HALEY & ALDRICH

BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

WELL COMPLETION REPORT

SITE-WIDE GROUNDWATER MONITORING WELLS

To: **Mr. Brian Mossman**
Boeing Realty Corporation
4900 E. Conant Street, Building 1
Long Beach, California 90808

From: **Haley & Aldrich, Inc.**

Date: **7 March 2006**

Subject: **Well Completion Report, Site-Wide Groundwater Monitoring Wells, Boeing Realty Corporation, Former C-6 Facility, Los Angeles, California**

Haley & Aldrich, Inc. (Haley & Aldrich) has prepared this Well Completion Report to summarize activities associated with installing 13 groundwater monitoring wells at Boeing Realty Corporation's (BRC's) Former C-6 Facility in Los Angeles, California (Site). The Site location is shown on Figure 1.

BACKGROUND

Groundwater impacts at the Site have been identified and delineated through various groundwater investigation and monitoring programs. Two primary groundwater impact source areas have been identified: Former Building 1/36 and Former Building 2. Several off-Site sources have also been identified: International Light Metals (ILM), Former Montrose Chemical, and Former Del Amo facility. The reported impacts consist primarily of volatile organic compounds (VOCs).

A Site-Wide Groundwater Monitoring Work Plan was prepared for the Site by Haley & Aldrich (2003) and submitted to the California Regional Water Quality Control Board – Los Angeles Region (LARWQCB). The LARWQCB approved the work plan in a letter dated 28 May 2003 (LARWQCB, 2003). The purpose of the work plan was to establish a groundwater monitoring well network that would provide data to:

- Monitor plume concentrations over time,
- Verify plume stability,
- Monitor the effectiveness of groundwater remediation efforts,
- Document monitoring natural attenuation processes, and
- Evaluate groundwater quality data relative to plumes at the adjacent facilities.

The work plan proposed the installation of 14 wells, seven in the B-Sand Aquifer and seven in the C-Sand Aquifer, as summarized below.

Two wells in the Building 1/36 source area B-Sand (MWB008 and MWB010),

Three wells in the Building 1/36 source area C-Sand (MWC009, MWC04D, and MWC011),

Three wells in the Building 2 source area B-Sand (MWB012, MWB013, and MWB014),

Three wells in the Building 2 source area C-Sand (MWC015, MWC016, and MWC017),

Two wells in the Site perimeter B-Sand (MWB019 and MWB020), and

One well in the Site perimeter C-Sand (MWC021).

The following sections describe the pre-field activities, well installation activities, and groundwater sampling activities for the new wells.

PRE-FIELD ACTIVITIES

Work Plan Deviations

As stated above, the wells were installed per the approved Haley & Aldrich work plan; however, several deviations were made to the work plan.

Because of a change in the layout of the new building on Lot 8, it was possible to salvage well WCC-6S and therefore the installation of well MWB010 was not necessary. In addition, the approved work plan shows the locations of three proposed buildings on Lot 8; however, only one building (different from any of the proposed buildings) was constructed as shown on Figure 2.

Well MW007 was proposed to be installed upgradient of the Building 1/36 plume as part of the bioremediation monitoring program (Arcadis G&M, Inc., 2002). However, since well MWB008 was proposed to be installed at the same approximate location in the Site-Wide Groundwater Monitoring Work Plan, it was determined that one well would suffice in this area; therefore well MWB008 was not installed.

Instead of 4-inch casing, 2-inch casing was used for well MWC011. This well was evaluated and it was concluded that a 2-inch well was sufficient for monitoring in this area.

A proposed well's name was changed from MWC04D to MWC022.

Two wells (MWB027 and MWB028) were installed to replace wells that were removed because of the construction of the new building on Lot 8. Three groundwater monitoring wells (TMW-1, TMW-2, and TMW-9) were removed and details are included in the Well Destruction Report, Groundwater Monitoring Well TMW-1, TMW-2, and TMW-9 (Haley & Aldrich, 2004). Wells MWB027 and MWB028 were installed to replace wells TMW-1 and TMW-9; however, because of the new building layout and the proximity of well MWB006, a well was not installed to replace TMW-2 (Figure 2).

Per a request from the U.S. Environmental Protection Agency (EPA), well construction details for well MWC009, which was installed per the approved work plan, were provided in a report previously submitted to the LARWQCB (Haley & Aldrich, 2005a); therefore, no well completion information for this well is provided in this report.

As a result of the above deviations, a total of 13 groundwater monitoring wells (MWB012, MWB013, MWB014, MWB019, MWB020, MWB027, MWB028, MWC011, MWC015, MWC016, MWC017, MWC021, and MWC022) were installed at the Site and are summarized in this report.

The Site-Wide Groundwater Monitoring Work Plan requires the newly installed wells to be sampled on a quarterly basis for one year and then in accordance with subsequent approved groundwater monitoring work plans prepared for the Site.

Well Installation Permits

Prior to well installation activities, groundwater monitoring well construction permits were obtained from the County of Los Angeles Department of Health Services. Copies of the well permits are included in Appendix A.

Utility Clearance

Underground Service Alert (USA) was notified prior to drilling activities. USA identified utility laterals entering the Site. Spectrum Geophysics, a private utility locator, was contracted to perform utility clearance at the drilling locations and to identify conflicts with underground utilities, pipes, and underground anomalies. A hand auger was used to clear the locations to an approximate depth of 10 feet below ground surface (bgs).

WELL INSTALLATION ACTIVITIES

The wells were installed between May 2004 and December 2005. The locations of the wells are shown on Figure 2.

The wells were installed by Test America Drilling or WDC Exploration and Wells using hollow-stem auger, air rotary casing hammer, or mud rotary drilling methods to depths up to approximately 128 feet bgs. With the exception of five wells (MWB027, MWB028, MWC011, MWC017, and MWC021), the wells were constructed using 4-inch outside diameter (OD) Schedule-40 polyvinyl chloride (PVC) casing. All of the wells contained 20 to 30 feet of 0.02-slotted screen.

> Wells MWB027, MWB028, and MWC011 were constructed using 2-inch OD Schedule-40 PVC casing.
>
> Well MWC017 was constructed using an 8-inch threaded steel conductor casing from the surface to approximately 94 feet bgs. From the surface to approximately 126 feet bgs (within the steel casing), 4-inch OD Schedule-40 PVC casing was installed.
>
> Well MWC021 was constructed using an 8-inch threaded steel conductor casing from the surface to approximately 94.7 feet bgs. From the surface to approximately 122 feet bgs (within the steel casing), 4-inch OD Schedule-40 PVC casing was installed.

A filter pack was placed in the annular space between the formation and slotted casing using #3, #2/12, or #2/16 Monterey sand to approximately 2 feet above the perforated zone. A bentonite seal was placed on top of the filter pack to a thickness of approximately 3 feet, and the remaining annular space was sealed with a cement-bentonite grout. The top of each well was completed using a 12-inch diameter steel traffic-rated well box and concrete. Well construction details are summarized in Table I and copies of the boring logs are included in Appendix B. For geologic descriptions, the borings were cored, as described in the boring logs (Appendix B).

Well Development

No sooner than 72 hours after installation, the wells were developed by surging, bailing, and pumping to remove fine-grained material from the well casing, sand pack, and the adjacent formation. The wells were developed in accordance with the approved Site-Wide Groundwater Monitoring Work Plan. Copies of the Well Development Logs are included in Appendix C.

Surveying

The well locations and elevations were surveyed by a licensed surveyor to the nearest 0.01 foot. Horizontal coordinates were established using California State Plane of 1983. Vertical elevations were established using North American Vertical Datum of 1988. The well coordinates and elevations are listed in Table I. Copies of the certified survey reports are included in Appendix D.

Waste Disposal

Soil and water generated from well installation activities were containerized and sampled for waste profiling purposes. The analytical results were used to profile, manifest, and dispose of the waste by BRC.

GROUNDWATER SAMPLING ACTIVITIES

No sooner than 2 weeks after well development activities, the wells were monitored, purged, and sampled in accordance with the approved Site-Wide Groundwater Monitoring Work Plan. After the initial sampling, the wells are subject to sampling for three additional quarters. During purging, pH, temperature, electrical conductivity, dissolved oxygen, oxidation-reduction potential, and turbidity were measured and recorded on the groundwater sampling data sheets. Groundwater samples were collected and analyzed for VOCs by EPA Method 8260B. The results of these events, including the quarterly groundwater sampling, are included in the semiannual and annual groundwater monitoring reports starting with the Groundwater Monitoring Report – Semiannual Event in September 2004 (Haley & Aldrich, 2005b).

SUMMARY

The installation of the 13 groundwater monitoring wells described herein is the completion of the Site-wide groundwater monitoring well network developed for the Site. The wells will continue to be sampled and the analytical results reported in accordance with the Site-Wide Groundwater Monitoring Work Plan

and Groundwater Monitoring Work Plan 2006 (CDM, 2006) approved by the LARWQCB in a letter dated 14 February 2006 (LARWQCB, 2006).

LIMITATIONS

This report was prepared by Haley & Aldrich, under the professional direction and review of the registered professional(s) listed below. The work described herein was conducted in accordance with generally accepted professional engineering and geologic practice. No other warranty exists, either expressed or implied.

In addition to data collected by and observations made by Haley & Aldrich personnel, this report incorporates Site conditions observed and described by others as reported in records available to Haley & Aldrich as of the date of report preparation. Haley & Aldrich relied—in part—on such data collected by others in the development of interpretations about environmental conditions at the Site. The accuracy, precision, or representative nature of data originally generated by others could not be independently verified by Haley & Aldrich and would be beyond the scope of this project. Site conditions may vary beyond the points explored in this and other investigations.

In addition, the passage of time may result in changes to Site conditions, technology, or economic conditions which could alter the findings and/or recommendations of the report.

We appreciate the opportunity to provide services on this project. Please do not hesitate to call one of the undersigned if you have any questions or comments.

Sincerely yours,
HALEY & ALDRICH, INC.

Beth Breitenbach

Beth Breitenbach
Staff Environmental Geologist

Joe Weidmann

M. Joseph Weidmann, PG #6947
Project Manager

Attachments:

Table I – Well Construction Details
Figure 1 – Site Location
Figure 2 – Groundwater Monitoring Well Locations
Appendix A – Well Construction Permits
Appendix B – Boring Logs
Appendix C – Well Development Logs
Appendix D – Survey Reports

REFERENCES

1. Arcadis G&M, Inc. 2002. Building 1/36 Area (Parcel C), Source Area Groundwater *In-Situ* Reactive Zone Pilot Test Study Workplan, Boeing Realty Corporation, Former C-6 Facility, Los Angeles, California. 10 May.

2. California Regional Water Quality Control Board, Los Angeles Region (LARWQCB). 2003. Work Plan Approval – Groundwater Monitoring Workplan, Former Boeing Realty Corporation C-6 Facility, 19503 Normandie Avenue, Los Angeles. 28 May.

3. California Regional Water Quality Control Board, Los Angeles Region (LARWQCB). 2006. Work Plan Approval, Groundwater Monitoring Work Plan 2006, Boeing Realty Corporation C-6 Facility, 19503 Normandie Avenue, Los Angeles. 14 February.

4. CDM, 2006. Groundwater Monitoring Work Plan 2006. 31 January.

5. Haley & Aldrich, Inc. 2003. Site-Wide Groundwater Monitoring Work Plan, Former C-6 Facility, Los Angeles, California. 31 March.

6. Haley & Aldrich, Inc. 2004. Well Destruction Report, Groundwater Monitoring Wells TMW-1, TMW-2, and TMW-9, Former C-6 Facility, Los Angeles, California. 3 December.

7. Haley & Aldrich, 2005a. Well Completion Report, Groundwater Monitoring Wells MWG001, MWG002, MWG003, MWG004, and MWC009, Boeing Realty Corporation, Former C-6 Facility, Los Angeles, California. 8 December.

8. Haley & Aldrich, 2005b. Groundwater Monitoring Report – Semiannual Event September 2004. 25 October.

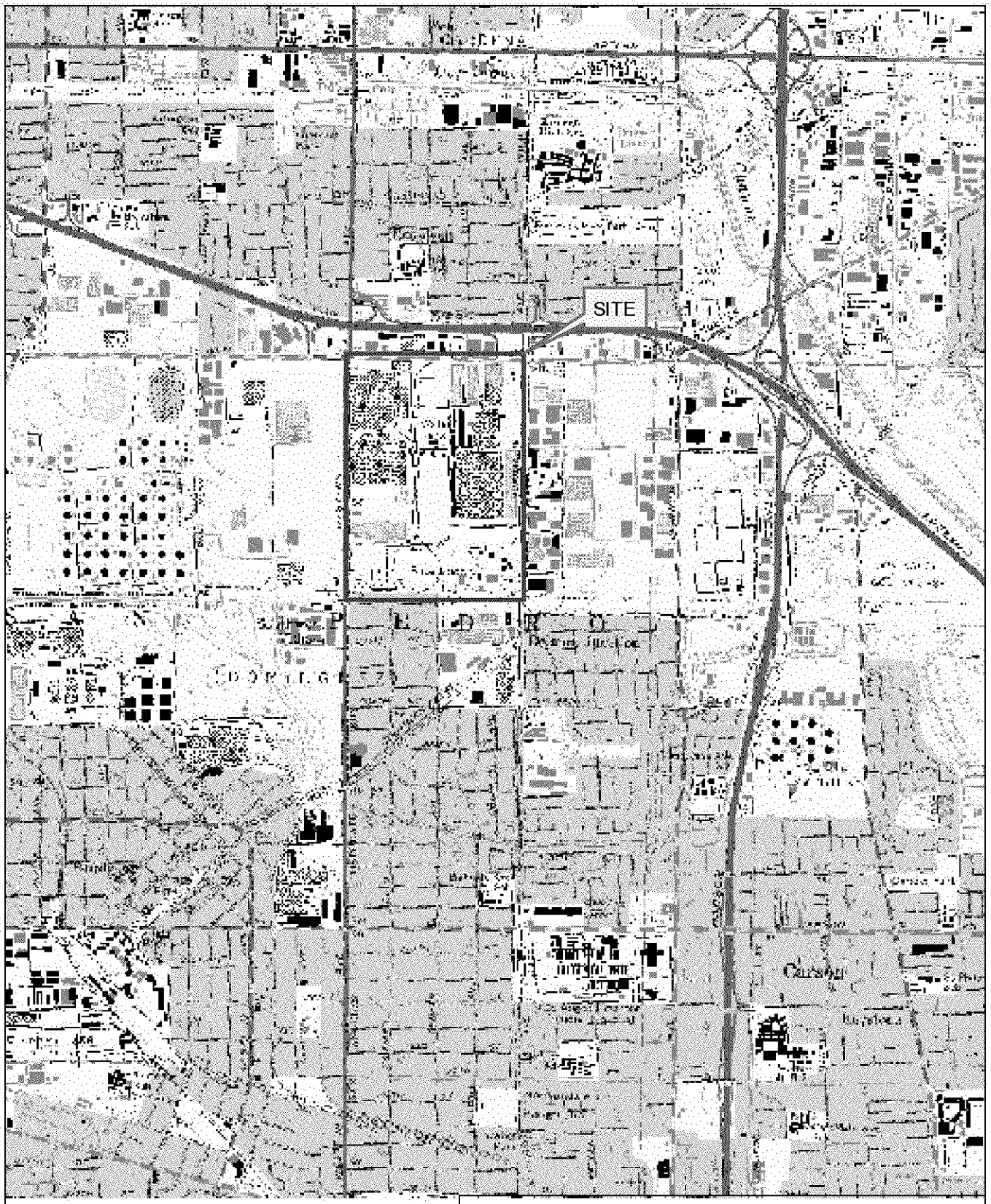
TABLES

TABLE I
WELL CONSTRUCTION DETAILS
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

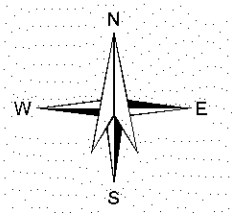
Well I.D.	Water Bearing Unit	Easting[1]	Northing[1]	Reference Elevation (AMSL)[2]	Boring Total Depth (feet bgs)	Screen Depth Interval (feet)	Filter Pack Interval (feet)	Casing Diameter (inches)	Casing Type	Slot Size (inches)	Well Completion Date
MWB012	B-Sand	6470031	1769026	52.43	90.5	64.5-84.5	62-85	4	Sch 40 PVC	0.02	5/17/2004
MWB013	B-Sand	6469589	1769403	55.33	86.5	65-85	62-85	4	Sch 40 PVC	0.02	5/17/2004
MWB014	B-Sand	6470277	1768394	51.69	86.5	65-85	62-85	4	Sch 40 PVC	0.02	5/17/2004
MWB019	B-Sand	6469966	1768100	55.18	90.5	65-85	62-85	4	Sch 40 PVC	0.02	5/17/2004
MWB020	B-Sand	6470392	1770870	51.07	120.5	59.5-89.5	56-118	4	Sch 40 PVC	0.02	6/6/2005
MWB027	B-Sand	6469945	1769941	57.14	90	67.5-87.5	65-90	2	Sch 40 PVC	0.02	11/30/2005
MWB028	B-Sand	6470103	1769482	56.84	92	65-90	63-93	2	Sch 40 PVC	0.02	12/1/2005
MWC011	C-Sand	6470259	1769756	54.03	117	94-114	92-115	2	Sch 40 PVC	0.02	11/29/2005
MWC015	C-Sand	6470300	1768828	51.51	128	100-125	99-126.5	4	Sch 40 PVC	0.02	5/17/2004
MWC016	C-Sand	6469983	1768727	52.61	131	102.5-127.5	101-128	4	Sch 40 PVC	0.02	5/17/2004
MWC017	C-Sand	6469975	1768100	55.16	128	100-125	99-126	4	Sch 40 PVC	0.02	5/17/2004
MWC021	C-Sand	6470701	1768946	54.53	126	97-122	94.5-122	4	Sch 40 PVC	0.02	5/17/2004
MWC022	C-Sand	6470450	1769993	51.6	120	97-117	93.5-117.5	4	Sch 40 PVC	0.02	6/7/2005

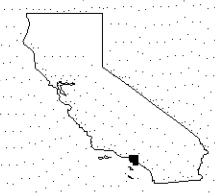
[1] California State Plane NAD 83, Zone 5, Feet
[2] AMSL = Above Mean Sea Level - All wells installed prior to 2005 were surveyed by Tait & Associates on May 19, 2005 with the exception of wells WCC-3S, WCC-6S, TMW-07, and TMW-08.

FIGURES



SITE COORDINATES: 33°51'20"N 118°18'5"W





U.S.G.S. QUADRANGLE: TORRANCE, CA

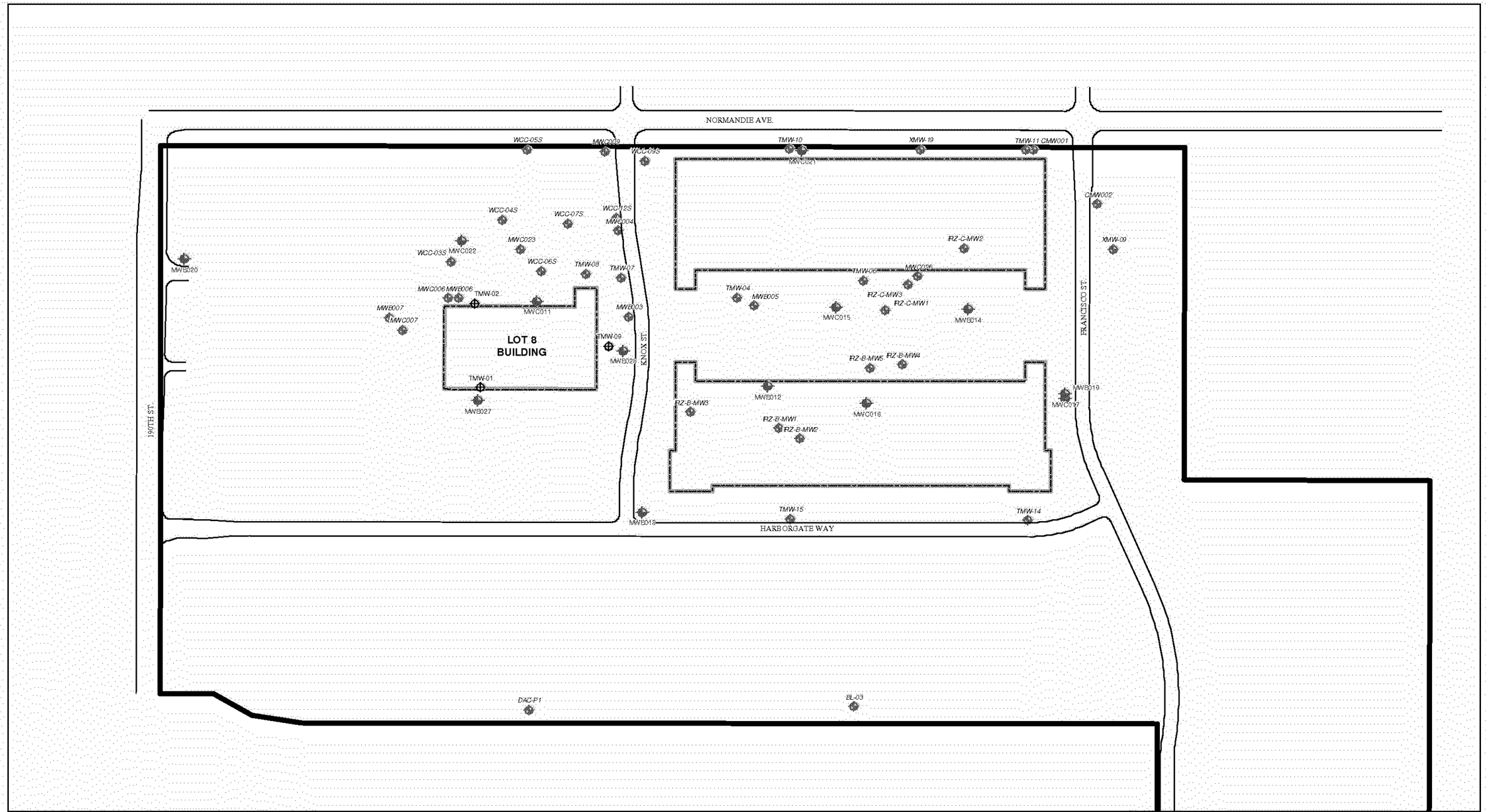
HALEY & ALDRICH

BOEING REALTY CORPORATION
FORMER C-6 FACILITY
19503 S. NORMANDIE
LOS ANGELES, CALIFORNIA

PROJECT LOCUS

SCALE: 1 : 24,000
MARCH 2006

FIGURE 1



LEGEND

- Newly Installed Site-Wide Groundwater Monitoring Wells
- Existing Groundwater Monitoring Wells
- Abandoned Groundwater Monitoring Wells
- Building Footprint
- Former Site Boundary

N

0 150 300 600 Feet

HALEY & ALDRICH

UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS

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FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

FIGURE 2

GROUNDWATER MONITORING WELL LOCATIONS

SCALE: AS SHOWN

MARCH 2006

28882-623

BOE-C6-0050353

APPENDIX A

Well Construction Permits

APPLICATION FOR WELL PERMIT
ENVIRONMENTAL HEALTH 5050 COMMERCE DRIVE BALDWIN PARK, CA 91706
COUNTY OF LOS ANGELES DEPARTMENT OF HEALTH SERVICES

DATE 9/26/03

DESCRIPTION

TYPE OF PERMIT (CHECK)

- [x] NEW WELL CONSTRUCTION
- [ ] RECONSTRUCTION OR RENOVATION
- [ ] DESTRUCTION

TYPE OF WELL

- [ ] PRIVATE DOMESTIC
- [ ] PUBLIC DOMESTIC
- [ ] IRRIGATION
- [x] OBSERVATION/MONITORING
- [ ] CATHODIC
- [ ] INDUSTRIAL
- [ ] GRAVEL PACK
- [ ] TEST

TYPE OF CASING
PVC 4" (4 to 85' w/ 20' screen / 0.010 inch slot w/ no 2/12 filter pack)
(4 to 125' w/ 98' of temp. conductor casing, 25' of screen)

METHOD OF SEALING OF CASING
Bentonite grout w/ Concrete cap (See attached obs. well installation plans).

METHOD OF DESTRUCTION
N/A

LOCATION

ADDRESS (NUMBER, STREET, AND NEAREST INTERSECTION)
19503 S. NORMANDIE AVE

CITY
Los Angeles

DIAGRAM (SHOW PROPERTY LINES, STREET, ADDRESS, WELL SITE, SEWERS, AND PRIVATE SEWAGE DISPOSAL SYSTEMS ALONG WITH LABELS AND DIMENSIONS)

SEE ATTACHED MAP

APPLICANT

NAME OF WELL DRILLER (PRINT)

NAME OF WELL OWNER (PRINT)
BOEING REALTY CORPORATION

TRADE NAME
WEST HAZMAT DRILLING

MAILING ADDRESS
2355 Lakewood Blvd, Bldg. 14, MC D001-0577

BUSINESS ADDRESS
1016 E. KATELLA AVE, ANAHEIM, CA 92805

CITY
LONG BEACH, CA 90846

I hereby agree to comply in every respect with all regulations of the County Preventive/Public Health Services and with all ordinances and laws of the County of Los Angeles and of the State of California pertaining to well construction, reconstruction and destruction. Upon completion of well and within ten days thereafter, I will furnish the County Preventive/Public Health Services with a complete log of the well, giving date drilled, depth of well, all perforations in casing, and any other data deemed necessary by such County Preventive/Public Health Services.

Paul R. Jones, R.G. #6195
Applicant's Signature

DISPOSITION OF APPLICATION: (For Sanitarians Use Only)

- [ ] APPROVED
- [ ] DENIED
- [x] APPROVED WITH CONDITIONS

If denied or approved with conditions, report reason or conditions here:

Maintain the required setback for the sewer and water lines.

DATE 10-08-03
SANITARIAN Robert Murphy

DATE
SECTION CHIEF

When signed by Section Chief, this application is a permit.

76A668
H-13 (Rev. 3/91) 2/95

APPLICANT COPY
Please Return All Copies

BOE-C6-0050355

SE[illegible]LLECTION
COUNTY OF L[illegible]ARTMENT OF HEALTH SERVICES
PUBLIC H[illegible]ROGRAMS - ENVIRONMENTAL HEALTH

RECEIVED
OCT 0 9 2003
Haley & Aldrich

SERVICE REQUEST APPLICATION

INSTRUCTIONS

1. Check the TYPE OF SERVICE requested and attach the required non-refundable fee to the application. Make money order or check payable to LOS ANGELES COUNTY TREASURER, DO NOT SEND CASH. This application is nontransferable.

FEE REQUIRED*		TYPE OF SERVICE 8
1,280.00 (8)	☒	MONITORING WELL CONSTRUCTION/DESTRUCTION
	☒	WELL CONSTRUCTION, RENOVATION OR DESTRUCTION PERMIT Complete and attach a Well Permit Application
	☐	PRIVATE SEWAGE DISPOSAL SYSTEM CONSTRUCTION PERMIT
	☐	PRIVATE SEWAGE DISPOSAL SYSTEM RENOVATION/EXPANSION
	☐	INSPECTION OF MOUNTAIN CABIN SITE as required by the United States Forest Service
	☐	INSPECTION OF EXISTING PRIVATE SEWAGE SYSTEM as required by FHA/VA
	☐	WATER SUPPLY TEST AND CERTIFICATION as required by U.S. Department of Agriculture

2. Check with Contact Office stamped below for requirements or information.
3. Complete the required information or deliver the completed application, money order or check with the forms indicated.

to: County of Los Angeles
Department of Health Services
Public Health Programs
Environmental Health
5050 COMMERCE DRIVE
BALDWIN PARK, CA 91706
626-430-5380
FAX 626-813-3016

*Refer to Schedule of Fees for current fiscal year.

NOTE: FIELD PERSONNEL CANNOT ACCEPT FEES.

4. Phone Contact Office noted below, after you have received your receipt, to request an inspection.

19503 S. NORMANDIE AVE. — Service/Job Location Address
9/23/03 — Date

HALEY & ALDRICH, INC (FOR BOEING REALTY CORP) — Owner/Applicant's Name
9040 FRIARS RD, STE. 220, SD CA 92108 — Address
(619) 280-9210 — Phone No.

WEST HAZMAT DRILLING — Contractor's Name
1016 E. KATELLA AVE, ANAHEIM, CA 92805 — Address
(714) 939-6850 — Phone No.

Co. Engineer Plan Check No._____ Tract No. _____ Lot No. _____ No. Bedrooms ____
(Complete line above for Private Sewage Disposal System Construction or Renovation Application)

CONTACT OFFICE

DEPARTMENT STAMP

10-6-03
CK # 109773
Receipt # 482570

ENTERED

Printed on recycled materials.

76S979 - H2124 (Rev. 3/91) (5/96) WHITE: CHIEF COPY CANARY: APPLICANT COPY PINK: SENIOR COPY

UNDERGROUND
ENGINEERING &
ENVIRONMENTAL
SOLUTIONS

Haley & Aldrich, Inc.
9040 Friars Road
Suite 220
San Diego, CA 92108-5860
Tel: 619.280.9210
Fax: 619.280.9415
www.HaleyAldrich.com

HALEY & ALDRICH

30 September 2003
File No. 28882-970

County of Los Angeles
Department of Health Services
Public Health Programs/Environmental Health
5050 Commerce Drive
Baldwin Park, CA 91706-1423

Attention: Monitoring Well Permitting

Subject: Submittal of Well Installation Permit Application for 8 Monitoring Wells at the Former Boeing C-6 Site, 19503 S. Normandie Avenue, Los Angeles, CA, California

Dear Sirs:

Haley & Aldrich, Inc. (Haley & Aldrich), on behalf of the Boeing Realty Corporation (Boeing) is pleased to submit this application for the installation of eight groundwater monitoring wells at the referenced site. These monitoring wells are to add to the existing Site groundwater monitoring program. Included with the application is the Service Request Application, a Site map showing the eight well locations, and two Observation Well Installation Plans for the eight wells to be installed (i.e. 4 to 85-feet and 4 to 125-feet bgs).

Please contact the undersigned at (619) 285-7102 if you wish to discuss this application.

Sincerely yours,
Haley & Aldrich, Inc.

Paul R. Sones, R.G., #6195
Senior Hydrogeologist

G:\Projects\ENVIRONMENTAL\28882_C6ProjectMngmt\Proposals\well permit submit.doc

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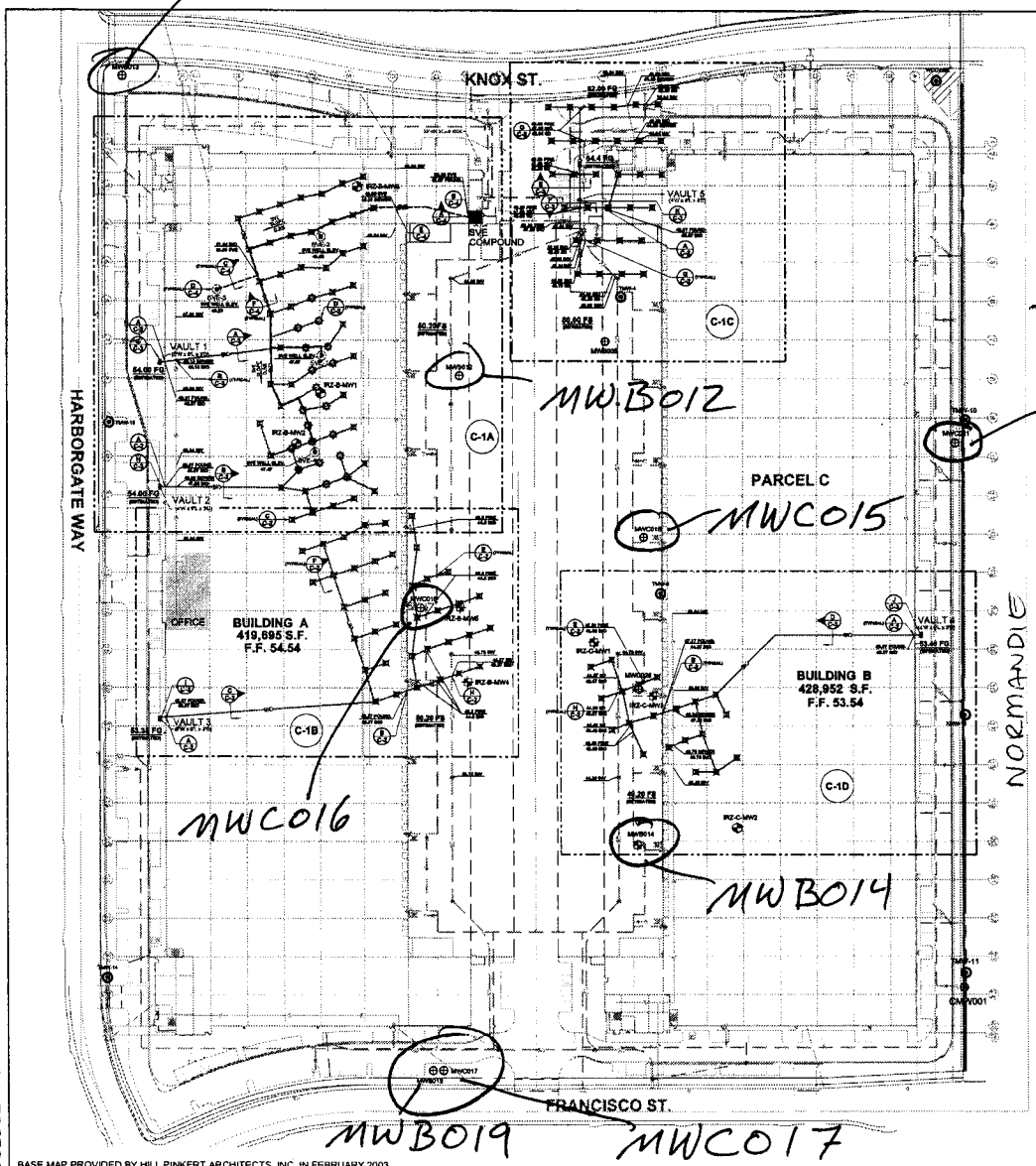


LEGEND

IRZ-C-MW5	BIO-REMEDIATION WELL /GROUNDWATER MONITORING WELL
IRZ-C-MW1	BIO-REMEDIATION WELL /GROUNDWATER MONITORING WELL THRU BUILDING SLAB
MWC021	PROPOSED GROUNDWATER MONITORING WELL
TMW-4	EXISTING GROUNDWATER MONITORING WELL
SVE-1	NEW SOIL VAPOR EXTRACTION WELL (BELOW SLAB / GRADE)
IRZ030A/B	NEW DUAL BIOINJECTION POINT (BELOW SLAB / GRADE)
IRZ031	NEW SINGLE BIOINJECTION POINT (BELOW SLAB / GRADE)
SVE COMPOUND	NEW SVE COMPOUND LOCATION (ABOVE GRADE)
VAULT 1	NEW FLUSH MOUNTED VAULT FOR SUBSURFACE REMEDIATION PIPING (VAULT DIMENSIONS AS SHOWN)
	BOUNDARY OF ADDITIONAL ENLARGED SHEET
—F—	PROPOSED FIRE SYSTEM PIPE BY OTHERS
—S—	PROPOSED SEWER LINE BY OTHERS
—SD—	PROPOSED STORM DRAIN PIPE BY OTHERS
—W—	PROPOSED WATER LINE BY OTHERS
—BIO—	PROPOSED BIOREMEDIATION SYSTEM PIPING
—SVE—	PROPOSED SVE SYSTEM PIPING
NUMBER / SHEET A / C-2	INDICATES DETAIL
# SEWER / # BIO	ELEVATION OF FEATURES (SEE NOTES BELOW) AT CROSSING POINTS

NOTES:

F.F. = FINISHED FLOOR
F.G. = FINISHED GRADE
INV = INVERT
BIO = BIOREMEDIATION PIPING (TOP OF SLURRY CONCRETE BENEATH THE UTILITIES, TOP OF SLURRY CONCRETE OVER THE UTILITIES)
SVE = SOIL VAPOR EXTRACTION PIPING (BOTTOM OF PIPE)
SD = STORM DRAIN (BOTTOM OF PIPE)
SEWER = SEWER LINE (BOTTOM OF PIPE)
FOUND. = PERIMETER FOUNDATION (BOTTOM OF FOOTING)

COMBINED LABEL SHOWN FOR DUAL BIOINJECTION POINTS REPRESENTS TWO SEPERATE AND UNIQUE POINTS AND LABELS (i.e.) RZ030A/B REPRESENTS IRZ030A AND IRZ030B) LOCATED APPROXIMATELY 3 FEET APART.

- N -

ALL DIMENSIONS AND LOCATIONS APPROXIMATE

ISSUE	DATE	REVISIONS	BY
5	8/20/03	APPROVED FOR CONSTRUCTION-REVISION 1	GKM
4	5/1/03	APPROVED FOR CONSTRUCTION	GKM
3	3/24/03	APPROVED FOR BID	GKM
2	3/19/03	DRAFT TO CLIENT	GKM
1	3/17/03	INTERNAL REVIEW	GKM
0	3/4/03	DRAFT	GKM

HALEY & ALDRICH

UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS

BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

BIOREMEDIATION AMENDMENT AND SOIL VAPOR EXTRACTION PIPING LAYOUT

Date: MAY 2003 | Scale: AS SHOWN | File No. 28882D02

0 80 160 SCALE IN FEET

Project Engineer: RMF
Designed By: TAH
Drawn By: GKM
Checked By: TAH
Sheet No.: 3 of 10
Drawing No. C-1 | Issue 5

BASE MAP PROVIDED BY HILL PINKERT ARCHITECTS, INC. IN FEBRUARY 2003
FIRE PROTECTION LINE PROVIDED BY ADVANCO FIRE PROTECTION IN FEBRAURY 2003
STORM DRAIN AND SEWER PROVIDED BY THIENES ENGINEERING, INC. IN FEBRAURY 2003

28882D02-AC

B-Sand Wells

HALEY & ALDRICH

OBSERVATION WELL INSTALLATION PLAN

Well No. MWB-012, 013, 014 + 019

Boring No.

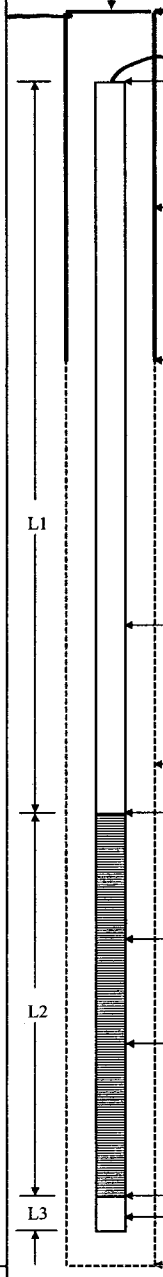
PROJECT	Boeing C-6 Site	H&A FILE NO.	28882-602
LOCATION	19503 S. Normandie Ave., Los Angeles	PROJECT MGR.	Scott Zachary
CLIENT	Boeing Realty Corporation	FIELD REP.	Paul Senes
CONTRACTOR		DATE INSTALLED	November 2003
DRILLER	West Haz Mat	WATER LEVEL	N/A

Ground El. ____ ft
El. Datum ____

Location 4 Wells at Various locations on site

☐ Guard Pipe
☑ Roadway Box

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL



(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)

(Not to Scale)

Type of protective cover/lock: Traffic Rated Box

Height/Depth of top of guard pipe/roadway box above/below ground surface: 0 ft

Locking Cap

~~Height~~/Depth of top of riser pipe above/below ground surface: 0.5 ft

Type of protective casing: well vault box
- Length: 1 ft
- Inside Diameter: 12 in

Depth of bottom of guard pipe/roadway box: 1 ft

Type of Seals	Top of Seal (ft)	Thickness (ft)
Concrete	Surface	2
~~Cement~~ Seal	2	58
bentonite Seal	60	3

Type of riser pipe: Sch. 40 PVC
- Inside diameter of riser pipe: 4 in
- Type of backfill around riser: See Seal info. above

Diameter of borehole: 10 in

Depth to top of well screen: 65 ft

Type of screen: Slotted Sch. 40 PVC
- Screen gauge or size of openings: 0.010 in
- Diameter of screen: 4 in

Type of backfill around screen: 2/12 Sand

Depth of bottom of well screen: 85 ft

Bottom of Silt trap: 85.5 ft

Depth of bottom of borehole: 85.5 ft

65 ft	+	20 ft	+	0.5 ft	=	85.5 ft
Riser Pay Length (L1)		Length of screen (L2)		Length of silt trap (L3)		Pay length

COMMENTS: Plan for 4 wells to 85-feet bgs (MWB012, MWB013, MWB014 and MWB019)

Form 2007

C-Sand Wells

4 Wells

HALEY & ALDRICH

OBSERVATION WELL INSTALLATION PLAN

Well No. MWC-015, 016, 017 + 02

Boring No.

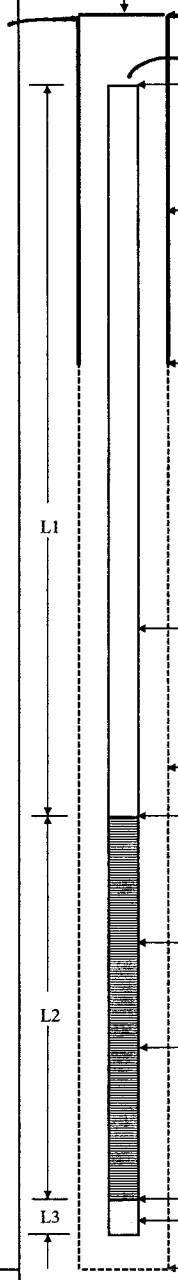
PROJECT	Boeing C-6 Site	H&A FILE NO.	28882-602
LOCATION	19503 S. Normandie Ave, L.A.	PROJECT MGR.	Scott Zachary
CLIENT	Boeing Realty Corporation	FIELD REP.	Paul Sones
CONTRACTOR	West Haz mat	DATE INSTALLED	November 2003
DRILLER		WATER LEVEL	N/A

Ground El. ____ ft
El. Datum ____

Location 4 Wells at Various Locations on Site

☐ Guard Pipe
☑ Roadway Box

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL



Type of protective cover/lock: Traffic Rated Box

Height/Depth of top of guard pipe/roadway box above/below ground surface: 0 ft

locking Cap

Height/Depth of top of riser pipe above/below ground surface: 0.5 ft

Type of protective casing: Well Vault box
- Length: 1 ft
- Inside Diameter: 12 in

Depth of bottom of guard pipe/roadway box: 1 ft

Type of Seals	Top of Seal (ft)	Thickness (ft)
Concrete	surface	2
Cement Seal	2	93
bentonite Seal	95	3

Type of riser pipe: Sch. 40 PVC
- Inside diameter of riser pipe: 4 in
- Type of backfill around riser: See Seal info. above

Diameter of borehole: 12 in

Depth to top of well screen: 100 ft

Type of screen: Slotted Sch. 40 PVC
- Screen gauge or size of openings: 0.010 in
- Diameter of screen: 4 in
- Type of backfill around screen: 2/12 Sand

Depth of bottom of well screen: 125 ft

Bottom of Silt trap: 125.5 ft

Depth of bottom of borehole: 125.5 ft

(Bottom of Exploration)
(Numbers refer to depth from ground surface in feet)

(Not to Scale)

Riser Pay Length (L1)	+	Length of screen (L2)	+	Length of silt trap (L3)	=	Pay length
100 ft	+	25 ft	+	0.5 ft	=	125.5 ft

COMMENTS: Plan for 4 wells To 125 feet bgs (MWC 015, MWC016, MWC 017 + MWC 021.

Form 2007

WELL PERMIT APPLICATION - NON-PRODUCTION WELLS

WATER & SEWAGE / MOUNTAIN & RURAL PROGRAMS - ENVIRONMENTAL HEALTH DIVISION
5050 COMMERCE DRIVE, BALDWIN PARK, CA 91706 (626) 430-5380 FAX (626) 813-3016

DATE: 5/24/05

X NEW WELL, CONSTRUCTION	X MONITORING	___ HEAT EXCHANGE
___ RECONSTRUCTION OR RENOVATION	___ CATHODIC	___ OTHER (Specify):
___ DECOMMISSIONING	___ INJECTION	
___ OTHER:	___ EXTRACTION	

WELL LOCATION

SITE ADDRESS: 1451 KNOX STREET	CITY: LOS ANGELES		ZIP CODE: 90501
Township	Range	Section	Map Book Page/ Grid: THOMAS BROS. P.763 J-3

NO. OF WELLS IN EACH PARCEL: Attach site map with well locations: See Attached

WELL STRUCTURE

Type and Size of Production Casing	
Sanitary / Annular Sealing Material	
Depth of Sanitary / Annular Seal	
Conductor Casing Seal	

CONSULTANT

Company	HALEY & ALDRICH, INC.
Contact Person	SCOTT ZACHARY / PAUL SONES
Address	7040 FRIARS RD. STE. 220
City, State Zip	SAN DIEGO, CA 92108
Telephone	619.280.9210

OWNER / DRILLER INFORMATION

Well Owner	BOEING REALTY CORP.
Address	3855 LAKEWOOD BLVD. Bldg. 14
City / Zip Code	LONG BEACH, CA 90846
Telephone	818.586.6015
Well Driller	WDC EXPLORATION + WELLS
Address	5566 ARROW HIGHWAY
City / Zip Code	MONTCLAIR, CA 91763
C-57 License No.	283326
Telephone	800.974.2769

IF WELL AND GEOLOGIC CONDITIONS ENCOUNTERED IN THE FIELD ARE FOUND TO DIFFER FROM THE SCOPE OF WORK PRESENTED TO THIS OFFICE, WORK PLAN MODIFICATIONS MAY BE REQUIRED

WELL DECOMMISSIONING

Well Depth log / records	
Method of Well Assessment	
Depth and Number of Perforations	
Type of Perforator Size of Perforations	
Type and Amount of Sealant	
Method of Upper Seal Pressure Application	

DISPOSITION OF PERMIT (Department Use Only)
THIS PERMIT IS CONSIDERED COMPLETE WHEN THE WORK PLAN IS APPROVED AND WHEN THE WELL COMPLETION LOG IS RECEIVED. NO WELL CONSTRUCTION OR DECOMMISSIONING CAN BE INITIATED WITHOUT THE WORK PLAN APPROVAL FROM THIS DEPARTMENT.

WORK PLAN APPROVAL
This Approval is Valid for 180 Days

Date	REHS
11-19-05	[illegible]

Conditions: Maintain the required setback for the sewer and water lines.

FINAL INSPECTION

Date	REHS

FINAL COMPLETION APPROVAL

Date	REHS

I hereby agree to comply in every respect with all the regulations of the County Environmental Health Division and with all ordinances and laws of the County of Los Angeles and the State of California pertaining to well construction, reconstruction and decommissioning. Upon completion of the well and within thirty days thereafter, I will furnish the Environmental Health office with a completion log of the well giving date drilled, depth of the well, perforations in the casing, and any other data deemed necessary by County Environmental Health Division.

Paul R. Sones
Applicant's Signature

Applicant Name: (PRINT) PAUL R. SONES
Telephone: 619.280.9210
FAX: 619.280.9415

76A66LA
H-13 (Rev. 05/2001)

SERVICE APPLICATION REQUEST AND FEE COLLECTION
COUNTY OF LOS ANGELES – DEPARTMENT OF HEALTH SERVICES' PUBLIC HEALTH PROGRAMS – ENVIRONMENTAL HEALTH

SERVICE REQUEST APPLICATION

INSTRUCTIONS

1. Check the TYPE OF SERVICE requested and attach the required non-refundable fee to the application. Make the money order or check payable to LOS ANGELES COUNTY TREASURER, DO NOT SEND CASH. This application is nontransferable.

FEE REQUIRED*		TYPE OF SERVICE
6 x $176 = $1,056.–	☑	MONITORING WELL CONSTRUCTION/DECOMMISSIONING Complete and attach a Non-Production Well -Well Permit Application
_____	☐	WELL CONSTRUCTION, RENOVATION OR DECOMMISSIONING PERMIT Complete and attach a Production Well-Well Permit Application
_____	☐	PRIVATE SEWAGE DISPOSAL SYSTEM CONSTRUCTION PERMIT
_____	☐	PRIVATE SEWAGE DISPOSAL RENOVATION / EXPANSION
_____	☐	INSPECTION OF MOUNTAIN CABIN SITE as required by the United States Forest Service
_____	☐	SEPTIC TANK REPLACEMENT
_____	☐	INSPECTION OF EXISTING PRIVATE SEWAGE SYSTEM
_____	☐	WATER SUPPLY TEST AND CERTIFICATION as required by U.S. Department of Agriculture

* Refer to Schedule of Fees for the current fiscal year. Field personnel cannot accept fees.

2. Check with the Contact Office stamped below for requirements or information

3. Deliver the completed application, money order or check with the forms indicated to:

County of Los Angeles
Mountain and Rural Program / Water, Sewage, & Subdivision Program
5050 Commerce Drive, Baldwin Park, CA 91706
(626) 430-5380 FAX (626) 813-3016

4. Please contact office noted above or office indicated below, after you have received your receipt, to request an inspection.

1541 KNOX ST., LOS ANGELES, CA 90501 (THOMAS BROS. P.763, J-3) 5/24/05
Service/ Job Location Address | City | Zip | Assessor Map Book | Page | Parcel # | Date

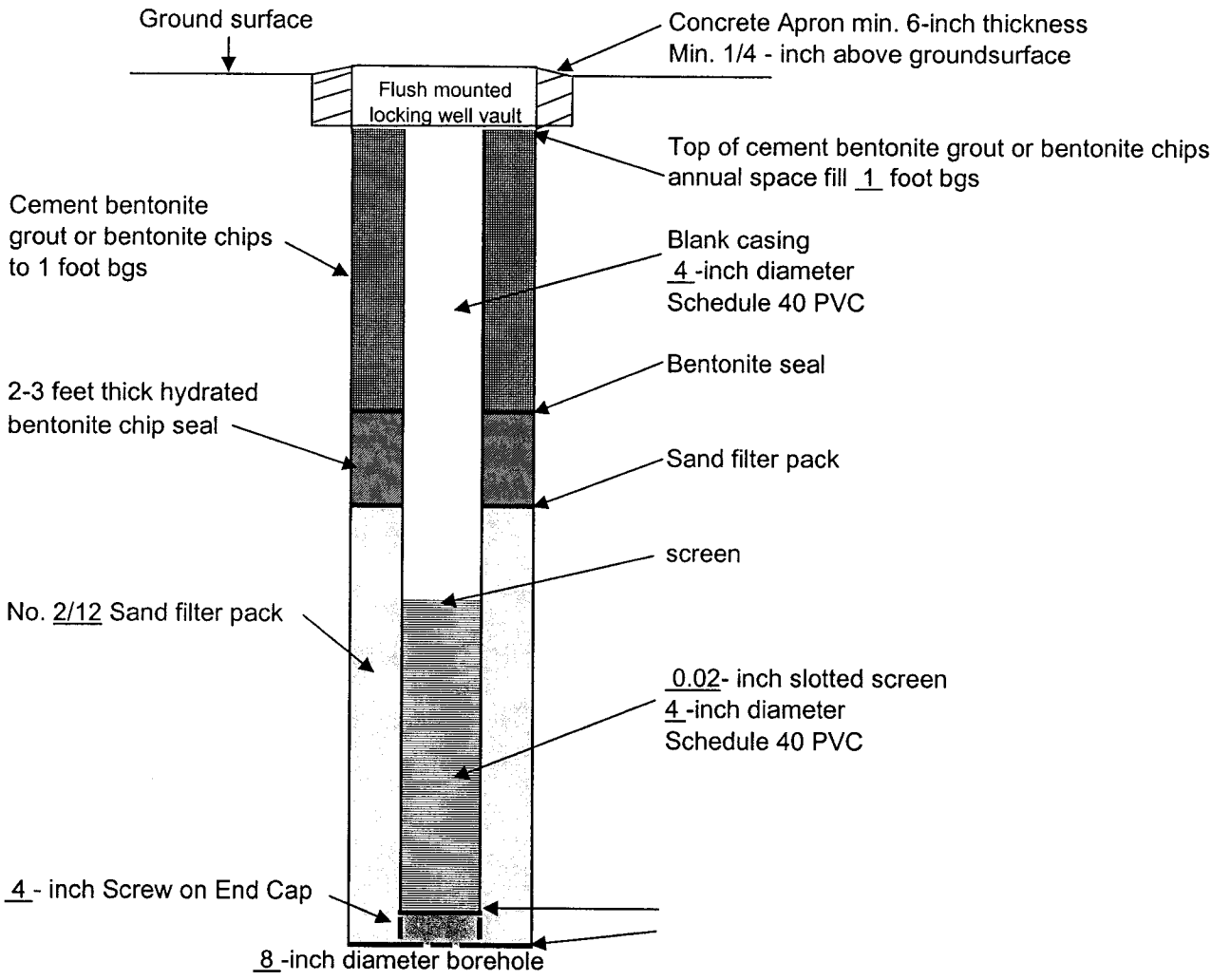
BOEING REALTY CORP. 3855 LAKEWOOD BLVD. BLDG. 1A 818-586-6015
Owner / Applicant Name | Address/Zip LONG BEACH, CA 90846 | Phone No.

HALEY & ALDRICH, INC. 9040 FRIARS RD. #220 619-280-9210
Contractor's Name | Address/Zip SAN DIEGO, CA 92108 | Phone No.

Co. Engineer Plan Check No. _____ Tract no. _____ Lot No. _____ No. Bedrooms _____ Fixture Unit Count _____
(Complete the line above for Private Sewage Disposal System Construction or Renovation Application)

CONTACT OFFICE	DEPARTMENT STAMP

Typical Monitoring Well Construction Diagram
Former Boeing C-6 Facility
1541 Knox Street
Los Angeles, California



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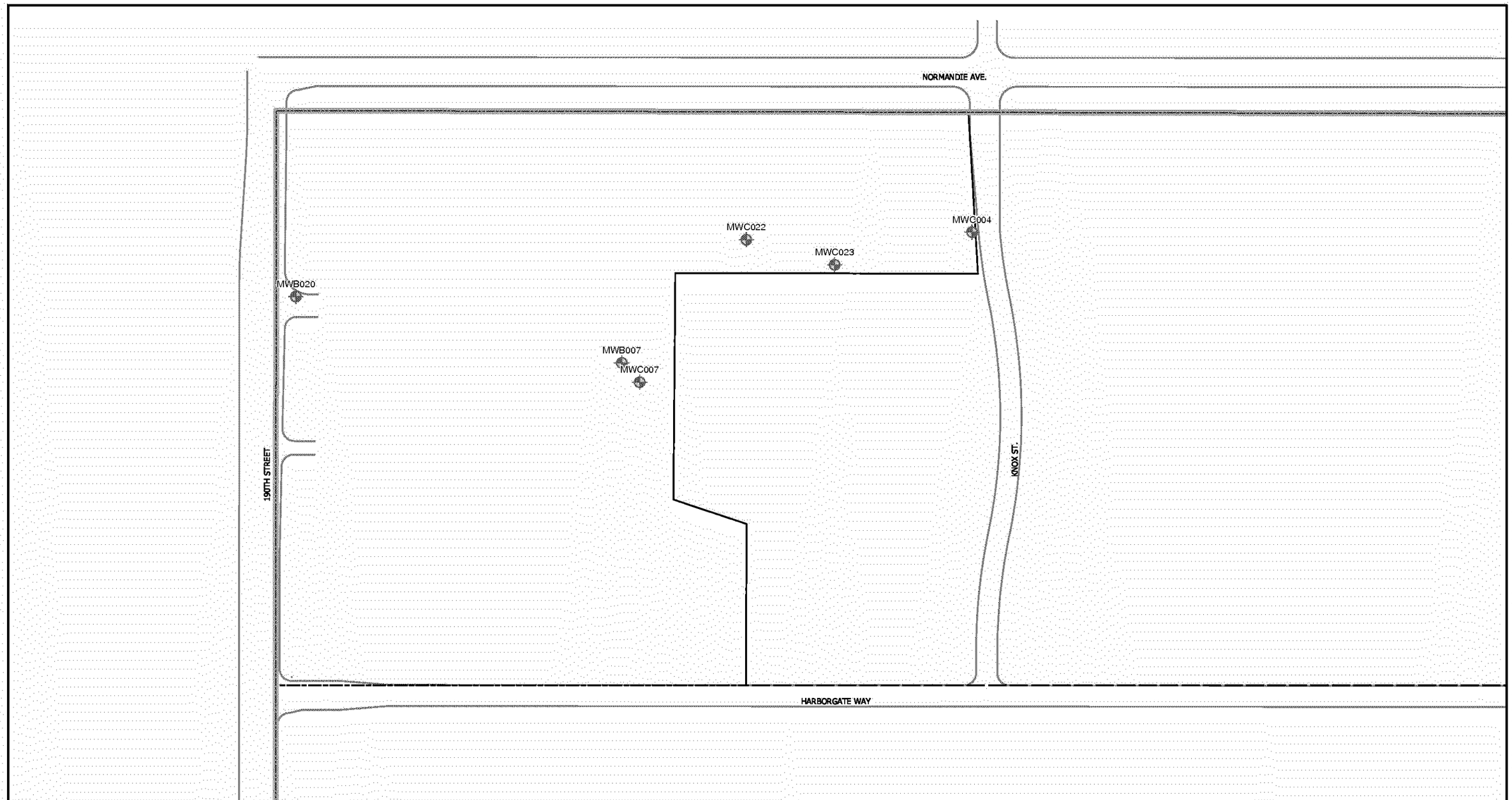

LEGEND

- Proposed Groundwater Monitoring well Location
- Property Boundary
- Parcel Boundary

N

All Locations and Dimensions are Approximate

0 100 200 400 Feet

HALEY & ALDRICH

UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS

BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

FIGURE 1

PROPOSED GROUNDWATER MONITORING WELL LOCATIONS

SCALE AS SHOWN

MAY 2005

SEWAGE / MOUNTAIN & RURAL PROGRAMS - ENVIRONMENTAL HEALTH DIVISION
COMMERCE DRIVE, BALDWIN PARK, CA 91706 (626) 430-5380 FAX (626) 813-3016

DATE: 11/17/05

X NEW WELL CONSTRUCTION	X MONITORING	HEAT EXCHANGE
RECONSTRUCTION OR RENOVATION	CATHODIC	OTHER (Specify):
DECOMMISSIONING	INJECTION	
OTHER:	EXTRACTION	

WELL LOCATION

SITE ADDRESS	CITY	ZIP CODE
1451 KNOX ST.	LOS ANGELES, CA	90021

Township	Range	Section	Map Book Page Grid
			THOM. BROS PAGE 763 / J-3

NO. OF WELLS IN EACH PARCEL: 60 Attach site map with well locations ✓

WELL STRUCTURE

Type and Size of Production Casing	SEE ATTACHED DIAGRAM
Sanitary / Annular Sealing Material	
Depth of Sanitary / Annular Seal	
Conductor Casing Seal	

OWNER/DRILLER INFORMATION

Well Owner	BOEING REALTY CORP.
Address	3855 LAKEWOOD BLVD.
City / Zip Code	BUILDING 1A LONG BEACH, CA 90846
Telephone	818-586-6005
Well Driller	WDC EXPLORATION + WELLS
Address	9560 ARROW HIGHWAY
City / Zip Code	MONTCLAIR, CA 91763
C-57 License No.	283226
Telephone	800-974-2769

WELL DECOMMISSIONING

Well Depth log / records	
Method of Well Assessment	
Depth and Number of Perforations	
Type of Perforator Size of Perforations	
Type and Amount of Sealant	
Method of Upper Seal Pressure Application	

Company	HALEY & ALDRICH INC.
Contact Person	PAUL SOMES
Address	9640 FRIARS RD. #220
City, State Zip	SAN DIEGO, CA 92108
Telephone	619-280-9210

IF WELL AND GEOLOGIC CONDITIONS ENCOUNTERED IN THE FIELD ARE FOUND TO DIFFER FROM THE SCOPE OF WORK PRESENTED TO THIS OFFICE, WORK PLAN MODIFICATIONS MAY BE REQUIRED.

DISPOSITION OF PERMIT (Department Use Only)
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[redacted]

Date 11/22/05 REHS Michael Lim

Conditions

CALL TO LET ME KNOW THE ACTUAL TIME & DATE OF DRILL FOR MWB027, MWB028, MWB003, MWB006, MWC011 & MWC011 AT (626) 430-5380 7 AM TO 10 AM. PLEASE 430-5380

[redacted]

Date REHS

[redacted]

Date 11/21/05 REHS Michael Lim

I hereby agree to comply in every respect with all the regulations of the County Environmental Health Division and with all ordinances and laws of the County of Los Angeles and the State of California pertaining to well construction, reconstruction and decommissioning. Upon completion of the well and within thirty days thereafter, I will furnish the Environmental Health office with a completion log of the well giving date drilled, depth of the well, perforations in the casing, and any other data deemed necessary by County Environmental Health Division.

Paul R. Somes
Applicant's Signature

Applicant Name: (PRINT) PAUL R. SOMES
Telephone: 619-280-9210
FAX: 619.280.9415

76A668-A
H-13 (Rev. 04/2001)

TOTAL P.01

SERVICE APPLICATION REQUEST AND FEE COLLECTION
COUNTY OF LOS ANGELES – DEPARTMENT OF HEALTH SERVICES'
PUBLIC HEALTH PROGRAMS – ENVIRONMENTAL HEALTH

SERVICE REQUEST APPLICATION

INSTRUCTIONS

1. Check the TYPE OF SERVICE requested and attach the required non-refundable fee to the application. Make the money order or check payable to LOS ANGELES COUNTY TREASURER, DO NOT SEND CASH. This application is nontransferable.

FEE REQUIRED*		TYPE OF SERVICE
6 x $185.- = $1,110.-	☐	MONITORING WELL CONSTRUCTION/DECOMMISSIONING Complete and attach a Non-Production Well -Well Permit Application
_____	☐	WELL CONSTRUCTION, RENOVATION OR DECOMMISSIONING PERMIT Complete and attach a Production Well-Well Permit Application
_____	☐	PRIVATE SEWAGE DISPOSAL SYSTEM CONSTRUCTION PERMIT
_____	☐	PRIVATE SEWAGE DISPOSAL RENOVATION / EXPANSION
_____	☐	INSPECTION OF MOUNTAIN CABIN SITE as required by the United States Forest Service
_____	☐	SEPTIC TANK REPLACEMENT
_____	☐	INSPECTION OF EXISTING PRIVATE SEWAGE SYSTEM
_____	☐	WATER SUPPLY TEST AND CERTIFICATION as required by U.S. Department of Agriculture

* Refer to Schedule of Fees for the current fiscal year. Field personnel cannot accept fees.

2. Check with the Contact Office stamped below for requirements or information

3. Deliver the completed application, money order or check with the forms indicated to:

County of Los Angeles
Mountain and Rural Program / Water, Sewage, & Subdivision Program
5050 Commerce Drive, Baldwin Park, CA 91706
(626) 430-5380 FAX (626) 813-3016

4. Please contact office noted above or office indicated below, after you have received your receipt, to request an inspection.

1541 KNOX ST., LOS ANGELES, CA 90501 (THOMAS. BROS. P.763, J-3) 11/10/05
Service/ Job Location Address | City | Zip | Assessor Map Book | Page | Parcel # | Date

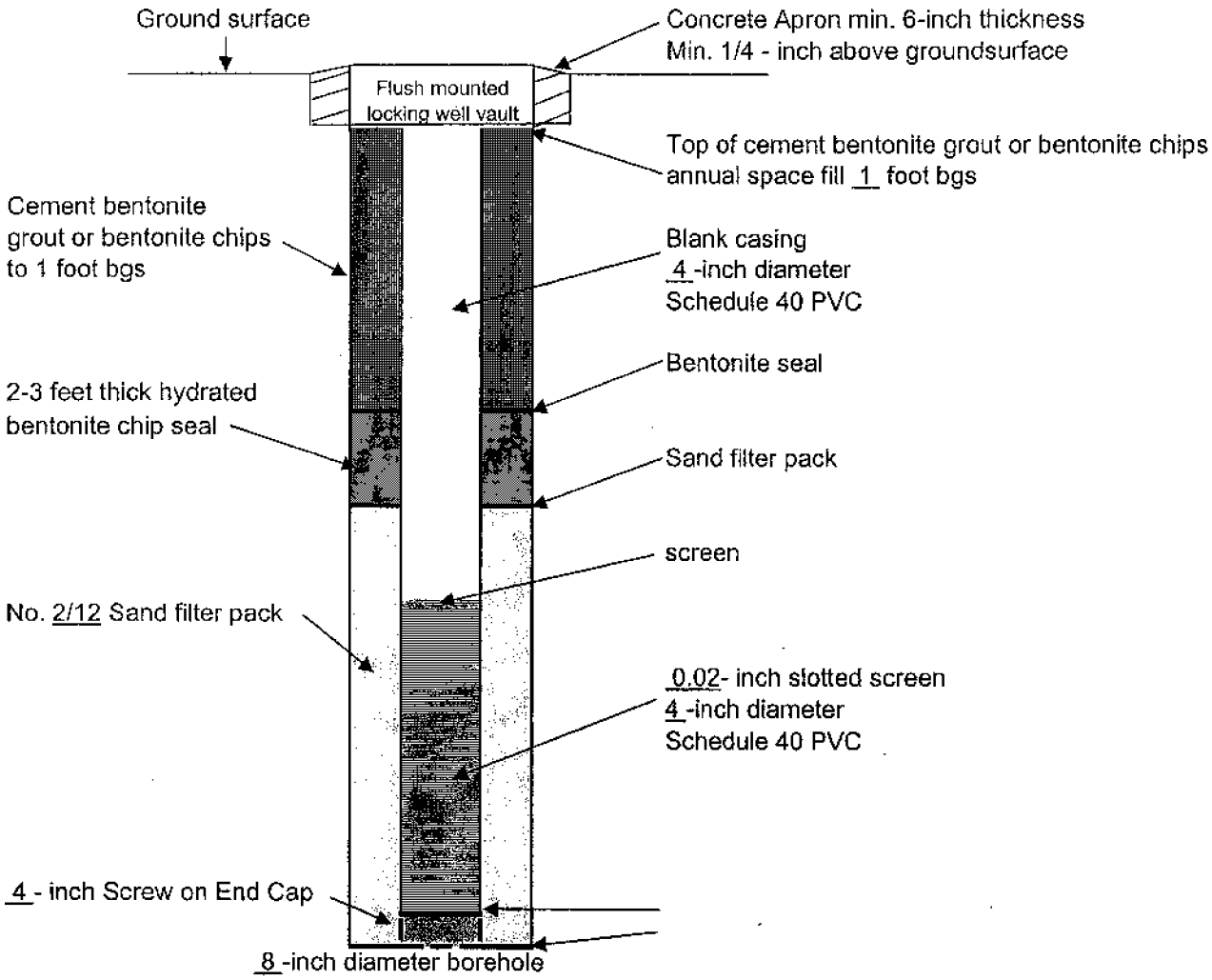
BOEING REALTY CORP. 3855 LAKEWOOD BLVD. Bldg. 1A 818.586.6015
Owner / Applicant Name | Address/Zip LONG BEACH, CA 90846 | Phone No.

HALEY + ALDRICH, INC. 9040 FRIARS RD. #220 619.280.9210
Contractor's Name | Address/Zip SAN DIEGO, CA 92108 | Phone No.

Co. Engineer Plan Check No. _____ Tract no. _____ Lot No. _____ No. Bedrooms _____ Fixture Unit Count _____
(Complete the line above for Private Sewage Disposal System Construction or Renovation Application)

CONTACT OFFICE	DEPARTMENT STAMP

Typical Monitoring Well Construction Diagram
Former Boeing C-6 Facility
1541 Knox Street
Los Angeles, California



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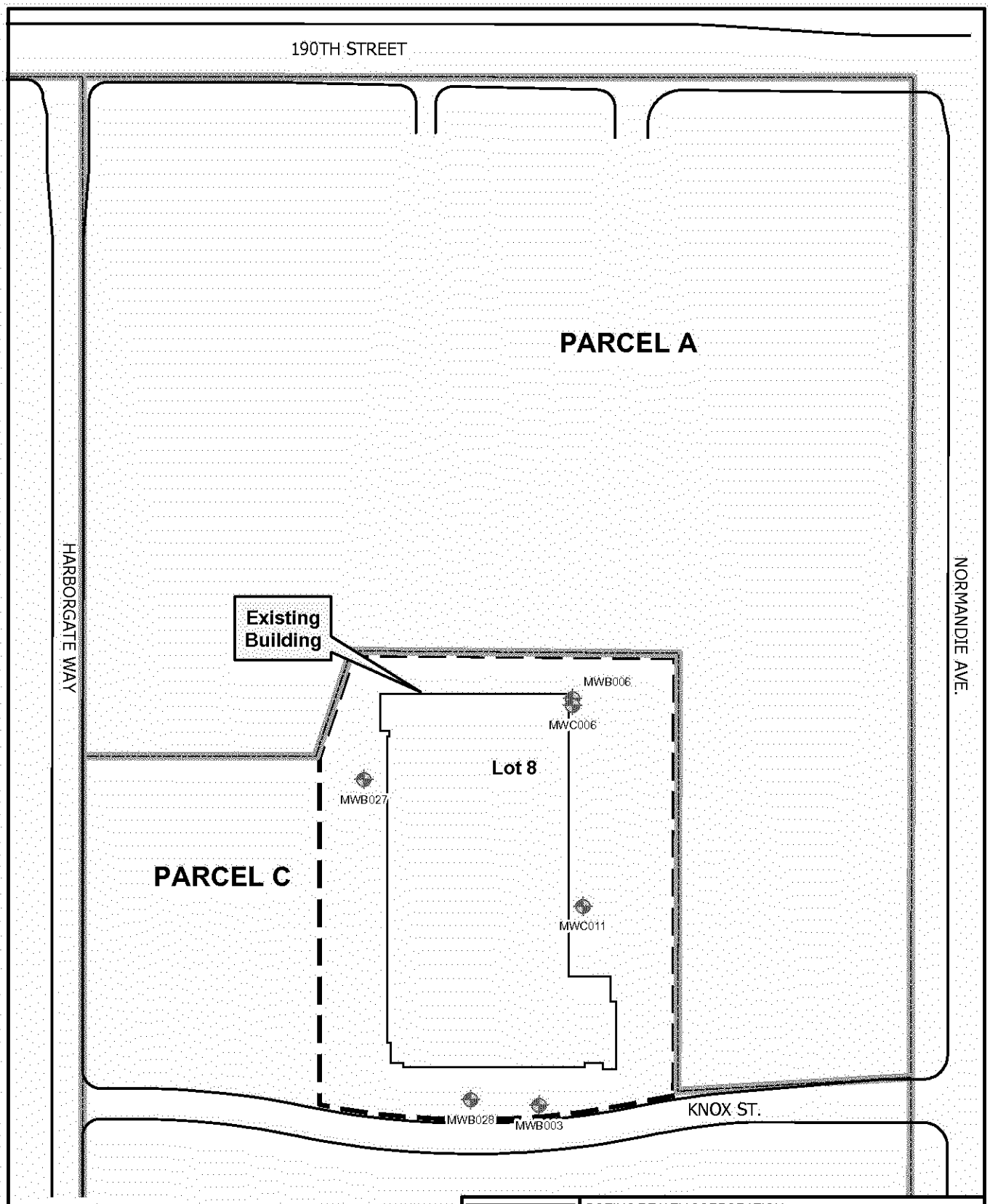


LEGEND

PROPOSED GROUNDWATER MONITORING WELL LOCATION WITH ID

PARCEL BOUNDARY

N

0 50 100 200

SCALE IN FEET

HALEY & ALDRICH

UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS

BOEING REALTY CORPORATION
FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

FIGURE 1

PROPOSED GROUNDWATER MONITORING WELL LOCATIONS

SCALE AS SHOWN

NOVEMBER 2005

(28892-506)02

APPENDIX B

Boring Logs

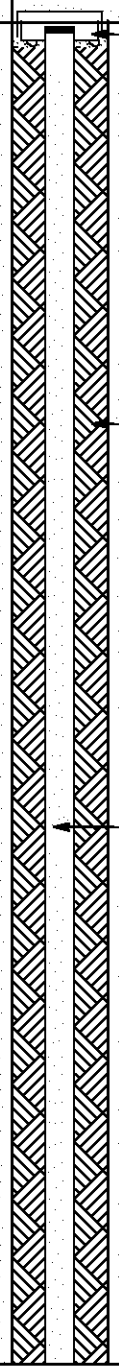
BORING NUMBER MWB012

HALEY & ALDRICH

COMPANY	Haley & Aldrich	DATE STARTED	03/23/2004 07:00
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	DATE COMPLETED	03/23/2004 04:00
LOCATION	Torrance, California	X-COORDINATE	6470030.88
DRILLING METHOD	Hollow Stem Auger	Y-COORDINATE	1769026.17
SAMPLING DEVICE	Split Spoon Sampler	TOTAL DEPTH	90.5
GROUND ELEVATION	53.04	LOCATION DESCRIPTION	Surveyed by Tait and Associates
DRILLER NAME	Test America Drilling	DEPTH TO WATER	--
LOGGED BY	Eric Pigati	MEASURING POINT ELEVATION	52.43
REMARKS	11" diameter borehole	APPROVED BY	Paul Sones, CA P.G. # 6195

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							fill dirt	0.3
							sandy GRAVEL road base	1.0
							Hand auger cuttings: brown silty CLAY, -FILL-	
5	8 11 13	100	X		CL			
10	10 13 14	80	X					12.5
					ML		light brown, clayey to sandy SILT, max particle size: fine sand, no odor, slightly moist	
15	9 13 17	100	X					
20	8 12 17	100	X					22.5
					CL		light brown, silty CLAY with fine sand, no odor, slightly moist	
25	7 9 19	100	X					27.5
					SP-SM		mottled light gray and light brown, fine SAND with silt, no odor, slightly moist, some darker orange oxidation streaks	
30	12 13 18	90	X					32.5
					SW		brown, fine to medium SAND, no odor, slightly moist, some darker orange oxidation streaks	
35	10 15 17	90	X					37.5
					SP		tan, fine SAND, no odor, slightly moist, some fines	
40	16 19 21	100	X					41.0
					CL		light gray, silty CLAY with orange oxidation streaks	
45	19 25 31	100	X					45.5
					SP		tan, fine SAND, no odor, slightly moist, some oxidation streaks	47.5
					CL			

WELL DIAGRAM



H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 5/26/05

BORING NUMBER MWB012

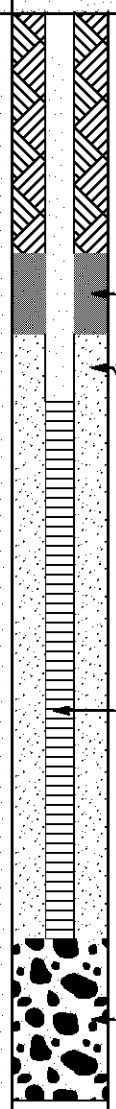
HALEY & ALDRICH

COMPANY	Haley & Aldrich	**DATE STARTED**	03/23/2004 07:00
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	**DATE COMPLETED**	03/23/2004 04:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
	12 17 23	100			CL		soft, light gray to brown, silty CLAY with fine sand, no odor, moist, some oxidation streaks, occasional fine sand lenses up to 6-inches thick	
55	17 21 23	100						57.5
					SP		light brown, fine to medium SAND, no odor, moist, with occasional gray CLAY layers up to 7-inches thick	
60	16 19 24	100						
65	13 19 22	100						
70	16 17 22	40						72.5
					SW		olive, fine to medium SAND with silty clay layers up to 2" thick, no odor, moist, shell fragments	
75	10 10 12	100						
80	18 18	100						
	21 14	100						
	16 17	100						
85	13 18	100						
	21 19	100						
	21 22	100						87.5
	20 21	100			SW-SM		olive, fine to medium SAND with silt and silty clay layers up to 2" thick, no odor, moist, shell fragments	
90	24 16 23 25							90.5
							Bottom of borehole at 90.5 feet.	

WELL DIAGRAM



H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 5/26/05

BORING NUMBER MWB013

HALEY & ALDRICH

COMPANY	Haley & Aldrich	DATE STARTED	03/25/2004 07:00
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	DATE COMPLETED	03/25/2004 04:00
LOCATION	Torrance, California	X-COORDINATE	6469588.66
DRILLING METHOD	Hollow Stem Auger	Y-COORDINATE	1769403.21
SAMPLING DEVICE	Split Spoon Sampler	TOTAL DEPTH	86.5
GROUND ELEVATION	55.62	LOCATION DESCRIPTION	Surveyed by Tait and Associates
DRILLER NAME	Test America Drilling	DEPTH TO WATER	--
LOGGED BY	Eric Pigati	MEASURING POINT ELEVATION	55.33
REMARKS	11" diameter borehole	APPROVED BY	Paul Sones, CA P.G. # 6195

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Asphalt	0.3
							sandy GRAVEL road base, saturated from landscape irrigation	1.0
							Hand auger, start sampling at 10-feet below land surface	
5								
10	4 4 11	100			CL		light brown, silty CLAY with some fine sand, very moist to saturated from landscape irrigation, no odor	12.5
							light brown, clayey SILT with some fine sand, moist, no odor	
15	6 9 11	100						
20	7 13 15	100			MH		same as above, increase in clay content and plasticity, moist, no odor	
25	4 13 19	100					top 12 inches same as above, lower 8 inches is light brown fine SAND with silt, slightly moist, no odor	27.5
							brown, fine SAND, top half of sample seems to be sluff, slightly moist, no odor	
30	13 15 15	100						
35	9 17 19	100			SP			
40	8 16 17	40						
45	12 19 20	100						47.5
					SP-SM			

WELL DIAGRAM

- 12" Concrete Seal w/ traffic rated wellbox
- 13" Cement/Bentonite Seal (95% Portland Cement + 5% Bentonite Grout)
- 4" PVC Casing

H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 5/26/05

BORING NUMBER MWB013

HALEY & ALDRICH

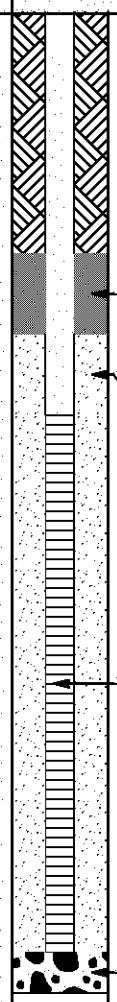
COMPANY	Haley & Aldrich	**DATE STARTED**	03/25/2004 07:00
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	**DATE COMPLETED**	03/25/2004 04:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
	11 13 21	100			SP-SM		fine SAND with medium grained, alternating thin (2 to 3 mm) layers of light orange and light gray oxidation, bottom 2 inches is light gray silty fine SAND, slightly moist, no odor	52.5
55	12 18 23	100			MH		olive, fine sandy SILT with clay, 0.5 inch layer of fine/medium sand near bottom of sample, moist, no odor	57.5
60	16 17 19	100			SM		olive, silty fine SAND with clay, orange mottling in areas, moist, no odor	62.5
65	14 14 24	100			CL		olive, silty CLAY with some fine sand, moist, stiff, some paper-thin oxidation layers along sand stringers, no odor	
70	19 21 24	100					light gray, silty CLAY, some orange oxidation streaks, moist, stiff, no odor	
75	16 19 25	100					same as above, olive, fine/medium SAND in sampler shoe (tip)	
80	19 20 25	100					same as above, last 6 inches of sampler is olive, fine/medium SAND, wet, no odor	
85	24 26 28	100					brown, fine/medium SAND, wet, with 6-inch layer of light gray-brown, clayey SILT in middle of sample, some oxidation streaks	86.5

Bottom of borehole at 86.5 feet.

WELL DIAGRAM



H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 5/26/05

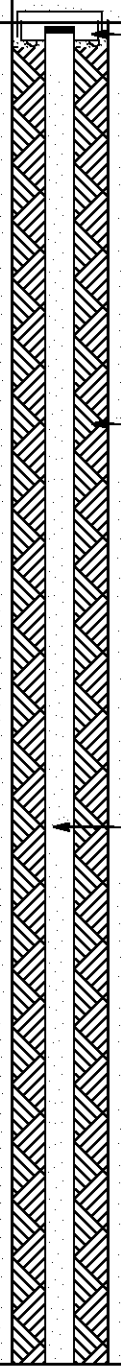
BORING NUMBER MWB014

HALEY & ALDRICH

COMPANY	Haley & Aldrich	DATE STARTED	03/24/2004 07:00
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	DATE COMPLETED	03/24/2004 04:00
LOCATION	Torrance, California	X-COORDINATE	6470276.70
DRILLING METHOD	Hollow Stem Auger	Y-COORDINATE	1768394.32
SAMPLING DEVICE	Split Spoon Sampler	TOTAL DEPTH	86.5
GROUND ELEVATION	52.08	LOCATION DESCRIPTION	Surveyed by Tait and Associates
DRILLER NAME	Test America Drilling	DEPTH TO WATER	--
LOGGED BY	Eric Pigati	MEASURING POINT ELEVATION	51.69
REMARKS	11" diameter borehole	APPROVED BY	Paul Sones, CA P.G. # 6195

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Concrete	0.5
							sandy GRAVEL base FILL	1.0
							Hand auger, start sampling at 10-feet below land surface	
5								
10	4 7 11	100	X		CL		brown to dark brown, silty CLAY, no odor, moist, medium plasticity to plastic	
15	5 9 14	100	X		CL			
20	7 9 12	100	X		CL			
25	8 12 15	100	X		CL			27.5
30	11 14 18	100	X		SP-SM		light brown, fine SAND with some silt, slightly moist, no odor, thin (2-inch) layer of shell fragments near bottom of sample	32.5
35	12 16 21	100	X		SW		light brown, fine to medium SAND, slightly moist, no odor, some oxidation	
40	13 14 19	100	X		SW		top 8 inches is light brown, fine/medium SAND with abundant shell fragments, remainder of sample is light gray & orange mottled silty CLAY with fine sand, medium plasticity	
45	13 18 19	100	X		SW		3 to 4-inch alternating layers of tan silty fine SAND & light gray silty CLAY with fine sand, some horizontal oxidation layers, slightly moist	

WELL DIAGRAM



H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 5/26/05

BORING NUMBER MWB014

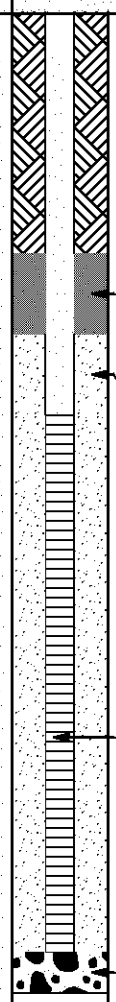
HALEY & ALDRICH

COMPANY	Haley & Aldrich	**DATE STARTED**	03/24/2004 07:00
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	**DATE COMPLETED**	03/24/2004 04:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
	15 17 23	100					light brown, fine/medium SAND with silt changing to light gray silty fine/medium sand, last 2" of sample is light gray silty CLAY, slightly moist	52.5
							gray-brown, silty fine SAND with clay, some oxidation	
55	16 18 22	100			SM			
60	15 19 24	100					olive, silty fine SAND with clay, abundant oxidation layers, moist, no odor	62.5
					SP		olive, medium SAND, very moist, no odor	
65	16 20 21	70						67.5
					CL		olive, silty CLAY and clayey SILT, 2-inch layer of medium grained SAND in middle of sample, moist, medium plasticity, some horizontal oxidation layers at the bottom of the sample	
70	50	100						
75	50	100					olive, silty CLAY with fine/medium sand, saturated, some horizontal oxidation layers, soft and sticky	
80	50	100						80.5
					SP		bottom 10 inches is olive medium SAND, saturated, remainder of sample is olive silty CLAY with some horizontal oxidation layers, soft, plastic	
85	50	70					olive, medium SAND with 2-inch layer of silty CLAY, soft, plastic	86.5
							Bottom of borehole at 86.5 feet.	

WELL DIAGRAM



H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 5/26/05

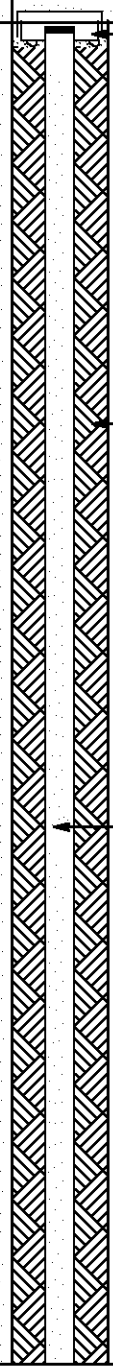
BORING NUMBER MWB019

HALEY & ALDRICH

COMPANY	Haley & Aldrich	DATE STARTED	03/22/2004 07:00
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	DATE COMPLETED	03/22/2004 04:00
LOCATION	Torrance, California	X-COORDINATE	6469965.79
DRILLING METHOD	Hollow Stem Auger	Y-COORDINATE	1768100.08
SAMPLING DEVICE	Split Spoon Sampler	TOTAL DEPTH	90.5
GROUND ELEVATION	55.68	LOCATION DESCRIPTION	Surveyed by Tait and Associates
DRILLER NAME	Test America Drilling	DEPTH TO WATER	--
LOGGED BY	Eric Pigati	MEASURING POINT ELEVATION	55.18
REMARKS		APPROVED BY	Paul Sones, CA P.G. # 6195

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Asphalt	0.3
							sandy GRAVEL road base	1.0
							Hand auger cuttings: stiff, dark brown CLAY with gravel and asphalt chunks, -FILL-	
5	4 5 7	100	X					
					SM		medium dense, light brown, silty fine SAND, no odor, moist	7.5
10	9 11 13	100	X					
					ML		medium stiff, light brown, clayey to sandy SILT, fine sand, no odor, moist	12.5
15	10 10 12	100	X					
20	8 14 17	100	X					
25	13 14 17	100	X					
					SP		light brown, fine to medium SAND, no odor, moist	27.5
30	11 15 18	100	X					
35	14 16 20	100	X					
40	10 18 20	100	X					
					SW		light brown, medium SAND with fine sand	42.5
45	11 15 22	100	X					
					SP			47.5

WELL DIAGRAM



H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 5/26/05

BORING NUMBER MWB019

HALEY & ALDRICH

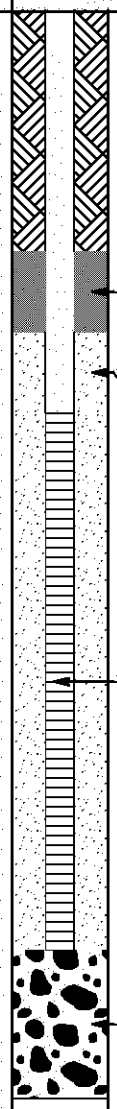
COMPANY Haley & Aldrich **DATE STARTED** 03/22/2004 07:00

PROJECT NAME BRC Former C-6 Facility, Torrance, CA **DATE COMPLETED** 03/22/2004 04:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
	15 17 18	100			SP		orange-brown to brown, medium SAND, no odor, moist, oxidation staining, occasional 4" silt lenses and trace fine gravel	
55	15 15 23	100						57.5
					SP		olive-brown, medium SAND, no odor, moist, no oxidation staining	
60	9 19 21	100						
65	15 20 21	100						
70	17 21 24	100						72.5
					SP		gray-brown, medium SAND, no odor, moist, some mottled light brown oxidation staining	
75	18 20 23	100						
80	19 20 24	100						
	15 16 22	100						82.5
					SP		tan, medium to coarse SAND, with layers of brown clayey silt up to 2-inches thick	84.5
85	12 18 19	100			SP		olive, medium to coarse SAND, no odor, with shell fragments and occasional silt layers	
	17 18 26	100						
	15 19 25	80						
90	14 16 21	50						90.5
	17 22 25						Bottom of borehole at 90.5 feet.	

WELL DIAGRAM



H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 5/26/05

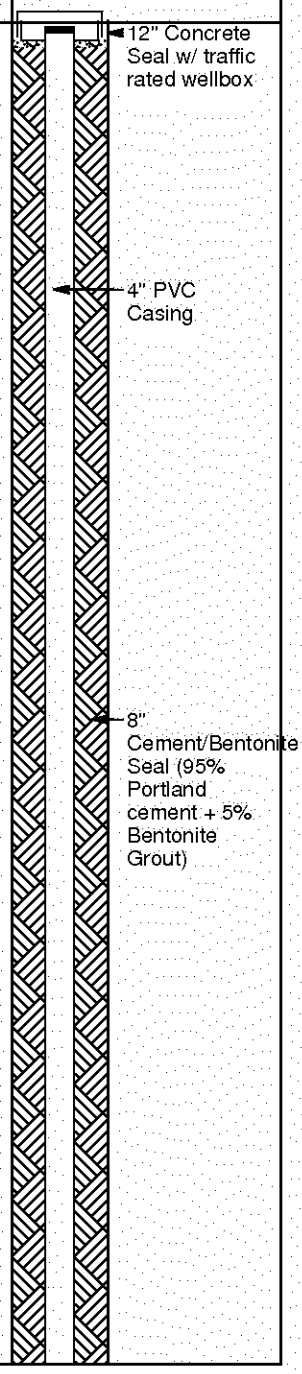
BORING NUMBER MWB020

HALEY & ALDRICH

COMPANY	Haley & Aldrich	DATE STARTED	06/04/2005 07:00
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	DATE COMPLETED	06/06/2005 10:00
LOCATION	Torrance, California	X-COORDINATE	6470361.000
DRILLING METHOD	Hollow Stem Auger	Y-COORDINATE	1770908.000
SAMPLING DEVICE	California Split Spoon	TOTAL DEPTH	120.5 feet bgs
GROUND ELEVATION	--	LOCATION DESCRIPTION	Surveyed
DRILLER NAME	WDC Exploration & Wells	DEPTH TO WATER	--
LOGGED BY	Travis Hammond	MEASURING POINT ELEVATION	--
REMARKS		APPROVED BY	Paul Sones, CA P.G. # 6195

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Hand auger to 10 feet bgs in triangle pattern	9.0
10		67			SC		hard, light brown, clayey fine SAND, layered, no odor, dry	14.0
15		100			ML		very stiff, light brown, SILT with fine sand, layered, no odor, dry	24.0
20		100						
25		100			SM		dense, light brown, silty fine SAND, layered, no odor, dry to moist	29.0
30		100			CL		very stiff, light brown, silty CLAY with fine sand, layered, no odor, dry to moist	34.0
35		67			SP		dense, light brown to tan, poorly graded, fine SAND with silt, no structure, no odor, moist	38.0
					ML		siff, light brown, fine sandy SILT, layered, no odor, dry to moist	40.0
40		100			SM		dense, light brown, silty fine SAND, no structure, no odor, moist	44.0
45		100			SP		medium dense, light brown to yellow-brown, poorly graded, fine SAND with trace silt, layered, no odor, moist	49.0
		100			ML			

WELL DIAGRAM



H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 2/27/06

BORING NUMBER MWB020

HALEY & ALDRICH

COMPANY	Haley & Aldrich	DATE STARTED	06/04/2005 07:00
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	DATE COMPLETED	06/06/2005 10:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
					ML		stiff, light brown, SILT with clay, layered, no odor, moist, iron staining	
55		94						
60		78			SP		medium dense, brown to olive-brown, poorly graded fine to medium SAND, no structure, no odor, moist	59.5
65		100			SM		medium dense to dense, brown to olive-brown, silty SAND, layered, no odor, moist, layers of silt up to 0.5" thick at 69.5 feet bgs	64.0
70		100			SP		dense, brown, poorly graded fine to medium SAND, no structure, no odor, moist	69.5 / 70.5
					SM		dense, brown to olive-brown, silty SAND, layered, no odor, moist, layers of silt 0.25" thick at 75.5 feet bgs	
75		67						
80		44			SP		medium dense, brown, poorly graded SAND, layered, no odor, moist, silt layer up to 1-inch thick at 84.5 feet bgs	79.0
85		100						
90		94						
95		94			CL		stiff, olive-brown with mottled iron stain, silty CLAY with fine sand, layered, no odor, moist, 2-inch gray clay layer with shell fragments at 100.5 feet bgs	94.5
100		100			SP		dense, light brown, poorly graded fine to medium SAND, shell fragments, no odor, moist to wet	99.0
105		0						

WELL DIAGRAM

- 8" Bentonite Chips Seal (Medium bentonite chips)
- 8" Monterey Sand Filterpack (#2/16)
- 4" PVC Slotted Screen 0.02"

H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 2/27/06

HALEY & ALDRICH

BORING NUMBER MWB020

COMPANY Haley & Aldrich **DATE STARTED** 06/04/2005 07:00

PROJECT NAME BRC Former C-6 Facility, Torrance, CA **DATE COMPLETED** 06/06/2005 10:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
110		0	X		SP		dense, light brown, poorly graded fine to medium SAND, shell fragments, no odor, moist to wet		
115		67	X						
120								120.5	8" Natural Formation Filterpack (Sluff)
							Bottom of borehole at 120.5 feet.		

H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 2/27/06

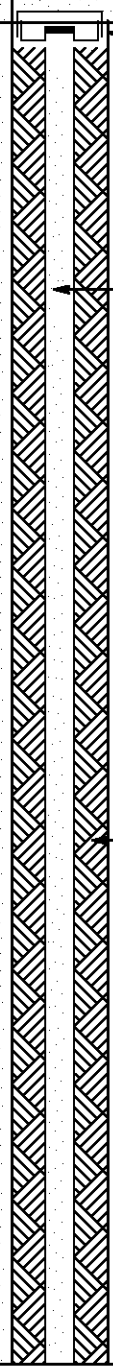
BORING NUMBER MWB027

HALEY & ALDRICH

COMPANY	Haley & Aldrich	DATE STARTED	11/28/2005 08:00
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	DATE COMPLETED	11/30/2005 17:00
LOCATION	Torrance, California	X-COORDINATE	6469944.635
DRILLING METHOD	Hollow Stem Auger	Y-COORDINATE	1769941.493
SAMPLING DEVICE	California Split Spoon	TOTAL DEPTH	91.5 feet bgs
GROUND ELEVATION	57.47 feet MSL	LOCATION DESCRIPTION	Surveyed
DRILLER NAME	WDC	DEPTH TO WATER	--
LOGGED BY	R. Ramzi	MEASURING POINT ELEVATION	57.14 ' (NAVD 88)
REMARKS		APPROVED BY	Paul Sones, CA P.G. # 6195

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Asphalt	0.3
							Hand auger to 10 feet bgs in triangular pattern, no sampling	
5								
10	18 25 28	94	X				stiff, dark olive-brown, SILT with some clay, no structure, no odor, moist	10.0
15	10 12 18	89	X					
20	14 17 21	78	X					
					ML			
25	20 20 20	89	X					
30	13 16 18	100	X					
35	15 20 28	89	X					
								38.0
					ML		soft, red-brown, SILT, no structure, no odor, dry	
40	23 25 28	94	X					
								43.0
					SM		loose to slightly dense, light brown, silty fine SAND with some clay, no structure, no odor, slightly moist	
45	16 18 20	100	X					
								48.0
					ML		stiff, dark olive-brown, SILT with trace clay, laminae, no odor, moist	

WELL DIAGRAM



H&A CCI MWBS-MWCSFEB06.GPJ CH2MHILL.GDT 2/24/06

BORING NUMBER MWB027

HALEY & ALDRICH

COMPANY Haley & Aldrich **DATE STARTED** 11/28/2005 08:00

PROJECT NAME BRC Former C-6 Facility, Torrance, CA **DATE COMPLETED** 11/30/2005 17:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
	15 15 18	89	X		ML		stiff, dark olive-brown, SILT with trace clay, laminae, no odor, moist		
55	14 16 19	100	X					58.0	
					SP		loose, red-brown, poorly graded fine SAND with some silt, no structure, no odor, dry		
60	11 13 15	33	X					64.0	8" Bentonite Chips Seal (Medium Bentonite chips)
65	12 14 17	89	X		ML		loose to slightly dense, dark olive-brown, SILT with some fine sand and trace clay, laminae, no odor, very moist		
70	15 17 19	89	X						8" Monterey Sand Filterpack (#2/16)
75	12 14 16	100	X					78.0	2" PVC Slotted Screen 0.02"
80	N/A	67	X		SP		loose, olive-brown to gray, poorly graded fine to medium SAND, no structure, no odor, wet, 3-inch layer of clay at 90.5 feet bgs		
85	N/A	67	X						
90	N/A	78	X					91.5	Fill Filterpack (collapsed native material)
							Bottom of borehole at 91.5 feet.		

H&A CCI MWBS-MWCSFEB06.GPJ CH2MHILL.GDT 2/24/06

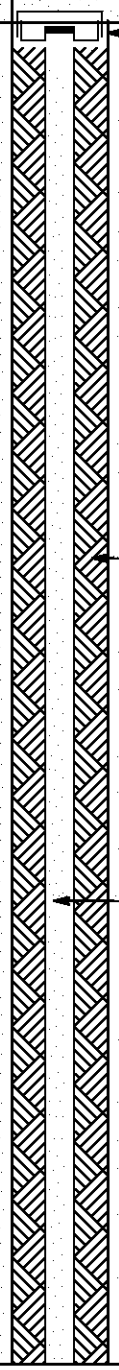
BORING NUMBER MWB028

HALEY & ALDRICH

COMPANY	Haley & Aldrich	DATE STARTED	11/30/2005 08:00
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	DATE COMPLETED	12/01/2005 17:00
LOCATION	Torrance, California	X-COORDINATE	6470102.685
DRILLING METHOD	Hollow Stem Auger	Y-COORDINATE	1769482.298
SAMPLING DEVICE	California Split Spoon	TOTAL DEPTH	93.0 feet bgs
GROUND ELEVATION	57.22 feet MSL	LOCATION DESCRIPTION	Surveyed
DRILLER NAME	WDC	DEPTH TO WATER	--
LOGGED BY	R. Ramzi	MEASURING POINT ELEVATION	56.84 ' (NAVD 88)
REMARKS		APPROVED BY	Paul Sones, CA P.G. # 6195

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Asphalt	0.3
							Hand auger to 10 feet bgs in triangular pattern, no sampling	
5								
10	7 9 11	100	X		CL		stiff, brown to tan, CLAY with some silt, no structure, no odor, dry, fill material	10.0
15	14 17 20	100	X		CL			
20	15 15 20	100	X		CL			
25	16 18 19	100	X		ML		stiff, brown to tan, SILT with some clay and fine sand, no odor, dry	23.0
30	13 17 21	100	X		CL		stiff, light brown, CLAY, no odor, slightly moist, lenses of fine sand	28.0
35	19 21 24	100	X		SM		dense, tan, silty fine SAND with trace clay, no structure, no odor, dry	34.0
40	16 18 20	100	X		SM			
45	25 50	44	X		SP		dense, tan, poorly graded fine SAND with silt and trace clay, no odor	43.0
	20	100	X		CL		stiff, light gray to tan, CLAY with some fine sand, rust staining, no odor, moist	48.0

WELL DIAGRAM



BORING NUMBER MWB028

HALEY & ALDRICH

COMPANY Haley & Aldrich **DATE STARTED** 11/30/2005 08:00

PROJECT NAME BRC Former C-6 Facility, Torrance, CA **DATE COMPLETED** 12/01/2005 17:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
	20 20						stiff, light gray to tan, CLAY with some fine sand, rust staining, no odor, moist		
55	12 14 16	100	X		CL				
60	9 11 13	83	X						8" Bentonite Chips Seal (Medium Bentonite chips)
								63.0	
65	20 50	44	X				tan, poorly graded fine to medium SAND with some silt and clay, no structure, no odor, moist, rust staining, high mica content, shell fragments		
70	15 18 23	89	X						2" PVC Slotted Screen 0.02"
75	23 50	67	X						
80	26 50	67	X		SP				8" Monterey Sand Filterpack (#2/16)
85	27 50	67	X						
90	20 23 27	100	X						
								93.0	
							Bottom of borehole at 93.0 feet.		

H&A CCI MWBS-MWCSFEB06.GPJ CH2MHILL.GDT 2/24/06

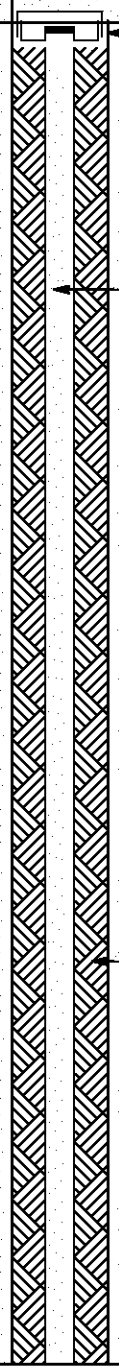
BORING NUMBER MWC011

HALEY & ALDRICH

COMPANY	Haley & Aldrich	DATE STARTED	11/29/2005 08:00
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	DATE COMPLETED	11/29/2005 17:00
LOCATION	Torrance, California	X-COORDINATE	6470259.017
DRILLING METHOD	Hollow Stem Auger	Y-COORDINATE	1769755.848
SAMPLING DEVICE	California Split Spoon	TOTAL DEPTH	117.0 feet bgs
GROUND ELEVATION	54.30 feet MSL	LOCATION DESCRIPTION	Surveyed
DRILLER NAME	WDC	DEPTH TO WATER	--
LOGGED BY	Todd Hall	MEASURING POINT ELEVATION	54.03 ' (NAVD 88)
REMARKS		APPROVED BY	Paul Sones, CA P.G. # 6195

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Concrete	0.5
							Hand auger to 10 feet bgs in triangular pattern, no sampling	
5								
10	9 12 14	60	X	0.0	SW		dense, light brown, well graded fine to coarse SAND with some clay and gravel up to 0.5-inch diameter, iron staining, moist	10.0
15	12 17 23	75	X	0.0	SM		loose, red-brown, silty fine SAND, no odor, moist	13.0
20	14 16 17	70	X	0.0				
25	14 17 20	80	X	0.0	ML		stiff, olive-grey, SILT with fine sand, moist	25.0
30	11 23 29	70	X	0.0	SM		dense, olive-grey, silty fine SAND with trace gravel, no odor, moist	28.0
35	17 21 27	0	X					
40	9 12 24	60	X	0.0	SP		dense, olive-grey, poorly graded fine SAND with some silt, no odor, moist	38.0
45	12 18 22	80	X	0.0	CL		very stiff, olive-brown, CLAY with fine sand and trace gravel up to 0.25-inch diameter, no odor, moist, medium plasticity	43.0
	24	60	X	0.0				49.5

WELL DIAGRAM



H&A CCI MWBS-MWCSFEB06.GPJ CH2MHILL.GDT 2/24/06

HALEY & ALDRICH

BORING NUMBER MWC011

COMPANY Haley & Aldrich **DATE STARTED** 11/29/2005 08:00

PROJECT NAME BRC Former C-6 Facility, Torrance, CA **DATE COMPLETED** 11/29/2005 17:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
	33 42						loose, yellow-brown, poorly graded fine SAND, iron staining, moist, fining downward		
55	25 37 43	30		0.0	SP				
60	10 27 36	90		0.0				60.0	
					SM		dense, olive-brown, silty fine SAND, iron staining, no odor, wet, micaceous		
65	14 20 29	70		0.0					
70	15 22 30	60		0.0					
75	9 11 18	50		0.0				75.0	
					SP		loose, light grey, poorly graded fine to medium SAND, no odor, wet, micaceous, fining downward		
80	11 17 20	60		0.0					
85	15 19 26	50		0.0				85.0	
					SM		dense, yellow-brown to red-brown, silty fine SAND, iron staining, no odor, wet, 2- to 4-inch thick silt interbeds		
90	14 17 23	30		0.0					8" Bentonite Chips Seal (Medium Bentonite chips)
95	16 22 30	70							
100	14 23 32	40							8" Monterey Sand Filterpack (#2/16)
105	11 14 21	50		0.0				105.0	
					SP		loose, red-brown, poorly graded fine to medium SAND, no odor, wet		

H&A CCI MWBS-MWCSFEB06.GPJ CH2MHILL.GDT 2/24/06

HALEY & ALDRICH

BORING NUMBER MWC011

COMPANY Haley & Aldrich **DATE STARTED** 11/29/2005 08:00

PROJECT NAME BRC Former C-6 Facility, Torrance, CA **DATE COMPLETED** 11/29/2005 17:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
					SP		loose, red-brown, poorly graded fine to medium SAND, no odor, wet	109.5	2" PVC Slotted Screen 0.02"
116	14 19 26	75	X	0.0	SM		dense, red-brown, silty fine SAND, iron staining, no odor, wet, fining downward	114.0	
115	16 27 30	20	X	0.0	SP		loose, olive-grey, poorly graded fine to medium SAND, no odor, wet	117.0	Fill Filterpack (collapsed native material)
							Bottom of borehole at 117.0 feet.		

H&A CCI MWBS-MWCSFEB06.GPJ CH2MHILL.GDT 2/24/06

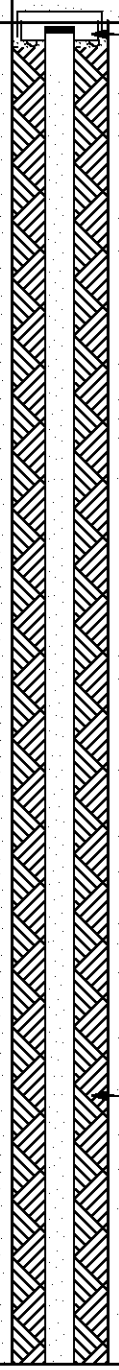
BORING NUMBER MWC015

HALEY & ALDRICH

COMPANY	Haley & Aldrich	DATE STARTED	03/22/2004 16:15
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	DATE COMPLETED	03/25/2004 10:00
LOCATION	Torrance, California	X-COORDINATE	6470299.80
DRILLING METHOD	Air Rotary Casing Hammer	Y-COORDINATE	1768827.94
SAMPLING DEVICE	Split Spoon Sampler	TOTAL DEPTH	128.0
GROUND ELEVATION	52.18	LOCATION DESCRIPTION	Surveyed by Tait and Associates
DRILLER NAME	Test America Drilling	DEPTH TO WATER	--
LOGGED BY	Travis Hammond	MEASURING POINT ELEVATION	51.51
REMARKS		APPROVED BY	Paul Sones, CA P.G. # 6195

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Concrete	0.5
							sandy GRAVEL base fill	1.0
5					CH		Hand auger cuttings: hard, brown to red-brown, CLAY with sand and gravel, maximum particle size (mps) = 0.25-inch, no structure, no odor, low moisture, fill	
10		33	X	0.1				
								14.0
15							clay became absent from the cuttings at approximately 14 feet below ground surface (bgs)	
20		100	X	0.1	SP-SM		dense, brown to red-brown, silty SAND, no structure, no odor, low moisture	
25								
								29.0
30		100	X	0.1	ML		stiff, brown to olive-brown, clayey SILT, mps = fine sand, layered structure, no odor, low moisture	
								34.0
35							cuttings became sandy at approximately 34 feet bgs	
40		100	X	0.1	SP-SM		dense, brown, fine SAND with silt, mps = medium sand, no structure, no odor, low moisture	
45								

WELL DIAGRAM



BORING NUMBER MWC015

HALEY & ALDRICH

COMPANY	Haley & Aldrich	**DATE STARTED**	03/22/2004 16:15
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	**DATE COMPLETED**	03/25/2004 10:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
		100	X	0.1			cuttings became sandy at approximately 34 feet bgs same as 40 feet		
55									4" PVC Casing
60		88	X	0.1	SP-SM		same as 40 feet		
65								68.0	
							less silt in cuttings at approximately 68 feet bgs		
70		100	X	0.1			medium dense, brown to olive-brown, poorly graded fine to medium SAND, trace silt, no structure, no odor, moist		
75					SP				
80		100	X	0.1			same as 70 feet, wet		
85									
90		100	X	0.1			same as 70 feet, wet soft, light brown, silty SAND with clay, maximum particle size = 0.25 inch shell fragments, no structure, no odor, wet	90.0	
					SM				
95								96.0	
							cuttings: clayey at approximately 96 feet bgs	13" borehole	13" Bentonite Pellets Seal (3/8-inch TR-30 Time-Release coated pellets)
100		33	X	0.1	SC		sample contains sluff, shells with medium stiff, brown, sandy CLAY, no structure, no odor, wet	10" borehole 101.0	10" Monterey Sand Filterpack (#3)
							cuttings: sandy at 101 feet bgs		
105					SP				

H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 5/26/05

BORING NUMBER MWC015

HALEY & ALDRICH

COMPANY	Haley & Aldrich	**DATE STARTED**	03/22/2004 16:15
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	**DATE COMPLETED**	03/25/2004 10:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							cuttings: sandy at 101 feet bgs		
110					SP		could not sample at 110 feet bgs due to flowing sands		4" PVC Slotted Screen 0.02"
115								117.0	
					SM		dense, brown to olive-brown, silty fine SAND, mps = medium sand, no structure, no odor, wet		
120		100	X					122.0	
125					SP		dense, light brown to gray-brown poorly graded medium SAND with gray to olive-gray silty CLAY layers up to 0.5-inch thick, mps = medium sand, layered structure, no odor, wet		Fill Filterpack (collapsed native material)
								128.0	
							Bottom of borehole at 128.0 feet.		

H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 5/26/05

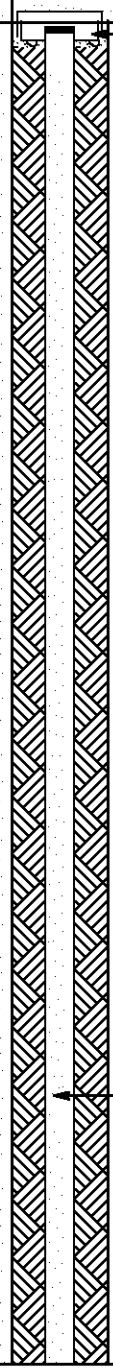
BORING NUMBER MWC016

HALEY & ALDRICH

COMPANY	Haley & Aldrich	DATE STARTED	03/26/2004 10:50
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	DATE COMPLETED	03/31/2004 11:00
LOCATION	Torrance, California	X-COORDINATE	6469983.25
DRILLING METHOD	Air Rotary Casing Hammer	Y-COORDINATE	1768727.09
SAMPLING DEVICE	Split Spoon Sampler	TOTAL DEPTH	131.0
GROUND ELEVATION	53.10	LOCATION DESCRIPTION	Surveyed by Tait and Associates
DRILLER NAME	Test America Drilling	DEPTH TO WATER	--
LOGGED BY	Travis Hammond	MEASURING POINT ELEVATION	52.61
REMARKS		APPROVED BY	Paul Sones, CA P.G. # 6195

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Concrete	0.5
							sandy GRAVEL base fill	1.0
							No sampling till the water table approximately 60 feet below ground surface (bgs). Lithology logged from air-rotary cuttings return.	
5					CH		hand auger cuttings: stiff, brown, CLAY with gravel, no odor, moist, -fill-	
10								
								13.0
15							cuttings: brown to light brown, fine SAND with silt, no odor, low moisture	
20					SP-SM			
25								25.0
							cuttings: less silt at approximately 25 feet bgs	
30								
35					SP			
40								
45								

WELL DIAGRAM



BORING NUMBER MWC016

HALEY & ALDRICH

COMPANY	Haley & Aldrich	**DATE STARTED**	03/26/2004 10:50
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	**DATE COMPLETED**	03/31/2004 11:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							cuttings: less silt at approximately 25 feet bgs		
55									13" Cement/Bentonite Seal (95% Portland Cement + 5% Bentonite Grout)
60									
65									
70					SP				
75									
80									
85									
90		100	X	0.1	SM		medium dense, brown to olive-brown, silty SAND, maximum particle size (mps) = 0.25-inch shell fragments, layered structure, no odor, wet	90.0	
95					SC		cuttings: clayey SAND at approximately 95 feet bgs	95.0 13" borehole 99.0	13" Bentonite Pellets Seal (1/4-inch TR-30 Time-Release coated pellets)
100					SP-SM		cuttings: less clayey at approximately 99 feet bgs	10" borehole	10" Bentonite Pellets Seal (1/4-inch TR-30 Time-Release coated pellets)
105									

BORING NUMBER MWC016

HALEY & ALDRICH

COMPANY	Haley & Aldrich	**DATE STARTED**	03/26/2004 10:50
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	**DATE COMPLETED**	03/31/2004 11:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							cuttings: less clayey at approximately 99 feet bgs		10" Monterey Sand Filterpack (#3)
110		22	X	0.1			loose, brown to olive-brown, fine SAND with silt, mps = medium sand, no structure, no odor, wet		
115					SP-SM				4" PVC Slotted Screen 0.02"
120							could not sample at 120 feet bgs due to flowing sands		
125									
							casing advanced under its own weight from 125 to 128 feet bgs, flowing sands	128.0	
130					SC		cuttings: clayey SAND, casing driving hard at 128 feet bgs	131.0	Fill Filterpack (collapsed native material)
							Bottom of borehole at 131.0 feet.		

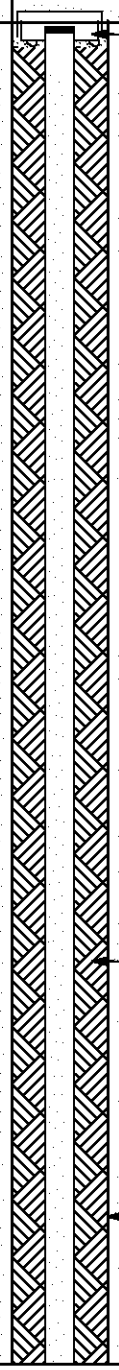
BORING NUMBER MWC017

HALEY & ALDRICH

COMPANY	Haley & Aldrich	DATE STARTED	04/01/2004 07:30
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	DATE COMPLETED	04/06/2004 08:30
LOCATION	Torrance, California	X-COORDINATE	6469975.16
DRILLING METHOD	Mud Rotary	Y-COORDINATE	1768099.87
SAMPLING DEVICE	--	TOTAL DEPTH	128.0
GROUND ELEVATION	55.70	LOCATION DESCRIPTION	Surveyed by Tait and Associates
DRILLER NAME	Test America Drilling	DEPTH TO WATER	--
LOGGED BY	Travis Hammond	MEASURING POINT ELEVATION	55.16
REMARKS		APPROVED BY	Paul Sones, CA P.G. # 6195

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Asphalt	0.4
							sandy GRAVEL base fill	1.0
							hand auger cuttings: stiff, brown, CLAY with concrete chunks up to 4-inches diameter, fill	
5								6.0
					SP-SM		hand auger cuttings: dense, brown to olive-brown, silty SAND, maximum particle size (mps) = medium sand, no structure, no odor, moist	
10								10.0
					SC		cuttings: brown, clayey SAND, mps = medium sand, no odor, moist	
15								16.0
							cuttings: CLAY chunks with less sand than above 16 feet below ground surface (bgs)	
20								
25								
30							cuttings: CLAY in drilling mud	
					CH			
35							cuttings: stiff, brown, CLAY, CH, mps = fine sand, no structure, no odor, moist	
40								
45								
								50.0

WELL DIAGRAM



BORING NUMBER MWC017

HALEY & ALDRICH

COMPANY	Haley & Aldrich	**DATE STARTED**	04/01/2004 07:30
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	**DATE COMPLETED**	04/06/2004 08:30

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							cuttings: medium SAND, mps = coarse sand		4" PVC Casing
55									
60									
65									8" Cement/Bentonite Seal (95% Portland Cement + 5% Bentonite Grout)
70									
					SP				
75									
80							cuttings: SAND in drilling mud		
85									
90									8" Bentonite Pellets Seal (3/8-inch TR-30 Time-Release coated pellets)
95								96.0	
					CH		cuttings: soft, brown to light brown, CLAY, mps = fine sand, no structure, no odor, moist		
100								100.0	8" Monterey Sand Filterpack (#3)
					SP-SM		cuttings: less clayey, mostly SAND though still some chunks of clay in the mud rotary cuttings. Could be left over clay from above		
105									

BORING NUMBER MWC017

HALEY & ALDRICH

COMPANY	Haley & Aldrich	**DATE STARTED**	04/01/2004 07:30
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	**DATE COMPLETED**	04/06/2004 08:30

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
110 115 120 125					SP-SM		cuttings: less clayey, mostly SAND though still some chunks of clay in the mud rotary cuttings. Could be left over clay from above		4" PVC Slotted Screen 0.02" Fill Filterpack (collapsed native material)
							Bottom of borehole at 128.0 feet.	128.0	

H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 5/26/05

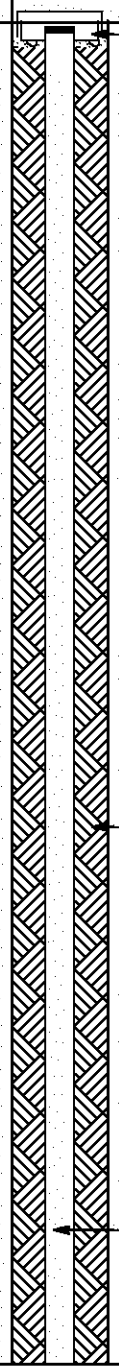
BORING NUMBER MWC021

HALEY & ALDRICH

COMPANY	Haley & Aldrich	DATE STARTED	04/06/2004 08:30
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	DATE COMPLETED	04/09/2004 18:00
LOCATION	Torrance, California	X-COORDINATE	6470701.48
DRILLING METHOD	Mud Rotary	Y-COORDINATE	1768945.55
SAMPLING DEVICE	--	TOTAL DEPTH	126.0
GROUND ELEVATION	54.74	LOCATION DESCRIPTION	Surveyed by Tait and Associates
DRILLER NAME	Test America Drilling	DEPTH TO WATER	--
LOGGED BY	Paul Sones	MEASURING POINT ELEVATION	54.53
REMARKS		APPROVED BY	Paul Sones, CA P.G. # 6195

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Asphalt	0.4
							sandy GRAVEL base fill	1.0
							hand auger cuttings: stiff, brown, clayey SAND with concrete chips, fill	
5								
10							cuttings: stiff, brown to olive-brown CLAY with trace sand, no odor	10.0
15							cuttings: same as 10 feet	
20							cuttings: same as 10 feet	
25							cuttings: same as 10 feet	
30							cuttings: same as 10 feet	
35							cuttings: brown, CLAY, slow drilling	
40							cuttings: same as 35 feet	
45							cuttings: same as 35 feet	

WELL DIAGRAM



BORING NUMBER MWC021

HALEY & ALDRICH

COMPANY	Haley & Aldrich	**DATE STARTED**	04/06/2004 08:30
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	**DATE COMPLETED**	04/09/2004 18:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							cuttings: same as 35 feet		
								53.0	
							cuttings: SILT and fine SAND with some CLAY clumps		
55							cuttings: C-SAND in cuttings		8" Threaded Steel Casing to 94.7 ft
60									
65							cuttings: brown to olive, clayey SILT		
70							cuttings: CLAY clumps, little to no sand		
75							cuttings: same as 70 feet		
80							cuttings: CLAY clumps		
85							cuttings: same as 80 feet		
90							cuttings: same as 80 feet		8" Bentonite Pellets Seal (1/4-inch TR-30 Time-Release coated pellets)
95							cuttings: same as 80 feet		8" Monterey Sand Filterpack (#3)
							heavy fat olive CLAY on drill bit when pulled		
100									
105							cuttings: SILT and fine SAND with some CLAY clumps		

H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 5/26/05

BORING NUMBER MWC021

HALEY & ALDRICH

COMPANY	Haley & Aldrich	**DATE STARTED**	04/06/2004 08:30
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	**DATE COMPLETED**	04/09/2004 18:00

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							cuttings: SILT and fine SAND with some CLAY clumps		4" PVC Slotted Screen 0.02"
110							cuttings: same as 105 feet		
115							cuttings: medium to C-SAND with some clay		
120							cuttings: C-SAND with some clay		
125							cuttings: C-SAND with shell fragments and trace gray clay clumps	126.0	Fill Filterpack (collapsed native material)
							Bottom of borehole at 126.0 feet.		

H&A CCI MWBS-MWCS.GPJ CH2MHILL.GDT 5/26/05

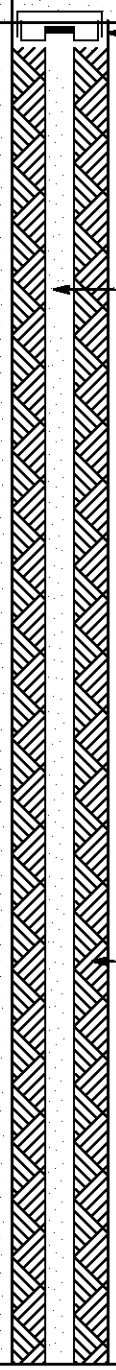
BORING NUMBER MWC022

HALEY & ALDRICH

COMPANY	Haley & Aldrich	DATE STARTED	06/06/2005
PROJECT NAME	BRC Former C-6 Facility, Torrance, CA	DATE COMPLETED	06/07/2005
LOCATION	Torrance, California	X-COORDINATE	1769993.282
DRILLING METHOD	Hollow Stem Auger	Y-COORDINATE	6470450.331
SAMPLING DEVICE	California Split Spoon	TOTAL DEPTH	120.0 feet bgs
GROUND ELEVATION	51.90 feet MSL	LOCATION DESCRIPTION	Surveyed
DRILLER NAME	WDC Exploration & Wells	DEPTH TO WATER	--
LOGGED BY	T. Hammond	MEASURING POINT ELEVATION	51.60 ' (NAVD 88)
REMARKS		APPROVED BY	P. Sones, CA P.G. # 6195

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
							Hand auger to 10' bgs in triangle pattern around boring location	
5								
10		100			CL		stiff, brown, silty CLAY, layered, no odor, moist	10.0
15		100			ML		medium stiff, brown, SILT with clay and fine sand, layered, no odor, moist	14.0
20		100						
25		100			CL		stiff, light brown, silty CLAY, layered, no odor, moist	24.0
30		100			ML		stiff, light brown to brown, clayey SILT with fine sand, no structure, no odor, moist	30.0
35		100						
40		100			CL		stiff, brown, silty CLAY, layered, no odor, moist	39.0
45		100			CL		color change to light gray-brown	
		100			SM			49.0

WELL DIAGRAM



H&A CCI MWBS-MWCSFEB06.GPJ CH2MHILL.GDT 2/27/06

BORING NUMBER MWC022

HALEY & ALDRICH

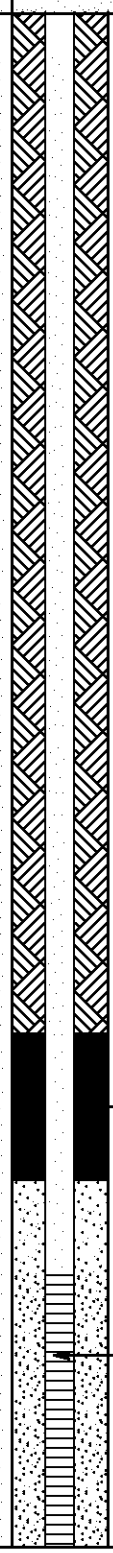
COMPANY Haley & Aldrich **DATE STARTED** 06/06/2005

PROJECT NAME BRC Former C-6 Facility, Torrance, CA **DATE COMPLETED** 06/07/2005

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
55		61			SM		dense, yellow-brown with mottled rust stain, silty fine SAND, weathered shell fragments, layered, no odor, dry to moist	59.0
60		78			SP		medium dense, light brown, poorly graded, fine SAND with silt, layered, no odor, moist to wet	71.0
65		50						
70		100						
					ML		medium stiff, light brown to olive-brown, fine sandy SILT, layered, no odor, moist	74.5
75		100			SP		medium dense, gray-brown to yellow-brown, poorly graded, fine to medium SAND, layered, no odor, moist	84.0
80		100						
85		100			SM		medium dense, light brown, silty fine SAND with layers of silt up to 0.5-inch thick, layered, no odor, moist to wet	89.0
90		83			SP		medium dense, light brown, poorly graded, fine SAND, shell fragements, layered, no odor, moist to wet	94.0
95		56			SC		dense, light brown, clayey fine SAND, shell fragments, layered, no odor, moist	99.0
100		89			SP		dense, light brown, poorly graded, fine SAND, shell fragments and partially cemented nodules, no structure, no odor, wet	
105		33						

WELL DIAGRAM



H&A CCI MWBS-MWCSFEB06.GPJ CH2MHILL.GDT 2/27/06

HALEY & ALDRICH

BORING NUMBER MWC022

COMPANY Haley & Aldrich **DATE STARTED** 06/06/2005

PROJECT NAME BRC Former C-6 Facility, Torrance, CA **DATE COMPLETED** 06/07/2005

Continued from Previous Page

DEPTH (ft. BGL)	BLOW COUNTS	RECOVERY (percent)	EXTENT	PID (ppmv)	U.S.C.S./ Rock Code	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
					SP				
110		100	X				no shell fragments		10" Monterey Sand Filterpack (#2/16)
115		100	X		SP				
120								120.0	10" Natural Formation Filterpack (Sluff)
							Bottom of borehole at 120.0 feet.		

APPENDIX C

Well Development Logs

HALEY & ALDRICH

DAILY FIELD REPORT

Project	C6 B & C SAND WELL [illegible]	Report No.	
Location	19400 HARBOR GATE WAY	Date	M 4/19/2004
Client	BOEING	Page	of
Contractor	TEST AMERICA INC (TAI)	File No.	28592-102
Weather	CLEAR & BREEZY	Temperature	60°

445 - 5 TIMECARD
5 - 715 TRAVEL

715 PAUL CALLED - HE PICKED UP THE WATER LEVEL INDICATOR & HORIBA
[illegible] CALLED TEST AMERICA - SHE AT [illegible]
RUNNING LATE & WILL BE HERE SHORTLY

800 TEST AMERICA ONSITE - SETTING UP AT MW B013
MARCIA & ECI ONSITE - DELIVERING DRUMS TO WELL LOCATIONS
815 MARCIA / ECI OFFSITE
MW B013 DTW 65.14 TO TOC
TD 81.20
SCREEN 65 - 85'
VOL OF FILTERPACK 8" ϕ = $\pi r^2 h$ = $3.14 \left(\frac{4}{12}\right)^2 20$
= 6.98 ft³
MINUS VOL OF CASING = $\pi \left(\frac{2}{12}\right)^2 h$ 1.74 ft³
TIMES 25% POROSITY 5.24 x 0.25 = 1.31 ft³
PLUS VOL OF H_2O COLUMN = 20' = 1.74
TOTAL VOL = 3.05 ft³ x 7.48 gal/ft³ = 22.8 gal
845 PAUL ON SITE
9 BAILED SEDIMENT OUT. WATER IS SILTY & LIGHT BROWN COLOR WITH FINE SAND

925 FILLED 1ST DRUM C6_1DW322_HA - LABELED

930 ECI DELIVERING 20 MORE DRUMS - 40 TOTAL

940 FILLED 2ND DRUM C6_1DW323_HA - LABELED

SEDIMENT ATTENUATING. TD 85.19'

1000 INSERTING 3"ϕ PUMP W/ 1" ϕ SCH 80 PVC DISCHARGE PIPE

1010 CALIBRATE EQUIPCO HORIBA U-10 (SN - 809045) - PH SEEMS OFF
USE TAI'S HYDAC FOR PH

Field Representative(s)	Time on site	Report/Travel/Other	Total hours

Distribution:

Haley & Aldrich, Inc.

Form 4004

HALEY & ALDRICH

DAILY FIELD REPORT

Project	C6 BKC SAND WELL DEVELOPMENT	Report No.	
Location	19400 HARBORGATE WAY	Date	M 11/19/04
Client	BOEING	Page	of
Contractor	TAI	File No.	23982-102
Weather	CLEAR & WARMER	Temperature	65°

TIME	GPM PUMPRATE	HYDAC PH	U-10 PH	(mS/cm) COND	(NTU) TURB	(mg/L) DO	(°C) TEMP	(%) SAL	(GAL) VOL PUMPED	DTW
10:20	2.2	7.95	6.49	1.56	7999	6.06	24.3	0.07	120	65.14' STATIC LEVEL
10:30	2.2	8.10	6.77	1.57	330	6.59	24.6	0.07	145	67.72'
10:45	2.2	8.04	6.90	1.54	37	6.48	24.7	0.07	165	
11:00	2.2	7.92	7.04	1.52	24	6.70	24.6	0.07	180	
11:10	2.2	7.83	7.17	1.49	8	6.80	24.7	0.06	200	
11:15	2.2	7.80	7.21	1.48	7	6.68	24.7	0.06	215	67.00'

11:20 PRODUCED DRUMS 324, 325, 326 (1/4 FULL)

CALL GLENN TO COORDINATE SCHEDULE FOR TOMORROW

MOVING TO MWC #17

1130-12 LUNCH

12:00 SET UP PLASTIC / BERM @ MWC #17

DTW 51.81 TO TOC ~0.5' bgs TO TOC

TD ~99' SQUISHY

12:20 BAILING SEDIMENT & DRILLING MUD

PRODUCED 1ST DRUM OF MUD / WATER C6-IDW327-HA

13:30 PRODUCED 2ND & 3RD DRUM OF WATER @ MWC #17 C6-IDW328-HA & 329

13:45 SET PUMP ON THE BOTTOM OF THE WELL

	PUMP RATE	HYDAC PH	U-10 PH	COND	TURB	DO	TEMP	SAL	VOL	DTW
13:55	2.5 gpm	7.75	5.13	0.753	461	3.65	23.4	0.03	170	
14:10	2.5	7.67	6.19	0.741	>999	4.06	23.6	0.03	210	
14:30	2.5	7.73	6.28	0.730	140	4.10	23.6	0.03	270	
14:55	2.5	7.70	6.32	0.725	71	4.78	23.8	0.03	300	
15:15	2.5	7.72	6.40	0.722	36	4.60	23.9	0.03	330	
15:30	2.5	7.75	6.77	0.719	20	4.42	23.9	0.07	360	
15:40	2.5	7.67	7.33	0.720	10	4.39	24.1	0.03	375	
15:55	2.5	7.66	7.41	0.711	7	4.45	24.2	0.03	410	

16:00 PRODUCED 9 DRUMS C6-IDW327 TO 335-HA

Field Representative(s)	Time on site	Report/Travel/Other	Total hours

Distribution:

Haley & Aldrich, Inc.

Form 4004

HALEY & ALDRICH

DAILY FIELD REPORT

Project	C6 [illegible]	Report No.	
Location	[illegible]	Date	MU / 17/04
Client	[illegible]	Page	of
Contractor	[illegible]	File No.	[illegible] - 102
Weather	CLEAR & [illegible]	Temperature	65°

16:05 PULLING PUMP, DECON EQUIPMENT W/ STEAM CLEANER, MOVE TO MW BØ19

GLENN 714-709-2721

CHECK MESSAGES - 340 MARCIA - [illegible]

356 MARCIA

408 RETURN EQUIP. AM

MWCØ19 DTW 67.59 TD 125.0 + 0.5' bgs

16:25 SET UP ON MW BØ19, DTW 51.5 BOTTOM SQUISHY @ 81'

16:45 BAILED SEDIMENT OUT, RUNNING SURGE BLOCK

17:00 BAILED [illegible] REMAINING SEDIMENT, WATER / SEDIMENT PLACED IN DRUM C6 - IDW 336_HA

17:15 SET PUMP ON THE BOTTOM, PUMPING 6 GPM, DISCHARGE IS VERY SILTY

TIME	VOL PUMPED	PUMP RATE	HYDAC pH	U-10 pH	COND	TURB	DO	TEMP	SAL
17:25	50	6	7.20	7.37	2.57	471	4.08	23.2	0.12
17:35	100	6	7.13	6.90	2.59	13	4.51	23.2	0.12
17:40	150	6	7.11	6.98	2.57	8	3.77	23.3	0.12
17:45	170	6	7.15	7.03	2.56	9	4.20	23.2	0.12

1750 FINISHED PUMPING MW BØ19, PRODUCED 4 DRUMS C6_IDW 336 TO 339_HA

1800 MW BØ19 DTW 67.09 TD 85.15 + 8" bgs TO TOC

CLEANING UP

1815 OFF SITE

Field Representative(s)	Time on site	Report/Travel/Other	Total hours

Distribution:

HALEY & ALDRICH

DAILY FIELD REPORT

Project	Boeing, Former C-6	Report No.	
Location	Torrance, CA	Date	4-20-04
Client	Boeing Realty	Page	1 of 2
Contractor	Test America	File No.	28882-102
Weather	Sunny	Temperature	70°

0745 Arrived on site
- Test America on site, arrived @ 0700 and distributed drums near wells and spread out diagram
- Safety meeting

0800 Set up on MWB 014
DTW 63.32 TD ~~85~~ 81.65 21.68' water (1.09) = 23.63 = 1 well volume
- Bailed silt from bottom
- Surged for 10 min
- Bailed again
- Set 3" pump on 18" from bottom

0907 - Started pumping

Time	Gal	Purge Rate	pH	Cond	Turb	DO	Temp	TDS	ORP	
0915	20		6.46	87.8	OR	6.84	23.2	0.553	152	5 Drums
0925	40	2	6.74	90.4	886	5.67	23.4	0.582	147	C6-IDW340-HA
0940	70	2	6.93	98.5	522	5.00	23.5	0.631	138	341
0955	100	2	7.01	99.0	78.2	4.73	23.9	0.634	123	342 343
1030	170	2	7.10	0.122	78.7	5.70	24.7	0.780	110	344
1040	190	2	7.11	0.118	34.6	5.12	24.9	0.76	102	
1045	200	2	7.12	0.117	13.3	5.15	24.8	0.75	100	TD 84.60'

1115 Set up on MWB 015
DTW 63.16 TD 117.8
- Bailed silt from bottom
- Surged for 10 min
- Bailed again
- Set pump inlet 18" from bottom

1213 Started pumping

Time	Gal	Purge GPM	pH	Cond	Turb.	DO	Temp	TDS	ORP	
1218	–	–	7.75	71.3	975	3.28	22.6	0.450	-2	
1223	120	13	7.48	69.9	331	1.00	22.7	0.447	-22	10 Drums
1228	185	13	7.40	69.5	196	0.71	22.6	0.445	-33	C6-IDW345-HA
1233	250	13	7.33	69.3	166	0.66	22.5	0.443	-27	
1300	~~249~~	485	7.32	70.1	110	0.59	22.7	0.448	-18	(345-354)
1305		550	13	7.26	70.1	108	0.60	22.4	0.443	-22

1315 Set up on MWB 012
DTW 63.32 TD 81.65
- Bailed silt from bottom
- Surged for 10 min
- Bailed again

Field Representative(s)	Time on site	Report/Travel/Other	Total hours
Glenn Andrasko	9.75	1.0	10.75

Distribution:

Glenn Andrasko
Haley & Aldrich, Inc.

Form 4004

HALEY & ALDRICH

DAILY FIELD REPORT

Project	Boeing, Former C6	Report No.	
Location	Torrance	Date	4-20-04
Client	Boeing Realty	Page	of
Contractor	Test America	File No.	
Weather		Temperature	

1407 Started pumping MWB012

Time	Gal	GPM	pH	Cond	Turb	DO	Temp	TDS	ORP	(5) Drums
1412	60	10	7.36	0.145	106	5.52	22.4	0.93	110	355-359
1421		10	7.13	0.142	329	5.17	22.4	0.91	117	
1425		10	7.12	0.142	21.6	5.18	22.4	0.91	116	
1428	225	10	7.20	0.142	13.1	5.18	22.4	0.91	118	

TD 84.12

1500 Set up on MWC016

DTW 64.63 TD 124.30

- Bailed out silt
- Surged for 10 min
- Bailed again

1530 Started pumping

Time	Gal	GPM	pH	Cond	Turb	DO	Temp	TDS	ORP	
1548	200	5	7.53	83.1	OR	7.02	22.5	0.534	113	(8) Drums
1609	310	5	7.30	85.7	855	4.80	23.5	0.548	117	360-368
1624	365	4.9	7.30	86.2	469	5.04	23.5	0.553	118	
1650	495	4.9	7.28	88.5	230	5.30	23.5	0.567	124	

1700 - Called P. Jones about high turbidity after pumping 9 drums. He suggest we surge again tomorrow morning. Pulled the pump and surged again

1730 Left site

Field Representative(s)	Time on site	Report/Travel/Other	Total hours
	9.75	1.~~25~~	10.75

Distribution:

Glenn Andrich

Haley & Aldrich, Inc.

Form 4004

HALEY & ALDRICH

DAILY FIELD REPORT

Project	Boeing C6	Report No.	
Location	14900 Harborgate Way	Date	4-21-04
Client	Boeing Realty	Page	of
Contractor	Test America	File No.	28882-102
Weather	Sunny 72°	Temperature	

0700 Arrive on site
- Returned to MWC-016
- Safety meeting

0730 Bailed <6" of silt from bottom of well
- Set pump 18" off bottom

0820 Started pumping

Time (min)	Gallons	GPM	pH	Cond (s/m)	Turb (NTU)	DO (mg/L)	Temp (°C)	TDS (g/L)	ORP (mv)
0832	35	1.5	6.78	0.113	OR	6.18	23.8	0.76	135
0845	55		7.07	92.1	OR	4.98	24.6	0.595	133
0858			7.18	93.7	570	6.73	24.8	0.597	129
0915			7.28	93.6	863	6.80	25.0	0.601	129
0936			7.24	95.6	750	6.57	25.9	0.612	126
0956			7.33	95.7	319	7.46	26.0	0.612	125
1011			7.29	96.8	128	6.23	26.1	0.619	121
1026			7.30	96.1	150	6.34	26.0	0.614	116
1056			7.29	97.1	99.5	6.43	26.6	0.621	112
1112			7.33	97.1	84.3	6.85	26.1	0.621	110
1127	275	1.5	7.27	95.0	86.5	7.50	26.2	0.617	113

1130 Shut down pump
Purged (5) drums C6_IDW 369 -> 372_HA Total (13) drums
DTW 64.56 TD 128.34

1245 Moved to MWC-021
DTW 49.34 TD 86.50 (soft bottom)
- Bailed out mud. (1 Drum) C6_IDW 373_HA

1313 - Started surging

1330 Bailed again (2nd Drum) C6_IDW 374_HA

1350 Set pump on bottom, purged 2 drums @ high flow rate (~10 GPM) then lowered flow to GPM

Time	Gallons	GPM	pH	Cond	Turb	DO	Temp	TDS	ORP	
1445		1.8	7.38	76.5	OR	1.69	24.4	0.490	130	(12) Drums
1449	~~330~~	↑ 3.2	7.32	76.7	OR	1.78	24.6	0.490	125	
1505	~~385~~ 330	3.4	7.27	74.3	418	1.83	24.2	0.475	124	C6_IDW_
1521	~~440~~ 385	3.4	7.25	74.6	627	1.73	24.2	0.478	122	373 -> 385_HA
1541	~~495~~ 440	3.4	7.21	74.7	55.8	1.16	24.1	0.478	118	
1549	~~550~~ 495		7.23	73.5	70.2	1.04	24.1	0.473	110	DTW 66.20
1617	550	3.4	7.22	73.3	48.8	0.94	24.0	0.469	103	TD 121.79
1628	585	3.4	7.22	73.4	10.1	0.95	23.9	0.469	101	

Field Representative(s)	Time on site	Report/Travel/Other	Total hours
Glenn Androsko	10.5	1.5	12

Distribution:

Glenn Androsko
Haley & Aldrich, Inc.

Form 4004

HALEY & ALDRICH

DAILY FIELD REPORT

Project	Boeing C6	Report No.	
Location		Date	4-21-04
Client		Page	of
Contractor		File No.	
Weather		Temperature	

1700 Test America ~~to~~ hosed off asphalt around MWC-021.
- Pushed up all plastic/trash
- Marcin Talaff will arrange p/u of all drums on 4-22-04

1730 Left site

Field Representative(s)	Time on site	Report/Travel/Other	Total hours
Glenn Androsko	10.5	1.5	12

Distribution:

Glenn Androsko
Haley & Aldrich, Inc.

Form 4004

HALEY & ALDRICH

Well Development Record

MWB020

Project Name	Boeing C-6	Date:	06-09-2005
Project Location	19503 Normandie	Weather:	Cloudy
Project Number	28832-506	Page	1 of 2
Technician	R. Ramzi		

Water Level Data (from top of casing)

Total Well Depth (TD)	79.32'	Casing Diameter (inches)	4"
Static Water Level (DTW)	59.81'	Screen Length (feet)	30'
Standing Water Column (WC) (TD - DTW)	19.51'	Borehole Diameter (inches)	10"
		Date Installed	Mon 06/06/05

Well Purging Data

Purge Method	Bail, surge, bail	(gpm)	NA
Well Volume (gallons) CD* (2" - 0.163, 2.5" - 0.255 4" - 0.653, 6" - 1.469)	/	Pump Description	Grundfos Redi
Number of Volumes to be Purged	/	Check Valve?	↓
Total Gallons to be Purged	/	Drilling Company	WDC

Surging and Bailing

Start Time:	1135	Finish Time:	1148	Comments:	Bailing
Start Time:	1149	Finish Time:	1201	Comments:	Surging
Start Time:	1202	Finish Time:	1206	Comments:	Bailing
Start Time:		Finish Time:		Comments:	45 gal total

Pumping Parameters

Time	Depth to Water (feet)	Volume (gallons)	Pumping Rate (gpm)	Temp (°C)	Spec. Cond. (mmhos/cm)	pH (units)	Turbidity (NTUs)	Dis. Oxy. (mg/l)	Comments (color, odor, sheen)
1214	—	TD = 89.63							
		DTW = 60.43							
1235	—	0	5	—	—	—	—	—	Pumping Started
1240	—	25	2.9	—	—	—	—	—	Adjusted PR
1315	—	101.5	4	—	—	—	—	—	" " + lowered pump to 80
									from 75'
				24.0					
1317	—	109.5	4		1823	7.7	62.0	11.52	ORP = 23.0
1323	→ pump shutdown to transfer water								
1325	→ resume pumping @ 4 gpm								
1327		117.5	4	23.74	1795	7.47	55.0		ORP = 4.5
1332	→ shut down → baker tank current, no room for waste water.								
		117.5 + 55 gal → total = 172.5 gal							

Will resume pumping on 6/10/05

QA/QC: [illegible]
Date: 6/17/05

HALEY & ALDRICH

Well Development Record

MWB020 (Cont'd)

Project Name	Boeing C-6	Date:	06-10-2005
Project Location	19503 Normandie Ave.	Weather:	Overcast
Project Number	28882-506	Page	1 of 2
Technician	R. Ramzi		

Water Level Data (from top of casing)

Total Well Depth (TD)	—	Casing Diameter (inches)	4"
Static Water Level (DTW)	—	Screen Length (feet)	30'
Standing Water Column (WC)	—	Borehole Diameter (inches)	10"
(TD - DTW)	—	Date Installed	Mon 6/6/05

Well Purging Data

Purge Method	Bail - Surge - bail	(gpm)	NA
Well Volume (gallons)	—	Pump Description	Grundfos Rediflo2
CD* (2" - 0.163, 2.5" - 0.255 4" - 0.653, 6" - 1.469)		Check Valve?	No
Number of Volumes to be Purged	—		
Total Gallons to be Purged	NA	Drilling Company	WDC

Surging and Bailing

Start Time:	0830	Finish Time:	0837	Comments:	Bailing → 25 gal
Start Time:		Finish Time:		Comments:	
Start Time:		Finish Time:		Comments:	
Start Time:		Finish Time:		Comments:	

Pumping Parameters

Time	Depth to Water (feet)	Volume (gallons)	Pumping Rate (gpm)	Temp (°C)	Spec. Cond. (mmhos/cm)	pH (units)	Turbidity (NTUs)	Dis. Oxy. (mg/l)	Comments (color, odor, sheen)
0905	—	0	5	—	—	—	—	—	pumping started
0915	—	50	4	—	—	—	—	—	adjusted FR
0925	—	90	4	22.81	1685	7.79	13.3	13.84	ORP = 24.2
0935	—	130	4	22.75	1663	7.72	10.0	13.55	ORP = 26.9
0945	—	170	4	22.74	1655	7.66	5.4	13.81	ORP = 26.8
0948	—	182	4	—	—	—	—	—	Shut down
		+172.5	from	6/9/05					
		354.5	gal Total	Pumped					

QA/QC: ARS

Date: 6/14/05

HALEY & ALDRICH

Well Development Record

MWC 022

Fi

Project Name	Boeing C-6	Date:	6-10-2005
Project Location	19503 Normandie Ave.	Weather:	Overcast
Project Number	~~28882~~ 506	Page	1 of
Technician	~~D.~~ R. Ramer		

Water Level Data (from top of casing)

Total Well Depth (TD)	114.08	Casing Diameter (inches)	4"
Static Water Level (DTW)	61.09	Screen Length (feet)	20'
Standing Water Column (WC) (TD - DTW)	52.99	Borehole Diameter (inches)	~~10"~~
		Date Installed	Tu 6/7/2005

Well Purging Data

Purge Method	Bail, surge, bail	(gpm)	NA
Well Volume (gallons) CD* (2" - 0.163, 2.5" - 0.255 4" - 0.653, 6" - 1.469)	~~NA~~	Pump Description	Grundfos Red. 4/02
Number of Volumes to be Purged		Check Valve?	No
Total Gallons to be Purged		Drilling Company	~~WDC~~

Surging and Bailing

Start Time:	1040	Finish Time:	1105	Comments:	Bailing
Start Time:	1107	Finish Time:	1124	Comments:	Surging
Start Time:	1125	Finish Time:	1145	Comments:	Bailing
Start Time:		Finish Time:		Comments:	50 gallons

Pumping Parameters

Time	Depth to Water (feet)	Volume (gallons)	Pumping Rate (gpm)	Temp (°C)	Spec. Cond. (~~mmhos~~/cm)	pH (units)	Turbidity (NTUs)	Dis. Oxy. (mg/l)	Comments (color, odor, sheen)
1150	TD=115.57								
	DTW=61.78								
1225	—	0	6	—	—	—	—	—	Pumping Started
1240	—	90	6	23.61	1038	7.87	109.9	12.12	ORP = 14.9
1250	—	150	6	23.68	1029	7.82	78.5	13.45	ORP = 12.5
1255	→	shut down, empty flatbed to baker Tank.							
1330	→	resumed pumping @ 6 gpm							
1340	—	210	6	23.84	1010	7.9	55.1	13.59	ORP = 16.9
1355	—	300	6	23.90	994	7.81	49.4	12.96	ORP = 9.5
1410	—	390	6	23.93	989	7.80	25.0	13.26	ORP = 6.3
1412	→	Shut down				412 gal total pumped			

QA/QC: [illegible]

Date: 6/14/05

HALEY & ALDRICH

Well Development Record

MWB027

Project Name: Boeing C-6 GW Remed.
Project Location: 1451 Knox St., Torrance, CA
Project Number: 23882-506
Technician: R. Ramei

Date: 12-6-2005
Weather: Cold but sunny
Page 1 of 1

Water Level Data (from top of casing)

Total Well Depth (TD): 85.30'
Static Water Level (DTW): 65.78'
Standing Water Column (WC) (TD - DTW): 19.52'

Casing Diameter (inches): 2"
Screen Length (feet): 20'
Borehole Diameter (inches): 8"
Date Installed: 11-30-2005

Well Purging Data

Purge Method: Bail/surge/bail
Well Volume (gallons): NA
CD* (2" - 0.163, 2.5" - 0.255 4" - 0.653, 6" - 1.469)
Number of Volumes to be Purged
Total Gallons to be Purged

(gpm)
Pump Description: Grunfos Rediflo
Check Valve?
Drilling Company: WDC

Surging and Bailing

Start Time:	0811	Finish Time:	0827	Comments: Bailing	6.5 gal
Start Time:	0829	Finish Time:	0845	Comments: Surging	
Start Time:	0852	Finish Time:	0954	Comments: Bailing	20.5 gal → 27 gal total
Start Time:		Finish Time:		Comments:	

Pumping Parameters

Time	Depth to Water (feet)	Volume (gallons)	Pumping Rate (gpm)	Temp (°C)	Spec. Cond. (~~mmhos~~ µS/cm)	pH (units)	Turbidity (NTUs)	Dis. Oxy. (mg/l)	Comments (color, odor, sheen)
0957	→	TD = 88.15'							
1005	→	pumping @ 1 gpm				—	—	—	Water highly turbid
1025	→	"	@ 1.5 gpm						
1050	78.95	37.5	1.5	22.18	4259	7.46	84.0	1.56	ORP = 92.4
1100	78.95	52.5	1.5	23.97	4323	7.47	53.4	1.47	ORP = 95.4
1110	78.96	67.5	1.5	23.66	4380	7.46	21.6	1.45	ORP = 94.5
1120	79.00	82.5	1.5	23.98	4435	7.43	21.7	1.67	ORP = 95.7
1124	→	Shut down, WL reached close to the top of the pump							

QA/QC:
Date:

HALEY & ALDRICH

Well Development Record

MWB028

Project Name: Boeing C-6 GW Remed
Project Location: 1459 Knox St, Torrance, CA
Project Number: 28382-506
Technician: R. Ramzi

Date: 12-6-2005
Weather: Sunny and Hot
Page 1 of 1

Water Level Data (from top of casing)

Total Well Depth (TD): 88.10'
Static Water Level (DTW): 66.00'
Standing Water Column (WC) (TD - DTW): 22.10'

Casing Diameter (inches): 2"
Screen Length (feet): 25'
Borehole Diameter (inches): 8'
Date Installed: 12-1-2005

Well Purging Data

Purge Method: Bail/Surge/bail
Well Volume (gallons): NA
CD* (2" - 0.163, 2.5" - 0.255 4" - 0.653, 6" - 1.469)
Number of Volumes to be Purged
Total Gallons to be Purged

(gpm): NA
Pump Description: Grunfos Redi-flo
Check Valve? NA
Drilling Company: WDC

Surging and Bailing

Start Time	Finish Time	Comments	
1221	1235	Bailing	7 gal bailed
1236	1245	Surging	
1254	1330	Bailing	15 gal bailed
			Total = 22 gal

Pumping Parameters

Time	Depth to Water (feet)	Volume (gallons)	Pumping Rate (gpm)	Temp (°C)	Spec. Cond. (~~mmhos~~ uS/cm)	pH (units)	Turbidity (NTUs)	Dis. Oxy. (mg/l)	Comments (color, odor, sheen)
1331	TD = 90.25'								
1340	→ pumping @ 1.325 gal/min								
1410	→ " @ 1.5 gpm								increased pumping rate
1410	66.32	39.75	1.5	23.36	1457	7.86	85.7	5.07	ORP = 83.5
1430	66.34	69.75	1.5	23.40	1375	7.81	20.0	5.63	ORP = 92.8
1440	66.36	84.75	1.5	23.00	1362	7.83	10.1	5.78	ORP = 91.7
1442	→ Shutdown								

QA/QC:
Date:

HALEY & ALDRICH

Well Development Record

MWC011

Project Name	Boeing C-6 GW Remed.	Date:	12-6-2005
Project Location	1451 E Knox St., Torrance, CA	Weather:	Clear skies (night)
Project Number	38882-506		
Technician	R. Ramzi	Page	1 of 2

Water Level Data (from top of casing)

Total Well Depth (TD)	110.20	Casing Diameter (inches)	2"
Static Water Level (DTW)	62.32	Screen Length (feet)	20'
Standing Water Column (WC) (TD - DTW)	47.28	Borehole Diameter (inches)	8"
		Date Installed	12-1-2005

Well Purging Data

Purge Method	Bail/surge/Bail	(gpm)	
Well Volume (gallons) CD* (2" - 0.163, 2.5" - 0.255 4" - 0.653, 6" - 1.469)	NA	Pump Description	Grunfos Rediflo
		Check Valve?	
Number of Volumes to be Purged	↓		
Total Gallons to be Purged		Drilling Company	WDC

Surging and Bailing

Start Time:	1647	Finish Time:	1720	Comments:	Bailing 4 gal
Start Time:		Finish Time:		Comments:	
Start Time:		Finish Time:		Comments:	
Start Time:		Finish Time:		Comments:	

Pumping Parameters

Time	Depth to Water (feet)	Volume (gallons)	Pumping Rate (gpm)	Temp (°C)	Spec. Cond. (mmhos/cm)	pH (units)	Turbidity (NTUs)	Dis. Oxy. (mg/l)	Comments (color, odor, sheen)
1722	→	TD =	113.0						
Note: well is bent or kink @ several spots (2 or 3). one right above where the WT is and the other about 5 ft from the bottom. No surging was performed due to this. Pumping was performed instead to remove the remaining sediment.									
1732	→	pumping @ 2.5 gpm							
1745	→	shut down.							

QA/QC: _____

Date:

MW C011

Well Development Record

Project Name: Boeing C-6 GW Remed.
Project Location: 1451 Knox St., Torrance, CA
Project Number: 28882-506

Date: 12-7-2005
Technician: R. Ramzi
Page 1 of 2

Field Parameters cont'd

Time	Depth to Water (feet)	Volume (gallons)	Pumping Rate (gpm)	Temp (°C)	Spec. Cond. (mmhos/cm)	pH (units)	Turbidity (NTUs)	Dis. Oxy. (mg/l)	Comments (color, odor, sheen)
1135	62.92	—	—	—	—	—	—	—	—
1146	→	pumping	@	2.5	gpm				
1155	66.08	≈25	2.5	22.68	1174	7.88	81.20	1.61	ORP = -20.0
1205	66.08	≈50	2.5	22.50	1111	7.82	3.80	2.24	ORP = -22.0
1215	66.17	≈75	2.5	22.27	1074	7.80	2.1	2.23	ORP = -23.0
1217	→	shut	down						

QA/QC:
Date:

Additional Comments

APPENDIX D

Survey Report

MONITOR WELLS
FIELD SURVEY SUMMARY

DATE: MAY 19 2005

CLIENT: HALEY & ALDRICH

REFERENCE NUMBER: N\A

LOCATION: HARBOR GATEWAY

CITY/STATE: TORRANCE, CA

CLIENT JOB #: N\A

TAIT & ASSOC. JOB #: SP-3289

VERTICAL CONTROL:

BENCHMARK DATA:

AGENCY: Los Angeles County Public Works Survey Division

B.M. DESIGNATION: Y-3030

ELEVATION: 49.669 M.S.L. (NAVD '88)

MONUMENT DESC.: U.S. G.S. BRASS DISK IN CONC

MONUMENT LOCATION:

600MM W/O CF 9.8M W/O C/L NORMANDIE AVE
& 32M S/O C/L PROD KNOW ST

LICENSED LAND SURVEYOR
MICHAEL SIMON
Exp. 6/30/07
No. 6034
STATE OF CALIFORNIA

Michael Simon

MICHAEL SIMON, P.L.S. 6034
MY REGISTRATION EXP. 6/30/07

SHEET 1 OF 2

MONITOR WELLS
FIELD SURVEY SUMMARY

DATE: MAY 19 2005

CLIENT: HALEY & ALDRICH

PROJECT LOCATION / ADDRESS:

TAIT JOB #: SP3289

CLIENT JOB #: N\A

HARBOR GATEWAY

WELL I.D.	NORTHING	EASTING	LATITUDE	LONGITUDE	TOP / CASING ELEVATION		GROUND/RIM ELEVATION	
BL-03	1768754.264	6468958.593	33.8522524556N	118.305326578W	58.66		59.06	M.S.L.
CMW001	1768190.442	6470696.256	33.8507175500N	118.299598222W	54.37		54.96	
CMW002	1767943.069	6470550.41	33.8500366222N	118.300076111W	52.81		53.11	
CMW026	1768610.032	6470275.398	33.8518670472N	118.300988389W	51.53		52.06	
DAC-P1	1769781.474	6468949.184	33.8550749500N	118305367842W	55.13		56.01	
IRZMW001A	1768994.769	6469840.344	33.8529206417N	118.302425003W	56.77		57.29	
IRZMW001B	1768994.769	6469840.344	33.8529206417N	118.302425003W	56.70		57.29	
IRZMW002A	1768995.518	6469836.011	33.8529226889N	118.302429400W	56.66		57.29	
IRZMW002B	1768995.518	6469836.011	33.8529226889N	118.302429400W	56.76		57.29	
IRZMW003A	1768991.86	6469863.506	33.8529128389N	118.302348692W	56.73		57.28	
IRZMW003B	1768991.86	6469863.506	33.8529128389N	118.302348692W	56.78		57.28	
IRZMW0004	1768617.294	6470047.217	33.8518851222N	118.301739950W	53.06		53.49	
IRZMW0005	1768714.735	6470034.102	33.8521527639N	118.301784106W	52.77		53.24	
IRZCMW001	1768666.873	6470214.169	33.8520227306N	118.301190600W	51.74		52.63	
IRZCMW002	1768417.183	6470413.512	33.8513382722N	118.300531628W	55.60		56.31	
IRZCMW003	1768599.674	6470293.899	33.8518387389N	118.300927356W	51.69		52.20	
MWB005	1769069.947	6470228.297	33.8531304167N	118301148050W	52.10		52.61	
MWB012	1769026.169	6470030.881	33.8530084972N	118.301797792W	52.43		53.04	
MWB013	1769403.214	6469588.659	33.8540408861N	118.303257967W	55.33		55.62	

WELL I.D.	NORTHING	EASTING	LATITUDE	LONGITUDE	TOP / CASING ELEVATION		GROUND/RIM ELEVATION	
MWB014	1768394.319	6470276.696	33.8512743222N	118.300981986W	51.69		52.08	
MWB019	1768100.075	6469965.794	33.8504632333N	118.302002989W	55.18		55.68	
MWC015	1768827.939	6470299.802	33.8524660139N	118.300910167W	51.51		52.18	
MWC016	1768727.087	6469983.251	33.8521890333N	118.301951711W	52.61		53.10	
MWC017	1768099.867	6469975.157	33.8504627389N	118.301972150W	55.16		55.70	
MWC021	1768945.554	6470701.477	33.8527924944N	118.299588442W	54.53		54.74	
TMW-10	1768958.122	6470719.541	33.8528271778N	118.299529072W	49.92		50.57	
TMW-11	1768210.625	6470717.166	33.8507731806N	118.299529558W	49.85		50.37	
TMW-14	1768206.109	6469546.171	33.8507511222N	118.303386000W	58.91		59.33	
TMW-15	1768956.598	6469551.341	33.8528133611N	118.303376433W	57.65		58.04	
TMW-04	1769123.153	6470249.906	33.8532767944N	118.301077406W	51.39		51.94	
TMW-06	1768725.357	6470295.158	33.852184100N	118.300924450W	51.72		52.13	
WCC-12S	1769502.903	6470502.633	33.854322350N	118.300248800W	51.32		51.80	
WCC-4S	1769863.607	6470495.701	33.8553134389N	118.300275181W	52.23		52.68	
WCC-5S	1769785.95	6470717.792	33.8551018722N	118.299542956W	52.82		53.31	
WCC-7S	1769702.203	6470501.455	33.8548699778N	118.300254642W	52.21		52.85	
WCC-9S	1769416.441	6470679.596	33.8540862222N	118.299665128W	57.39		55.06	
XMW-09	1767936.798	6470402.879	33.8500181806N	118.300561917W	53.16		53.58	
XMW-19	1768545.398	6470718.482	33.8516930833N	118.299528508W	49.38		49.78	
MWG001	1769156.146	6470702.484	33.8533711694N	118.299587192W	54.13		54.55	
MWG002	1768458.709	6470701.055	33.8514547361N	118.299585053W	54.78		55.03	
MWC009	1769372.117	6470654.211	33.8539642194N	118.299748297W	53.99		54.68	

MONITOR WELLS
FIELD SURVEY SUMMARY

DATE: December, 2005

CLIENT: HALEY & ALDRICH

REFERENCE NUMBER: N\A

LOCATION: HARBOR GATEWAY

CITY/STATE: TORRANCE, CA

CLIENT JOB #: N\A

TAIT & ASSOC. JOB #: SP-3289

VERTICAL CONTROL:

BENCHMARK DATA:

AGENCY: Los Angeles County Public Works Survey Division

B.M. DESIGNATION: Y-3030

ELEVATION: 49.669 M.S.L. (NAVD '88)

MONUMENT DESC.: U.S. G.S. BRASS DISK IN CONC

MONUMENT LOCATION:

600MM W/O CF 9.8M W/O C/L NORMANDIE AVE
& 32M S/O C/L PROD KNOW ST

LICENSED LAND SURVEYOR
MICHAEL SIMON
Exp. 6/30/07
No. 6034
STATE OF CALIFORNIA

Michael Simon

MICHAEL SIMON, P.L.S. 6034
MY REGISTRATION EXP. 6/30/07

SHEET 1 OF 2

MONITOR WELLS
FIELD SURVEY SUMMARY

DATE: December, 2005

CLIENT: HALEY & ALDRICH

PROJECT LOCATION / ADDRESS:

TAIT JOB #: SP3289

CLIENT JOB #: N\A

HARBOR GATEWAY

WELL I.D.	NORTHING	EASTING	LATITUDE	LONGITUDE	TOP / CASING ELEVATION		GROUND/RIM ELEVATION	
MWB003	1769481.51	6470189.329	33.854260991N	118.301280450W	56.95		57.25	
MWB006	1770057.962	6470247.577	33.855845449N	118.301094299W	53.90		54.51	
MWB027	1769941.493	6469944.635	33.855522917N	118.302090898W	57.14		57.47	
MWB028	1769482.298	6470102.685	33.854262442N	118.301565818W	56.84		57.22	
MWC006	1770044.426	6470247.825	33.855808257N	118.301093348W	54.03		54.47	
MWC011	1769755.848	6470259.017	33.855015392N	118.301053641W	54.03		54.30	

MONITOR WELLS
FIELD SURVEY SUMMARY

DATE: JUNE 13 2005

CLIENT: HALEY & ALDRICH

REFERENCE NUMBER: N\A

LOCATION: HARBOR GATEWAY

CITY/STATE: TORRANCE, CA

CLIENT JOB #: N\A

TAIT & ASSOC. JOB #: SP-3289

VERTICAL CONTROL:

BENCHMARK DATA:

AGENCY: Los Angeles County Public Works Survey Division

B.M. DESIGNATION: Y-3030

ELEVATION: 49.669 M.S.L. (NAVD '88)

MONUMENT DESC.: U.S. G.S. BRASS DISK IN CONC

MONUMENT LOCATION:

600MM W/O CF 9.8M W/O C/L NORMANDIE AVE
& 32M S/O C/L PROD KNOW ST

LICENSED LAND SURVEYOR
MICHAEL SIMON
Exp. 6/30/07
No. 6034
STATE OF CALIFORNIA

Michael Simon

MICHAEL SIMON, P.L.S. 6034
MY REGISTRATION EXP. 6/30/05

MONITOR WELLS
FIELD SURVEY SUMMARY

DATE: JUNE 13 2005

CLIENT: HALEY & ALDRICH

PROJECT LOCATION / ADDRESS:

CI

WELL I.D.	NORTHING	EASTING	LATITUDE	LONGITUDE
MWC004	1769497.527	6470482.679	33.85430741	118.3003145
MWB007	1770219.862	6470207.119	33.85628999	118.3012292
MWC007	1770178.945	6470168.374	33.85617723	118.3013564
MWB020	1770869.972	6470392.216	33.85807789	118.3006259
MWC022	1769993.282	6470450.331	33.85566939	118.3004259
MWC023	1769808.523	6470424.026	33.85516149	118.3005107

TAIT JOB #: SP3289

LIENT JOB #: N\A

HARBOR GATEWAY

TOP / CASING ELEVATION		GROUND/RIM ELEVATION	
51.86		52.16	
51.39		51.64	
51.57		51.82	
51.07		51.45	
51.60		51.90	
51.43		51.77	