APPENDIX A

142

Park Environmental

November 5, 1993

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DEPARTMENT OF PUBLIC WORKS
WASTE MANAGEMENT DIV.

1013-J3

Mr. Steve Groner
COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
UST Local Oversight Program
Waste Management Division
900 South Fremont Avenue
Alhambra, CA 91802-1460

I- 1298

REFERENCE: **Confirmation of "No Further Action" Status**
Vapor Extraction Remediation Program
Barmet Aluminum Corporation
2211 East Carson Street
Carson, California

Clup# 31863
OTHR-C# 79155
S.G.

Dear Mr. Groner:

This letter serves to document our recent telephone conversation on October 27, 1993 regarding the referenced site. **Park Environmental Corporation (Park)** submitted a report entitled "Completion of Additional Vapor Extraction Remediation" dated June 10, 1993. In this report **Park** reported that the vapor extraction system was recovering vapors with non-detect concentrations of TPH and BTEX, and that further vapor extraction activities would not accomplish additional site cleanup. The DPW LOP subsequently issued a letter stating that confirmation soil borings would be required to achieve site closure.

Based on the findings of our remediation program and our recent telephone conversation, **Park** has the following understanding:

- The vapor extraction program has effectively remediated volatile fuel constituents in the soil, however heavier petroleum hydrocarbons associated with diesel fuel or rolling oils may remain in the soil;

- Confirmation soil sampling is not feasible at this time primarily due to the large number of utilities and piping located in the vicinity of the USTs;

5100 E. Hunter Ave. ▯ Anaheim, CA 92807 TEL 714-777-1001 800-723-7275 FAX 714-777-1262

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- The LOP will not issue a formal written site closure without confirmation soil borings and acceptable results of soil analyses;

- In lieu of receiving written site closure, Barmet may discontinue vapor extraction remediation with a "no further action" status. This status would have the stipulation that since the USTs are to be removed by 1998, soil conditions will be appropriately assessed (and remediated if required) at that time;

- In the interim, Barmet will continue to conduct tank integrity tests annually and monitor groundwater quarterly; and

- This letter, along with Park's referenced report, will serve to document for your files the completed vapor extraction remediation of the volatile fraction of fuel hydrocarbons associated with the USTs, and the future requirements for additional assessment.

Should you have any questions, please contact us at 714/777-1001

Sincerely,

PARK ENVIRONMENTAL CORPORATION

Original signed by Ed Furu

Ed Furu, R.G.
Senior Hydrogeologist

Original signed by Rick A. Caporale

Rick A. Caporale
Principal Scientist

MDE:dng

COUNTY OF LOS ANGELES
FIRE DEPARTMENT
1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294

Refer reply to:
HEALTH HAZARDOUS MATERIALS DIVISION
5825 Rickenbacker Rd
Commerce CA 90040

P. MICHAEL FREEMAN
FIRE CHIEF
FORESTER & FIRE WARDEN

0 01238-001298
LOP

March 7, 1995

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MAR 14 1995
DEPARTMENT OF PUBLIC HEALTH
WASTE MANAGEMENT DIVISION

Mr. William Burns, General Manager
Barmet Aluminum Corporation
2211 E. Carson Street
Carson, CA 90810

Dear Mr. Burns:

**SUBJECT: BARMET ALUMINUM CORPORATION SITE
2211 AND 2241 E. CARSON STREET,
CARSON, CA 90810**

This Department has completed a review of the following reports and other related data:

"Site Mitigation Report for Soils Containing Copper, Lead, Zinc, and Cadmium, Barmet Aluminum Corporation, at 2211 E. Carson Street, Carson", dated December 12, 1994, by Park Environmental Corporation (Park), regarding metals contamination on MB 7316, Pg. 31, parcel 30 (parcel 30) of the Los Angeles County Assessors's roll, i.e. behind and west of the main plant.

"Site Mitigation at Barmet Aluminum Corporation, 2241 East Carson Street", dated January 6, 199(5), by Park Environmental Corporation, regarding metals contamination on MB 7316, Pg. 26, parcel 31(parcel 31), of the Los Angeles County Assessor's roll, i.e, over the former California By-Products landfill site to the northwest of the main plant.

Excerpts from," Solid Waste Assessment Test, Exemption Questionnaire Responses", dated July 1, 1988, and other "SWAT" data by Woodward-Clyde, regarding potential hazards from the closed California By-Products pit.

letter from California Regional Water Quality Control Board, Los Angeles Region, to Mr. Paul Faj(ardo), dated December 8, 1993, regarding their review of the "SWAT" test data and groundwater monitoring results. (LARWQCB file # 58-038)

- "Focused Assessment of Barmet Aluminum Corporation, Carson Facility, Evaluating Health Risk from Historic Waste Deposition", dated February 15, 1994, by Park Environmental Corporation, regarding health risks of metals in soils on parcel 30, i.e, behind and west of the main plant.

Based upon the above information, we concur with your consultant, Park Environmental, that the known heavy metals contamination has been satisfactorily mitigated for the current property use.

However, low levels of known metals contamination remain on parcel 30. Also, undiscovered pockets of other contaminants may remain. For this reason, this Department requires the following before a closure letter can be issued:

[illegible] to this office of the filing of real estate deed notification with the County Recorder which serves to notify future buyer(s) of the existence of contaminated soils on the site.

This Department is aware of past and continuing groundwater (GW) contamination issues regarding Light Non-Aqueous Phase Liquids (LNAPL's) and low levels of chlorinated hydrocarbons in the vicinity of the main plant area. Based on conversations with Ms. Sunita Shiv of the Los Angeles County Department of Public Works/Local Oversight Program (DPW/LOP), Mr. Paul Fajardo of Barmet, and Mr. Ed Furu of Park Environmental, this Department understands that the DPW/LOP is actively overseeing the resolution of these groundwater contamination issues, and that Park has undertaken additional assessment work to focus on possible GW contamination sources. This department defers to DPW/LOP and/or Regional Water Quality Control Board (RWQCB) oversight, and has no further requirement or restriction relating to the site at this time.

The requirements listed herein do not exempt the responsible party or his agent from compliance with any other applicable laws, regulations, or ordinances. They do not legalize waste treatment or disposal facilities and they leave unaffected any further restriction or restraint which may be contained in other statutes or required by other agencies.

If you have any questions, please feel free to call Steve Chase at (213) 890-4110.

Very truly yours

Original signed by Thomas W. Klinger

THOMAS W. KLINGER, SUPERVISOR
SITE MITIGATION UNIT
HEALTH HAZARDOUS MATERIALS DIVISION

TK:sc

c: Mr. Ed Furu, Park Environmental
Mr. Carl Sjoberg, LA Co DPW
Mr. Paul Fajardo, Barnet Aluminum Corp.
Mr. Robert Ghirelli, LARWQCB
Mr. Richard Gillaspy, LA Co FD/ HHMD-Inf.

210

WHEN RECORDED MAIL TO:

Barmet Aluminum Corporation
753 W. Waterloo Road
Akron, Ohio 44314-0740

Attn: M. Waheed Khan

APN: 7316-26-30&31

95 1329983

RECORDED/FILED IN OFFICIAL RECORDS
RECORDER'S OFFICE
LOS ANGELES COUNTY
CALIFORNIA
8:04 AM AUG 15 1995

SPACE ABOVE THIS LINE FOR RECORDER'S USE

DEED NOTIFICATION

FREE 3 R

The undersigned owner hereby discloses the information as described in the attached two page letter prepared by PARK ENVIRONMENTAL CORPORATION, dated April 10, 1995, affecting the properties of Barmet Aluminum Corporation, located at 2211 and 2241 E. Carson Street, Carson, California, described as Parcel 2 of Parcel Map 18528 as recorded in Book 205, Pages 40 and 41 of Parcel Maps, Records of Los Angeles County, California.

BARMET ALUMINUM CORPORATION, AN OHIO CORPORATION, owner

Original signed by Norman E. Wells Jr.

President Secretary

Dated: 7-12-95

State of Ohio)
County of Summit) SS.

On July 12, 1995, before me, Carla J. Menhorn, personally appeared Norman E. Wells Jr, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.
WITNESS my hand and official seal.

Signature: Original signed by Carla J. Menhorn

CARLA J. MENHORN, Notary Public
State of Ohio
My Commission Expires Sept. 12, 1998

(This area for official notarial seal)

MAIL TAX STATEMENTS AS DIRECTED ABOVE

Park

April 10, 1995

Mr. Waheed Khan
BARMET ALUMINUM CORPORATION **1047-J12**
753 W. Waterloo Road
Akron, Ohio 44314

REFERENCE: **Deed Notification for the Barmet Properties Located at 2211 and 2241 E. Carson Street, Carson, California**

Dear Mr. Khan:

Park Environmental Corporation (Park) has successfully conducted site mitigation at two portions of the Barmet Aluminum Corporation (Barmet) properties located at 2211 and 2241 E. Carson Street in Carson California. It is Park's understanding that this summary is to be an attachment to a deed notification filed with the County of Los Angeles as a condition for site closure. A summary of the site mitigation conducted on Barmet properties includes the following:

2211 E. Carson Street

Site assessment was conducted at 2211 E. Carson Street to address a buried material containing heavy metals identified in the northern and southeastern portions of the site. The buried material consisted of a bluish powder which contained copper, zinc, cadmium, and lead. Maximum total concentrations of metals included copper at 10,825 milligrams per kilogram (mg/kg or parts per million), zinc at 7,825 mg/kg, cadmium at 125 mg/kg, and lead at 645 mg/kg. Average metal concentrations in shallow subsurface soils, however, are much lower than these figures suggest.

A health-based risk assessment was conducted and findings indicated no significant risk to human health from elevated metal concentrations. It was also assessed that mitigation should be limited to removal of the material containing elevated metal concentrations in the areas of disturbed asphalt and that these areas be repaved to minimize human exposure to the underlying soils. The mitigation was successfully completed by excavating a small amount of affected soils from several areas of disturbed asphalt, and repaving these areas with asphalt. The work has been documented in a report submitted to the Los Angeles County Fire Department (LACOFD) entitled "Focused Assessment of Barmet Aluminum Corporation, Carson Facility, Evaluating Health Risk From Historic Waste Deposition" dated February 15, 1994. This report was accepted by the LACOFD.

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5100 E. Hunter Ave. ▪ Anaheim, CA 92807 ▪ Tel (714) 777-1001 or (800) 727-7275 ▪ Fax (714) 777-1262

3

2241 E. Carson Street

Site mitigation on the 2241 E. Carson Street site consisted of chemically treating approximately 2,000 tons of surface soil containing elevated concentrations of metals. Elevated concentrations of copper, zinc, cadmium, and lead were identified in the northeast portion of the site. Lead was present in concentrations requiring mitigation. The maximum concentration of total lead in the soil was 2,440 mg/kg. After treatment of the soil, the soluble portion of the lead was reduced to less than 1 milligram per liter (mg/l, or part per million), which is well below the criteria for classification as a hazardous material (5 mg/l). After the treated soil was assessed as non-hazardous, it was spread and compacted on site for use as fill material, and this entire area was paved with asphalt.

The findings of this mitigation have been documented in a report submitted to the LACOFD entitled "Site Mitigation at Barmet Aluminum Corporation Property, 2241 E. Carson Street, Carson, California", dated January 6, 1995. This report has been accepted by the LACOFD.

Although proper precautions should be taken during any future excavation activities, which could potentially expose workers to metals remaining in the soil, current usage of the Barmet properties at 2211 and 2241 E. Carson Street poses no unacceptable human health risks from metal concentrations known to be present in the soil.

Sincerely,

PARK ENVIRONMENTAL CORPORATION

Original signed by Ed Furu

Ed Furu, R.G.
Principal Hydrogeologist

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COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
TELEPHONE (818) 458-5100

HARRY W. STONE, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

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NOV 13 1995

Mr. Paul FaJardo
Barmet Aluminum Corp.
P.O. Box 22769
Long Beach, CA 90801-5769

IN REPLY PLEASE REFER TO FILE EP-1

001238-001298

Dear Mr. FaJardo:

HAZARDOUS MATERIALS UNDERGROUND STORAGE
CLOSURE CERTIFICATION
FACILITY LOCATION: 2211 E. CARSON STREET, CARSON (22)
CLOSURE APPLICATION NUMBER: 134402

This office has reviewed the closure report dated Oct. 20, 1995 concerning the subject facility.

Based on the report, you have met the closure requirements of this office. However, since the California Regional Water Quality Control Board (CRWQCB) is the lead agency for the subject site mitigation, this matter has been referred to the agency. Any further Site Assessment/Remedial Action Plans, are subject to the direction and approval of the CRWQCB.

For the purpose of this Department's obligation as local agency under Division 20, Chapter 6.7, California Health and Safety Code, the subject site closure will not be considered final until such time as the CRWQCB has made such a determination.

Please be advised that this letter does not relieve you of any liability under the California Health and Safety Code or Water Code for past, present, or future operations at this site. Nor does it relieve you of the responsibility to cleanup existing, additional, or previously unidentified conditions at the site which cause or threaten to cause pollution or nuisance or otherwise pose a threat to water quality or public health.

Additionally, be advised that changes in the present or proposed use of the site may require further site characterization and mitigation activity. It is the property owner's responsibility to notify this agency of any changes in report content, future contamination findings, or site usage.

Please submit all future correspondence to Mr. Al Novak of the CRWQCB at 101 Centre Plaza Drive, Monterey Park, California 91754-2156, (213) 266-7551, with a copy sent to this office.

If you have any questions, please contact Mr. David Esfandi at (818) 458- 3510, Monday through Thursday, 7:00 a.m. to 5:30 p.m.

Very truly yours,

HARRY W. STONE
Director of Public Works

Original signed by Mr. D. Esfandi for

for CARL W. SJOBERG
Chief, Industrial Waste Planning & Control
Environmental Programs Division

UST1\CL208
C147067

cc: California Regional Water Quality Control Board, Los Angeles Region
Ms. Lori Salisbury, Park Environmental

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294
(323) 881-2401

P. MICHAEL FREEMAN
FIRE CHIEF
FORESTER & FIRE WARDEN

Refer reply to: Kenneth C. Smith
HEALTH HAZARDOUS MATERIALS DIVISION
24330 Narbonne Avenue
Lomita, CA 90717

November 30, 2006

Bill Newton, Carson Plant Manager
Newport Rolling Mill
7319 Newport Road S-E
Uhrichsville, Ohio 44683

FA0006689

Dear Mr. Newton:

CLOSURE REPORT FOR THE FORMER CARSON FACILITY COMMONWEALTH ALUMINUM 2211 CARSON STREET, CARSON, CA 90810

On November 28, 2006 Inspector Kenneth C. Smith, SHMS of this Department conducted a final closure walk through at the Commonwealth Aluminum Corporation at the above location. Mr. Bill Newton, Plant Manager, Mr. Jim Deal, Maintenance Supervisor for Commonwealth Aluminum, and a number of consultants for Aleris International and the intended property owner. The final closure report was reviewed and specific areas of concern that were cited in the October 19, 2006 Notice of Violation was discussed with Mr. Newton. My walk through revealed that Common Wealth Aluminum was in compliance with the Generator closure standards [22 CCR 66265.111, 66265.114] in that no contaminated equipment or structures were observed. Hazardous wastes generated from closure were properly disposed. Copies of analytical data, manifests and bills of lading relating to the remediation efforts were provided for our review.

Closure of the Conditionally Authorized unit – Limited tiered permit closure [HSC 25201.5(d) (8)] were also found to be in compliance with regulatory standards. All waste residues, containment system components, structures and equipment contaminated with hazardous waste had been removed or decontaminated.

The Department has completed its review of the Closure Documents, and coupled with the results of the physical finding on the walk through, approves the closure of this site. This approval does not exempt the responsible party or his agent from compliance with any other applicable laws, regulation or ordinances.

The facility continues to have active permits for the three USTs with Los Angeles County Department of Public Works. There is an active Industrial Wastewater Permit with the Los Angeles County Sanitation district for the clarifier unit. Aleris (Common Wealth Aluminum) is still involved in a voluntary On-site Oil Recovery and Groundwater Monitoring Program under the jurisdiction of the Regional Water Quality Control Board. Each of these agencies will follow up on their programs and should be contacted directly for assistance.

If you have further questions please contact Kenneth C. Smith at 310.534.6277.

Yours truly,

Original signed by Kenneth C. Smith

Kenneth C. Smith, Supervising HMS
SOUTHWEST DISTRICT, INSPECTION SECTION
HEALTH HAZARDOUS MATERIALS DIVISION

cc: Shahin Nourishad, HHMD, Site Mitigation Unit

APPENDIX B

TABLE B1: SOIL DATA - BTEX
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-2-P @ 5'	MW-2-P @ 10'	MW-2-P @ 15'	MW-2-P @ 20'	MW-2-P @ 25'	MW-2-P @ 30'	MW-3-P @ 5'	MW-3-P @ 10'
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-2-P	MW-2-P	MW-2-P	MW-2-P	MW-2-P	MW-2-P	MW-3-P	MW-3-P
Depth (ft bgs)	5	10	15	20	25	30	5	10
Sample Date	8/27/1991	8/27/1991	8/27/1991	8/27/1991	8/27/1991	8/27/1991	8/27/1991	8/27/1991
Analytical Method	8020	8020	8020	8020	8020	8020	8020	8020
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Xylenes	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Notes:
ft bgs = feet below ground surface
mg/kg = milligrams per kilogram
<x = not detected at or above the detection limit noted

TABLE B1: SOIL DATA - BTEX
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-3-P @ 15'	MW-3-P @ 21'	MW-3-P @ 26'	MW-3-P @ 31'	MW-4-P @ 25'	MW-4-P @ 29'	MW-5-P @ 21'	MW-6-P @ 5'
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-3-P	MW-3-P	MW-3-P	MW-3-P	MW-4-P	MW-4-P	MW-5-P	MW-6-P
Depth (ft bgs)	15	21	26	31	25	29	21	5
Sample Date	8/27/1991	8/27/1991	8/27/1991	8/27/1991	8/27/1991	8/27/1991	8/28/1991	8/29/1991
Analytical Method	8020	8020	8020	8020	8020	8020	8020	8020
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Xylenes	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Notes:
ft bgs = feet below ground surface
mg/kg = milligrams per kilogram
<x = not detected at or above the detection limit noted

TABLE B1: SOIL DATA - BTEX
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-6-P @ 10'	MW-6-P @ 15'	MW-6-P @ 20'	MW-6-P @ 20A'	MW-6-P @ 25'	MW-7-P @ 19'	SB-11-P-5	SB-11-P-10
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-6-P	MW-6-P	MW-6-P	MW-6-P	MW-6-P	MW-7-P	SB-11-P	SB-11-P
Depth (ft bgs)	10	15	20	20	25	19	5	10
Sample Date	8/29/1991	8/29/1991	8/29/1991	8/29/1991	8/29/1991	8/29/1991	5/14/1992	5/14/1992
Analytical Method	8020	8020	8020	8020	8020	8020	8020	8020
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	0.61
Ethylbenzene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	14
Toluene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	1.8
Total Xylenes	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	180

Notes:
ft bgs = feet below ground surface
mg/kg = milligrams per kilogram
<x = not detected at or above the detection limit noted

TABLE B1: SOIL DATA - BTEX
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-11-P-15	SB-11-P-20	SB-11-P-25	SB-12-P-20	T-1-1	T-1-2	T-2-1	T-3-1	T-4-1
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-11-P	SB-11-P	SB-11-P	SB-12-P	T-1	T-1	T-2	T-3	T-4
Depth (ft bgs)	15	20	25	20	1	2	1	1	1
Sample Date	5/14/1992	5/14/1992	5/14/1992	5/14/1992	8/14/1995	8/14/1995	8/14/1995	8/15/1995	8/14/1995
Analytical Method	8020	8020	8020	8020	8020	8020	8020	8020	8020
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Benzene	ND	0.74	ND	ND	<0.003	<0.003	<0.003	<0.3	<0.003
Ethylbenzene	23	12	ND	12	<0.003	<0.003	<0.003	2.8	<0.003
Toluene	2.4	11	ND	0.48	0.0063	<0.003	<0.003	0.42	<0.003
Total Xylenes	160	78	0.62	19	<0.003	<0.003	<0.003	11	<0.003

Notes:
ft bgs = feet below ground surface
mg/kg = milligrams per kilogram
<x = not detected at or above the detection limit noted

TABLE B2: SOIL DATA - METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	HA-1-1	HA-2-1	HA-3-1	SB-1-0.5	SB-1-1	SB-1-3	SB-1-8	SB-2-0.5	SB-2-1	SB-2-3	SB-3-0.5	SB-3-1	SB-3-3	SB-4-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	HA-1	HA-2	HA-3	SB-1	SB-1	SB-1	SB-1	SB-2	SB-2	SB-2	SB-3	SB-3	SB-3	SB-4
Depth	1	1	1	0.5	1	3	8	0.5	1	3	0.5	1	3	0.5
Sample Date	5/13/1993	5/13/1993	5/13/1993	5/1/2006	5/13/1993	5/13/1993	5/1/2006	5/1/2006	5/13/1993	5/13/1993	5/1/2006	5/13/1993	5/13/1993	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	--	--	--	**25000**	--	--	**14000**	**11000**	--	--	**15000**	--	--	**7500**
Arsenic	--	--	--	**6.9**	--	--	**3.8**	**2.4**	--	--	**4.3**	--	--	**4.3**
Barium	--	--	--	**270**	--	--	--	**110**	--	--	**150**	--	--	**48**
Beryllium	--	--	--	<1	--	--	--	<0.5	--	--	<0.5	--	--	<0.5
Cadmium	--	--	--	**1.4**	--	--	--	<0.5	--	--	**0.58**	--	--	<0.5
Chloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	**30**	--	--	--	**16**	--	--	**21**	--	--	**20**
Cobalt	--	--	--	**18**	--	--	--	**8.3**	--	--	**10**	--	--	**40**
Copper	**299**	**6400**	**73.3**	**46**	**19.7**	**0.4**	--	**19**	**0.3**	**10.7**	**27**	**4.1**	**9.1**	**31**
Cyanide (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	**67**	**455**	**36**	**7.7**	**10**	**2**	--	**3**	**5**	**6**	**9.3**	**3**	**5**	**3.4**
Mercury	--	--	--	**0.11**	--	--	--	**0.021**	--	--	**0.055**	--	--	**0.043**
Molybdenum	--	--	--	<4	--	--	--	<2	--	--	<2	--	--	<2
Nickel	--	--	--	**29**	--	--	--	**12**	--	--	**18**	--	--	**9.6**
Selenium	--	--	--	<4	--	--	--	<2	--	--	<2	--	--	<2
Silver	--	--	--	<2	--	--	--	<1	--	--	<1	--	--	<1
Sulfate	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfide (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	**65**	--	--	--	**37**	--	--	**44**	--	--	**31**
Zinc	**580**	**2360**	**269**	**86**	**51.3**	**1.3**	--	**53**	**1.3**	**36.7**	**84**	**22.4**	**26.9**	**39**

Notes:
ft bgs = feet below ground surface
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TABLE B2: SOIL DATA - METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	SB-4-1	SB-4-3	SB-5-0.5	SB-5-1	SB-5-3	SB-6-0.5	SB-6-1	SB-6-3	SB-6A-0.5	SB-6B-0.5	SB-6C-0.5	SB-6C-16	SB-6C-22	SB-6C-26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-4	SB-4	SB-5	SB-5	SB-5	SB-6	SB-6	SB-6	SB-6A	SB-6B	SB-6C	SB-6C	SB-6C	SB-6C
Depth	1	3	0.5	1	3	0.5	1	3	0.5	0.5	0.5	16	22	26
Sample Date	5/13/1993	5/13/1993	5/1/2006	5/13/1993	5/13/1993	5/1/2006	5/13/1993	5/13/1993	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	--	--	**13000**	--	--	**15000**	--	--	**23000**	**9100**	**4800**	--	--	--
Arsenic	--	--	**2.1**	--	--	**4.9**	--	--	<4	<2	<2	**3.3**	**4.2**	**7.4**
Barium	--	--	**120**	--	--	**140**	--	--	**130**	**120**	**51**	**79**	**110**	**170**
Beryllium	--	--	<0.5	--	--	<0.5	--	--	<1	<0.5	<0.5	<0.5	<0.5	**0.54**
Cadmium	--	--	<0.5	--	--	**2.4**	--	--	**5.7**	<0.5	<0.5	<0.5	<0.5	**0.55**
Chloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	**17**	--	--	**22**	--	--	**50**	**12**	**7.4**	**13**	**16**	**24**
Cobalt	--	--	**8**	--	--	**9**	--	--	**20**	**7.5**	**3.7**	**6**	**7.5**	**11**
Copper	**0.3**	<0.2	**25**	**8.3**	**15**	**69**	**10.6**	**24.6**	**430**	**22**	**19**	**16**	**21**	**36**
Cyanide (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	**3**	<2	**4.8**	**10**	**9**	**30**	**4**	**7**	**180**	**4.3**	**3.5**	**4.1**	**3.7**	**5.9**
Mercury	--	--	<0.02	--	--	**0.14**	--	--	**0.12**	<0.02	**0.029**	**0.022**	**0.1**	**0.06**
Molybdenum	--	--	<2	--	--	<2	--	--	**4.3**	<2	<2	<2	<2	<2
Nickel	--	--	**13**	--	--	**18**	--	--	**42**	**8.6**	**7.4**	**11**	**13**	**20**
Selenium	--	--	<2	--	--	<2	--	--	<4	<2	<2	<2	<2	<2
Silver	--	--	<1	--	--	<1	--	--	<2	<1	<1	<1	<1	<1
Sulfate	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfide (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	**41**	--	--	**46**	--	--	**40**	**35**	**17**	**26**	**36**	**50**
Zinc	**2.7**	**1.1**	**76**	**52.9**	**58.2**	**220**	**19.8**	**40**	**1300**	**47**	**38**	**36**	**48**	**64**

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TABLE B2: SOIL DATA - METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	SB-7-0.5	SB-7-1	SB-8-0.5	SB-8-1	SB-8-3	SB-9-0.5	SB-9-1	SB-9-3	SB-9-8	SB-10-0.5	SB-10-1	SB-10-3	SB-10-5	SB-11-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-7	SB-7	SB-8	SB-8	SB-8	SB-9	SB-9	SB-9	SB-9	SB-10	SB-10	SB-10	SB-10	SB-11
Depth	0.5	1	0.5	1	3	0.5	1	3	8	0.5	1	3	5	0.5
Sample Date	5/1/2006	5/10/1993	5/1/2006	5/10/1993	5/10/1993	5/1/2006	5/10/1993	5/10/1993	5/1/2006	5/1/2006	5/10/1993	5/10/1993	5/10/1993	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	**6500**	--	**16000**	--	--	**22000**	--	--	--	**14000**	--	--	--	**4600**
Arsenic	<2	--	**5**	--	--	**6.9**	--	--	**2.9**	**4.1**	--	--	--	**2.5**
Barium	**81**	--	**150**	--	--	**150**	--	--	--	**150**	--	--	--	**79**
Beryllium	<0.5	--	<0.5	--	--	<0.5	--	--	--	<0.5	--	--	--	<0.5
Cadmium	<0.5	--	**0.6**	--	--	**1.8**	--	--	--	**0.65**	--	--	**1.9**	<0.5
Chloride	--	--	--	--	--	--	--	--	--	--	--	**1050**	--	--
Chromium	**7.8**	--	**22**	--	--	**33**	--	--	--	**20**	--	--	--	**9.6**
Cobalt	**5.7**	--	**9.8**	--	--	**11**	--	--	--	**9.5**	--	--	--	**200**
Copper	**13**	**33.9**	**27**	**121**	**74.3**	**420**	**530**	**21.8**	**30**	**31**	**755**	**1332**	**174**	**24**
Cyanide (total)	--	--	--	--	--	--	--	--	--	--	--	**0.98**	--	--
Lead	**2**	**17**	**7.8**	**52**	**14**	**17**	**143**	**20**	--	**9.1**	**121**	**645**	**31**	**18**
Mercury	**0.03**	--	**0.05**	--	--	**0.033**	--	--	--	**0.066**	--	--	--	**0.029**
Molybdenum	<2	--	<2	--	--	**4.1**	--	--	--	<2	--	--	--	<2
Nickel	**6.2**	--	**17**	--	--	**59**	--	--	--	**17**	--	--	--	**9.6**
Selenium	<2	--	<2	--	--	<2	--	--	--	<2	--	--	--	<2
Silver	<1	--	<1	--	--	<1	--	--	--	<1	--	--	--	<1
Sulfate	--	--	--	--	--	--	--	--	--	--	--	**53**	--	--
Sulfide (total)	--	--	--	--	--	--	--	--	--	--	--	<1	--	--
Vanadium	**24**	--	**48**	--	--	**47**	--	--	--	**44**	--	--	--	**17**
Zinc	**37**	**63**	**70**	**557**	**142**	**150**	**1350**	**47**	--	**70**	**1712**	**4025**	**271**	**38**

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TABLE B2: SOIL DATA - METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	SB-11-1	SB-11-3	SB-12-0.5	SB-12-1	SB-12-3	SB-13-0.5	SB-13-1	SB-13-3	SB-14-0.5	SB-14A-0.5	SB-14-1	SB-14-3	SB-14-16	SB-14-22
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-11	SB-11	SB-12	SB-12	SB-12	SB-13	SB-13	SB-13	SB-14	SB-14A	SB-14	SB-14	SB-14	SB-14
Depth	1	3	0.5	1	3	0.5	1	3	0.5	0.5	1	3	16	22
Sample Date	5/10/1993	5/10/1993	5/1/2006	5/10/1993	5/10/1993	5/1/2006	5/10/1993	5/10/1993	5/1/2006	5/1/2006	5/10/1993	5/10/1993	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	--	--	**11000**	--	--	**17000**	--	--	**16000**	**14000**	--	--	--	--
Arsenic	--	--	**4**	--	--	**4.4**	--	--	**3.4**	**4**	--	--	**3.8**	**3.9**
Barium	--	--	**110**	--	--	**160**	--	--	**160**	**150**	--	--	**72**	**43**
Beryllium	--	--	<0.5	--	--	**0.5**	--	--	<0.5	<0.5	--	--	<0.5	<0.5
Cadmium	--	--	**1.3**	--	--	**1.4**	--	--	**0.97**	**1.1**	--	--	<0.5	**5.9**
Chloride	--	--	--	**267**	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	**18**	--	--	**29**	--	--	**29**	**21**	--	--	**13**	**9.5**
Cobalt	--	--	**22**	--	--	**22**	--	--	**13**	**9.6**	--	--	**6.4**	**4.3**
Copper	**937**	**20.8**	**140**	**1622**	**9.5**	**140**	**1028**	**20.8**	**67**	**48**	**465**	**26.7**	**17**	**9.7**
Cyanide (total)	--	--	--	--	**0.08**	--	--	--	--	--	--	--	--	--
Lead	**159**	**8**	**34**	**311**	**5**	**23**	**117**	**10**	**13**	**9.2**	**83**	**8**	**3.2**	<2
Mercury	--	--	**0.062**	--	--	**0.076**	--	--	**0.056**	**0.077**	--	--	<0.02	<0.02
Molybdenum	--	--	<2	--	--	<2	--	--	<2	<2	--	--	<2	<2
Nickel	--	--	**16**	--	--	**25**	--	--	**18**	**17**	--	--	**11**	**7.6**
Selenium	--	--	<2	--	--	<2	--	--	<2	<2	--	--	<2	<2
Silver	--	--	<1	--	--	<1	--	--	<1	<1	--	--	<1	<1
Sulfate	--	--	--	**125**	--	--	--	--	--	--	--	--	--	--
Sulfide (total)	--	--	--	<1	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	**29**	--	--	**47**	--	--	**46**	**43**	--	--	**27**	**21**
Zinc	**1832**	**54.5**	**180**	**1997**	**54.5**	**220**	**840**	**55.8**	**130**	**89**	**565**	**59**	**41**	**26**

Notes:
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TABLE B2: SOIL DATA - METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	SB-14-26	SB-15-0.5	SB-15-1	SB-15-3	SB-15-16	SB-15-22	SB-16-0.5	SB-16-1	SB-16-3	SB-17-0.5	SB-17-1	SB-17-3	SB-17-16	SB-17-22
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-14	SB-15	SB-15	SB-15	SB-15	SB-15	SB-16	SB-16	SB-16	SB-17	SB-17	SB-17	SB-17	SB-17
Depth	26	0.5	1	3	16	22	0.5	1	3	0.5	1	3	16	22
Sample Date	5/1/2006	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/1/2006	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/10/1993	5/10/1993	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	--	**13000**	--	--	--	--	**18000**	--	--	**6000**	--	--	--	--
Arsenic	**5.1**	**2.7**	--	--	**4**	**6.1**	<4	--	--	**2.9**	--	--	**3.1**	**9.9**
Barium	**140**	**120**	--	--	**74**	**140**	**170**	--	--	**91**	--	--	**65**	**170**
Beryllium	**0.51**	<0.5	--	--	<0.5	<0.5	<1	--	--	<0.5	--	--	<0.5	**0.66**
Cadmium	**0.55**	<0.5	**10.1**	--	<0.5	<0.5	<1	--	--	<0.5	--	--	<0.5	**0.67**
Chloride	--	--	**83**	--	--	--	--	--	--	--	--	--	--	--
Chromium	**21**	**21**	--	--	**12**	**20**	**23**	--	--	**13**	--	--	**12**	**23**
Cobalt	**9.6**	**14**	--	--	**5.2**	**8.9**	**12**	--	--	**99**	--	--	**5.7**	**11**
Copper	**32**	**120**	**3787**	**528**	**15**	**28**	**30**	**680**	**146**	**32**	**305**	**17.6**	**15**	**43**
Cyanide (total)	--	--	<0.02	--	--	--	--	--	--	--	--	--	--	--
Lead	**5.7**	**4.4**	**326**	**76**	**3**	**5**	**4.2**	**93**	**28**	**26**	**52**	**7**	**2.5**	**9.3**
Mercury	<0.02	**0.024**	--	--	<0.02	**0.049**	**0.052**	--	--	**0.15**	--	--	**0.12**	**0.077**
Molybdenum	<2	<2	--	--	<2	<2	<4	--	--	<2	--	--	<2	<2
Nickel	**17**	**15**	--	--	**10**	**17**	**18**	--	--	**11**	--	--	**10**	**19**
Selenium	<2	<2	--	--	<2	<2	<4	--	--	<2	--	--	<2	<2
Silver	<1	<1	--	--	<1	<1	<2	--	--	<1	--	--	<1	<1
Sulfate	--	--	**110**	--	--	--	--	--	--	--	--	--	--	--
Sulfide (total)	--	--	<1	--	--	--	--	--	--	--	--	--	--	--
Vanadium	**50**	**41**	--	--	**26**	**39**	**52**	--	--	**18**	--	--	**26**	**47**
Zinc	**62**	**89**	**2**	**860**	**35**	**57**	**80**	**1145**	**112**	**56**	**194**	**44**	**37**	**70**

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TABLE B2: SOIL DATA - METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	SB-18-0.5	SB-18-1	SB-18-3	SB-18-16	SB-18-22	SB-18-26	SB-19-0.5	SB-19-1	SB-19-3	SB-19-16	SB-19-19	SB-20-0.5	SB-20-16	SB-20-22
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-18	SB-18	SB-18	SB-18	SB-18	SB-18	SB-19	SB-19	SB-19	SB-19	SB-19	SB-20	SB-20	SB-20
Depth	0.5	1	3	16	22	26	0.5	1	3	16	19	0.5	16	22
Sample Date	5/1/2006	5/10/1993	5/10/1993	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/10/1993	5/10/1993	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	**11000**	--	--	--	--	--	**15000**	--	--	--	--	**15000**	--	--
Arsenic	**2.6**	--	--	**4.4**	**4.7**	**9.5**	<4	--	--	**8.1**	**9.3**	**4.4**	**5**	**3.7**
Barium	**140**	--	--	**90**	**87**	**150**	**150**	--	--	**110**	**180**	**140**	**90**	**75**
Beryllium	<0.5	--	--	<0.5	<0.5	**0.57**	<1	--	--	<0.5	**0.63**	<0.5	<0.5	<0.5
Cadmium	**1.3**	--	--	<0.5	<0.5	<0.5	<1	--	--	<0.5	**0.56**	<0.5	<0.5	<0.5
Chloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	**24**	--	--	**14**	**13**	**24**	**20**	--	--	**15**	**24**	**20**	**15**	**11**
Cobalt	**42**	--	--	**6.5**	**5.9**	**11**	**10**	--	--	**6.6**	**12**	**9.7**	**6.8**	**4.9**
Copper	**85**	**910**	**23.3**	**18**	**16**	**39**	**23**	**445**	**13.4**	**20**	**40**	**29**	**18**	**14**
Cyanide (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	**22**	**91**	**9**	**3.6**	**2.8**	**7.5**	**5.8**	**84**	**6**	**3.7**	**8.1**	**4.9**	**3.6**	**2**
Mercury	**0.049**	--	--	<0.02	<0.02	**0.079**	**0.058**	--	--	<0.02	**0.064**	**0.058**	<0.02	<0.02
Molybdenum	<2	--	--	<2	<2	<2	<4	--	--	<2	<2	<2	<2	<2
Nickel	**16**	--	--	**12**	**11**	**20**	**16**	--	--	**13**	**21**	**15**	**12**	**9.3**
Selenium	<2	--	--	<2	<2	<2	<4	--	--	<2	<2	<2	<2	<2
Silver	<1	--	--	<1	<1	<1	<2	--	--	<1	<1	<1	<1	<1
Sulfate	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfide (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	**33**	--	--	**27**	**27**	**46**	**46**	--	--	**31**	**49**	**42**	**26**	**23**
Zinc	**170**	**628**	**48.8**	**43**	**42**	**61**	**68**	**2775**	**43.7**	**52**	**72**	**68**	**39**	**33**

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TABLE B2: SOIL DATA - METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	SB-20-26	SB-21-0.5	SB-21-1	SB-21-3	SB-22-0.5	SB-22-1	SB-22-3	SB-22-16	SB-22-22	SB-23-0.5	SB-23-1	SB-23-3	SB-23-8	SB-24-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-20	SB-21	SB-21	SB-21	SB-22	SB-22	SB-22	SB-22	SB-22	SB-23	SB-23	SB-23	SB-23	SB-24
Depth	26	0.5	1	3	0.5	1	3	16	22	0.5	1	3	8	0.5
Sample Date	5/1/2006	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/1/2006	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	--	**14000**	--	--	**7600**	--	--	--	--	**13000**	--	--	**12000**	**27000**
Arsenic	**9**	**4.3**	--	--	**2.9**	--	--	**2.8**	**3.2**	**3.2**	--	--	**3.7**	**5.2**
Barium	**130**	**160**	--	--	**210**	--	--	**58**	**63**	**130**	--	--	--	**150**
Beryllium	**0.56**	<0.5	--	--	<0.5	--	--	<0.5	<0.5	<0.5	--	--	--	**0.87**
Cadmium	<0.5	**0.63**	--	--	**0.57**	--	--	<0.5	<0.5	<0.5	--	--	--	**7.1**
Chloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	**22**	**20**	--	--	**18**	--	--	**11**	**11**	**18**	--	--	--	**200**
Cobalt	**10**	**31**	--	--	**150**	--	--	**5.5**	**5.3**	**23**	--	--	--	**11**
Copper	**35**	**38**	**436**	**150**	**58**	**16.5**	<0.2	**14**	**15**	**29**	**222**	**176**	--	**950**
Cyanide (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	**7.3**	**7.4**	**59**	**23**	**12**	**5**	<2	**2.8**	**2.6**	**4.6**	**18**	**26**	--	**110**
Mercury	**0.057**	**0.03**	--	--	**0.07**	--	--	<0.02	**0.056**	**0.032**	--	--	--	**0.23**
Molybdenum	<2	<2	--	--	<2	--	--	<2	<2	<2	--	--	--	**10**
Nickel	**18**	**17**	--	--	**11**	--	--	**9.3**	**9.2**	**14**	--	--	--	**500**
Selenium	<2	<2	--	--	<2	--	--	<2	<2	<2	--	--	--	<2
Silver	<1	<1	--	--	<1	--	--	<1	<1	<1	--	--	--	**1.3**
Sulfate	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfide (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	**44**	**44**	--	--	**23**	--	--	**22**	**25**	**42**	--	--	--	**46**
Zinc	**63**	**72**	**260**	**123**	**77**	**46**	**2**	**34**	**32**	**62**	**387**	**192**	--	**550**

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TABLE B2: SOIL DATA - METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	SB-24-1	SB-24-3	SB-24-8	SB-24-16	SB-24-22	SB-25-0.5	SB-25-1	SB-25-3	SB-26-0.5	SB-27A-0.5	SB-26-1	SB-26-3	SB-27-0.5	SB-27-1
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-24	SB-24	SB-24	SB-24	SB-24	SB-25	SB-25	SB-25	SB-26	SB-27A	SB-26	SB-26	SB-27	SB-27
Depth	1	3	8	16	22	0.5	1	3	0.5	0.5	1	3	0.5	1
Sample Date	5/11/1993	5/11/1993	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/11/1993
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	--	--	--	--	--	**28000**	--	--	**5500**	**14000**	--	--	**72000**	--
Arsenic	--	--	--	**3.6**	**9.4**	<4	--	--	**4.1**	<2	--	--	<8	--
Barium	--	--	--	**61**	**220**	**160**	--	--	**73**	**110**	--	--	**120**	--
Beryllium	--	--	--	<0.5	**0.67**	<1	--	--	<0.5	<0.5	--	--	**3.6**	--
Cadmium	--	**21.5**	--	<0.5	**0.74**	**4.8**	--	--	**0.9**	**5.5**	--	--	**28**	--
Chloride	--	**62**	--	--	--	--	--	--	--	--	**3005**	--	--	--
Chromium	--	--	--	**12**	**27**	**59**	--	--	**13**	**18**	--	--	**210**	--
Cobalt	--	--	--	**5.8**	**12**	**11**	--	--	**100**	**9.3**	--	--	**9.6**	--
Copper	**790**	**10825**	**41**	**15**	**53**	**390**	**873**	**617**	**43**	**24**	**3975**	**698**	**3800**	**897**
Cyanide (total)	--	**0.08**	--	--	--	--	--	--	--	--	**0.19**	--	--	--
Lead	**116**	**328**	--	**2.9**	**9.9**	**58**	**134**	**96**	**25**	**5.8**	**332**	**75**	**220**	**203**
Mercury	--	--	--	**0.022**	**0.063**	**0.093**	--	--	**0.074**	**0.092**	--	--	**0.036**	--
Molybdenum	--	--	--	**2**	**2**	**30**	--	--	<2	<2	--	--	**10**	--
Nickel	--	--	--	**10**	**24**	**31**	--	--	**8.9**	**12**	--	--	**180**	--
Selenium	--	--	--	<2	<2	<4	--	--	<2	<2	--	--	<8	--
Silver	--	--	--	<1	<1	<2	--	--	<1	<1	--	--	**4.8**	--
Sulfate	--	**87**	--	--	--	--	--	--	--	--	**90**	--	--	--
Sulfide (total)	--	<1	--	--	--	--	--	--	--	--	<1	--	--	--
Vanadium	--	--	--	**27**	**56**	**52**	--	--	**17**	**41**	--	--	**35**	--
Zinc	**1290**	**2335**	--	**35**	**75**	**380**	**7825**	**517**	**240**	**91**	**1817**	**405**	**1700**	**815**

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TABLE B2: SOIL DATA - METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	SB-27-3	SB-27A-8	SB-28-0.5	SB-28-1	SB-28-3	SB-29-0.5	SB-29-1	SB-29-3	SB-30-0.5	SB-30-1	SB-30-3	SB-31-0.5	SB-31-1	SB-31-3
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-27	SB-27A	SB-28	SB-28	SB-28	SB-29	SB-29	SB-29	SB-30	SB-30	SB-30	SB-31	SB-31	SB-31
Depth	3	8	0.5	1	3	0.5	1	3	0.5	1	3	0.5	1	3
Sample Date	5/11/1993	5/1/2006	5/1/2006	5/10/1993	5/10/1993	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/11/1993	5/11/1993
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	--	--	**14000**	--	--	**13000**	--	--	**6000**	--	--	**16000**	--	--
Arsenic	--	<2	**2.4**	--	--	<2	--	--	**3.8**	--	--	**3.7**	--	--
Barium	--	**140**	**120**	--	--	**130**	--	--	**58**	--	--	**140**	--	--
Beryllium	--	<0.5	<0.5	--	--	<0.5	--	--	<0.5	--	--	<0.5	--	--
Cadmium	--	<0.5	**0.96**	--	--	**0.66**	--	--	<0.5	**13.1**	--	**0.91**	--	--
Chloride	--	--	--	--	--	--	--	--	--	**144**	--	--	--	--
Chromium	--	**21**	**18**	--	--	**18**	--	--	**16**	--	--	**39**	--	--
Cobalt	--	**9.7**	**8.8**	--	--	**9**	--	--	**3.2**	--	--	**9.4**	--	--
Copper	**68.3**	**27**	**21**	**21.7**	**465**	**22**	**403**	**36**	**26**	**2850**	**78.3**	**110**	**545**	**435**
Cyanide (total)	--	--	--	--	--	--	--	--	--	**0.62**	--	--	--	--
Lead	**21**	**3.9**	**8**	**29**	**99**	**3.3**	**76**	**17**	**12**	**201**	**21**	**28**	**86**	**94**
Mercury	--	**0.039**	**0.091**	--	--	**0.16**	--	--	**0.039**	--	--	<0.02	--	--
Molybdenum	--	**2.1**	<2	--	--	<2	--	--	<2	--	--	<2	--	--
Nickel	--	**15**	**15**	--	--	**13**	--	--	**12**	--	--	**19**	--	--
Selenium	--	<2	<2	--	--	<2	--	--	<2	--	--	<2	--	--
Silver	--	<1	<1.5	--	--	<1	--	--	<1	--	--	<1	--	--
Sulfate	--	--	--	--	--	--	--	--	--	**184**	--	--	--	--
Sulfide (total)	--	--	--	--	--	--	--	--	--	<1	--	--	--	--
Vanadium	--	**43**	**42**	--	--	**40**	--	--	**15**	--	--	**41**	--	--
Zinc	**143**	**60**	**64**	**60**	**728**	**60**	**476**	**67.5**	**83**	**1577**	**95**	**210**	**613**	**554**

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TABLE B2: SOIL DATA - METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	SB-32-0.5	SB-32-1	SB-32-3	SB-33-0.5	SB-33-1	SB-33-3	SB-33-5	SB-33-8	SB-34-0.5	SB-34-1	SB-34-3	SB-34-5	SB-34-8	SB-35-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-32	SB-32	SB-32	SB-33	SB-33	SB-33	SB-33	SB-33	SB-34	SB-34	SB-34	SB-34	SB-34	SB-35
Depth	0.5	1	3	0.5	1	3	5	8	0.5	1	3	5	8	0.5
Sample Date	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/11/1993	5/11/1993	5/11/1993	5/1/2006	5/1/2006	5/11/1993	5/11/1993	5/11/1993	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	**17000**	--	--	**30000**	--	--	--	--	**27000**	--	--	--	**12000**	**15000**
Arsenic	**5.1**	--	--	**4.7**	--	--	--	<2	**4**	--	--	--	**8.1**	**3.4**
Barium	**150**	--	--	**110**	--	--	--	**130**	**160**	--	--	--	--	**150**
Beryllium	**0.51**	--	--	**0.67**	--	--	--	<0.5	<1	--	--	--	--	<0.5
Cadmium	**1.1**	--	--	**4.5**	--	**10.3**	**3.4**	<0.5	**1.4**	**10.5**	--	**125**	--	**0.51**
Chloride	--	--	--	--	--	**995**	--	--	--	**173**	--	--	--	--
Chromium	**31**	--	--	**38**	--	--	--	**24**	**37**	--	--	--	--	**19**
Cobalt	**10**	--	--	**9.5**	--	--	--	**9.8**	**9.8**	--	--	--	--	**9**
Copper	**170**	**613**	**400**	**1300**	**848**	**1030**	**246**	**26**	**1700**	**1642**	**736**	**1232**	**32**	**23**
Cyanide (total)	--	--	--	--	--	<0.02	--	--	--	**0.48**	--	--	--	--
Lead	**36**	**96**	**57**	**100**	**135**	**132**	**44**	**3.6**	**32**	**186**	**101**	**256**	--	**6**
Mercury	**0.13**	--	--	**0.066**	--	--	--	**0.06**	**0.067**	--	--	--	--	**0.041**
Molybdenum	<2	--	--	**2.4**	--	--	--	**2.4**	<4	--	--	--	--	<2
Nickel	**27**	--	--	**170**	--	--	--	**16**	**27**	--	--	--	--	**15**
Selenium	<2	--	--	<2	--	--	--	<2	<4	--	--	--	--	<2
Silver	<1	--	--	<1	--	--	--	<1	<2	--	--	--	--	<1
Sulfate	--	--	--	--	--	**65**	--	--	--	**74**	--	--	--	--
Sulfide (total)	--	--	--	--	--	<1	--	--	--	<1	--	--	--	--
Vanadium	**46**	--	--	**41**	--	--	--	**42**	**43**	--	--	--	--	**47**
Zinc	**120**	**461**	**408**	**820**	**843**	**905**	**913**	**63**	**250**	**2935**	**2813**	**2457**	--	**65**

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TABLE B2: SOIL DATA - METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	SB-35-1	SB-35-3	SB-36-0.5	SB-37-0.5	SB-37-1	SB-37-3	SB-38-0.5	SB-38-1	SB-38-3	SB-38-3	SB-39-0.5	SB-39-1	SB-39-3	SB-39-3
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-35	SB-35	SB-36	SB-37	SB-37	SB-37	SB-38	SB-38	SB-38	SB-38	SB-39	SB-39	SB-39	SB-39
Depth	1	3	0.5	0.5	1	3	0.5	1	3	3	0.5	1	3	3
Sample Date	5/10/1993	5/10/1993	5/1/2006	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/1/2006	5/11/1993	5/11/1993	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	--	--	**14000**	**15000**	--	--	**16**	--	--	**13000**	**30000**	--	--	**15000**
Arsenic	--	--	**2.6**	**2.4**	--	--	<2	--	--	<4	<4	--	--	<2
Barium	--	--	**140**	**130**	--	--	**210**	--	--	**110**	**180**	--	--	**130**
Beryllium	--	--	<0.5	<0.5	--	--	<0.5	--	--	<1	<1	--	--	<0.5
Cadmium	--	--	<0.5	<0.5	--	--	**0.82**	--	--	<1	**1**	--	--	<0.5
Chloride	**2185**	--	--	--	--	--	--	--	--	--	--	**83**	--	--
Chromium	--	--	**19**	**18**	--	--	**25**	--	--	**17**	**37**	--	--	**21**
Cobalt	--	--	**9.1**	**8.4**	--	--	**7.7**	--	--	**7.9**	**12**	--	--	**11**
Copper	**1142**	**153**	**22**	**21**	**374**	**302**	**53**	**141**	**35.9**	**44**	**150**	**1367**	**222**	**38**
Cyanide (total)	**0.35**	--	--	--	--	--	--	--	--	--	--	<0.02	--	--
Lead	**137**	**68**	**3.6**	**6.8**	**53**	**95**	**52**	**26**	**12**	**15**	**57**	**182**	**47**	**10**
Mercury	--	--	**0.039**	**0.04**	--	--	**0.071**	--	--	**0.082**	**0.16**	--	--	**0.044**
Molybdenum	--	--	<2	<2	--	--	**2.1**	--	--	<4	<4	--	--	**2.5**
Nickel	--	--	**15**	**14**	--	--	**16**	--	--	**12**	**25**	--	--	**16**
Selenium	--	--	<2	<2	--	--	<2	--	--	<4	<4	--	--	<2
Silver	--	--	<1	<1	--	--	<1	--	--	<2	<2	--	--	<1
Sulfate	**16**	--	--	--	--	--	--	--	--	--	--	**147**	--	--
Sulfide (total)	<1	--	--	--	--	--	--	--	--	--	--	<1	--	--
Vanadium	--	--	**43**	**43**	--	--	**35**	--	--	**37**	**58**	--	--	**45**
Zinc	**2850**	**327**	**61**	**70**	**657**	**541**	**220**	**185**	**69**	**130**	**210**	**2497**	**245**	**90**

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TABLE B2: SOIL DATA - METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	SB-40-0.5	SB-40-1	SB-40-3	SB-40-3	SB-40-5	SB-40-5D	SB-41-0.5	SB-41-1	SB-41-3	SB-41-3	SB-42-0.5	SB-42-1	SB-42-3	SB-42-3
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-40	SB-40	SB-40	SB-40	SB-40	SB-40	SB-41	SB-41	SB-41	SB-41	SB-42	SB-42	SB-42	SB-42
Depth	0.5	1	3	3	5	5	0.5	1	3	3	0.5	1	3	3
Sample Date	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/11/1993	5/11/1993	5/1/2006	5/1/2006	5/13/1993	5/13/1993	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	**19000**	--	--	**19000**	--	--	**37000**	--	--	**22000**	**24000**	--	--	**25000**
Arsenic	<2	--	--	<4	--	--	**3.2**	--	--	**4.2**	**2.5**	--	--	<4
Barium	**150**	--	--	**170**	--	--	**190**	--	--	**150**	**170**	--	--	**230**
Beryllium	<0.5	--	--	<1	--	--	**0.57**	--	--	<1	**0.51**	--	--	<1
Cadmium	**0.88**	--	--	<1	--	**1.1**	**3**	--	--	<1	**2.1**	--	--	<1
Chloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	**35**	--	--	**32**	--	--	**57**	--	--	**32**	**41**	--	--	**39**
Cobalt	**10**	--	--	**11**	--	--	**11**	--	--	**13**	**21**	--	--	**16**
Copper	**130**	**273**	**867**	**150**	**39.7**	**57.3**	**240**	**915**	**37.5**	**43**	**130**	**38.7**	**26**	**46**
Cyanide (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	**43**	**62**	**120**	**29**	**14**	**16**	**150**	**92**	**46**	**7.9**	**110**	**14**	**12**	**13**
Mercury	**0.098**	--	--	**0.066**	--	--	**0.12**	--	--	**0.049**	**0.11**	--	--	**0.21**
Molybdenum	<2	--	--	<4	--	--	**7.3**	--	--	**4.5**	**6**	--	--	**4**
Nickel	**22**	--	--	**23**	--	--	**36**	--	--	**21**	**27**	--	--	**26**
Selenium	<2	--	--	<4	--	--	**2.1**	--	--	<4	<2	--	--	<4
Silver	<1	--	--	<2	--	--	<1	--	--	<2	<1	--	--	<2
Sulfate	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfide (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	**46**	--	--	**47**	--	--	**46**	--	--	**53**	**45**	--	--	**76**
Zinc	**160**	**375**	**840**	**170**	**55.5**	**125**	**800**	**5475**	**259**	**95**	**600**	**213**	**310**	**75**

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TABLE B2: SOIL DATA - METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	SB-43-0.5	SB-43-1	SB-43-3	SB-44-0.5	SB-44-1	SB-44-3	SB-45-1	SB-45-3	SB-46-1	SB-46-3	SB-47-1	SB-47-3	SB-48-1	SB-48-3
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-43	SB-43	SB-43	SB-44	SB-44	SB-44	SB-45	SB-45	SB-46	SB-46	SB-47	SB-47	SB-48	SB-48
Depth	0.5	1	3	0.5	1	3	1	3	1	3	1	3	1	3
Sample Date	5/1/2006	5/13/1993	5/13/1993	5/1/2006	5/11/1993	5/11/1993	5/11/1993	5/11/1993	5/11/1993	5/11/1993	5/11/1993	5/11/1993	5/10/1993	5/10/1993
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	**7300**	--	--	**15000**	--	--	--	--	--	--	--	--	--	--
Arsenic	**2.4**	--	--	**2.1**	--	--	--	--	--	--	--	--	--	--
Barium	**49**	--	--	**140**	--	--	--	--	--	--	--	--	--	--
Beryllium	<0.5	--	--	<0.5	--	--	--	--	--	--	--	--	--	--
Cadmium	<0.5	--	--	<0.5	--	--	--	--	--	--	--	--	--	--
Chloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	**14**	--	--	**19**	--	--	--	--	--	--	--	--	--	--
Cobalt	**5.9**	--	--	**9.5**	--	--	--	--	--	--	--	--	--	--
Copper	**31**	**15.8**	**76.7**	**33**	**49**	**168**	**8.5**	**21.4**	**24.4**	**15.9**	**36.1**	**228**	**30.6**	**20.9**
Cyanide (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	**3.6**	**5**	**27**	**10**	**22**	**61**	**3**	**10**	**15**	**7**	**21**	**85**	**35**	**15**
Mercury	**0.039**	--	--	**0.065**	--	--	--	--	--	--	--	--	--	--
Molybdenum	**10**	--	--	<2	--	--	--	--	--	--	--	--	--	--
Nickel	**7.2**	--	--	**16**	--	--	--	--	--	--	--	--	--	--
Selenium	<2	--	--	<2	--	--	--	--	--	--	--	--	--	--
Silver	<1	--	--	<1	--	--	--	--	--	--	--	--	--	--
Sulfate	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfide (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	**25**	--	--	**44**	--	--	--	--	--	--	--	--	--	--
Zinc	**43**	**32**	**169**	**85**	**143**	**430**	**22.1**	**46.8**	**71.3**	**41.9**	**110**	**307**	**79.9**	**63.6**

Notes:
ft bgs = feet below ground surface
mg/kg = milligrams per kilogram
<x = not detected at or above the detection limit noted
-- = Constituent not analyzed for in this sample

TABLE B2: SOIL DATA - METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	SB-49-1	SB-49-3	SB-51-1	SB-51-3	SB-52-1	SB-52-3	SB-53-1	SB-53-3	SB-54-1	SB-54-3	SB-55-1	SB-55-3	SB-56-1	SB-56-3
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-49	SB-49	SB-51	SB-51	SB-52	SB-52	SB-53	SB-53	SB-54	SB-54	SB-55	SB-55	SB-56	SB-56
Depth	1	3	1	3	1	3	1	3	1	3	1	3	1	3
Sample Date	5/13/1993	5/13/1993	5/13/1993	5/13/1993	5/13/1993	5/13/1993	5/13/1993	5/13/1993	5/13/1993	5/13/1993	5/13/1993	5/13/1993	5/13/1993	5/13/1993
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	**18.7**	**10.6**	**81.3**	**19.8**	**50.4**	**26.5**	**28.7**	**10.7**	**25.7**	**85.5**	**14**	**10.3**	**4.6**	**12.7**
Cyanide (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	**8**	**4**	**40**	**7**	**17**	**10**	**8**	**4**	**12**	**28**	**8**	**5**	**2**	**6**
Mercury	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfide (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	**59**	**40.4**	**487**	**45**	**193**	**87.9**	**132**	**25.7**	**60.5**	**148**	**38.3**	**26.5**	**12**	**40.9**

Notes:
ft bgs = feet below ground surface
mg/kg = milligrams per kilogram
<x = not detected at or above the detection limit noted
-- = Constituent not analyzed for in this sample

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	6A	6AA	6B	6BB	6C	6CC	6DD	7A	7B	7C
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	6	6	6	6	6	6	6	7	7	7
Depth (ft bgs)	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+
Sample Date	5/20/1993	5/20/1993	5/20/1993	5/20/1993	5/20/1993	5/20/1993	5/20/1993	5/20/1993	5/20/1993	5/20/1993
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	--	--	--	--
TEPH (C8-C40)	--	--	--	--	--	--	--	--	--	--
TPH (diesel)	--	--	--	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	--	--	--	--	--	--	--	--	--	--
TPH (gasoline)	--	--	--	--	--	--	--	--	--	--
TPH (volatile)										
TPHD	--	--	--	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--	--	--	--
TVPH (C6-C12)	**15000**	**41000**	**4400**	**18000**	**15000**	**33000**	**6600**	**16000**	**7700**	**12000**

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-10-P @ 15'	MW-10-P-15	MW-10-P @ 22'	MW-10-P-22	MW-10-P @ 25'	MW-10-P-25	MW-11-P @ 15'
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-10-P	MW-10-P	MW-10-P	MW-10-P	MW-10-P	MW-10-P	MW-11-P
Depth (ft bgs)	15	15	22	22	25	25	15
Sample Date	2/27/1992	4/13/1992	2/27/1992	4/13/1992	2/27/1992	4/13/1992	2/27/1992
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	<10						
TEPH (C8-C40)	<10	<10	<10	<10	<10	<10	<10
TPH (diesel)	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	--	--	--	--	--	--	--
TPH (gasoline)	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--
TVPH (C6-C12)	--	--	--	--	--	--	--

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-11-P-15	MW-11-P @ 23'	MW-11-P-23	MW-2-P @ 5'	MW-2-P @ 10'	MW-2-P @ 15'	MW-2-P @ 20'
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-11-P	MW-11-P	MW-11-P	MW-2-P	MW-2-P	MW-2-P	MW-2-P
Depth (ft bgs)	15	23	23	5	10	15	20
Sample Date	4/13/1992	2/27/1992	4/13/1992	8/27/1991	8/27/1991	8/27/1991	8/27/1991
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH				--	--	--	--
TEPH (C8-C40)	<10	<10	<10	--	--	--	--
TPH (diesel)	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	--	--	--	<10	<10	<10	<10
TPH (gasoline)	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--
TVPH (C6-C12)	--	--	--	--	--	--	--

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-2-P @ 25'	MW-2-P @ 30'	MW-3-P @ 5'	MW-3-P @ 10'	MW-3-P @ 15'	MW-3-P @ 21'
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-2-P	MW-2-P	MW-3-P	MW-3-P	MW-3-P	MW-3-P
Depth (ft bgs)	25	30	5	10	15	21
Sample Date	8/27/1991	8/27/1991	8/27/1991	8/27/1991	8/27/1991	8/27/1991
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--
TEPH (C8-C40)	--	--	--	--	--	--
TPH (diesel)	--	--	--	--	--	--
TPH (extractable - rolling oil)	**14**	**485**	<10	<10	<10	**5075**
TPH (gasoline)	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--
TPHD	--	--	--	--	--	--
TPHG	--	--	--	--	--	--
TRPH	--	--	--	--	--	--
TVPH (C6-C12)	--	--	--	--	--	--

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-3-P @ 26'	MW-3-P @ 31'	MW-4-P @ 5'	MW-4-P @ 10'	MW-4-P @ 15'	MW-4-P @ 20'	MW-4-P @ 25'
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-3-P	MW-3-P	MW-4-P	MW-4-P	MW-4-P	MW-4-P	MW-4-P
Depth (ft bgs)	26	31	5	10	15	20	25
Sample Date	8/27/1991	8/27/1991	8/27/1991	8/27/1991	8/27/1991	8/27/1991	8/27/1991
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	--
TEPH (C8-C40)	--	--	--	--	--	--	--
TPH (diesel)	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	**19701**	**7351**	<10	<10	**11**	**10417**	**1211**
TPH (gasoline)	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--
TVPH (C6-C12)	--	--	--	--	--	--	--

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-4-P @ 29'	MW-5-P @ 5'	MW-5-P @ 10'	MW-5-P @ 15'	MW-5-P @ 21'	MW-5-P @ 25'	MW-6-P @ 5'
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-4-P	MW-5-P	MW-5-P	MW-5-P	MW-5-P	MW-5-P	MW-6-P
Depth (ft bgs)	29	5	10	15	21	25	5
Sample Date	8/27/1991	8/28/1991	8/28/1991	8/28/1991	8/28/1991	8/28/1991	8/29/1991
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	--
TEPH (C8-C40)	--	--	--	--	--	--	--
TPH (diesel)	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	**539**	<10	<10	<10	**9889**	**37**	**22**
TPH (gasoline)	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--
TVPH (C6-C12)	--	--	--	--	--	--	--

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-6-P @ 10'	MW-6-P @ 15'	MW-6-P @ 20'	MW-6-P @ 20A'	MW-6-P @ 25'	MW-6-P @ 30'	MW-7-P @ 5'
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-6-P	MW-6-P	MW-6-P	MW-6-P	MW-6-P	MW-6-P	MW-7-P
Depth (ft bgs)	10	15	20	20	25	30	5
Sample Date	8/29/1991	8/29/1991	8/29/1991	8/29/1991	8/29/1991	8/29/1991	8/29/1991
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	--
TEPH (C8-C40)	--	--	--	--	--	--	--
TPH (diesel)	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	**344**	**15**	**197**	**106**	**1705**	<10	<10
TPH (gasoline)	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--
TVPH (C6-C12)	--	--	--	--	--	--	--

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-7-P @ 10'	MW-7-P @ 15'	MW-7-P @ 17'	MW-7-P @ 19'	MW-7-P @ 25'	MW-7-P @ 30'	MW-8-P @ 14'
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-7-P	MW-7-P	MW-7-P	MW-7-P	MW-7-P	MW-7-P	MW-8-P
Depth (ft bgs)	10	15	17	19	25	30	14
Sample Date	8/29/1991	8/29/1991	8/29/1991	8/29/1991	8/29/1991	8/29/1991	2/26/1992
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	
TEPH (C8-C40)	--	--	--	--	--	--	<10
TPH (diesel)	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	<10	<10	**11**	**158**	<10	<10	--
TPH (gasoline)	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--
TVPH (C6-C12)	--	--	--	--	--	--	--

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-8-P @ 20'	MW-8-P @ 22'	MW-8-P-14	MW-8-P-22	MW-8-P @ 27'	MW-8-P-27	MW-9-P @ 20'
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-8-P	MW-8-P	MW-8-P	MW-8-P	MW-8-P	MW-8-P	MW-9-P
Depth (ft bgs)	20	22	14	22	27	27	20
Sample Date	2/26/1992	2/26/1992	4/13/1992	4/13/1992	2/26/1992	4/13/1992	2/26/1992
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH							
TEPH (C8-C40)	**740**	**46000**	<10	**46000**	**960**	**960**	<10
TPH (diesel)	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	--	--	--	--	--	--	--
TPH (gasoline)	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--
TVPH (C6-C12)	--	--	--	--	--	--	--

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-9-P-20	MW-9-P @ 23'	MW-9-P-23	MW-9-P @ 25'	MW-9-P-25	MW-9-P @ 29'	MW-9-P-29	SB-1-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-9-P	MW-9-P	MW-9-P	MW-9-P	MW-9-P	MW-9-P	MW-9-P	SB-1
Depth (ft bgs)	20	23	23	25	25	29	29	0.5
Sample Date	4/13/1992	2/26/1992	4/13/1992	2/26/1992	4/13/1992	2/26/1992	4/13/1992	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH								--
TEPH (C8-C40)	<10	**10000**	**10000**	**120**	**120**	<10	<10	<5
TPH (diesel)	--	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	--	--	--	--	--	--	--	--
TPH (gasoline)	--	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--	--
TVPH (C6-C12)	--	--	--	--	--	--	--	<0.4

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-10-0.5	SB-11-0.5	SB-11-8	SB-11-P-5	SB-11-P-10	SB-11-P-15	SB-11-P-20	SB-11-P-25	SB-12-0.5	SB-12-8
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-10	SB-11	SB-11	SB-11-P	SB-11-P	SB-11-P	SB-11-P	SB-11-P	SB-12	SB-12
Depth (ft bgs)	0.5	0.5	8	5	10	15	20	25	0.5	8
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/14/1992	5/14/1992	5/14/1992	5/14/1992	5/14/1992	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	--	--	--	--
TEPH (C8-C40)	**28**	**760**	<10	--	--	--	--	--	**11000**	**14**
TPH (diesel)	--	--	--	**3400**	**2700**	**2600**	**1200**	**ND**	--	--
TPH (extractable - rolling oil)	--	--	--	--	--	--	--	--	--	--
TPH (gasoline)	--	--	--	**400**	**2800**	**2100**	**2500**	**50**	--	--
TPH (volatile)	--	--	--	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--	--	--	--
TVPH (C6-C12)	<0.4	**4.5**	<0.4	--	--	--	--	--	**12000**	<8.7

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-12-P-5	SB-12-P-10	SB-12-P-15	SB-12-P-20	SB-12-P-25	SB-13-0.5	SB-13-8	SB-13-P-5	SB-13-P-10
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-12-P	SB-12-P	SB-12-P	SB-12-P	SB-12-P	SB-13	SB-13	SB-13-P	SB-13-P
Depth (ft bgs)	5	10	15	20	25	0.5	8	5	10
Sample Date	5/14/1992	5/14/1992	5/14/1992	5/14/1992	5/14/1992	5/1/2006	5/1/2006	5/14/1992	5/14/1992
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	--	--	--
TEPH (C8-C40)	--	--	--	--	--	**130**	**70**	--	--
TPH (diesel)	**ND**	--	**ND**	**440**	**ND**	--	--	--	--
TPH (extractable - rolling oil)	--	--	--	--	--	--	--	--	--
TPH (gasoline)	**0.12**	**ND**	**ND**	**1400**	**ND**	--	--	**ND**	**ND**
TPH (volatile)	--	--	--	--	--	--	--	--	--
TPHD						--	--	--	--
TPHG						--	--		
TRPH	--	--	--	--	--	--	--	--	--
TVPH (C6-C12)	--	--	--	--	--	**0.83**	<0.39	--	--

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-13-P-15	SB-13-P-20	SB-13-P-25	SB-14-0.5	SB-14-8	SB-14-16	SB-14-22	SB-14-26	SB-14A-0.5	SB-14A-8
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-13-P	SB-13-P	SB-13-P	SB-14	SB-14	SB-14	SB-14	SB-14	SB-14A	SB-14A
Depth (ft bgs)	15	20	25	0.5	8	16	22	26	0.5	8
Sample Date	5/14/1992	5/14/1992	5/14/1992	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	--	--	--	--
TEPH (C8-C40)	--	--	--	**49000**	**54**	<5	**12**	<10	**4800**	<5
TPH (diesel)	**ND**	**ND**	**ND**	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	--	--	--	--	--	--	--	--	--	--
TPH (gasoline)	**ND**	**1.3**	**ND**	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--	--	--	--
TPHD				--	--	--	--	--	--	--
TPHG				--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--	--	--	--
TVPH (C6-C12)	--	--	--	**690**	**1.7**	<0.39	<0.35	<0.38	**0.54**	<0.39

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-15-0.5	SB-15-8	SB-15-16	SB-15-22	SB-16-0.5	SB-16-8	SB-17-0.5	SB-17-8	SB-17-16	SB-17-22	SB-18-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-15	SB-15	SB-15	SB-15	SB-16	SB-16	SB-17	SB-17	SB-17	SB-17	SB-18
Depth (ft bgs)	0.5	8	16	22	0.5	8	0.5	8	16	22	0.5
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	--	--	--	--	--
TEPH (C8-C40)	**35**	<5	**6.9**	**19**	<5	<5	**290**	**35000**	**14**	**2400**	**14**
TPH (diesel)	--	--	--	--	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	--	--	--	--	--	--	--	--	--	--	--
TPH (gasoline)	--	--	--	--	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--	--	--	--	--
TVPH (C6-C12)	<0.39	**1.2**	<0.39	**580**	<0.32	<0.4	**0.56**	**28**	<0.39	**6.2**	<0.39

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-18-8	SB-18-16	SB-18-22	SB-18-26	SB-19-0.5	SB-19-8	SB-19-16	SB-19-19	SB-2-0.5	SB-20-0.5	SB-20-8
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-18	SB-18	SB-18	SB-18	SB-19	SB-19	SB-19	SB-19	SB-2	SB-20	SB-20
Depth (ft bgs)	8	16	22	26	0.5	8	16	19	0.5	0.5	8
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	--	--	--	--	--
TEPH (C8-C40)	<5	<5	<5	<10	<5	**6200**	<5	**770**	**5.6**	<5	<5
TPH (diesel)	--	--	--	--	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	--	--	--	--	--	--	--	--	--	--	--
TPH (gasoline)	--	--	--	--	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--	--	--	--	--
TVPH (C6-C12)	<0.39	<0.4	<0.4	<0.38	<0.38	<0.39	<0.4	**4**	<0.32	<0.39	<0.38

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-20-16	SB-20-22	SB-20-26	SB-21-0.5	SB-21-8	SB-22-0.5	SB-22-8	SB-22-16	SB-22-22	SB-23-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-20	SB-20	SB-20	SB-21	SB-21	SB-22	SB-22	SB-22	SB-22	SB-23
Depth (ft bgs)	16	22	26	0.5	8	0.5	8	16	22	0.5
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	--	--	--	--
TEPH (C8-C40)	<5	<5	<10	**310**	<10	**26**	<5	**8.6**	<30	**10**
TPH (diesel)	--	--	--	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	--	--	--	--	--	--	--	--	--	--
TPH (gasoline)	--	--	--	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--	--	--	--
TVPH (C6-C12)	<0.41	<0.39	<0.33	**12**	<0.39	<0.35	<0.39	<0.4	**240**	<0.37

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-24-0.5	SB-24-8	SB-24-16	SB-24-22	SB-25-0.5	SB-25-8	SB-26-0.5	SB-26-8	SB-27-0.5	SB-27A-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-24	SB-24	SB-24	SB-24	SB-25	SB-25	SB-26	SB-26	SB-27	SB-27A
Depth (ft bgs)	0.5	8	16	22	0.5	8	0.5	8	0.5	0.5
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	--	--	--	--
TEPH (C8-C40)	**170**	<5	<5	**1700**	**210**	<5	**230**	<10	**120**	**65**
TPH (diesel)	--	--	--	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	--	--	--	--	--	--	--	--	--	--
TPH (gasoline)	--	--	--	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--	--	--	--
TVPH (C6-C12)	<0.38	<0.37	<0.39	**81**	<0.35	<0.38	<0.38	<0.42	<0.38	<0.34

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-27A-8	SB-28-0.5	SB-29-0.5	SB-3-0.5	SB-30-0.5	SB-30-8	SB-31-0.5	SB-32-0.5	SB-33-0.5	SB-34-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-27A	SB-28	SB-29	SB-3	SB-30	SB-30	SB-31	SB-32	SB-33	SB-34
Depth (ft bgs)	8	0.5	0.5	0.5	0.5	8	0.5	0.5	0.5	0.5
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	--	--	--	--
TEPH (C8-C40)	<5	<5	<5	<5	**740**	<5	**42**	**5.6**	<5	<5
TPH (diesel)	--	--	--	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	--	--	--	--	--	--	--	--	--	--
TPH (gasoline)	--	--	--	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--	--	--	--
TVPH (C6-C12)	<0.39	<0.39	<0.38	<0.39	<0.39	<0.38	<0.4	<0.39	<0.38	<0.38

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-35-0.5	SB-36-0.5	SB-37-0.5	SB-4-0.5	SB-43-0.5	SB-43-8	SB-44-0.5	SB-44-8	SB-5-0.5	SB-6-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-35	SB-36	SB-37	SB-4	SB-43	SB-43	SB-44	SB-44	SB-5	SB-6
Depth (ft bgs)	0.5	0.5	0.5	0.5	0.5	8	0.5	8	0.5	0.5
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	--	--	--	--
TEPH (C8-C40)	<5	<5	<5	**27**	**230**	<5	**180**	<5	<5	**600**
TPH (diesel)	--	--	--	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	--	--	--	--	--	--	--	--	--	--
TPH (gasoline)	--	--	--	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--	--	--	--
TVPH (C6-C12)	<0.4	<0.39	<0.4	<0.39	<0.36	<0.37	**18**	<0.4	<0.4	<0.4

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-6A-0.5	SB-6B-0.5	SB-6C-0.5	SB-6C-8	SB-6C-16	SB-6C-22	SB-6C-26	SB-7-0.5	SB-8-0.5	SB-9-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-6A	SB-6B	SB-6C	SB-6C	SB-6C	SB-6C	SB-6C	SB-7	SB-8	SB-9
Depth (ft bgs)	0.5	0.5	0.5	8	16	22	26	0.5	0.5	0.5
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--	--	--	--	--	--
TEPH (C8-C40)	**18000**	**61**	**1600**	**420**	**4500**	<10	**230**	<5	**45**	**8.7**
TPH (diesel)	--	--	--	--	--	--	--	--	--	--
TPH (extractable - rolling oil)	--	--	--	--	--	--	--	--	--	--
TPH (gasoline)	--	--	--	--	--	--	--	--	--	--
TPH (volatile)	--	--	--	--	--	--	--	--	--	--
TPHD	--	--	--	--	--	--	--	--	--	--
TPHG	--	--	--	--	--	--	--	--	--	--
TRPH	--	--	--	--	--	--	--	--	--	--
TVPH (C6-C12)	**55**	<0.38	**9.6**	<0.39	**4100**	<0.4	**120**	<0.39	<0.38	<0.38

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B3: SOIL DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	T-1-1	T-1-2	T-2-1	T-3-1	T-4-1
Sample Matrix	Soil	Soil	Soil	Soil	Soil
Sample Location	T-1	T-1	T-2	T-3	T-4
Depth (ft bgs)	1	2	1	1	1
Sample Date	8/14/1995	8/14/1995	8/14/1995	8/15/1995	8/14/1995
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TEPH	--	--	--	--	--
TEPH (C8-C40)	--	--	--	--	--
TPH (diesel)	**25**	<10	<10	**170**	<10
TPH (extractable - rolling oil)	--	--	--	--	--
TPH (gasoline)	**3.3**	<0.05	**0.7**	**400**	**0.23**
TPH (volatile)	--	--	--	--	--
TPHD	--	--	--	--	--
TPHG	--	--	--	--	--
TRPH	**73**	**27**	**30**	**310**	<10
TVPH (C6-C12)	--	--	--	--	--

Notes:
ND = constituent no detected at unknown detection limit.
mg/kg = milligrams per kilogram.
ft bgs = feet below ground surface.

TPH = Total petroleum hydrocarbons with TEPH (C8-C40) analyzed for using Method 418.2 (1992 sampling events) or US EPA Method 8015M (May 2006 sampling event), TVPH (C6-C12) analyzed for using US EPA Method 8015M, TPH diesel, rolling oil, gasoline and volatile analyzed for using US EPA Method 8015, using and TRPH analyzed for Method 418.1.
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	6A	6AA	6B	6BB	6C	6CC	6DD
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	6	6	6	6	6	6	6
Depth (ft bgs)	4+	4+	4+	4+	4+	4+	4+
Sample Date	5/20/1993	5/20/1993	5/20/1993	5/20/1993	5/20/1993	5/20/1993	5/20/1993
Analytical Method	8240	8240	8240	8240	8240	8240	8240
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	--	--	--	--	--	--	--
1,1,2-Trichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethylene	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	--	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	--	--	--	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--
2-Chloroethylvinyl ether	--	--	--	--	--	--	--
4-Isopropyltoluene	--	--	--	--	--	--	--
Bromodichloromethane	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	--	--
Bromomethane	--	--	--	--	--	--	--
Carbon Tetrachloride	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	--	--	--	--	--	--	--
cis-1,3-Dichloropropylene	--	--	--	--	--	--	--
Dibromochloromethane	--	--	--	--	--	--	--
Dichlorodifluoromethane (R12)	--	--	--	--	--	--	--
Ethylbenzene	**0.46**	**0.77**	**0.22**	<0.1	**0.38**	**0.54**	<0.1
Isopropylbenzene	--	--	--	--	--	--	--
Methylene Chloride	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	--
n-Butylbenzene	--	--	--	--	--	--	--
n-Propylbenzene	--	--	--	--	--	--	--
sec-Butylbenzene	--	--	--	--	--	--	--
Tetrachloroethylene (PCE)	**0.1**	**0.19**	<0.1	**0.11**	<0.1	**0.13**	<0.1
Toluene	**0.75**	**0.38**	**0.39**	**0.36**	**0.84**	**0.48**	**0.19**
Total Xylenes	**2.3**	**3.5**	**1.4**	**0.47**	**2.2**	**3.1**	**0.14**
trans-1,2-Dichloroethylene	--	--	--	--	--	--	--
trans-1,3-Dichloropropylene	--	--	--	--	--	--	--
Trichloroethylene (TCE)	--	--	--	--	--	--	--
Trichlorofluoromethane (R11)	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	7A	7B	7C	MW-10-P @ 15'	MW-10-P @ 22'
Sample Matrix	Soil	Soil	Soil	Soil	Soil
Sample Location	7	7	7	MW-10-P	MW-10-P
Depth (ft bgs)	4+	4+	4+	15	22
Sample Date	5/20/1993	5/20/1993	5/20/1993	2/27/1992	2/27/1992
Analytical Method	8240	8240	8240	8010	8010
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	--	--	--	<0.005	<0.005
1,1,2,2-Tetrachloroethane	--	--	--	<0.005	<0.005
1,1,2-Trichloroethane	--	--	--	<0.005	<0.005
1,1-Dichloroethane	--	--	--	<0.005	<0.005
1,1-Dichloroethylene	--	--	--	<0.005	<0.005
1,2,4-Trimethylbenzene	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	<0.005	<0.005
1,2-Dichloroethane (EDC)	--	--	--	<0.005	<0.005
1,2-Dichloropropane	--	--	--	<0.005	<0.005
1,3,5-Trimethylbenzene	--	--	--	--	--
1,3-Dichlorobenzene	--	--	--	<0.005	<0.005
1,4-Dichlorobenzene	--	--	--	<0.005	<0.005
2-Chloroethylvinyl ether	--	--	--	<0.005	<0.005
4-Isopropyltoluene	--	--	--	--	--
Bromodichloromethane	--	--	--	<0.005	<0.005
Bromoform	--	--	--	<0.005	<0.005
Bromomethane	--	--	--	<0.005	<0.005
Carbon Tetrachloride	--	--	--	<0.005	<0.005
Chlorobenzene	--	--	--	<0.005	<0.005
Chloroethane	--	--	--	<0.005	<0.005
Chloroform	--	--	--	<0.005	<0.005
Chloromethane	--	--	--	<0.005	<0.005
cis-1,2-Dichloroethylene	--	--	--	--	--
cis-1,3-Dichloropropylene	--	--	--	<0.005	<0.005
Dibromochloromethane	--	--	--	<0.005	<0.005
Dichlorodifluoromethane (R12)	--	--	--	--	--
Ethylbenzene	<0.1	<0.1	<0.1	--	--
Isopropylbenzene	--	--	--	--	--
Methylene Chloride	--	--	--	<0.005	<0.005
Naphthalene	--	--	--	--	--
n-Butylbenzene	--	--	--	--	--
n-Propylbenzene	--	--	--	--	--
sec-Butylbenzene	--	--	--	--	--
Tetrachloroethylene (PCE)	<0.1	<0.1	<0.1	<0.005	<0.005
Toluene	**0.55**	**0.43**	**0.52**	--	--
Total Xylenes	**0.43**	**0.29**	**0.42**	--	--
trans-1,2-Dichloroethylene	--	--	--	<0.005	<0.005
trans-1,3-Dichloropropylene	--	--	--	<0.005	<0.005
Trichloroethylene (TCE)	--	--	--	<0.005	<0.005
Trichlorofluoromethane (R11)	--	--	--	<0.005	<0.005
Vinyl chloride	--	--	--	<0.005	<0.005

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-10-P @ 25'	MW-11-P @ 15'	MW-11-P @ 23'	MW-2-P @ 5'	MW-2-P @ 10'
Sample Matrix	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-10-P	MW-11-P	MW-11-P	MW-2-P	MW-2-P
Depth (ft bgs)	25	15	23	5	10
Sample Date	2/27/1992	2/27/1992	2/27/1992	8/27/1991	8/27/1991
Analytical Method	8010	8010	8010	8010	8010
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	<0.005	<0.005	<0.005	<0.05	<0.05
1,1,2,2-Tetrachloroethane	<0.005	<0.005	<0.005	--	--
1,1,2-Trichloroethane	<0.005	<0.005	<0.005	<0.05	<0.05
1,1-Dichloroethane	<0.005	<0.005	<0.005	<0.05	<0.05
1,1-Dichloroethylene	<0.005	<0.005	<0.005	<0.05	<0.05
1,2,4-Trimethylbenzene	--	--	--	--	--
1,2-Dichlorobenzene	<0.005	<0.005	<0.005	--	--
1,2-Dichloroethane (EDC)	<0.005	<0.005	<0.005	<0.05	<0.05
1,2-Dichloropropane	<0.005	<0.005	<0.005	<0.05	<0.05
1,3,5-Trimethylbenzene	--	--	--	--	--
1,3-Dichlorobenzene	<0.005	<0.005	<0.005	--	--
1,4-Dichlorobenzene	<0.005	<0.005	<0.005	--	--
2-Chloroethylvinyl ether	<0.005	<0.005	<0.005	--	--
4-Isopropyltoluene	--	--	--	--	--
Bromodichloromethane	<0.005	<0.005	<0.005	<0.05	<0.05
Bromoform	<0.005	<0.005	<0.005	--	--
Bromomethane	<0.005	<0.005	<0.005	--	--
Carbon Tetrachloride	<0.005	<0.005	<0.005	<0.05	<0.05
Chlorobenzene	<0.005	<0.005	<0.005	--	--
Chloroethane	<0.005	<0.005	<0.005	--	--
Chloroform	<0.005	<0.005	<0.005	<0.05	<0.05
Chloromethane	<0.005	<0.005	<0.005	--	--
cis-1,2-Dichloroethylene	--	--	--	<0.05	<0.05
cis-1,3-Dichloropropylene	<0.005	<0.005	<0.005	<0.05	<0.05
Dibromochloromethane	<0.005	<0.005	<0.005	--	--
Dichlorodifluoromethane (R12)	--	--	--	<0.05	<0.05
Ethylbenzene	--	--	--	--	--
Isopropylbenzene	--	--	--	--	--
Methylene Chloride	<0.005	<0.005	<0.005	<0.05	<0.05
Naphthalene	--	--	--	--	--
n-Butylbenzene	--	--	--	--	--
n-Propylbenzene	--	--	--	--	--
sec-Butylbenzene	--	--	--	--	--
Tetrachloroethylene (PCE)	<0.005	<0.005	<0.005	<0.05	<0.05
Toluene	--	--	--	--	--
Total Xylenes	--	--	--	--	--
trans-1,2-Dichloroethylene	<0.005	<0.005	<0.005	<0.05	<0.05
trans-1,3-Dichloropropylene	<0.005	<0.005	<0.005	<0.05	<0.05
Trichloroethylene (TCE)	<0.005	<0.005	<0.005	<0.05	<0.05
Trichlorofluoromethane (R11)	<0.005	<0.005	<0.005	<0.05	<0.05
Vinyl chloride	<0.005	<0.005	<0.005	<0.05	<0.05

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-2-P @ 15'	MW-2-P @ 20'	MW-2-P @ 25'	MW-2-P @ 30'	MW-3-P @ 5'
Sample Matrix	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-2-P	MW-2-P	MW-2-P	MW-2-P	MW-3-P
Depth (ft bgs)	15	20	25	30	5
Sample Date	8/27/1991	8/27/1991	8/27/1991	8/27/1991	8/27/1991
Analytical Method	8010	8010	8010	8010	8010
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	--	--	--	--	--
1,1,2-Trichloroethane	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	<0.05	<0.05	<0.05	<0.05	<0.05
1,2,4-Trimethylbenzene	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--
1,2-Dichloroethane (EDC)	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	<0.05	<0.05	<0.05	<0.05	<0.05
1,3,5-Trimethylbenzene	--	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--	--
1,4-Dichlorobenzene	--	--			
2-Chloroethylvinyl ether	--	--	--	--	--
4-Isopropyltoluene	--	--	--	--	--
Bromodichloromethane	<0.05	<0.05	<0.05	<0.05	<0.05
Bromoform	--	--	--	--	--
Bromomethane	--	--	--	--	--
Carbon Tetrachloride	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	--	--	--	--	--
Chloroethane	--	--	--	--	--
Chloroform	<0.05	<0.05	<0.05	<0.05	<0.05
Chloromethane	--	--	--	--	--
cis-1,2-Dichloroethylene	<0.05	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	<0.05	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	--	--	--	--	--
Dichlorodifluoromethane (R12)	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	--	--	--	--	--
Isopropylbenzene	--	--	--	--	--
Methylene Chloride	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	--	--	--	--	--
n-Butylbenzene	--	--	--	--	--
n-Propylbenzene	--	--	--	--	--
sec-Butylbenzene	--	--	--	--	--
Tetrachloroethylene (PCE)	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	--	--	--	--	--
Total Xylenes	--	--	--	--	--
trans-1,2-Dichloroethylene	<0.05	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	<0.05	<0.05	<0.05	<0.05	<0.05
Trichloroethylene (TCE)	<0.05	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane (R11)	<0.05	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	<0.05	<0.05	<0.05	<0.05	<0.05

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-3-P @ 10'	MW-3-P @ 15'	MW-3-P @ 21'	MW-3-P @ 26'	MW-3-P @ 31'
Sample Matrix	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-3-P	MW-3-P	MW-3-P	MW-3-P	MW-3-P
Depth (ft bgs)	10	15	21	26	31
Sample Date	8/27/1991	8/27/1991	8/27/1991	8/27/1991	8/27/1991
Analytical Method	8010	8010	8010	8010	8010
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	--	--	--	--	--
1,1,2-Trichloroethane	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	<0.05	<0.05	<0.05	<0.05	<0.05
1,2,4-Trimethylbenzene	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--
1,2-Dichloroethane (EDC)	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	<0.05	<0.05	<0.05	<0.05	<0.05
1,3,5-Trimethylbenzene	--	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--	--
1,4-Dichlorobenzene			--	--	--
2-Chloroethylvinyl ether	--	--	--	--	--
4-Isopropyltoluene	--	--	--	--	--
Bromodichloromethane	<0.05	<0.05	<0.05	<0.05	<0.05
Bromoform	--	--	--	--	--
Bromomethane	--	--	--	--	--
Carbon Tetrachloride	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	--	--	--	--	--
Chloroethane	--	--	--	--	--
Chloroform	<0.05	<0.05	<0.05	<0.05	<0.05
Chloromethane	--	--	--	--	--
cis-1,2-Dichloroethylene	<0.05	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	<0.05	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	--	--	--	--	--
Dichlorodifluoromethane (R12)	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	--	--	--	--	--
Isopropylbenzene	--	--	--	--	--
Methylene Chloride	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	--	--	--	--	--
n-Butylbenzene	--	--	--	--	--
n-Propylbenzene	--	--	--	--	--
sec-Butylbenzene	--	--	--	--	--
Tetrachloroethylene (PCE)	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	--	--	--	--	--
Total Xylenes	--	--	--	--	--
trans-1,2-Dichloroethylene	<0.05	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	<0.05	<0.05	<0.05	<0.05	<0.05
Trichloroethylene (TCE)	<0.05	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane (R11)	<0.05	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	<0.05	<0.05	<0.05	<0.05	<0.05

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-4-P @ 20'	MW-4-P @ 25'	MW-4-P @ 29'	MW-5-P @ 21'	MW-6-P @ 10'
Sample Matrix	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-4-P	MW-4-P	MW-4-P	MW-5-P	MW-6-P
Depth (ft bgs)	20	25	29	21	10
Sample Date	8/27/1991	8/27/1991	8/27/1991	8/28/1991	8/29/1991
Analytical Method	8010	8010	8010	8010	8010
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	<0.05	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	--	--	--	--	--
1,1,2-Trichloroethane	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	<0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	<0.05	<0.05	<0.05	<0.05	<0.05
1,2,4-Trimethylbenzene	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--
1,2-Dichloroethane (EDC)	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	<0.05	<0.05	<0.05	<0.05	<0.05
1,3,5-Trimethylbenzene	--	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--
2-Chloroethylvinyl ether	--	--	--	--	--
4-Isopropyltoluene	--	--	--	--	--
Bromodichloromethane	<0.05	<0.05	<0.05	<0.05	<0.05
Bromoform	--	--	--	--	--
Bromomethane	--	--	--	--	--
Carbon Tetrachloride	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	--	--	--	--	--
Chloroethane	--	--	--	--	--
Chloroform	<0.05	<0.05	<0.05	<0.05	<0.05
Chloromethane	--	--	--	--	--
cis-1,2-Dichloroethylene	<0.05	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	<0.05	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	--	--	--	--	--
Dichlorodifluoromethane (R12)	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	--	--	--	--	--
Isopropylbenzene	--	--	--	--	--
Methylene Chloride	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	--	--	--	--	--
n-Butylbenzene	--	--	--	--	--
n-Propylbenzene	--	--	--	--	--
sec-Butylbenzene	--	--	--	--	--
Tetrachloroethylene (PCE)	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	--	--	--	--	--
Total Xylenes	--	--	--	--	--
trans-1,2-Dichloroethylene	<0.05	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	<0.05	<0.05	<0.05	<0.05	<0.05
Trichloroethylene (TCE)	<0.05	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane (R11)	<0.05	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	<0.05	<0.05	<0.05	<0.05	<0.05

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-6-P @ 20'	MW-6-P @ 20A'	MW-6-P @ 25'	MW-7-P @ 19'	MW-8-P @ 14'
Sample Matrix	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-6-P	MW-6-P	MW-6-P	MW-7-P	MW-8-P
Depth (ft bgs)	20	20	25	19	14
Sample Date	8/29/1991	8/29/1991	8/29/1991	8/29/1991	2/26/1992
Analytical Method	8010	8010	8010	8010	8010
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	<0.05	<0.05	<0.05	<0.05	<0.005
1,1,2,2-Tetrachloroethane	--	--	--	--	<0.005
1,1,2-Trichloroethane	<0.05	<0.05	<0.05	<0.05	<0.005
1,1-Dichloroethane	<0.05	<0.05	<0.05	<0.05	<0.005
1,1-Dichloroethylene	<0.05	<0.05	<0.05	<0.05	<0.005
1,2,4-Trimethylbenzene	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	<0.005
1,2-Dichloroethane (EDC)	<0.05	<0.05	<0.05	<0.05	<0.005
1,2-Dichloropropane	<0.05	<0.05	<0.05	<0.05	<0.005
1,3,5-Trimethylbenzene	--	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--	<0.005
1,4-Dichlorobenzene	--	--	--	--	<0.005
2-Chloroethylvinyl ether	--	--	--	--	<0.005
4-Isopropyltoluene	--	--	--	--	--
Bromodichloromethane	<0.05	<0.05	<0.05	<0.05	<0.005
Bromoform	--	--	--	--	<0.005
Bromomethane	--	--	--	--	<0.005
Carbon Tetrachloride	<0.05	<0.05	<0.05	<0.05	<0.005
Chlorobenzene	--	--	--	--	<0.005
Chloroethane	--	--	--	--	<0.005
Chloroform	<0.05	<0.05	<0.05	<0.05	<0.005
Chloromethane	--	--	--	--	<0.005
cis-1,2-Dichloroethylene	<0.05	<0.05	<0.05	<0.05	--
cis-1,3-Dichloropropylene	<0.05	<0.05	<0.05	<0.05	<0.005
Dibromochloromethane	--	--	--	--	<0.005
Dichlorodifluoromethane (R12)	<0.05	<0.05	<0.05	<0.05	--
Ethylbenzene	--	--	--	--	--
Isopropylbenzene	--	--	--	--	--
Methylene Chloride	<0.05	<0.05	<0.05	<0.05	<0.005
Naphthalene	--	--	--	--	--
n-Butylbenzene	--	--	--	--	--
n-Propylbenzene	--	--	--	--	--
sec-Butylbenzene	--	--	--	--	--
Tetrachloroethylene (PCE)	<0.05	<0.05	<0.05	<0.05	<0.005
Toluene	--	--	--	--	--
Total Xylenes	--	--	--	--	--
trans-1,2-Dichloroethylene	<0.05	<0.05	<0.05	<0.05	<0.005
trans-1,3-Dichloropropylene	<0.05	<0.05	<0.05	<0.05	<0.005
Trichloroethylene (TCE)	<0.05	<0.05	<0.05	<0.05	<0.005
Trichlorofluoromethane (R11)	<0.05	<0.05	<0.05	<0.05	<0.005
Vinyl chloride	<0.05	<0.05	<0.05	<0.05	<0.005

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-8-P @ 20'	MW-8-P @ 22'	MW-8-P @ 27'	MW-9-P @ 20'	MW-9-P @ 23'
Sample Matrix	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-8-P	MW-8-P	MW-8-P	MW-9-P	MW-9-P
Depth (ft bgs)	20	22	27	20	23
Sample Date	2/26/1992	2/26/1992	2/26/1992	2/26/1992	2/26/1992
Analytical Method	8010	8010	8010	8010	8010
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	<0.005	<0.005	<0.005	<0.005	<0.005
1,1,2,2-Tetrachloroethane	<0.005	<0.005	<0.005	<0.005	<0.005
1,1,2-Trichloroethane	<0.005	<0.005	<0.005	<0.005	<0.005
1,1-Dichloroethane	<0.005	<0.005	<0.005	<0.005	<0.005
1,1-Dichloroethylene	<0.005	<0.005	<0.005	<0.005	<0.005
1,2,4-Trimethylbenzene	--	--	--	--	--
1,2-Dichlorobenzene	<0.005	<0.005	<0.005	<0.005	<0.005
1,2-Dichloroethane (EDC)	<0.005	<0.005	<0.005	<0.005	<0.005
1,2-Dichloropropane	<0.005	<0.005	<0.005	<0.005	<0.005
1,3,5-Trimethylbenzene	--	--	--	--	--
1,3-Dichlorobenzene	<0.005	<0.005	<0.005	<0.005	<0.005
1,4-Dichlorobenzene	<0.005	<0.005	<0.005	<0.005	<0.005
2-Chloroethylvinyl ether	<0.005	<0.005	<0.005	<0.005	<0.005
4-Isopropyltoluene	--	--	--	--	--
Bromodichloromethane	<0.005	<0.005	<0.005	<0.005	<0.005
Bromoform	<0.005	<0.005	<0.005	<0.005	<0.005
Bromomethane	<0.005	<0.005	<0.005	<0.005	<0.005
Carbon Tetrachloride	<0.005	<0.005	<0.005	<0.005	<0.005
Chlorobenzene	<0.005	<0.005	<0.005	<0.005	<0.005
Chloroethane	<0.005	<0.005	<0.005	<0.005	<0.005
Chloroform	<0.005	<0.005	<0.005	<0.005	<0.005
Chloromethane	<0.005	<0.005	<0.005	<0.005	<0.005
cis-1,2-Dichloroethylene	--	--	--	--	--
cis-1,3-Dichloropropylene	<0.005	<0.005	<0.005	<0.005	<0.005
Dibromochloromethane	<0.005	<0.005	<0.005	<0.005	<0.005
Dichlorodifluoromethane (R12)	--	--	--	--	--
Ethylbenzene	--	--	--	--	--
Isopropylbenzene	--	--	--	--	--
Methylene Chloride	<0.005	<0.005	<0.005	<0.005	<0.005
Naphthalene	--	--	--	--	--
n-Butylbenzene	--	--	--	--	--
n-Propylbenzene	--	--	--	--	--
sec-Butylbenzene	--	--	--	--	--
Tetrachloroethylene (PCE)	<0.005	<0.005	<0.005	<0.005	**0.145**
Toluene	--	--	--	--	--
Total Xylenes	--	--	--	--	--
trans-1,2-Dichloroethylene	<0.005	<0.005	<0.005	<0.005	<0.005
trans-1,3-Dichloropropylene	<0.005	<0.005	<0.005	<0.005	<0.005
Trichloroethylene (TCE)	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorofluoromethane (R11)	<0.005	<0.005	<0.005	<0.005	<0.005
Vinyl chloride	<0.005	<0.005	<0.005	<0.005	<0.005

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	MW-9-P @ 25'	MW-9-P @ 29'	SB-1-0.5	SB-10-0.5	SB-11-0.5	SB-11-8
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	MW-9-P	MW-9-P	SB-1	SB-10	SB-11	SB-11
Depth (ft bgs)	25	29	0.5	0.5	0.5	8
Sample Date	2/26/1992	2/26/1992	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Analytical Method	8010	8010	8260B	8260B	8260B	8260B
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	<0.005	<0.005	--	--	--	--
1,1,2,2-Tetrachloroethane	<0.005	<0.005	<0.002	<0.0021	<0.019	<0.002
1,1,2-Trichloroethane	<0.005	<0.005	--	--	--	--
1,1-Dichloroethane	<0.005	<0.005	--	--	--	--
1,1-Dichloroethylene	<0.005	<0.005	--	--	--	--
1,2,4-Trimethylbenzene	--	--	<0.002	<0.0021	<0.019	<0.002
1,2-Dichlorobenzene	<0.005	<0.005	--	--	--	--
1,2-Dichloroethane (EDC)	<0.005	<0.005	--	--	--	--
1,2-Dichloropropane	<0.005	<0.005	--	--	--	--
1,3,5-Trimethylbenzene	--	--	<0.002	<0.0021	<0.019	<0.002
1,3-Dichlorobenzene	<0.005	<0.005	--	--	--	--
1,4-Dichlorobenzene	<0.005	<0.005	--	--	--	--
2-Chloroethylvinyl ether	<0.005	<0.005	--	--	--	--
4-Isopropyltoluene	--	--	<0.002	<0.0021	<0.019	<0.002
Bromodichloromethane	<0.005	<0.005	--	--	--	--
Bromoform	<0.005	<0.005	--	--	--	--
Bromomethane	<0.005	<0.005	--	--	--	--
Carbon Tetrachloride	<0.005	<0.005	--	--	--	--
Chlorobenzene	<0.005	<0.005	--	--	--	--
Chloroethane	<0.005	<0.005	--	--	--	--
Chloroform	<0.005	<0.005	--	--	--	--
Chloromethane	<0.005	<0.005	--	--	--	--
cis-1,2-Dichloroethylene	--	--	--	--	--	--
cis-1,3-Dichloropropylene	<0.005	<0.005	--	--	--	--
Dibromochloromethane	<0.005	<0.005	--	--	--	--
Dichlorodifluoromethane (R12)	--	--	--	--	--	--
Ethylbenzene	--	--	<0.002	<0.0021	**1.7**	<0.002
Isopropylbenzene	--	--	<0.002	<0.0021	**0.055**	<0.002
Methylene Chloride	<0.005	<0.005	<0.02	<0.021	<0.19	<0.02
Naphthalene	--	--	<0.0051	<0.0053	<0.048	<0.0049
n-Butylbenzene	--	--	<0.0051	<0.0053	<0.048	<0.0049
n-Propylbenzene	--	--	<0.002	<0.0021	<0.019	<0.002
sec-Butylbenzene	--	--	<0.0051	<0.0053	<0.048	<0.0049
Tetrachloroethylene (PCE)	<0.005	<0.005	<0.002	<0.0021	<0.019	<0.002
Toluene	--	--	<0.002	<0.0021	<0.019	<0.002
Total Xylenes	--	--	<0.0041	<0.0042	**11**	<0.0039
trans-1,2-Dichloroethylene	<0.005	<0.005	--	--	--	--
trans-1,3-Dichloropropylene	<0.005	<0.005	--	--	--	--
Trichloroethylene (TCE)	<0.005	<0.005	<0.002	<0.0021	<0.019	<0.002
Trichlorofluoromethane (R11)	<0.005	<0.005	--	--	--	--
Vinyl chloride	<0.005	<0.005	--	--	--	--

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-12-0.5	SB-12-8	SB-13-0.5	SB-14-0.5	SB-14-8	SB-14-16	SB-14-22
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-12	SB-12	SB-13	SB-14	SB-14	SB-14	SB-14
Depth (ft bgs)	0.5	8	0.5	0.5	8	16	22
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	<0.019	<0.002	<0.002	<0.019	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethylene	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	**1**	<0.002	<0.002	**0.97**	<0.002	<0.002	<0.002
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	--	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	**0.36**	<0.002	<0.002	**0.55**	<0.002	<0.002	**0.0028**
1,3-Dichlorobenzene	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--
2-Chloroethylvinyl ether	--	--	--	--	--	--	--
4-Isopropyltoluene	<0.019	<0.002	<0.002	<0.019	<0.002	<0.002	<0.002
Bromodichloromethane	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	--	--
Bromomethane	--	--	--	--	--	--	--
Carbon Tetrachloride	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	--	--	--	--	--	--	--
cis-1,3-Dichloropropylene	--	--	--	--	--	--	--
Dibromochloromethane	--	--	--	--	--	--	--
Dichlorodifluoromethane (R12)	--	--	--	--	--	--	--
Ethylbenzene	**0.034**	<0.002	**0.0062**	**0.051**	<0.002	<0.002	<0.002
Isopropylbenzene	**0.04**	<0.002	<0.002	**0.077**	<0.002	<0.002	**0.0056**
Methylene Chloride	<0.19	<0.02	<0.02	<0.19	<0.02	<0.02	<0.02
Naphthalene	<0.046	<0.005	<0.005	**0.1**	<0.0051	<0.005	**0.039**
n-Butylbenzene	<0.046	<0.005	<0.005	<0.046	<0.0051	<0.005	<0.005
n-Propylbenzene	**0.068**	<0.002	<0.002	**0.13**	<0.002	<0.002	**0.0034**
sec-Butylbenzene	<0.046	<0.005	<0.005	**0.067**	<0.0051	<0.005	<0.017
Tetrachloroethylene (PCE)	<0.019	<0.002	<0.002	<0.019	<0.002	<0.002	<0.002
Toluene	<0.019	<0.002	<0.002	**0.021**	<0.002	<0.002	<0.002
Total Xylenes	**0.18**	<0.004	**0.054**	**0.39**	<0.0041	<0.004	<0.004
trans-1,2-Dichloroethylene	--	--	--	--	--	--	--
trans-1,3-Dichloropropylene	--	--	--	--	--	--	--
Trichloroethylene (TCE)	<0.019	<0.002	<0.002	<0.019	<0.002	<0.002	<0.002
Trichlorofluoromethane (R11)	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-14-26	SB-14A-0.5	SB-14A-8	SB-15-0.5	SB-15-16	SB-15-22	SB-16-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-14	SB-14A	SB-14A	SB-15	SB-15	SB-15	SB-16
Depth (ft bgs)	26	0.5	8	0.5	16	22	0.5
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethylene	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	**0.002**	<0.002	<0.002	<0.002	<0.002	**0.13**	<0.002
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	--	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	<0.002	<0.002	<0.002	<0.002	<0.002	**0.052**	<0.002
1,3-Dichlorobenzene	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--
2-Chloroethylvinyl ether	--	--	--	--	--	--	--
4-Isopropyltoluene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Bromodichloromethane	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	--	--
Bromomethane	--	--	--	--	--	--	--
Carbon Tetrachloride	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	--	--	--	--	--	--	--
cis-1,3-Dichloropropylene	--	--	--	--	--	--	--
Dibromochloromethane	--	--	--	--	--	--	--
Dichlorodifluoromethane (R12)	--	--	--	--	--	--	--
Ethylbenzene	<0.002	<0.002	<0.002	<0.002	<0.002	**0.023**	<0.002
Isopropylbenzene	<0.002	<0.002	<0.002	<0.002	<0.002	**0.019**	<0.002
Methylene Chloride	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Naphthalene	<0.005	<0.0049	<0.0051	<0.005	<0.005	**0.01**	<0.0051
n-Butylbenzene	<0.005	<0.0049	<0.0051	<0.005	<0.005	<0.005	<0.0051
n-Propylbenzene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
sec-Butylbenzene	<0.005	<0.0049	<0.0051	<0.005	<0.005	**0.042**	<0.0051
Tetrachloroethylene (PCE)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Toluene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Total Xylenes	<0.004	<0.0039	<0.0041	**0.011**	<0.004	**0.072**	<0.0041
trans-1,2-Dichloroethylene	--	--	--	--	--	--	--
trans-1,3-Dichloropropylene	--	--	--	--	--	--	--
Trichloroethylene (TCE)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Trichlorofluoromethane (R11)	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-17-0.5	SB-17-8	SB-17-16	SB-17-22	SB-18-0.5	SB-18-16	SB-18-22
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-17	SB-17	SB-17	SB-17	SB-18	SB-18	SB-18
Depth (ft bgs)	0.5	8	16	22	0.5	16	22
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethylene	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	<0.002	**0.11**	<0.002	**0.014**	<0.002	<0.002	<0.002
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	--	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	<0.002	**0.037**	<0.002	**0.0049**	<0.002	<0.002	<0.002
1,3-Dichlorobenzene	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--
2-Chloroethylvinyl ether	--	--	--	--	--	--	--
4-Isopropyltoluene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Bromodichloromethane	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	--	--
Bromomethane	--	--	--	--	--	--	--
Carbon Tetrachloride	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	--	--	--	--	--	--	--
cis-1,3-Dichloropropylene	--	--	--	--	--	--	--
Dibromochloromethane	--	--	--	--	--	--	--
Dichlorodifluoromethane (R12)	--	--	--	--	--	--	--
Ethylbenzene	**0.014**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Isopropylbenzene	<0.002	**0.0038**	<0.002	<0.002	<0.002	<0.002	<0.002
Methylene Chloride	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Naphthalene	<0.005	**0.031**	<0.005	<0.005	<0.0051	<0.005	<0.005
n-Butylbenzene	<0.005	<0.005	<0.005	<0.005	<0.0051	<0.005	<0.005
n-Propylbenzene	<0.002	**0.014**	<0.002	<0.002	<0.002	<0.002	<0.002
sec-Butylbenzene	<0.005	<0.005	<0.005	<0.005	<0.0051	<0.005	<0.005
Tetrachloroethylene (PCE)	<0.002	**0.0076**	<0.002	<0.002	<0.002	<0.002	<0.002
Toluene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Total Xylenes	**0.11**	**0.011**	<0.004	<0.004	<0.004	<0.004	<0.004
trans-1,2-Dichloroethylene	--	--	--	--	--	--	--
trans-1,3-Dichloropropylene	--	--	--	--	--	--	--
Trichloroethylene (TCE)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Trichlorofluoromethane (R11)	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-18-26	SB-19-0.5	SB-19-8	SB-19-16	SB-19-19	SB-2-0.5	SB-2-8
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-18	SB-19	SB-19	SB-19	SB-19	SB-2	SB-2
Depth (ft bgs)	26	0.5	8	16	19	0.5	8
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethylene	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	**0.0038**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	--	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,3-Dichlorobenzene	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--
2-Chloroethylvinyl ether	--	--	--	--	--	--	--
4-Isopropyltoluene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Bromodichloromethane	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	--	--
Bromomethane	--	--	--	--	--	--	--
Carbon Tetrachloride	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	--	--	--	--	--	--	--
cis-1,3-Dichloropropylene	--	--	--	--	--	--	--
Dibromochloromethane	--	--	--	--	--	--	--
Dichlorodifluoromethane (R12)	--	--	--	--	--	--	--
Ethylbenzene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Isopropylbenzene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Methylene Chloride	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Naphthalene	<0.005	<0.0049	<0.005	<0.005	<0.005	<0.005	<0.0049
n-Butylbenzene	<0.005	<0.0049	<0.005	<0.005	<0.005	<0.005	<0.0049
n-Propylbenzene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
sec-Butylbenzene	<0.005	<0.0049	<0.005	<0.005	<0.005	<0.005	<0.0049
Tetrachloroethylene (PCE)	<0.002	<0.002	<0.002	<0.002	<0.002	**0.0097**	**0.0026**
Toluene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Total Xylenes	<0.004	<0.0039	<0.004	<0.004	<0.004	<0.004	<0.0039
trans-1,2-Dichloroethylene	--	--	--	--	--	--	--
trans-1,3-Dichloropropylene	--	--	--	--	--	--	--
Trichloroethylene (TCE)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Trichlorofluoromethane (R11)	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-20-0.5	SB-20-16	SB-20-22	SB-20-26	SB-21-0.5	SB-21-8	SB-22-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-20	SB-20	SB-20	SB-20	SB-21	SB-21	SB-22
Depth (ft bgs)	0.5	16	22	26	0.5	8	0.5
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	<0.0019	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
1,1,2-Trichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethylene	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	<0.0019	<0.002	<0.002	**0.0079**	<0.002	**0.0079**	<0.002
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	--	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	<0.0019	<0.002	<0.002	**0.0021**	<0.002	**0.0036**	<0.002
1,3-Dichlorobenzene	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--
2-Chloroethylvinyl ether	--	--	--	--	--	--	--
4-Isopropyltoluene	<0.0019	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
Bromodichloromethane	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	--	--
Bromomethane	--	--	--	--	--	--	--
Carbon Tetrachloride	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	--	--	--	--	--	--	--
cis-1,3-Dichloropropylene	--	--	--	--	--	--	--
Dibromochloromethane	--	--	--	--	--	--	--
Dichlorodifluoromethane (R12)	--	--	--	--	--	--	--
Ethylbenzene	<0.0019	<0.002	<0.002	<0.002	**0.028**	<0.0019	<0.002
Isopropylbenzene	<0.0019	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
Methylene Chloride	<0.019	<0.02	<0.02	<0.02	<0.02	<0.019	<0.02
Naphthalene	<0.0048	<0.0049	<0.005	**0.0058**	<0.005	<0.0046	<0.0049
n-Butylbenzene	<0.0048	<0.0049	<0.005	<0.005	<0.005	<0.0046	<0.0049
n-Propylbenzene	<0.0019	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
sec-Butylbenzene	<0.0048	<0.0049	<0.005	<0.005	<0.005	<0.0046	<0.0049
Tetrachloroethylene (PCE)	<0.0019	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
Toluene	<0.0019	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
Total Xylenes	<0.0038	<0.0039	<0.004	**0.004**	**0.17**	<0.0037	**0.014**
trans-1,2-Dichloroethylene	--	--	--	--	--	--	--
trans-1,3-Dichloropropylene	--	--	--	--	--	--	--
Trichloroethylene (TCE)	<0.0019	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
Trichlorofluoromethane (R11)	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-22-8	SB-22-16	SB-22-22	SB-23-0.5	SB-24-0.5	SB-24-8	SB-24-16
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-22	SB-22	SB-22	SB-23	SB-24	SB-24	SB-24
Depth (ft bgs)	8	16	22	0.5	0.5	8	16
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	<0.0019	<0.002	<0.0098	<0.002	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethylene	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	<0.0019	<0.002	**0.15**	<0.002	<0.002	<0.002	<0.002
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	--	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	<0.0019	<0.002	**0.058**	<0.002	<0.002	<0.002	<0.002
1,3-Dichlorobenzene	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--
2-Chloroethylvinyl ether	--	--	--	--	--	--	--
4-Isopropyltoluene	<0.0019	<0.002	**0.011**	<0.002	<0.002	<0.002	<0.002
Bromodichloromethane	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	--	--
Bromomethane	--	--	--	--	--	--	--
Carbon Tetrachloride	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	--	--	--	--	--	--	--
cis-1,3-Dichloropropylene	--	--	--	--	--	--	--
Dibromochloromethane	--	--	--	--	--	--	--
Dichlorodifluoromethane (R12)	--	--	--	--	--	--	--
Ethylbenzene	<0.0019	<0.002	<0.0098	<0.002	<0.002	<0.002	<0.002
Isopropylbenzene	<0.0019	<0.002	<0.0098	<0.002	<0.002	<0.002	<0.002
Methylene Chloride	<0.019	<0.02	<0.098	<0.02	<0.02	<0.02	**0.11**
Naphthalene	<0.0048	<0.0051	**0.045**	<0.0051	<0.005	<0.0051	<0.0049
n-Butylbenzene	<0.0048	<0.0051	<0.025	<0.0051	<0.005	<0.0051	<0.0049
n-Propylbenzene	<0.0019	<0.002	**0.019**	<0.002	<0.002	<0.002	<0.002
sec-Butylbenzene	<0.0048	<0.0051	<0.025	<0.0051	<0.005	<0.0051	<0.0049
Tetrachloroethylene (PCE)	<0.0019	<0.002	**0.012**	<0.002	**0.0032**	<0.002	<0.002
Toluene	<0.0019	<0.002	<0.0098	<0.002	<0.002	<0.002	<0.002
Total Xylenes	<0.0039	<0.004	<0.02	<0.0041	<0.004	<0.0041	<0.0039
trans-1,2-Dichloroethylene	--	--	--	--	--	--	--
trans-1,3-Dichloropropylene	--	--	--	--	--	--	--
Trichloroethylene (TCE)	<0.0019	<0.002	<0.0098	<0.002	<0.002	<0.002	<0.002
Trichlorofluoromethane (R11)	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-24-22	SB-25-0.5	SB-25-8	SB-26-0.5	SB-26-8	SB-27-0.5	SB-27A-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-24	SB-25	SB-25	SB-26	SB-26	SB-27	SB-27A
Depth (ft bgs)	22	0.5	8	0.5	8	0.5	0.5
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	<0.002	**0.002**	<0.0022	<0.002	<0.0021	<0.0019	<0.0024
1,1,2-Trichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethylene	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	**0.0026**	<0.002	<0.0022	<0.002	<0.0021	<0.0019	<0.0024
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	--	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	<0.002	<0.002	<0.0022	<0.002	<0.0021	<0.0019	<0.0024
1,3-Dichlorobenzene	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--
2-Chloroethylvinyl ether	--	--	--	--	--	--	--
4-Isopropyltoluene	<0.002	<0.002	<0.0022	<0.002	<0.0021	<0.0019	<0.0024
Bromodichloromethane	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	--	--
Bromomethane	--	--	--	--	--	--	--
Carbon Tetrachloride	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	--	--	--	--	--	--	--
cis-1,3-Dichloropropylene	--	--	--	--	--	--	--
Dibromochloromethane	--	--	--	--	--	--	--
Dichlorodifluoromethane (R12)	--	--	--	--	--	--	--
Ethylbenzene	<0.002	<0.002	<0.0022	<0.002	<0.0021	<0.0019	<0.0024
Isopropylbenzene	<0.002	<0.002	<0.0022	<0.002	<0.0021	<0.0019	<0.0024
Methylene Chloride	<0.02	<0.02	<0.022	<0.02	<0.021	<0.019	<0.024
Naphthalene	<0.0049	<0.0049	<0.0054	<0.005	<0.0052	<0.0049	<0.0059
n-Butylbenzene	<0.0049	<0.0049	<0.0054	<0.005	<0.0052	<0.0049	<0.0059
n-Propylbenzene	<0.002	<0.002	<0.0022	<0.002	<0.0021	<0.0019	<0.0024
sec-Butylbenzene	<0.0049	<0.0049	<0.0054	<0.005	<0.0052	<0.0049	<0.0059
Tetrachloroethylene (PCE)	**0.0056**	<0.002	<0.0022	**0.003**	<0.0021	<0.0019	<0.0024
Toluene	<0.002	<0.002	<0.0022	<0.002	<0.0021	<0.0019	<0.0024
Total Xylenes	<0.0039	<0.0039	<0.0043	**0.005**	<0.0041	<0.0039	<0.0047
trans-1,2-Dichloroethylene	--	--	--	--	--	--	--
trans-1,3-Dichloropropylene	--	--	--	--	--	--	--
Trichloroethylene (TCE)	**0.0022**	<0.002	<0.0022	<0.002	<0.0021	<0.0019	<0.0024
Trichlorofluoromethane (R11)	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-28-0.5	SB-29-0.5	SB-3-0.5	SB-30-0.5	SB-31-0.5	SB-32-0.5	SB-33-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-28	SB-29	SB-3	SB-30	SB-31	SB-32	SB-33
Depth (ft bgs)	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	<0.002	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethylene	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	<0.002	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	--	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	<0.002	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002
1,3-Dichlorobenzene	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--
2-Chloroethylvinyl ether	--	--	--	--	--	--	--
4-Isopropyltoluene	<0.002	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002
Bromodichloromethane	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	--	--
Bromomethane	--	--	--	--	--	--	--
Carbon Tetrachloride	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	--	--	--	--	--	--	--
cis-1,3-Dichloropropylene	--	--	--	--	--	--	--
Dibromochloromethane	--	--	--	--	--	--	--
Dichlorodifluoromethane (R12)	--	--	--	--	--	--	--
Ethylbenzene	<0.002	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002
Isopropylbenzene	<0.002	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002
Methylene Chloride	<0.02	<0.02	<0.019	<0.02	<0.02	<0.02	<0.02
Naphthalene	<0.005	<0.005	<0.0048	<0.0051	<0.0051	<0.005	<0.0051
n-Butylbenzene	<0.005	<0.005	<0.0048	<0.0051	<0.0051	<0.005	<0.0051
n-Propylbenzene	<0.002	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002
sec-Butylbenzene	<0.005	<0.005	<0.0048	<0.0051	<0.0051	<0.005	<0.0051
Tetrachloroethylene (PCE)	<0.002	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002
Toluene	<0.002	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002
Total Xylenes	<0.004	<0.004	<0.0039	<0.0041	<0.0041	<0.004	<0.0041
trans-1,2-Dichloroethylene	--	--	--	--	--	--	--
trans-1,3-Dichloropropylene	--	--	--	--	--	--	--
Trichloroethylene (TCE)	<0.002	<0.002	<0.0019	<0.002	<0.002	<0.002	<0.002
Trichlorofluoromethane (R11)	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-34-0.5	SB-35-0.5	SB-36-0.5	SB-37-0.5	SB-4-0.5	SB-43-0.5	SB-43-8
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-34	SB-35	SB-36	SB-37	SB-4	SB-43	SB-43
Depth (ft bgs)	0.5	0.5	0.5	0.5	0.5	0.5	8
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
1,1,2-Trichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethylene	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	--	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
1,3-Dichlorobenzene	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--
2-Chloroethylvinyl ether	--	--	--	--	--	--	--
4-Isopropyltoluene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
Bromodichloromethane	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	--	--
Bromomethane	--	--	--	--	--	--	--
Carbon Tetrachloride	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	--	--	--	--	--	--	--
cis-1,3-Dichloropropylene	--	--	--	--	--	--	--
Dibromochloromethane	--	--	--	--	--	--	--
Dichlorodifluoromethane (R12)	--	--	--	--	--	--	--
Ethylbenzene	<0.002	<0.002	<0.002	<0.002	<0.002	**0.0037**	<0.002
Isopropylbenzene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
Methylene Chloride	<0.02	<0.02	<0.02	<0.02	<0.02	<0.019	<0.02
Naphthalene	<0.0051	<0.0051	<0.0051	<0.005	<0.005	<0.0047	<0.0051
n-Butylbenzene	<0.0051	<0.0051	<0.0051	<0.005	<0.005	<0.0047	<0.0051
n-Propylbenzene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
sec-Butylbenzene	<0.0051	<0.0051	<0.0051	<0.005	<0.005	<0.0047	<0.0051
Tetrachloroethylene (PCE)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
Toluene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
Total Xylenes	<0.0041	<0.0041	<0.0041	<0.004	<0.004	**0.019**	<0.004
trans-1,2-Dichloroethylene	--	--	--	--	--	--	--
trans-1,3-Dichloropropylene	--	--	--	--	--	--	--
Trichloroethylene (TCE)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0019	<0.002
Trichlorofluoromethane (R11)	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-44-0.5	SB-44-8	SB-5-0.5	SB-6-0.5	SB-6A-0.5	SB-6B-0.5	SB-6C-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-44	SB-44	SB-5	SB-6	SB-6A	SB-6B	SB-6C
Depth (ft bgs)	0.5	8	0.5	0.5	0.5	0.5	0.5
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	<0.002	<0.0022	<0.002	<0.002	<0.015	<0.0021	<0.002
1,1,2-Trichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethylene	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	**0.061**	<0.0022	<0.002	<0.002	<0.015	<0.0021	<0.002
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	--	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	**0.04**	<0.0022	<0.002	<0.002	<0.015	<0.0021	<0.002
1,3-Dichlorobenzene	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--
2-Chloroethylvinyl ether	--	--	--	--	--	--	--
4-Isopropyltoluene	**0.007**	<0.0022	<0.002	<0.002	<0.015	<0.0021	<0.002
Bromodichloromethane	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	--	--
Bromomethane	--	--	--	--	--	--	--
Carbon Tetrachloride	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	--	--	--	--	--	--	--
cis-1,3-Dichloropropylene	--	--	--	--	--	--	--
Dibromochloromethane	--	--	--	--	--	--	--
Dichlorodifluoromethane (R12)	--	--	--	--	--	--	--
Ethylbenzene	<0.002	<0.0022	<0.002	<0.002	<0.015	<0.0021	<0.002
Isopropylbenzene	**0.002**	<0.0022	<0.002	<0.002	<0.015	<0.0021	<0.002
Methylene Chloride	<0.02	<0.022	<0.02	<0.02	<0.15	<0.021	<0.02
Naphthalene	**0.24**	<0.0056	<0.005	<0.005	<0.038	<0.0052	<0.005
n-Butylbenzene	<0.005	<0.0056	<0.005	<0.005	<0.038	<0.0052	<0.005
n-Propylbenzene	**0.016**	<0.0022	<0.002	<0.002	<0.015	<0.0021	<0.002
sec-Butylbenzene	**0.014**	<0.0056	<0.005	<0.005	<0.038	<0.0052	<0.005
Tetrachloroethylene (PCE)	<0.002	<0.0022	<0.002	<0.002	<0.015	<0.0021	<0.002
Toluene	<0.002	<0.0022	<0.002	<0.002	<0.015	<0.0021	<0.002
Total Xylenes	<0.004	<0.0045	<0.004	<0.004	<0.03	<0.0041	<0.004
trans-1,2-Dichloroethylene	--	--	--	--	--	--	--
trans-1,3-Dichloropropylene	--	--	--	--	--	--	--
Trichloroethylene (TCE)	<0.002	<0.0022	<0.002	<0.002	<0.015	<0.0021	<0.002
Trichlorofluoromethane (R11)	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B4: SOIL DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample ID	SB-6C-8	SB-6C-16	SB-6C-22	SB-6C-26	SB-7-0.5	SB-8-0.5	SB-9-0.5
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location	SB-6C	SB-6C	SB-6C	SB-6C	SB-7	SB-8	SB-9
Depth (ft bgs)	8	16	22	26	0.5	0.5	0.5
Sample Date	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006	5/1/2006
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,1,1-Trichloroethane	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	<0.002	<3.9	<0.0018	<0.02	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethylene	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	**0.0031**	**290**	<0.0018	<0.002	<0.002	<0.002	<0.002
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	--	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	<0.002	**96**	<0.0018	<0.005	<0.002	<0.002	<0.002
1,3-Dichlorobenzene	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--
2-Chloroethylvinyl ether	--	--	--	--	--	--	--
4-Isopropyltoluene	<0.002	**4.8**	<0.0018	**0.002**	<0.002	<0.002	<0.002
Bromodichloromethane	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	--	--
Bromomethane	--	--	--	--	--	--	--
Carbon Tetrachloride	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	--	--	--	--	--	--	--
cis-1,3-Dichloropropylene	--	--	--	--	--	--	--
Dibromochloromethane	--	--	--	--	--	--	--
Dichlorodifluoromethane (R12)	--	--	--	--	--	--	--
Ethylbenzene	<0.002	**34**	**0.023**	<0.004	<0.002	<0.002	<0.002
Isopropylbenzene	<0.002	**9.4**	**0.0029**	<0.005	<0.002	<0.002	<0.002
Methylene Chloride	<0.02	<39	<0.018	<0.02	<0.02	<0.02	<0.02
Naphthalene	**0.0058**	**69**	**0.011**	<0.002	<0.0049	<0.005	<0.0049
n-Butylbenzene	<0.0049	**52**	<0.0044	<0.005	<0.0049	<0.005	<0.0049
n-Propylbenzene	<0.002	**43**	**0.0083**	<0.002	<0.002	<0.002	<0.002
sec-Butylbenzene	<0.0049	<9.7	<0.0044	**0.0056**	<0.0049	<0.005	<0.0049
Tetrachloroethylene (PCE)	<0.002	<3.9	<0.0018	<0.002	<0.002	<0.002	<0.002
Toluene	<0.002	<3.9	<0.0018	<0.002	<0.002	<0.002	<0.002
Total Xylenes	<0.0039	**220**	**0.0022**	<0.002	<0.0039	<0.004	<0.0039
trans-1,2-Dichloroethylene	--	--	--	--	--	--	--
trans-1,3-Dichloropropylene	--	--	--	--	--	--	--
Trichloroethylene (TCE)	<0.002	<3.9	<0.0018	<0.002	<0.002	<0.002	<0.002
Trichlorofluoromethane (R11)	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--

Notes:
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted.
-- = Constituent not analyzed for in this sample.

TABLE B5a: SOIL GAS DATA BY EPA METHOD 8260B AND 8015M
Former Commonwealth Aluminum Facility
Corrective Measures Proposal
Carson, California

Sample Identification	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6C(a)	SB-7(a)	SB-8	SB-9	SB-10	SB-11	SB-12	SB-13	SB-14(a)	SB-14A
Matrix	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas
Sample Depth (ft bgs)	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Sample Date	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006
Unit	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
VOCs by EPA Method 8260B															
Tetrachloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes	<1.0	<1.0	<1.0	<1.0	<1.0	<1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
All Other VOCs	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TVPH by EPA Method 8015M															
TVPH	<100	<100	<100	<100	<100	**590**	<100	<100	<100	<100	<100	**1500**	<100	**1000**	<100

Notes
Soil gas data collect by ERM as reported in the DRAFT Soil Investigation Report, dated May 2006.
-- No data collected.
(a) Higher concentration of original and duplicate samples
µg/L = Micrograms per liter
ND - Not detected above reporting limit.
ft bgs = feet below ground surface
TVPH- Total volatile petroleum hydrocarbons
<x = not detected at or above the detection limit noted

TABLE B5a: SOIL GAS DATA BY EPA METHOD 8260B AND 8015M
Former Commonwealth Aluminum Facility
Corrective Measures Proposal
Carson, California

Sample Identification	SB-15	SB-16	SB-17	SB-18	SB-19	SB-20	SB-21(a)	SB-22	SB-23	SB-24	SB-25	SB-26	SB-27A	SB-28	SB-29	SB-30	SB-31
Matrix	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas
Sample Depth (ft bgs)	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Sample Date	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006
Unit	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
VOCs by EPA Method 8260B																	
Tetrachloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
All Other VOCs	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TVPH by EPA Method 8015M																	
TVPH	**680**	<100	<100	<100	<100	<100	**300**	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100

Notes
Soil gas data collect by ERM as reported in the DRAFT Soil Investigation Report, dated May 2006.
-- No data collected.
(a) Higher concentration of original and duplicate samples
µg/L = Micrograms per liter
ND - Not detected above reporting limit.
ft bgs = feet below ground surface
TVPH- Total volatile petroleum hydrocarbons
<x = not detected at or above the detection limit noted

TABLE B5a: SOIL GAS DATA BY EPA METHOD 8260B AND 8015M
Former Commonwealth Aluminum Facility
Corrective Measures Proposal
Carson, California

Sample Identification	SB-32	SB-33	SB-34	SB-35	SB-36	SB-37	SB-38	SB-39	SB-40	SB-41	SB-42	SB-43	SB-44
Matrix	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas
Sample Depth (ft bgs)	15	15	15	15	15	15	--	--	--	--	--	15	15
Sample Date	4/2006	4/2006	4/2006	4/2006	4/2006	4/2006	--	--	--	--	--	4/2006	4/2006
Unit	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	--	--	--	--	--	µg/l	µg/l
VOCs by EPA Method 8260B													
Tetrachloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--	--	--	<1.0	<1.0
Trichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--	--	--	<1.0	<1.0
Benzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--	--	--	<1.0	<1.0
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--	--	--	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--	--	--	<1.0	<1.0
Xylenes	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--	--	--	<1.0	<1.0
All Other VOCs	ND	ND	ND	ND	ND	ND	--	--	--	--	--	ND	ND
TVPH by EPA Method 8015M													
TVPH	<100	<100	<100	<100	<100	<100	--	--	--	--	--	<100	<100

Notes
Soil gas data collect by ERM as reported in the DRAFT Soil Investigation Report, dated May 2006.
-- No data collected.
(a) Higher concentration of original and duplicate samples
µg/L = Micrograms per liter
ND - Not detected above reporting limit.
ft bgs = feet below ground surface
TVPH- Total volatile petroleum hydrocarbons
<x = not detected at or above the detection limit noted

TABLE B5b: SOIL GAS DATA BY EPA METHOD TO-15 - ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	I-SV-13-5	I-SV-13-12	I-SV-13-20	I-SV-15	I-SV-16-5	I-SV-16-12	I-SV-16-18	I-SV-16-18D[1]	I-SV-17	I-SV-18
Matrix	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas
Sample Depth (ft bgs)	5	12	20	5	5	12	18	18	5	5
Sample Date	7/27/2006	7/27/2006	7/27/2006	7/27/2006	7/27/2006	7/27/2006	7/27/2006	7/27/2006	7/27/2006	7/27/2006
Unit	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3
1,1,1-Trichloroethane	<4.6	<4.5	<4.8	**16**	**7.2**	<4.4	**6.9**	**6.2**	**35**	<4.4
1,1,2,2-Tetrachloroethane	<5.8	<5.6	<6.0	<5.6	<5.3	<5.5	<5.9	<5.9	<6.0	<5.5
1,1,2-Trichloroethane	<4.6	<4.5	<4.8	<4.5	<4.2	<4.4	<4.7	<4.7	<4.8	<4.4
1,1-Dichloroethane	<3.4	<3.3	**6.5**	<3.3	<3.1	<3.2	<3.5	<3.5	**14**	**6.3**
1,1-Dichloroethene	<3.3	<3.2	<3.5	<3.2	<3.1	<3.2	<3.4	<3.4	<3.5	<3.2
1,2,4-Trichlorobenzene	<25	<24	<26	<24	<23	<24	<25	<25	<26	<24
1,2,4-Trimethylbenzene	**20**	**76**	**62**	**23**	**46**	<4.0	**41**	**34**	**25**	**16**
1,2-Dibromoethane (EDB)	<6.4	<6.3	<6.7	<6.3	<6.0	<6.2	<6.6	<6.6	<6.7	<6.2
1,2-Dichlorobenzene	<5.0	<4.9	<5.3	<4.9	<4.6	<4.8	<5.1	<5.1	<5.3	<4.8
1,2-Dichloroethane	<3.4	<3.3	<3.5	<3.3	<3.1	<3.2	<3.5	<3.5	<3.5	<3.2
1,2-Dichloropropane	<3.9	<3.8	<4.0	<3.8	<3.6	<3.7	<4.0	<4.0	<4.0	<3.7
1,3,5-Trimethylbenzene	**5.7**	**19**	**17**	**6.9**	**10**	<4.0	**12**	**9.6**	**7.1**	**4.5**
1,3-Butadiene	<1.8	<1.8	<1.9	<1.8	<1.7	<1.8	<1.9	<1.9	<1.9	<1.8
1,3-Dichlorobenzene	<5.0	<4.9	<5.3	<4.9	<4.6	<4.8	<5.1	<5.1	<5.3	<4.8
1,4-Dichlorobenzene	<5.0	<4.9	<5.3	<4.9	<4.6	<4.8	<5.1	<5.1	<5.3	<4.8
1,4-Dioxane	<12	<12	<13	<12	<11	<12	<12	<12	**27**	<12
2,2,4-Trimethylpentane	**18**	**19**	**17**	**35**	**32**	<3.8	**15**	**13**	**27**	**20**
2-Butanone	**19**	**12**	**12**	**24**	**22**	<2.4	**31**	**27**	**19**	**14**
2-Hexanone	<14	<13	<14	<13	<13	<13	<14	<14	<14	<13
2-Propanol	<8.2	<8.1	**13**	<8.1	<7.6	<7.9	<8.4	<8.4	<8.6	<7.9
3-Chloropropene	<10	<10	<11	<10	<9.7	<10	<11	<11	<11	<10
4-Ethyltoluene	**11**	**43**	**36**	**14**	**21**	<4.0	**23**	**21**	**14**	**8.2**
4-Methyl-2-pentanone	**5.6**	**7.2**	<3.6	**6.8**	**12**	<3.3	**4.9**	**4.9**	**7.0**	**8.0**
Acetone	**330**	**470**	**420**	**160**	**340**	**14**	**320**	**300**	**120**	**140**
alpha-Chlorotoluene	<4.3	<4.2	<4.5	<4.2	<4.0	<4.2	<4.4	<4.4	<4.5	<4.2
Benzene	**7.6**	**6.4**	**4.4**	**40**	**11**	<2.6	**4.2**	**3.8**	**19**	**28**
Bromodichloromethane	<5.6	<5.5	<5.9	<5.5	<5.2	<5.4	<5.7	<5.7	<5.9	<5.4
Bromoform	<8.7	<8.5	<9.0	<8.5	<8.0	<8.3	<8.8	<8.8	<9.0	<8.3
Bromomethane	<3.3	<3.2	<3.4	<3.2	<3.0	<3.1	<3.3	<3.3	<3.4	<3.1
Carbon Disulfide	**3.7**	**5.1**	**3.4**	**6.7**	**34**	<2.5	**15**	**14**	**9.1**	**8.1**
Carbon Tetrachloride	<5.3	<5.2	<5.5	<5.2	<4.9	<5.1	<5.4	<5.4	<5.5	<5.1
Chlorobenzene	<3.9	<3.8	<4.0	<3.8	<3.6	<3.7	<3.9	<3.9	<4.0	<3.7
Chloroethane	<2.2	<2.2	<2.3	<2.2	<2.0	<2.1	<2.2	<2.2	<2.3	**3.9**
Chloroform	<4.1	<4.0	<4.3	<4.0	**4.1**	<3.9	<4.2	<4.2	<4.3	<3.9
Chloromethane	<6.9	<6.8	<7.2	<6.8	<6.4	<6.6	<7.1	<7.1	<7.2	<6.6
cis-1,2-Dichloroethene	<3.3	<3.2	<3.5	<3.2	<3.1	<3.2	<3.4	<3.4	**170**	**25**
cis-1,3-Dichloropropene	<3.8	<3.7	<4.0	<3.7	<3.5	<3.6	<3.9	<3.9	<4.0	<3.6
Cumene	<4.1	<4.0	<4.3	<4.0	<3.8	<4.0	<4.2	<4.2	<4.3	<4.0
Cyclohexane	<2.9	<2.8	<3.0	<2.8	<2.7	<2.8	<2.9	<2.9	<3.0	**8.8**
Dibromochloromethane	<7.2	<7.0	<7.4	<7.0	<6.6	<6.8	<7.3	<7.3	<7.4	<6.8
Ethanol	**38**	**15**	**16**	**36**	**18**	<6.1	**23**	**21**	**32**	**7.2**
Ethyl Benzene	**10**	**24**	**19**	**23**	**10**	<3.5	**15**	**15**	**11**	**5.6**
Freon 11	**8.2**	**9.8**	**12**	**20**	**15**	<4.5	**16**	**15**	<4.9	<4.5
Freon 113	<6.4	<6.3	<6.7	< 6.3	<5.9	<6.2	<6.6	<6.6	<6.7	<6.2
Freon 114	<5.9	<5.7	<6.1	< 5.7	<5.4	<5.6	<6.0	<6.0	<6.1	<5.6
Freon 12	<4.2	<4.0	<4.3	<4.0	<3.8	<4.0	<4.2	<4.2	<4.3	<4.0
Heptane	**8.6**	**9.6**	**4.8**	**20**	**15**	<3.3	**13**	**12**	**7.8**	**6.5**
Hexachlorobutadiene	<36	<35	<37	<35	<33	<34	<36	<36	<37	<34
Hexane	**6.4**	**6.4**	**7.4**	**66**	**37**	<2.8	**12**	**9.8**	**18**	**28**
m,p-Xylene	**41**	**120**	**94**	**95**	**46**	<3.5	**71**	**61**	**49**	**26**
Methyl tert-butyl ether	<3.0	<3.0	<3.2	< 3.0	<2.8	<2.9	<3.1	<3.1	<3.2	<2.9
Methylene Chloride	<2.9	**3.7**	<3.0	**3.9**	**3.8**	<2.8	<3.0	<3.0	**3.7**	<2.8
o-Xylene	**16**	**49**	**42**	**36**	**20**	<3.5	**33**	**28**	**22**	**11**
Propylbenzene	<4.1	**7.7**	**6.6**	<4.0	<3.8	<4.0	**4.6**	<4.2	<4.3	<4.0
Styrene	<3.6	<3.5	<3.7	<3.5	<3.3	<3.4	<3.6	<3.6	<3.7	<3.4
Tetrachloroethene	**14**	**7.2**	**51**	**120**	**710**	<5.5	**650**	**570**	**550**	**16**
Tetrahydrofuran	<2.5	**4.3**	**4.0**	**3.3**	**2.8**	<2.4	**3.3**	**4.3**	**2.6**	**4.3**
Toluene	**67**	**57**	**38**	**73**	**43**	<3.0	**29**	**24**	**37**	**22**
trans-1,2-Dichloroethene	<3.3	<3.2	<3.5	<3.2	<3.1	<3.2	<3.4	<3.4	**4.3**	<3.2
trans-1,3-Dichloropropene	<3.8	<3.7	<4.0	<3.7	<3.5	<3.6	<3.9	<3.9	<4.0	<3.6
Trichloroethene	<4.5	<4.4	**6.5**	**6.0**	**8.3**	<4.3	**100**	**92**	**280**	**12**
Vinyl Chloride	<2.1	<2.1	<2.2	<2.1	<2.0	<2.0	<2.2	<2.2	<2.2	**4.5**

Notes
[1]Duplicate sample
µg/m^3 = Micrograms per cubic meter
ft bgs = feet below ground surface
<x = not detected at or above the detection limit

TABLE B5b: SOIL GAS DATA BY EPA METHOD TO-15 - ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

Sample Identification	I-SV-20
Matrix	Soil gas
Sample Depth (ft bgs)	5
Sample Date	7/27/2006
Unit	µg/m^3
1,1,1-Trichloroethane	<4.7
1,1,2,2-Tetrachloroethane	<5.9
1,1,2-Trichloroethane	<4.7
1,1-Dichloroethane	<3.5
1,1-Dichloroethene	**10**
1,2,4-Trichlorobenzene	<25
1,2,4-Trimethylbenzene	**34**
1,2-Dibromoethane (EDB)	<6.6
1,2-Dichlorobenzene	<5.1
1,2-Dichloroethane	<3.5
1,2-Dichloropropane	<4.0
1,3,5-Trimethylbenzene	**9.1**
1,3-Butadiene	<1.9
1,3-Dichlorobenzene	<5.1
1,4-Dichlorobenzene	<5.1
1,4-Dioxane	<12
2,2,4-Trimethylpentane	**33**
2-Butanone	**4.9**
2-Hexanone	<14
2-Propanol	<8.4
3-Chloropropene	<11
4-Ethyltoluene	**19**
4-Methyl-2-pentanone	<3.5
Acetone	**140**
alpha-Chlorotoluene	<4.4
Benzene	**9.8**
Bromodichloromethane	<5.7
Bromoform	<8.8
Bromomethane	<3.3
Carbon Disulfide	**4.7**
Carbon Tetrachloride	<5.4
Chlorobenzene	<3.9
Chloroethane	<2.2
Chloroform	<4.2
Chloromethane	<7.1
cis-1,2-Dichloroethene	**62**
cis-1,3-Dichloropropene	<3.9
Cumene	<4.2
Cyclohexane	<2.9
Dibromochloromethane	<7.3
Ethanol	**12**
Ethyl Benzene	**13**
Freon 11	<4.8
Freon 113	<6.6
Freon 114	<6.0
Freon 12	<4.2
Heptane	**13**
Hexachlorobutadiene	<36
Hexane	**18**
m,p-Xylene	**56**
Methyl tert-butyl ether	<3.1
Methylene Chloride	**3.1**
o-Xylene	**22**
Propylbenzene	<4.2
Styrene	<3.6
Tetrachloroethene	**510**
Tetrahydrofuran	**2.7**
Toluene	**50**
trans-1,2-Dichloroethene	**4.7**
trans-1,3-Dichloropropene	<3.9
Trichloroethene	**360**
Vinyl Chloride	**5.3**

Notes
(1)Duplicate sample
µg/m^3 = Micrograms per cubic me
ft bgs = feet below ground surface
<x = not detected at or above the d

TABLE B6: SOIL GAS DATA - METHANE FIXED GASES
ALERIS AlUMINUM
Remediation and Redevelopment Plan
Carson, California

SampleID	I-SV-1	I-SV-1D(1)	I-SV-2	I-SV-3	I-SV-4	I-SV-5	I-SV-6	I-SV-7	I-SV-8
Matrix	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas
Sample Depth (ft bgs)	5	5	5	5	5	5	5	5	5
Sample Date	7/28/2006	7/28/2006	7/28/2006	7/28/2006	7/28/2006	7/28/2006	7/28/2006	7/28/2006	7/28/2006
Unit	%	%	%	%	%	%	%	%	
Oxygen	**16**	**16**	**14**	**20**	**7.1**	**7.6**	**8.7**	**9.5**	**9.9**
Nitrogen	**80**	**80**	**83**	**78**	**90**	**90**	**90**	**89**	**86**
Carbon Monoxide	<0.022	<0.024	<0.021	<0.022	<0.022	<0.025	<0.023	<0.024	<0.022
Methane	<0.00022	<0.00024	<0.00021	<0.00022	<0.00022	<0.00025	<0.00023	<0.00024	<0.00022
Carbon Dioxide	**3.6**	**3.6**	**2.9**	**2.0**	**2.5**	**2.1**	**1.8**	**1.6**	**4.1**
Ethane	<0.0022	<0.0024	<0.0021	<0.0022	<0.0022	<0.0025	<0.0023	<0.0024	<0.0022
Ethene	<0.0022	<0.0024	<0.0021	<0.0022	<0.0022	<0.0025	<0.0023	<0.0024	<0.0022

Notes:
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted

TABLE B6: SOIL GAS DATA - METHANE FIXED GASES
ALERIS AlUMINUM
Remediation and Redevelopment Plan
Carson, California

SampleID	I-SV-8D(1)	I-SV-9	I-SV-10	I-SV-11	I-SV-12	I-SV-14	I-SV-19
Matrix	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas	Soil gas
Sample Depth (ft bgs)	5	5	5	5	5	5	5
Sample Date	7/28/2006	7/28/2006	7/28/2006	7/28/2006	7/28/2006	7/28/2006	7/28/2006
Unit	%	%	%	%	%	%	%
Oxygen	**10**	**1.9**	**13**	**19**	**17**	**13**	**1.2**
Nitrogen	**86**	**98**	**81**	**79**	**81**	**85**	**69**
Carbon Monoxide	<0.022	<0.022	<0.024	<0.023	<0.024	<0.023	<0.023
Methane	<0.00022	**0.08**	<0.00024	**0.00041**	<0.00024	<0.00023	**12**
Carbon Dioxide	**4.1**	<0.022	**5.8**	**1.6**	**1.8**	**2.2**	**18**
Ethane	<0.0022	<0.0022	<0.0024	<0.0023	<0.0024	<0.0023	<0.0023
Ethene	<0.0022	<0.0022	<0.0024	<0.0023	<0.0024	<0.0023	<0.0023

Notes:
ft bgs = feet below ground surface
<x = not detected at or above the detection limit noted

TABLE B7: PREVIOUS SOIL VAPOR TESTING RESULTS
ALERIS ALUMINUM
Remediation and Redevelopment Report
Carson, California

Sample Name	GS1-10	GS2-10	GS3-10	GS4-10	GS5-10	GS6-10	GS7-10	GS8-10	GS9-10	GS10-10	GS11-10	GS12-10
Sample Data	1/4/1996	1/4/1996	1/4/1996	1/4/1996	1/4/1996	1/4/1996	1/4/1996	1/4/1996	1/4/1996	1/4/1996	1/4/1996	1/4/1996
Sample Depth (ft bgs)	10	10	10	10	10	10	10	10	10	10	10	10
Times Samples	3	1	1	1	1	2	1	1	1	1	1	1
Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1-Dichloroethylene	**27**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroetheylene	**1**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Freon 113	**30**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethylene	**11**	<1	<1	<1	<1	<1	**4**	<1	<1	<1	<1	<1
Trichloroethylene	**1**	<1	<1	<1	<1	<1	**3**	<1	<1	<1	<1	<1

Notes:
µg/L = micrograms per liter
ft bgs = feet below ground surface

<x = not detected at or above the detection limit noted

TABLE B7: PREVIOUS SOIL VAPOR TESTING RESULTS
ALERIS ALUMINUM
Remediation and Redevelopment Report
Carson, California

Sample Name	GS13-10	GS14-10	GS15-10	GS16-10	GS17-10	GS18-10	GS19-10	GS20-10
Sample Data	1/4/1996	1/4/1996	1/5/1996	1/5/1996	1/5/1996	1/5/1996	1/5/1996	1/5/1996
Sample Depth (ft bgs)	10	10	10	10	10	10	10	10
Times Samples	1	1	1	1	1	1	1	1
Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1-Dichloroethylene	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroetheylene	<1	<1	<1	<1	<1	<1	<1	<1
Freon 113	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethylene	<1	<1	**4**	<1	**2**	<1	**1**	**3**
Trichloroethylene	<1	<1	**4**	**2**	**1**	<1	**1**	**1**

Notes:
µg/L = micrograms per liter
ft bgs = feet below ground surface

<x = not detected at or above the detection limit noted

TABLE B8: GROUNDWATER - TOTAL METALS
ALERIS ALUMINUM
Remediation and Redevelopment Report
Carson, California

SampleID	1HP-1	1HP-2	1HP-3	MW-3	MW-7	MW10P
Matrix	Water	Water	Water	Water	Water	Water
Sample Date	7/27/2006	7/27/2006	7/27/2006	7/27/2006	7/27/2006	7/27/2006
Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	**11**	<0.50	**1.4**	<0.50	<0.50	<0.50
Antimony	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	**0.040**	<0.0070	<0.0070	**0.0071**	**0.010**	**0.0094**
Barium	**0.46**	**0.32**	**0.32**	<0.20	<0.20	<0.20
Beryllium	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chromium	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cobalt	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Copper	**0.061**	<0.050	<0.050	<0.050	<0.050	<0.050
Lead	**0.011**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Molybdenum	<0.050	<0.050	**0.063**	**0.12**	**0.20**	**7.7**
Nickel	<0.050	<0.050	**0.15**	<0.050	<0.050	<0.050
Selenium	<0.0050	<0.0050	**0.0083**	**0.013**	<0.0050	<0.0050
Silver	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Thallium	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Vanadium	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Zinc	**0.14**	**0.11**	**0.12**	<0.050	<0.050	<0.050
Mercury	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Notes
mg/L = Milligrams per Liter
<x = not detected at or above the detection limit noted

TABLE B9: GROUNDWATER DATA - DISSOLVED METALS
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

SampleID	1HP-1	1HP-2	1HP-3	MW-3	MW-7	MW10P
Matrix	Water	Water	Water	Water	Water	Water
Sample Date	7/27/2006	7/27/2006	7/27/2006	7/27/2006	7/27/2006	7/27/2006
Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Antimony	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic	**0.017**	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070
Barium	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cadmium	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chromium	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Cobalt	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Copper	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Lead	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Molybdenum	**0.052**	**0.050**	<0.050	<0.050	**0.19**	**7.7**
Nickel	<0.050	**0.14**	<0.050	<0.050	<0.050	<0.050
Selenium	<0.0050	<0.0050	**0.013**	**0.013**	<0.0050	<0.0050
Silver	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Thallium	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Vanadium	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Zinc	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Mercury	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Notes
mg/L = Milligrams per Liter
<x = not detected at or above the detection limit noted

TABLE B10: GROUNDWATER
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

SampleID	1HP-1	1HP-2	1HP-3	MW-3	MW-7	MW10P
Matrix	Water	Water	Water	Water	Water	Water
Sample Date	7/27/2006	7/27/2006	7/27/2006	7/27/2006	7/27/2006	7/27/2006
Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1,2-Tetrachloroethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1-Trichloroethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2,3-Trichlorobenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2,3-Trichloropropane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2,4-Trichlorobenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2,4-Trimethylbenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3,5-Trimethylbenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m,p-Xylenes	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acetone	**23**	<10	<10	<10	<10	<10
tert-Amyl Methyl Ether (TAME)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Benzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromobenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromochloromethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromodichloromethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromomethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Butanone (MEK)	<10	<10	<10	<10	<10	<10
tert-Butyl alcohol (TBA)	<10	<10	<10	<10	<10	<10
sec-Butylbenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
tert-Butylbenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
n-Butylbenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Disulfide	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chlorobenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloroethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloroform	<0.50	**0.52**	<0.50	<0.50	<0.50	<0.50
Chloromethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Chlorotoluene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Chlorotoluene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dibromo-3-chloropropane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dibromoethane (EDB)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dibromomethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane (R12)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethane	<0.50	**7.7**	<0.50	**0.64**	**1.4**	<0.50
1,2-Dichloroethane (EDC)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	<0.50	**0.94**	<0.50	**0.62**	<0.50	<0.50
trans-1,2-Dichloroethylene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,2-Dichloroethylene	<0.50	<0.50	<0.50	<0.50	**1.6**	<0.50
1,2-Dichloropropane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2,2-Dichloropropane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichloropropane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,3-Dichloropropylene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,3-Dichloropropylene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloropropylene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Diisopropyl ether (DIPE)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Ethylbenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethyl-tert-Butyl Ether (ETBE)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Hexachlorobutadiene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Hexanone (MBK)	<10	<10	<10	<10	<10	<10
Isopropylbenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Isopropyltoluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl-tert-Butyl Ether (MTBE)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-pentanone (MIBK)	<10	<10	<10	<10	<10	<10
Naphthalene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Propylbenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
o-Xylene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene (PCE)	<0.50	**0.51**	<0.50	**1.6**	<0.50	<0.50
Toluene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene (TCE)	<0.50	**17**	<0.50	**6.1**	**1.9**	<0.50
Trichlorofluoromethane (R11)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl chloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrahydrothiophene	<20	<20	<20	<20	<20	<20

Notes
µg/L = Micrograms per liter
<x = not detected at or above the detection limit
noted

TABLE B11: GROUNDWATER
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

SampleID	MW-5P
Matrix	Product
Sample Date	7/27/2006
Unit	mg/L
Aluminum	**2.4**
Antimony	<0.20
Arsenic	**1.2**
Barium	<0.20
Beryllium	<0.020
Cadmium	<0.020
Chromium	<0.050
Cobalt	<0.050
Copper	**0.076**
Lead	**1.3**
Molybdenum	**0.067**
Nickel	<0.050
Selenium	**0.010**
Silver	<0.020
Thallium	<0.10
Vanadium	<0.20
Zinc	**0.17**
Mercury	<0.00050

Notes:
mg/L = milligrams per liter.
ft bgs = feet below ground surface.
<x = not detected at or above the detection limit noted.

TABLE B12: PRODUCT DATA - PCBs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

SampleID	MW-5P
Matrix	Product
Sample Date	7/27/2006
Unit	µg/L
Aroclor-1221	<2000
Aroclor-1232	<2000
Aroclor-1242	<2000
Aroclor-1248	<2000
Aroclor-1254	<2000
Aroclor-1260	<2000

Notes:
µg/L = micrograms per liter.
<x = not detected at or above the detection limit noted.

TABLE B13: PRODUCT DATA - SVOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California
Carson, California

SampleID	MW-5P
Sample Date	7/27/2006
Sample Matrix	Product
Unit	µg/L
1,2,4-Trichlorobenzene	<5000
2,4,5-Trichlorophenol	<5000
2,4,6-Trichlorophenol	<5000
2-Nitrophenol	<5000
4-Nitrophenol	<5000
3,3´-Dichlorobenzidine	<10000
Acenaphthene	<2500
Acenaphthylene	<2500
Aniline	<5000
Anthracene	<2500
Azobenzene	<2500
Benzidine	<10000
Benzo(a)anthracene	<10000
Benzo(a)pyrene	<2500
Benzo(b)fluoranthene	<2500
Benzo(g,h,i)perylene	<2500
Benzoic acid	<25000
Benzo(k)fluoranthene	<2500
Benzyl alcohol	<5000
4-Bromophenyl phenyl ether	<2500
Butyl benzyl phthalate	<5000
4-Chloro-3-methylphenol	<5000
4-Chloroaniline	<10000
Bis(2-chloroethoxy)methane	<2500
Bis(2-chloroethyl)ether	<2500
Bis(2-chloroisopropyl)ether	<2500
2-Chloronaphthalene	<2500
2-Chlorophenol	<2500
4-Chlorophenyl phenyl ether	<2500
Chrysene	<2500
Dibenzo(a,h)anthracene	<2500
Dibenzofuran	<2500
Di-n-butyl phthalate	<50000
1,2-Dichlorobenzene	<2500
1,3-Dichlorobenzene	<2500
1,4-Dichlorobenzene	<2500
2,4-Dichlorophenol	<2500
Dimethyl phthalate	<20000
2,4-Dimethylphenol	<10000
Dimethyl phthalate	<5000
4,6-Dinitro-2-methylphenol	<10000
2,4-Dinitrophenol	<10000
2,6-Dinitrotoluene	<2500
2,4-Dinitrotoluene	<2500
Di-n-octyl phthalate	<5000
1,2-Diphenylhydrazine	<2500
Bis(2-ethylhexyl)phthalate	<25000
Fluoranthene	<2500
Fluorene	<2500
Hexachlorobenzene	<5000
Hexachlorobutadiene	<5000
Hexachlorocyclopentadiene	<5000
Hexachloroethane	<2500
Indeno (1,2,3-cd) pyrene	<10000
Isophorone	<2500
2-Methylnaphthalene	<2500
2-Methylphenol	<5000
3-Methylphenol	<5000
4-Methylphenol	<5000
Naphthalene	<2500
4-Nitroaniline	<10000
3-Nitroaniline	<10000
2-Nitroaniline	<10000
Nitrobenzene	<2500
N-Nitrosodimethylamine	<2500
N-Nitrosodi-n-propylamine	<5000
N-Nitrosodiphenylamine	<2500
Pentachlorophenol	<10000
Phenanthrene	<2500
Phenol	<2500
Pyrene	<2500

Notes
µg/L = micrograms per liter.
<x = not detected at or above the detection limit noted.

TABLE B14: PRODUCT DATA - TPH
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

SampleID	MW-5P
Matrix	Product
Sample Date	7/27/2006
Unit	mg/L
C6-C8	<200
C8-C10	<200
C10-C12	**1,500**
C12-C14	**51,000**
C14-C16	**310,000**
C16-C18	**21,000**
C18-C20	**5,200**
C20-C22	**1,800**
C22-C24	**810**
C24-C26	**1,100**
C26-C28	**1,300**
C28-C32	**2,200**
C32-C34	**1,100**
C34-C36	**940**
C36-C40	**480**
C40-C44	<200
TPH (C6-C44)	**400,000**

Notes
mg/L = milligrams per liter.
<x = not detected at or above the detection limit noted.

TABLE B15: PRODUCT DATA - VOCs
ALERIS ALUMINUM
Remediation and Redevelopment Plan
Carson, California

SampleID	MW-5P
Matrix	Product
Sample Date	7/27/2006
Unit	µg/L
1,1,1,2-Tetrachloroethane	<500
1,1,1-Trichloroethane	<500
1,1,2,2-Tetrachloroethane	<500
1,1,2-Trichloro-1,2,2-trifluoroethane (R	<500
1,1,2-Trichloroethane	<500
1,2,3-Trichlorobenzene	<500
1,2,3-Trichloropropane	<500
1,2,4-Trichlorobenzene	<500
1,2,4-Trimethylbenzene	<500
1,3,5-Trimethylbenzene	<500
m,p-Xylenes	<1000
Acetone	<10000
tert-Amyl Methyl Ether (TAME)	<2000
Benzene	<500
Bromobenzene	<500
Bromochloromethane	<500
Bromodichloromethane	<500
Bromoform	<500
Bromomethane	<500
2-Butanone (MEK)	<10000
tert-Butyl alcohol (TBA)	<10000
sec-Butylbenzene	<500
tert-Butylbenzene	<500
n-Butylbenzene	<500
Carbon Disulfide	<500
Carbon Tetrachloride	<500
Chlorobenzene	<500
Chloroethane	<500
Chloroform	<500
Chloromethane	<500
2-Chlorotoluene	<500
4-Chlorotoluene	<500
1,2-Dibromo-3-chloropropane	<1000
Dibromochloromethane	<500
1,2-Dibromoethane (EDB)	<500
Dibromomethane	<500
1,3-Dichlorobenzene	<500
1,2-Dichlorobenzene	<500
1,4-Dichlorobenzene	<500
Dichlorodifluoromethane (R12)	<500
1,1-Dichloroethane	<500
1,2-Dichloroethane (EDC)	<500
1,1-Dichloroethylene	<500
trans-1,2-Dichloroethylene	<500
cis-1,2-Dichloroethylene	<500
1,2-Dichloropropane	<500
2,2-Dichloropropane	<500
1,3-Dichloropropane	<500
cis-1,3-Dichloropropylene	<500
trans-1,3-Dichloropropylene	<500
1,1-Dichloropropylene	<500
Diisopropyl ether (DIPE)	<2000
Ethylbenzene	<500
Ethyl-tert-Butyl Ether (ETBE)	<2000
Hexachlorobutadiene	<1000
2-Hexanone (MBK)	<10000
Isopropylbenzene	<500
4-Isopropyltoluene	<1000
Methyl-tert-Butyl Ether (MTBE)	<2000
Methylene Chloride	<5000
4-Methyl-2-pentanone (MIBK)	<10000
Naphthalene	<2000
n-Propylbenzene	<500
o-Xylene	<500
Styrene	<500
Tetrachloroethylene (PCE)	<500
Toluene	<500
Trichloroethylene (TCE)	<500
Trichlorofluoromethane (R11)	<500
Vinyl chloride	<500

Notes
µg/L = micrograms per liter.
<x = not detected at or above the detection limit noted.

APPENDIX C

IRIS ENVIRONMENTAL

Via Email

December 12, 2006

Ms. Elizabeth H. Erickson
Associate Engineering Geologist
California Regional Water Quality Control Board
Los Angeles Region
320 West Fourth Street, Suite 200
Los Angeles, CA 90013

Re: Total Petroleum Hydrocarbon Soil Screening Levels
Former Carson Aleris Facility: 2211 and 2241 E. Carson Street, Carson, CA
Iris Environmental Contract No. 05-390-M

Dear Elizabeth,

As discussed most recently in a telephone conversation with Iris Environmental on October 19, 2006 Commonwealth Aluminum Concast, Inc., dba Aleris Rolled Products (Aleris) and ProLogis were negotiating the sale of the Carson-Aleris Facility located at 2211 and 2241 East Carson Street in Carson, California (Site) from Aleris to ProLogis. This transaction was completed on December 11, 2006, and ProLogis intends to redevelop the Site as a distribution warehouse facility. On behalf of ProLogis, Iris Environmental is preparing a Site Remediation and Redevelopment Plan (SRRP), which will propose remediation activities, based on a review of available Site data and comparison of the data with appropriate environmental screening values. The SRRP will be submitted to the California Regional Water Quality Control Board, Los Angeles Region (RWQCB) for review and approval.

Iris Environmental requested guidance during our October 19, 2006 telephone conversation regarding the selection of an appropriate screening level concentration for soils containing petroleum hydrocarbons at the Site. As discussed, Iris Environmental agrees that the Los Angeles Regional Water Quality Control Board Draft *Draft Interim Site Assessment and Cleanup Guidebook* (LARWQCB; 1996) TPH screening level guidance is appropriate for the Site, but, as you are aware, this guidance document is structured such that interpretation using Site specific parameters is required in order to select an appropriate screening value. As

suggested during our conversation, Iris Environmental is pleased to submit this letter report focused on the selection of appropriate petroleum hydrocarbon soil screening levels at the Site, in advance of submission of the entire SRRP, for your early review and comment.

Specifically, this report has been prepared to support selection of Total Petroleum Hydrocarbon (TPH) Site screening level concentrations consistent with LA Regional Board Screening Guidelines for non-drinking water aquifers.

Methodology

As part of the preparation of the SRRP, Iris Environmental compiled and evaluated Site data, both historic and those data collected during a recent Phase II Site Investigation performed by Iris Environmental (Iris Environmental 2006). The Phase II Site Investigation Report was previously submitted to the RWQCB on September 14, 2006. The compiled historic and current data were then evaluated by comparing them to appropriate environmental screening levels, including United States Environmental Protection Agency (USEPA) Region IX commercial worker soil Preliminary Remediation Goals (PRGs; 2004), Department of Toxic Substances Control (DTSC) commercial worker soil California Human Health Screening Levels (CHHSLs; 2004, revised January 2005), DTSC commercial/industrial soil gas CHHSLs (2004, revised January 2005), USEPA Maximum Contaminant Levels (MCLs), California Department of Health Services MCLs, and RWQCB TPH screening levels. Table 1 summarizes the chemical detections in Site soils and Table 2 summarizes chemical detections in soil vapor. All compiled data will be included in summary data tables in the SRRP.

Soil Data (Petroleum Hydrocarbons and VOCs)

A review of the Site data shows that petroleum hydrocarbons have been widely detected in soils. Most of these detections are located in the portion of the Site, underlying the former manufacturing building, known to contain free-phase rolling oil in the subsurface. The rolling oil used at the Site, NORPAR 15, is described by its manufacturer as “a normal paraffinic petroleum product of exceptionally high purity, characterized by low reactivity, low solvency, moderate volatility, relatively low viscosity, and mild odor”. Product specifications show the composition of NORPAR 15 by weight percentage as normal tetradecane ($C_{14}H_{30}$) 33.2%, normal pentadecane ($C_{15}H_{23}$), 48.7%, normal hexadecane ($C_{16}H_{34}$) 15.6%, normal heptadecane ($C_{17}H_{36}$), 2.1%, normal octadecane ($C_{18}H_{38}$) 0.3 %, and normal nonadecane ($C_{19}H_{40}$) 0.1%. In addition, according to manufacturer’s literature for NORPAR 15, it complies as a Technical White Mineral Oil, (CFR 178.3620 (b)), and is an approved USDA H-1 Lubricant, permitted for direct addition to food for human consumption. NORPAR 15 product information is attached.

A sample of the rolling oil was collected from one of the Site monitoring wells (MW-5-P) as part of the Phase II Site Investigation performed by Iris Environmental. Free product from this well was analyzed for volatile organic compounds (VOCs) using USEPA Method 8260, semi-volatile organic compounds (SVOCs) using USEPA Method 8270, polychlorinated biphenyls (PCBs) using USEPA Method 8082, Title 26 metals and aluminum using USEPA Method 6010/7000, and a hydrocarbon fingerprint scan using USEPA Method 8015 modified. The only constituents detected in these analyses above the respective detection limits, other than hydrocarbons, were metals at low concentrations, with aluminum having the highest concentration at 2.4 milligrams

per liter (mg/l; parts per million). The hydrocarbon fingerprint scan for the free-product collected from the Site monitoring well showed that the majority of this product is in the C_{12} – C_{22} range, consistent with the product specifications detailed above. Analytical results for the free product collected from Site monitoring well MW-5-P are attached in Tables 2 through 5.

The closed underground storage tanks (USTs) at the Site include a cluster of four that formerly contained diesel fuel and gasoline in addition to rolling oil, along with other process sumps, and the Site data shows the presence of petroleum hydrocarbons in gasoline and diesel ranges in these areas as well. Other isolated locations at the Site have also shown elevated concentrations of petroleum hydrocarbons in both gasoline and diesel ranges, although generally at shallow depths.

VOCs have historically been detected in Site soils at relatively low concentrations. A comparison of concentrations detected with commercial worker PRGs shows that these screening levels are exceeded at only one location, with 1,2,4-trimethylbenzene concentration at 290 milligrams per kilogram (mg/kg; parts per million), 1,3,5-trimethylbenzene at 96 mg/kg, and naphthalene at 69 mg/kg. This one sample location is in the area of the closed USTs, and all three VOCs are petroleum related. Therefore, the data indicate that the petroleum in the subsurface soils at the Site, with the exception of one localized area, does not contain volatile constituents of concern from a human health perspective, considering the proposed redevelopment of the Site. The closed USTs in the localized area containing elevated VOC concentrations will be physically removed during Site redevelopment, and affected soils will be managed appropriately.

Soil Vapor Data

ERM conducted Site-wide soil vapor sampling in a 2006 Site investigation, in which 40 soil vapor samples were collected. The collected samples were analyzed using USEPA Method 8260B, and only one VOC compound, ethylbenzene, was detected at one location at a concentration above the method detection limit. The concentration of ethylbenzene at this location was 1.9 micrograms per liter (µg/l). Iris Environmental's June 2006 Phase II sampling program, amongst other objectives, included soil gas sampling in the portion of the Site known to be affected with rolling oil in the subsurface, and collected samples were analyzed using EPA Method T0-15. Both the ERM and Iris Environmental data were evaluated by comparing them to soil gas CHHSLs for commercial site use, and none of the detected soil gas concentrations exceeded screening levels. The only other soil gas data available for the Site were collected in 1996. Some of the locations sampled during this 1996 investigation indicated concentrations of VOCs above current commercial screening standards. The area in which the highest concentrations were detected in 1996 was selected as a sampling location for Iris Environmental's Phase II 2006 sampling program in order to evaluate current concentrations of VOCs in soil gas in this area. As discussed above, the current soil gas conditions are below screening levels.

Petroleum Hydrocarbon Screening Level Selection

In addition to information needed in order to select the appropriate TPH screening level for the Site, Iris Environmental collected available information to characterize the nature of the

groundwater underlying the Site.

Perched Aquifer

Numerous investigations have reported the presence of a perched aquifer. Aqua Science (AquaScience 1988) reportedly encountered groundwater at 25 below ground surface (bgs) and stated that:

> "The local hydrogeology is classified as a shallow groundwater area (groundwater above 40 feet) based on the LADPW (Los Angeles Department of Public Works) guidelines. The nearest Los Angeles County test well to the site is well number 876Y. The last groundwater level measurement was conducted in October, 1982. The depth to usable groundwater at this time was determined to be 110 feet below the surface. The shallow occurrence of groundwater at this site indicates a possible perched aquifer as the source."

In a subsequent investigation, Thorne Environmental (Thorne 1989) stated that:

> "Aqua Sciences encountered a perched or semi-perched water body during the drilling and completion of tank monitoring wells. This water was not encountered during the Thorne Environmental investigation to a depth of 25 feet."

Park Environmental (1991) also reported that:

> "Regional groundwater has been measured at 110 feet bgs approximately one half mile northwest from the site (Los Angeles County Hydrologic Records Department, Well #876Y, taken in October, 1982). Depth to groundwater was measured at 100.2 feet bgs on March 19, 1991. Another well, No. 865A located on Wilmington just north of Carson Street, was measured in April, 1991 with groundwater at 96.9 feet bgs. The available hydrologic information appears to suggest that the first groundwater beneath the site may represent a perched or semi-perched condition."

Contamination in Aquifer

Woodward-Clyde Consultants reported in the Solid Waste Assessment Test Exemption Questionnaire Responses (July 1988) that a review of documents submitted to the RWQCB for facilities in the vicinity of the Site, including the Dominguez Section of the Shell Oil Company Wilmington Manufacturing Complex located northwest of the Site, the Arco Watson Refinery located south of the Site, and the Cormier Chevrolet facility south of the Site, showed that the upper aquifer has been affected by petroleum hydrocarbons.

Total Dissolved Solids

Iris Environmental tabulated the electrical conductivity values measured in the field in monitoring wells MW-1, MW-3, MW-4, MW-5, MW-6, MW-7, MW-7P, MW-8, MW-10P, and MW-11P, from July 1992 through July 2006, and calculated total dissolved solids (TDS) concentrations from the electrical conductivity values. To eliminate potential bias introduced by the known presence of hydrocarbons, only wells without free-phase hydrocarbons were included in this evaluation. The mean and 95% upper confidence limit of the mean (95% UCL)

concentrations of TDS in all monitoring wells are 3,148 mg/L and 3,938 mg/L, respectively. The mean and 95% UCL concentrations for TDS are above the 3,000 mg/L criteria customarily used to define groundwater as a drinking water resource.

Conclusion

Petroleum hydrocarbons impacts at the Site are primarily rolling oil, a non-toxic, food grade mineral oil, and isolated areas with residual diesel fuel and gasoline impacts. Comparison of Site data with environmental screening levels has confirmed that concentrations of VOCs in soil and soil gas at the Site are acceptable for the proposed redevelopment of the Site as a distribution warehouse facility. The first encountered groundwater aquifer at the Site has been historically characterized as a perched aquifer in Agency submittals, is not used as a source of drinking water, contains significant petroleum hydrocarbon contamination, originating from this and other facilities in the vicinity of the Site, and has a TDS concentration greater than 3,000 mg/l.

Consistent with the *Draft Interim Site Assessment and Cleanup Guidebook* (LARWQCB 1996), and based on the characteristics of rolling oil (food grade mineral oil), Iris Environmental therefore proposes that the appropriate TPH soil screening level concentrations for the Site are those applicable to a non-drinking water aquifer. Specifically, TPH soil screening level concentrations of 1,000 mg/kg in the C_4-C_{12} range, 10,000 mg/kg in the C_{13}-C_{22} range, and 50,000 mg/kg in the C_{23}-C_{32} range for soils at the Site.

Please give us a call at your earliest convenience should you have any questions or require any additional information, and we look forward to receipt of your written concurrence in this matter.

Sincerely,
IRIS ENVIRONMENTAL

Original signed by Sandra H. Stevens

Sandra H. Stevens
Principal

Original signed by Nicholas T. Loizeaux

Nicholas T. Loizeaux, P.G.
Principal

Attachments:
Tables:
- Table 1: Summary of Chemical Detections in Soil
- Table 2: Summary of Chemical Detections in Soil Gas
- Table 3: Product Data – PCBs
- Table 4: Product Data – SVOCs
- Table 5: Product Data – TPH
- Table 6: Product Data – VOCs

NORPAR 15 Product Information

I:\Catellus\05-390-M Aleris - Carson, CA\RWQCB\TPH Screening Level.doc

cc: Scott Strine, ProLogis
Pat Maloney, ProLogis
Pam Andes, Allen Matkins

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Woodward-Clyde Consultants (Woodward Clyde). 1988. *Solid Waste Assessment Test Exemption Questionnaire Responses*. July 1.

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TABLE 1: SUMMARY OF CHEMICAL DETECTIONS IN SOIL
CARSON / ALERIS
Carson, California

Analytical Group	Chemical Name	Detection Frequency	Range of Detected Concentrations	Mean Concentration	95 % UCL Concentration[1]	Soil PRG[2] (Commercial Worker)	Soil CHHSL[3] (Commercial Worker)	Exceeds Screening Level[4]	Units
Inorganics									
	Aluminum	57/57	16-72000	16,402	25,023	100,000	NA	No	mg/kg
	Arsenic	63/82	2.1-9.9	3.78	4.20	0.251	0.240	**Yes**	mg/kg
	Barium	78/78	43-270	129	138	66,577	63,000	No	mg/kg
	Beryllium	14/78	0.5-3.6	0.386	0.467	1,941	1,700	No	mg/kg
	Cadmium	46/87	0.51-125	3.47	12.8	451	990[a]	No	mg/kg
	Chloride	10/10	62-3005	805	1,926	NA	NA	NA	mg/kg
	Chromium	78/78	7.4-210	26.8	42.1	448	NA	No	mg/kg
	Cobalt	78/78	3.2-200	17.5	32.5	1,921	3,200	No	mg/kg
	Copper	191/193	0.3-10825	372	869	40,877	38,000	No	mg/kg
	Cyanide (total)	7/10	0.08-0.98	0.281	0.719	12,313	NA	No	mg/kg
	Lead	187/190	2-645	49.4	89.0	800	3,500	No	mg/kg
	Mercury	65/78	0.021-0.23	0.1	0.0846	307	180	No	mg/kg
	Molybdenum	17/78	2-30	2.23	4.08	5,110	4,800	No	mg/kg
	Nickel	78/78	6.2-500	27.1	56.9	20,439	16,000	No	mg/kg
	Selenium	1/78	2.1	1.19	1.29	5,110	4,800	No	mg/kg
	Silver	2/78	1.3-4.8	0.639	0.74	5,110	4,800	No	mg/kg
	Sulfate	10/10	16-184	95.1	123	NA	NA	NA	mg/kg
	Sulfide (total)	0/10	ND	ND	ND	NA	NA	NA	mg/kg
	Vanadium	78/78	15-76	38.8	41.0	1,022	6,700	No	mg/kg
	Zinc	190/190	1.1-7825	449	891	100,000	100,000	No	mg/kg
TPH									
	TEPH (C8-C40)	51/100	5.6-49000	1,982	9,722	10,000 [b]	10,000 [b]	**Yes**	mg/kg
	TPH (diesel)	7/17	25-3400	621	1,824	10,000 [b]	10,000 [b]	No	mg/kg
	TPH (extractable - rolling oil)	18/36	11-19701	1,591	8,389	10,000 [b]	10,000 [b]	**Yes**	mg/kg
	TPH (gasoline)	12/20	0.12-2800	483	1,381	1,000 [b]	1000 [b]	**Yes**	mg/kg
	TRPH	4/5	27-310	89.0	459	10,000 [b]	10,000[b]	No	mg/kg
	TVPH (C6-C12)	30/97	0.54-41000	1,924	3,671	1,000 [b]	1,000 [b]	**Yes**	mg/kg
VOC									
	1,1,1-Trichloroethane	0/33	ND	ND	ND	1,200	NA	No	mg/kg
	1,1,2,2-Tetrachloroethane	1/94	0.002	0.0224	0.113	0.929	NA	No	mg/kg
	1,1,2-Trichloroethane	0/33	ND	ND	ND	1.605	NA	No	mg/kg
	1,1-Dichloroethane	0/33	ND	ND	ND	6.009	NA	No	mg/kg
	1,1-Dichloroethylene	0/33	ND	ND	ND	413	NA	No	mg/kg
	1,2,4-Trimethylbenzene	14/81	0.002-290	3.61	39.2	170	NA	**Yes**	mg/kg
	1,2-Dichlorobenzene	0/13	ND	ND	ND	600	NA	No	mg/kg
	1,2-Dichloroethane (EDC)	0/33	ND	ND	ND	0.603	NA	No	mg/kg
	1,2-Dichloropropane	0/33	ND	ND	ND	0.742	NA	No	mg/kg
	1,3,5-Trimethylbenzene	11/81	0.0021-96	1.20	8.60	69.7	NA	**Yes**	mg/kg
	1,3-Dichlorobenzene	0/13	ND	ND	ND	600	NA	No	mg/kg
	1,4-Dichlorobenzene	0/13	ND	ND	ND	7.87	NA	No	mg/kg
	2-Chloroethylvinyl ether	0/13	ND	ND	ND	NA	NA	NA	mg/kg
	4-Isopropyltoluene	4/81	0.002-4.8	0.0609	0.431	NA	NA	NA	mg/kg
	Benzene	2/33	0.61-0.74	0.0623	0.344	1	NA	No	mg/kg
	Bromodichloromethane	0/33	ND	ND	ND	1.83	NA	No	mg/kg
	Bromoform	0/13	ND	ND	ND	218	NA	No	mg/kg
	Bromomethane	0/13	ND	ND	ND	13.1	NA	No	mg/kg
	Carbon Tetrachloride	0/33	ND	ND	ND	0.55	NA	No	mg/kg
	Chlorobenzene	0/13	ND	ND	ND	530	NA	No	mg/kg
	Chloroethane	0/13	ND	ND	ND	6.49	NA	No	mg/kg
	Chloroform	0/33	ND	ND	ND	2.00	NA	No	mg/kg
	Chloromethane	0/13	ND	ND	ND	156	NA	No	mg/kg
	cis-1,2-Dichloroethylene	0/20	ND	ND	ND	146	NA	No	mg/kg
	cis-1,3-Dichloropropylene	0/33	ND	ND	ND	NA	NA	NA	mg/kg
	Dibromochloromethane	0/13	ND	ND	ND	2.55	NA	No	mg/kg
	Dichlorodifluoromethane (R12)	0/20	ND	ND	ND	308	NA	No	mg/kg
	Ethylbenzene	20/124	0.0037-34	0.831	4.52	395	NA	No	mg/kg
	Isopropylbenzene	9/81	0.002-9.4	0.120	0.844	1,977	NA	No	mg/kg
	Methylene Chloride	1/114	0.11	0.187	1.25	20.5	NA	No	mg/kg
	Naphthalene	10/81	0.0058-69	0.861	6.18	4.20	NA	**Yes**	mg/kg
	n-Butylbenzene	1/81	52	0.646	4.65	240	NA	No	mg/kg
	n-Propylbenzene	8/81	0.0034-43	0.535	3.85	240	NA	No	mg/kg
	sec-Butylbenzene	4/81	0.0056-0.067	0.0647	0.438	220	NA	No	mg/kg
	Tetrachloroethylene (PCE)	12/124	0.0026-0.19	0.0291	0.128	1.31	NA	No	mg/kg
	Toluene	17/124	0.021-11	0.191	1.12	520	NA	No	mg/kg
	Total Xylenes	31/124	0.0022-220	5.61	32.2	420	NA	No	mg/kg
	trans-1,2-Dichloroethylene	0/33	ND	ND	ND	235	NA	No	mg/kg

TABLE 1: SUMMARY OF CHEMICAL DETECTIONS IN SOIL
CARSON / ALERIS
Carson, California

Analytical Group	Chemical Name	Detection Frequency	Range of Detected Concentrations	Mean Concentration	95 % UCL Concentration[1]	Soil PRG[2] (Commercial Worker)	Soil CHHSL[3] (Commercial Worker)	Exceeds Screening Level[4]	Units
	trans-1,3-Dichloropropylene	0/33	ND	ND	ND	NA	NA	NA	mg/kg
	Trichloroethylene (TCE)	1/114	0.0022	0.0228	0.129	0.115	NA	No	mg/kg
VOC									
	Trichlorofluoromethane (R11)	0/33	ND	ND	ND	2,000	NA	No	mg/kg
	Vinyl chloride	0/33	ND	ND	ND	0.746	NA	No	mg/kg

Notes:

[1]Corresponds to the 95% Upper Confidence Level (UCL) of the arithmetic mean calculated using ProUCL version 3.00.02 and assuming that chemicals reported as non-detect (ND) are present at one-half the method detection limit as recommended by the USEPA (1989). The maximum detected value of the primary and field duplicate sample analytical results included in the calculations. If both values were ND, the minimum detection limit was included in the calculations.

[2] US EPA Region IX Preliminary Remediation Goals (2004). October Available at http://www.epa.gov/region09/waste/sfund/prg/files/04prgtable.pdf

[3] California Human Health Screening Level (CHHSL) commercial / industrial soil screening numbers from Cal/EPA (2004). *Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil*. Office of Environmental Health Hazard Assessment (OEHHA) Integrated Risk Assessment Section. November, revised January 2005.

[4] Consistuent exceeds screening level if the maximum concentration detected at the Site is greater than a screening level for that consituent.

[a] Revised to reflect the Cal/EPA Department of Toxic Substances Control Human and Ecological Risk Division's current policy that cadmium is not considered as a carcinogen via the oral route. The revised screening value was calculated using methodology consistent with that used by Cal/EPA to calculate CHHSLs (Cal/EPA 2004), resulting in risk-based concentrations under a commercial setting of 1255 mg/kg for cancer risk and 990 mg/kg for noncancer hazard.

[b] Los Angeles Regional Water Quality Control Board screening levels for TPH from *Remediation Guidance for Petroleum and VOC Impacted Sites* , May 1996. TEPH (C8-C40) was screened assuming that 100% of the concentration was present as C13-C22.

mg/kg = milligrams per kilogram.
NA = Not applicable, screening level not available.
ND = Not detected at or above the reporting limit for this compound.
TPH = Total petroleum hydrocarbons.
TEPH (C8-C40) = Total extractable petroleum hydrocarbons.
TRPH = Total residual petroleum hydrocarbons.
TVPH (C6-C12) = total volatile petroleum hydrocarbons.
VOC = Volatile organic compound.

References:

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TABLE 2: SUMMARY OF CHEMICAL DETECTIONS IN SOIL GAS
CARSON / ALERIS
Carson, California

Analytical Group	Chemical Name	Detection Frequency	Range of Detected Concentrations	Mean Concentration	95 % UCL Concentration[1]	Soil Gas Screening Level[2]	Exceeds Screening Level[3]	Units
Gases								
	Carbon Dioxide	13/14	1.6-18	3.60	15.2	NA	NA	%
	Carbon Monoxide	0/14	ND	ND	ND	NA	NA	%
	Ethane	0/14	ND	ND	ND	NA	NA	%
	Ethene	0/14	ND	ND	ND	NA	NA	%
	Methane	3/14	0.00041-12	0.863	9.39	NA	NA	%
	Nitrogen	14/14	69-98	84.2	87.6	NA	NA	%
	Oxygen	14/14	1.2-20	11.3	14.0	NA	NA	%
VOC								
	1,1,1-Trichloroethane	4/10	6.2-35	7.88	22.3	6,960,000	No	ug/m^3
	1,1,2,2-Tetrachloroethane	0/10	ND	ND	ND	NA	NA	ug/m^3
	1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0/10	ND	ND	ND	NA	NA	ug/m^3
	1,1,2-Trichloroethane	0/10	ND	ND	ND	NA	NA	ug/m^3
	1,1-Dichloroethane	3/10	6.3-14	3.85	9.46	NA	NA	ug/m^3
	1,1-Dichloroethylene	1/10	10	2.48	6.12	NA	NA	ug/m^3
	1,2,4-Trichlorobenzene	0/10	ND	ND	ND	NA	NA	ug/m^3
	1,2,4-Trimethylbenzene	9/10	16-76	34.5	47.4	NA	NA	ug/m^3
	1,2-Dibromoethane (EDB)	0/10	ND	ND	ND	NA	NA	ug/m^3
	1,2-Dichloro-1,1,2,2,-tetrafluoroethane (R114)	0/10	ND	ND	ND	NA	NA	ug/m^3
	1,2-Dichlorobenzene	0/10	ND	ND	ND	NA	NA	ug/m^3
	1,2-Dichloroethane (EDC)	0/10	ND	ND	ND	356	No	ug/m^3
	1,2-Dichloropropane	0/10	ND	ND	ND	NA	NA	ug/m^3
	1,3,5-Trimethylbenzene	9/10	4.5-19	9.33	12.5	NA	NA	ug/m^3
	1,3-Butadiene	0/10	ND	ND	ND	NA	NA	ug/m^3
	1,3-Dichlorobenzene	0/10	ND	ND	ND	NA	NA	ug/m^3
	1,4-Dichlorobenzene	0/10	ND	ND	ND	NA	NA	ug/m^3
	1,4-Dioxane	1/10	27	8.10	12.3	NA	NA	ug/m^3
	2,2,4-Trimethylpentane	9/10	13-35	21.8	27.7	NA	NA	ug/m^3
	2-Butanone (MEK)	9/10	4.9-31	15.9	21.1	NA	NA	ug/m^3
	2-Hexanone (MBK)	0/10	ND	ND	ND	NA	NA	ug/m^3
	2-Propanol	1/10	13	4.96	6.75	NA	NA	ug/m^3
	3-Chloropropene	0/10	ND	ND	ND	NA	NA	ug/m^3
	4-Ethyltoluene	9/10	8.2-43	19.1	26.4	NA	NA	ug/m^3
	4-Methyl-2-pentanone (MIBK)	7/10	4.9-12	5.67	7.58	NA	NA	ug/m^3
	Acetone	10/10	14-470	245	332	NA	NA	ug/m^3
	alpha-Chlorotoluene	0/10	ND	ND	ND	NA	NA	ug/m^3
	Benzene	9/10	3.8-40	13.2	24.1	284	No	ug/m^3
	Bromodichloromethane	0/10	ND	ND	ND	NA	NA	ug/m^3
	Bromoform	0/10	ND	ND	ND	NA	NA	ug/m^3
	Bromomethane	0/10	ND	ND	ND	NA	NA	ug/m^3
	Carbon Disulfide	9/10	3.4-34	9.11	16.2	NA	NA	ug/m^3
	Carbon Tetrachloride	0/10	ND	ND	ND	211	No	ug/m^3
	Chlorobenzene	0/10	ND	ND	ND	NA	NA	ug/m^3
	Chloroethane	1/10	3.9	1.38	1.94	NA	NA	ug/m^3
	Chloroform	1/10	4.1	2.26	2.67	NA	NA	ug/m^3
	Chloromethane	0/10	ND	ND	ND	NA	NA	ug/m^3
	cis-1,2-Dichloroethylene	3/10	25-170	26.8	133	115,000	No	ug/m^3
	cis-1,3-Dichloropropylene	0/10	ND	ND	ND	NA	NA	ug/m^3
	Cyclohexane	1/10	8.8	2.17	5.38	NA	NA	ug/m^3
	Dibromochloromethane	0/10	ND	ND	ND	NA	NA	ug/m^3
	Dichlorodifluoromethane (R12)	0/10	ND	ND	ND	NA	NA	ug/m^3
	Ethanol	9/10	7.2-38	20.0	27.0	NA	NA	ug/m^3
	Ethylbenzene	9/10	5.6-24	13.2	17.4	NA	NA	ug/m^3
	Heptane	9/10	4.8-20	10.0	13.1	NA	NA	ug/m^3
	Hexachlorobutadiene	0/10	ND	ND	ND	NA	NA	ug/m^3
	Hexane	9/10	6.4-66	20.1	37.9	NA	NA	ug/m^3
	Isopropylbenzene	0/10	ND	ND	ND	NA	NA	ug/m^3
	m,p-Xylenes	9/10	26-120	60.0	80.6	2,230,000	No	ug/m^3
	Methylene Chloride	5/10	3.1-3.9	2.55	3.23	NA	NA	ug/m^3
	Methyl-tert-Butyl Ether (MTBE)	0/10	ND	ND	ND	28,900	No	ug/m^3
	n-Propylbenzene	3/10	4.6-7.7	3.31	6.33	NA	NA	ug/m^3
	o-Xylene	9/10	11-49	25.3	33.7	2,070,000	No	ug/m^3
	Styrene	0/10	ND	ND	ND	NA	NA	ug/m^3
	Tetrachloroethylene (PCE)	9/10	7.2-710	263	927	1,580	No	ug/m^3
	Tetrahydrofuran	8/10	2.6-4.3	3.08	3.76	NA	NA	ug/m^3
	Toluene	9/10	22-73	41.8	54.2	888,000	No	ug/m^3

TABLE 2: SUMMARY OF CHEMICAL DETECTIONS IN SOIL GAS
CARSON / ALERIS
Carson, California

Analytical Group	Chemical Name	Detection Frequency	Range of Detected Concentrations	Mean Concentration	95 % UCL Concentration[1]	Soil Gas Screening Level[2]	Exceeds Screening Level[3]	Units
VOC								
	trans-1,2-Dichloroethylene	2/10	4.3-4.7	2.21	2.95	235,000	No	ug/m^3
	trans-1,3-Dichloropropylene	0/10	ND	ND	ND	NA	NA	ug/m^3
	Trichloroethylene (TCE)	7/10	6-360	77.9	339	4,390	No	ug/m^3
	Trichlorofluoromethane (R11)	6/10	8.2-20	9.04	12.9	NA	NA	ug/m^3
	Vinyl chloride	2/10	4.5-5.3	1.83	4.07	94.8	No	ug/m^3

Notes:

[1]Corresponds to the 95% Upper Confidence Level (UCL) of the arithmetic mean calculated using ProUCL version 3.00.02 and assuming that chemicals reported as non-detect (ND) are present at one-half the method detection limit as recommended by the USEPA (1989). The maximum detected value of the primary and field duplicate sample analytical results included in the calculations. If both values were ND, the minimum detection limit was included in the calculations.

[2] California Human Health Screening Level (CHHSL) commercial / industrial soil gas screening numbers for volatile chemicals below buildings constructed with engineered fill below sub-slab gravel developed by Cal/EPA (2004).

[3] Consistuent exceeds screening level if the maximum concentration detected at the Site is greater than a screening level for that consituent.

NA = Not applicable, screening level not available.
ND = Not detected at or above the reporting limit for this compound.
ug/m^3 = micrograms per cubic meter.
VOC = Volatile organic compound.

References:

California Environmental Protection Agency (Cal/EPA). 2004. *Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil.* Office of Environmental Health Hazard Assessment (OEHHA) Integrated Risk Assessment Section. November, revised January 2005.

United States Environmental Protection Agency (USEPA). 1989. *Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part A). Interim Final*. Office of Emergency and Remedial Response. EPA 540/1 89/002. Washington, D.C. December.

TABLE 3: PRODUCT DATA - PCBs
ALERIS ALUMINUM
Carson, California

SampleID	MW-5P
Matrix	Product
Sample Date	7/27/2006
Unit	µg/L
Aroclor-1221	<2000
Aroclor-1232	<2000
Aroclor-1242	<2000
Aroclor-1248	<2000
Aroclor-1254	<2000
Aroclor-1260	<2000

Notes:
µg/L = micrograms per liter.

<x = not detected at or above the detection limit noted.

TABLE 4: PRODUCT DATA - SVOCs
ALERIS ALUMINUM
Carson, California

SampleID	MW-5P
Sample Date	7/27/2006
Sample Matrix	Product
Unit	µg/L
1,2,4-Trichlorobenzene	<5000
2,4,5-Trichlorophenol	<5000
2,4,6-Trichlorophenol	<5000
2-Nitrophenol	<5000
4-Nitrophenol	<5000
3,3´-Dichlorobenzidine	<10000
Acenaphthene	<2500
Acenaphthylene	<2500
Aniline	<5000
Anthracene	<2500
Azobenzene	<2500
Benzidine	<10000
Benzo(a)anthracene	<10000
Benzo(a)pyrene	<2500
Benzo(b)fluoranthene	<2500
Benzo(g,h,i)perylene	<2500
Benzoic acid	<25000
Benzo(k)fluoranthene	<2500
Benzyl alcohol	<5000
4-Bromophenyl phenyl ether	<2500
Butyl benzyl phthalate	<5000
4-Chloro-3-methylphenol	<5000
4-Chloroaniline	<10000
Bis(2-chloroethoxy)methane	<2500
Bis(2-chloroethyl)ether	<2500
Bis(2-chloroisopropyl)ether	<2500
2-Chloronaphthalene	<2500
2-Chlorophenol	<2500
4-Chlorophenyl phenyl ether	<2500
Chrysene	<2500
Dibenzo(a,h)anthracene	<2500
Dibenzofuran	<2500
Di-n-butyl phthalate	<50000
1,2-Dichlorobenzene	<2500
1,3-Dichlorobenzene	<2500
1,4-Dichlorobenzene	<2500
2,4-Dichlorophenol	<2500
Dimethyl phthalate	<20000
2,4-Dimethylphenol	<10000
Dimethyl phthalate	<5000
4,6-Dinitro-2-methylphenol	<10000
2,4-Dinitrophenol	<10000
2,6-Dinitrotoluene	<2500
2,4-Dinitrotoluene	<2500
Di-n-octyl phthalate	<5000
1,2-Diphenylhydrazine	<2500
Bis(2-ethylhexyl)phthalate	<25000
Fluoranthene	<2500
Fluorene	<2500
Hexachlorobenzene	<5000
Hexachlorobutadiene	<5000
Hexachlorocyclopentadiene	<5000
Hexachloroethane	<2500
Indeno (1,2,3-cd) pyrene	<10000
Isophorone	<2500
2-Methylnaphthalene	<2500
2-Methylphenol	<5000
3-Methylphenol	<5000
4-Methylphenol	<5000
Naphthalene	<2500
4-Nitroaniline	<10000
3-Nitroaniline	<10000
2-Nitroaniline	<10000
Nitrobenzene	<2500
N-Nitrosodimethylamine	<2500
N-Nitrosodi-n-propylamine	<5000
N-Nitrosodiphenylamine	<2500
Pentachlorophenol	<10000
Phenanthrene	<2500
Phenol	<2500
Pyrene	<2500

Notes
µg/L = micrograms per liter.
<x = not detected at or above the detection limit noted.

TABLE 5: PRODUCT DATA - TPH
ALERIS ALUMINUM
Carson, California

SampleID	MW-5P
Matrix	Product
Sample Date	7/27/2006
Unit	mg/L
C6-C8	<200
C8-C10	<200
C10-C12	**1,500**
C12-C14	**51,000**
C14-C16	**310,000**
C16-C18	**21,000**
C18-C20	**5,200**
C20-C22	**1,800**
C22-C24	**810**
C24-C26	**1,100**
C26-C28	**1,300**
C28-C32	**2,200**
C32-C34	**1,100**
C34-C36	**940**
C36-C40	**480**
C40-C44	<200
TPH (C6-C44)	**400,000**

Notes
mg/L = milligrams per liter.

<x = not detected at or above the detection limit noted.

TABLE 6: PRODUCT DATA - VOCs
ALERIS ALUMINUM
Carson, California

SampleID	MW-5P
Matrix	Product
Sample Date	7/27/2006
Unit	µg/L
1,1,1,2-Tetrachloroethane	<500
1,1,1-Trichloroethane	<500
1,1,2,2-Tetrachloroethane	<500
1,1,2-Trichloro-1,2,2-trifluoroethane (R	<500
1,1,2-Trichloroethane	<500
1,2,3-Trichlorobenzene	<500
1,2,3-Trichloropropane	<500
1,2,4-Trichlorobenzene	<500
1,2,4-Trimethylbenzene	<500
1,3,5-Trimethylbenzene	<500
m,p-Xylenes	<1000
Acetone	<10000
tert-Amyl Methyl Ether (TAME)	<2000
Benzene	<500
Bromobenzene	<500
Bromochloromethane	<500
Bromodichloromethane	<500
Bromoform	<500
Bromomethane	<500
2-Butanone (MEK)	<10000
tert-Butyl alcohol (TBA)	<10000
sec-Butylbenzene	<500
tert-Butylbenzene	<500
n-Butylbenzene	<500
Carbon Disulfide	<500
Carbon Tetrachloride	<500
Chlorobenzene	<500
Chloroethane	<500
Chloroform	<500
Chloromethane	<500
2-Chlorotoluene	<500
4-Chlorotoluene	<500
1,2-Dibromo-3-chloropropane	<1000
Dibromochloromethane	<500
1,2-Dibromoethane (EDB)	<500
Dibromomethane	<500
1,3-Dichlorobenzene	<500
1,2-Dichlorobenzene	<500
1,4-Dichlorobenzene	<500
Dichlorodifluoromethane (R12)	<500
1,1-Dichloroethane	<500
1,2-Dichloroethane (EDC)	<500
1,1-Dichloroethylene	<500
trans-1,2-Dichloroethylene	<500
cis-1,2-Dichloroethylene	<500
1,2-Dichloropropane	<500
2,2-Dichloropropane	<500
1,3-Dichloropropane	<500
cis-1,3-Dichloropropylene	<500
trans-1,3-Dichloropropylene	<500
1,1-Dichloropropylene	<500
Diisopropyl ether (DIPE)	<2000
Ethylbenzene	<500
Ethyl-tert-Butyl Ether (ETBE)	<2000
Hexachlorobutadiene	<1000
2-Hexanone (MBK)	<10000
Isopropylbenzene	<500
4-Isopropyltoluene	<1000
Methyl-tert-Butyl Ether (MTBE)	<2000
Methylene Chloride	<5000
4-Methyl-2-pentanone (MIBK)	<10000
Naphthalene	<2000
n-Propylbenzene	<500
o-Xylene	<500
Styrene	<500
Tetrachloroethylene (PCE)	<500
Toluene	<500
Trichloroethylene (TCE)	<500
Trichlorofluoromethane (R11)	<500
Vinyl chloride	<500

Notes
µg/L = micrograms per liter.
<x = not detected at or above the detection limit noted.

MATERIAL SAFETY DATA SHEET

ExxonMobil Chemical Company
A Division of Exxon Mobil Corporation

DATE PREPARED: NOV 13, 2002
MSDS NO.: 92865612

NORPAR 15 FLUID

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: NORPAR 15 FLUID

CHEMICAL NAME:
Normal Paraffin 64771-72-8

CHEMICAL FAMILY:
n-Paraffinic Hydrocarbon

PRODUCT DESCRIPTION:
Clear colorless liquid

CONTACT ADDRESS:
ExxonMobil Chemical Company
P.O. Box 3272, Houston, Texas 77253-3272

**** EMERGENCY TELEPHONE NUMBERS: (24 Hours) ****
**** CHEMTREC (800) 424-9300 ****
**** ExxonMobil Chemical Company (800) 726-2015 ****

NON EMERGENCY TELEPHONE NUMBERS : (8am-5pm M-F)
FOR GENERAL PRODUCT INFORMATION CALL : (281) 870-6000
FOR HEALTH AND MEDICAL INFORMATION CALL : (281) 870-6884

SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS

This product is not hazardous as defined in 29 CFR1910.1200

SECTION 3 HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

EYE CONTACT:
Slightly irritating but does not injure eye tissue.

SKIN CONTACT:
Low order of toxicity.

Frequent or prolonged contact may irritate and cause dermatitis.
Skin contact may aggravate an existing dermatitis condition.

INHALATION:
High vapor/aerosol concentrations (attainable at elevated temperatures well above ambient) are irritating to the eyes and the respiratory tract, and may cause headaches, dizziness, anaesthesia, drowsiness, unconsciousness, and other central nervous system effects, including death

INGESTION:
Minimal toxicity.
Small amounts of this product aspirated into the respiratory system during ingestion or vomiting may cause mild to severe pulmonary injury, possibly progressing to death.

SECTION 4 FIRST AID MEASURES

EYE CONTACT:
Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:
Immediately flush with large amounts of water; use soap if available. Remove contaminated clothing, including shoes, after flushing has begun.

INHALATION:
Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.

INGESTION:
If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.

SECTION 5 FIRE-FIGHTING MEASURES

FLASH POINT:	240 Deg F. METHOD: PMCC ASTM D93 NOTE: Minimum
FLAMMABLE LIMITS:	LEL: 0.5 UEL: 4.6 NOTE: Approximate
AUTOIGNITION TEMP.:	451 Deg F. NOTE: Approximate

GENERAL HAZARD
Low Hazard, liquid can burn upon heating to temperatures at or above

the flashpoint.
Toxic gases will form upon combustion.
Static Discharge, material can accumulate static charges which can cause an incendiary electrical discharge .
"Empty" containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner, or properly disposed of.

FIRE FIGHTING
Use water spray to cool fire exposed surfaces and to protect personnel.
Isolate "fuel" supply from fire.
Use foam, dry chemical, or water spray to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.
Avoid spraying water directly into storage containers due to danger of boilover.
This liquid is volatile and gives off invisible vapors. Either the liquid or vapor may settle in low areas or travel some distance along the ground or surface to ignition sources where they may ignite or explode.

DECOMPOSITION PRODUCTS UNDER FIRE CONDITIONS
Fumes, smoke and carbon monoxide

SECTION 6 ACCIDENTAL RELEASE MEASURES

LAND SPILL
Eliminate sources of ignition. Prevent additional discharge of material, if possible to do so without hazard. For small spills implement cleanup procedures; for large spills implement cleanup procedures and, if in public area, keep public away and advise authorities. Also, if this product is subject to CERCLA reporting (see Section 15 REGULATORY INFORMATION) notify the National Response Center.
Prevent liquid from entering sewers, watercourses, or low areas. Contain spilled liquid with sand or earth.
Recover by pumping or with a suitable absorbent.
Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

WATER SPILL
Eliminate sources of ignition. Warn occupants and shipping in surrounding and downwind areas of fire and explosion hazard and request all to stay

clear.
Remove from surface by skimming or with suitable adsorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in non-confined waters.
Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

SECTION 7 STORAGE AND HANDLING

ELECTROSTATIC ACCUMULATION HAZARD
Yes, use proper bonding and/or grounding procedure.
Additional information regarding safe handling of products with static accumulation potential can be ordered by contacting the American Petroleum Institute (API) for API Recommended Practice 2003, entitled "Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents" (American Petroleum Institute, 1220 L Street Northwest, Washington, DC 20005), or the National Fire Protection Association (NFPA) for NFPA 77 entitled "Static Electricity" (National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101).

STORAGE TEMPERATURE Deg F:
Ambient

LOADING/UNLOADING TEMPERATURE Deg F:
Ambient

STORAGE/TRANSPORT PRESSURE mmHg:
Atmospheric

LOADING/UNLOADING VISCOSITY cSt:
3.0

STORAGE AND HANDLING:
Keep container closed. Handle and open containers with care. Store in a cool, well ventilated place away from incompatible materials.
Do NOT handle or store near an open flame, heat or other sources of ignition. Protect material from direct sunlight.
Material will accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or grounding procedures.
Do NOT pressurize, cut, heat, or weld containers. Empty product containers may contain product residue. Do NOT reuse empty containers without commercial cleaning or reconditioning.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE CONTROLS
The use of local exhaust ventilation is recommended to control process

emissions near the source. Laboratory samples should be handled in a lab hood. Provide mechanical ventilation of confined spaces. See respiratory protection recommendations.

PERSONAL PROTECTION

For open systems where contact is likely, wear safety glasses with side shields, long sleeves, and chemical resistant gloves.
Where contact may occur, wear safety glasses with side shields.
Where concentrations in air may exceed the limits given in this Section and engineering, work practice or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.

WORKPLACE EXPOSURE GUIDELINES

ExxonMobil RECOMMENDS THE FOLLOWING OCCUPATIONAL EXPOSURE LIMITS:
a TWA of 1200 mg/m3 (140 ppm) based on total hydrocarbon.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

SPECIFIC GRAVITY at Deg F:	0.77 at 60
DENSITY at Deg F:	6.4 lbs/gal at 60
VAPOR PRESSURE, mmHg at Deg F:	0.02 at 68
SOLUBILITY IN WATER, wt. % at Deg F:	Less than 0.01 at 77
VISCOSITY OF LIQUID, cSt at Deg F:	3.3 at 77 Approximate
SP. GRAV. OF VAPOR, at 1 atm (Air=1):	7.30 Calculated
FREEZING/MELTING POINT, Deg F:	50
EVAPORATION RATE, n-Bu Acetate=1:	Less than 0.1
BOILING POINT, Deg F:	464 to 558

SECTION 10 STABILITY AND REACTIVITY

STABILITY:

Stable

CONDITIONS TO AVOID INSTABILITY:

Not applicable

HAZARDOUS POLYMERIZATION:

Will not occur

CONDITIONS TO AVOID HAZARDOUS POLYMERIZATION:

Not applicable

MATERIALS AND CONDITIONS TO AVOID INCOMPATIBILITY:
Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS:
None

SECTION 11 TOXICOLOGICAL INFORMATION

Please refer to Section 3 for available information on potential health effects.

SECTION 12 ECOLOGICAL INFORMATION

No specific ecological data are available for this product. Please refer to Section 6 for information regarding accidental releases and Section 15 for regulatory reporting information.

SECTION 13 DISPOSAL CONSIDERATIONS

Please refer to Sections 5, 6 and 15 for disposal and regulatory information.

SECTION 14 TRANSPORT INFORMATION

DEPARTMENT OF TRANSPORTATION (DOT):
This product is not DOT regulated.

SECTION 15 REGULATORY INFORMATION

TSCA:
This product is listed on the TSCA Inventory at CAS Registry Number 64771-72-8

Clean Water Act/Oil Pollution Act:
This product is classified as an oil under Section 311 of the Clean Water Act (40 CFR 110) and the Oil Pollution Act of 1990. Discharge or spills which produce a visible sheen on either surface water, or in waterways/sewers which lead to surface water, must be reported to the National Response Center at 800-424-8802.

CERCLA:
If this product is accidentally spilled, it is not subject to any special reporting under the requirements of the Comprehensive Environmental Response, Compensation and Liability Act. We recommend you contact local authorities to determine if there may be other local reporting requirements.

SARA TITLE III:
Under the provisions of Title III, Sections 311/312 of the Superfund Amendments and Reauthorization Act, this product is classified into the following hazard categories:
Not Hazardous.
This product does not contain Section 313 Reportable Ingredients.

SECTION 16 OTHER INFORMATION

NOTES:
This product has been evaluated by ExxonMobil Chemical Company and determined to meet the low vapor pressure (LVP) exemption set by the California Air Resources Board for volatile organic compounds in consumer products (California Code of Regulations, Title 17, Article 2, Section 94510).

HAZARD RATING SYSTEMS:
This information is for people trained in:
National Paint & Coatings Association's (NPCA)
Hazardous Materials Identification System (HMIS)
National Fire Protection Association (NFPA 704)
Identification of the Fire Hazards of Materials

	NPCA-HMIS	NFPA 704	KEY
HEALTH	1	1	4 = Severe
FLAMMABILITY	1	1	3 = Serious
REACTIVITY	0	0	2 = Moderate
			1 = Slight
			0 = Minimal

CAUTION: HMIS ratings are based on a 0-4 rating scale with 1 representing minimal hazards or risks, and 4 representing significant hazards or risks. Recommended HMIS ratings should not be used in the

absence of a fully implemented HMIS hazard communication program.

REVISION SUMMARY:

Since August 13, 2002 this MSDS has been revised in Section(s):
5, 6, 9

REFERENCE NUMBER:
HDHA-C-25047

SUPERSEDES ISSUE DATE:
August 13, 2002

This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. It is the users responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

LAST PAGE

TECHNIGRAM

DC-[illegible]
March 27, 1992

USDA LUBRICANT APPROVALS

The following is a discussion of USDA H-1 and H-2 approved lubricants. A current list of approved Exxon USA lubricants is also attached for reference.

The U.S. Department of Agriculture (USDA) is responsible for reviewing, approving and listing proprietary lubricants which are authorized for use in federally inspected meat and poultry plants. The USDA controls the use of lubricants in these specific food processing applications, while the Food and Drug Administration (FDA) controls ingredients and components of lubricants that may be utilized in other food and drug manufacturing or processing operations.

Determination of a lubricant's acceptability for meat and poultry operations begins when a manufacturer submits a listing of the proprietary ingredients of the lubricant to the USDA. For those lubricants which might directly contact food, the ingredients must also be found on the FDA Lubricants with Incidental Food Contact list on the Generally Recognized as Safe (GRAS) list or on the Prior Sanctioned list. If any of the components are not found on the FDA lists, the USDA will ask the manufacturer to prove safety, or the USDA will ask the manufacturer to petition the FDA for a ruling. A food additive petition is a very complicated process which usually is quite expensive and time consuming.

If the review of the lubricant is acceptable, the USDA will issue an H-1 approval. An H-1 approval implies that there may be indirect food contact, but that these lubricants may not be appropriate when deliberate food contact is anticipated, such as the use of release agents for bakery products. Acceptable H-1 lubricants can be used where the lubricated part is exposed to edible products. Examples of this type of lubricant use are open gears or chains, or machinery located above the edible product.

If the lubricant manufacturer anticipates no food contact, then the USDA review will not necessarily require a strict proof of safety. The USDA will issue an H-2 approval if no food contact is anticipated. Closed and sealed gear boxes are an example of this type of lubricant use.

A list of H-1 and H-2 approved lubricants is maintained on an annual basis by the USDA and is available from the U.S. Government Printing Office. MTS maintains a copy of this publication. The list includes compounds arranged alphabetically, by trade name, under the heading of the firm by which they are marketed. The 1991 list of approved Exxon USA products is provided on p.2 of this Technigram.

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PRODUCT INFORMATION BULLETIN

DG-1P
October 15, 1992
Supersedes issue of November 11, 1987

NORPAR® 15 Solvent
Sales Specification

Normal Paraffin

The product is warranted to meet the values specified below. Actual values may deviate within the established reproducibility of the test method. In case of dispute, the test methods specified below, or their eqivalent, will be used in conjunction with ASTM D 3244, "Standard Practice for Utilization of Test Data to Determine Conformance with Specifications."

Aniline Point, Mixed, ASTM D 611, °C	82 Min.
Color, Saybolt, ASTM D 156	+26 Min.
Distillation, ASTM D 86, °C	
Initial Boiling Point	240 Min.
Dry Point	292 Max.
Flash Point, ASTM D 93, °C	115.6 Min.
Normal paraffin Content, Mass %	97 Min.
Specific Gravity, ASTM D 1250, 15.6°/15.6°C	0.760 - 0.785
Sulfur Content, Microcoulometer, ppm	12 Max.

PIBEPH

EXXON Marketing Technical Services Exxon Company, U.S.A.

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TECHNIGRAM®

D236-B
April 10, 1991
Supersedes issue of December 15, 1989

FDA Applications for Exxon Products

This Technigram summarizes Exxon product applications permitted by the U.S. Food and Drug Administration (FDA) as listed in 21 Code of Federal Regulations Part 170-199, Food and Drugs.

This information is offered as guidance only.

It is important that the customer, end-user, or formulator consult the original up-to-date regulations since extractive limitations are often specified for finished articles. The FDA regulations are extremely complicated and carry significant penalties for failure to comply both with the letter and spirit of the law. For these reasons, you are encouraged to consult with Marketing Technical Services if you are uncertain about the FDA status of a product in a specific end use.

1-3-4-5-6

EPH44/1

EXXON

Marketing Technical Services Exxon Company, U.S.A.

TECHNIGRAM presents current information pertinent to conditions in the USA. Elsewhere, this information should be interpreted in terms of local conditions.

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Part 172 - Food Additives Permitted for Direct Addition to Food for Human Consumption

Code	Description	Affected EUSA Products
172.210	Coatings on Fresh Fruit	EXXSOL HEPTANE; ISOPAR C, E
172.250	Petroleum Naphtha	EXXSOL HEPTANE; ISOPAR C, E
172.615	Chewing Gum Base	All PARVAN grades
172.882	Synthetic Isoparaffinic Petroleum Hydrocarbons	ISOPAR C, E, G, H, K, L, M; EXX-PRINT 189D, 493D
172.884	Odorless Light Petroleum Hydrocarbons	EXXSOL D 60, D 80, D 110, D 130; ISOPAR G, H, K, L, M, V; LOPS. EXX-PRINT 176D, 189D, 283D, 287D, 392D, 493D, 588D; NORPAR 12, [redacted]
172.886	Petroleum Wax	All PARVAN grades

Part 173 - Secondary Direct Food Additives Permitted in Food for Human Consumption

Code	Description	Affected EUSA Products
173.270	Hexane	EXXSOL HEXANE
173.280	Solvent Extraction Process for Citric Acid	ISOPAR C, E, G, H, K, L, M
173.340	Defoaming Agents 173.340(a)(3) Defoaming Agent for Beet Sugar and Yeast only	EXXSOL D 60, D 80, D 110, D 130; ISOPAR C, E, G, H, K, L, M, V; LOPS; [redacted] 12, [redacted]

Part 175 - Indirect Food Additives: Adhesive Coatings and Compounds

Code	Description	Affected EUSA Products
175.105	Adhesives (Includes Defoaming Agents from 176.210)	Asphalt; EXXSOL D 60, D 80, D 110, D 130; EXX-PRINT 176D, 189D, 283D, 287D, 493D, 805; EXXSOL HEPTANE; EXXSOL HEXANE; FLEXON 766, 845, 885; all ISOPAR grades; LOPS; [redacted] 12, 13, [redacted]; all grades of PARVAN; TELURA 415, 417, 521, 607, 612, 613, 619; VARSOL 1, 18; Toluene, Xylene [Kerosene is listed; EUSA labels Kerosene for dermal cancer potential]
175.125	Pressure-Sensitive Adhesives	All PARVAN grades
175.210	Acrylate Ester Copolymer Coating	EXXSOL D 80, D 110, D 130; ISOPAR M, V; NORPAR 12, 13, 15; All PARVAN grades, EXX-PRINT 176D, 189D, 283D, 287D, 392D, 493D, 588D 805; FLEXON 766, 845, 855; TELURA 415, 417, 521, 607, 612, 613, 619D
175.300	Resinous and Polymeric Coatings	All PARVAN grades
175.320	Resinous and Polymeric Coatings for Polyolefin Films	EXXSOL HEXANE; all PARVAN grades; Toluene

Part 176 - Indirect Food Additives: Paper and Paperboard Components

Code	Description	Affected EUSA Products
176.170(a)	Components of Paper and Paperboard in Contact with Aqueous and Fatty Foods	All PARVAN grades
176.180	Components of Paper and Paperboard in Contact with Dry Food	EXXSOL D 60, D 80, D 110, D 130; EXX-PRINT 176D, 189D, 283D, 287D, 392D, 493D, 588D; ISOPAR G, H, K, L, M, V; LOPS; NORPAR 12, 13; all PARVAN grades; Toluene, Xylene
176.200	Defoaming Agents Used in Coatings	EXXSOL D 60, D 80, D 110, D 130; EXX-PRINT 176D, 189D, 283D, 287D, 392D, 493D, 588D; EXXSOL HEPTANE; EXXSOL HEXANE; FLEXON 766, 845, 885; all ISOPAR grades; LOPS; NORPAR 12, 13, 15; all PARVAN grades; TELURA 415, 417, 521, 607, 612, 613, 619, 619D; [Kerosene is listed; EUSA labels Kerosene for dermal cancer potential]
176.210	Defoaming Agents Used in the Manufacture of Paper and Paperboard	EXXSOL D 60, D 80, D 110, D 130; EXX-PRINT 176D, 189D, 283D, 287D, 392D, 493D, 588D, 805; EXXSOL HEPTANE; FLEXON 766, 845, 885; all ISOPAR grades; LOPS; NORPAR 12, 13, 15; all PARVAN grades; TELURA 415, 417, 521, 607, 612, 613, 619, 619D; [Kerosene is listed; EUSA labels Kerosene for dermal cancer potential]
176.300	Slimicides	EXXSOL D 60, D 80, D 110, D 130; EXXSOL HEPTANE; FLEXON 766, 845, 885; all ISOPAR grades; LOPS; NORPAR 12, 13, 15; all PARVAN grades; TELURA 415, 417, 521, 607, 612, 613, 619, 619D; Toluene; Xylene; [Kerosene is listed; EUSA labels Kerosene for dermal cancer potential]

Part 177 - Indirect Food Additives: Polymers

Code	Description	Affected EUSA Products
177.1010	Acrylic and Modified Acrylic Plastics, Semi-rigid and Rigid	Toluene, Xylene
177.1200	Cellophane (Defoamers from 176.200)	EXXSOL D 60, D 80, D 110, D 130; EXX-PRINT 176D, 189D, 283D, 287D, 392D, 493D, 588D, 805; EXXSOL HEPTANE; All ISOPAR grades; NORPAR 12, 15; all PARVAN grades; Toluene
177.1400	Hydroxyethylcellulose Film	EXXSOL D 60, D 80, D 110, D 130; EXX-PRINT 176D, 189D, 283D, 287D, 392D, 493D, 588D, 805; EXXSOL HEPTANE; All ISOPAR grades; NORPAR 12, 15; all PARVAN grades; Toluene
177.1520	Olefin Polymers (see 178.3650)	EXXSOL D 60, D 80, D 110, D 130; ISOPAR G, H, K, L, M, V; LOPS; NORPAR 12, 15; EXX-PRINT 176D, 189D, 283D, 287D, 392D, 493D, 588D
177.1580	Polycarbonate Resins	EXXSOL HEPTANE; Toluene
177.1630	Polyethylene Phthalate Polymers	Products included and specified under 175.210, 175.320, 177.1010, 177.1200, 177.1400, 177.1520, 177.1580
177.1650	Polysulfide Polymer Polyepoxy Resin	Toluene, Xylene

Part 177 - Indirect Food Additives: Polymers (Cont'd)

Code	Description	Affected EUSA Products
177.2260	Filters, Resin Bonded	EXXSOL D 80, D 110, D 130; FLEXON 766, 845, 885; ISOPAR M, V; LOPS; NORPAR 12, 13, 15; all PARVAN grades; TELURA 415, 417, 521, 607, 612, 613, 619, 619D; EXX-PRINT 176D, 189D, 283D, 287D, 392D, 493D, 588D, 805
177.2460	Poly (2,6 Dimethyl-1,4 Phenylene) Oxide Resins	Toluene
177.2600	Rubber Articles Intended for Repeated Use	EXXSOL D 80, D 110, D 130; FLEXON 766, 845, 885; ISOPAR M, V; NORPAR 12, 13, 15; all PARVAN grades; TELURA 415, 417, 521, 607, 612, 613, 619, 619D; EXX-PRINT 176D, 189D, 283D, 287D, 392D, 493D, 588D, 805
177.2800	Textiles and Textile Fibers	EXXSOL D 60, D 80, D 110, D 130; FLEXON 766, 845, 885; ISOPAR G, H, K, L, M, V; NORPAR 12, 13, 15; all PARVAN grades; TELURA 415, 417, 521, 607, 612, 613, 619, 619D; EXX-PRINT 176D, 189D, 283D, 287D, 392D, 493D, 588D, 805; [Kerosene is listed; EUSA labels Kerosene for dermal carcinogenic potential]

Part 178 - Indirect Food Additives: Adjuvants, Production Aids, and Sanitizers

Code	Description	Affected EUSA Products
178.3010	Adjuvants in Polystyrene	Toluene
178.3120	Animal Glue (Defoamers from 176.210)	EXXSOL D 60, D 80, D 110, D 130; EXXSON HEPTANE; FLEXON 766, 845, 885; All ISOPAR Grades; NORPAR 12, 13, 15; LOPS; TELURA 415, 417, 521, 607, 612, 613, 619, 619D; All PARVAN Grades;
178.3530	Isoparaffinic Petroleum Hydrocarbons, Synthetic	ISOPAR C, E, G, H, K, L, M; EXX-PRINT 189D, 493D
178.3570	Lubricants With Incidental Food Contact	CARUM 330; EXXSOL D 80, D 110, D 130; EXX-PRINT 176D, 189D, 283D, 287D, 392D, 493D 588D, 805; ISOPAR M, V; NORPAR 12, 13, 15; UNIVIS Special 22, 32, 46, 68, EP 220, B 320, B 220D
178.3620	Mineral Oil 178.3620(a) White Mineral Oil	No Product
	178.3620(b) Technical White Mineral Oil	EXXSOL D 80, D 110, D 130; EXX-PRINT 176D, 189D, 283D, 287D, 392D, 493D, 588D, ISOPAR M, V; NORPAR 12, 15
	178.3620(c) Mineral Oil	FLEXON 766, 845, 885; ISOPAR M, V; EXX-PRINT 283D, 392D, 493D, 588D, 805, NORPAR 13; ORCHEX 692, 796; TELURA 415, 417, 521, 607, 612, 613, 619, 619D
178.3650	Odorless Light Petroleum Hydrocarbons	EXXSOL D 60, D 80, D 110, D 130; ISOPAR G, H, K, L, M, V; LOPS; NORPAR 12, 15; EXX-PRINT 176D, 189D, 283D, 287D, 392D, 493D, 588D

Part 178 - Indirect Food Additives: Adjuvants, Production Aids, and Sanitizers (Cont'd)

Code	Description	Affected EUSA Products
178.3710	Petroleum Wax	All PARVAN grades
178.3800	Preservatives for Wood	ISOPAR G, H, K, L, all PARVAN grades; VARSOL 1, 18
178.3850	Reinforced Wax	All PARVAN grades
178.3910*	Surface Lubricants used in the Manufacture of Metallic Articles: 178.3910(a)(3)	FLEXON 766, 845, 885; ISOPAR H, V; NORPAR 13; TELURA 415, 417, 521, 607, 612, 613, 619, 619D
	178.3910(a)(4)	ISOPAR C, E, G, H, K, L, M; NORPAR 12, 15; all PARVAN grades; VARSOL 1, 18
	178.3910(b)	EXXSOL D 80, D 110, D 130; ISOPAR H, V; NORPAR 12, 13, 15; all PARVAN grades;

Part 179 - Irradiation in the Production, Processing, and Handling of Food

Code	Description	Affected EUSA Products
179.45	Packaging Materials for Use During the Irradiation of Pre-Packaged Foods	EXXSOL D 60, D 80, D 110, D 130; ISOPAR H, V; NORPAR 12, 15; EXX-PRINT 176D, 189D, 283D, 392D, 493D, 588D

Part 573 - Food Additives Permitted in Feed and Drinking Water of Animals

Code	Description	Affected EUSA Products
573.220	Feed-Grade Biuret	EXXSOL D 60, D 80, D 110, D 130; ISOPAR H, V; NORPAR 12, 15
573.680	Mineral Oil (i.e., Dusting or Palletizing of Animal Feed)	EXXSOL D 60, D 80, D 110, D 130; ISOPAR H, V; NORPAR 12, 15
573.740	Odorless Light Petroleum Hydrocarbons	EXXSOL D 60, D 80, D 110, D 130; ISOPAR C, E, G, H, K, L, M, V; NORPAR 12, 15

* Products meeting 178.3910(b) may also be used for rolling operations under 178.3910(a).

APPENDIX D

D.1 INTRODUCTION

The Carson/Aleris facility located at 2211 and 2241 East Carson Street in Carson, California (Site) operated as an aluminum scrap recycling and rolling operation until April 1, 2006. At that time, operations ceased, and the Site has been decommissioned in accordance with a Final Facility Closure Plan (ERM, 2006).

The Site was acquired by ProLogis on December 11, 2006, and ProLogis intends to redevelop the Site as a distribution warehouse facility. This health risk evaluation has been prepared by Iris Environmental on behalf of ProLogis to evaluate existing Site data, and to determine whether any remedial activities may be necessary in order to redevelop the Site for its intended use as a commercial property. A Land Use Covenant will be implemented to restrict the Site to commercial/industrial land uses.

D.2 METHODOLOGY

D.2.1 Potentially Exposed Populations and Pathways of Exposure

Under the current Site redevelopment plan, the majority of the Site would be covered by a warehouse or paved parking areas and roads. The proposed future building footprint is shown on Figure 2 of the main report. As noted above, a Land Use Covenant will be implemented to restrict the Site to commercial/industrial land uses. Although the Site will be paved under the current Site redevelopment plan precluding any potential direct contact with soils for future users of the Site, soil direct contact pathways were conservatively included in this health risk evaluation.

The first encountered groundwater aquifer at the Site has been historically characterized as a perched aquifer encountered at a depth of approximately 25 feet below ground surface (bgs). Due to the depth at which groundwater is first encountered, it is not expected to be contacted directly by future users of the Site under the current Site redevelopment plan. In addition, groundwater beneath the Site is not currently used for drinking water purposes and contains significant petroleum hydrocarbon contamination originating from this and other facilities in the vicinity of the Site as well as high total dissolved solids (TDS), which would prevent its use as a drinking water resource (Iris Environmental, 2006). Groundwater is therefore evaluated as a non-drinking water resource in this health risk evaluation. For the reasons stated above, under routine future conditions for the planned future land uses, the only potentially complete exposure pathway through which onsite commercial populations may be exposed to chemicals detected in groundwater would be through the inhalation of volatile constituents in

groundwater that may migrate up through the soil column into indoor or ambient air. These potential exposures to Site groundwater via the indoor or outdoor vapor inhalation pathway are evaluated using Site soil gas data.

The potentially complete pathways through which future commercial populations, post-redevelopment, may be exposed to chemicals detected at Site include the following:

- Inhalation of volatiles migrating from soil, up through the soil column, and into indoor air (*i.e.*, vapor intrusion) and ambient air;
- Inhalation of particulates;
- Soil Ingestion; and
- Dermal Contact with soil.

Although a landscape/maintenance worker is not explicitly quantitatively evaluated in this health risk evaluation, conclusions regarding potential exposures and risks to a future landscape/maintenance worker are discussed qualitatively within the context of the commercial worker evaluation.

During the redevelopment phase, onsite construction workers may be exposed to chemicals detected at the Site through the following potentially complete pathways:

- Inhalation of volatiles migrating from soil, up through the soil column, and into ambient air;
- Inhalation of particulates;
- Soil Ingestion; and
- Dermal Contact with soil.

The closest offsite resident to the Site is approximately ¼ mile east of the Site. During the redevelopment phase, offsite residents may be exposed via inhalation to volatiles and particulates that are generated during construction activities and disperse offsite. Although the offsite resident population is not explicitly quantitatively evaluated in this health risk evaluation, conclusions regarding potential exposures and risks to offsite residents potentially exposed during the redevelopment phase are discussed qualitatively within the context of the construction worker evaluation.

The closest recreational park to the Site is approximately ¼ mile northwest of the Site. During the redevelopment phase, offsite recreational users of the park may be exposed via inhalation to volatiles and to particulates that are generated during construction activities and disperse offsite. Similar to the offsite residential population, the offsite recreational user is not explicitly quantitatively evaluated in this health risk evaluation; conclusions regarding potential exposures and risks to offsite recreational users

potentially exposed during the redevelopment phase are discussed qualitatively within the context of the construction worker evaluation.

In sum, the populations that are included in the quantitative risk evaluation are the future commercial workers, present following the redevelopment of the Site, and construction workers involved in the redevelopment of the Site, as described in the sections that follow.

D.2.2 Data Used in Evaluating Exposures

All soil data collected during historical investigations, as described in Section 3.0 of the main report, were included in this evaluation to evaluate direct exposures (*i.e.*, ingestion, dermal contact, and inhalation of soil particulates) to chemicals in Site soil, with the following exceptions: samples collected within the landfill area and the northwestern portion of the Site that will remain a parking area (as depicted in Figure 2, Site Development Plan). In general, under the future planned commercial land-use, including the development of the property for use as a distribution warehouse facility, soils down to a depth of 10 feet bgs could potentially be brought up and mixed with surface soils (Cal/EPA, 1992). Thus, only soil samples collected at depths less than or equal to 10 feet bgs were considered representative of soils to which future commercial workers may potentially be exposed. During the redevelopment phase, construction workers may come in contact with soils deeper than 10 feet bgs during the removal of subsurface structures (e.g., removal of underground storage tanks), thus, soil samples collected at all depths were considered representative of soils to which construction workers during the redevelopment phase may potentially be exposed.

There is currently a Deed Notification recorded for the Site which addresses the presence of metals in the landfill area and the northwestern portion of the Site. This Notification states that proper precautions should be taken during any future excavation activities which could potentially expose workers to metals remaining in the soil in the landfill area and the northwestern portion of the Site. As part of the Site redevelopment program, a more stringent Land Use Covenant will be recorded for the Site which will require that the landfill and the northwestern portion of the Site will remain paved. The Covenant will also include requirements for regular inspection and maintenance of these paved areas. Thus, soils in these areas will not be available for contact by potential future users of the Site and soil sampling data collected in these areas was not included in this health risk evaluation. These areas known to contain metals will remain paved during Site redevelopment activities, and will continue to be used as truck trailer parking areas. No underlying soils will be excavated or otherwise disturbed and all improvements in these areas will involve only additional paving or contouring of the currently paved surfaces.

All soil vapor data collected by Iris Environmental in July 2006 were included to evaluate the potential for vapor intrusion (*i.e.*, the potential for volatile chemicals to migrate up through the vadose zone and accumulate in the indoor air of a building constructed at the Site). These soil vapor data were considered to be more representative of Site conditions compared to soil vapor data collected by ERM during the May 2006 sampling event as the soil vapor data collected by Iris Environmental are more recent and have lower detection limits for individual volatile chemicals. The soil vapor data for total volatile petroleum hydrocarbons (TVPH) mixture collected by ERM during the May 2006 sampling event was also included to evaluate the potential for vapor intrusion, as soil vapor data for TVPH was not collected by Iris Environmental. The analytic results for soil and soil gas data are presented in Appendix B and summarized in Tables 1, and 2 of the main report, respectively.

All detected compounds were evaluated as chemicals of potential concern (COPC). The 95 percent upper confidence limit of the mean (95% UCL)[1] was used as the representative soil exposure point concentration (EPC) to evaluate direct exposures (i.e., soil ingestion and dermal contact) and to evaluate exposures to volatiles and particulates in outdoor air for the future commercial worker and construction worker scenarios. As a conservative approach, and as requested by DTSC, the maximum detected concentration of each COPC was also used for the future commercial worker scenario, in addition to the 95% UCL, as an EPC in order to develop an estimate of the range of potential concentrations and corresponding risks that may be encountered at the Site. Although risk assessment guidance states that risks should be based on average exposures, an evaluation of potential maximum risks was conducted here in order to avoid missing potential impacts at the Site that may be limited in area, and that could potentially be masked by averaging concentrations across the entire redevelopment area. The maximum detected concentration of each COPC was not used as the EPC to evaluate the construction worker scenario, as a construction worker will likely work in multiple areas across the Site during the entire redevelopment phase (conservatively assumed to extend for 250 days, per DTSC's recommendation). Accordingly, the average concentration of chemicals across the entire redevelopment area is a more representative EPC for a construction worker exposed during the course of the Site redevelopment.

For compounds such as arsenic, where risk-based screening levels are below background levels, a statistical evaluation may be performed in accordance with Cal/EPA guidance (1997) to determine whether arsenic concentrations at the Site are representative of

[1] The 95% UCL estimate of the dataset was calculated using USEPA ProUCL Version 3.00.02 (USEPA, 2004a) statistical program. One-half the detection limit used as surrogate value for non-detects in the calculations. If the 95% UCL estimate is greater than the maximum detected concentration, then the maximum detected concentration is used as the representative EPC.

background levels. A Site-wide background comparison for arsenic was conducted following the approach put forth by CalEPA (1997) for inorganic chemicals and is discussed in Section D.2.5 below.

The maximum detected concentration of each volatile organic compound (VOC) detected in soil gas was used to estimate the concentration of volatiles in indoor air.

D.2.3 Calculating Cancer Risk and Noncancer Hazard Estimates

Future Commercial Worker Scenario

Cumulative cancer risk and noncancer hazard estimates were calculated for the future commercial worker using the methodology presented in the California Human Health Screening Levels (CHHSLs; Cal/EPA, 2004) guidance document. In brief, cumulative cancer risk estimates were calculated by taking the assumed EPC for each chemical and dividing by the respective CHHSL concentration designated for the cancer evaluation under the commercial/industrial land use scenario. The ratio was multiplied by 10^{-6} (the target risk used to develop the CHHSLs) to calculate the estimated cancer risk for that specific chemical under the assumption that populations present at the Site are exposed to the 95% UCL concentration or maximum detected concentration for the top 10 feet of soils at the Site and the maximum concentration for soil gas. The risks for individual chemicals were then summed to calculate the cumulative cancer risk for exposure to all carcinogens detected at the Site. As a point of reference, we note that the National Contingency Plan (NCP) (40 CFR 300) indicates that lifetime incremental cancer risks posed by a site should not exceed a range of one in one million (10^{-6}) to one hundred in a million (10^{-4}). For commercial sites, the "target" cancer risk level often used by Cal/EPA and USEPA in determining the need for mitigation is closer to 10^{-5}.

Similarly, cumulative noncancer hazard estimates were calculated by taking the assumed EPC for each chemical and dividing by the respective CHHSL concentration designated for noncancer effects. This generated an individual Hazard Quotient (HQ) for each chemical. The HQs for individual chemicals were then summed to calculate the cumulative Hazard Index (HI) for exposure to the EPCs of all chemicals detected in soils or soil gas at the Site. For noncancer health hazards, an HI of one (1) is identified as the target level of concern. Chemical exposures that yield hazard indices of less than 1 are not expected to result in adverse noncancer health effects (USEPA 1989).

For soils, where CHHSLs were not available, USEPA Region IX Preliminary Remediation Goals (PRGs; USEPA, 2004b) designated for cancer or noncancer effects were used, as appropriate. As a conservative approach, for chemicals where both CHHSLs and PRGs were available, the lower of the two screening levels were used to calculate the cumulative cancer risk or noncancer hazard. As no CHHSLs or PRGs have

been developed for total petroleum hydrocarbons (TPH) in soil, soil screening values were calculated following the methodology detailed in Section D.2.4, below. For soil gas, where CHHSLs were not available, CHHSL-equivalent values were calculated following the methodology presented in the CHHSLs guidance document. The toxicity values used in these calculations, as well as calculated indoor air screening values, attenuation factors and final screening values, are presented in Table D-1.

Construction Worker Scenario

Cumulative cancer risks and noncancer hazards were estimated for the construction worker by calculating soil risk-based screening levels (RBSLs) for the construction worker using the same methodology described above. The soil RBSLs for construction workers were developed using the same equations that were used to develop the soil CHHSLs (Cal/EPA 2004) and incorporating Cal/EPA's recommended exposure assumptions for a construction worker (Cal/EPA 2005) and toxicity values (Cal/EPA 2007, USEPA 1994b, 1997, and 2007). Exposure factors, toxicity values, and equations used to calculate the RBSLs for the construction worker are presented in Attachment A.

D.2.4 Calculating TPH Screening Values

As noted above, no CHHSL or PRG values have been developed for exposure to TPH in soils. Thus, as requested by the California Environmental Protection Agency (Cal/EPA) Department of Toxic Substances Control (DTSC), screening values for TPH constituents detected at the Site were developed for TPH-gasoline, TPH-diesel and TPH-rolling oil.

The TPH constituents detected at the Site consist primarily of petroleum hydrocarbons in three ranges: TPH-gasoline (C_5 to C_{10}), TPH-diesel (C_{11} to C_{18}), and TPH-rolling oil ($C_{>10}$ to C_{40}, with over 90% in the C_{14} to C_{19} range). In general, petroleum hydrocarbons are comprised of four major groups: alkanes, alkenes, cycloalkanes and aromatics. From a human health standpoint, the main chemicals of concern (COCs) that may be expected to be present in these TPH ranges, particularly TPH-volatile range hydrocarbons, are the volatile aromatics, which are characterized and evaluated as individual constituents (i.e., naphthalene, benzene, toluene, ethylbenzene, and xylenes). The toxicity of the volatile component of the TPH range hydrocarbons is thus addressed by evaluating the detections of individual volatile compounds in soil gas[2] as well as soil. However, other hydrocarbon

[2] Naphthalene was analyzed for and not detected at a detection limit of 1 µg/L during the May 2006 soil gas sampling event conducted by ERM; however, naphthalene was not included in the July 2006 soil gas sampling event, during which lower detection limits were achieved for all compounds because of a change in the analytic method. Given the relatively low magnitude and frequency of naphthalene detections in all soils at the Site (*i.e.*, naphthalene was detected at maximum and mean concentrations of 69 milligrams per kilogram (mg/kg) and 0.861 mg/kg, respectively, in 10 of 81 samples for all soils, including depths greater than 10 feet bgs), it is unlikely that naphthalene would be widely detected in soil gas at the Site with detection limits lower than 1 µg/L. Additionally, because of the proximity of the Site to the landfill, the

constituents exist in the TPH-gasoline, TPH-diesel and TPH-rolling oil ranges. The toxicity of the other constituents in the TPH-gasoline, TPH-diesel and TPH-rolling oil ranges was addressed using an indicator/surrogate approach as recommended by the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG, 1997), with draft toxicity values recommended by the Human and Ecological Risk Division (HERD) of DTSC.

The TPHCWG approach is a product of a collaborative effort between industry, government, and academia and reflects the most current theories on evaluating complex mixtures. The basis for the TPHCWG methodology is the examination of a mixture as the product of several smaller subsets, which are defined by specific carbon ranges and are referred to as fractions. Four fractions (i.e., $C_{>5}$-C_8, $C_{>8}$-C_{16}, $C_{>16}$-C_{35}, $C_{>35}$) were established by the TPHCWG for toxicity. For example, the components of TPH-diesel fall into two of the four toxicity fractions ($C_{>8}$-C_{16} and $C_{>16}$-C_{35}). Within each fraction, toxicity surrogates are conservatively selected to be representative of the entire TPH mixture in that range where one reference dose (RfD) is representative of aliphatics (i.e., alkanes, alkenes, alkynes, and cycloalkanes) and one RfD is representative of aromatics (i.e., polynuclear aromatics[3], diaromatics, and monoaromatics). This is based upon the TPHCWG assumption that within a given carbon range and structural class (i.e., aromatic or aliphatic), individual chemical components have similar toxic effects.

In order to identify the appropriate toxicity of the aliphatic and aromatic fractions for each of the four carbon ranges, the TPHCWG examined all available toxicity data for each subgroup (e.g., aliphatics within the range $C_{>5}$-C_8) and provided recommendations for the most representative values for each fraction. Unlike the approach taken by the Massachusetts Department of Environmental Protection (MADEP), emphasis was given to those toxicity values which were derived from mixture data rather than data from individual compounds. Recently, HERD developed draft toxicity values based on the TPHCWG approach. As requested by DTSC, the HERD recommended oral and inhalation RfDs were used in this evaluation. The oral and inhalation RfDs for each fraction evaluated here are presented in Table D-2 for TPH-gasoline, Table D-3 for TPH-diesel and Table D-4 for TPH-rolling oil. Since inhalation RfDs for both aliphatics and aromatics in the $C_{>16}$-C_{35} range do not exist, the oral RfDs for these fractions were applied to the inhalation route.

City of Carson will require installation of a vapor barrier system as part of Site improvements, effectively reducing the potential for vapor intrusion to indoor air at the Site.

[3] With the exception of the PAH naphthalene, which is evaluated as an individual constituent, only noncarcinogenic polynuclear aromatics are generally present in TPH-diesel fuel, as the carcinogenic polynuclear aromatics are the heavier range hydrocarbons (TPHCWG, 1997). Thus, although polynuclear aromatics are included in the evaluation of noncancer hazards for TPH-diesel, no corresponding evaluation of cancer risks for individual polynuclear aromatics other than naphthalene is necessary for this hydrocarbon range.

The fractional composition of a TPH mixture in terms of both carbon range and structural form (i.e., aliphatic or aromatic) is required to calculate surrogate toxicity criteria under the TPHCWG approach. Hydrocarbon fingerprint data were not available for TPH-gasoline or TPH-diesel found at the Site. The assumed fractional composition for carbon ranges for TPH-gasoline were 75% $C_{>5}$ to C_8 and 25% $C_{>8}$ to C_{16} (Metcalf & Eddy, 1993). The assumed fractional composition for carbon ranges for TPH-diesel were 74% $C_{>8}$ to C_{16} and 26% $C_{>16}$ to C_{35} (Metcalf & Eddy, 1993). TPH-rolling oil used at the Site, NORPAR 15, is described by its manufacturer as "a normal paraffinic petroleum product of exceptionally high purity" and has been sampled and analyzed for TPH by USEPA Method 8015 modified. Based on this analysis of free product collected from groundwater at the Site, the fractional composition for carbon ranges for TPH-rolling oil is 91% $C_{>8}$ to C_{16} and 9% $C_{>16}$ to C_{35}. Note that approximately 1% of the free product fell into the $C_{>35}$ carbon range and although these components are not volatile or soluble in groundwater and not likely to be bioavailable by the dermal or oral route of exposure (TPHCWG, 1997), this fraction was conservatively included in the $C_{>16}$ to C_{35} carbon range. In regards to structural composition, the assumed composition of TPH-gasoline was 75% aliphatics and 25% aromatics (Metcalf & Eddy, 1993). The composition of TPH-diesel was assumed to be 70% aliphatics and 30% aromatics (Metcalf & Eddy, 1993). The composition of TPH-rolling oil was assumed to be 100% aliphatics based on product specifications of NORPAR 15. The composition of NORPAR 15 is presented in Appendix C of the main report.

The final total RfDs are presented in Tables D-2, D-3, and D-4 for TPH-gasoline, TPH-diesel and TPH-rolling oil, respectively.

Risk-based screening levels (RBSLs) were developed per Cal/EPA guidance (2004) for TPH-gasoline, TPH-diesel and TPH-rolling oil in soil using the total RfDs toxicity values. As the Site will be developed for commercial land-use, RBSLs for TPH-gasoline, TPH-diesel, and TPH-rolling oil were calculated for the future commercial worker scenario. As mentioned above, RBSLs were also developed for the construction worker scenario in order to evaluate whether TPH concentrations detected in specific areas of the Site may potentially be above a level of concern for a construction worker who could be engaged in the redevelopment of the Site. Cal/EPA recommended default exposure factors (Cal/EPA, 2005a; 2004) were used to calculate the RBSLs. Exposure factors and equations used to calculate the RBSLs and the calculated RBSLs for TPH-gasoline are presented in Tables D-5 and D-6 for the commercial worker and construction worker, respectively. Exposure factors and equations used to calculate the RBSLs and the calculated RBSLs for TPH-diesel are presented in Tables D-7 and D-8 for the commercial worker and construction worker, respectively. Exposure factors and equations used to calculate the RBSLs and the calculated RBSLs for TPH-rolling oil are

presented in Tables D-9 and D-10 for the commercial worker and construction worker, respectively.

The RBSLs for exposure to TPH-gasoline, TPH-diesel and TPH-rolling oil in soil under the commercial worker scenario are 27,000 milligrams per kilogram (mg/kg), 37,000 mg/kg, and 52,000 mg/kg, respectively. The RBSLs for exposure to TPH-gasoline, TPH-diesel and TPH-rolling oil in soil under the construction worker scenario are 7,300 mg/kg, 9,500 mg/kg and 14,000 mg/kg, respectively. The RBSLs for TPH-gasoline and TPH-rolling oil were used as surrogate values to evaluate TVPH and TEPH, respectively, in this health risk evaluation.

Note that there is uncertainty associated with the use of the TPHCWG approach in estimating the toxicity of TPH mixtures because the true composition of weathered TPH present at the Site is not known. This is particularly true for TPH-gasoline, TVPH, TEPH and TPH-diesel detected at the Site for which there are no data on the structural or carbon range composition.

D.2.5 Evaluation of Background Concentrations for Arsenic

A Site-wide background comparison for arsenic was conducted following the approach put forth by CalEPA (1997) for inorganic chemicals. This approach evaluates whether the data distributions reflect single normal or lognormal populations, or contain multiple populations that would indicate contamination in addition to ambient levels. Cal/EPA recommends a “weight-of-evidence” approach where three indicators of background exceedances are considered. The three indicators include: (1) the degree to which the site data distributions are fit by a normal or lognormal distribution; (2) a graphical assessment (probability plot against the normal or lognormal distribution) to identify breaks or nonlinearity indicative of more than a single population; and (3) the dispersion of the data as indicated by the coefficient of variation (CV = standard deviation/average) and the data range (order of magnitude difference between the maximum and minimum concentrations). The arsenic data set includes all samples that were collected at the Site at depths less than or equal to 10 feet bgs. No arsenic data were collected from within the landfill and the northwestern portions of the Site. The statistical evaluations of these data are presented below.

Data Distributions

The distribution of the arsenic data sets were tested using Lilliefors test to evaluate whether the data population was normally or lognormally distributed (USEPA 2004a). The results of the Lilliefors test are provided in Exhibit A. At the 95% confidence level, the data population tested normal (i.e. the probability value was greater than 0.05). Thus,

the arsenic data set was assumed to be normally distributed for the purpose of plotting the cumulative percent discussed below.

Graphical Assessment

As recommended by Cal/EPA guidance (1997), cumulative percent plots represent a useful tool that can be used to determine whether multiple data populations are present. Consistent with Cal/EPA guidance, a cumulative percentage plot for the normally distributed population of arsenic was prepared (Exhibit B). A visual review of the cumulative probability plot indicates that multiple populations of data may be apparent (i.e. there is a break in the plot lines at the far upper end of the distribution indicating the potential presence of multiple distinct populations [Cal/EPA 1997]) and leads us to conclude that more than one data population may present.

Summary Statistics

As noted in Cal/EPA guidance (1997), typically, data drawn from just one population will display a range of detected values of no more than 2 orders of magnitude and a CV no greater than 1. Based on these criteria, the range of concentrations in soil and the coefficient of variation (for non-transformed data set; presented in Exhibit C) suggest that the data set for arsenic is representative of one population (i.e. naturally occurring background concentrations).

Although the statistical summaries for arsenic indicate that the arsenic concentrations detected at the Site are representative of background concentrations, the graphical assessment for arsenic indicates that there may be multiple populations present at the Site. It is likely, however, that this small population at the upper tail of the arsenic distribution is indicative of natural variation in soils at the Site for the following reasons: (1) arsenic was not used at the Site, has never been considered a COPC, and thus is not likely present in soils as a result of contamination from Site operations; and (2) a review of the spatial distribution of the three samples (ERM samples SB-1 at 1.0 feet, SB-9 1.0 feet bgs, and SB-8 at 8.1 feet bgs) at the upper end of the arsenic distribution indicates that there are no specific areas of higher concentrations which would reflect a source or contamination area. Thus, concentrations of arsenic detected at the Site are believed to be representative of background levels and thus were excluded from the cumulative risk evaluation.

D.3 RESULTS

The estimated cumulative cancer risks and noncancer HIs for future onsite commercial workers and for construction workers during the redevelopment phase exposed to COPCs in soils and/or soil gas are calculated using the methodology stated in Section D.2.3 and D.2.4 above. As mentioned previously in Section D.2.1, conclusions regarding potential

exposures and risks to a future landscape/maintenance worker are discussed qualitatively within the context of the commercial worker evaluation. Further, conclusions regarding potential exposures and risks to offsite residents and recreational users potentially exposed during the redevelopment phase are discussed qualitatively within the context of the construction worker evaluation.

Populations Exposed Post-Redevelopment

Future Onsite Commercial Workers

As summarized in Table D-11, the 95% UCL and maximum total cancer risks for future onsite commercial workers exposed to chemicals detected in soils are 6×10^{-7} and 2×10^{-6}, respectively. The majority of the total cancer risk (approximately 52%) is attributable to total chromium which, per DTSC's request, is assumed to be comprised of hexavalent and trivalent chromium, at a ratio of 1:6 ratio. As hexavalent chromium is unlikely to be present in soils since there are no known onsite sources, the total cancer risk associated with chromium is likely an overestimate, and thus the maximum estimated cancer risks associated with soils are likely lower than 2×10^{-6}.

As summarized in Table D-12, the maximum total cancer risk for future onsite commercial workers exposed to chemicals detected in soil gas is 8×10^{-7}.

In sum, the cumulative potential cancer risks for the onsite commercial worker populations posed by the presence of all COPCs in soils and soil gas range from 1×10^{-6} to 3×10^{-6} which are equivalent to, and just above, the lower end of the risk management range of between 1×10^{-6} and $1\times10^{-4}$and below the typical commercial site "target" cancer risk of 1×10^{-5}.

As summarized in Table D-11, the 95% UCL and maximum total noncancer HIs for the future onsite commercial worker exposed to chemicals detected in soils are 0.7 and 3, respectively. Approximately 81% of the total noncancer HI (for both the 95% UCL and maximum) is attributed to TPHs in soils, primarily TVPH and TEPH. The levels of TVPH exceed the RBSL developed for TPH-gasoline in one localized area around locations 6AA and 6CC. In the vicinity of this localized TVPH area, there are four additional sample locations with levels of TVPH above one-half the RBSL developed for TPH-gasoline (i.e. locations 6A, 6B, 6BB, and 7A). Although the levels of TEPH do not exceed the RBSL developed for TPH-rolling oil, there are two locations where levels are above one-half the RBSL (i.e., SB-17 and SB-14). Approximately 16% and 12% of the 95% UCL and maximum total noncancer HI, respectively, is attributed to metals in soils, primarily aluminum, cadmium, copper, and vanadium. The maximum concentration of aluminum, cadmium, and copper were detected in one sample collected from SB-27 at 0.5 ft bgs. The concentrations of these metals in this sample appear to be anomalies as concentrations of these metals in a sample collected in close proximity to SB-27 at the

same depth (i.e. SB-27A at 0.5 ft bgs) were considerably lower (i.e., 5 times lower for aluminum and cadmium and 396 times lower for copper). Concentrations of vanadium appear relatively evenly and randomly distributed throughout the redevelopment area and no localized, elevated concentration area was identified.

As summarized in Table D-12, the maximum total noncancer HI for the future onsite commercial worker exposed to chemicals detected in soil gas is 1, equivalent to the target HI of 1. Approximately 99% of the maximum total noncancer HI is attributed to TVPH. The soil-gas CHHSL for TVPH presented in Table D-12 is based on the conservative assumption that the source of the vapor begins at 49 cm bgs (i.e., approximately 1.6 ft bgs). The maximum detected concentration of TVPH in soil gas was actually detected at 15 ft bgs. Based on the assumption that the source of TVPH vapors begins at 15 ft bgs, the attenuation factor, as shown on Table D-1, would decrease from 0.000535 to 0.000185 (the calculation sheets are provided in Attachment B), corresponding to a modified soil-gas CHHSL for TVPH of 3,000,000 $\mu g/m^3$. Thus, the maximum detected concentration of TVPH in soil gas detected at 15 ft bgs would result in a noncancer HI of 0.5 and the maximum total noncancer HI for the future onsite commercial worker exposed to chemicals detected in soil gas would be 0.5, below the target HI of 1.

In sum, the cumulative noncancer HIs for the onsite commercial worker populations posed by the presence of all COPCs in soils and soil gas range from 1 to 4, which are equivalent to and above, respectively, the target HI of 1. As noted above, the total noncancer HI is attributed primarily to TPHs in onsite soils at several localized areas. These localized areas are, in general, around former sumps. Aside from these localized areas of TPHs, the concentrations of chemicals in onsite soils would not pose an unacceptable risk to the health of future commercial populations who could be working onsite.

Future Onsite Landscape/Maintenance Workers

The exposure assumptions for the future onsite landscape/maintenance workers, in general, would be the same as those for the future onsite commercial worker, with the exception that the landscape/maintenance worker could have a higher soil ingestion rate than the commercial worker (330 milligrams per day (mg/day) versus 100 mg/day), and a lower exposure frequency of possibly once or twice a week rather than 5 days per week (i.e. 5 days per week for 50 weeks for a total of 250 day per year) assumed for the future onsite worker. Further, concentrations of vapors in outdoor air from VOCs in soil gas will likely be lower than concentrations of vapors in indoor air. Moreover, the average concentrations of COPCs in soils are a more representative EPC that a future onsite landscape/maintenance worker would be exposed to, as the future onsite landscape/maintenance worker will likely be involved with landscape/maintenance

activities across the entire redevelopment area. Thus, overall, future onsite landscape/maintenance workers will have lower exposure to COPCs in soils and soil gas and therefore lower projected health risks than those projected for the future onsite commercial worker. Specifically, the total estimated cancer risk for a future landscape/maintenance worker is expected to be below the lower end of the risk management range of between 1×10^{-6} and $1\times10^{-4}$and the total estimated noncancer HI is expected to below the target noncancer target HI of 1.

Populations Exposed During Redevelopment

Onsite Construction Workers

As summarized in Table D-13, the 95% UCL total cancer risk for onsite construction workers exposed to chemicals detected in soils is 1×10^{-5} which is well within the risk management range of between 1×10^{-6} and $1\times10^{-4}$and equivalent to the typical commercial site "target" cancer risk of 1×10^{-5}. Approximately 81% of the total cancer risk is attributed to total chromium which, per DTSC's request, is assumed to be comprised of hexavalent and trivalent chromium, at a ratio of 1:6 ratio. As hexavalent chromium is unlikely to be present in soils since there are no known onsite sources, the total cancer risk is likely an overestimate.

As summarized in Table D-12, the 95% UCL total noncancer HI for the onsite construction worker exposed to chemicals detected in soils is 13, which is above the target HI of 1. Approximately 27%, 8%, and 6% of the total noncancer HI is attributed to aluminum, cobalt, and nickel, respectively, primarily from the inhalation of particulates exposure pathway. Approximately 24% and 5% of the total noncancer HI is attributed to 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene, primarily from the inhalation of vapors in outdoor air exposure pathway. Approximately 16% of the total noncancer HI is attributed to TPH, collectively, primarily from direct contact exposure pathways (i.e. soil ingestion and dermal contact with soils).

It is important to emphasize that the noncancer HI estimated for the construction worker is likely to represent a significant overestimate of the actual projected HI for the construction worker. The reasons that the construction worker HI represents a significant overestimate are as follows: 1) The assessment assumes that the construction worker is exposed for 250 days, and that the level of dust present in the air during the entire 250 day period is 1 mg/m^3. These two factors together represent a significant overestimate of exposure, because the development itself is expected to only take about 145 days, and it is typical that only approximately 25% of the build-out period requires dust-generating activities (e.g., soil grading). Further, a sustained dust level of 1 mg/m^3, even during the dust generating activities, is very conservative, as this level of dust would become quite a nuisance for workers. 2) The 95% UCL for the trimethylbenzenes are highly influenced

by concentrations detected in one sample (SB-6C collected at 16 feet bgs) which was considerably higher than the concentrations detected in soils in any other locations across the entire redevelopment area. As the trimethylbenzenes were not detected above the laboratory reporting limit in the soil gas sample collected a foot above this one soil sample by ERM, the level of trimethylbenzenes in the volatile phase may be overestimated using the soil matrix concentrations. For these reasons combined, the projected noncancer HIs for the metals and the trimethylbenzenes likely represent a significant overestimate of the actual HI for the construction worker who could be engaged in the redevelopment of the Site.

Offsite Residents

The child resident is the more sensitive offsite receptor due to the higher intake relative to body weight than the adult resident, and thus health risks for the offsite resident potentially exposed during redevelopment activities will be discussed here in the context of the offsite child resident. The offsite resident could be exposed to emissions from the Site for the same total duration of exposure as the construction worker (i.e., 8 hours per day, for 250 days). However, the offsite resident child will have a lower breathing rate and body weight than the onsite construction worker (i.e.,3.3 m^3 per eight hour exposure time versus 20 m^3 assumed for the onsite construction worker; and a lower body weight of 15 kilograms (kg) versus 70 kg for the onsite construction worker). Further, concentrations of particulates and vapors in outdoor air will attenuate offsite and would be expected to be lower by at least a factor of 5 at the nearest offsite resident receptor point relative to the concentrations that would be expected onsite[4]. Thus, health risks for the offsite child resident would be at least 0.15 times (i.e., [3.3/20] x [70/15] x [1/5]) that of the onsite construction worker. Further, as dust controls and perimeter monitoring will be in-place during the redevelopment phase to ensure that the dust levels do not exceed ambient air quality standards, actual exposures and health risks to offsite residents would be even lower and are expected to be well below the cancer risk management range of between 1×10^{-6} and $1\times10^{-4}$and noncancer target HI of 1.

Offsite Recreational Users

The offsite child recreational user is the more sensitive receptor due to the higher intake relative to body weight than the offsite adult recreational user, thus health risks for the offsite recreational user will be discussed here in the context of the offsite child recreational user. Similar to the offsite resident, it is reasonable to assume that the concentrations of particulates and vapors at the location of the nearest offsite recreational

[4] Iris Environmental ran SCREEN3 to estimate the ratio of fence-line concentrations to ambient air concentrations ¼ mile way from the fence-line. As this ratio was greater than 5, Iris conservatively assumed that the reduction in concentration would be at least a factor of 5.

area (located ¼ mile northwest of the Site) would be approximately 5 times lower than the concentrations of particulates and vapors onsite[4]. If one were to assume that a child could be playing offsite, for 2 hours per day during the entire redevelopment period, the health risks for the offsite child recreational user would be at least 0.039 times (i.e., [0.83 m3 (for a 2 hour exposure period)/20 m3 (for an 8 hour exposure period)] x [70 kg/15 kg] x [1/5]) that of the onsite construction worker. Further, as dust controls and perimeter monitoring will be in-place during the redevelopment phase to ensure that the dust levels do not exceed ambient air quality standards, actual exposures and health risks to offsite recreational users would be even lower and are expected to be well below the cancer risk management range of between 1×10^{-6} and $1\times10^{-4}$and noncancer target HI of 1.

D.4 UNCERTAINTIES ASSOCIATED WITH THE USE OF SCREENING LEVELS FOR ESTIMATING CUMULATIVE RISKS

In general, CHHSLs were used to evaluate potential health risks associated with metals in soils, and PRGs were used to evaluate potential health risks associated with VOCs in soils. The uncertainties associated with the use of CHHSLs/PRGs for estimating potential health risks, as opposed to using HERD-recommended exposure and toxicity values and calculating 'forward risks' are described below. Further, uncertainties associated with exposure assumptions used in the derivation of RBSLs for construction workers are also discussed below.

Exposure Assumptions

The only exposure parameter used in the development of the CHHSLs and PRGs that differs from the HERD-recommended default exposure assumptions for the commercial worker (Cal/EPA 2005a) is the exposed skin surface area. The exposed skin surface area for the commercial worker used in the development of the CHHSLs and the PRGs is 3,300 cm^2, whereas HERD recommends a skin surface area of 5,700 cm^2 for the commercial worker. Cancer risks for the commercial worker are driven primarily by the inhalation pathway for both metals and VOCs, thus, the increase in the skin surface area exposure parameter would not materially change the projected cancer risks for the commercial worker. In general, noncancer hazards for VOCs are driven by the inhalation pathway. Furthermore, noncancer hazards for metals via the dermal contact pathway, in general, contribute approximately 10% or less to the overall noncancer hazard for a specific metal. Thus, the overall increase in the noncancer hazards due to the increase in exposed skin surface area would not materially change the projected cumulative noncancer hazards.

The derivation of RBSLs for the construction worker assumes that the construction worker is exposed for 250 days, and that the level of dust present in the air during the entire 250 day period is 1 mg/m^3. These two factors together represent a significant overestimate of exposure, because the development itself is expected to only take about 145 days, and it is typical that only approximately 25% of the build-out period requires dust-generating activities (e.g., soil grading). Further, a sustained dust level of 1 mg/m^3, even during the dust generating activities, is very conservative, as this level of dust would become quite a nuisance for workers and likely a significant overestimate of the particulate exposures. Therefore, the cumulative noncancer HI estimated for the construction worker is likely to represent a significant overestimate of the actual projected HI for the construction worker.

Toxicity Values

The toxicity values used to derive the CHHSLs for metals and PRGs for VOCs are generally consistent with the toxicity values recommended by HERD, or are not significantly different such that they would materially change the projected cancer risks or noncancer hazards. The one exception would be that HERD recommends a more stringent toxicity value for evaluating cancer risks associated with exposure to benzene than the toxicity value recommended by USEPA Region IX in the development of the PRG for benzene. However, since cancer risks for benzene are driven by the inhalation of indoor air exposure pathway, and since the soil gas CHHSLs (which are used here to evaluate indoor air risks) incorporate the more stringent cancer potency value recommended by HERD, the difference between USEPA and HERD-recommended cancer potency value for benzene does not affect the projected cumulative cancer risks.

D.5 CONCLUSIONS

The average and maximum cumulative cancer risks posed by all chemicals detected in soils and soil gas at the Site are well within levels considered acceptable for future commercial populations. The average and maximum cumulative noncancer hazards for the future commercial population posed by all chemicals detected in soils and soil gas at the Site is equivalent to and above, respectively, the target noncancer HI of 1, attributed primarily to TPH in soils; in particular, TVPH and TEPH in soils in several localized areas.

Further, cumulative cancer risks for construction workers exposed during the redevelopment phase are well within levels that would be considered acceptable. However, the cumulative noncancer hazard for construction workers during the redevelopment phase is above the noncancer HI of 1, attributable primarily to the

potential inhalation of metals present in the particulate phase generated during construction activities.

Potential risks and noncancer hazards to future onsite landscape workers, as well as offsite residents and offsite recreational users who could be exposed during the period of redevelopment, are expected to be well within levels that would be considered acceptable for these populations.

In sum, with the exception of several localized and limited areas of TVPH and TEPH (primarily around former sumps), the levels of chemicals detected in soils and soil gas at the Site would be considered safe and protective of future commercial populations working at the Site. Further, the levels of chemicals present at the Site would be considered safe and protective of future onsite landscape workers, and all offsite populations that could be present during the build-out of the Site. The risk assessment suggests that excessive exposures to dust during an extended, 250 day build-out of the Site could, if uncontrolled, potentially result in unacceptable noncancer health effects in the construction worker. Protection of construction workers' health will be addressed in the Site-specific Health and Safety Plan.

Note that samples collected within the landfill area and the northwestern portions of the Site are not included in this cumulative risk evaluation. A Land Use Covenant will require that these portions of the Site, which are currently the subject of a deed notification, will remain paved. The Covenant will also include requirements for regular inspection and maintenance of these paved areas. Thus, soils in these areas will not be available for contact by potential future users of the Site and soil sampling data collected in these areas was not included in this health risk evaluation.

D.6 REFERENCES

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APPENDIX D

TABLES

TABLE D-1: SUMMARY OF TOXICITY VALUES, TARGET INDOOR AIR CONCENTRATIONS, ATTENUATION FACTORS, AND SOIL GAS SCREENING VALUES

DRAFT

CARSON / ALERIS

Carson, California

Chemical	Unit Risk Factor for Carcinogenic Effects $(\mu g/m^3)^{-1}$	Source	Reference Concentration for Noncarcinogenic Effects (mg/m^3)	Source	Indoor Air Risk-Based Concentration Cancer[1] $(\mu g/m^3)$	Indoor Air Risk-Based Concentration Noncancer[1] $(\mu g/m^3)$	Attenuation Factor (α)[3] Unitless	Soil Gas Risk-Based Concentration Cancer[1] $(\mu g/m^3)$	Soil Gas Risk-Based Concentration Noncancer[1] $(\mu g/m^3)$
1,1-Dichloroethane	1.6E-06	2	5.0E-01	4	2.56E+00	7.30E+02	4.47E-04	5.71E+03	1.6E+06
1,1-Dichloroethylene	NA	1,2	7.0E-02	2	NA	1.02E+02	5.03E-04	NA	2.0E+05
1,2,4-Trimethylbenzene	NA	1,2	6.0E-03	5	NA	8.69E+00	3.91E-04	NA	2.2E+04
1,3,5-Trimethylbenzene	NA	1,2	6.0E-03	5	NA	8.69E+00	3.90E-04	NA	2.2E+04
1,4-Dioxane	7.7E-06	2	3.0E+00	2	5.31E-01	4.38E+03	4.94E-04	1.08E+03	8.9E+06
2,2,4-Trimethylpentane	NA	1,2	7.0E-01	1 *	NA	1.02E+03	4.12E-04	NA	2.5E+06
2-Butanone	NA	1,2	5.0E+00	1	NA	7.30E+03	4.88E-04	NA	1.5E+07
2-Propanol	NA	1,2	7.0E+00	2 **	NA	1.02E+04	5.42E-04	NA	1.9E+07
4-Ethyltoluene	NA	1,2	1.0E-01	1 #	NA	1.46E+02	4.23E-04	NA	3.5E+05
4-Methyl-2-pentanone	NA	1,2	3.0E+00	1	NA	4.38E+03	4.56E-04	NA	9.6E+06
Acetone	NA	1,2	3.2E+00	1	NA	4.60E+03	6.19E-04	NA	7.4E+06
Carbon disulfide	NA	1,2	7.0E-01	1	NA	1.02E+03	5.47E-04	NA	1.9E+06
Chloroethane (ethyl chloride)	8.3E-07	3	1.0E+01	1	4.93E+00	1.46E+04	8.31E-04	5.93E+03	1.8E+07
Chloroform	5.3E-06	2	3.0E-01	2	7.71E-01	4.38E+02	5.47E-04	1.41E+03	8.0E+05
Cyclohexane	NA	1,2	6.0E+00	1	NA	8.76E+03	4.69E-04	NA	1.9E+07
Ethanol	NA	1,2	3.5E-01	1 $	NA	5.11E+02	5.98E-04	NA	8.5E+05
Ethylbenzene	NA	1,2	1.0E+00	1	NA	1.46E+03	4.50E-04	NA	3.2E+06
Heptane	NA	1,2	7.0E-01	1 *	NA	1.02E+03	4.32E-04	NA	2.4E+06
Hexane	NA	1,2	7.0E-01	1	NA	1.02E+03	7.46E-04	NA	1.4E+06
Methylene chloride	1.0E-06	2	4.0E-01	2	4.09E+00	5.84E+02	5.38E-04	7.59E+03	1.1E+06
n-Propylbenzene	NA	1,2	1.4E-01	3	NA	2.04E+02	3.89E-04	NA	5.3E+05
Tetrahydrofuran	1.9E-06	3	3.0E-01	3	2.15E+00	4.38E+02	5.29E-04	4.07E+03	8.3E+05
Trichlorofluoromethane	NA	1,2	7.0E-01	4	NA	1.02E+03	4.93E-04	NA	2.1E+06
Additional Noncancer CHHSLs for Calculated for Cumulative risk screen (attenuation factors and target air concentrations for cancer taken directly from the CHHSLs document [Cal/EPA 2004])									
PCE	5.9E-06	2	3.5E-02	2	6.93E-01	5.11E+01	4.39E-04	1.58E+03	1.2E+05
TCE	2.0E-06	2	3.5E-02	1	2.04E+00	5.11E+01	4.65E-04	4.39E+03	1.1E+05
VC	7.8E-05	2	1.0E-01	1	5.24E-02	1.46E+02	5.53E-04	9.48E+01	2.6E+05
TVPH	NA	7	3.7E-01	7 ***	NA	5.47E+02	5.35E-04	NA	1.0E+06

Notes:

$\mu g/m^3$ = micrograms per cubic meter.

mg/m^3 = milligrams per cubic meter.

NA = Not applicable. This chemical is not considered to be a carcinogen.

[1] Calculated using equations B-1 or B-2 as presented in the CHHSL guidance document (Cal/EPA 2004).

[2] Lower of the calculated cancer and noncancer risk-based concentrations for indoor air.

[3] Calculated using the Johnson and Ettinger Model (SL-ADV Version 3.0; 02/03, as modified by DTSC Version 3.0-mod1; 07/03) as per the CHHSL guidance document (Cal/EPA 2004).

[4] Calculated by dividing the appropriate indoor air risk-based concentration by the attenuation factor.

References:

California Environmental Protection Agency (Cal/EPA). 2004. Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil. Office of Environmental Health Hazard Assessment, Integrated Risk Assessment Section. November, Revised January 2005.

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3. National Center for Environmental Assessment (NCEA). From 2004 USEPA Region IX PRG table.
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5. USEPA Provisional Peer Reviewed Toxicity Values (PPRTVs). From 2004 USEPA Region IX PRG table.
6. United States Environmental Protection Agency (USEPA). 2004. *Region IX Preliminary Remediation Goals* . October. http://www.epa.gov/region09/waste/sfund/prg/files/04prgtable.pdf
7. Human and Ecological Risk Division (HERD). 2007. Table 2 of the Draft Interim Guidance TPH at School Sites. Department of Toxic Substances Control. June 7. As provided by HERD.

* Hexane used as a surrogate value.

** Isopropanol used as a surrogate value.

*** RfD_{TOTAL} derived in Table D-2 using TPH fraction-specific toxicity information provided by HERD (2007) and converted to Reference Concentration assuming a breathing rate of 20 cubic meters per day (m3/d) and a body weight of 70 kilograms (kg) .

[#] Xylenes used as a surrogate value.

[$] Oral RfD for n-butanol used as a surrogate value, converted to an RfC under the assumption of a body weight of 70 kg and a breathing rate of 20 m^3.

TABLE D-2: FRACTION-SPECIFIC TOXICITY VALUES - TPH-GASOLINE
CARSON/ALERIS
Carson, California

DRAFT

TPH-Gasoline	TPHCWG Fraction	Overall Weight Fraction[1]	Oral RfD (mg/kg-day)	Inhalation RfD[2] (mg/kg-day)	Fraction / Oral RfD $(mg/kg\text{-}day)^{-1}$	Fraction / Inhalation RfD $(mg/kg\text{-}day)^{-1}$
	Aliphatics					
$C_{>5}$-C_8	C_5-C_8	5.6E-01	0.04	0.2	1.4E+01	2.8E+00
$C_{>8}$-C_{16}	C_9-C_{18}	1.9E-01	0.1	0.09	1.9E+00	2.2E+00
	Aromatics					
$C_{>5}$-C_8	C_6-C_8	1.9E-01	NA	NA	NA	NA
$C_{>8}$-C_{16}	C_9-C_{16}	6.3E-02	0.04	0.01	1.6E+00	4.4E+00
Total		1.0E+00			1.8E+01	9.4E+00
			RfD_{TOTAL} (mg/kg-day)		**5.7E-02**	**1.1E-01**

Notes:

[1] Calculated assuming an overall weight fraction of 75% for alphatics and 25% for aromatics and a weight fraction of 75% for $C_{>5}$-C_8 and 25% for $C_{>8}$-C_{16}.

[2] Converted from a reference concentration (RfC) assuming a breathing rate of 20 cubic meters per day (m^3/d) and a body weight of 70 kilograms (kg).

mg/kg-day = milligrams per kilogram day.
NA = Not applicable. Each COPC (i.e. BTEX) evaluated individually within this range as recommended by HERD (2007)
RfD = Reference dose. Fraction specific value recommended by HERD (2007).
$RfD_{TOTAL} = 1 / \sum_i Fraction_i / RfD_i$

References:

Human and Ecological Risk Division (HERD). 2007. Table 2 of the Draft Interim Guidance TPH at School Sites. Department of Toxic Substances Control. June 7. As provided by HERD.

TABLE D-3: FRACTION-SPECIFIC TOXICITY VALUES - TPH-DIESEL
CARSON/ALERIS
Carson, California

DRAFT

TPH-Diesel	TPHCWG Fraction	Overall Weight Fraction[1]	Oral RfD (mg/kg-day)	Inhalation RfD[2] (mg/kg-day)	Fraction / Oral RfD $(mg/kg\text{-}day)^{-1}$	Fraction / Inhalation RfD $(mg/kg\text{-}day)^{-1}$
	Aliphatics					
C_8-C_{16}	C_9-C_{18}	5.2E-01	0.1	0.1	5.2E+00	6.0E+00
$C_{>16}$-C_{21}	C_{19}-C_{32}	1.8E-01	2.0	2.0	9.1E-02	2.6E-01
	Aromatics					
C_8-C_{16}	C_9-C_{16}	2.2E-01	0.04	0.01	5.6E+00	1.6E+01
$C_{>16}$-C_{21}	C_{17}-C_{32}	7.8E-02	0.04	0.04	2.0E+00	1.3E+01
Total		1.0E+00			1.3E+01	3.5E+01
			RfD_{TOTAL} (mg/kg-day)		**7.8E-02**	**2.9E-02**

Notes:

[1] Calculated assuming an overall weight fraction of 70% for alphatics and 30% for aromatics and a weight fraction of 74% for $C_{>8}$-C_{16} and 26% for $C_{>16}$-C_{21}.

[2] Converted from a reference concentration (RfC) assuming a breathing rate of 20 cubic meters per day (m^3/d) and a body weight of 70 kilograms (kg).

mg/kg-day = milligrams per kilogram day.
RfD = Reference dose. Fraction specific value recommended by the HERD.
$RfD_{TOTAL} = 1 / \sum_i Fraction_i / RfD_i$

References:

Human and Ecological Risk Division (HERD). 2007. Draft Interim Guidance TPH at School Sites. Department of Toxic Substances Control. June 7.

TABLE D-4: FRACTION-SPECIFIC TOXICITY VALUES - TPH-ROLLING OIL
CARSON/ALERIS
Carson, California

DRAFT

TPH-Rolling Oil	TPHCWG Fraction	Overall Weight Fraction[1]	Oral RfD (mg/kg-day)	Inhalation RfD[2] (mg/kg-day)	Fraction / Oral RfD $(mg/kg\text{-}day)^{-1}$	Fraction / Inhalation RfD $(mg/kg\text{-}day)^{-1}$
	Aliphatics					
$C_{>10}$-C_{16}	C_9-C_{18}	9.1E-01	0.1	0.1	9.1E+00	1.1E+01
$C_{>16}$-C_{40}	C_{19}-C_{32}	9.4E-02	2.0	2.0	4.7E-02	4.7E-02
	Aromatics					
$C_{>8}$-C_{16}	C_9-C_{16}	0.0E+00	NA	NA	NA	NA
$C_{>16}$-C_{40}	C_{17}-C_{32}	0.0E+00	NA	NA	NA	NA
Total		1.0E+00			9.1E+00	1.1E+01
			RfD_{TOTAL} (mg/kg-day)		**1.1E-01**	**9.4E-02**

Notes:

[1] Calculated assuming an overall weight fraction of 100% for alphatics and 0% for aromatics and a weight fraction of 91% for $C_{>10}$-C_{16} and 9% for $C_{>16}$-C_{40}. Fraction assumptions are based on a hydrocarbon fingerprint scan for the free product collected from one on-site groundwater monitoring well.

[2] Converted from a reference concentration (RfC) assuming a breathing rate of 20 cubic meters per day (m^3/d) and a body weight of 70 kilograms (kg).

mg/kg-day = milligrams per kilogram day.
RfD = Reference dose. Fraction specific value recommended by the HERD.
$RfD_{TOTAL} = 1 / \sum_i Fraction_i / RfD_i$

References:

Human and Ecological Risk Division (HERD). 2007. Draft Interim Guidance TPH at School Sites. Department of Toxic Substances Control. June 7.

TABLE D-5: TPH-GASOLINE RISK-BASED SOIL SCREENING LEVELS - COMMERCIAL WORKER SCENARIO
CARSON/ALERIS
Carson, California

DRAFT

Risk-Based Soil Screening Level for TPH-gasoline (USEPA 2004, Equation 4-4)

Noncancer

$$C_s = \frac{THQ \times BW \times AT_{nc}}{EF \times ED \left[\left(\frac{1}{RfDo} \times \frac{IR}{1.00E+06} \right) + \left(\frac{1}{RfDo} \times \frac{SA \times AF \times ABS}{1.00E+06} \right) + \left(\frac{1}{RfDi} \times \frac{BR}{PEF^*} \right) \right]} = \mathbf{2.7E+04}$$

Where:

ABS =	0.1	unitless	Skin absorption (organics) (Default value; Cal/EPA 2005)
AF =	0.2	mg/cm^2	Adherance Factor (Default value; Cal/EPA 2005)
AT_{nc} =	9,125	days	Averaging Time for Noncarcinogenic Compounds (Default value; Cal/EPA 2005)
BW =	70	kg	Body Weight (Default value; Cal/EPA 2005)
C_s =	calculated	mg/kg	Concentration of chemical in soils
EF	250	days/year	Exposure Frequency (Default value; Cal/EPA 2005)
ED	25	years	Exposure Duration (Default value; Cal/EPA 2005)
BR =	20	m^3/day	Inhalation Rate (Default value; Cal/EPA 2004)
IR =	100	mg/day	Soil Ingestion Rate (Default value; Cal/EPA 2005)
SA =	5700	cm^2/day	Exposed Surface Area (Default value; Cal/EPA 2005)
RfDi =	1.1E-01	$mg_{chemical}/kg_{body\ weight}$-day	Reference Dose, inhalation (See Table D-2)
RfDo =	5.7E-02	$mg_{chemical}/kg_{body\ weight}$-day	Reference Dose, oral (See Table D-2)
THQ =	1.0	unitless	Target Hazard Quotient
PEF * =	1.316E+09	m^3/kg	Particulate Emission Factor (Default value; Cal/EPA 2005)

Notes:

* Use volatilization factor (VF [m^3/kg]) for volatile chemicals (defined as having a Henry's Law Constant [atm-m3/mol] greater than 1 x 10^5 and a vapor pressure greater than 1x10^{-3} [Cal/EPA, 1994]) or PEF for non-volatile chemicals.

References:

Cal/EPA 2005. *HERD HHRA Note Number 1: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Military Facilities.* Department of Toxic Substances Control. October 27.

California Environmental Protection Agency (Cal/EPA). 2004. Human-Exposure-Based Screening Numbers Developed to Aid Estimation o Cleanup Costs for Contaminated Soil. Office of Environmental Health Hazard Assessment (OEHHA) Integrated Risk Assessment Section. November, revised January 2005.

USEPA 2004. Region IX Preliminary Remediation Goals User's Guide. Available at www.epa.gov/region09/waste/sfund/prg/files/04usersguide.pdf

TABLE D-6: TPH-GASOLINE RISK-BASED SOIL SCREENING LEVELS - INTRUSIVE WORKER SCENARIO
CARSON/ALERIS
Carson, California

DRAFT

Risk-Based Soil Screening Level for TPH-gasoline (USEPA 2004, Equation 4-4)

Noncancer

$$C_s = \frac{THQ \times BW \times AT_{nc}}{EF \times ED \left[\left(\frac{1}{RfDo} \times \frac{IR}{1.00E+06} \right) + \left(\frac{1}{RfDo} \times \frac{SA \times AF \times ABS}{1.00E+06} \right) + \left(\frac{1}{RfDi} \times \frac{BR}{PEF^*} \right) \right]} = \mathbf{7.3E+03}$$

Where:

ABS =	0.1	unitless	Skin absorption (organics) (Default value; Cal/EPA 2005)
AF =	0.8	mg/cm^2	Adherance Factor (Default value; Cal/EPA 2005)
AT_{nc} =	365	days	Averaging Time for Noncarcinogenic Compounds (Default value; Cal/EPA 2005)
BW =	70	kg	Body Weight (Default value; Cal/EPA 2005)
C_s =	calculated	mg/kg	Concentration of chemical in soils
EF	250	days/year	Exposure Frequency (Default value; Cal/EPA 2005)
ED	1	years	Exposure Duration (Default value; Cal/EPA 2005)
BR =	20	m^3/day	Inhalation Rate (Default value; Cal/EPA 2005)
IR =	330	mg/day	Soil Ingestion Rate (Default value; Cal/EPA 2005)
SA =	5700	cm^2/day	Exposed Surface Area (Default value; Cal/EPA 2005)
RfDi =	1.1E-01	$mg_{chemical}/kg_{body\ weight}$-day	Reference Dose, inhalation (See Table D-2)
RfDo =	5.7E-02	$mg_{chemical}/kg_{body\ weight}$-day	Reference Dose, oral (See Table D-2)
THQ =	1.0	unitless	Target Hazard Quotient
PEF * =	1.00E+06	m^3/kg	Particulate Emission Factor (Default value; Cal/EPA 2005)

Notes:

* Use volatilization factor (VF [m^3/kg]) for volatile chemicals (defined as having a Henry's Law Constant [atm-m3/mol] greater than 1 x 10^5 and a vapor pressure greater than 1x10^{-3} [Cal/EPA, 1994]) or PEF for non-volatile chemicals.

References:

Cal/EPA 2005. *HERD HHRA Note Number 1: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Military Facilities.* Department of Toxic Substances Control. October 27.

USEPA 2004. Region IX Preliminary Remediation Goals User's Guide. Available at www.epa.gov/region09/waste/sfund/prg/files/04usersguide.pdf

TABLE D-7: TPH-DIESEL RISK-BASED SOIL SCREENING LEVELS - COMMERCIAL WORKER SCENARIO
CARSON/ALERIS
Carson, California

DRAFT

Risk-Based Soil Screening Level for TPH-diesel(USEPA 2004, Equation 4-4)

Noncancer

$$C_s = \frac{THQ \times BW \times AT_{nc}}{EF \times ED \left[\left(\frac{1}{RfDo} \times \frac{IR}{1.00E+06} \right) + \left(\frac{1}{RfDo} \times \frac{SA \times AF \times ABS}{1.00E+06} \right) + \left(\frac{1}{RfDi} \times \frac{BR}{PEF^*} \right) \right]} = \mathbf{3.7E+04}$$

Where:

ABS =	0.1	unitless	Skin absorption (organics) (Default value; Cal/EPA 2005)
AF =	0.2	mg/cm^2	Adherance Factor (Default value; Cal/EPA 2005)
AT_{nc} =	9,125	days	Averaging Time for Noncarcinogenic Compounds (Default value; Cal/EPA 2005)
BW =	70	kg	Body Weight (Default value; Cal/EPA 2005)
C_s =	calculated	mg/kg	Concentration of chemical in soils
EF	250	days/year	Exposure Frequency (Default value; Cal/EPA 2005)
ED	25	years	Exposure Duration (Default value; Cal/EPA 2005)
BR =	20	m^3/day	Inhalation Rate (Default value; Cal/EPA 2004)
IR =	100	mg/day	Soil Ingestion Rate (Default value; Cal/EPA 2005)
SA =	5700	cm^2/day	Exposed Surface Area (Default value; Cal/EPA 2005)
RfDi =	2.9E-02	$mg_{chemical}/kg_{body\ weight}$-day	Reference Dose, inhalation (See Table D-3)
RfDo =	7.8E-02	$mg_{chemical}/kg_{body\ weight}$-day	Reference Dose, oral (See Table D-3)
THQ =	1.0	unitless	Target Hazard Quotient
PEF * =	1.316E+09	m^3/kg	Particulate Emission Factor (Default value; Cal/EPA 2005)

Notes:

* Use volatilization factor (VF [m^3/kg]) for volatile chemicals (defined as having a Henry's Law Constant [atm-m3/mol] greater than 1 x 10^5 and a vapor pressure greater than 1x10^{-3} [Cal/EPA, 1994]) or PEF for non-volatile chemicals.

References:

Cal/EPA 2005. *HERD HHRA Note Number 1: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Military Facilities.* Department of Toxic Substances Control. October 27.

California Environmental Protection Agency (Cal/EPA). 2004.*Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil.* Office of Environmental Health Hazard Assessment (OEHHA) Integrated Risk Assessment Section. November, revised January 2005.

USEPA 2004. Region IX Preliminary Remediation Goals User's Guide. Available at www.epa.gov/region09/waste/sfund/prg/files/04usersguide.pdf

TABLE D-8: TPH-DIESEL RISK-BASED SOIL SCREENING LEVELS - INTRUSIVE WORKER SCENARIO
CARSON/ALERIS
Carson, California

DRAFT

Risk-Based Soil Screening Level for TPH-diesel(USEPA 2004, Equation 4-4)

Noncancer

$$C_s = \frac{THQ \times BW \times AT_{nc}}{EF \times ED \left[\left(\frac{1}{RfDo} \times \frac{IR}{1.00E+06} \right) + \left(\frac{1}{RfDo} \times \frac{SA \times AF \times ABS}{1.00E+06} \right) + \left(\frac{1}{RfDi} \times \frac{BR}{PEF^*} \right) \right]} = \mathbf{9.5E+03}$$

Where:

ABS =	0.1	unitless	Skin absorption (organics) (Default value; Cal/EPA 2005)
AF =	0.8	mg/cm^2	Adherance Factor (Default value; Cal/EPA 2005)
AT_{nc} =	365	days	Averaging Time for Noncarcinogenic Compounds (Default value; Cal/EPA 2005)
BW =	70	kg	Body Weight (Default value; Cal/EPA 2005)
C_s =	calculated	mg/kg	Concentration of chemical in soils
EF	250	days/year	Exposure Frequency (Default value; Cal/EPA 2005)
ED	1	years	Exposure Duration (Default value; Cal/EPA 2005)
BR =	20	m^3/day	Inhalation Rate (Default value; Cal/EPA 2005)
IR =	330	mg/day	Soil Ingestion Rate (Default value; Cal/EPA 2005)
SA =	5700	cm^2/day	Exposed Surface Area (Default value; Cal/EPA 2005)
RfDi =	2.9E-02	$mg_{chemical}/kg_{body\ weight}$-day	Reference Dose, inhalation (See Table D-3)
RfDo =	7.8E-02	$mg_{chemical}/kg_{body\ weight}$-day	Reference Dose, oral (See Table D-3)
THQ =	1.0	unitless	Target Hazard Quotient
PEF * =	1.00E+06	m^3/kg	Particulate Emission Factor (Default value; Cal/EPA 2005)

Notes:

* Use volatilization factor (VF [m^3/kg]) for volatile chemicals (defined as having a Henry's Law Constant [atm-m3/mol] greater than 1 x 10^5 and a vapor pressure greater than 1x10^{-3} [Cal/EPA, 1994]) or PEF for non-volatile chemicals.

References:

Cal/EPA 2005. *HERD HHRA Note Number 1: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Military Facilities.* Department of Toxic Substances Control. October 27.

USEPA 2004. Region IX Preliminary Remediation Goals User's Guide. Available at www.epa.gov/region09/waste/sfund/prg/files/04usersguide.pdf

TABLE D-9: TPH-ROLLING OIL RISK-BASED SOIL SCREENING LEVELS - COMMERCIAL WORKER SCENARIO
CARSON/ALERIS
Carson, California

DRAFT

Risk-Based Soil Screening Level for TPH-rolling oil (USEPA 2004, Equation 4-4)

Noncancer

$$C_s = \frac{THQ \times BW \times AT_{nc}}{EF \times ED \left[\left(\frac{1}{RfDo} \times \frac{IR}{1.00E+06} \right) + \left(\frac{1}{RfDo} \times \frac{SA \times AF \times ABS}{1.00E+06} \right) + \left(\frac{1}{RfDi} \times \frac{BR}{PEF^*} \right) \right]} = \mathbf{5.2E+04}$$

Where:

ABS =	0.1	unitless	Skin absorption (organics) (Default value; Cal/EPA 2005)
AF =	0.2	mg/cm^2	Adherance Factor (Default value; Cal/EPA 2005)
AT_{nc} =	9,125	days	Averaging Time for Noncarcinogenic Compounds (Default value; Cal/EPA 2005)
BW =	70	kg	Body Weight (Default value; Cal/EPA 2005)
C_s =	calculated	mg/kg	Concentration of chemical in soils
EF	250	days/year	Exposure Frequency (Default value; Cal/EPA 2005)
ED	25	years	Exposure Duration (Default value; Cal/EPA 2005)
BR =	20	m^3/day	Inhalation Rate (Default value; Cal/EPA 2004)
IR =	100	mg/day	Soil Ingestion Rate (Default value; Cal/EPA 2005)
SA =	5700	cm^2/day	Exposed Surface Area (Default value; Cal/EPA 2005)
RfDi =	9.4E-02	$mg_{chemical}/kg_{body\ weight}$-day	Reference Dose, inhalation (See Table D-4)
RfDo =	1.1E-01	$mg_{chemical}/kg_{body\ weight}$-day	Reference Dose, oral (See Table D-4)
THQ =	1.0	unitless	Target Hazard Quotient
PEF * =	1.316E+09	m^3/kg	Particulate Emission Factor (Default value; Cal/EPA 2005)

Notes:

* Use volatilization factor (VF [m^3/kg]) for volatile chemicals (defined as having a Henry's Law Constant [atm-m3/mol] greater than 1 x 10^5 and a vapor pressure greater than 1x10^{-3} [Cal/EPA, 1994]) or PEF for non-volatile chemicals.

References:

Cal/EPA 2005. *HERD HHRA Note Number 1: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Military Facilities.* Department of Toxic Substances Control. October 27.

California Environmental Protection Agency (Cal/EPA). 2004.*Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil*. Office of Environmental Health Hazard Assessment (OEHHA) Integrated Risk Assessment Section. November, revised January 2005.

USEPA 2004. Region IX Preliminary Remediation Goals User's Guide. Available at www.epa.gov/region09/waste/sfund/prg/files/04usersguide.pdf

TABLE D-10: TPH-ROLLING OIL RISK-BASED SOIL SCREENING LEVELS - INTRUSIVE WORKER SCENARIO
CARSON/ALERIS
Carson, California

DRAFT

Risk-Based Soil Screening Level for TPH-rolling oil (USEPA 2004, Equation 4-4)

Noncancer

$$C_s = \frac{THQ \times BW \times AT_{nc}}{EF \times ED \left[\left(\frac{1}{RfDo} \times \frac{IR}{1.00E+06} \right) + \left(\frac{1}{RfDo} \times \frac{SA \times AF \times ABS}{1.00E+06} \right) + \left(\frac{1}{RfDi} \times \frac{BR}{PEF^*} \right) \right]} = \mathbf{1.4E+04}$$

Where:

ABS =	0.1	unitless	Skin absorption (organics) (Default value; Cal/EPA 2005)
AF =	0.8	mg/cm^2	Adherance Factor (Default value; Cal/EPA 2005)
AT_{nc} =	365	days	Averaging Time for Noncarcinogenic Compounds (Default value; Cal/EPA 2005)
BW =	70	kg	Body Weight (Default value; Cal/EPA 2005)
C_s =	calculated	mg/kg	Concentration of chemical in soils
EF	250	days/year	Exposure Frequency (Default value; Cal/EPA 2005)
ED	1	years	Exposure Duration (Default value; Cal/EPA 2005)
BR =	20	m^3/day	Inhalation Rate (Default value; Cal/EPA 2005)
IR =	330	mg/day	Soil Ingestion Rate (Default value; Cal/EPA 2005)
SA =	5700	cm^2/day	Exposed Surface Area (Default value; Cal/EPA 2005)
RfDi =	9.4E-02	$mg_{chemical}/kg_{body\ weight}$-day	Reference Dose, inhalation (See Table D-4)
RfDo =	1.1E-01	$mg_{chemical}/kg_{body\ weight}$-day	Reference Dose, oral (See Table D-4)
THQ =	1.0	unitless	Target Hazard Quotient
PEF * =	1.00E+06	m^3/kg	Particulate Emission Factor (Default value; Cal/EPA 2005)

Notes:

* Use volatilization factor (VF [m^3/kg]) for volatile chemicals (defined as having a Henry's Law Constant [atm-m3/mol] greater than 1 x 10^5 and a vapor pressure greater than 1x10^{-3} [Cal/EPA, 1994]) or PEF for non-volatile chemicals.

References:

Cal/EPA 2005. *HERD HHRA Note Number 1: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Military Facilities.* Department of Toxic Substances Control. October 27.

USEPA 2004. Region IX Preliminary Remediation Goals User's Guide. Available at www.epa.gov/region09/waste/sfund/prg/files/04usersguide.pdf

TABLE D-11: SUMMARY OF CUMULATIVE CANCER RISKS AND NONCANCER HAZARDS FOR CHEMICALS DETECTED IN SOIL DRAFT
UNDER A FUTURE COMMERCIAL LAND-USE SCENARIO
CARSON / ALERIS
Carson, California

Analytical Group	Chemical Name	Detection Frequency	Range of Detected Concentrations (mg/kg)	Mean Concentration (mg/kg)	95 % UCL Concentration[1] (mg/kg)	Soil PRG [2] for Cancer Effects (mg/kg)	Soil PRG [2] for Noncancer Effects (mg/kg)	Soil CHHSL [3] for Cancer Effects (mg/kg)	Soil CHHSL [3] for Noncancer Effects (mg/kg)	95% UCL Cancer Risk [4]	95% UCL Noncancer Hazard Index [4]	Maximum Cancer Risk [5]	Maximum Noncancer Hazard Index [5]
Inorganics													
	Aluminum	57/57	16-72000	16,402	25,023	NC	9.2E+05	NA	NA	NC	0.03	NC	0.08
	Barium	56/56	48-270	137	147	NC	6.7E+04	NC	6.3E+04	NC	0.002	NC	0.004
	Beryllium	7/56	0.5-3.6	0.40	0.51	2.2E+03	1.9E+03	NA	1.7E+03	2E-10	0.0003	2E-09	0.002
	Cadmium	31/56	0.51-28	1.6	4.9	3.0E+03	4.5E+02	1.3E+03 [a]	9.9E+02 [a]	4E-09	0.01	2E-08	0.06
	Chromium	56/56	7.4-210	31	52	4.5E+02 [b]	NA	2.6E+02 [b]	1.7E+04 [b]	2E-07	0.003	8E-07	0.01
	Cobalt	56/56	3.2-200	21	42	1.9E+03	1.3E+04	3.2E+03	NA	2E-08	0.003	1E-07	0.02
	Copper	100/102	0.3-3800	146	416	NC	4.1E+04	NC	3.8E+04	NC	0.01	NC	0.10
	Lead	97/99	2-220	25	49	NC	8.0E+02	NC	3.4E+02 [c]	NA [c]	NA [c]	NA [c]	NA [c]
	Mercury	53/56	0.021-0.23	0.071	0.082	NC	3.1E+02	NC	1.8E+02	NC	0.0005	NC	0.001
	Molybdenum	15/56	2.1-30	2.7	5.2	NC	5.1E+03	NC	4.8E+03	NC	0.001	NC	0.006
	Nickel	56/56	6.2-500	32	74	NC	2.0E+04	NC	1.6E+04	NC	0.005	NC	0.03
	Selenium	1/56	2.1	1.3	1.4	NC	5.1E+03	NC	4.8E+03	NC	0.0003	NC	0.0004
	Silver	2/56	1.3-4.8	0.69	0.84	NC	5.1E+03	NC	4.8E+03	NC	0.0002	NC	0.001
	Vanadium	56/56	15-76	41	43	NC	1.0E+03	NC	6.7E+03	NC	0.04	NC	0.07
	Zinc	99/99	1.1-1700	182	359	NC	3.1E+05	NC	2.9E+05 [d]	NC	0.001	NC	0.006
TPH													
	TEPH (C8-C40)	36/65	5.6-49000	2,009	11,612	NA [e]	5.2E+04 [e]	NA [e]	5.2E+04 [e]	NA	0.2	NA	0.9
	TPH (diesel)	4/8	25-3400	789	11,292	NA [e]	3.7E+04 [e]	NA [e]	3.7E+04 [e]	NA	0.09	NA	0.09
	TPH (extractable - rolling oil)	2/12	22-344	35	315	NA [e]	5.2E+04 [e]	NA [e]	5.2E+04 [e]	NA	0.006	NA	0.007
	TPH (gasoline)	7/11	0.12-2800	328	6,204	NA [f]	2.7E+04 [f]	NA [f]	2.7E+04 [f]	NA	0.1	NA	0.1
	TRPH	4/5	27-310	89	459	NA [e]	5.2E+04 [e]	NA [e]	5.2E+04 [e]	NA	0.006	NA	0.006
	TVPH (C6-C12)	23/75	0.54-41000	2,420	4,458	NA [f]	2.7E+04 [f]	NA [f]	2.7E+04 [f]	NA	0.2	NA	1.5
VOC													
	1,1,2,2-Tetrachloroethane	1/59	0.002	0.0016	0.0027	9.3E-01	4.0E+03	NA	NA	2E-09	0.0000005	2E-09	0.0000005
	1,2,4-Trimethylbenzene	6/59	0.0031-1	0.038	0.18	NC	1.7E+02	NA	NA	NC	0.001	NC	0.006
	1,3,5-Trimethylbenzene	5/59	0.0036-0.55	0.018	0.087	NC	7.0E+01	NA	NA	NC	0.001	NC	0.008
	4-Isopropyltoluene	1/59	0.007	0.0016	0.0029	NC	2.0E+03	NA	NA	NC	0.000001	NC	0.000004
	Benzene	1/13	0.61	0.072	0.53	1.4E+00	1.2E+02	NA	NA	4E-07	0.005	4E-07	0.005
	Ethylbenzene	14/82	0.0037-14	0.26	2.0	NC	7.4E+03	NA	NA	NC	0.0003	NC	0.002
	Isopropylbenzene	5/59	0.002-0.077	0.0040	0.011	NC	2.0E+03	NA	NA	NC	0.00001	NC	0.00004
	Naphthalene	4/59	0.0058-0.24	0.0097	0.029	4.2E+00	1.9E+02	NA	NA	7E-09	0.0002	6E-08	0.001
	n-Propylbenzene	4/59	0.014-0.13	0.0051	0.020	NC	2.2E+03	NA	NA	NC	0.000009	NC	0.00006
	sec-Butylbenzene	2/59	0.014-0.067	0.0048	0.010	NC	1.6E+03	NA	NA	NC	0.000006	NC	0.00004
	Tetrachloroethylene (PCE)	9/74	0.0026-0.19	0.014	0.038	1.3E+00	1.3E+02	NA	NA	3E-08	0.0003	1E-07	0.001
	Toluene	14/82	0.0063-1.8	0.090	0.38	NC	2.2E+03	NA	NA	NC	0.0002	NC	0.0008
	Total Xylenes	23/82	0.005-180	2.7	25	NC	9.0E+02	NA	NA	NC	0.03	NC	0.2
Cumulative Cancer Risk and Noncancer Hazard Index										6E-07	0.7	2E-06	3

TABLE D-11: SUMMARY OF CUMULATIVE CANCER RISKS AND NONCANCER HAZARDS FOR CHEMICALS DETECTED IN SOIL UNDER A FUTURE COMMERCIAL LAND-USE SCENARIO
CARSON / ALERIS
Carson, California

Notes:

[1]Corresponds to the 95% Upper Confidence Level (UCL) of the arithmetic mean calculated using ProUCL version 3.00.02 and assuming that chemicals reported as non-detect (ND) are present at one-half the method detection limit as recommended by the USEPA (1989). The maximum detected value of the primary and field duplicate sample analytical results included in the calculations. If both values were ND, the minimum detection limit was included in the calculations.

[2] US EPA Region IX Preliminary Remediation Goals (2004) for industrial exposure scenarios. October. Available at http://www.epa.gov/region09/waste/sfund/prg/files/04prgtable.pdf

[3] California Human Health Screening Level (CHHSL) commercial / industrial soil screening numbers from Cal/EPA where available (2004).

[4] Cancer risks and noncancer hazard indices were calculated by dividing the 95% UCL of the mean concentration by the minimum screening value for cancer and noncancer endpoints, respectively, then multiplying the ratio by the target cancer risk of 1×10^{-6} or target hazard index of 1.

[5] Cancer risks and noncancer hazard indices were calculated by dividing the maximum detected concentration by the minimum screening value for cancer and noncancer endpoints, respectively, then multiplying the ratio by the target cancer risk of 1×10^{-6} or target hazard index of 1.

[a] Revised to reflect the Cal/EPA Department of Toxic Substances Control Human and Ecological Risk Division's current policy that cadmium is not considered as a carcinogen via the oral route. The revised screening value was calculated using methodology consistent with that used by Cal/EPA to calculate CHHSLs (Cal/EPA 2004), resulting in risk-based concentrations under a commercial setting of 1255 mg/kg for cancer risk and 990 mg/kg for noncancer hazard.

[b] Values for total chromium assumes a 1:6 ratio of hexavalent to trivalent chromium. CHHSLs for total chromium presented here are based on adjusted toxicity values for the 1:6 ratio assumption and calculated using the methodology for calculating soil risk-based screening levels presented in the CHHSLs document.

[c] Lead is evaluated using the USEPA's Adult Lead Model. Please see text for details.

[d] Published CHHSL for zine of 100,000 mg/kg represent the maximum concentration and not based on toxicity. The value presented here is based on toxicity values and calculated using the methodology for calculating soil risk-based screening levels presented in the CHHSLs document.

[e] Carcinogenic effects are evaluated using soil sampling data analyzed for VOCs. Noncancer effects are evaluated using the approach set forth by the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG, 1997) as discussed in the text. Toxicity for TEPH and TRPH are assumed to be equivalent to TPH-rolling oil.

[f] Carcinogenic effects are evaluated using soil and soil gas sampling data analyzed for VOCs. Noncancer effects are evaluated using the approach set forth by the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG, 1997) as discussed in the text. Toxicity for TVPH are assumed to be equivalent to TPH-gasoline.

mg/kg = milligrams per kilogram.
NA = Not applicable, screening level not available. Lead is evaluated using the USEPA's Adult Lead Model. Please see text for details.
NC = Not considered to be a carcinogen.
TPH = Total petroleum hydrocarbons.
TEPH (C8-C40) = Total extractable petroleum hydrocarbons.
TRPH = Total residual petroleum hydrocarbons.
TVPH (C6-C12) = total volatile petroleum hydrocarbons.
VOC = Volatile organic compound.

References:

California Environmental Protection Agency (Cal/EPA). 2004. *Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil.* Office of Environmental Health Hazard Assessment (OEHHA) Integrated Risk Assessment Section. November, revised January 2005.

Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG). 1997. *Volume 4: Development of Fraction Specific Reference Doses (RfDs) and Reference Concentrations (RfCs) for Total Petroleum Hydrocarbons (TPH).*

United States Environmental Protection Agency (1989). *Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part A). Interim Final* . Office of Emergency and Remedial Response. EPA 540/1 89/002. Washington, D.C. December.

TABLE D-12: SUMMARY OF CUMULATIVE CANCER RISKS AND NONCANCER HAZARDS FOR CHEMICALS DETECTED IN SOIL GAS UNDER A FUTURE COMMERCIAL LAND-USE SCENARIO
CARSON / ALERIS
Carson, California

DRAFT

Analytical Group	Chemical Name	Detection Frequency ($\mu g/m^3$)	Range of Detected Concentrations ($\mu g/m^3$)	Mean Concentration ($\mu g/m^3$)	Soil Gas Screening Level for Cancer Effects [1] (µg/m3)	Soil Gas Screening Level for Noncancer Effects [1] (µg/m3)	Maximum Cancer Risk [2]	Maximum Noncancer Hazard Quotient [2]
VOC								
	1,1,1-Trichloroethane	4/10	6.2-35	7.88	NC	7.0E+06	NC	0.000005
	1,1-Dichloroethane	3/10	6.3-14	3.85	5.7E+03 *	1.6E+06 *	2E-09	0.000009
	1,1-Dichloroethylene	1/10	10	2.48	NC	2.0E+05 *	NC	0.00005
	1,2,4-Trimethylbenzene	9/10	16-76	34.5	NC	2.2E+04 *	NC	0.003
	1,3,5-Trimethylbenzene	9/10	4.5-19	9.33	NC	2.2E+04 *	NC	0.0009
	1,4-Dioxane	1/10	27	8.10	1.1E+03 *	8.9E+06 *	3E-08	0.000003
	2,2,4-Trimethylpentane	9/10	13-35	21.8	NC	2.5E+06 *	NC	0.00001
	2-Butanone (MEK)	9/10	4.9-31	15.9	NC	1.5E+07 *	NC	0.000002
	2-Propanol	1/10	13	4.96	NC	1.9E+07 *	NC	0.0000007
	4-Ethyltoluene	9/10	8.2-43	19.1	NC	3.5E+05 *	NC	0.0001
	4-Methyl-2-pentanone (MIBK)	7/10	4.9-12	5.67	NC	9.6E+06 *	NC	0.000001
	Acetone	10/10	14-470	245	NC	7.4E+06 *	NC	0.00006
	Benzene	9/10	3.8-40	13.2	2.8E+02	8.8E+04 *	1E-07	0.0005
	Carbon Disulfide	9/10	3.4-34	9.11	NC	1.9E+06 *	NC	0.00002
	Chloroethane	1/10	3.9	1.38	5.9E+03 *	1.8E+07 *	7E-10	0.0000002
	Chloroform	1/10	4.1	2.26	1.4E+03 *	8.0E+05 *	3E-09	0.000005
	cis-1,2-Dichloroethylene	3/10	25-170	26.8	NC	1.2E+05	NC	0.001
	Cyclohexane	1/10	8.8	2.17	NC	1.9E+07 *	NC	0.0000005
	Ethanol	9/10	7.2-38	20.0	NC	8.5E+05 *	NC	0.00004
	Ethylbenzene	9/10	5.6-24	13.2	NC	3.2E+06 *	NC	0.000007
	Heptane	9/10	4.8-20	10.0	NC	2.4E+06 *	NC	0.000008
	Hexane	9/10	6.4-66	20.1	NC	1.4E+06 *	NC	0.00005
	m,p-Xylenes	9/10	26-120	60.0	NC	2.2E+06	NC	0.00005
	Methylene Chloride	5/10	3.1-3.9	2.55	7.6E+03 *	1.1E+06 *	5E-10	0.000004
	n-Propylbenzene	3/10	4.6-7.7	3.31	NC	5.3E+05 *	NC	0.00001
	o-Xylene	9/10	11-49	25.3	NC	2.1E+06	NC	0.00002
	Tetrachloroethylene (PCE)	9/10	7.2-710	263	1.6E+03	1.2E+05 *	4E-07	0.006
	Tetrahydrofuran	8/10	2.6-4.3	3.08	4.1E+03 *	8.3E+05 *	1E-09	0.000005
	Toluene	9/10	22-73	41.8	NC	8.9E+05	NC	0.00008
	trans-1,2-Dichloroethylene	2/10	4.3-4.7	2.21	NC	2.4E+05	NC	0.00002
	Trichloroethylene (TCE)	7/10	6-360	77.9	4.4E+03	1.1E+05 *	8E-08	0.003
	Trichlorofluoromethane (R11)	6/10	8.2-20	9.04	NC	2.1E+06 *	NC	0.00001
	Vinyl chloride	2/10	4.5-5.3	1.83	9.5E+01	2.6E+05 *	6E-08	0.00002
TPH								
	TVPH	5/40	300,000-1,500,000	145,500	NC	1.0E+06 *	NC	1
Cumulative Cancer Risk and Noncancer Hazard Index							8E-07	1

Notes:

[1] California Human Health Screening Level (CHHSL) commercial / industrial soil gas screening numbers for volatile chemicals below buildings constructed with engineered fill below sub-slab gravel developed by Cal/EPA (2004). CHHSLs are not currently available for those compounds/endpoints where values are marked with an asterisk; screening levels were developed for these compounds using methodology presented in the CHHSLs document.

TABLE D-12: SUMMARY OF CUMULATIVE CANCER RISKS AND NONCANCER HAZARDS FOR CHEMICALS DETECTED IN SOIL GAS UNDER A FUTURE COMMERCIAL LAND-USE SCENARIO
CARSON / ALERIS
Carson, California

Notes:

[2] Cancer risks and noncancer hazard quotients were calculated by dividing the maximum detected concentration by the screening value for cancer and noncancer endpoints, respectively, then multiplying the ratio by the target cancer risk of 1×10^{6} or target hazard index of 1.

* See note 1 above.

NC = Not considered to be a carcinogen.

ug/m^3 = micrograms per cubic meter.

VOC = Volatile organic compound.

References:

California Environmental Protection Agency (Cal/EPA). 2004. *Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil*. Office of Environmental Health Hazard Assessment (OEHHA) Integrated Risk Assessment Section. November, revised January 2005.

United States Environmental Protection Agency (USEPA). 1989. *Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part A). Interim Final*. Office of Emergency and Remedial Response. EPA 540/1 89/002. Washington, D.C. December.

TABLE D-13: SUMMARY OF CUMULATIVE CANCER RISKS AND NONCANCER HAZARDS FOR CHEMICALS DETECTED IN SOIL UNDER A REDEVELOPMENT CONSTRUCTION-PHASE SCENARIO
CARSON / ALERIS
Carson, California

DRAFT

Analytical Group	Chemical Name	Detection Frequency	Range of Detected Concentrations (mg/kg)	Mean Concentration (mg/kg)	95 % UCL Concentration[1] (mg/kg)	Soil RBSL for Cancer Effects [2] (mg/kg)	Soil RBSL for Noncancer Effects [2] (mg/kg)	95% UCL Cancer Risk [3]	95% UCL Noncancer Hazard [3]
Inorganics									
	Aluminum	57/57	16-72000	16402	25,023	NC	7.0E+03	NC	4
	Barium	78/78	43-270	129	138	NC	7.0E+02	NC	0.2
	Beryllium	14/78	0.5-3.6	0.39	0.47	4.3E+01	1.0E+01	1E-08	0.05
	Cadmium	37/78	0.51-28	1.3	3.7	2.4E+01	2.5E+01	2E-07	0.2
	Chromium	78/78	7.4-210	27	42	4.9E+00	7.8E+01	9E-06	0.5
	Cobalt	78/78	3.2-200	18	33	3.7E+01	2.9E+01	9E-07	1
	Copper	122/124	0.3-3800	124	869	NC	9.6E+03	NC	0.09
	Lead	118/121	2-220	21	42	NC	8.0E+02	NA [a]	NA [a]
	Mercury	65/78	0.021-0.23	0.062	0.085	NC	5.0E+01	NC	0.002
	Molybdenum	17/78	2-30	2.2	4.1	NC	1.3E+03	NC	0.003
	Nickel	78/78	6.2-500	27	57	3.9E+02	7.1E+01	1E-07	0.8
	Selenium	1/78	2.1	1.2	1.3	NC	1.3E+03	NC	0.001
	Silver	2/78	1.3-4.8	0.64	0.74	NC	1.3E+03	NC	0.0006
	Vanadium	78/78	15-76	39	41	NC	2.6E+02	NC	0.2
	Zinc	121/121	1.1-1700	158	306	NC	7.8E+04	NC	0.004
TPH									
	TEPH (C8-C40)	51/100	5.6-49000	1982	9,722	NA	1.4E+04 [b]	NA	0.7
	TPH (diesel)	7/17	25-3400	621	1,824	NA	9.5E+03 [b]	NA	0.2
	TPH (extractable - rolling oil)	18/36	11-19701	1591	8,389	NA	1.4E+04 [b]	NA	0.6
	TPH (gasoline)	12/20	0.12-2800	483	1,381	NA	7.3E+03 [c]	NA	0.2
	TRPH	4/5	27-310	89	459	NA	1.4E+04 [b]	NA	0.02
	TVPH (C6-C12)	30/97	0.54-41000	1924	3,671	NA	7.3E+03 [c]	NA	0.5
VOC									
	1,1,2,2-Tetrachloroethane	1/94	0.002	0.022	0.11	2.6E+00	4.5E+02	8E-10	0.000004
	1,2,4-Trimethylbenzene	14/81	0.002-290	3.6	39	NC	1.2E+01	NC	3
	1,3,5-Trimethylbenzene	11/81	0.0021-96	1.2	8.6	NC	1.2E+01	NC	0.7
	4-Isopropyltoluene	4/81	0.002-4.8	0.061	0.43	NC	1.0E+03	NC	0.0004
	Benzene	2/33	0.61-0.74	0.065	0.34	1.0E+00	1.3E+01	3E-07	0.03
	Ethylbenzene	20/124	0.0037-34	0.83	4.5	NC	8.1E+02	NC	0.006
	Isopropylbenzene	9/81	0.002-9.4	0.12	0.84	NC	6.7E+01	NC	0.013
	Methylene Chloride	1/114	0.11	0.19	1.3	2.6E+01	1.5E+02	4E-09	0.0007
	Naphthalene	10/81	0.0058-69	0.86	6.2	1.4E+01	2.6E+01	4E-07	0.2
	n-Butylbenzene	1/81	52	0.65	4.7	NC	1.8E+02	NC	0.03
	n-Propylbenzene	8/81	0.0034-43	0.54	3.9	NC	1.4E+02	NC	0.03
	sec-Butylbenzene	4/81	0.0056-0.067	0.065	0.44	NC	2.1E+02	NC	0.00032
	Tetrachloroethylene (PCE)	12/124	0.0026-0.19	0.029	0.13	3.7E+00	1.4E+01	3E-08	0.009
	Toluene	17/124	0.0063-11	0.19	1.1	NC	1.9E+02	NC	0.006
	Trichloroethylene (TCE)	1/114	0.0022	0.023	0.13	1.8E+01	1.2E+01	1E-10	0.0002
	Total Xylenes	31/124	0.0022-220	5.6	25	NC	9.7E+01	NC	0.3
Cumulative Cancer Risk and Noncancer Hazard Index								1E-05	13

Notes:

[1]Corresponds to the 95% Upper Confidence Level (UCL) of the arithmetic mean calculated using ProUCL version 3.00.02 and assuming that chemicals reported as non-detect (ND) are present at one-half the method detection limit as recommended by the USEPA (1989). The maximum detected value of the primary and field duplicate sample analytical results included in the calculations. If both values were ND, the minimum detection limit was included in the calculations.

[2] Cancer and noncancer risk-based screening level (RBSLs) were calculated using CHHSL methodology and HERD-recommended exposure assumptions and toxicity values. See Attachment 1 for summary exposure assumptions and toxicity values used.

[3] Cancer risks and noncancer hazards were calculated by dividing the 95% UCL of the mean concentration by the minimum screening value for cancer and noncancer endpoints, respectively, then multiplying the ratio by the target cancer risk of 1×10^{-6} or target hazard index of 1.

[a] Lead is evaluated using the USEPA's Adult Lead Model. Please see text for details.

[b] Carcinogenic effects are evaluated using soil sampling data analyzed for VOCs. Noncancer effects are evaluated using the approach set forth by the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG, 1997) as discussed in the text. Toxicity for TEPH and TRPH are assumed to be equivalent to TPH-rolling oil.

[c] Carcinogenic effects are evaluated using soil and soil gas sampling data analyzed for VOCs. Noncancer effects are evaluated using the approach set forth by the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG, 1997) as discussed in the text. Toxicity for TVPH are assumed to be equivalent to TPH-gasoline.

mg/kg = milligrams per kilogram.
NA = Not applicable, screening level not available. Lead is evaluated using the USEPA's Adult Lead Model. Please see text for details.
NC = Not considered to be a carcinogen.
TPH = Total petroleum hydrocarbons.
TEPH (C8-C40) = Total extractable petroleum hydrocarbons.
TRPH = Total residual petroleum hydrocarbons.
TVPH (C6-C12) = total volatile petroleum hydrocarbons.
VOC = Volatile organic compound.

References:

California Environmental Protection Agency (Cal/EPA). 2004. *Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil.* Office of Environmental Health Hazard Assessment (OEHHA) Integrated Risk Assessment Section. November, revised January 2005.

Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG). 1997. *Volume 4: Development of Fraction Specific Reference Doses (RfDs) and Reference Concentrations (RfCs) for Total Petroleum Hydrocarbons (TPH).*

United States Environmental Protection Agency (1989). *Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part A). Interim Final* . Office of Emergency and Remedial Response. EPA 540/1 89/002. Washington, D.C. December.

APPENDIX D

EXHIBITS

EXHIBIT A: NORMALITY TEST FOR ARSENIC
CARSON / ALERIS
Site Remediation and Redevelopment Plan
Carson, California

StatMost for Windows Wednesday, July 18, 2007 5:43:29 PM

Normality Tests

Column Name: [As10ft]
Sample Size = 60
Number of Missings = 0
Data Mean = 3.1083
Standard Deviation = 1.5784

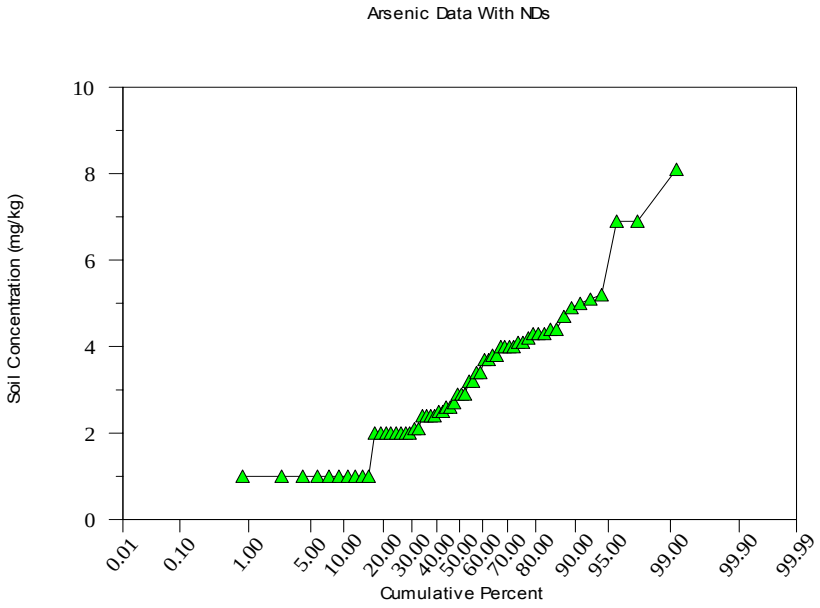
Lilliefors Normality Test:
DIF = 0.0930
Probability = 0.5000

Column Name: [LN(As10ft)]
Sample Size = 60
Number of Missings = 0
Data Mean = 0.9940
Standard Deviation = 0.5604

Lilliefors Normality Test:
DIF = 0.1290
Probability = 0.0145

StatMost Report Created by Iris Environmental

EXHIBIT B: CUMULATIVE PERCENT PLOTS FOR LOG-TRANSFORMED ARSENIC
CARSON / ALERIS
Site Remediation and Redevelopment Plan
Carson, California



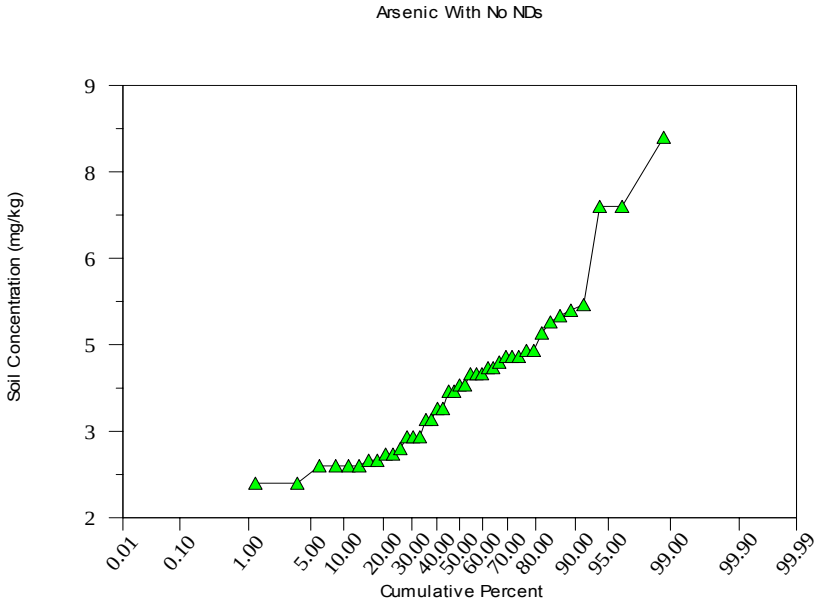


EXHIBIT C: DESCRIPTIVE STATISTICS FOR ARSENIC
CARSON / ALERIS
Site Remediation and Redevelopment Plan
Carson, California

Descriptive Statistic	Arsenic Data
Sample Size (n)	60
Mean (μ)	3.1
Median	2.9
Standard Deviation	1.6
Standard Error of the Mean[1]	0.20
Minimum Concentration	2.1
Maximum Concentration	8.1
Lower Quartile (Q1)	2.0
Upper Quartile (Q3)	4.1
Coefficient of Variation	0.51
Range - Order of Magnitude Difference	0.59

Notes:
mg/kg = milligrams per kilogram.
[1] The standard error of the mean = standard deviation / $\sqrt{n}$

APPENDIX D

ATTACHMENT

ATTACHMENT A

RISK-BASED SCREENING LEVEL CALCULATIONS FOR CONSTRUCTION WORKER SCENARIO

TABLE A-1: EXAMPLE CALCULATION FOR RBSL FOR COBALT - INTRUSIVE WORKER SCENARIO
CARSON/ALERIS
Carson, California

Risk-Based Screening Level (RBSL) for Cobalt (USEPA 2004, Equations 4-3 and 4-4)

Noncancer

$$C_s = \frac{THQ \times BW \times AT_{nc}}{EF \times ED \left[\left(\frac{1}{RfDo} \times \frac{IR}{1.00E+06} \right) + \left(\frac{1}{RfDo} \times \frac{SA \times AF \times ABS}{1.00E+06} \right) + \left(\frac{1}{RfDi} \times \frac{BR}{PEF^*} \right) \right]} = \mathbf{2.9E+01}$$

Cancer

$$C_s = \frac{TR \times BW \times AT_c}{EF \times ED \left[\left(\frac{IR \times CSF_o}{1.00E+06} \right) + \left(\frac{SA \times AF \times ABS \times CSF_o}{1.00E+06} \right) + \left(\frac{BR \times CSF_i}{PEF^*} \right) \right]} = \mathbf{3.7E+01}$$

Where:

ABS =	0.01	unitless	Skin absorption (inorganics) (Default value; Cal/EPA 2005)
AF =	0.8	mg/cm^2	Adherance Factor (Default value; Cal/EPA 2005)
AT_c =	25,550	days	Averaging Time for Carcinogenic Compounds
AT_{nc} =	365	days	Averaging Time for Noncarcinogenic Compounds (Default value; Cal/EPA 2005)
BW =	70	kg	Body Weight (Default value; Cal/EPA 2005)
C_s =	calculated	mg/kg	Concentration of chemical in soils
EF	250	days/year	Exposure Frequency (Default value; Cal/EPA 2005)
ED	1	years	Exposure Duration (Default value; Cal/EPA 2005)
BR =	20	m^3/day	Inhalation Rate (Default value; Cal/EPA 2005)
IR =	330	mg/day	Soil Ingestion Rate (Default value; Cal/EPA 2005)
SA =	5700	cm^2/day	Exposed Surface Area (Default value; Cal/EPA 2005)
RfDi =	5.7E-06	$mg_{chemical}/kg_{body\ weight}$-day	Reference Dose, inhalation (See Table 1)
CSFi =	9.8E+00	$(mg_{chemical}/kg_{body\ weight}\text{-day})^{-1}$	Cancer Slope Factor, inhalation (See Table 1)
RfDo =	2.0E-02	$mg_{chemical}/kg_{body\ weight}$-day	Reference Dose, oral (See Table 1)
CSFo =	0.0E+00	$(mg_{chemical}/kg_{body\ weight}\text{-day})^{-1}$	Cancer Slope Factor, oral (See Table 1)
THQ =	1.0	unitless	Target Hazard Quotient
TR =	1.0E-06	unitless	Target Cancer Risk
PEF * =	1.00E+06	m^3/kg	Particulate Emission Factor (Default value; Cal/EPA 2005)

Notes:

* Use volatilization factor (VF [m^3/kg]) for volatile chemicals (defined as having a Henry's Law Constant [atm-m3/mol] greater than 1 x 10^5 and a vapor pressure greater than 1x10^{-3} [Cal/EPA, 1994]) or PEF for non-volatile chemicals.

Default Skin Absorption (Cal/EPA 2005)

0.10 Organic Chemicals
0.001 Cadmium
0.01 Other Metals

References:

Cal/EPA 2005. *HERD HHRA Note Number 1: Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Military Facilities.* Department of Toxic Substances Control. October 27.
USEPA 2004. Region IX Preliminary Remediation Goals User's Guide. Available at www.epa.gov/region09/waste/sfund/prg/files/04usersguide.pdf

TABLE A-2: SUMMARY OF CARCINOGENIC AND NONCARCINOGENIC TOXICITY VALUES
CARSON/ALERIS
Carson, California

Chemical	Cancer Slope Factor (CSF) $(mg/kg\text{-}day)^{-1}$				Chronic Noncancer Reference Dose (RfD) (mg/kg-day)			
	Inhalation	Source	Oral	Source	Inhalation	Source	Oral	Source
Inorganics								
Aluminum	NC	1	NC	1	1.4E-03	2	1.0E+00	2
Barium	NC	1	NC	1	1.4E-04	3	7.0E-02	4
Beryllium	8.4E+00	1	NC	a	2.0E-06	1b	2.0E-03	4
Cadmium	1.5E+01	1	NC	a	5.7E-06	1b	5.0E-04	4c
Chromium	7.3E+01	1d	NC	a	1.5E-05	4d	2.1E-02	4d
Cobalt	9.8E+00	2	NC	a	5.7E-06	2	2.0E-02	2
Copper	NC	1	NC	1	3.7E-02	3f	3.7E-02	3g
Mercury	NC	1	NC	1	2.6E-05	1b	3.0E-04	5h
Molybdenum	NC	1	NC	1	5.0E-03	4f	5.0E-03	4
Nickel	9.1E-01	1	NC	a	1.4E-05	1b	2.0E-02	4
Selenium	NC	1	NC	1	5.7E-03	1b	5.0E-03	4
Silver	NC	1	NC	1	5.0E-03	4f	5.0E-03	4
Vanadium	NC	1	NC	1	1.0E-03	2f	1.0E-03	2
Zinc	NC	1	NC	1	3.0E-01	4f	3.0E-01	4
Total Petroleum Hydrocarbons								
TPH (gasoline)	NC	1	NC	1	1.1E-01	6	5.7E-02	6
TPH (diesel)	NC	1	NC	1	2.9E-02	6	7.8E-02	6
TPH (extractable - rolling oil)	NC	1	NC	1	9.4E-02	6	1.1E-01	6
Volatile Organic Compounds								
1,1,2,2-Tetrachloroethane	2.0E-01	1	2.0E-01	1	6.0E-02	2f	6.0E-02	2
1,2,4-Trimethylbenzene	NC	1	NC	1	1.7E-03	2	5.0E-02	2
1,3,5-Trimethylbenzene	NC	1	NC	1	1.7E-03	2	5.0E-02	2
4-Isopropyltoluene	NC	1	NC	1	1.1E-01	4b,i	1.0E-01	4i
Benzene	1.0E-01	1	1.0E-01	1	8.6E-03	4b	4.0E-03	4
Ethylbenzene	NC	1	NC	1	2.9E-01	4b	1.0E-01	4
Isopropylbenzene	NC	1	NC	1	1.1E-01	4b	1.0E-01	4
Methylene Chloride	3.5E-03	1	1.4E-02	1	1.1E-01	1b	6.0E-02	4
Naphthalene	1.2E-01	1	1.2E-01	1	8.6E-04	4b	2.0E-02	4
n-Butylbenzene	NC	1	NC	1	4.0E-02	7f	4.0E-02	7
n-Propylbenzene	NC	1	NC	1	4.0E-02	7f	4.0E-02	7
sec-Butylbenzene	NC	1	NC	1	4.0E-02	7f	4.0E-02	7
Tetrachloroethylene (PCE)	2.1E-02	1	5.4E-01	1	1.0E-02	1b	1.0E-02	4

TABLE A-2: SUMMARY OF CARCINOGENIC AND NONCARCINOGENIC TOXICITY VALUES
CARSON/ALERIS
Carson, California

Chemical	Cancer Slope Factor (CSF) $(mg/kg\text{-}day)^{-1}$				Chronic Noncancer Reference Dose (RfD) (mg/kg-day)			
	Inhalation	Source	Oral	Source	Inhalation	Source	Oral	Source
Toluene	NC	1	NC	1	8.6E-02	1b	2.0E-01	4
Trichloroethylene (TCE)	7.0E-03	1	1.3E-02	1	1.0E-02	7	3.0E-04	7
Total Xylenes	NC	1	NC	1	2.9E-02	4b	2.0E-01	4

Notes:
na - Not applicable. Evaluated carcinogenic PAHs.
NA - Not available. Route-specific toxicity value for this compound was not available.
NC - Not considered to be a carcinogen.
[a] This chemical is not considered a carcinogen by the route of ingestion.
[b] This value has been converted from an RfC value (units: mg chemical/m^3 air), assuming a 20 m^3/day inhalation rate and a 70 kg body weight.
[c] The RfD for cadmium is estimated for cadmium exposure in water.
[d] Assumes toxicity for total chromium (1:6 ratio Cr VI: Cr III)
[e] Toxicity values for Chromium (III)
[f] Route-to-route extrapolation.
[g] The RfD for copper is based on a drinking water standard of 1.3 mg/L.
[h] Value for mercury and compounds listed in USEPA Region IX Preliminary Remediation Goal support documents maintained online.
[i] Surrogate value - assumes toxicity for isopropylbenzene

Sources:
1. California Environmental Protection Agency (Cal/EPA), Office of Environmental Health Hazard Assessment (OEHHA). 2007. Table of cancer slope factors maintained at http://www.oehha.ca.gov/risk/pdf/TCDB061207.pdf (July 2007); table of chronic RELs maintained online at http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html (February 2005).
2. Provisional Peer Reviewed Toxicity Value (PPRTV) from Region IX PRG table. Found at http://www.epa.gov/region09/waste/sfund/prg/index.html.
3. United States Environmental Protection Agency (USEPA). 1997. *Health Effects Assessment Summary Tables. FY 1997 Update.* July. Office of Environmental Health Hazard Assessment (OEHHA).
4. United States Environmental Protection Agency (USEPA). 2007. *Integrated Risk Information System Database.* Maintained at http://www.epa.gov/iris/index.html.
5. United States Environmental Protection Agency (USEPA). 2004. Region IX Preliminary Remediation Goals (PRGs). October. Maintained at http://www.epa.gov/region09/waste/sfund/prg/index.html.
6. Iris Environmental - toxicity value derived using guidance from the Total Petroleum Hydrocarbon Criteria Working Group (See main text.)
7. National Center for Environmental Assessment (NCEA) from Region IX PRG table. Found at http://www.epa.gov/region09/waste/sfund/prg/index.html.

TABLE A-3: VOLATILIZATION AFACTOR EQUATIONS AND PARAMETER
CARSON/ALERIS
Carson, California

Redevelopment Construction Worker Outdoor Air Volatilization Factor (VF), for Naphthalene (USEPA 2002, Equation 4-8)

$$VF = \frac{Q/C \times (3.14 \times D_A \times T)^{1/2} \times 10^{-4}\ (m^2/cm^2)}{2 \times \rho_b \times D_A} = \mathbf{6.16E+03}\ m^3/kg$$

Consistent with USEPA 1996, the larger VF is used to evaluate air concentrations.

where:

$$D_A = \frac{[(\theta_a^{3.33} D_i H') + (\theta_w^{3.33} D_w)]/h^2}{\rho_b K_d + \theta_w + \theta_a H'_{TS}}$$

and:

D_A	4.66E-06	cm^2/s	apparent diffusivity (calculated using equation cited above)
Q/C_{vol}	40.07	$(g/m^2\text{-}s) / (kg/m^3)$	dispersion factor (calculated, see below)
T	3.15E+07	s	exposure interval (based on exposure duration of 1 year)
ρ_b	1.50	g/cm^3	dry soil bulk density (default value, USEPA 2002)
h	0.43	cm^3_{pore}/cm^3_{soil}	total soil porosity (default value, USEPA 2002)
θ_w	0.15	cm^3_{water}/cm^3_{soil}	water-filled soil porosity (default value, USEPA 2002)
θ_a	0.28	cm^3_{air}/cm^3_{soil}	air-filled soil porosity (calculated, $n-\theta_w$)
D_i	0.059	cm^2/s	diffusivity in air (chemical-specific, see Table A-4)
H'	0.018	unitless	Henry's Law Constant (chemical-specific, see Table A-4)
D_w	7.50E-06	cm^2/s	diffusivity in water (chemical-specific, see Table A-4)
$K_d = K_{oc} \times f_{oc}$	12.00	cm^3/g	soil-water partition coefficient (chemical specific, see Table A-4)
K_{oc}	2000	cm^3/g	soil organic carbon partition coefficient (chemical-specific, see Table A-4)
f_{oc}	0.0060	g/g	fraction organic carbon in soil (default value, USEPA 2002)

Redevelopment Construction Worker Outdoor Air Mass-Limit Volatilization Factor (VF) (USEPA 2002, Eq. 4-13)

$$VF = \frac{Q/C_{vol} \times T}{\rho_b \times d_s \times 10^4\ cm^2/m^2} = \mathbf{1.11E+02}\ m^3/kg$$

Consistent with USEPA 1996, the larger VF is used to evaluate air concentrations.

and:

Q/C_{vol}	40.07	$(g/m^2\text{-}s) / (kg/m^3)$	dispersion factor (calculated, see below)
T	3.15E+07	s	exposure interval (based on exposure duration of 1 year)
ρ_b	1.50	g/cm^3	dry soil bulk density (default value, USEPA 2002)
d_s	762	cm	average source depth (site-specific)

Site-specific Dispersion Factor (USEPA 2002, Equation D-1)

$$Q/C_{vol} = A \exp[(\ln Asite - B)^2 (1/C)] = \mathbf{40.07}\ (g/m^2\text{-}s) / (kg/m^3)$$

where:

A_{site}	12	acres	areal extent of the Site that will be redeveloped
Location	LA	--	General location (USEPA 2002)
A	11.9	--	constant, default value presented on page D-3 (USEPA 2002)
B	18.4	--	constant, default value presented on page D-3 (USEPA 2002)
C	209.8	--	constant, default value presented on page D-3 (USEPA 2002)

References:

U.S. Environmental Protection Agency (USEPA). 1996. *Soil Screening Guidance: User's Guide* . Office of Solid Waste and Emergency Response. EPA/540/R-96/018. April.

USEPA. 2002. *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites.* Office of Soild Waste and Emergency Response. Washington, D.C., December.

TABLE A-4: CHEMICAL PROPERTIES AND VOLATILIZATION FACTOR FOR VOCS
CARSON/ALERIS
Carson, California

Chemical	VOC[a]	Diffusivity in air, Da (cm^2/s)		Diffusivity in water, Dw (cm^2/s)		Henry's Law Constant at 25 Degree Celsius, H ($atm\text{-}m^3/mol$)		Henry's Law Constant at groundwater temperature[a], H'_{TS} (unitless)		Organic Carbon Partition Coefficient, Koc (cm^3/g)		Volatilization Factor, VF (m^3/kg)
Volatile Organic Compounds												
1,1,2,2-Tetrachloroethane	Y	7.10E-02	1	7.90E-06	1	3.44E-04	1	1.33E-02	1	9.33E+01	1	1.54E+03
1,2,4-Trimethylbenzene	Y	6.06E-02	1	7.92E-06	1	6.14E-03	1	2.36E-01	1	1.35E+03	1	1.40E+03
1,3,5-Trimethylbenzene	Y	6.02E-02	1	8.67E-06	1	5.87E-03	1	2.25E-01	1	1.35E+03	1	1.44E+03
4-Isopropyltoluene	Y	6.37E-02	2	NA		1.10E-02	2	4.51E-01	2	5.27E+03	2	1.94E+03
Benzene	Y	8.80E-02	1	9.80E-06	1	5.54E-03	1	2.17E-01	1	5.89E+01	1	2.97E+02
Ethylbenzene	Y	7.50E-02	1	7.80E-06	1	7.86E-03	1	3.05E-01	1	3.63E+02	1	5.90E+02
Isopropylbenzene	Y	6.50E-02	1	7.10E-06	1	1.16E+00	1	4.42E+01	1	4.89E+02	1	1.16E+02
Methylene Chloride	Y	1.01E-01	1	1.17E-05	1	2.18E-03	1	8.62E-02	1	1.17E+01	1	2.70E+02
Naphthalene	Y	5.90E-02	1	7.50E-06	1	4.82E-04	1	1.84E-02	1	2.00E+03	1	6.16E+03
n-Butylbenzene	Y	5.70E-02	1	8.12E-06	1	1.31E-02	1	5.04E-01	1	1.11E+03	1	9.02E+02
n-Propylbenzene	Y	6.01E-02	1	7.83E-06	1	1.07E-02	1	4.10E-01	1	5.62E+02	1	7.00E+02
sec-Butylbenzene	Y	5.70E-02	1	8.12E-06	1	1.39E-02	1	3.10E-01	1	9.66E+02	1	1.07E+03
Tetrachloroethylene (PCE)	Y	7.20E-02	1	8.20E-06	1	1.84E-02	1	7.14E-01	1	1.55E+02	1	2.77E+02
Toluene	Y	8.70E-02	1	8.60E-06	1	6.62E-03	1	2.58E-01	1	1.82E+02	1	4.33E+02
Trichloroethylene (TCE)	Y	7.90E-02	1	9.10E-06	1	1.03E-02	1	4.02E-01	1	1.66E+02	1	3.54E+02
Total Xylenes	Y	7.00E-02	1	7.80E-06	1	7.32E-03	1	2.84E-01	1	4.07E+02	1	6.67E+02

Notes:
[a] Calculated using HERD-recommended default groundwater temperature of 24 degree Celsius.

References:

1. USEPA. 2003. *User's Guide for Evaluating Subsurface Vapor Intrusion Into Buildings*. Office of Emergency and Remedial Response. Washington, D.C., June 19.
2. SRC PhysProp Database. 2002. found at http://esc.syrres.com/interkow/physdemo.htm and methods from Schwarzenback R. P. et al. 1993. Environmental Organic Chemistry. John Wiley and Sons, Inc., New York, NY.

ATTACHMENT B

TOTAL VOLATILE PETROLEUM HYDROCARBON ATTENTUATION FACTOR CALCULATION SHEETS

SL-ADV
Version 3.0; 02/03

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in ' **DTSC / HERD**

Version 3.0-mod1; 07/03

YES X

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

	ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C_R (µg/kg)	Chemical	ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)
	ALC5C8	1.00E+00	C5-C8 Aliphatic	22	9	49	0	9	10	30
	ARC6C8	1.00E+00	C6-C8 Aromatic	22	9	49	0	9	10	30
	ALC9C18	1.00E+00	C9-C18 Aliphatic	22	9	49	0	9	10	30
	ARC9C16	1.00E+00	C9-C16 Aromatic	22	9	49	0	9	10	30
	ALC5C8	1.00E+00	C5-C8 Aliphatic	22	9	457	0	19	30	408.2
	ARC6C8	1.00E+00	C6-C8 Aromatic	22	9	457	0	19	30	408.2
	ALC9C18	1.00E+00	C9-C18 Aliphatic	22	9	457	0	19	30	408.2
END	ARC9C16	1.00E+00	C9-C16 Aromatic	22	9	457	0	19	30	408.2

Assumes source begins at 49 cm bgs (approximately 1.6 ft bgs).

Assumes source begins at 457 cm bgs (approximately 15 ft bgs).

Chemical	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)	ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction f_{oc}^A (unitless)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
C5-C8 Aliphatic	S			S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	SIC	1.8	0.3	0.15
C6-C8 Aromatic	S			S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	SIC	1.8	0.3	0.15
C9-C18 Aliphatic	S			S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	SIC	1.8	0.3	0.15
C9-C16 Aromatic	S			S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	SIC	1.8	0.3	0.15
C5-C8 Aliphatic	S			S	1.66	0.375	0.054	0.002	SIC	1.8	0.3	0.15	0.002	S	1.5	0.43	0.15
C6-C8 Aromatic	S			S	1.66	0.375	0.054	0.002	SIC	1.8	0.3	0.15	0.002	S	1.5	0.43	0.15
C9-C18 Aliphatic	S			S	1.66	0.375	0.054	0.002	SIC	1.8	0.3	0.15	0.002	S	1.5	0.43	0.15
C9-C16 Aromatic	S			S	1.66	0.375	0.054	0.002	SIC	1.8	0.3	0.15	0.002	S	1.5	0.43	0.15

Chemical	ENTER Stratum C soil organic carbon fraction f_{oc}^{C} (unitless)	ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
C5-C8 Aliphatic	0.002	9	40	1000	1000	244	0.1	1	5	70	25	25	250	1.0E-06	1
C6-C8 Aromatic	0.002	9	40	1000	1000	244	0.1	1	5	70	25	25	250	1.0E-06	1
C9-C18 Aliphatic	0.002	9	40	1000	1000	244	0.1	1	5	70	25	25	250	1.0E-06	1
C9-C16 Aromatic	0.002	9	40	1000	1000	244	0.1	1	5	70	25	25	250	1.0E-06	1
C5-C8 Aliphatic	0.002	9	40	1000	1000	244	0.1	1	5	70	25	25	250	1.0E-06	1
C6-C8 Aromatic	0.002	9	40	1000	1000	244	0.1	1	5	70	25	25	250	1.0E-06	1
C9-C18 Aliphatic	0.002	9	40	1000	1000	244	0.1	1	5	70	25	25	250	1.0E-06	1
C9-C16 Aromatic	0.002	9	40	1000	1000	244	0.1	1	5	70	25	25	250	1.0E-06	1

CHEMICAL PROPERTIES SHEET

Chemical	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	Physical state at soil temperature, (S,L,G)
C5-C8 Aliphatic	1.00E-01	1.00E-05	8.00E-01	25	7,000	324.00	507.60	7.94E+02	3.60E+01	NA	7.0E-01	0.0E+00
C6-C8 Aromatic	1.00E-01	1.00E-05	5.60E-03	25	7,342	352.00	562.20	7.90E+01	1.80E+03	NA	0.0E+00	0.0E+00
C9-C18 Aliphatic	1.00E-01	1.00E-05	1.90E+00	25	7,000	423.00	568.90	3.16E+04	4.30E-01	NA	3.0E-01	0.0E+00
C9-C16 Aromatic	1.00E-01	1.00E-05	1.20E-02	25	7,930	423.00	592.20	1.58E+03	6.50E+01	NA	5.0E-02	0.0E+00
C5-C8 Aliphatic	1.00E-01	1.00E-05	8.00E-01	25	7,000	324.00	507.60	7.94E+02	3.60E+01	NA	7.0E-01	0.0E+00
C6-C8 Aromatic	1.00E-01	1.00E-05	5.60E-03	25	7,342	352.00	562.20	7.90E+01	1.80E+03	NA	0.0E+00	0.0E+00
C9-C18 Aliphatic	1.00E-01	1.00E-05	1.90E+00	25	7,000	423.00	568.90	3.16E+04	4.30E-01	NA	3.0E-01	0.0E+00
C9-C16 Aromatic	1.00E-01	1.00E-05	1.20E-02	25	7,930	423.00	592.20	1.58E+03	6.50E+01	NA	5.0E-02	0.0E+00
END												

INTERMEDIATE CALCULATIONS SHEET

Chemical	Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (µg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)
C5-C8 Aliphatic	7.88E+08	40	0.321	0.321	0.150	0.003	1.01E-07	0.998	1.01E-07	4,000	1.00E+00	6.78E+04	1.00E+06	4.00E-04
C6-C8 Aromatic	7.88E+08	40	0.321	0.321	0.150	0.003	1.01E-07	0.998	1.01E-07	4,000	1.00E+00	6.78E+04	1.00E+06	4.00E-04
C9-C18 Aliphatic	7.88E+08	40	0.321	0.321	0.150	0.003	1.01E-07	0.998	1.01E-07	4,000	1.00E+00	6.78E+04	1.00E+06	4.00E-04
C9-C16 Aromatic	7.88E+08	40	0.321	0.321	0.150	0.003	1.01E-07	0.998	1.01E-07	4,000	1.00E+00	6.78E+04	1.00E+06	4.00E-04
C5-C8 Aliphatic	7.88E+08	448.2	0.321	0.150	0.280	0.003	1.01E-07	0.998	1.01E-07	4,000	1.00E+00	6.78E+04	1.00E+06	4.00E-04
C6-C8 Aromatic	7.88E+08	448.2	0.321	0.150	0.280	0.003	1.01E-07	0.998	1.01E-07	4,000	1.00E+00	6.78E+04	1.00E+06	4.00E-04
C9-C18 Aliphatic	7.88E+08	448.2	0.321	0.150	0.280	0.003	1.01E-07	0.998	1.01E-07	4,000	1.00E+00	6.78E+04	1.00E+06	4.00E-04
C9-C16 Aromatic	7.88E+08	448.2	0.321	0.150	0.280	0.003	1.01E-07	0.998	1.01E-07	4,000	1.00E+00	6.78E+04	1.00E+06	4.00E-04
END														

INTERMEDIATE CALCULATIONS SHEET

Chemical	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization a ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Soil-water partition coefficient, K_d (cm^3/g)	Source vapor conc., C_{source} (μg/m^3)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)
C5-C8 Aliphatic	9	7,374	7.05E-01	2.91E+01	1.79E-04	1.62E-02	1.62E-02	2.01E-03	2.57E-03	40	9	1.59E+00	7.10E+03	0.10	8.33E+01
C6-C8 Aromatic	9	7,979	4.88E-03	2.02E-01	1.79E-04	1.62E-02	1.62E-02	2.01E-03	2.57E-03	40	9	1.58E-01	7.81E+02	0.10	8.33E+01
C9-C18 Aliphatic	9	9,060	1.63E+00	6.72E+01	1.79E-04	1.62E-02	1.62E-02	2.01E-03	2.57E-03	40	9	6.32E+01	9.75E+02	0.10	8.33E+01
C9-C16 Aromatic	9	9,988	1.01E-02	4.17E-01	1.79E-04	1.62E-02	1.62E-02	2.01E-03	2.57E-03	40	9	3.16E+00	1.27E+02	0.10	8.33E+01
C5-C8 Aliphatic	9	7,374	7.05E-01	2.91E+01	1.79E-04	1.62E-02	2.01E-03	7.80E-03	6.60E-03	448.2	9	1.59E+00	4.09E+03	0.10	8.33E+01
C6-C8 Aromatic	9	7,979	4.88E-03	2.02E-01	1.79E-04	1.62E-02	2.01E-03	7.80E-03	6.60E-03	448.2	9	1.58E-01	6.82E+02	0.10	8.33E+01
C9-C18 Aliphatic	9	9,060	1.63E+00	6.72E+01	1.79E-04	1.62E-02	2.01E-03	7.80E-03	6.60E-03	448.2	9	6.32E+01	8.86E+02	0.10	8.33E+01
C9-C16 Aromatic	9	9,988	1.01E-02	4.17E-01	1.79E-04	1.62E-02	2.01E-03	7.80E-03	6.60E-03	448.2	9	3.16E+00	1.25E+02	0.10	8.33E+01
END															

INTERMEDIATE CALCULATIONS SHEET

Chemical	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	**Infinite source indoor attenuation coefficient, α (unitless)**	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Finite source β term (unitless)	Finite source ψ term $(sec)^{-1}$	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)	Finite source indoor attenuation coefficient, <α> (unitless)	Mass limit bldg. conc., $C_{building}$ ($\mu g/m^3$)	Finite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Final finite source bldg conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
C5-C8 Aliphatic	1.62E-02	4.00E+02	2.35E+50	**5.35E-04**	3.80E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01
C6-C8 Aromatic	1.62E-02	4.00E+02	2.35E+50	**5.35E-04**	4.18E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C9-C18 Aliphatic	1.62E-02	4.00E+02	2.35E+50	**5.35E-04**	5.22E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-01
C9-C16 Aromatic	1.62E-02	4.00E+02	2.35E+50	**5.35E-04**	6.81E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.0E-02
C5-C8 Aliphatic	1.62E-02	4.00E+02	2.35E+50	**1.85E-04**	7.55E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01
C6-C8 Aromatic	1.62E-02	4.00E+02	2.35E+50	**1.85E-04**	1.26E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C9-C18 Aliphatic	1.62E-02	4.00E+02	2.35E+50	**1.85E-04**	1.63E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-01
C9-C16 Aromatic	1.62E-02	4.00E+02	2.35E+50	**1.85E-04**	2.31E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.0E-02
END															