APPENDIX E

1990 GROUNDWATER QUALITY STUDY— VICINITY OF THE BALLONA WETLANDS

LAW/CRANDALL

A DIVISION OF LAW ENGINEERING
AND ENVIRONMENTAL SERVICES, INC.

GROUND WATER MONITORING WELL INSTALLATION

AND

WATER QUALITY STUDY

PLAYA VISTA PROJECT

LOS ANGELES, CALIFORNIA

FOR

MAGUIRE THOMAS PARTNERS

(LCA L90261.FO)

AUGUST 21, 1990

LAW/CRANDALL, INC.
ENGINEERING AND ENVIRONMENTAL SERVICES

August 21, 1990

Maguire Thomas Partners
13250 Jefferson Boulevard
Los Angeles, California 90094

(LCA L90261.FO)

Attention: Mr. Joel Stensby
Project Manager

Gentlemen:

We are pleased to submit our "Report of Ground Water Monitoring Well Installation and Water Quality Study, Playa Vista Project, Los Angeles, California for Maquire Thomas Partners." The investigation was performed to determine ground water quality and gradient conditions in the vicinity of the Ballona Wetlands. The work was authorized by Mr. Joel Stensby of Maguire Thomas Partners on May 23, 1990, and performed in accordance with general specifications provided by Mr. Dave Chamberlain of Camp, Dresser, & McKee (CDM). This report presents the results of our field and laboratory findings concerning the area.

Based on the field and laboratory findings, there is no indication of significant contamination at the site. Trace levels of eight priority pollutant metals were detected within 10 of 11 ground water samples obtained from on-site monitoring wells. None of the concentrations exceed the maximum contaminant levels established for drinking water by the Environmental Protection Agency or the California Department of Health Services. The laboratory analyses indicated that concentrations of remaining priority pollutant metals, volatile and extractable organic compounds, pesticides, and PCBs in the samples analyzed were below detection limits.

Please feel free to contact us if you have any questions regarding this report.

Respectfully submitted,

LEROY CRANDALL AND ASSOCIATES

Larry Nodler, R.G. 4896
Project Geologist

Mervin E. Johnson, C.E.G. 26
Vice President
Director of Geological Services

G1-13/bgs
(5 copies submitted)

cc: Camp, Dresser, & McKee
Attn: Mr. Dave Chamberlain
Psomas and Associates
Attn: Mr. Jacob Lipa

REGISTERED GEOLOGIST
MERVIN E. JOHNSON
NO. 26
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

TABLE OF CONTENTS

Tables

Plates

GROUND WATER MONITORING WELL INSTALLATION

AND

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FOR

MAGUIRE THOMAS PARTNERS

SCOPE

This report presents the results of our ground water monitoring well installation, sampling, and analytical program performed in Parcels A, B, C, and D of the proposed Playa Vista Project in the Playa del Rey district of the City of Los Angeles. The locations of the site and included parcels are shown on the attached Plate, Site Plan. The purpose of the investigation was to determine ground water quality and gradient conditions in the vicinity of the Ballona Wetlands.

The investigation included drilling nine exploratory soil borings within Parcels A, B, and D. Each boring was converted to a ground water monitoring well. Soil samples were obtained from each boring and monitored for volatile organic compounds by field headspace analysis. Ground water samples were collected from eleven wells, including two previously existing wells within Parcel C, and submitted to BC Analytical Laboratories in Glendale, California for chemical analysis.

The professional opinions presented in this report have been developed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has been prepared for Maguire Thomas Partners and their consultants to be used solely in evaluating potential environmental implications at the subject site. The report has not been prepared for use by other parties, and may not contain sufficient information for purposes of other parties or other uses.

SITE CONDITIONS

The site comprises approximately 957 acres of primarily undeveloped land that has been divided into Parcels A, B, C, and D. The site is bounded by the Marina Freeway and Jefferson Boulevard on the north, bluffs of the Ballona Escarpment (Playa del Rey Hills) along the east and southeast, residential and commercial developments on the southwest, and the Marina del Rey entrance channel and Fiji Way along the west. The Ballona Creek channel roughly bisects the site in a generally northeast-southwest direction.

Parcels A and B are vacant except for several oil and gas well islands associated with the Playa del Rey oilfield, which began production in 1929. The wells are currently operated by the Southern California Gas Company. Numerous areas of former oilfield activities (drilling pads, sumps, access road, etc.) are also present. Parcel C is currently vacant, although the portion of the site east of Culver Boulevard was previously used as a recreation area and contains remnants of several ballfields. Parcel D contains the Playa Vista Project office, located at the eastern corner of the intersection of Lincoln and Jefferson Boulevards, and several areas of past and present activities associated with the former Hughes Airport.

The site is located within the Ballona Creek floodplain, the ancestral drainage of the Los Angeles River and, at its nearest point, is approximately 1,500 feet from the Pacific Ocean. Elevations across the site range from about 2 to 22 feet above mean sea level (MSL). The area is relatively flat overall and generally slopes southward to the Pacific Ocean.

Fill material exists within Parcels A, C, and D. Fill within Parcels A and C consists of material placed during the dredging of Marina del Rey. Fill material within Parcel D consists primarily of compacted soil, stockpiled soil, and construction debris resulting from the demolition of structures associated with the Hughes Airport. Additional on-site

fill is present as embankments along Ballona Creek, Culver Boulevard, and Lincoln Boulevard.

HYDROGEOLOGIC CONDITIONS

The Playa Vista Project site is located within the Santa Monica Hydrologic Subarea of the Los Angeles Coastal Plain. Local artificial fill deposits composed of sandy to clayey silt and silty sand up to 15 feet thick were encountered during our assessment work in 1988 (F-88218) at the site. The site is generally underlain by Holocene age alluvium that constitutes a portion of the underlying ground water reservoir. The Holocene alluvium is estimated to range from about 40 to 120 feet thick (DWR Bulletin No. 104, 1961). The upper section consists predominantly of silty clay and silt. The lower section consists of a sand and gravel zone composing the Ballona aquifer, which is commonly known as the "50-foot gravel." The thicknesses and lithologies discussed in this report may vary somewhat across the site. The Silverado aquifer within the lower Pleistocene age San Pedro formation is thought to directly underlie the Holocene age alluvium, including the Ballona aquifer. This aquifer is one of the most important ground water-producing zones in the coastal plain, and is estimated to range from about 80 to 150 feet beneath the site.

Ground water occurs near sea level in the site vicinity. Regional ground water movement is to the north or northeast (inland), toward ground water pumping depressions. Ground water in the vicinity of the site is generally considered degraded due to past overproduction of ground water and resulting sea water intrusion. Ballona Creek, which is channelized through the site, is locally fed by Centinela Creek and the Sepulveda Channel, located 0.5 and 1.8 miles northeast of the Lincoln Boulevard overpass and Ballona Creek, respectively. In addition, two unlined streams were observed flowing at the site. One stream is located along the southern boundary of Parcels B and D, near the base of the Ballona Escarpment. The other stream was observed flowing along a portion of Parcel D, south of Jefferson Boulevard. Both streams flow southwesterly

through the wetlands within Parcel B prior to discharging into the Ballona Creek, approximately 1,500 to 2,000 feet inland.

INVESTIGATION

GENERAL

The field investigation began with a preliminary site visit on June 22, 1990, to discuss the proposed work schedule with Mr. Joel Stensby, construction manager for the Playa Vista Project. The locations of the proposed monitoring wells were identified during this meeting. The actual drilling locations were staked in the field on June 25, 1990. Eleven wells were initially planned to be installed for the water quality study. However, it was decided by Camp, Dresser and McKee and our personnel that two wells installed in Parcel C (Wells MW-1E and MW-2E) during previous work at the site would be sufficient for monitoring and sampling purposes. Of the nine wells installed during the current investigation, two were placed within each of Parcels A and D, and five were installed in Parcel B. The locations of the wells are shown in relation to general site features on the Site Plan.

Drilling and well installation activities were performed between June 27 and July 2, 1990, by Datum Exploration of Signal Hill, California. Soil and ground water samples were obtained during and after the completion of drilling operations and submitted to an analytical laboratory for chemical analysis. Most of the soil samples were placed on hold pending the results of the ground water analyses. However, selected samples collected from four of the borings within the wetlands were analyzed by a second laboratory for electrical conductivity (salinity) and pH characteristics. The ground water samples were analyzed for priority pollutant organic compounds (volatile and extractable), metals, pesticides, and PCBs. The logs of the borings and well construction details are presented in Appendix A.

DRILLING AND SOIL SAMPLING

Prior to drilling, Underground Service Alert was contacted to verify the absence of known underground utilities at each proposed drilling location. Nine borings were then drilled to depths ranging from 13 to 27 feet below ground surface using truck-mounted equipment and 8-inch-diameter, hollow-stem flight augers. No drilling fluids, including water, were introduced into the borehole during drilling. As discussed below, each boring was drilled twice with hollow-stem auger equipment to obtain soil samples while minimizing the possible impact of caving and/or heaving sands.

The borings were drilled initially to obtain two sets of representative soil samples for chemical analysis. Both sets of samples were obtained by driving a modified California split-spoon sampler approximately 6 inches into firm, undisturbed soil to penetrate any overlying loose cuttings. A representative portion of each soil sample was sealed in a capped brass sleeve to perform a field analysis of the relative concentration of volatile organic compounds (VOCs) within the sample headspace. The samples were allowed to warm in the sun for approximately 10 minutes to enhance the volatilization of organic compounds. The relative concentration of organic vapors present in each sample was then monitored using a Gastechtor Model No. 1238 organic vapor analyzer (OVA), calibrated to 50 parts per million (ppm) of hexane. Each sample was monitored twice to verify the initial results. The results of the headspace analyses are indicated on the boring logs.

Soil samples were obtained at 5-foot intervals within each boring. At least one saturated sample was collected from each boring. The samples were submitted to BC Analytical, a state-certified laboratory in Glendale, California, and placed on hold pending the results of the ground water analyses.

Additional samples were obtained at 2-foot intervals within Borings MW-1, MW-2, MW-3, and MW-4. As with the previous sample group, at least one sample was obtained from saturated sediments at each boring location. These samples were shipped to Dr. Bertin

Anderson of the Revegetation & Wildlife Management Center, Incorporated (RWMC) in Blythe, California. The samples were analyzed to determine the electrical conductivity (EC) and pH characteristics of soil within the wetlands.

Each soil sample was obtained in a clean, 2½-inch x 6-inch brass sleeve, sealed with aluminum foil, plastic caps and tape, labeled, and stored individually in a zip-lock bag. The first set of samples was stored in an iced chest and delivered to BC Analytical. The second sample set was carefully packed and sent by overnight mail to RWMC. The sampling equipment was decontaminated between each use with clean water and non-phosphate detergent, followed by a clean water rinse, a distilled water rinse, an intermediate rinse with laboratory-grade methanol, and a final distilled water rinse.

After completion of sampling, the augers were retracted from each borehole and plugged with a wooden plug. The borings were then re-drilled to total depths penetrating approximately 10 feet below the apparent static ground water level. Each plug was punched out from the lead auger with sampling rods on completion of drilling and beginning of well installation. All drill cuttings and samples were inspected, classified, and logged by our field geologist during the drilling operations. These observations are reported on the boring logs. The drill cuttings were stored near the stockpiled soil and debris in Parcel D. Plastic sheeting (Visqueen) was placed above and below the soil to minimize aeration or leaching of volatile compounds.

Each boring was drilled using a set of steam-cleaned augers and bit. The equipment was decontaminated off-site because of the lack of an on-site decontamination area and to eliminate the need for containing the decontamination fluids. These procedures were followed to minimize the possibility of cross-contamination between borings and/or sampling intervals.

MONITORING WELL INSTALLATION

Each boring was converted into a monitoring well by installing 2-inch-diameter PVC casing and screen. The PVC was delivered on-site, cleaned and wrapped in plastic by the manufacturer, and was inspected for indications of contamination by our field geologist. All of the casing and screen used consisted of Schedule 40 PVC with flush-threaded joints. No glue or solvents were used in the well construction. The well screen was observed to contain three vertical columns of 0.010-inch horizontal slots spaced at 0.25-inch intervals. The screen therefore contains approximately 144 slots per lineal foot.

Ten- and fifteen-foot sections of well screen were placed through the augers within each boring with the intention of bracketing the water table surface to accommodate minor fluctuation in ground water levels. The top of the screen in Wells MW-1, MW-2, and MW-5 is currently submerged about ½ to 3 feet below the water. This occurred as a result of extremely shallow ground water (within 3 feet of ground surface) at these locations. The remaining screened intervals currently extend between about 1 and 6 feet above the water table surface.

A filter pack consisting of Lone Star No. 2/12 sand was placed within the annular space around the entire screened interval to reduce the infiltration of fine-grained sediments into the well structure. The filter pack was extended between about ½ and 5 feet above the top of the well screen to accommodate any settlement during well development. The filter pack was carefully placed through the augers during retraction from the borehole. This procedure was followed to minimize the collapse of loose formation sands around the well casing and screen before placement of the filter pack.

A bentonite seal of ¼-inch clay pellets was placed above the filter pack, and the remaining annular space was sealed with concrete to ground surface. Each well was completed at ground surface with a steel well cover set in place within a 4-foot-square concrete well pad. The top and bottom of each well casing was capped with a threaded

PVC cap. Each steel well cover was locked with a padlock, each keyed alike, painted yellow to enhance visibility, and labeled. The monitoring well construction details for all wells monitored are presented in Appendix A, and are summarized in the following Table 1.

TABLE 1

WELL CONSTRUCTION DATA

Well No.	Elevation of Top of PVC Casing	Elevation of Top of Steel	Ground Surface Elevation	Total Length of Casing	Casing Height Above Ground Surface	Depth of Screened Interval Relative to Ground Surface
MW-1	5.01	5.11	2.8	22.2	2.2	5 - 20
MW-2	4.04	4.25	2.2	14.8	1.8	3 - 13
MW-3	3.67	3.70	1.8	13.9	1.9	2 - 12
MW-4	4.94	5.24	3.2	19.7	1.7	3 - 18
MW-5	5.43	5.64	3.6	22.8	1.8	6 - 21
MW-6	14.66	15.04	13.4	25.3	1.3	9 - 24
MW-7	17.04	17.34	15.5	26.5	1.5	10 - 25
MW-8	18.52	18.72	16.7	21.8	1.8	10 - 20
MW-9	11.95	12.18	10.6	20.4	1.4	9 - 19
MW-1E	14.14	--	12.6	33.5	1.5	10.5 - 32
MW-2E	19.71	--	18.2	39.0	1.5	17.5 - 37.5

Note: Elevations are in feet MSL, based on City of Los Angeles bench mark data. All other measurements are in feet.

WELL DEVELOPMENT AND GROUND WATER SAMPLING

After completion, the static water within each well was measured using an electric water level indicator calibrated against a steel measuring tape. Each well was then developed to remove fine-grained sediments from the well structure and develop the filter pack opposite the screened interval. Development was achieved by rig and/or hand-bailing between 20 and 25 gallons of water from each well. Development continued until relatively clear water was produced. The development water was discharged onto ground surface a minimum distance of 50 feet from the well.

Ground water samples were obtained from seven of the wells on June 30, 1990 immediately after development. The samples were collected with a clean, Teflon bailer after field measurements of pH, temperature, and EC had stabilized to the point where three consistent readings of each were recorded. Ground water samples were obtained from Wells MW-8 and MW-9 and previously existing Wells MW-1E and MW-2E on July 2, 1990. Approximately 20 to 25 gallons of water were hand-bailed from Wells MW-8 and MW-9 prior to sampling. Wells MW-1E and MW-2E were purged of approximately 6 gallons of water prior to sampling. All four wells were sampled after field measurements of pH, temperature, and pH had stabilized.

Each set of ground water samples was obtained from each well using EPA-approved protocol. The sampling equipment was decontaminated between wells with clean water and non-phosphate detergent, followed by a clean water rinse, a distilled water rinse, an intermediate rinse with laboratory-grade methanol, and a final distilled water rinse. The sampling equipment was then stored in a clean environment between sampling. While bailing, the field geologist took care not to use and contaminate any more bailing line than necessary. Used bailing line was discarded prior to sampling the next well. These procedures were performed to minimize the possibility of cross-contamination between wells.

To provide additional quality assurance/quality control, a duplicate field sample (MW-4D) was obtained from Well MW-4 and a laboratory trip blank sample accompanied the sample containers until delivery to the laboratory. The latter sample would be analyzed in the event that significant contamination was detected within one or more of the field samples to determine whether such contaminants were representative of ground water conditions or introduced into the sample(s) by an outside source. These measures were performed in addition to the standard QA/QC procedures developed and conducted in-house by the testing laboratory.

The samples were collected in laboratory-supplied glass containers, labelled, stored in iced chests, and delivered to BC Analytical with Chain-of-Custody documentation. Each well sample was analyzed for priority pollutant metals (EPA Method 6010/7000 series), priority pollutant volatile and extractable organic compounds (EPA Methods 8240 and 8270, respectively), and pesticides and PCBs (EPA Method 8080).

GROUND WATER MEASUREMENTS AND WELL HEAD SURVEY

In addition to the initial round of water level measurements obtained immediately prior to sampling each well, two additional monitoring rounds were performed. On July 5, 1990, static water levels were measured within Wells MW-1 through MW-9; however, Wells MW-1E and MW-2E were inadvertently omitted from the monitoring round. On July 17, 1990, static water levels were obtained within each of the eleven wells.

In order to convert the water level data into water surface elevation data, the newly installed wells were surveyed by Psomas and Associates on July 10, 1990. The elevations of the north sides of the tops of each PVC casing and steel well cover were obtained in feet above mean sea level (MSL) using City of Los Angeles bench mark data. The reference points on the steel well covers were indicated with spray paint. The reference points on the PVC casings were indicated by cutting a small notch on the top thread and marking an arrow with a black, felt-tipped pen. The tops of the PVC casings were used for reference when obtaining static water levels.

Wells MW-1E and MW-2E were surveyed after being installed using the same City of Los Angeles bench mark datum used during the recent survey. The previous well head elevations were used to convert the water level data into water surface elevations during this investigation.

FINDINGS

GEOLOGIC MATERIALS

Artificial fill material was encountered within Borings MW-6, MW-7, MW-8, and MW-9. The material consisted of 8½ to 14 feet of moist, brown silty sand, grey sand, brown sandy to clayey silt, and grey silty clay. Local concrete debris was observed within Boring MW-7 in Parcel D. The remaining geologic materials encountered across the site consisted primarily of upper silty clay layers with occasional underlying silty to clayey sand and sand layers. The soil is generally fine-grained, moist to saturated, and dark brown to grey. Borings MW-5 and MW-8 contained abundant seashells at 5- and 10-foot depths, respectively, in silty clay layers. The seashells within Boring MW-8 are believed to have originated from dredged fill placed in this area. Borings MW-1 through MW-5 exhibited sulfide odors in saturated soil below a depth of about 6 feet. No other odors were noted. The results of the headspace analyses did not indicate the presence of detectable concentrations of volatile organic compounds within the samples tested.

GROUND WATER OCCURRENCE

On July 17, 1990, ground water was measured at depths ranging from about 2 to 19 feet below ground surface across the site during our monitoring rounds. These levels occurred in Wells MW-1 and MW-2E, respectively. Ground water surface elevations on the same date ranged from −1.82 feet MSL in Well MW-2E to +2.80 feet MSL in Well MW-8. The water level data obtained during each monitoring round is summarized on the following page in Table 2.

TABLE 2

GROUND WATER LEVEL DATA

Well No.	Date Measured	Depth to Ground Water	Reference Point Elevation	Ground Water Surface Elevation
MW-1	6/30/90	4.10	5.01	0.91
	7/05/90	4.00		1.01
	7/17/90	3.92		1.09
MW-2	6/30/90	4.00	4.04	0.04
	7/05/90	4.25		- 0.21
	7/17/90	4.41		- 0.37
MW-3	6/30/90	4.90	3.67	- 1.23
	7/05/90	4.20		- 0.53
	7/17/90	4.49		- 0.81
MW-4	6/30/90	5.40	4.94	- 0.46
	7/05/90	6.05		- 1.11
	7/17/90	6.74		- 1.80
MW-5	6/30/90	6.80	5.43	- 1.37
	7/05/90	6.95		- 1.52
	7/17/90	7.20		- 1.77
MW-6	6/30/90	13.60	14.66	1.06
	7/05/90	13.60		1.06
	7/17/90	13.61		1.05
MW-7	6/30/90	15.25	17.04	1.79
	7/05/90	15.30		1.74
	7/17/90	15.46		1.58
MW-8	7/02/90	15.90	18.52	2.62
	7/05/90	15.60		2.92
	7/17/90	15.72		2.80
MW-9	7/02/90	11.45	11.95	0.50
	7/05/90	11.50		0.45
	7/17/90	11.56		0.39
MW-1E	7/02/90	13.75	14.14	0.39
	7/17/90	13.79		0.35
MW-2E	7/02/90	21.43	19.71	- 1.72
	7/17/90	21.53		- 1.82

Notes: Depths are in feet relative to reference point at top of PVC casing. Elevations are in feet MSL, based on City of Los Angeles bench mark data.

Based on the July 17, 1990 water level data, ground water movement varies significantly across the site. The primary feature influencing hydraulic conditions at the site appears to be the Ballona Creek channel. The ground water contours shown on the Site Plan indicate that the channel is acting as a drain and, possibly, as a barrier to movement from Parcels A and C, to Parcels B and D.

Elevated ground water levels within the western portions of Parcels A, B, and C suggest hydraulic influence from urban runoff. The particularly high ground water elevation within Well MW-8 may reflect recharge from irrigation at adjacent developments at the end of Fiji Way. Relatively low water levels within the southern and eastern portions of Parcel B may reflect discharge into several creeks that flow through this parcel prior to discharging into the Ballona Creek.

SOIL ANALYSES

Laboratory analyses were performed on selected soil samples from wetland Borings MW-1 through MW-4 to determine electrical conductivity (EC) and pH characteristics; these analyses were performed by RWMC. Samples obtained from Boring MW-1 at 2-, 4-, and 6-foot depths and samples from Boring MW-4 at 2- and 4-foot depths exhibited EC levels ranging from 4,790 to 8,200 micromhos (μmhos). The samples obtained at 2- and 4-foot depths from Borings MW-2 and MW-3, and at a 6-foot depth in Boring MW-4, contained EC levels ranging from 13,000 to 16,500 μmhos. The results of the pH analyses indicate the soil samples are slightly basic in nature, with pH values ranging between pH 8.19 and 9.45. In general, no direct correlation appears to exist between the depth and composition of the sample and the EC and pH values obtained. The results of the EC and pH analyses are presented on the following page in Table 3. The laboratory data sheets are included in Appendix B.

The results of the ground water sample analyses indicated that analyses would not be necessary to determine the presence of priority pollutant organic compounds, metals, pesticides, or PCBs within the soil samples obtained at 5-foot intervals within any of the borings.

TABLE 3

RESULTS OF SOIL ANALYSES

Sample I.D.		Date Sampled	EC (μmhos)	pH
MW-1	@ 2'	6/29/90	4,790	9.20
	@ 4'	6/29/90	5,600	9.42
	@ 6'	6/29/90	6,400	9.45
MW-2	@ 2'	6/29/90	16,500	9.21
	@ 4'	6/29/90	14,000	8.71
MW-3	@ 2'	6/28/90	13,000	9.11
	@ 4'	6/28/90	15,000	8.89
MW-4	@ 2'	6/30/90	8,200	9.20
	@ 4'	6/30/90	6,300	8.19
	@ 6'	6/30/90	13,500	9.08

Notes: (EC) = electrical conductivity; (μmhos) = micromhos

GROUND WATER ANALYSES

Field measurements of temperature, EC, and pH were obtained for ground water within each well immediately prior to sampling. The results indicate temperatures ranging from 61.8°F to 68.7°F for ground water within the seven wells sampled on June 30, 1990. On July 2, 1990, temperatures obtained from the remaining four wells ranged from 65.6°F to 70.4°F. Electrical conductivity measurements obtained for 10 of 11 samples indicated EC levels exceeding the maximum response capability of the Myron L field instrument used (>10,000 μmhos). Ground water within Well MW-5 exhibited an EC level of 2,600 μmhos. The pH values obtained for each well were slightly basic, ranging from 7.2 to 7.4. The results of the field readings are summarized on the following page in Table 4.

TABLE 4

FIELD MEASUREMENTS OF
GROUND WATER QUALITY CHARACTERISTICS

Well No.	Date Measured	Temp. (°F)	EC (μmhos)	pH M
W-1	6/30/90	61.8	> 10,000	7.4 *
MW-2	6/30/90	68.7	> 10,000	7.4 *
MW-3	6/30/90	65.2	> 10,000	7.4 *
MW-4	6/30/90	63.3	> 10,000	7.3 *
MW-5	6/30/90	65.5	2,600	7.4 *
MW-6	6/30/90	67.2	> 10,000	7.4 *
MW-7	6/30/90	65.2	> 10,000	7.3 *
MW-8	7/02/90	69.0	> 10,000	7.4
MW-9	7/02/90	70.4	> 10,000	7.2
MW-1E	7/02/90	66.8	> 10,000	7.4
MW-2E	7/02/90	65.6	> 10,000	7.4

Notes: (*) indicates approximate corrected value after re-calibrating Myron-L instrument.

(EC) = electrical conductivity; (μmhos) = micromhos

The results of EPA Method 6010/7000 series analyses indicate trace concentrations of cadmium (Cd), lead (Pb), zinc (Zn), arsenic (As), beryllium (Be), chromium (Cr), nickel (Ni), and copper (Cu) within some of the wells tested. All levels are below the maximum contaminant levels established for these metals within drinking water by the U.S. Environmental Protection Agency (EPA) and the California Department of Health Services (DOHS). No drinking water standards have been established for beryllium and nickel.

Some of the metal concentrations, however, exceed the more stringent ambient water quality criteria for the protection of saltwater aquatic life recommended by the EPA. The following well samples contained concentrations exceeding the single maximum contaminant level of 170 micrograms per liter (μg/L) for zinc (as opposed to the 1-hour, 24-hour, or 4-day average) recommended by the EPA: Wells MW-2, MW-5, and MW-2E contained zinc levels of 200 μg/L, 250 μg/L, and 190 μg/L, respectively. No "maximum" criteria have been established for lead, arsenic, beryllium, nickel, or copper.

The following wells also exhibit metal concentrations exceeding the "instantaneous maximum limiting concentrations" under the California Ocean Plan (revised, March 1990): 250 μg/L of zinc in Well MW-5 exceeds the limit of 200 μg/L; 90 μg/L of copper and 110 μg/L of nickel within Well MW-9 exceed the 30 μg/L and 50 μg/L limits, respectively; the 40 μg/L level of hexavalent or total chromium in Well MW-2E is above the established limit of 20 μg/L. No limit has been established for beryllium.

The results of EPA Method 8270 analyses for extractable organic priority pollutants indicate the presence of bis(2-ethylhexyl)phthalate within samples from Wells MW-5 and MW-6. The results indicate respective concentrations of 62 μg/L and 17 μg/L of this contaminant within the wells. A footnote on the laboratory data sheets suggests that this parameter may be a laboratory contaminant. No other extractable organic compounds were detected.

The results of EPA Method 8240 analyses for volatile organic priority pollutants indicate that the concentration of each of these parameters was below the detection limit.

The results of EPA Method 8080 analyses for pesticides and PCBs indicate that the concentration of each of these parameters was below the detection limit.

The concentrations of the parameters detected within each of the samples are presented on the following page in Table 5. The laboratory data sheets and accompanying Chain-of-Custody documentation are attached as Appendix B. The laboratory data sheets indicate several instances where detection limits varied among samples for specific parameters due to matrix interference and resultant dilution of the sample required. In the particular case of well samples MW-2 and MW-4D, the detection limit for p,p'-DDT was raised from 0.04 μg/L to 0.10 μg/L as a result of in-house laboratory contamination from a previous sample batch. These cases are identified within footnotes to the data sheets.

CONCLUSIONS

The geologic materials encountered during our investigation indicate that the site is underlain primarily by Holocene age silty clay interlayered with silty to clayey sand and sand layers. Up to 14 feet of artificial fill consisting of silty sand, sand, sandy to clayey silt, and silty clay was encountered within Borings MW-6, MW-7, MW-8, and MW-9. Local concrete debris was observed within Boring MW-7 and Parcel D.

Ground water levels within wells monitored during the investigation indicate that ground water occurs under unconfined conditions at depths ranging from about 2 to 19 feet below ground surface. Ground water elevations across the site range from about 2 feet below to about 3 feet above mean sea level. In general, ground water movement is toward the Ballona Creek channel, which acts as a drain within the site. Elevated water levels within the western portions of Parcels A, B, and C appear to reflect hydraulic influence from urban irrigation runoff.

TABLE 5

RESULTS OF GROUND WATER ANALYSES

Well Number	Parameters (µg/L)								
	Cd	Pb	Zn	As	Be	Cr	Ni	Cu	Bis(2-ethylhexyl)phthalate
MW-1	< 1	< 2	50	< 2	< 1	< 5	< 50	< 20	< 10
MW-2	< 2*	< 2	200	< 20*	< 1	< 5	< 50	< 20	< 10
MW-3	< 1	< 2	50	< 2	< 1	< 5	< 50	< 20	< 10
MW-4	< 1	4	110	7	< 1	< 5	< 50	< 20	< 10
MW-4D	< 1	< 2	80	5	< 1	< 5	< 50	< 20	< 10
MW-5	1	2	250	14	< 1	< 5	< 50	< 20	62
MW-6	6	< 2	130	19	< 1	< 5	< 50	< 20	17
MW-7	2	10	130	3	< 1	< 5	< 50	< 20	< 10
MW-8	< 1	< 10*	< 30	< 2	< 1	< 5	< 50	< 20	< 10
MW-9	< 1	< 2	160	< 10*	2	< 5	110	90	< 10
MW-1E	< 1	6	< 30	6	< 1	< 5	< 50	< 20	< 10
MW-2E	< 1	< 2	190	< 2	3	40	150	< 20	< 10

Notes: (µg/L) = micrograms per liter; (--) indicates concentration below indicated detection limit;
(*) = higher detection limit due to matrix interference; (D) indicates duplicate field sample;
(E) = indicates existing monitoring well.

Relatively low levels within the southern and eastern portions of Parcel B may reflect ground water discharge into several creeks that flow through this parcel. Laboratory analyses performed by RWMC indicate electrical conductivities ranging from 4,760 to 16,500 μmhos within the upper 6 feet of soil in the wetlands, generally indicative of brackish water conditions. The pH values obtained from the same samples range from 8.19 to 9.42, indicating slightly basic conditions.

Laboratory analyses performed on ground water samples obtained from eleven monitoring wells at the site indicate trace levels of eight priority pollutant metals within some of the wells. The concentrations were below the maximum contaminant levels established for drinking water by the U.S. Environmental Protection Agency and the California Department of Health Services. Individual metal concentrations exceeding the maximum recommended levels established by the EPA for the protection of saltwater aquatic life were detected within three wells. Wells MW-2, MW-5, and MW-2E contained respective zinc concentrations of 200 μg/L, 250 μg/L, and 190 μg/L, exceeding the recommended maximum limit of 170 μg/L.

Three wells also exhibited individual metal concentrations that exceed the "instantaneous maximum limiting concentrations" established under the California Ocean Plan: the zinc level of 250 μg/L in Well MW-5 exceeds the established limit of 200 μg/L. The 90 μg/L concentration of copper and 110 μg/L of nickel within Well MW-9 is above the respective limits of 30 μg/L and 50 μg/L. The 40 μg/L level of chromium in Well MW-2E exceeds the established limit of 20 μg/L.

No other significant concentrations of priority pollutant metals, volatile or extractable organic compounds, pesticides, or PCBs were detected within the samples tested.

--oOo--

AREA A (139.1 ac.)

Business/Resort Hotels	1,500 rooms
Luxury Hotel	300 rooms
Visitor Serving Retail	150,000 sq. ft.
Residential	1,226 units
Marina	40 acres

AREA B (336.1 ac.)

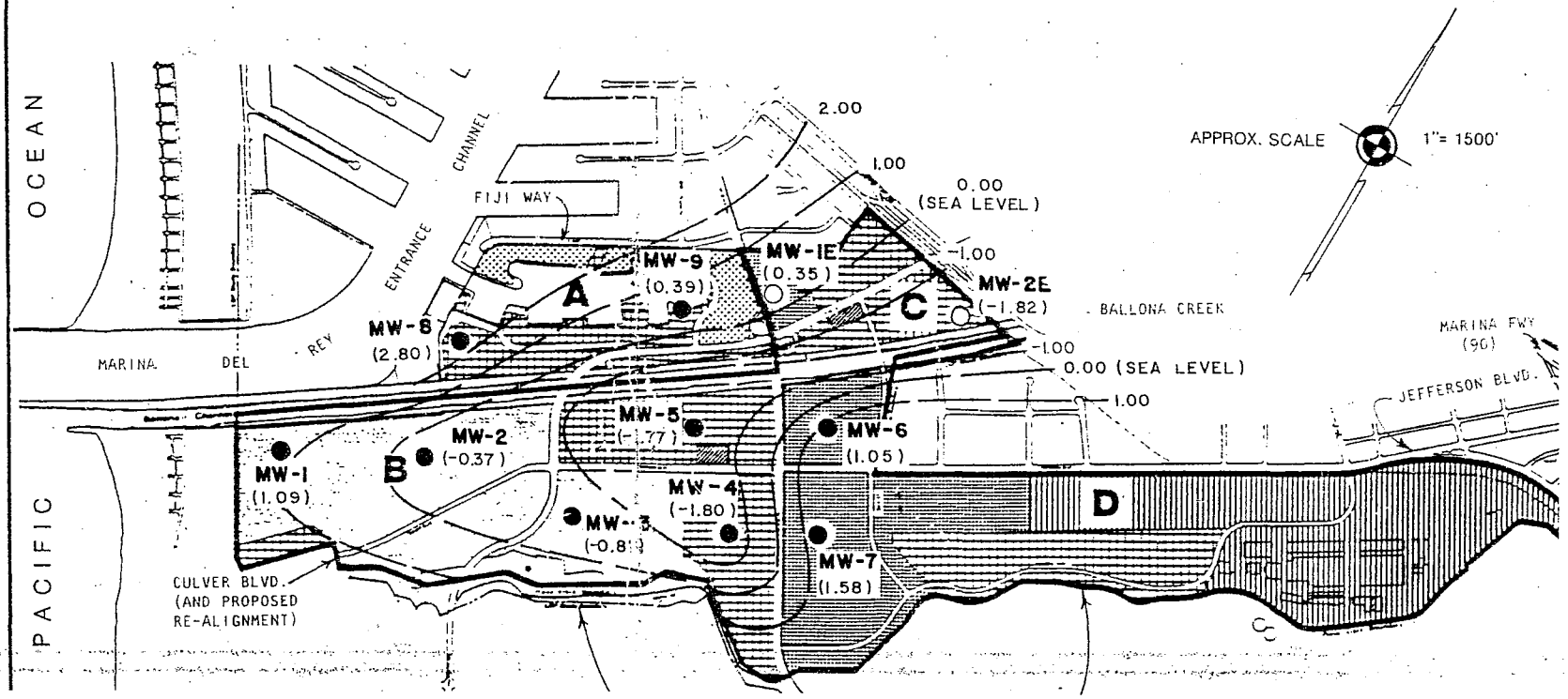
Residential	2,333 units
Neighborhood Retail	70,000 sq. ft.
Marsh Restoration and Interpretive Center	209 ac.

AREA C (69.7 ac.)

Office	900,000 sq. ft.
Visitor Serving Retail	100,000 sq. ft.
Residential	2,032 units
Neighborhood Retail	50,000 sq. ft.

AREA D (412.2 ac.)

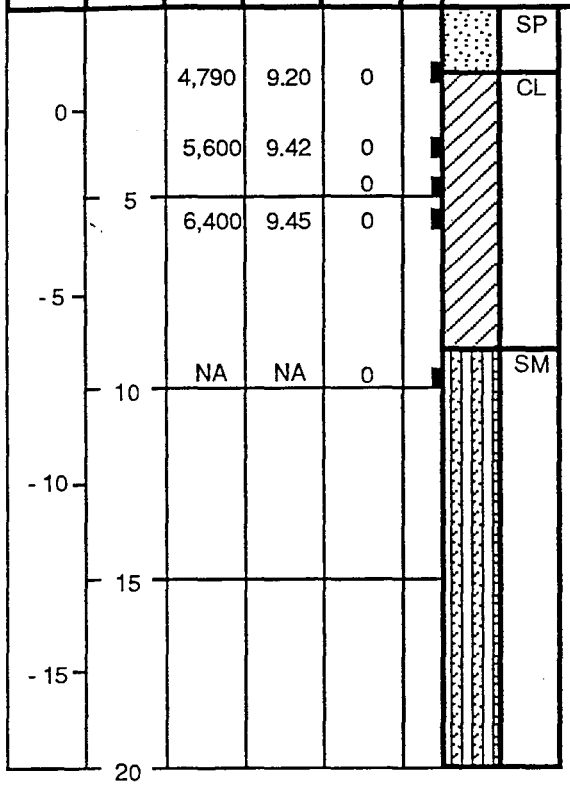
Office	2,0
Office/Research (includes existing)	2,9
Retail	60
Hotel	60
Residential	3,2



BORING MW - 1

DATE DRILLED: June 29, 1990
EQUIPMENT USED: 8" Hollow- Stem Flight Auger

GROUND SURFACE ELEVATION = 2.8 Feet MSL



SAND - fine, moist, brown

SILTY CLAY - with very fine Sand, very moist, dark grey

Greenish

Very moist

Slight sulfide odor

CLAYEY SAND - fine, saturated, dark grey

NOTES: Boring terminated at 20'. Water level measured at 10' below ground surface 20 minutes after completion of drilling. Two-inch diameter PVC well installed to a depth of 20'.

(NA) indicates Sample not analyzed.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

lk S.G. RC W.P. lk CHKD

DB L90261.FO DATE 7/12/90 F.T.

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.1

BORING MW - 2

DATE DRILLED: June 29, 1990
EQUIPMENT USED: 8" Hollow- Stem Flight Auger

GROUND SURFACE ELEVATION = 2.2 Feet MSL

ELEVATION	DEPTH (ft.)	E.C. (umhos)	pH	OVA (ppm)	SAMPLE LOC.		
0	0	16,500	9.21	0		CL	DESSICATED CLAY AND EVAPORITE DEPOSITS - SILTY CLAY - with very fine Sand, very moist, greyish brown
						CL	
		14,000	8.71	0		SP	SAND - fine, poorly graded, Clayey, saturated, dark brown
	5	NA	NA	0		CL	SILTY CLAY - with very fine Sand, saturated, greenish grey
-5							Slight sulfide odor
	10						
-10							
	15						

NOTES: Boring terminated at 13'. Water level measured at 3' below ground surface 20 minutes after completion of drilling. Two-inch diameter PVC well installed to a depth of 13'.

(NA) indicates sample not analyzed.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

JB L90261.FO DATE 7/12/90 F.T. T. lk S.G. RC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.2

BORING MW - 3

DATE DRILLED: June 28, 1990
EQUIPMENT USED: 8" Hollow - Stem Flight Auger
GROUND SURFACE ELEVATION = 1.8 Feet MSL

ELEVATION	DEPTH (ft.)	E.C. (umhos)	pH	OVA (ppm)	SAMPLE LOC.		
0	0	13,000	9.11	0		ML	CLAYEY SILT - with fine Sand, moist, brown
		15,000	8.89	0		CL	SILTY CLAY - with very fine Sand, saturated, dark greyish brown Slight sulfide odor
	5	NA	NA	0			
-5							
	10						
-10							
	15						

NOTES: Boring terminated at 12'. Water level measured at 3' below ground surface 10 minutes after completion of drilling. Two-inch diameter PVC well installed to a depth of 12'.

(NA) indicates sample not analyzed.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

DB L90261.FO DATE 7/12/90 F.T. t. lk S.G. RC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.3

BORING MW - 4

DATE DRILLED: June 28, 1990
EQUIPMENT USED: 8" Hollow- Stem Flight Auger

GROUND SURFACE ELEVATION = 3.2 Feet MSL

ELEVATION	DEPTH (ft.)	E.C. (umhos)	pH	OVA (ppm)	SAMPLE LOC.		
		8,200	9.20	0		ML	CLAYEY SILT - with fine Sand, moist, brown
0		6,300	8.19	0		CL	SANDY CLAY - with fine Sand, some Silt, moist, brown
	5	13,500	9.08	0			Saturated
		NA	NA				Slight sulfide odor
-5						CL	SILTY CLAY - with very fine Sand, saturated, dark greyish brown
	10						
-10							
	15						
-15							
	20						

NOTES: Boring terminated at 18'. Water level measured at 5' below ground surface10 minutes after completion of drilling. Two- inch diameter PVC well installed to a depth of 18'.

(NA) indicates sample not analyzed.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

JB L90261.FO DATE 7/12/90 F.T. ____ T. lk S.G. RC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

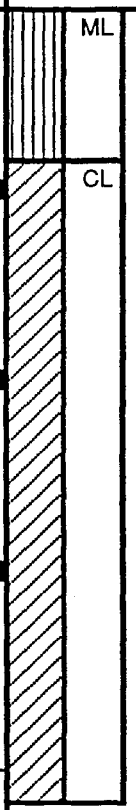
PLATE A - 1.4

BORING MW - 5

DATE DRILLED: June 27, 1990
EQUIPMENT USED: 8" - Hollow Stem Flight Auger

GROUND SURFACE ELEVATION = 3.6 Feet MSL

ELEVATION	DEPTH (ft.)	E.C. (umhos)	pH	OVA (ppm)	SAMPLE LOC.
0	5	NA	NA	0	
-5	10	NA	NA	0	
-10	15	NA	NA	0	
-15	20				
-20	25				



ML SANDY SILT - moist, light greyish brown

CL SILTY CLAY - with very fine Sand, abundant seashells, very moist, dark grey

Slight sulfide odor

Saturated

NOTES: Boring terminated at 21'. Water level measured at 11' below ground surface 25 minutes after completion of drilling. Two-inch diameter PVC well installed to a depth of 21'.

(NA) indicates sample not analyzed.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

JB L90261.FO DATE 7/12/90 F.T. t. lk S.G. RC W.P. lk CHKD

LOG OF BORING

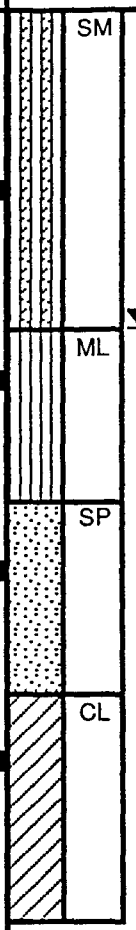
LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.5

BORING MW - 6

DATE DRILLED: June 27, 1990
EQUIPMENT USED: 8" Hollow-Stem Flight Auger
GROUND SURFACE ELEVATION = 13.4 Feet MSL

ELEVATION	DEPTH (ft.)	E.C. (umhos)	pH	OVA (ppm)	SAMPLE LOC.
10	5	NA	NA	0	
5	10	NA	NA	0	
0	15	NA	NA	0	
-5	20	NA	NA	0	
-10	25				



SM — FILL - SILTY SAND - well graded, moist, brown

▼ SURFACE OF NATURAL SOIL

ML — SANDY SILT - fine Sand, Clayey, moist, greyish brown

SP — SAND - fine, poorly graded, very moist, brownish grey

Saturated

CL — SILTY CLAY - with fine Sand, saturated, dark brown

NOTES: Boring terminated at 24'. Water level measured at 14' below ground surface 20 minutes after completion of drilling. Two-inch diameter PVC well installed to a depth of 24'.

(NA) indicates sample not analyzed.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

JB L90261.FO DATE 7/12/90 F.T. lk S.G. RC W.P. lk CHKD

LOG OF BORING

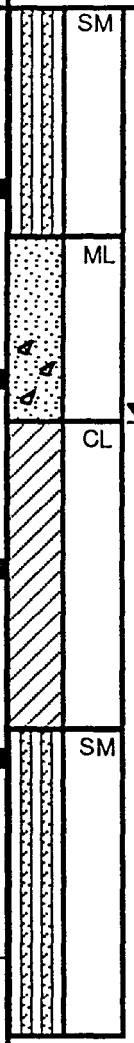
LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.6

BORING MW - 7

DATE DRILLED: June 27, 1990
EQUIPMENT USED: 8" Hollow- Stem Flight Auger
GROUND SURFACE ELEVATION = 15.5 Feet MSL

ELEVATION	DEPTH (ft.)	E.C. (umhos)	pH	OVA (ppm)	SAMPLE LOC.
15					
10	5	NA	NA	0	
5	10	NA	NA	0	
0	15	NA	NA	0	
-5	20	NA	NA	0	
-10	25				
-15	30				



SM FILL - SILTY SAND - local dark Silt lenses, moist, brown

ML FILL - SAND - poorly graded, moist, grey

Local concrete debris

SURFACE OF NATURAL SOIL

CL SILTY CLAY - with very fine Sand, moist, black

Grey

Saturated

SM SILTY SAND - Clayey, saturated, grey

NOTES: Boring terminated at 27'. Water level measured at 15' below ground surface 25 minutes after completion of drilling. Two-inch diameter PVC well installed to a depth of 25'.

(NA) indicates sample not analyzed.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

DB L90261.FO DATE 7/12/90 F.T. ___ lk S.G. RC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.7

BORING MW - 8

DATE DRILLED: June 29, 1990
EQUIPMENT USED: 8" Hollow- Stem Flight Auger

GROUND SURFACE ELEVATION = 16.7 Feet MSL

ELEVATION	DEPTH (ft.)	E.C. (umhos)	pH	OVA (ppm)	SAMPLE LOC.	
15	5	NA	NA	0		ML — FILL - SANDY SILT - moist, brown
10	10	NA	NA	0		SP — FILL - SAND - fine, poorly graded, moist, light brown
5	15	NA	NA	0		CL — FILL - SILTY CLAY - abundant seashells, very moist, dark grey Saturated
0	20	NA	NA	0		▼ SURFACE OF NATURAL SOIL SM — SILTY SAND - fine, saturated, dark brown

NOTES: Boring terminated at 20'. Water level measured at 10' below ground surface 20 minutes after completion of drilling. Two- inch diameter PVC well installed to a depth of 20'.

(NA) indicates sample not analyzed.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

L90261.FO

DB _____ DATE 7/12/90 F.T. _____ I. lk S.G. RC W.P. lk CHKD

LOG OF BORING

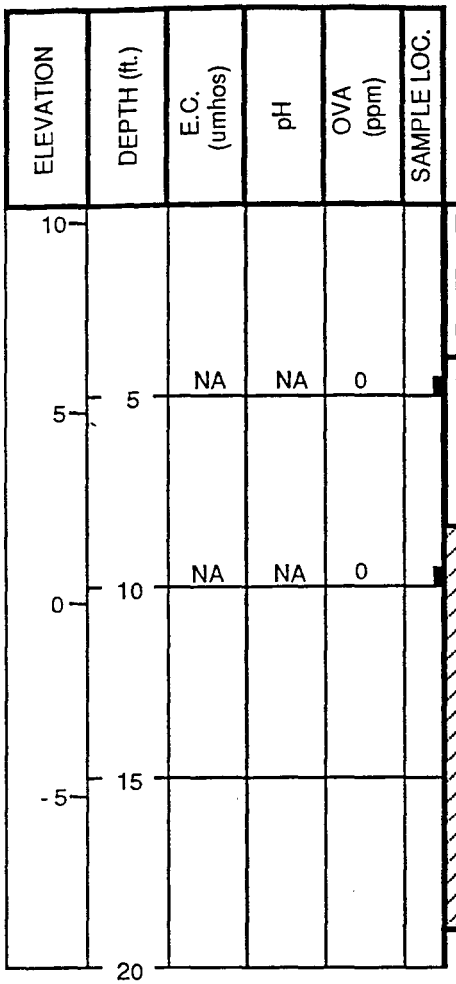
LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.8

BORING MW - 9

DATE DRILLED: June 29, 1990
EQUIPMENT USED: 8" Hollow - Stem Flight Auger

GROUND SURFACE ELEVATION = 10.6 Feet MSL



ML FILL - CLAYEY SILT - moist, brown

SM FILL - SILTY SAND - fine, moist, brown

▼ SURFACE OF NATURAL SOIL

CL SILTY CLAY - with very fine Sand, saturated, brown

NOTES: Boring terminated at 19'. Water level measured at 9' below ground surface 10 minutes after completion of drilling. Two-inch diameter PVC well installed to a depth of 19'.

(NA) indicates sample not analyzed.

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

B L90261.FO DATE 7/12/90 F.T. lk S.G. RC W.P. lk CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.9

BORING MW - 1E

DATE DRILLED: June 22, 1988
EQUIPMENT USED: 8" - Diameter Hollow Stem Auger

GROUND SURFACE ELEVATION = 12.6 Feet MSL

ELEVATION	DEPTH (ft.)	TOTAL FUEL HYDROCARBONS	BENZENE	TOLUENE	XYLENE	LEAD	SAMPLE LOC.
10	5	NA	NA	NA	NA	NA	
5	10	NA	NA	NA	NA	NA	
0	15	NA	NA	NA	NA	NA	
- 5	20	NA	NA	NA	NA	NA	
- 10	25	NA	NA	NA	NA	NA	
- 15	30	NA	NA	NA	NA	NA	
- 20	35						

SM FILL - SILTY SAND - moist to very moist, fine to medium grained, brown

Very moist

▼ SURFACE OF NATURAL SOIL

ML SANDY SILT - very moist to wet, fine grained, greyish brown

CL SILTY CLAY - saturated, grey mottled with brown

Saturated, dark grey with abundant seashells

ML CLAYEY SILT - saturated, dark greenish grey

SM SILTY SAND - saturated, fine, slightly Clayey, dark greenish grey

NOTE: Boring terminated at 32'. Water level measured at 12'. Two-inch diameter PVC well installed to a depth of 32'.

(NA) indicates sample not analyzed

Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

B F-88218 DATE 7/5/88 F.T. lp S.G. FB W.P. lp CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A-1.10

BORING MW - 2E

DATE DRILLED: June 27, 1988
EQUIPMENT USED: 8" - Diameter Hollow Stem Auger

GROUND SURFACE ELEVATION = 18.2 Feet MSL

ELEVATION	DEPTH (ft.)	TOTAL FUEL HYDROCARBONS	BENZENE	TOLUENE	XYLENE	LEAD	SAMPLE LOC.		
15	5	NA	NA	NA	NA	NA		SM	FILL - SILTY SAND - dry to moist, fine, brownish grey to greenish grey
10	10	NA	NA	NA	NA	NA		CL	Moist, greenish grey ▼ SURFACE OF NATURAL SOIL SILTY CLAY - very moist, dark grey
5	15	NA	NA	NA	NA	NA		CL	SILTY CLAY - very moist, dark greenish grey mottled with reddish brown
0	20	NA	NA	NA	NA	NA		SM	SILTY SAND - wet to saturated, fine to medium grained Sand, grey
-5	25	NA	NA	NA	NA	NA		SP	SAND - saturated, fine to coarse grained Sand, gravelly, dark grey
-10	30								
-15	35								Clayey, grey
-20	40								

NOTE: * Boring terminated at 40.5'. Water level measured at 10'. Two-inch diameter PVC well installed to a depth of 37.5'.

(NA) indicates sample not analyzed.

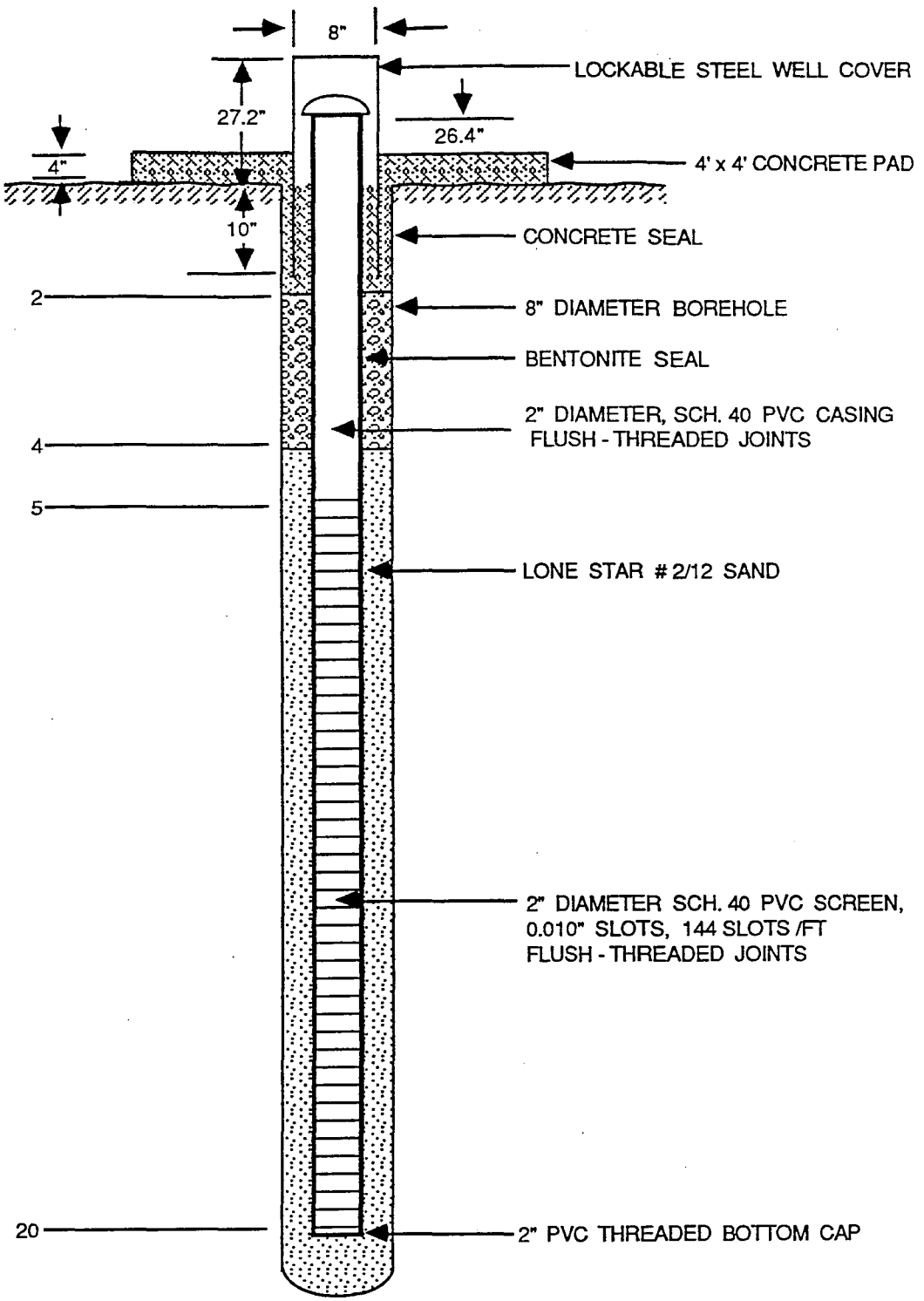
Note : The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

B F-88218 DATE 7/5/88 F.T. lp S.G. FB W.P. lp CHKD

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.11



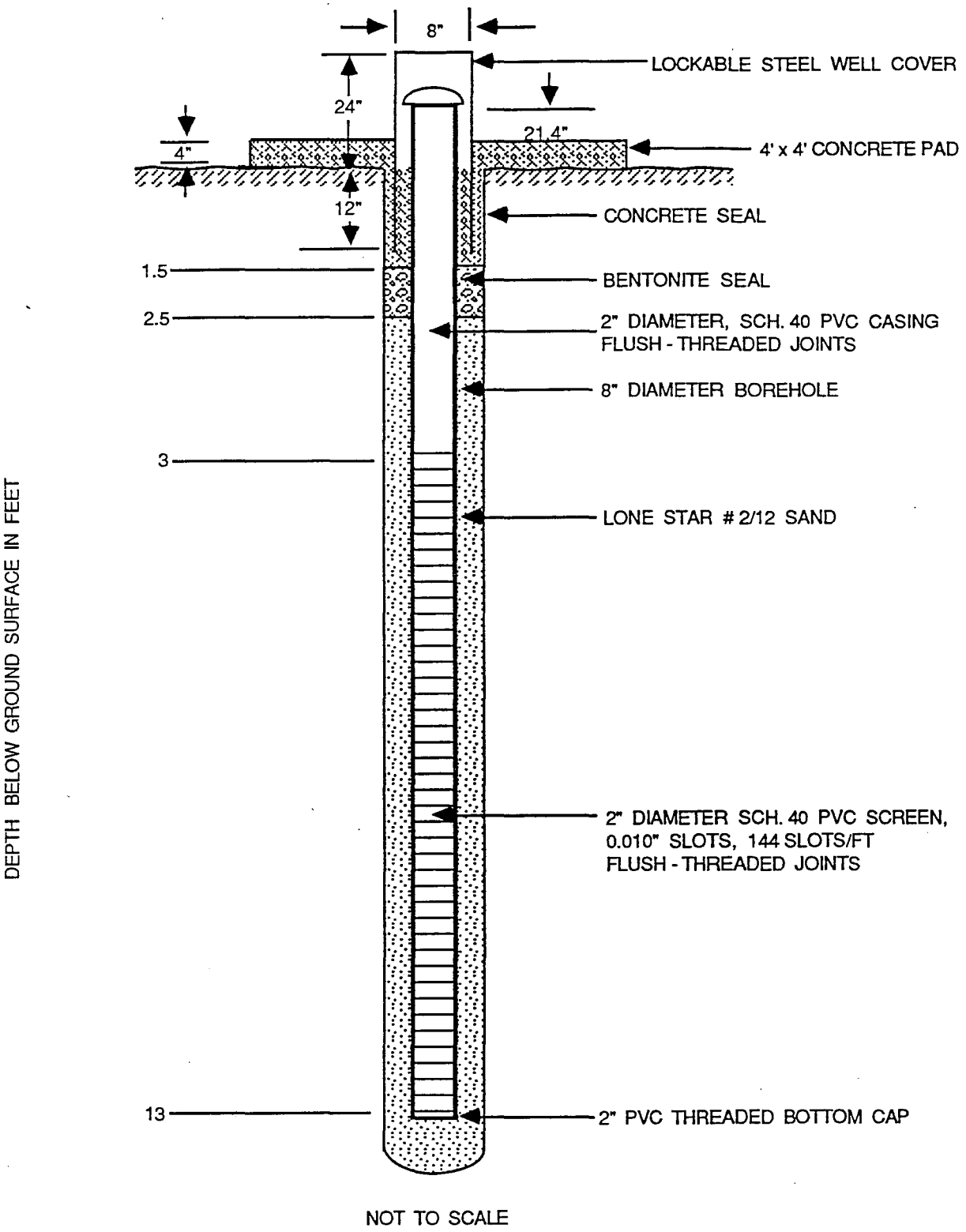
JOB L90261.FO DATE 7/17/90 P. mae S.G. LN CHKD

MONITORING WELL MW - 1
CONSTRUCTION DETAILS

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.12

JOB L90261.FO DATE 7/17/90 P. mae S.G. LN CHKD



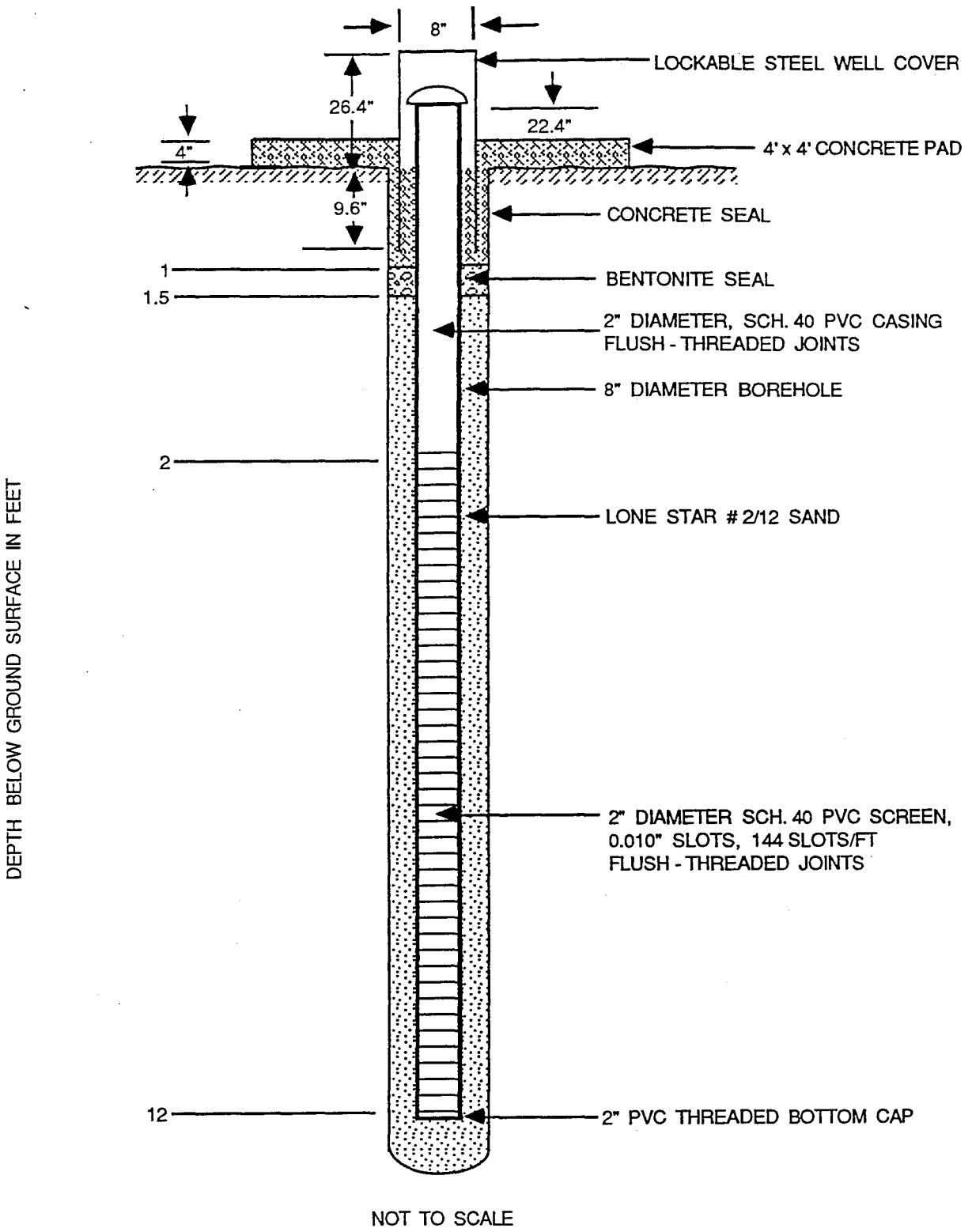
NOT TO SCALE

MONITORING WELL MW - 2
CONSTRUCTION DETAILS

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.13

JOB L90261.FO DATE 7/17/90 P. mae S.G. LN CHKD

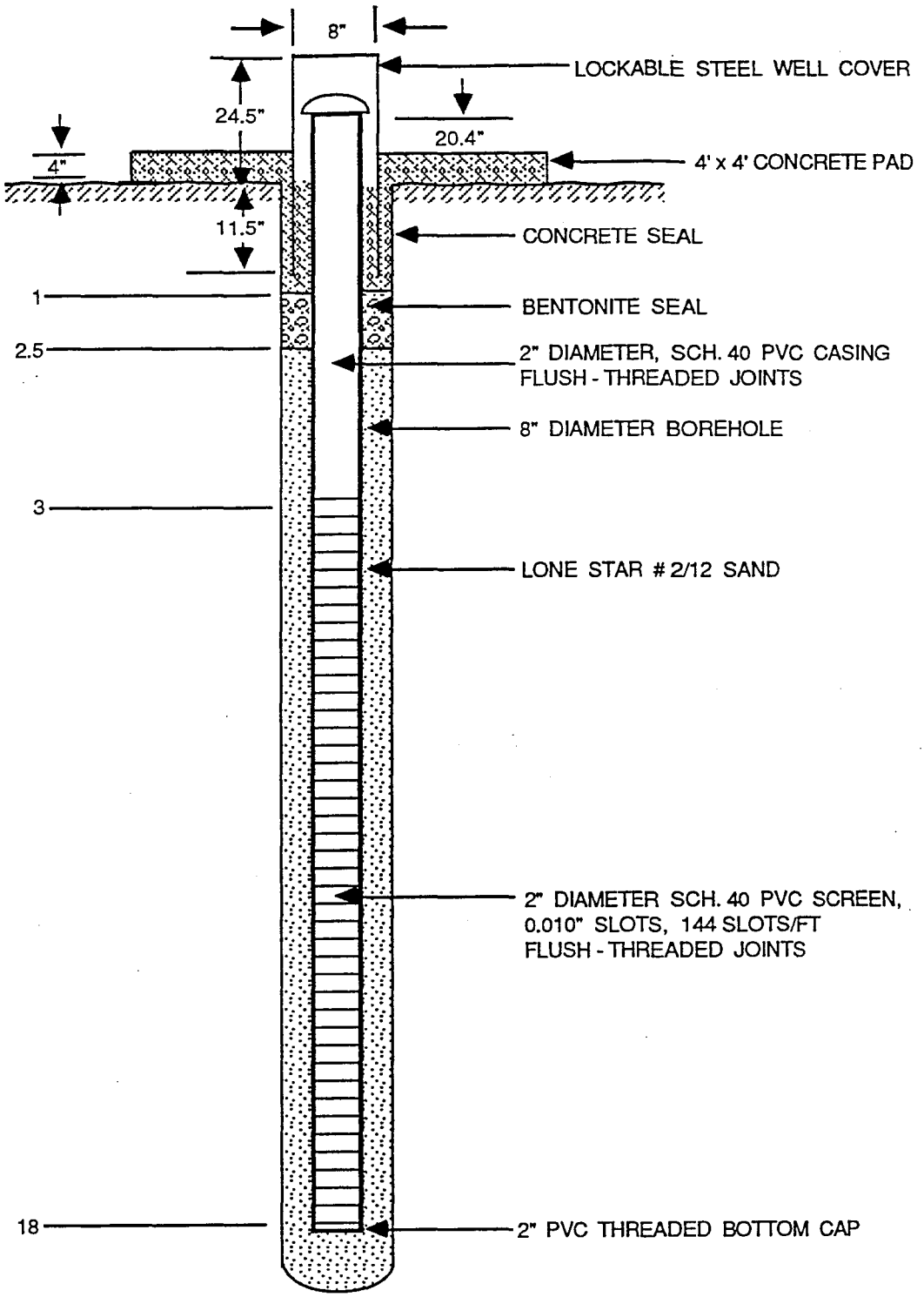


MONITORING WELL MW - 3
CONSTRUCTION DETAILS

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.14

JOB L90261.FO DATE 7/17/90 P. mae S.G. LN CHKD



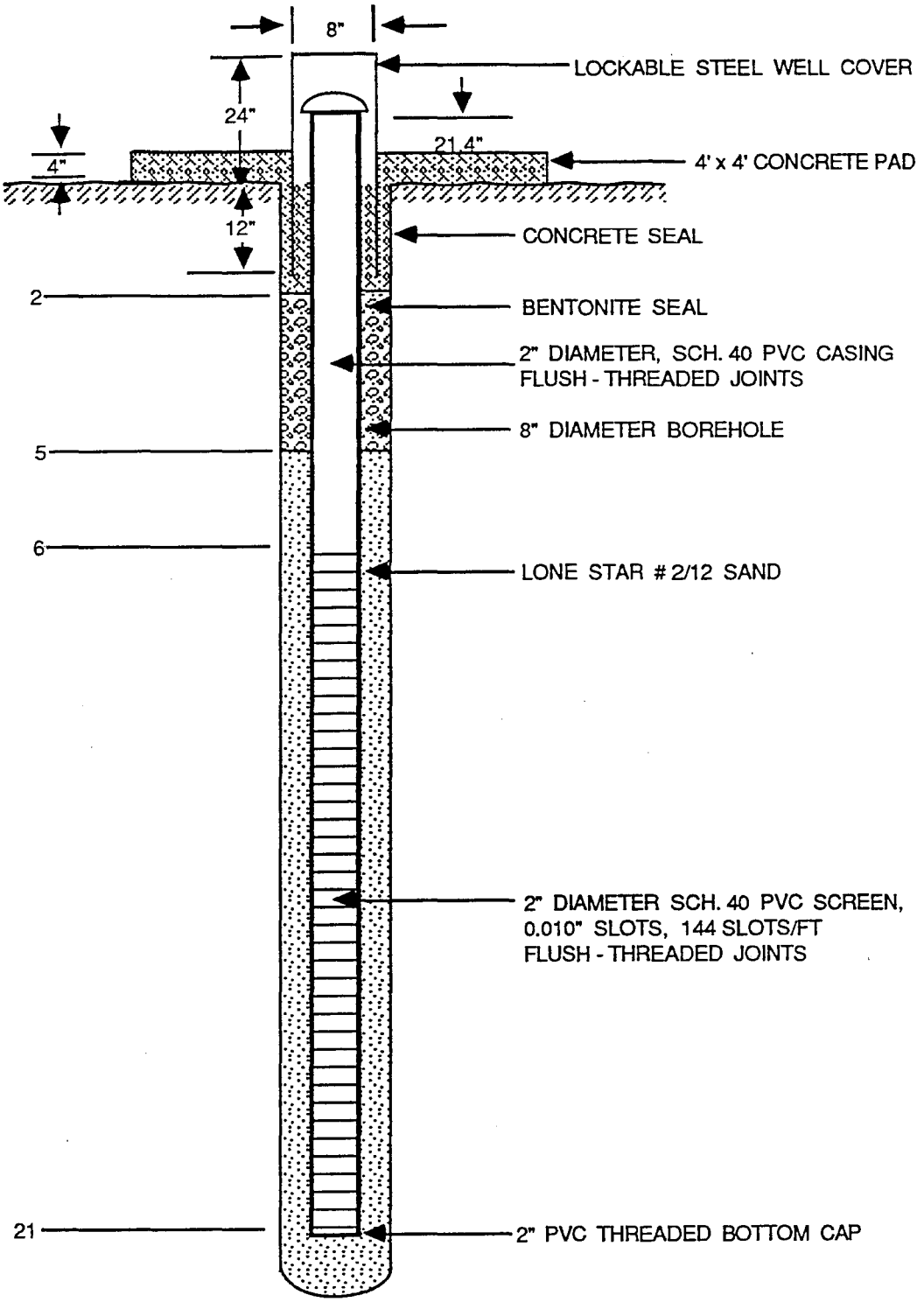
NOT TO SCALE

MONITORING WELL MW - 4
CONSTRUCTION DETAILS

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.15

JOB L90261.FO DATE 7/17/90 P. mae S.G. LN CHKD



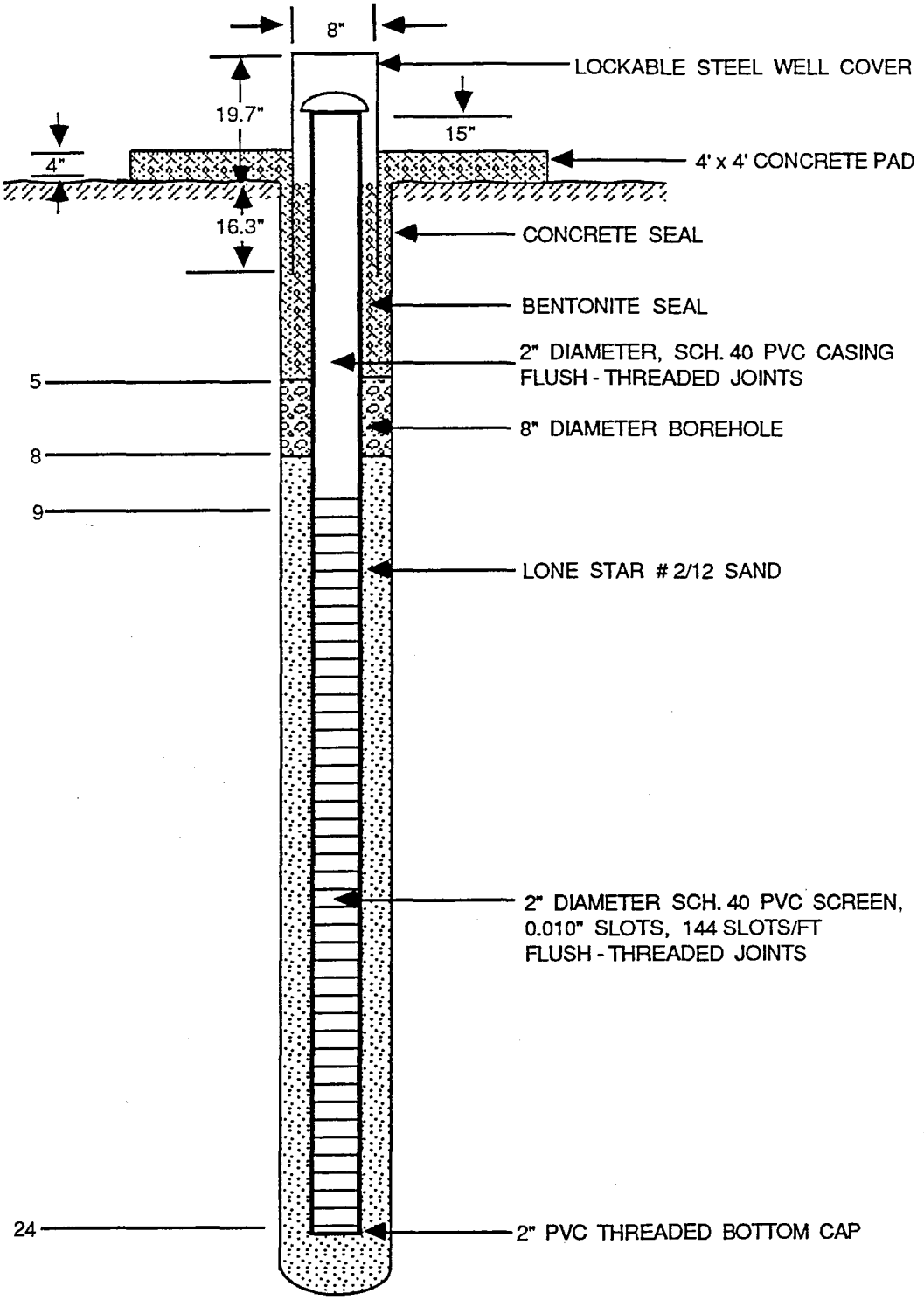
NOT TO SCALE

MONITORING WELL MW - 5
CONSTRUCTION DETAILS

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.16

JOB L90261.FO DATE 7/17/90 P. mae S.G. LN CHKD



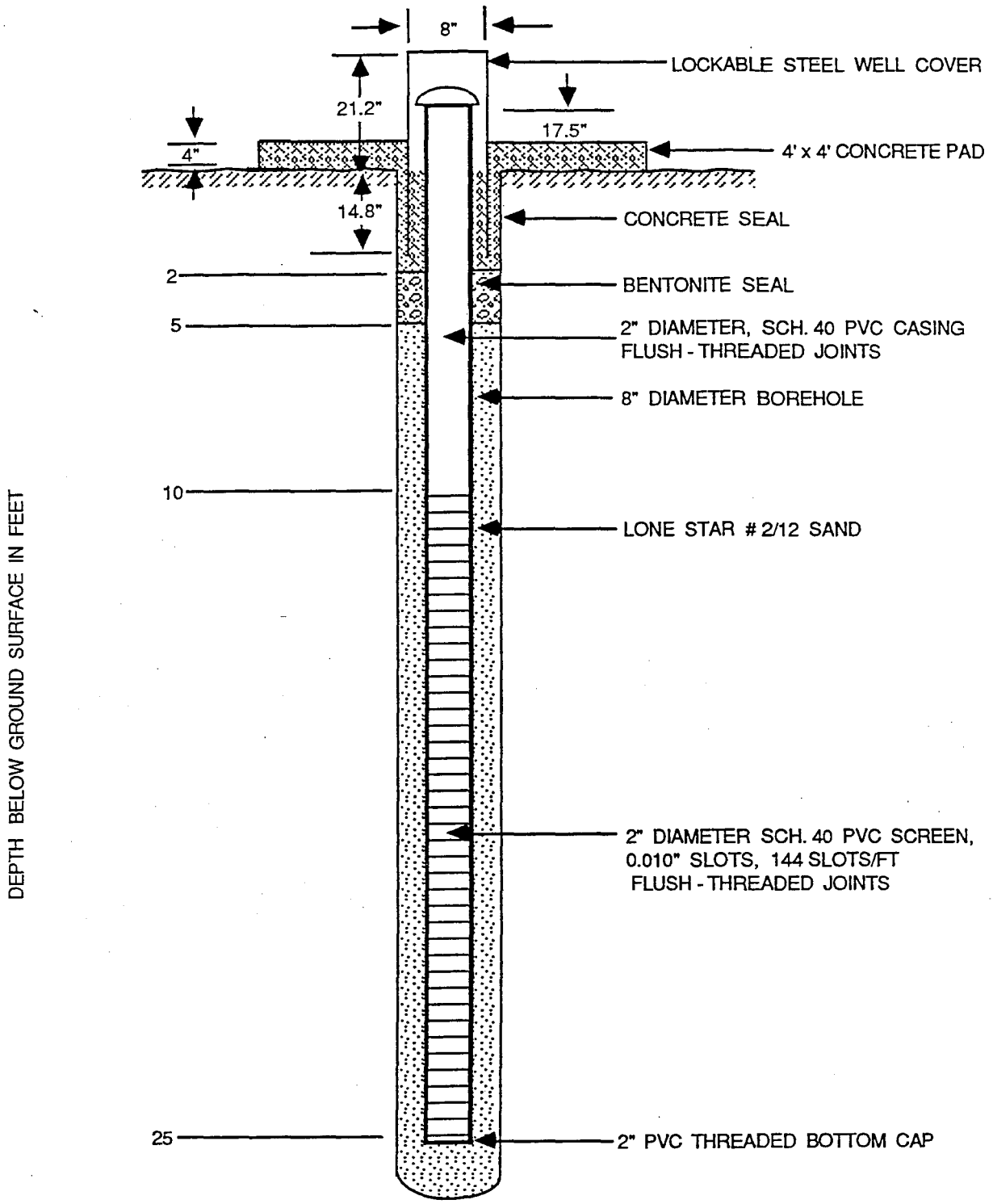
NOT TO SCALE

MONITORING WELL MW - 6
CONSTRUCTION DETAILS

LeROY CRANDALL AND ASSOCIATES

PLATE A-1.17

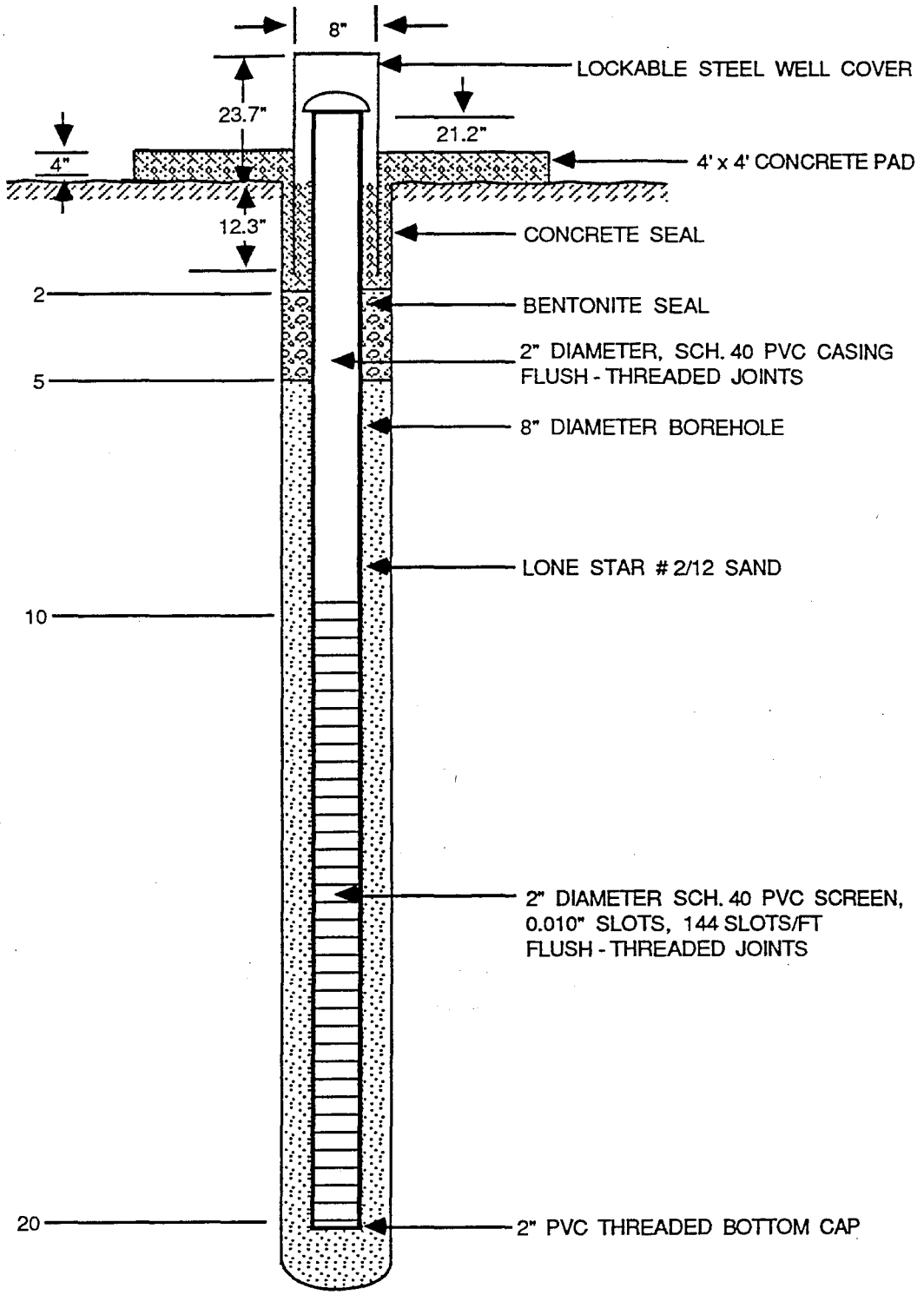
JOB L90261.FO DATE 7/17/90 P. mae S.G. LN CHKD



MONITORING WELL MW - 7
CONSTRUCTION DETAILS

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.18



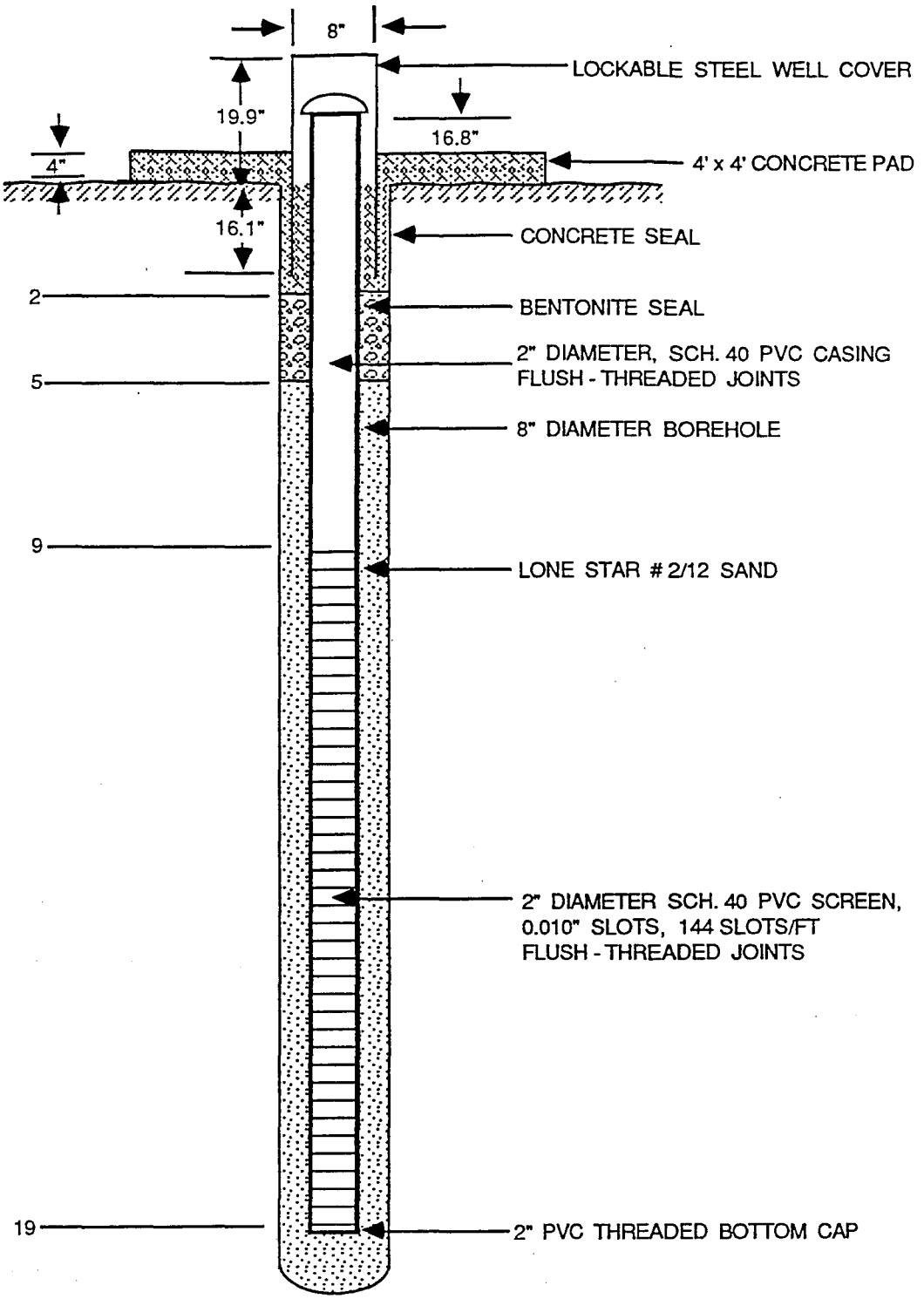
NOT TO SCALE

MONITORING WELL MW - 8
CONSTRUCTION DETAILS

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.19

JOB L90261.FO DATE 7/17/90 P. mae S.G. LN CHKD



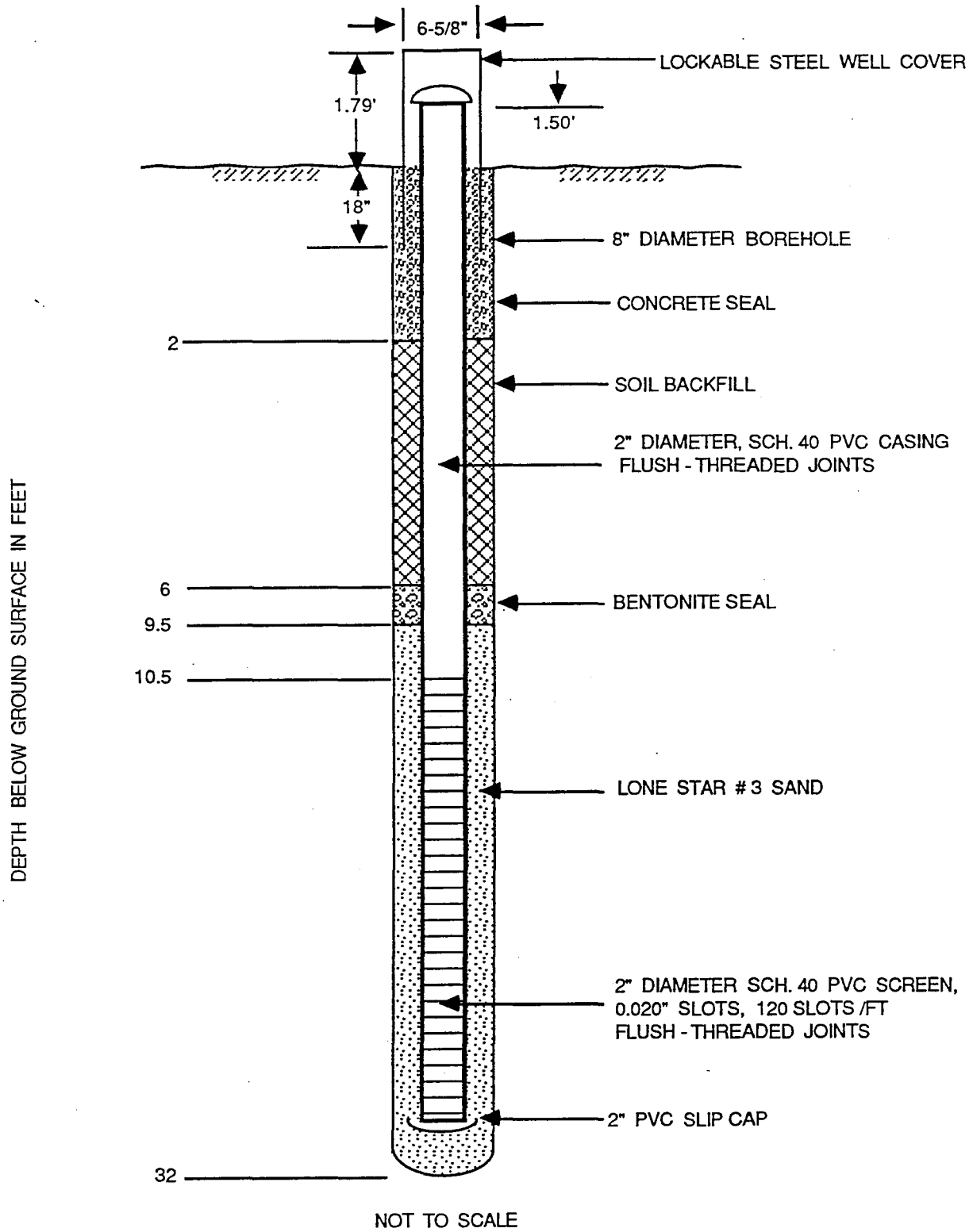
JOB L90261.FO DATE 7/17/90 P. mae S.G. LN CHKD

MONITORING WELL MW - 9
CONSTRUCTION DETAILS

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.20

JOB L90261.FO DATE 7/27/90 P. lk S.G. LN CHKD

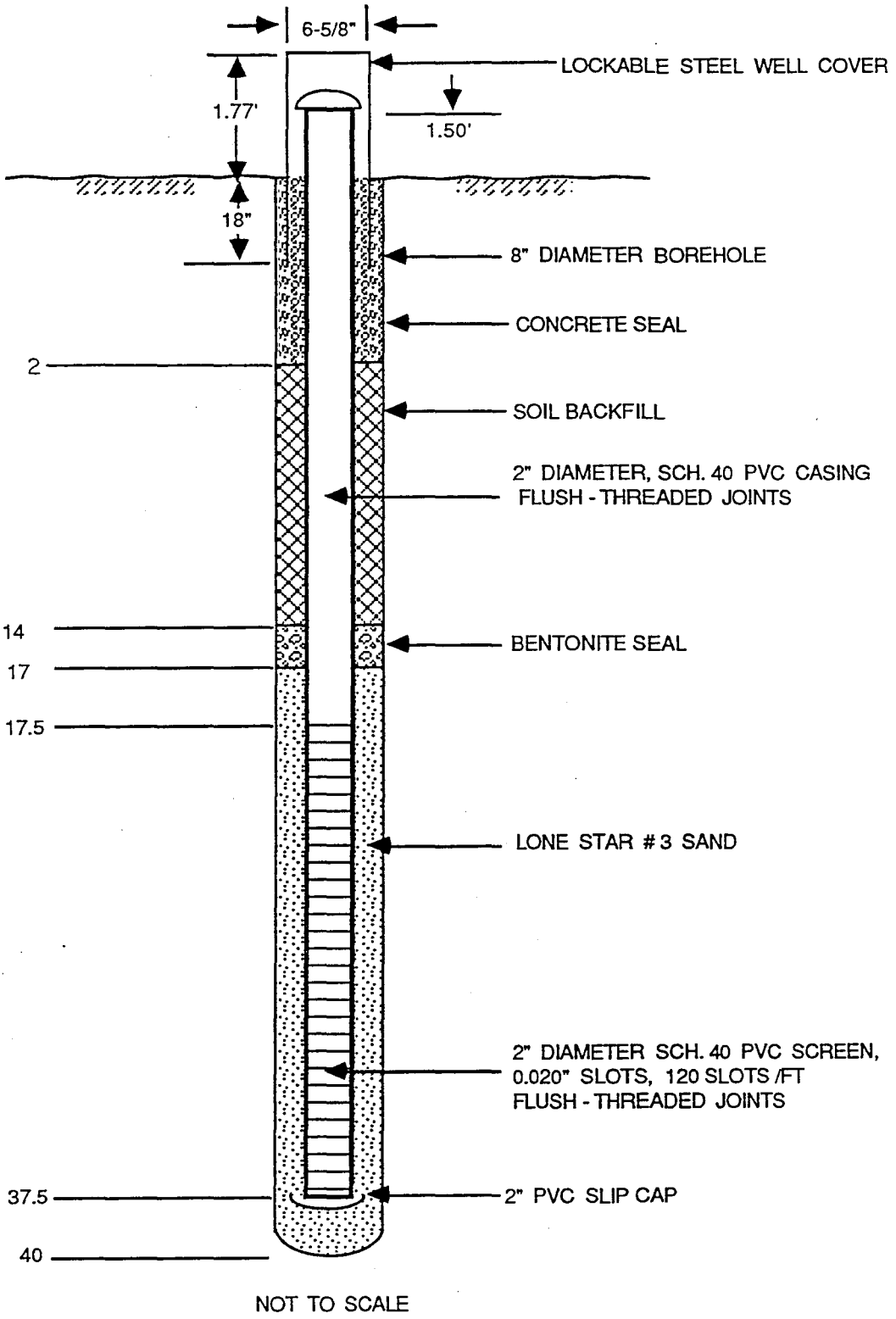


NOT TO SCALE

MONITORING WELL MW - 1E
CONSTRUCTION DETAILS

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.21



JOB L90261.FO DATE 7/27/90 lk S.G. LN CHKD

MONITORING WELL MW - 2E
CONSTRUCTION DETAILS

LeROY CRANDALL AND ASSOCIATES

PLATE A - 1.22

REVEGETATION & WILDLIFE MGMT. CENTER, INC.
A Private Research and Wildlife Management Organization
201 South Palm Drive
Blythe, California 92225 619/922-2541

Bertin W. Anderson, PhD, President
Early R. Miller, Ag. spec., Secretary
Joe Washington, Geologist, Vice President
Jim Starr, Fisheries biology
Victor Vasquez, Wildlife Management

7 July 1990

To: Leroy Crandall Assoc., attention: Larry Nodler

Subject: Soil analysis

INVOICE:

EC, pH and soil classif. on 10 samples @$6 =	$60
shipping, handling, prep. results	20
PLEASE PAY THIS AMOUNT	$80

THANK YOU YOUR PAYMENT IS APPRECIATED

RESULTS OF ANALYSIS OF 10 SOIL SAMPLES FROM LEROY CRANDALL AND ASSOC.

	EC	pH	SOIL
MW-1 @ 2'	4.79	9.20	+2
4'	5.60	9.42	+3
6'	6.40	9.45	+2
MW-2 @ 2'	16.50	9.21	+2
4'	14.00	8.71	-2
MW-3 @ 2'	13.00	9.11	+2
4'	15.00	8.89	+1
MW-4 @ 2'	8.20	9.20	+2
4'	6.30	8.19	+1
6'	13.50	9.08	-1

EC's=millimhos/cc; 1 EC unit=~640 ppm; 1 EC=1 Siemen
EC 0-3=suitable for salt sensitive species
EC 3-8=suitable for moderately salt tolerant species
EC 8-15=suitable for only salt tolerant species
EC >15=unsuitable; productivity or death will result for even salt tolerant sp.
For soil plus values indicate preponderance of clay in sample; minus values indicate that sand predominates.
Vegetation will be stunted or will die at pH levels >9 unless steps are taken to reduce impact.

Analytical Report

AMENDED REPORT

7-23-90

LOG NO: G90-07-004

Received: 02 JUL 90
Reported: 17 JUL 90

Mr. Larry Nodler
LeRoy Crandall & Associates
900 Grand Central Ave.
Glendale, CA 91201-3009

Project: L90261.F0

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-004-1	MW-7	30 JUN 90
07-004-2	MW-4	30 JUN 90
07-004-3	MW-3	30 JUN 90
07-004-4	MW-6	30 JUN 90
07-004-5	MW-4D	30 JUN 90

PARAMETER	07-004-1	07-004-2	07-004-3	07-004-4	07-004-5
Nitric Acid Digestion with HCl, Date	07/06/90	07/06/90	07/06/90	07/06/90	07/06/90
Nitric Acid Digestion, Date	07/06/90	07/06/90	07/06/90	07/06/90	07/06/90
Beryllium, mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium, mg/L	0.002	<0.001	<0.001	0.006	<0.001
Chromium, mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Copper, mg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Lead, mg/L	0.010	0.004	<0.002	<0.002	<0.002
Nickel, mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Silver, mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium, mg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc, mg/L	0.13	0.11	0.05	0.13	0.08
Antimony, mg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Arsenic, mg/L	0.003	0.007	<0.002	0.019	0.005
Selenium, mg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Mercury, mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

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07-004-5	MW-4D	30 JUN 90

PARAMETER	07-004-1	07-004-2	07-004-3	07-004-4	07-004-5
B/N,A Ext.Pri.Poll. (EPA-8270)					
Date Analyzed	07/13/90	07/13/90	07/13/90	07/13/90	07/13/90
Date Extracted	07/06/90	07/06/90	07/06/90	07/06/90	07/06/90
Dilution Factor, Times 1	1	1	1	1	1
1,2,4-Trichlorobenzene, ug/L	<10	<10	<10	<10	<10
1,2-Dichlorobenzene, ug/L	<10	<10	<10	<10	<10
1,2-Diphenylhydrazine, ug/L	<10	<10	<10	<10	<10
1,3-Dichlorobenzene, ug/L	<10	<10	<10	<10	<10
1,4-Dichlorobenzene, ug/L	<10	<10	<10	<10	<10
2,4,5-Trichlorophenol, ug/L	<10	<10	<10	<10	<10
2,4,6-Trichlorophenol, ug/L	<10	<10	<10	<10	<10
2,4-Dichlorophenol, ug/L	<10	<10	<10	<10	<10
2,4-Dimethylphenol, ug/L	<10	<10	<10	<10	<10
2,4-Dinitrophenol, ug/L	<25	<25	<25	<25	<25
2,4-Dinitrotoluene, ug/L	<10	<10	<10	<10	<10
2,6-Dinitrotoluene, ug/L	<10	<10	<10	<10	<10
2-Chloronaphthalene, ug/L	<10	<10	<10	<10	<10
2-Chlorophenol, ug/L	<10	<10	<10	<10	<10
2-Methyl-4,6-dinitrophenol, ug/L	<50	<50	<50	<50	<50
2-Methylnaphthalene, ug/L	<10	<10	<10	<10	<10
2-Methylphenol, ug/L	<10	<10	<10	<10	<10
2-Nitroaniline, ug/L	<50	<50	<50	<50	<50
2-Nitrophenol, ug/L	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine, ug/L	<10	<10	<10	<10	<10

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07-004-4	MW-6	30 JUN 90
07-004-5	MW-4D	30 JUN 90

PARAMETER	07-004-1	07-004-2	07-004-3	07-004-4	07-004-5
3-Nitroaniline, ug/L	<50	<50	<50	<50	<50
4-Bromophenylphenylether, ug/L	<10	<10	<10	<10	<10
4-Chloro-3-methylphenol, ug/L	<10	<10	<10	<10	<10
4-Chloroaniline, ug/L	<20	<20	<20	<20	<20
4-Chlorophenylphenylether, ug/L	<10	<10	<10	<10	<10
4-Methylphenol, ug/L	<10	<10	<10	<10	<10
4-Nitroaniline, ug/L	<50	<50	<50	<50	<50
4-Nitrophenol, ug/L	<25	<25	<25	<25	<25
Acenaphthene, ug/L	<10	<10	<10	<10	<10
Acenaphthylene, ug/L	<10	<10	<10	<10	<10
Aniline, ug/L	<20	<20	<20	<20	<20
Anthracene, ug/L	<10	<10	<10	<10	<10
Benzidine, ug/L	<40	<40	<40	<40	<40
Benzo(a)anthracene, ug/L	<10	<10	<10	<10	<10
Benzo(a)pyrene, ug/L	<10	<10	<10	<10	<10
Benzo(b)fluoranthene, ug/L	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/L	<10	<10	<10	<10	<10
Benzo(k)fluoranthene, ug/L	<10	<10	<10	<10	<10
Benzyl Alcohol, ug/L	<20	<20	<20	<20	<20
Benzoic acid, ug/L	<50	<50	<50	<50	<50
Butylbenzylphthalate, ug/L	<10	<10	<10	<10	<10
Chrysene, ug/L	<10	<10	<10	<10	<10
Di-n-octylphthalate, ug/L	<10	<10	<10	<10	<10
Dibenzo(a,h)anthracene, ug/L	<10	<10	<10	<10	<10

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07-004-5	MW-4D	30 JUN 90

PARAMETER	07-004-1	07-004-2	07-004-3	07-004-4	07-004-5
Dibenzofuran, ug/L	<10	<10	<10	<10	<10
Dibutylphthalate, ug/L	<50	<50	<50	<50	<50
Diethylphthalate, ug/L	<10	<10	<10	<10	<10
Dimethylphthalate, ug/L	<25	<25	<25	<25	<25
Fluoranthene, ug/L	<10	<10	<10	<10	<10
Fluorene, ug/L	<10	<10	<10	<10	<10
Hexachlorobenzene, ug/L	<10	<10	<10	<10	<10
Hexachlorobutadiene, ug/L	<10	<10	<10	<10	<10
Hexachlorocyclopentadiene, ug/L	<10	<10	<10	<10	<10
Hexachloroethane, ug/L	<10	<10	<10	<10	<10
Indeno(1,2,3-c,d)pyrene, ug/L	<10	<10	<10	<10	<10
Isophorone, ug/L	<10	<10	<10	<10	<10
N-Nitrosodimethylamine, ug/L	<80	<80	<80	<80	<80
N-Nitrosodiphenylamine, ug/L	<10	<10	<10	<10	<10
N-Nitrosodi-n-propylamine, ug/L	<40	<40	<40	<40	<40
Nitrobenzene, ug/L	<10	<10	<10	<10	<10
Naphthalene, ug/L	<10	<10	<10	<10	<10
Phenanthrene, ug/L	<10	<10	<10	<10	<10
Phenol, ug/L	<10	<10	<10	<10	<10
Pentachlorophenol, ug/L	<10	<10	<10	<10	<10
Pyrene, ug/L	<10	<10	<10	<10	<10
Bis(2-chloroethoxy)methane, ug/L	<10	<10	<10	<10	<10
Bis(2-chloroethyl)ether, ug/L	<10	<10	<10	<10	<10
Bis(2-chloroisopropyl)ether, ug/L	<10	<10	<10	<10	<10

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07-004-4	MW-6	30 JUN 90
07-004-5	MW-4D	30 JUN 90

PARAMETER	07-004-1	07-004-2	07-004-3	07-004-4	07-004-5
Bis(2-ethylhexyl)phthalate, ug/L	<10	<10	<10	17	<10

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07-004-4	MW-6	30 JUN 90
07-004-5	MW-4D	30 JUN 90

PARAMETER	07-004-1	07-004-2	07-004-3	07-004-4	07-004-5
Pesticides/PCBs (EPA 8080)					
Date Analyzed	07/11/90	07/11/90	07/13/90	07/12/90	07/12/90
Date Extracted	07/05/90	07/05/90	07/05/90	07/05/90	07/05/90
Dilution Factor, Times 1	1	1	1	1	1
Aldrin, ug/L	<0.04	<0.04	<0.04	<0.04	<0.04
Chlordane, ug/L	<0.3	<0.3	<0.3	<0.3	<0.3
p,p'-DDD, ug/L	<0.04	<0.04	<0.04	<0.04	<0.04
p,p'-DDE, ug/L	<0.04	<0.04	<0.04	<0.04	<0.04
p,p'-DDT, ug/L	<0.04	<0.04	<0.04	<0.04	<0.1
Dieldrin, ug/L	<0.04	<0.04	<0.04	<0.04	<0.04
Endosulfan I, ug/L	<0.04	<0.04	<0.04	<0.04	<0.04
Endosulfan II, ug/L	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate, ug/L	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin, ug/L	<0.07	<0.07	<0.07	<0.07	<0.07
Endrin aldehyde, ug/L	<0.04	<0.04	<0.04	<0.04	<0.04
Heptachlor epoxide, ug/L	<0.04	<0.04	<0.04	<0.04	<0.04
Heptachlor, ug/L	<0.04	<0.04	<0.04	<0.04	<0.04
Methoxychlor, ug/L	<0.2	<0.2	<0.2	<0.2	<0.2
Aroclor 1016, ug/L	<0.6	<0.6	<0.6	<0.6	<0.6
Aroclor 1221, ug/L	<0.6	<0.6	<0.6	<0.6	<0.6
Aroclor 1232, ug/L	<0.6	<0.6	<0.6	<0.6	<0.6
Aroclor 1242, ug/L	<0.6	<0.6	<0.6	<0.6	<0.6
Aroclor 1248, ug/L	<0.6	<0.6	<0.6	<0.6	<0.6
Aroclor 1254, ug/L	<0.6	<0.6	<0.6	<0.6	<0.6

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07-004-3	MW-3	30 JUN 90
07-004-4	MW-6	30 JUN 90
07-004-5	MW-4D	30 JUN 90

PARAMETER	07-004-1	07-004-2	07-004-3	07-004-4	07-004-5
Aroclor 1260, ug/L	<0.6	<0.6	<0.6	<0.6	<0.6
Aroclor 1262, ug/L	<0.6	<0.6	<0.6	<0.6	<0.6
Toxaphene, ug/L	<0.5	<0.5	<0.5	<0.5	<0.5
BHC, alpha isomer, ug/L	<0.04	<0.04	<0.04	<0.04	<0.04
BHC, beta isomer, ug/L	<0.04	<0.04	<0.04	<0.04	<0.04
BHC, delta isomer, ug/L	<0.04	<0.04	<0.04	<0.04	<0.04
BHC, gamma isomer (Lindane), ug/L	<0.04	<0.04	<0.04	<0.04	<0.04

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07-004-5	MW-4D	30 JUN 90

PARAMETER	07-004-1	07-004-2	07-004-3	07-004-4	07-004-5
Vol.Pri.Poll. (EPA-8240)					
Date Analyzed	07/05/90	07/05/90	07/05/90	07/05/90	07/05/90
Dilution Factor, Times 1	1	1	1	1	1
1,1,1-Trichloroethane, ug/L	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane, ug/L	<1	<1	<1	<1	<1
1,1,2-Trichloroethane, ug/L	<1	<1	<1	<1	<1
1,1-Dichloroethane, ug/L	<1	<1	<1	<1	<1
1,1-Dichloroethene, ug/L	<1	<1	<1	<1	<1
1,2-Dichloroethane, ug/L	<1	<1	<1	<1	<1
1,2-Dichlorobenzene, ug/L	<1	<1	<1	<1	<1
1,2-Dichloropropane, ug/L	<1	<1	<1	<1	<1
1,3-Dichlorobenzene, ug/L	<1	<1	<1	<1	<1
1,4-Dichlorobenzene, ug/L	<1	<1	<1	<1	<1
2-Chloroethylvinylether, ug/L	<1	<1	<1	<1	<1
2-Hexanone, ug/L	<10	<10	<10	<10	<10
Acetone, ug/L	<50	<50	<50	<50	<50
Acrolein, ug/L	<50	<50	<50	<50	<50
Acrylonitrile, ug/L	<20	<20	<20	<20	<20
Bromodichloromethane, ug/L	<1	<1	<1	<1	<1
Bromomethane, ug/L	<1	<1	<1	<1	<1
Benzene, ug/L	<1	<1	<1	<1	<1
Bromoform, ug/L	<1	<1	<1	<1	<1
Chlorobenzene, ug/L	<1	<1	<1	<1	<1
Carbon Tetrachloride, ug/L	<1	<1	<1	<1	<1

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07-004-4	MW-6	30 JUN 90
07-004-5	MW-4D	30 JUN 90

PARAMETER	07-004-1	07-004-2	07-004-3	07-004-4	07-004-5
Chloroethane, ug/L	<1	<1	<1	<1	<1
Chloroform, ug/L	<1	<1	<1	<1	<1
Chloromethane, ug/L	<2	<2	<2	<2	<2
Carbon Disulfide, ug/L	<2	<2	<2	<2	<2
Dibromochloromethane, ug/L	<1	<1	<1	<1	<1
Ethylbenzene, ug/L	<1	<1	<1	<1	<1
Freon 113, ug/L	<1	<1	<1	<1	<1
Methyl ethyl ketone, ug/L	<10	<10	<10	<10	<10
Methyl isobutyl ketone, ug/L	<5	<5	<5	<5	<5
Methylene chloride, ug/L	<2	<2	<2	<2	<2
Styrene, ug/L	<1	<1	<1	<1	<1
Trichloroethene, ug/L	<1	<1	<1	<1	<1
Trichlorofluoromethane, ug/L	<1	<1	<1	<1	<1
Toluene, ug/L	<1	<1	<1	<1	<1
Tetrachloroethene, ug/L	<1	<1	<1	<1	<1
Vinyl acetate, ug/L	<5	<5	<5	<5	<5
Vinyl chloride, ug/L	<1	<1	<1	<1	<1
Total Xylene Isomers, ug/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene, ug/L	<1	<1	<1	<1	<1
cis-1,3-Dichloropropene, ug/L	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene, ug/L	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene, ug/L	<1	<1	<1	<1	<1
Other Vol.Pri.Poll. (EPA-8240)	---	---	---	---	---

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07-004-7	MW-2	30 JUN 90
07-004-8	MW-1	30 JUN 90

PARAMETER	07-004-6	07-004-7	07-004-8
Nitric Acid Digestion with HCl, Date	07/06/90	07/06/90	07/06/90
Nitric Acid Digestion, Date	07/06/90	07/06/90	07/06/90
Beryllium, mg/L	<0.001	<0.001	<0.001
Cadmium, mg/L	0.001	<0.002	<0.001
Chromium, mg/L	<0.005	<0.005	<0.005
Copper, mg/L	<0.02	<0.02	<0.02
Lead, mg/L	0.002	<0.002	<0.002
Nickel, mg/L	<0.05	<0.05	<0.05
Silver, mg/L	<0.01	<0.01	<0.01
Thallium, mg/L	<0.5	<0.5	<0.5
Zinc, mg/L	0.25	0.20	0.05
Antimony, mg/L	<0.5	<0.5	<0.5
Arsenic, mg/L	0.014	<0.02	<0.002
Selenium, mg/L	<0.02	<0.02	<0.02
Mercury, mg/L	<0.0005	<0.0005	<0.0005

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Analytical Report

LOG NO: G90-07-004

Received: 02 JUL 90
Reported: 17 JUL 90

Mr. Larry Nodler
LeRoy Crandall & Associates
900 Grand Central Ave.
Glendale, CA 91201-3009

Project: L90261.F0

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-004-6	MW-5	30 JUN 90
07-004-7	MW-2	30 JUN 90
07-004-8	MW-1	30 JUN 90

PARAMETER	07-004-6	07-004-7	07-004-8
B/N,A Ext.Pri.Poll. (EPA-8270)			
Date Analyzed	07/13/90	07/13/90	07/13/90
Date Extracted	07/06/90	07/06/90	07/06/90
Dilution Factor, Times 1	1	1	1
1,2,4-Trichlorobenzene, ug/L	<10	<10	<10
1,2-Dichlorobenzene, ug/L	<10	<10	<10
1,2-Diphenylhydrazine, ug/L	<10	<10	<10
1,3-Dichlorobenzene, ug/L	<10	<10	<10
1,4-Dichlorobenzene, ug/L	<10	<10	<10
2,4,5-Trichlorophenol, ug/L	<10	<10	<10
2,4,6-Trichlorophenol, ug/L	<10	<10	<10
2,4-Dichlorophenol, ug/L	<10	<10	<10
2,4-Dimethylphenol, ug/L	<10	<10	<10
2,4-Dinitrophenol, ug/L	<25	<25	<25
2,4-Dinitrotoluene, ug/L	<10	<10	<10
2,6-Dinitrotoluene, ug/L	<10	<10	<10
2-Chloronaphthalene, ug/L	<10	<10	<10
2-Chlorophenol, ug/L	<10	<10	<10
2-Methyl-4,6-dinitrophenol, ug/L	<50	<50	<50
2-Methylnaphthalene, ug/L	<10	<10	<10
2-Methylphenol, ug/L	<10	<10	<10
2-Nitroaniline, ug/L	<50	<50	<50
2-Nitrophenol, ug/L	<10	<10	<10
3,3'-Dichlorobenzidine, ug/L	<10	<10	<10
3-Nitroaniline, ug/L	<50	<50	<50
4-Bromophenylphenylether, ug/L	<10	<10	<10

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-004-6	MW-5	30 JUN 90
07-004-7	MW-2	30 JUN 90
07-004-8	MW-1	30 JUN 90

PARAMETER	07-004-6	07-004-7	07-004-8
4-Chloro-3-methylphenol, ug/L	<10	<10	<10
4-Chloroaniline, ug/L	<20	<20	<20
4-Chlorophenylphenylether, ug/L	<10	<10	<10
4-Methylphenol, ug/L	<10	<10	<10
)-Nitroaniline, ug/L	<50	<50	<50
4-Nitrophenol, ug/L	<25	<25	<25
Acenaphthene, ug/L	<10	<10	<10
Acenaphthylene, ug/L	<10	<10	<10
Aniline, ug/L	<20	<20	<20
Anthracene, ug/L	<10	<10	<10
Benzidine, ug/L	<40	<40	<40
Benzo(a)anthracene, ug/L	<10	<10	<10
Benzo(a)pyrene, ug/L	<10	<10	<10
Benzo(b)fluoranthene, ug/L	<10	<10	<10
Benzo(g,h,i)perylene, ug/L	<10	<10	<10
Benzo(k)fluoranthene, ug/L	<10	<10	<10
Benzyl Alcohol, ug/L	<20	<20	<50
Benzoic acid, ug/L	<50	<50	<50
Butylbenzylphthalate, ug/L	<10	<10	<10
Chrysene, ug/L	<10	<10	<10
Di-n-octylphthalate, ug/L	<10	<10	<10
Dibenzo(a,h)anthracene, ug/L	<10	<10	<10
Dibenzofuran, ug/L	<10	<10	<10
Dibutylphthalate, ug/L	<50	<50	<50
Diethylphthalate, ug/L	<10	<10	<10
Dimethylphthalate, ug/L	<25	<25	<25

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Project: L90261.F0

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-004-6	MW-5	30 JUN 90
07-004-7	MW-2	30 JUN 90
07-004-8	MW-1	30 JUN 90

PARAMETER	07-004-6	07-004-7	07-004-8
Fluoranthene, ug/L	<10	<10	<10
Fluorene, ug/L	<10	<10	<10
Hexachlorobenzene, ug/L	<10	<10	<10
Hexachlorobutadiene, ug/L	<10	<10	<10
Hexachlorocyclopentadiene, ug/L	<10	<10	<10
Hexachloroethane, ug/L	<10	<10	<10
Indeno(1,2,3-c,d)pyrene, ug/L	<10	<10	<10
Isophorone, ug/L	<10	<10	<10
N-Nitrosodimethylamine, ug/L	<80	<80	<80
N-Nitrosodiphenylamine, ug/L	<10	<10	<10
N-Nitrosodi-n-propylamine, ug/L	<40	<40	<40
Nitrobenzene, ug/L	<10	<10	<10
Naphthalene, ug/L	<10	<10	<10
Phenanthrene, ug/L	<10	<10	<10
Phenol, ug/L	<10	<10	<10
Pentachlorophenol, ug/L	<10	<10	<10
Pyrene, ug/L	<10	<10	<10
Bis(2-chloroethoxy)methane, ug/L	<10	<10	<10
Bis(2-chloroethyl)ether, ug/L	<10	<10	<10
Bis(2-chloroisopropyl)ether, ug/L	<10	<10	<10
Bis(2-ethylhexyl)phthalate, ug/L	62	<10	<10

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Project: L90261.F0

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-004-6	MW-5	30 JUN 90
07-004-7	MW-2	30 JUN 90
07-004-8	MW-1	30 JUN 90

PARAMETER	07-004-6	07-004-7	07-004-8
Pesticides/PCBs (EPA 8080)			
Date Analyzed	07/12/90	07/12/90	07/18/90
Date Extracted	07/05/90	07/05/90	07/05/90
Dilution Factor, Times 1	1	1	1
Aldrin, ug/L	<0.04	<0.04	<0.04
Chlordane, ug/L	<0.3	<0.3	<0.3
p,p'-DDD, ug/L	<0.04	<0.04	<0.04
p,p'-DDE, ug/L	<0.04	<0.04	<0.04
p,p'-DDT, ug/L	<0.04	<0.1	<0.04
Dieldrin, ug/L	<0.04	<0.04	<0.04
Endosulfan I, ug/L	<0.04	<0.04	<0.04
Endosulfan II, ug/L	<0.05	<0.05	<0.05
Endosulfan sulfate, ug/L	<0.05	<0.05	<0.05
Endrin, ug/L	<0.07	<0.07	<0.07
Endrin aldehyde, ug/L	<0.04	<0.04	<0.04
Heptachlor epoxide, ug/L	<0.04	<0.04	<0.04
Heptachlor, ug/L	<0.04	<0.04	<0.04
Methoxychlor, ug/L	<0.2	<0.2	<0.2
Aroclor 1016, ug/L	<0.6	<0.6	<0.6
Aroclor 1221, ug/L	<0.6	<0.6	<0.6
Aroclor 1232, ug/L	<0.6	<0.6	<0.6
Aroclor 1242, ug/L	<0.6	<0.6	<0.6
Aroclor 1248, ug/L	<0.6	<0.6	<0.6
Aroclor 1254, ug/L	<0.6	<0.6	<0.6
Aroclor 1260, ug/L	<0.6	<0.6	<0.6
Aroclor 1262, ug/L	<0.6	<0.6	<0.6

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Project: L90261.F0

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-004-6	MW-5	30 JUN 90
07-004-7	MW-2	30 JUN 90
07-004-8	MW-1	30 JUN 90

PARAMETER	07-004-6	07-004-7	07-004-8
Toxaphene, ug/L	<0.5	<0.5	<0.5
BHC, alpha isomer, ug/L	<0.04	<0.04	<0.04
BHC, beta isomer, ug/L	<0.04	<0.04	<2
BHC, delta isomer, ug/L	<0.04	<0.04	<0.04
BHC, gamma isomer (Lindane), ug/L	<0.04	<0.04	<2

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-004-6	MW-5	30 JUN 90
07-004-7	MW-2	30 JUN 90
07-004-8	MW-1	30 JUN 90

PARAMETER	07-004-6	07-004-7	07-004-8
Vol.Pri.Poll. (EPA-8240)			
Date Analyzed	07/05/90	07/05/90	07/05/90
Dilution Factor, Times 1	1	1	1
1,1,1-Trichloroethane, ug/L	<1	<1	<1
,1,2,2-Tetrachloroethane, ug/L	<1	<1	<1
ı,1,2-Trichloroethane, ug/L	<1	<1	<1
1,1-Dichloroethane, ug/L	<1	<1	<1
1,1-Dichloroethene, ug/L	<1	<1	<1
1,2-Dichloroethane, ug/L	<1	<1	<1
1,2-Dichlorobenzene, ug/L	<1	<1	<1
1,2-Dichloropropane, ug/L	<1	<1	<1
1,3-Dichlorobenzene, ug/L	<1	<1	<1
1,4-Dichlorobenzene, ug/L	<1	<1	<1
2-Chloroethylvinylether, ug/L	<1	<1	<1
2-Hexanone, ug/L	<10	<10	<10
Acetone, ug/L	<50	<50	<50
Acrolein, ug/L	<50	<50	<50
Acrylonitrile, ug/L	<20	<20	<20
Bromodichloromethane, ug/L	<1	<1	<1
Bromomethane, ug/L	<1	<1	<1
Benzene, ug/L	<1	<1	<1
Bromoform, ug/L	<1	<1	<1
Chlorobenzene, ug/L	<1	<1	<1
Carbon Tetrachloride, ug/L	<1	<1	<1
Chloroethane, ug/L	<1	<1	<1
Chloroform, ug/L	<1	<1	<1

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-004-6	MW-5	30 JUN 90
07-004-7	MW-2	30 JUN 90
07-004-8	MW-1	30 JUN 90

PARAMETER	07-004-6	07-004-7	07-004-8
Chloromethane, ug/L	<2	<2	<2
Carbon Disulfide, ug/L	<2	<2	<2
Dibromochloromethane, ug/L	<1	<1	<1
Ethylbenzene, ug/L	<1	<1	<1
Freon 113, ug/L	<1	<1	<1
Methyl ethyl ketone, ug/L	<10	<10	<10
Methyl isobutyl ketone, ug/L	<5	<5	<5
Methylene chloride, ug/L	<2	<2	<2
Styrene, ug/L	<1	<1	<1
Trichloroethene, ug/L	<1	<1	<1
Trichlorofluoromethane, ug/L	<1	<1	<1
Toluene, ug/L	<1	<1	<1
Tetrachloroethene, ug/L	<1	<1	<1
Vinyl acetate, ug/L	<5	<5	<5
Vinyl chloride, ug/L	<1	<1	<1
Total Xylene Isomers, ug/L	<5	<5	<5
cis-1,2-Dichloroethene, ug/L	<1	<1	<1
cis-1,3-Dichloropropene, ug/L	<1	<1	<1
trans-1,2-Dichloroethene, ug/L	<1	<1	<1
trans-1,3-Dichloropropene, ug/L	<1	<1	<1
Other Vol.Pri.Poll. (EPA-8240)	---	---	---

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
07-004-9	MW-1 @ 5'	29 JUN 90
07-004-10	MW-1 @ 10'	29 JUN 90
07-004-11	MW-2 @ 5'	29 JUN 90
07-004-12	MW-8 @ 5'	29 JUN 90
07-004-13	MW-8 @ 10'	29 JUN 90

PARAMETER	07-004-9	07-004-10	07-004-11	07-004-12	07-004-13
Sample Held, Not Analyzed	HOLD	HOLD	HOLD	HOLD	HOLD

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
07-004-14	MW-8 @ 15'	29 JUN 90
07-004-15	MW-9 @ 5'	29 JUN 90
07-004-16	MW-9 @ 10'	29 JUN 90

PARAMETER	07-004-14	07-004-15	07-004-16
Sample Held, Not Analyzed	HOLD	HOLD	HOLD

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, BLANK WATER SAMPLES	DATE SAMPLED
07-004-17	Trip Blank	30 JUN 90

PARAMETER	07-004-17
Sample Held, Not Analyzed	HOLD

The detection limit for Cadmium on sample G90-07-004-7 was elevated due to matrix interference. T. Gaynor 07/16/90

Based on historical data, he bis(2-ethylhexyl)phthalate seen on sample G90-07-004-4 and -6 for EPA 8270 is possibly due to laboratory contamination.

Amended report:
Due to matrix interferences on G90-07-004-8, beta and gamma-BHC were reported from a run at 1:50 dilution. This resulted in elevated detection limits for these compounds. Results for the other compounds were reported from the non-diluted run. The detection limit for p,p'-DDT samples -5 & -7 were elevated to 01. ug/L due to trace level contamination which carried over from a sample containing high levels of p,p'-DDT.
07/20/90 G. Havalias

Amended report: The detection limit for arsenic on G90-07-004-7 and selenium on all samples was elevated due to high levels of matrix interference. 07/23/90 --T. Gaynor

Jeffrey A. Erion, Laboratory Manager

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Glendale, CA 91201

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BCA B C Analytical

Analytical Report

7-23-90

LOG NO: G90-07-037

Received: 03 JUL 90
Reported: 20 JUL 90

Mr. Larry Nodler
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900 Grand Central Ave.
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Project: L90261.F0

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-037-1	MW-8	02 JUL 90
07-037-2	MW-9	02 JUL 90
07-037-3	MW-1E	02 JUL 90
07-037-4	MW-2E	02 JUL 90

PARAMETER	07-037-1	07-037-2	07-037-3	07-037-4
		3/90 2/96		
Nitric Acid Digestion with HCl, Date	07/09/90	07/09/90	07/09/90	07/09/90
Nitric Acid Digestion, Date	07/09/90	07/09/90	07/09/90	07/09/90
Beryllium, mg/L	<0.001	0.002 ND	<0.001	0.003
Cadmium, mg/L	<0.001	<0.001 0.0012	<0.001	<0.001
Chromium, mg/L	<0.005	<0.005 ND	<0.005	0.040
Copper, mg/L	<0.02	0.09 ND	<0.02	<0.02
Lead, mg/L	<0.01	<0.002 ND	0.006	<0.002
Nickel, mg/L	<0.05	0.11 ND	<0.05	0.15
Silver, mg/L	<0.01	<0.01 ND	<0.01	<0.01
Thallium, mg/L	<0.5	<0.5 ND	<0.5	<0.5
Zinc, mg/L	<0.03	0.16 0.016	<0.03	0.19
Antimony, mg/L	<0.5	<0.5 ND	<0.5	<0.5
Arsenic, mg/L	<0.002	<0.01 0.0034	0.006	<0.002
Selenium, mg/L	<0.02	<0.004 ND	<0.004	<0.004
Mercury, mg/L	<0.0005	<0.0005 ND	<0.0005	<0.0005

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-037-1	MW-8	02 JUL 90
07-037-2	MW-9	02 JUL 90
07-037-3	MW-1E	02 JUL 90
07-037-4	MW-2E	02 JUL 90

PARAMETER	07-037-1	07-037-2	07-037-3	07-037-4
B/N,A Ext.Pri.Poll. (EPA-8270)				
Date Analyzed	07/13/90	07/13/90	07/13/90	07/13/90
Date Extracted	07/06/90	07/06/90	07/06/90	07/06/90
Dilution Factor, Times 1	1	1	1	1
1,2,4-Trichlorobenzene, ug/L	<10	<10	<10	<10
1,2-Dichlorobenzene, ug/L	<10	<10	<10	<10
1,2-Diphenylhydrazine, ug/L	<10	<10	<10	<10
1,3-Dichlorobenzene, ug/L	<10	<10	<10	<10
1,4-Dichlorobenzene, ug/L	<10	<10	<10	<10
2,4,5-Trichlorophenol, ug/L	<10	<10	<10	<10
2,4,6-Trichlorophenol, ug/L	<10	<10	<10	<10
2,4-Dichlorophenol, ug/L	<10	<10	<10	<10
2,4-Dimethylphenol, ug/L	<10	<10	<10	<10
2,4-Dinitrophenol, ug/L	<25	<25	<25	<25
2,4-Dinitrotoluene, ug/L	<10	<10	<10	<10
2,6-Dinitrotoluene, ug/L	<10	<10	<10	<10
2-Chloronaphthalene, ug/L	<10	<10	<10	<10
2-Chlorophenol, ug/L	<10	<10	<10	<10
2-Methyl-4,6-dinitrophenol, ug/L	<50	<50	<50	<50
2-Methylnaphthalene, ug/L	<10	<10	<10	<10
2-Methylphenol, ug/L	<10	<10	<10	<10
2-Nitroaniline, ug/L	<50	<50	<50	<50
2-Nitrophenol, ug/L	<10	<10	<10	<10
3,3'-Dichlorobenzidine, ug/L	<10	<10	<10	<10
3-Nitroaniline, ug/L	<50	<50	<50	<50

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Project: L90261.F0

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-037-1	MW-8	02 JUL 90
07-037-2	MW-9	02 JUL 90
07-037-3	MW-1E	02 JUL 90
07-037-4	MW-2E	02 JUL 90

PARAMETER	07-037-1	07-037-2	07-037-3	07-037-4
4-Bromophenylphenylether, ug/L	<10	<10	<10	<10
4-Chloro-3-methylphenol, ug/L	<10	<10	<10	<10
4-Chloroaniline, ug/L	<20	<20	<20	<20
4-Chlorophenylphenylether, ug/L	<10	<10	<10	<10
4-Methylphenol, ug/L	<10	<10	<10	<10
4-Nitroaniline, ug/L	<50	<50	<50	<50
4-Nitrophenol, ug/L	<25	<25	<25	<25
Acenaphthene, ug/L	<10	<10	<10	<10
Acenaphthylene, ug/L	<10	<10	<10	<10
Aniline, ug/L	<20	<20	<20	<20
Anthracene, ug/L	<10	<10	<10	<10
Benzidine, ug/L	<40	<40	<40	<40
Benzo(a)anthracene, ug/L	<10	<10	<10	<10
Benzo(a)pyrene, ug/L	<10	<10	<10	<10
Benzo(b)fluoranthene, ug/L	<10	<10	<10	<10
Benzo(g,h,i)perylene, ug/L	<10	<10	<10	<10
Benzo(k)fluoranthene, ug/L	<10	<10	<10	<10
Benzyl Alcohol, ug/L	<20	<20	<20	<20
Benzoic acid, ug/L	<50	<50	<50	<50
Butylbenzylphthalate, ug/L	<10	<10	<10	<10
Chrysene, ug/L	<10	<10	<10	<10
Di-n-octylphthalate, ug/L	<10	<10	<10	<10
Dibenzo(a,h)anthracene, ug/L	<10	<10	<10	<10
Dibenzofuran, ug/L	<10	<10	<10	<10
Dibutylphthalate, ug/L	<50	<50	<50	<50

Analytical Report

LOG NO: G90-07-037

Received: 03 JUL 90
Reported: 20 JUL 90

Mr. Larry Nodler
LeRoy Crandall & Associates
900 Grand Central Ave.
Glendale, CA 91201-3009

Project: L90261.F0

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-037-1	MW-8	02 JUL 90
07-037-2	MW-9	02 JUL 90
07-037-3	MW-1E	02 JUL 90
07-037-4	MW-2E	02 JUL 90

PARAMETER	07-037-1	07-037-2	07-037-3	07-037-4
Diethylphthalate, ug/L	<10	<10	<10	<10
Dimethylphthalate, ug/L	<25	<25	<25	<25
Fluoranthene, ug/L	<10	<10	<10	<10
Fluorene, ug/L	<10	<10	<10	<10
Hexachlorobenzene, ug/L	<10	<10	<10	<10
Hexachlorobutadiene, ug/L	<10	<10	<10	<10
Hexachlorocyclopentadiene, ug/L	<10	<10	<10	<10
Hexachloroethane, ug/L	<10	<10	<10	<10
Indeno(1,2,3-c,d)pyrene, ug/L	<10	<10	<10	<10
Isophorone, ug/L	<10	<10	<10	<10
N-Nitrosodimethylamine, ug/L	<80	<80	<80	<80
N-Nitrosodiphenylamine, ug/L	<10	<10	<10	<10
N-Nitrosodi-n-propylamine, ug/L	<40	<40	<40	<40
Nitrobenzene, ug/L	<10	<10	<10	<10
Naphthalene, ug/L	<10	<10	<10	<10
Phenanthrene, ug/L	<10	<10	<10	<10
Phenol, ug/L	<10	<10	<10	<10
Pentachlorophenol, ug/L	<10	<10	<10	<10
Pyrene, ug/L	<10	<10	<10	<10
Bis(2-chloroethoxy)methane, ug/L	<10	<10	<10	<10
Bis(2-chloroethyl)ether, ug/L	<10	<10	<10	<10
Bis(2-chloroisopropyl)ether, ug/L	<10	<10	<10	<10
Bis(2-ethylhexyl)phthalate, ug/L	<10	<10	<10	<10

801 Western Avenue
Glendale, CA 91201

818/247-5737
Fax: 818/247-9797

BCA *B C Analytical*

Analytical Report

LOG NO: G90-07-037

Received: 03 JUL 90
Reported: 20 JUL 90

Mr. Larry Nodler
LeRoy Crandall & Associates
900 Grand Central Ave.
Glendale, CA 91201-3009

Project: L90261.F0

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-037-1	MW-8	02 JUL 90
07-037-2	MW-9	02 JUL 90
07-037-3	MW-1E	02 JUL 90
07-037-4	MW-2E	02 JUL 90

PARAMETER	07-037-1	07-037-2	07-037-3	07-037-4
Pesticides/PCBs (EPA 8080)				
Date Analyzed	07/13/90	07/13/90	07/13/90	07/13/90
Date Extracted	07/09/90	07/09/90	07/09/90	07/09/90
Dilution Factor, Times 1	1	1	1	1
Aldrin, ug/L	<0.04	<0.04	<0.04	<0.04
Chlordane, ug/L	<0.3	<0.3	<0.3	<0.3
p,p'-DDD, ug/L	<0.04	<0.04	<0.04	<0.04
p,p'-DDE, ug/L	<0.04	<0.04	<0.04	<0.04
p,p'-DDT, ug/L	<0.04	<0.04	<0.04	<0.04
Dieldrin, ug/L	<0.04	<0.04	<0.04	<0.04
Endosulfan I, ug/L	<0.04	<0.04	<0.04	<0.04
Endosulfan II, ug/L	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate, ug/L	<0.05	<0.05	<0.05	<0.05
Endrin, ug/L	<0.07	<0.07	<0.07	<0.07
Endrin aldehyde, ug/L	<0.04	<0.04	<0.04	<0.04
Heptachlor epoxide, ug/L	<0.04	<0.04	<0.04	<0.04
Heptachlor, ug/L	<0.04	<0.04	<0.04	<0.04
Methoxychlor, ug/L	<0.2	<0.2	<0.2	<0.2
Aroclor 1016, ug/L	<0.6	<0.6	<0.6	<0.6
Aroclor 1221, ug/L	<0.6	<0.6	<0.6	<0.6
Aroclor 1232, ug/L	<0.6	<0.6	<0.6	<0.6
Aroclor 1242, ug/L	<0.6	<0.6	<0.6	<0.6
Aroclor 1248, ug/L	<0.6	<0.6	<0.6	<0.6
Aroclor 1254, ug/L	<0.6	<0.6	<0.6	<0.6
Aroclor 1260, ug/L	<0.6	<0.6	<0.6	<0.6

Analytical Report

LOG NO: G90-07-037

Received: 03 JUL 90
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Mr. Larry Nodler
LeRoy Crandall & Associates
900 Grand Central Ave.
Glendale, CA 91201-3009

Project: L90261.F0

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-037-1	MW-8	02 JUL 90
07-037-2	MW-9	02 JUL 90
07-037-3	MW-1E	02 JUL 90
07-037-4	MW-2E	02 JUL 90

PARAMETER	07-037-1	07-037-2	07-037-3	07-037-4
Aroclor 1262, ug/L	<0.6	<0.6	<0.6	<0.6
Toxaphene, ug/L	<0.5	<0.5	<0.5	<0.5
BHC, alpha isomer, ug/L	<0.04	<0.04	<0.04	<0.04
BHC, beta isomer, ug/L	<0.04	<0.04	<0.04	<0.04
BHC, delta isomer, ug/L	<0.04	<0.04	<0.04	<0.04
BHC, gamma isomer (Lindane), ug/L	<0.04	<0.04	<0.04	<0.04

801 Western Avenue
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BCA *B C Analytical*

Analytical Report

LOG NO: G90-07-037

Received: 03 JUL 90
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Mr. Larry Nodler
LeRoy Crandall & Associates
900 Grand Central Ave.
Glendale, CA 91201-3009

Project: L90261.F0

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-037-1	MW-8	02 JUL 90
07-037-2	MW-9	02 JUL 90
07-037-3	MW-1E	02 JUL 90
07-037-4	MW-2E	02 JUL 90

PARAMETER	07-037-1	07-037-2	07-037-3	07-037-4
Vol.Pri.Poll. (EPA-8240)				
Date Analyzed	07/09/90	07/09/90	07/09/90	07/09/90
Dilution Factor, Times 1	1	1	1	1
1,1,1-Trichloroethane, ug/L	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane, ug/L	<1	<1	<1	<1
1,1,2-Trichloroethane, ug/L	<1	<1	<1	<1
1,1-Dichloroethane, ug/L	<1	<1	<1	<1
1,1-Dichloroethene, ug/L	<1	<1	<1	<1
1,2-Dichloroethane, ug/L	<1	<1	<1	<1
1,2-Dichlorobenzene, ug/L	<1	<1	<1	<1
1,2-Dichloropropane, ug/L	<1	<1	<1	<1
1,3-Dichlorobenzene, ug/L	<1	<1	<1	<1
1,4-Dichlorobenzene, ug/L	<1	<1	<1	<1
2-Chloroethylvinylether, ug/L	<1	<1	<1	<1
2-Hexanone, ug/L	<10	<10	<10	<10
Acetone, ug/L	<50	<50	<50	<50
Acrolein, ug/L	<50	<50	<50	<50
Acrylonitrile, ug/L	<20	<20	<20	<20
Bromodichloromethane, ug/L	<1	<1	<1	<1
Bromomethane, ug/L	<1	<1	<1	<1
Benzene, ug/L	<1	<1	<1	<1
Bromoform, ug/L	<1	<1	<1	<1
Chlorobenzene, ug/L	<1	<1	<1	<1
Carbon Tetrachloride, ug/L	<1	<1	<1	<1
Chloroethane, ug/L	<1	<1	<1	<1

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Glendale, CA 91201

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BCA B C Analytical

Analytical Report

LOG NO: G90-07-037

Received: 03 JUL 90
Reported: 20 JUL 90

Mr. Larry Nodler
LeRoy Crandall & Associates
900 Grand Central Ave.
Glendale, CA 91201-3009

Project: L90261.F0

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-037-1	MW-8	02 JUL 90
07-037-2	MW-9	02 JUL 90
07-037-3	MW-1E	02 JUL 90
07-037-4	MW-2E	02 JUL 90

PARAMETER	07-037-1	07-037-2	07-037-3	07-037-4
Chloroform, ug/L	<1	<1	<1	<1
Chloromethane, ug/L	<2	<2	<2	<2
Carbon Disulfide, ug/L	<2	<2	<2	<2
Dibromochloromethane, ug/L	<1	<1	<1	<1
Ethylbenzene, ug/L	<1	<1	<1	<1
Freon 113, ug/L	<1	<1	<1	<1
Methyl ethyl ketone, ug/L	<10	<10	<10	<10
Methyl isobutyl ketone, ug/L	<5	<5	<5	<5
Methylene chloride, ug/L	<2	<2	<2	<2
Styrene, ug/L	<1	<1	<1	<1
Trichloroethene, ug/L	<1	<1	<1	<1
Trichlorofluoromethane, ug/L	<1	<1	<1	<1
Toluene, ug/L	<1	<1	<1	<1
Tetrachloroethene, ug/L	<1	<1	<1	<1
Vinyl acetate, ug/L	<5	<5	<5	<5
Vinyl chloride, ug/L	<1	<1	<1	<1
Total Xylene Isomers, ug/L	<5	<5	<5	<5
cis-1,2-Dichloroethene, ug/L	<1	<1	<1	<1
cis-1,3-Dichloropropene, ug/L	<1	<1	<1	<1
trans-1,2-Dichloroethene, ug/L	<1	<1	<1	<1
trans-1,3-Dichloropropene, ug/L	<1	<1	<1	<1
Other Vol.Pri.Poll. (EPA-8240)	---	---	---	---

801 Western Avenue
Glendale, CA 91201

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BCA *B C Analytical*

Analytical Report

LOG NO: G90-07-037

Received: 03 JUL 90
Reported: 20 JUL 90

Mr. Larry Nodler
LeRoy Crandall & Associates
900 Grand Central Ave.
Glendale, CA 91201-3009

Project: L90261.F0

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, BLANK WATER SAMPLES	DATE SAMPLED
07-037-5	Trip Blank	02 JUL 90

PARAMETER	07-037-5
Sample Held, Not Analyzed	HOLD

Amended report: The detection limits for lead and selenium for G90-07-037-1 and arsenic for G90-07-037-2 were elevated due to high amounts of matrix interferences. 07/23/90--T. Gaynor

Jeffrey A. Erion, Laboratory Manager

801 Western Avenue
Glendale, CA 91201

818/247-5737
Fax: 818/247-9797

BCA B C Analytical

CHAIN OF CUSTODY RECORD

BCA Log Number

Client name: LeRoy Crandall and Associates	Project or PO#: L-9026-FO
Address: 900 Grand Central Ave	Phone #: (818) 243-4140
City, State, Zip: Glendale, CA 91201	Report attention: Mr. Larry Nodler

Sampled by: Richard Clark

Lab Sample number	Date sampled	Time sampled	Type* See key below	Sample description	Number of containers	Hold	Hazardous sample Special handling required	Remarks
1	6-27-90	8:45 AM	SO	MW-7 @ 5	1	✓		
2		9:05AM		@ ~~10~~ 12				
3		9:12AM		@ 15				
4		9:25AM		@ 20				
##								
5		1:30PM		MW-5 @ 5				
6		1:40PM		@ 10				
7	↓	1:45PM	↓	@ 15	↓	↓		

Analyses required

	Signature	Print Name	Company	Date	Time
Relinquished by	Richard Clark	Richard Clark	LC&A	6-27-90	7:00 PM
Received by					
Relinquished by					
Received by					
Relinquished by					
Received by Laboratory					

B C ANALYTICAL

- ☐ 1255 Powell Street, Emeryville, CA 94608 (415) 428-2300
- ☐ 801 Western Avenue, Glendale, CA 91201 (818) 247-5737
- ☐ 1200 Pacifico Avenue, Anaheim, CA 92805 (714) 978-0113

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.

Disposal arrangements: _____

*KEY: AQ—Aqueous NA—Nonaqueous SL—Sludge GW—Groundwater SO—Soil OT—Other PE—Petroleum

CHAIN OF CUSTODY RECORD

BCA Log Number 6690-0-594

Client name: LeRoy Crandall & Associates		Project or PO#: 90261-0	
Address: 900 Grand Central Ave		Phone #: (818) 243 9140	
City, State, Zip: Glendale, CA		Report attention: Mr. Larry Nodler	

Lab Sample number	Date sampled	Time sampled	Type* See key below	Sampled by: Richard Clark Sample description	Number of containers	Analyses required: Hold	Hazardous sample Special handling required	Remarks
1	6-28-90	8:05am	SO	MW-6 @ 5	1			
2		8:20am		@ 10				
3		8:35am		@ 15				
4		8:50am		@ 20				
5		12:30pm		MW-5 @ 5				
6		12:40pm		@ 10				
7		4:25pm	↓	MW-3 @ 5	↓	↓		

	Signature	Print Name	Company	Date	Time
Relinquished by	Richard Clark	Richard Clark	LC&A	6-28-90	8:30 pm
Received by	Steven Woug	Steven Woug	BCA Glendale	6/28/90	8:30 p.m.
Relinquished by					
Received by					
Relinquished by					
Received by Laboratory					

B C ANALYTICAL

☐ 1255 Powell Street, Emeryville, CA 94608 (415) 428-2300
☐ 801 Western Avenue, Glendale, CA 91201 (818) 247-5737
☐ 1200 Pacific Avenue, Anaheim, CA 92805 (714) 978-0113

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.

Disposal arrangements: _____

*KEY: AQ—Aqueous NA—Nonaqueous SL—Sludge GW—Groundwater SO—Soil OT—Other PE—Petroleum

CHAIN OF CUSTODY RECORD

BCA Log Number 690 ~~-005~~ -004

Client name: LeRoy Crandall and Associates	Project or PO#: 290261-10
Address: 900 Grand Central Ave	Phone #s: (818) 545-4140
City, State, Zip: Glendale, CA	Report attention: Mr. Larry Nader

Sampled by: Richard Clark

Lab Sample number	Date sampled	Time sampled	Type* See key below	Sample description	Number of containers	Analyses required: Hold	METALS	608	625	624	Hazardous sample / Special handling required	Remarks
1	6-29	11:45am	SO	MW-1 @ 5	1	✓						
2		12:10pm		@ 10		✓						
3		9:15am		MW-2 @ 5		✓						
4		3:35pm		MW-8 @ 5		✓						
5		3:40pm		@ 10		✓						
6		3:50pm		@ 15		✓						
7		6:05pm		MW-9 @ 5		✓						
8	↓	6:10pm	↓	MW-9 @ 10	↓	✓						
9	6-30	8:35am	GW	MW-7	7		✓	✓	✓	✓		
10	6-30	9:40am		MW-4			✓	✓	✓	✓		
11		10:40am		MW-3			✓	✓	✓	✓		
12	↓	11:35am	↓	MW-6	↓		✓	✓	✓	✓		

	Signature	Print Name	Company	Date	Time
Relinquished by	Richard Clark	Richard Clark	LC & A	7-2-90	10am
Received by					
Relinquished by					
Received by					
Relinquished by					
Received by Laboratory		LARRY KEM	BCA	07/02/90	10 AM

B C ANALYTICAL

- ☐ 1255 Powell Street, Emeryville, CA 94608 (415) 428-2300
- ☐ 801 Western Avenue, Glendale, CA 91201 (818) 247-5737
- ☐ 1200 Pacifico Avenue, Anaheim, CA 92805 (714) 978-0113

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.

Disposal arrangements: _____

*KEY: AQ—Aqueous NA—Nonaqueous SL—Sludge GW—Groundwater SO—Soil OT—Other PE—Petroleum

CHAIN OF CUSTODY RECORD

BCA Log Number 6W-07-004

Client name: LeRoy Crandall and Associates	Project or PO#: 2482L.0
Address: 900 Grand Central Ave	Phone #: (818) 243-4140
City, State, Zip: Glendale, CA	Report attention: Mr. Larry Nader

Lab Sample number	Date sampled	Time sampled	Type* See key below	Sampled by: Richard Clark Sample description	Number of containers	Analyses required: METALS	608	625	624				Hazardous sample Special handling required	Remarks
13	6-30	9:45am	GW	MW-4D	7	✓	✓	✓	✓					
14	"	12:30pm	"	MW-5		✓	✓	✓	✓					
15	"	1:30pm	"	MW-2		✓	✓	✓	✓					
16	"	2:40pm	"	MW-1		✓	✓	✓	✓					
				Travel Blank										

	Signature	Print Name	Company	Date	Time
Relinquished by	Richard Clark	Richard Clark	LC&A	7-2-90	10 AM
Received by					
Relinquished by					
Received by					
Relinquished by					
Received by Laboratory	Jerry Lem	LARRY LEM	BCA	07/02/90	10:00 AM

B C ANALYTICAL

- ☐ 1255 Powell Street, Emeryville, CA 94608 (415) 428-2300
- ☐ 801 Western Avenue, Glendale, CA 91201 (818) 247-5737
- ☐ 1200 Pacifico Avenue, Anaheim, CA 92805 (714) 978-0113

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.

Disposal arrangements: _____

*KEY: AQ—Aqueous NA—Nonaqueous SL—Sludge GW—Groundwater SO—Soil OT—Other PE—Petroleum

CHAIN OF CUSTODY RECORD

BCA Log Number 690-07-0257

Client name (LC&A) Leroy Crandall and Assoc.	Project or PO# 2-9026-10
Address 900 Grand Central Ave	Phone # (818) 243-4140
City, State, Zip Glendale, CA 91501	Report attention Mr. Larry Nodler

Lab Sample number	Date sampled	Time sampled	Type* See key below	Sampled by Richard Clark / Sample description	Number of containers	Analyses required: METALS	608	624 Extended	625	Hazardous sample Special handling required	Remarks
1	7-2-90		GW	MW-8	7	✓	✓	✓	✓		
2	7-2-90		GW	MW-9	7	✓	✓	✓	✓		
3	7-2-90		GW	MW-1E	7	✓	✓	✓	✓		
4	7-2-90		GW	MW-2E	7	✓	✓	✓	✓		
				Travel Blank							

	Signature	Print Name	Company	Date	Time
Relinquished by	Richard Clark	Richard Clark	LC&A	7-3-90	9:30 am
Received by					
Relinquished by					
Received by					
Relinquished by					
Received by Laboratory		Alphonso Cruz	BC Analytical	7/3/90	9:30 am

B C ANALYTICAL

- ☐ 1255 Powell Street, Emeryville, CA 94608 (415) 428-2300
- ☐ 801 Western Avenue, Glendale, CA 91201 (818) 247-5737
- ☐ 1200 Pacifico Avenue, Anaheim, CA 92805 (714) 978-0113

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.

Disposal arrangements: _____

*KEY: AQ—Aqueous NA—Nonaqueous SL—Sludge GW—Groundwater SO—Soil OT—Other PE—Petroleum