Appendix G-2

Limited Subsurface Investigation Report

Limited Subsurface Investigation Report

REPORT DATE: May 17, 2023

SITE INFORMATION
Gateway
11501 Jeffrey Road
Irvine, California 92620

PROJECT INFORMATION
AEI Project No. 477333

PREPARED FOR
The City of Irvine
Peter Carmichael
1 Civic Center Plaza
P.O. Box 19575
Irvine, California 92623

PREPARED BY
AEI Consultants
701 Campus Square W, Suite 723A
El Segundo, California 90245

1.800.801.3224
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AEI Consultants
701 Campus Square W, Suite 723A
El Segundo, California 90245

May 17, 2023

Peter Carmichael
The City of Irvine
1 Civic Center Plaza
P.O. Box 19575
Irvine, California 92623

Subject: Limited Subsurface Investigation
Gateway, 11501 Jeffrey Road
Irvine, California 92620
AEI Project No. 477333

Dear Mr. Carmichael,

This report presents the results of the Limited Subsurface Investigation conducted by AEI Consultants (AEI) at Gateway, 11501 Jeffrey Road, Irvine, California (Site) to assess the recognized environmental conditions (REC) identified in working Phase I Environmental Site Assessment. The investigation was performed in general accordance with the scope of services outlined in our proposal dated March 22, 2023 (AEI Proposal Number 89270-1), which was subsequently authorized on April 12, 2023.

AEI appreciates the opportunity to support this important project. If you have any questions, please do not hesitate to contact me.

Sincerely,

Lisa Henderson

Lisa Henderson
Project Manager II
701 Campus Square W, Suite 723A
El Segundo, California 90245
714.349.5760
lhenderson@aeiconsultants.com

TABLE OF CONTENTS

1.0 PURPOSE

This report presents the results of the Limited Subsurface Investigation (LSI) performed by AEI Consultants (AEI) at Gateway, 11501 Jeffrey Road, Irvine, California (Site). This investigation was completed to assess the recognized environmental condition (REC) identified in the working Phase I Environmental Site Assessment. The Gateway Site description, background, investigation procedures, findings, summary, and conclusions are presented in the following sections.

2.0 SITE DESCRIPTION AND BACKGROUND

The Gateway Site is approximately 80 acres of undeveloped land located in Hicks Canyon east of Portola Parkway, between the Jeffrey Road extension on the north and Bee Canyon Road on the south. See Figure 1.

This Site extends up-canyon (easterly) to the Natural Community Conservation Planning open space property. The lower portion of the canyon is wide and has ascending hillsides along the north and south sides. The upper portion of the broad canyon splits into two canyons, Hicks Canyon extending to the northeast and a tributary canyon extending to the southeast. There is a large bedrock ridge between the two canyons. The Gateway Site will be developed as a residential community, park, and will have an extension of the Jeffrey Open Space Trail. There are several structures at the Site and existing unrecorded encumbrances for construction and agricultural yard uses with trailer offices locally at the Site and these will be removed in the future. In the middle portion of the broad canyon, there is a large soil stockpile that will be used for the future Site grading. There are old agricultural houses near the confluence of the two creeks, and in the tributary canyon for various construction yards/uses.

At the time of the investigation, Jeffrey Road was rerouted to cut into the northwestern portion of the Site, as shown on Figure 2.

The ground surface at the Site is generally flat in the southern portion of the Site and is at a higher elevation at the northern portion, with a topographic gradient to the south. The Site lies at an elevation of approximately 470 feet above mean sea level (MSL) in the northern portion and approximately 333 feet MSL in the southern portion, along Portola Parkway. According to the information obtained from the State Water Resource Control Board's GeoTracker website for surrounding area, groundwater was expected to be encountered at 64 to 82 feet below ground surface (bgs) and groundwater flow direction beneath the Site is inferred to follow the topographic gradient, and flow to the south.

According to the working Phase I ESA, the Site has been used for agricultural purposes, there is the potential organochlorine pesticides (OCPs) and/or arsenic may have been used on the Site.

3.0 FIELD INVESTIGATION AND OBSERVATIONS

AEI was contracted to perform a Limited Subsurface Investigation to evaluate if the subsurface at the Site has been adversely impacted by former agricultural uses. Investigation efforts included the collection of shallow soil samples equally spaced across the Site in up to 18 equal sections. At the time of the investigation, the southern portion of the Site adjacent to the Jeffery Road was identified to be hardscape, used as equipment and vehicle storage areas. Jeffery Road was rerouted to trend south onto the Site as shown on Figure 2. No samples were collected in the hardscape areas or the area where Jeffery Road was relocated. The northern portion of the Site where the large soil stockpiles are currently located was not sampled. The terrain was overgrown with tall weeds and the rough terrain made it inaccessible.

The sample locations are shown on Figure 2. The completed Site activities are summarized below.

3.1 Health and Safety Plan

A site-specific health and safety plan was prepared, reviewed by on-site personnel, and kept on the Site for the duration of the fieldwork.

3.2 Soil Sample Collection

On April 20, 2023, a shallow soil sampling program was completed that was generally consistent with the protocol outlined in the Department of Toxic Substance Control (DTSC) *Interim Guidance for Sampling Agricultural Properties (Third Revision)* dated August 7, 2008. For the shallow sampling program, 14 separate sampling areas (Sections S-1 through S-9, S-11, S-12, S-13, S-16, and S-17) were evenly spaced across the Site, as shown on Figure 2. Soil samples were collected from clear, accessible areas within the Site.

Samples collected from Sections S-1 through S-9, S-12, S-13, S-16, and S-17 were composited in the field into thirteen (13) 2-, 3- or 4-point composite samples (S-1 through S-9, S-12, S-13, S-16, and S-17) and two duplicate samples were collected from areas S-8 (DUP-4) and S-16 (DUP-2). Due to hardscape, only one (1) sample was collected from Section 11 (S-11). Select discrete samples, one from each area (Sections S-1 through S-9, S-11, S-12, S-13, S-16, and S-17) were analyzed for arsenic, including two (2) discrete duplicate samples from Section 8 (DUP-3) and Section 16 (DUP-1).

Prior to sampling, loose vegetation and soil was cleared from the ground surface at each sample location and a small hole was dug to a depth of approximately six inches below ground surface with hand tools. A hand shovel was then used to scrape soil from the sides of the hole at a depth of between three and six inches and transfer the soil to clean, laboratory-supplied, 4-ounce glass jars for the discrete soil samples. Upon collection, each sample was labeled with the project name, project number, and the sampling date and time. After labeling, each sample was placed into an insulated, chilled ice chest containing ice for transport to the analytical laboratory. Chain-of-custody documentation was prepared and accompanied the samples to the analytical laboratory. A copy of the chain-of-custody documentation is included in Appendix A.

3.3 Decontamination Procedures and Investigation-Derived Waste

AEI personnel wore disposable Nitrile gloves during sample collection and changed gloves prior to and between each sample collection. Individual, new clean plastic bags were used for each sample collection and discarded once completed. No mechanical equipment was used for the sampling.

No investigation-derived waste requiring disposal or characterization was generated during the field activities.

3.4 Laboratory Analyses

The soil samples were submitted to the State of California certified laboratory, Alpha Scientific Corporation, of Cerritos, California. Fourteen composite soil samples (S-1 through S-9, S-11, S-12, S-13, S-16, and S-17-1) and two (2) duplicate composite samples (DUP-2 and DUP-4) were analyzed for OCPs using United States Environmental Protection Agency (US EPA) Testing Method 8081A. Fourteen discrete soil samples (S-1-3, S-2-1, S3-2, S-4-2, S-5-1, S-6-1, S-7-4, S-8-1, S-9-1, S-11-2, S-12-2, S-13-4, S-16-1, and S-17-2) and two (2) duplicate discrete samples (DUP-1 and DUP-3) were analyzed for arsenic using US EPA Testing Method 6010B.

Chain-of-custody documentation and the certified analytical report are provided in Appendix A. No further sample analysis was conducted as part of this investigation.

4.0 FINDINGS

The findings of this investigation are summarized below.

Analytical results generated during this investigation were compared to the Revision 2, July 2019 Environmental Screening Levels (ESLs) for residential, commercial/industrial, and construction worker scenarios issued by the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). Under most circumstances, and within the limitations described in the SFBRWQCB ESL guidance documents, the presence of a chemical in soil, at concentrations below the corresponding ESL guidance concentration may be assumed to not pose a significant threat to human health and the environment. Additional evaluation may be necessary at sites where a chemical is present at concentrations above the corresponding ESL. Additionally, detections of arsenic in soil samples were compared to the *Kearney Foundation of Soil Science Division of Agriculture and Natural Resources University of California Background Concentrations of Trace and Major Elements in California Soils* (Bradford 1996) to evaluate a background threshold.

For this investigation, AEI understands the Site is planned for redevelopment for a residential community, park, and will have an extension of the Jeffrey Open Space Trail. Therefore, analytical results generated during this investigation were compared to the ESLs assuming a direct shallow soil contact for residential, commercial, and construction worker use.

Table 1 presents a summary of the soil sample analytical results. The results can be further summarized as follows:

- 4,4'-Dichlorodiphenyldichloroethane (DDE) was detected in 14 composite soil samples and two (2) duplicate samples at concentrations ranging from 0.0307 milligrams per kilogram (mg/kg) (DUP-2) to 0.670 mg/kg (S-4), below the residential ESL of 2.7 mg/kg, the commercial/industrial ESL of 12 mg/kg, and the construction worker ESL of 81 mg/kg.
- 4,4'-Dichlorodiphenyltrichloroethane (DDT) was detected in 14 composite soil samples and two (2) duplicate samples at concentrations ranging from 0.0085 mg/kg (S-16) to 0.453 mg/kg (S-11), below the residential ESL of 1.9 mg/kg, the commercial/industrial ESL of 8.5 mg/kg, and the construction worker ESL of 57 mg/kg.
- Endrin was detected in 14 composite soil samples and two (2) duplicate samples at concentrations ranging from 0.0037 mg/kg (S-16 and DUP-2) to 0.0327 mg/kg (S-6), below the residential ESL of 21 mg/kg, the commercial/industrial ESL of 290 mg/kg, and the construction worker ESL of 74 mg/kg.
- No other OCPs were detected in soil samples above their respective laboratory method detection limits.
- Arsenic was detected in the 14 composite soil samples and two (2) duplicate samples at concentrations ranging from 2.4 mg/kg (S-1-3) to 5.8 mg/kg (DUP-3 and S-9-1), above the residential ESL of 0.07 mg/kg, the commercial/industrial ESL of 0.31 mg/kg, and the construction worker ESL of 2.00 mg/kg. However, the concentrations detected were below the maximum background concentration of 11.0 mg/kg.

5.0 SUMMARY AND CONCLUSIONS

AEI has completed a Limited Subsurface Investigation at the Site to evaluate if the near surface soil has been impacted by the historical agricultural use identified at the Site. Fourteen shallow soil composites and two (2) duplicate composite soil samples were collected and analyzed for OCPs and 14 discrete samples (including two [2] duplicates) were collected and analyzed for arsenic. The results are summarized as follows:

- 4,4'-DDD, 4-4'-DDT, and endrin were detected at concentrations below their respective direct contact ESLs for residential, commercial, and construction worker exposure in the soil samples collected at the Site.
- No other OCPs were detected in the soil samples collected and analyzed above their respective laboratory MDLs.
- Arsenic was not detected at concentrations above the maximum background concentration of 11.0 mg/kg in the soil samples collected at the Site.

Based on the DTSC guidance in the *Interim Guidance for Sampling Agricultural Properties (Third Revision)*, AEI assumes the agricultural chemicals (if used) were applied uniformly across the

Site in any given year and the variation across the Site would be relatively small. Therefore the lack of samples collected do not affect the results of this investigation, and no further assessment is warranted at this time.

6.0 REFERENCES

Department of Toxic Substance Control (DTSC), 2008b. *Interim Guidance for Sampling Agricultural Properties (Third Revision) (Interim Guidance)*, dated August 7.

G. R. Bradford, A. C. Change1, A. L. Page, D. Bakhtar, J. A. Frampton, and H. Wright, 1996. *Background Concentrations of Trace and Major Elements in California Soils, Kearney Foundation of Soil Science Division of Agricultural and Natural Resources University of California*, March.

San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), 2019, *Environmental Screening Levels*, Rev. 2, July.

7.0 REPORT LIMITATIONS AND RELIANCE

This report presents a summary of work completed by AEI Consultants. The completed work includes observations and descriptions of site conditions encountered. Where appropriate, it includes analytical results for samples taken during the course of the work. The number and location of samples are chosen to provide the requested information, subject to scope of work for which AEI was retained and limitations inherent in this type of work, but it cannot be assumed that they are representative of areas not sampled. This report should not be regarded as a guarantee that no further contamination beyond that which could have been detected within the scope of this investigation is present beneath the Site. Undocumented, unauthorized releases of hazardous material, the remains of which are not readily identifiable by visual inspection and are of different chemical constituents, are difficult and often impossible to detect within the scope of a chemical specific investigation.

Any conclusions and/or recommendations are based on these analyses and observations, and the governing regulations. Conclusions beyond those stated and reported herein should not be inferred from this document. These services were performed in accordance with generally accepted practices, in the environmental engineering and construction field, which existed at the time and location of the work. No other warranty, either expressed or implied, has been made.

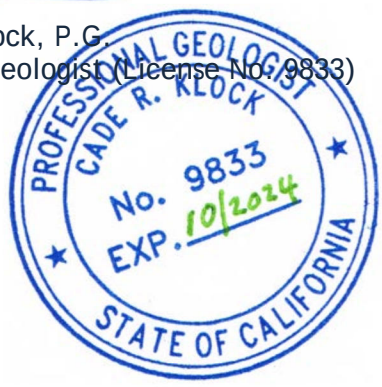
This investigation was prepared for the sole use and benefit of The City of Irvine. Both verbal and written, whether in draft or final, are for the benefit of The City of Irvine. This report has no other purpose and may not be relied upon by any other person or entity without the written consent of AEI. Either verbally or in writing, third parties may come into possession of this report or all or part of the information generated as a result of this work. In the absence of a written agreement with AEI granting such rights, no third parties shall have rights of recourse or recovery whatsoever under any course of action against AEI, its officers, employees, vendors, successors or assigns. Reliance is provided in accordance with AEI's Proposal and Standard Terms & Conditions executed by Peter Carmichael. The limitation of liability defined in the Terms and Conditions is the aggregate limit of AEI's liability to the client and all relying parties.

8.0 SIGNATURES

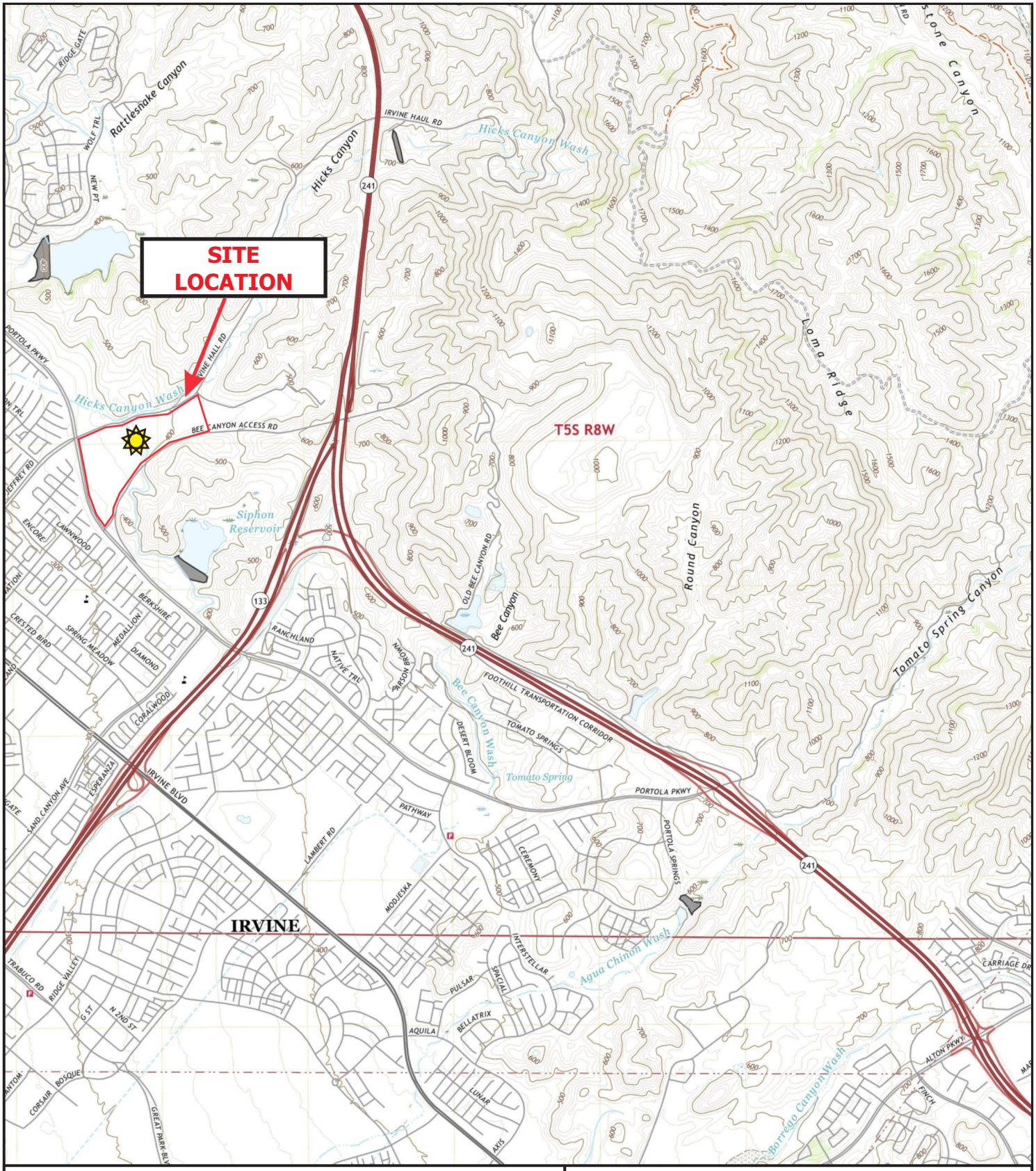
This document was prepared by, or under the direction of, the undersigned.

Kate Lamb
Regional Director

Cade Klock, P.G.
Senior Geologist (License No. 9833)



FIGURES



LEGEND

N

Source: USGS

SITE LOCATION MAP

AEI

Gateway
11501 Jeffrey Road
Irvine, California 92620

FIGURE 1
Project No. 477333

LEGEND

- Approximate Site Boundary
- 17-2 Soil Sampling Location
- Jeffery Road Re-Routed Location

SITE MAP

AEI

Gateway
11501 Jeffrey Road
Irvine, California 92620

FIGURE 2
Project No. 477333

TABLE

TABLE 1: SOIL SAMPLE DATA SUMMARY
Gateway, 11501 Jeffrey Road, Irvine, California 92620
AEI Project No. 477333

Location ID	Date	Depth (feet bgs)	Organochlorine Pesticides (OCPs) by U.S. EPA Method 8081A* 4,4'-DDE (mg/kg)	4,4'-DDT (mg/kg)	Endrin (mg/kg)	Other OCPs (mg/kg)	Arsenic by U.S. EPA Method 6010B (mg/kg)
S-1	4/20/2023	0.5	0.216*	0.0454	0.0181	ND<MDL	--
S-1-3			--	--	--	--	2.4
S-2	4/20/2023	0.5	0.234*	0.156*	0.0185	ND<MDL	--
S-2-1			--	--	--	--	2.8
S-3	4/20/2023	0.5	0.540*	0.324*	0.0235	ND<MDL	--
S-3-2			--	--	--	--	3.9
S-4	4/20/2023	0.5	0.670*	0.237*	0.0286	ND<MDL	--
S-4-2			--	--	--	--	3.8
S-5	4/20/2023	0.5	0.545*	0.287*	0.0243	ND<MDL	--
S-5-1			--	--	--	--	3.7
S-6	4/20/2023	0.5	0.565*	0.411*	0.0327	ND<MDL	--
S-6-1			--	--	--	--	3.9
S-7	4/20/2023	0.5	0.280*	0.180*	0.0289	ND<MDL	--
S-7-4			--	--	--	--	3.4
S-8	4/20/2023	0.5	0.505*	0.411*	0.0254	ND<MDL	--
DUP-4			0.457*	0.345*	0.0252	ND<MDL	--
S-8-1			--	--	--	--	5.2
DUP-3			--	--	--	--	5.8
S-9	4/20/2023	0.5	0.490*	0.391*	0.0240	ND<MDL	--
S-9-1			--	--	--	--	5.8
S-11	4/20/2023	0.5	0.525*	0.453*	0.0299	ND<MDL	--
S-11-2			--	--	--	--	4.4
S-12	4/20/2023	0.5	0.530*	0.246*	0.0222	ND<MDL	--
S-12-2			--	--	--	--	3.6
S-13	4/20/2023	0.5	0.0404	0.0117	0.0058	ND<MDL	--
S-13-4			--	--	--	--	4.2
S-16	4/20/2023	0.5	0.0329	0.0085	0.0037	ND<MDL	--
DUP-2			0.0307	0.0098	0.0037	ND<MDL	--
S-16-1			--	--	--	--	4.5
DUP-1			--	--	--	--	4.1
S-17	4/20/2023	0.5	0.0616	0.0251	0.0067	ND<MDL	--
S-17-2			--	--	--	--	4.4
Comparison Values based on California Maximum Background Concentration in mg/kg*			--	--	--	--	11
Comparison Values in mg/kg - Environmental Screening Levels, Table S-1, Residential; SFBRWQCB, July 2019 Rev. 2			2.7	1.9	21	Varies	0.07
Comparison Values in mg/kg - Environmental Screening Levels, Table S-1, Comm/Ind; SFBRWQCB, July 2019 Rev. 2			12	8.5	290	Varies	0.31
Comparison Values in mg/kg - Environmental Screening Levels, Table S-1, Construction Worker; SFBRWQCB, July 2019 Rev. 2			81	57	74	Varies	2.00

Notes:

Analyses performed by Alpha Scientific Corporation, Environmental Laboratories of Cerritos, California
Samples collected for OCP analysis were field-composited

mg/kg	Milligrams per kilogram
ND<	Not detected at or above the method detection limit (MDL) shown
bgs	Below ground surface
EPA	Environmental Protection Agency
Table S-1	Soil-Direct Exposure Human Health Risk Levels

APPENDIX A

LABORATORY ANALYTICAL REPORT

ALPHA SCIENTIFIC CORPORATION
Environmental Laboratories

04-26-2023

Ms. Kate Lamb
AEI Consultants
701 Campus Square West, Suite 723A
El Segundo, CA 90245

Project: 477333
Project Site: Irvine Ranch
Sample Date: 04-20-2023
Lab Job No.: AI304037

Dear Ms. Lamb:

Enclosed please find the analytical report for the sample(s) received by Alpha Scientific Corporation on 04-20-2023 and analyzed by the following EPA methods:

EPA 6010B (Arsenic, TTLC)
EPA 8081A (Organochlorine Pesticides)

All analyses have met the QA/QC criteria of this laboratory.

The sample(s) arrived in good conditions (i.e., chilled, intact) and with a chain of custody record attached.

Alpha Scientific Corporation is a CA ELAP certified laboratory (Certificate Number 3007). Thank you for giving us the opportunity to serve you. Please feel free to call me at (562) 809-8880 if our laboratory can be of further service to you.

Sincerely,

Roger Wang, Ph. D.
Laboratory Director

Enclosures

This cover letter is an integral part of this analytical report.

Client:	AEI Consultants	Lab Job No.:	AI304037
Project:	477333		
Project Site:	Irvine Ranch	Date Sampled:	04-20-2023
Matrix:	Soil	Date Received:	04-20-2023
Batch No.:	0421A-MS1	Date Analyzed:	04-21-2023
		Date Reported:	04-26-2023

EPA 6010B (Arsenic, TTLC)
Reporting Units: mg/kg (ppm)

Sample I.D.	Lab ID	Arsenic, TTLC	MDL	PQL
Method Blank		ND	1	2
S-1-3	AI304037-2	2.4	1	2
S-2-1	AI304037-4	2.8	1	2
S-3-2	AI304037-6	3.9	1	2
S-4-2	AI304037-8	3.8	1	2
S-5-1	AI304037-10	3.7	1	2
S-6-1	AI304037-12	3.9	1	2
S-7-4	AI304037-14	3.4	1	2
S-8-1	AI304037-16	5.2	1	2
S-9-1	AI304037-18	5.8	1	2
S-11-2	AI304037-20	4.4	1	2
S-12-2	AI304037-22	3.6	1	2
S-13-4	AI304037-24	4.2	1	2
S-16-1	AI304037-26	4.5	1	2
S-17-2	AI304037-28	4.4	1	2
DUP-1	AI304037-29	4.1	1	2
DUP-3	AI304037-31	5.8	1	2

MDL: Method Dectection Limit;
PQL: Practical Quantitation Limit;
ND: Not Detected (at the specified limit).

Client: AEI Consultants
Project: 477333
Project Site: Irvine Ranch
Matrix: Soil
Extraction Method: EPA 3550B
Batch No. AD21-PS1

Lab Job No.: AI304037

Date Sampled: 04-20-2023
Date Received: 04-20-2023
Date Extracted: 04-21-2023
Date Analyzed: 04-21-2023
Date Reported: 04-26-2023

EPA 8081A (Organochlorine Pesticides)
Reporting Unit: µg/kg (ppb)

LAB SAMPLE I.D.			MB	AI304037-1	AI304037-3	AI304037-5	AI304037-7	AI304037-9
CLIENT SAMPLE I.D.				S-1	S-2	S-3	S-4	S-5
DILUTION FACTOR			1	5	5	5	5	5
COMPOUND	MDL	PQL						
Alpha-BHC	2.0	5.0	ND	ND	ND	ND	ND	ND
Gamma-BHC (Lindane)	2.0	5.0	ND	ND	ND	ND	ND	ND
Heptachlor	2.0	5.0	ND	ND	ND	ND	ND	ND
Aldrin	2.0	5.0	ND	ND	ND	ND	ND	ND
Beta-BHC	2.0	5.0	ND	ND	ND	ND	ND	ND
Delta-BHC	2.0	5.0	ND	ND	ND	ND	ND	ND
Heptachlor Epoxide	2.0	5.0	ND	ND	ND	ND	ND	ND
Endosulfan I	2.0	5.0	ND	ND	ND	ND	ND	ND
4,4'-DDE	2.0	5.0	ND	216*	234*	540*	670*	545*
Dieldrin	2.0	5.0	ND	ND	ND	ND	ND	ND
Endrin	2.0	5.0	ND	18.1	18.5	23.5	28.6	24.3
4,4'-DDD	2.0	5.0	ND	ND	ND	ND	ND	ND
Endosulfan II	2.0	5.0	ND	ND	ND	ND	ND	ND
4,4'-DDT	2.0	5.0	ND	45.4	156*	324*	237*	287*
Endrin Aldehyde	2.0	5.0	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	2.0	5.0	ND	ND	ND	ND	ND	ND
Methoxychlor	2.0	5.0	ND	ND	ND	ND	ND	ND
Alpha-Chlordane	2.0	5.0	ND	ND	ND	ND	ND	ND
Gamma-Chlordane	2.0	5.0	ND	ND	ND	ND	ND	ND
Total Chlordane	15	25	ND	ND	ND	ND	ND	ND
Toxaphene	30	100	ND	ND	ND	ND	ND	ND
SURROGATE	Accept Limit%		%RC	%RC	%RC	%RC	%RC	%RC
Surrogate Standard	60-140		126	120	130	124	129	123

MDL=Method Detection Limit; PQL=Practical Quantitation Limit; MB=Method Blank;
ND=Not Detected (below DF × MDL);
J=Trace concentration, result is between MDL and PQL;
* = Obtained from a higher dilution analysis.
%RC=Percent Recovery.

Client:	AEI Consultants	Lab Job No.:	AI304037
Project:	477333		
Project Site:	Irvine Ranch	Date Sampled:	04-20-2023
Matrix:	Soil	Date Received:	04-20-2023
Extraction Method:	EPA 3550B	Date Extracted:	04-21-2023
Batch No.	AD21-PS1	Date Analyzed:	04-21-2023
		Date Reported:	04-26-2023

EPA 8081A (Organochlorine Pesticides)
Reporting Unit: µg/kg (ppb)

LAB SAMPLE I.D.			MB	AI304037-11	AI304037-13	AI304037-15	AI304037-17	AI304037-19
CLIENT SAMPLE I.D.				S-6	S-7	S-8	S-9	S-11
DILUTION FACTOR			1	5	5	5	5	5
COMPOUND	**MDL**	**PQL**						
Alpha-BHC	2.0	5.0	ND	ND	ND	ND	ND	ND
Gamma-BHC (Lindane)	2.0	5.0	ND	ND	ND	ND	ND	ND
Heptachlor	2.0	5.0	ND	ND	ND	ND	ND	ND
Aldrin	2.0	5.0	ND	ND	ND	ND	ND	ND
Beta-BHC	2.0	5.0	ND	ND	ND	ND	ND	ND
Delta-BHC	2.0	5.0	ND	ND	ND	ND	ND	ND
Heptachlor Epoxide	2.0	5.0	ND	ND	ND	ND	ND	ND
Endosulfan I	2.0	5.0	ND	ND	ND	ND	ND	ND
4,4'-DDE	2.0	5.0	ND	565*	280*	505*	490*	525*
Dieldrin	2.0	5.0	ND	ND	ND	ND	ND	ND
Endrin	2.0	5.0	ND	32.7	28.9	25.4	24.0	29.9
4,4'-DDD	2.0	5.0	ND	ND	ND	ND	ND	ND
Endosulfan II	2.0	5.0	ND	ND	ND	ND	ND	ND
4,4'-DDT	2.0	5.0	ND	411*	180*	411*	391*	453*
Endrin Aldehyde	2.0	5.0	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	2.0	5.0	ND	ND	ND	ND	ND	ND
Methoxychlor	2.0	5.0	ND	ND	ND	ND	ND	ND
Alpha-Chlordane	2.0	5.0	ND	ND	ND	ND	ND	ND
Gamma-Chlordane	2.0	5.0	ND	ND	ND	ND	ND	ND
Total Chlordane	15	25	ND	ND	ND	ND	ND	ND
Toxaphene	30	100	ND	ND	ND	ND	ND	ND
SURROGATE	**Accept Limit%**		**%RC**	**%RC**	**%RC**	**%RC**	**%RC**	**%RC**
Surrogate Standard	60-140		126	125	127	125	122	129

MDL=Method Detection Limit; PQL=Practical Quantitation Limit; MB=Method Blank;
ND=Not Detected (below DF × MDL);
J=Trace concentration, result is between MDL and PQL;
* = Obtained from a higher dilution analysis.
%RC=Percent Recovery.

Client:	AEI Consultants	Lab Job No.:	AI304037
Project:	477333		
Project Site:	Irvine Ranch	Date Sampled:	04-20-2023
Matrix:	Soil	Date Received:	04-20-2023
Extraction Method:	EPA 3550B	Date Extracted:	04-21-2023
Batch No.	AD21-PS1	Date Analyzed:	04-21-2023
		Date Reported:	04-26-2023

EPA 8081A (Organochlorine Pesticides)
Reporting Unit: µg/kg (ppb)

LAB SAMPLE I.D.			MB	AI304037-21	AI304037-23	AI304037-25	AI304037-27	AI304037-30
CLIENT SAMPLE I.D.				S-12	S-13	S-16	S-17	DUP-2
DILUTION FACTOR			1	1	1	1	1	1
COMPOUND	**MDL**	**PQL**						
Alpha-BHC	2.0	5.0	ND	ND	ND	ND	ND	ND
Gamma-BHC (Lindane)	2.0	5.0	ND	ND	ND	ND	ND	ND
Heptachlor	2.0	5.0	ND	ND	ND	ND	ND	ND
Aldrin	2.0	5.0	ND	ND	ND	ND	ND	ND
Beta-BHC	2.0	5.0	ND	ND	ND	ND	ND	ND
Delta-BHC	2.0	5.0	ND	ND	ND	ND	ND	ND
Heptachlor Epoxide	2.0	5.0	ND	ND	ND	ND	ND	ND
Endosulfan I	2.0	5.0	ND	ND	ND	ND	ND	ND
4,4'-DDE	2.0	5.0	ND	530*	40.4	32.9	61.6	30.7
Dieldrin	2.0	5.0	ND	ND	ND	ND	ND	ND
Endrin	2.0	5.0	ND	22.2	5.8	3.7	6.7	3.7
4,4'-DDD	2.0	5.0	ND	ND	ND	ND	ND	ND
Endosulfan II	2.0	5.0	ND	ND	ND	ND	ND	ND
4,4'-DDT	2.0	5.0	ND	246*	11.7	8.5	25.1	9.8
Endrin Aldehyde	2.0	5.0	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	2.0	5.0	ND	ND	ND	ND	ND	ND
Methoxychlor	2.0	5.0	ND	ND	ND	ND	ND	ND
Alpha-Chlordane	2.0	5.0	ND	ND	ND	ND	ND	ND
Gamma-Chlordane	2.0	5.0	ND	ND	ND	ND	ND	ND
Total Chlordane	15	25	ND	ND	ND	ND	ND	ND
Toxaphene	30	100	ND	ND	ND	ND	ND	ND
SURROGATE	**Accept Limit%**		**%RC**	**%RC**	**%RC**	**%RC**	**%RC**	**%RC**
Surrogate Standard	60-140		126	125	126	127	128	128

MDL=Method Detection Limit; PQL=Practical Quantitation Limit; MB=Method Blank;
ND=Not Detected (below DF × MDL);
J=Trace concentration, result is between MDL and PQL;
* = Obtained from a higher dilution analysis.
%RC=Percent Recovery.

Client: AEI Consultants
Project: 477333
Project Site: Irvine Ranch
Matrix: Soil
Extraction Method: EPA 3550B
Batch No. AD21-PS1

Lab Job No.: AI304037

Date Sampled: 04-20-2023
Date Received: 04-20-2023
Date Extracted: 04-21-2023
Date Analyzed: 04-21-2023
Date Reported: 04-26-2023

EPA 8081A (Organochlorine Pesticides)
Reporting Unit: µg/kg (ppb)

LAB SAMPLE I.D.			MB	AI304037-32				
CLIENT SAMPLE I.D.				DUP-4				
DILUTION FACTOR			1	5				
COMPOUND	**MDL**	**PQL**						
Alpha-BHC	2.0	5.0	ND	ND				
Gamma-BHC (Lindane)	2.0	5.0	ND	ND				
Heptachlor	2.0	5.0	ND	ND				
Aldrin	2.0	5.0	ND	ND				
Beta-BHC	2.0	5.0	ND	ND				
Delta-BHC	2.0	5.0	ND	ND				
Heptachlor Epoxide	2.0	5.0	ND	ND				
Endosulfan I	2.0	5.0	ND	ND				
4,4'-DDE	2.0	5.0	ND	457*				
Dieldrin	2.0	5.0	ND	ND				
Endrin	2.0	5.0	ND	25.2				
4,4'-DDD	2.0	5.0	ND	ND				
Endosulfan II	2.0	5.0	ND	ND				
4,4'-DDT	2.0	5.0	ND	345*				
Endrin Aldehyde	2.0	5.0	ND	ND				
Endosulfan Sulfate	2.0	5.0	ND	ND				
Methoxychlor	2.0	5.0	ND	ND				
Alpha-Chlordane	2.0	5.0	ND	ND				
Gamma-Chlordane	2.0	5.0	ND	ND				
Total Chlordane	15	25	ND	ND				
Toxaphene	30	100	ND	ND				
SURROGATE	**Accept Limit%**		**%RC**	**%RC**				
Surrogate Standard	60-140		126	128				

MDL=Method Detection Limit; PQL=Practical Quantitation Limit; MB=Method Blank;
ND=Not Detected (below DF × MDL);
J=Trace concentration, result is between MDL and PQL;
* = Obtained from a higher dilution analysis.
%RC=Percent Recovery.

04-26-2023

EPA 6010B for Arsenic
Batch QA/QC Report

Client:	AEI Consultants	Lab Job No.:	AI304037
Project:	477333		
Matrix:	Soil	Lab Sample I.D.:	AI304037-2
Batch No.:	0421A-MS1	Date Analyzed:	04-21-2023

I. MS/MSD Report
Unit: ppm

Analyte	EPA Method	Sample Conc.	Spike Conc.	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
Arsenic (As)	6010B	2.6	4.0	120.4	126.6	5.0	30	70-130

II. LCS Result
Unit: ppm

Analyte	EPA Method	LCSD Value	True Value	Rec.%	Accept. Limit
Arsenic (As)	6010B	4.650	4.0	116.3	80-120

ND: Not Detected (at the specified limit).

04-26-2023

EPA 8081A (Pesticides)
Batch QA/QC Report

Client:	AEI Consultants	Lab Job No.:	AI304037
Project:	477333		
Matrix:	Soil	Lab Sample I.D.:	A304038-1
Batch No:	AD21-PS1	Date Analyzed:	04-21-2023

I. MS/MSD Report
Unit: ppb

Analyte	Sample Conc.	Spike Conc.	MS	MSD	MS %Rec.	MSD %Rec.	% RPD	%RPD Accept. Limit	%Rec Accept. Limit
Gamma-BHC	ND	10	9.36	9.31	93.6	93.1	0.5	30	46-127
Heptachlor	ND	10	10.8	10.6	108.0	106.0	1.9	30	31-134
Aldrin	ND	10	8.99	9.48	89.9	94.8	5.3	30	36-132
Dieldrin	ND	20	16.6	16.5	83.0	82.5	0.6	30	21-134
Endrin	ND	20	20.1	19.5	100.5	97.5	3.0	30	42-139
4,4'-DDT	ND	20	17.3	18.3	86.5	91.5	5.6	30	21-134

II. LCS Result
Unit: ppb

Analyte	LCS Report Value	True Value	Rec.%	Accept. Limit
Gamma-BHC	19.9	20	99.5	80-120
Heptachlor	21.8	20	109.0	80-120
Aldrin	21.0	20	105.0	80-120
Dieldrin	20.8	20	104.0	80-120
Endrin	22.1	20	110.5	80-120
4,4'-DDT	21.1	20	105.5	80-120

ND: Not Detected.

ALPHA SCIENTIFIC CORPORATION
CHAIN OF CUSTODY RECORD

Lab Job Number A1304037

Client: AEI Consultants

Address: 701 Campus Sq W, Ste 723A El Segundo CA

Report Attention: K Lamb | Phone: | Fax: | Sampled by: K Lamb R Mussel

Project Name/No.: 477333 | Project Site: Irvine Ranch

T.A.T. Requested: ☐ 8 hrs ☐ 24 hrs ☒ 48 hrs ☐ 3 day ☐ 4 day ☐ 5 days+

Sample Condition: ☒ Chilled ☒ Intact ☐ Sample seals

Client Sample ID	Lab Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No.,type* & size of container	TPH-Gasoline	TPH-Diesel	8260B (BTEX, Oxygenates)	8260B (VOCs)	8270C (SVOCs)	CAM Metals	8082 (PCBs)	Arsenic 6010B	OCPs 8081A	Remark
S-17	A1304037-27	4/20/23	12:07	S	N	1									X	
S-17-2	-28		12:09											X		
S-13-4	-24		1143											X		
S-13	-23		1150												X	
S-16-1	-26		1156											X		
DUP-1	-29		1156											X		
S-16	-25		1158												X	
DUP-2	-30		1158												X	
S-3-2	-6		1125											X		
S-3	-5		1130												X	
S-2-1	-4		1047											X		
S-2	-3		1050												X	
S-5-1	-10		11:17											X		
S-5	-9		11:20												X	
S-6-1	-12		11:23											X		
S-6	-11		1123												X	

Relinquished by	Company	Date	Time	Received by	Company	Date	Time
[signature]	AEI	4/20/23	1336	[signature]	ASL	4-20-23	1336
Relinquished by	Company	Date	Time	Received by	Company	Date	Time

Container types: A=Air Bag, G=Glass bottle, E=EnCore, M=Metal Tube, P=Plastic bottle, V=VOA vial

Alpha Scientific Corporation
16760 Gridley Road
Cerritos, CA 90703

Email: asc90703@gmail.com
Tel: (562) 809-8880
Fax: (562) 809-8801

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expenses.
Distribution: White with report, Yellow to courier.

ALPHA SCIENTIFIC CORPORATION
CHAIN OF CUSTODY RECORD

Lab Job Number A1304037

Client: AEI

Address: AEI @ Signed

Report Attention: K Lamb | Phone: | Fax: | Sampled by: K Lamb K Meissi

Project Name/No.: 477333 | Project Site: Irvine Ranch

Client Sample ID	Lab Sample ID	Sample Collection Date	Sample Collection Time	Matrix Type	Sample Preserve	No.,type* & size of container	TPH-Gasoline	TPH-Diesel	8260B (BTEX, Oxygenates)	8260B (VOCs)	8270C (SVOCs)	CAM Metals	8082 (PCBs)	Arsenic 6010B	OCPs 8081A				Remark
S-4-2	A1304037-8	4/20/23	1130	S	N	1								X					
S-4	-7		1132												X				
S-8-1	-16		1037											X					
S-8	-15		1039												X				
DUP-3	-31		1037											X					
DUP-4	-32		1039												X				
S-12-2	-22		1027											X					
S-12	-21		1028												X				
S-1-3	-2		945											X					
S-1	-1		9:47												X				
S-7-4	-14		1033											X					
S-7	-13		1034												X				
S-11-2	-20		1026											X					
S-11	-19		1026												X				
S-9-1	-18		1014											X					
S-9	-17	↓	10:20	↓	↓	↓									X				

Analyses Requested

T.A.T. Requested: ☐ 8 hrs ☐ 24 hrs ☐ 48 hrs ☐ 3 day ☐ 4 day ☒ 5 days+

Sample Condition: ☒ Chilled ☒ Intact ☐ Sample seals

Relinquished by	Company	Date	Time	Received by	Company	Date	Time
K Lamb	AEI	4/20/23	1336	K Meissi	ASL	4-20-23	1336
Relinquished by	Company	Date	Time	Received by	Company	Date	Time

Container types: M=Metal Tube, A=Air Bag, P=Plastic bottle, G=Glass bottle, V=VOA vial, E=EnCore

Alpha Scientific Corporation
16760 Gridley Road
Cerritos, CA 90703

Email: asc90703@gmail.com
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Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expenses.
Distribution: White with report, Yellow to courier.

Alpha Scientific Corporation
Sample Acceptance Checklist

Section 1

Client: AET Project: 477333 Lab Job# A1304037

Date Received: 4-20-23

Sample(s) received in cooler(s)? Yes ✓ No____ (skip to Section 2)

Cooler(s) packed with: Ice ✓ Ice Packs____ Packing Material____

Cooler Temperature (°C) : #1: 4°C #2:____ #3:____ #4:____ #5____

(Acceptable range is 0°C to 6°C or arriving on ice for samples received on the same day as collected.)

(Ambient Temperature for vapor or air samples is acceptable).

If sample(s) received outside acceptable range, Project Manager contacted by(Personnel Initial):____

Section 2	YES	NO	N/A
Was a COC received?	✓		
Were client sample IDs present?	✓		
Were sample(s) collection dates present?	✓		
Was the COC signed?	✓		
Were tests clearly indicated?	✓		
Did all samples arrive intact? If no, indicate below.	✓		
Did all container labels agree with COC?	✓		
Were correct containers used for the tests required?	✓		
Was there sufficient sample amount for requested tests?	✓		
Were the samples correctly preserved?	✓		
Was there headspace in VOA vials?			✓
Were Custody seals present?		✓	
If yes-were they intact?			✓

Section 3

Explanations/Comments:____

Section 4

Was the Project Manager notified of anomalies? Yes____ No____ N/A ✓

Via Phone: By: ____ Date/Time ____

By Email: Sent to:____

Project Manager's response:____

Completed by: ML Date: 4-20-23

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