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**SOIL SCREENING SURVEY REPORT  
FOR  
PHASE 2 NEW ANIMAL QUARANTINE STATION AT  
HDOA LARGE ANIMAL HOLDING FACILITY  
99-951 HALAWA VALLEY STREET  
AIEA, ISLAND OF OAHU 96701**

**MNA PROJECT 3048\_2  
AHL PROJECT No. 6930.001  
DAGS JOB No. 12-27-5713**

**NOVEMBER 15, 2021**



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## LIST OF ABBREVIATIONS

AQS	Animal Quarantine Station
bgs	below ground surface
COC	Chain-of-Custody
COPC	Chemical of Potential Concern
DU	Decision Unit
EAL	Environmental Action Level
EPA	Environmental Protection Agency, United States
ESA	Environmental Site Assessment
ft	foot/feet
HDOA	Hawaii Department of Agriculture
HDOH	Hawaii Department of Health
HEER	Hazard Evaluation and Emergency Response
HREC	Historical Recognized Environmental Condition
IDW	Investigation-Derived Waste
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
mg/kg	milligrams per kilogram
MI	Multi-Incremental
MNA	Myounghee Noh & Associates, L.L.C.
MS/MSD	Matrix Spike/Matrix Spike Duplicate
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
SAP	Sampling and Analysis Plan
SVOC	Semi-Volatile Organic Compounds
TGM	Technical Guidance Manual
TPH-DRO/RRO	Total Petroleum Hydrocarbons as Diesel/Residual Range Organics
UCL	Upper Confidence Limit

## EXECUTIVE SUMMARY

Myounghee Noh & Associates, L.L.C., under contract with Architects Hawaii Limited, conducted a soil screening survey for the new Hawaii Department of Agriculture (HDOA) Animal Quarantine Station (AQS), located at the current HDOA Large Animal Holding Facility, 99-951 Halawa Valley Street, Aiea, Hawaii. The objective of the screening survey was to identify the presence of potentially hazardous soil contaminants, and associated risks that may be encountered during soil disturbance and earthwork for the construction of the new AQS.

The project site is located in an area with unknown fill material. Thus, petroleum constituents, heavy metals, and polychlorinated biphenyls (PCB) were included as Chemicals of Potential Concern (COPC). The Large Animal Holding Facility was built prior to 1978, thus, heavy metal such as lead was a COPC for the building areas and the previous application of pesticides was considered a potential historical contamination source for all project areas. Based on this assessment and review of a 2018 Phase I Environmental site Assessment (ESA), the COPCs were identified as the following:

- Total Petroleum Hydrocarbons as Diesel/Residual Range Organics (TPH-DRO/RRO)
- Semi-Volatile Organic Compounds (SVOC)
- Resource Conservation and Recovery Act (RCRA) 8 Metals
- PCB
- Organochlorine pesticides

In August 2021, multi-incremental (MI) soil samples were collected from seven Decision Units (DU) around the current HDOA Large Animal Holding Facility. The following table provides a description of sampling locations.

Decision Unit	Location	Sampling Depths (ft bgs)	Chemicals of Potential Concern	Rationale
1	Building perimeters of the Large Animal Holding Facility	0-0.5 0.5-1	Pesticides Lead/Arsenic	<ul style="list-style-type: none"> <li>• Potential former use of pesticides</li> <li>• Flaking of lead-containing or lead-based paints</li> </ul>
2	Paved parking areas and driveways of the project site	0-1 1-2	TPH-DRO/RRO, SVOC Heavy Metals, PCB Pesticides	<ul style="list-style-type: none"> <li>• Unknown fill material</li> <li>• Potential former use of pesticides</li> </ul>
3	Vegetated area to the north of the buildings and south of Halawa Valley Street	0-1 1-2	TPH-DRO/RRO, SVOC Heavy Metals, PCB Pesticides	<ul style="list-style-type: none"> <li>• Unknown fill material</li> <li>• Potential former use of pesticides</li> </ul>
4	Pasture, north area	0-1 1-2	TPH-DRO/RRO, SVOC Heavy Metals, PCB Pesticides	<ul style="list-style-type: none"> <li>• Unknown fill material</li> <li>• Potential former use of pesticides</li> </ul>
5	Pasture, east area	0-1 1-2	TPH-DRO/RRO, SVOC Heavy Metals, PCB Pesticides	<ul style="list-style-type: none"> <li>• Unknown fill material</li> <li>• Potential former use of pesticides</li> </ul>
6	Pasture, west area	0-1 1-2	TPH-DRO/RRO, SVOC Heavy Metals, PCB Pesticides	<ul style="list-style-type: none"> <li>• Unknown fill material</li> <li>• Potential former use of pesticides</li> </ul>
7	Pasture, south area	0-1	TPH-DRO/RRO, SVOC	<ul style="list-style-type: none"> <li>• Unknown fill material</li> </ul>

Decision Unit	Location	Sampling Depths (ft bgs)	Chemicals of Potential Concern	Rationale
		1-2	Heavy Metals, PCB Pesticides	• Potential former use of pesticides

ft bgs	feet below ground surface	TPH-DRO/RRO	Total Petroleum Hydrocarbons as Diesel/Residual Range Organics
PCB	Polychlorinated Biphenyls		
SVOC	Semi-Volatile Organic Compounds		

The analytical results were compared to the Hawaii Department of Health Tier 1 Environmental Action Levels (EAL) for sites located less than 150 meters from surface water and above a drinking water resource for unrestricted (residential) and restricted (commercial/industrial) land use.

No COPCs were measured exceeding the Tier 1 EALs for unrestricted land use. Measurable levels of heavy metals (arsenic, barium, chromium, and lead), PCB (as Aroclor-1260), and pesticides (technical chlordane) were found, but levels were below the EALs for unrestricted land use. No measurable levels of TPH-DRO/RRO and SVOC were found. A steep vegetated area was located to the south of the parking area (DU-2) was inaccessible to the drill rig and was not sampled. Assume soil in the area has levels of Aroclor-1260, arsenic, barium, chromium, and chlordane below the EALs. Based on the review of previous site assessments and findings of the soil screening survey, MNA recommends the following:

- Soils may be used as backfill in the same area and depths where they are excavated from. Excess soils that will be transported offsite for disposal must be characterized to ensure compliance with recipient guidelines and requirements. For soil or waste characterization, the Contractor must collect representative soil samples (e.g., multi-incremental sampling technique).
- For other demolition/construction areas, there are reportable levels of PCB, heavy metals, and pesticides. While the findings were below the EALs for unrestricted land use, earthwork may cause potential exposures to the site workers and nearby facility users via fugitive dust. The Contractor must anticipate hazards and implement engineering controls, such as water misting and wind barriers, to prevent exposures to humans and the environment.
- Erosion control measures shall be implemented and precautions must be taken to mitigate impacts to storm drain systems and/or the nearby surface water, Halawa Stream. Install double best management practices (e.g. silt fence, filter socks) within 75 feet of any opening to Halawa Stream to ensure the stream is protected from pollution or erosion (soil, sediments, or other contaminants).

## 1.0 INTRODUCTION

Myounghee Noh & Associates, L.L.C. (MNA), under contract with Architects Hawaii Limited, conducted a soil screening survey for Phase 2 of the Animal Quarantine Station (AQS) Relocation Project, Halawa Valley Street, Aiea, Island of Oahu. The project site is an approximate 6-acre portion of Tax Map Key (TMK) (1) 9-9-010:054 (por.). The project includes the construction of a new AQS, including an AQS office, maintenance building, indoor and outdoor kennels, parking, and utility infrastructure. The site is currently a large animal holding facility with sheds, parking area and driveways, and pastures (Appendix A, Figure 1).

In 2018, a Phase I Environmental Site Assessment (ESA) was conducted to identify any *recognized environmental conditions (REC)* at the project site. *RECs* were identified at the project site, as well as other environmental concerns. Based on the Phase I ESA findings and coordination with the Hawaii Department of Health (HDOH) Hazard Evaluation and Emergency Response (HEER) Office, MNA developed a Chemicals of Potential Concern (COPCs) list and prepared a Sampling and Analysis Plan (SAP), which was approved by the HDOH HEER Office prior to soil sample collection (Myounghee Noh & Associates, L.L.C., 2021). Soil sampling was conducted to determine if COPCs are present in levels at or above the HDOH Tier 1 Environmental Action Levels (EAL).

## 2.0 POTENTIAL SITE CONTAMINATION SOURCES

### 2.1 Previous Site Assessments

In 2018, Louis Berger conducted a Phase I ESA for the project site. The Phase I ESA was for an approximately 35-acre site, encompassing TMK (1) 9-9-010:006 (por.), 046 (por.), 054, 057, 058, and the land area below the H-3 overpass (no TMK). The Phase I ESA revealed the following *RECs* in connection with TMK (1) 9-9-010:054, the current HDOA land area planned for construction of the new AQS.

#### REC:

- *Corroded and leaking drums:* Two severely corroded and leaking drums containing a white powder were observed under the elevated H-3 Freeway, located northeast of the proposed AQS project site.

#### Historical REC (HREC):

- *SPILLS Site:* The site was listed in the SPILLS database for a release of 30 gallons of non-polychlorinated biphenyls (PCB) transformer oil. The final result was State On-Scene Coordinator No Further Action. Records did not indicate the location of the release.

#### Other environmental concerns:

- No information on the operation and activities conducted by the U.S. Navy at the site from 1942 to 1968 were identified. All chemicals of potential concern (COPC) related to the U.S. Navy's possible activities should be considered. The layout of future facilities should



consider any environmental requirements, as well as historical operations and related COPCs.

- Waste piles were observed in several locations throughout the Site, to the southeast of the proposed AQS project site (Louis Berger U.S., 2018).

## **2.2 Chemicals of Potential Concern**

Based on the available previous assessment and record review, the COPCs were identified as petroleum constituents, PCB, organochlorine pesticides, and heavy metals. Soil sampling was conducted for surface (0-1 ft below ground surface [bgs]) and near-surface (1-2 ft bgs) soil, as this soil was most likely to contain COPCs from the historical land use. Proposed COPCs and sampling depths were also provided by the client in the added services scope of work document. The following were identified as COPCs for this project.

- Total Petroleum Hydrocarbons as Diesel and Residual Range Organics (TPH-DRO/RRO) by Environmental Protection Agency (EPA) Method 8015
- Semi-Volatile Organic Compounds (SVOC), including priority 18 Polycyclic Aromatic Hydrocarbons (PAH), by EPA Method 8270C-SIM
- PCB by EPA Method 8082
- Resource Conservation and Recovery Act (RCRA) 8 Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by EPA Method 6010B/7471A.
- Organochlorine Pesticides by EPA Method 8081A, including technical chlordane.

## **3.0 SAMPLING AND ANALYSIS**

On 29 July and 09 August 2021, a geophysical survey was conducted using ground penetration radar at each boring location to screen for subsurface utilities and anomalies prior to drilling and sample collection. Subsurface utilities and anomalies were marked with biodegradable spray paint and boring locations were adjusted accordingly to avoid underground utilities. Additionally, Hawaii One Call was contacted for utility clearances.

### **3.1 Decision Units**

During 23-31 August 2021, soil samples were collected from the seven Decision Units (DU), which were established based on the current land uses and COPCs. A site map depicting the DUs is presented in Appendix A, Figure 2, and the sample locations for each DU are shown in Appendix A, Figure 3a-3d. Table 1 provides DU descriptions and a summary for the soil sampling and analysis. A steep vegetated area was located to the south of the parking area (DU-2) was inaccessible to the drill rig and was not sampled.

**Table 1. Summary of Soil Sampling and Analysis**

Location: Rationale	Decision Unit	Depth (ft)	Sample Type (no. of increments)	Sample ID	Analytes (EPA Method)						Notes
					TPH-DRO/ RRO (8015)	SVOC (8260)	RCRA 8 Metals (6010/7274A)	Lead/ Arsenic (6010)	PCB (8082)	Pesticides (8081A)	
Large Animal Holding Facility sheds (~725 ln ft) 0-2 ft Around existing building perimeters: <ul style="list-style-type: none"> <li>Unknown fill material</li> <li>Potential pesticides and arsenic around building perimeters from historical application</li> <li>Potential spalling of lead paints from buildings</li> </ul>	1	0-0.5	MI (75) Primary	3048-DU1-1A				✓		✓	Geophysical survey Manual sampling
			MI (75) Duplicate	3048-DU1-1B				✓		✓	
			MI (75) Triplicate	3048-DU1-1C				✓		✓	
		0.5-1	MI (75)	3048-DU1-2A				✓		✓	
Large Animal Holding Facility parking area and driveways (~0.5 acre): <ul style="list-style-type: none"> <li>Unknown fill material</li> </ul>	2	0-1	MI (75)	3048-DU2-1A	✓	✓	✓		✓	✓	Geophysical survey Drill rig
		1-2	MI (75)	3048-DU2-2A	✓	✓	✓				
Vegetated Area (~1 acre) <ul style="list-style-type: none"> <li>Unknown fill material</li> </ul>	3	0-1	MI (75)	3048-DU3-1A	✓	✓	✓		✓	✓	
		1-2	MI (75)	3048-DU3-2A	✓	✓	✓				
Current Pasture Area - North portion (~0.35 acre): <ul style="list-style-type: none"> <li>Unknown fill material</li> </ul>	4	0-1	MI (75)	3048-DU4-1A	✓	✓	✓		✓	✓	
		1-2	MI (75)	3048-DU4-2A	✓	✓	✓				
Current Pasture Area - West portion (~1 acre): <ul style="list-style-type: none"> <li>Unknown fill material</li> </ul>	5	0-1	MI (75)	3048-DU5-1A	✓	✓	✓		✓	✓	
		1-2	MI (75)	3048-DU5-2A	✓	✓	✓				
Current Pasture Area - East portion (~0.65 acre): <ul style="list-style-type: none"> <li>Unknown fill material</li> </ul>	6	0-1	MI (75)	3048-DU6-1A	✓	✓	✓		✓	✓	
		1-2	MI (75)	3048-DU6-2A	✓	✓	✓				
Current Pasture Area - South portion (~1 acre): <ul style="list-style-type: none"> <li>Unknown fill material</li> </ul>	7	0-1	MI (75) Primary	3048-DU7-1A	✓	✓	✓		✓	✓	
			MI (75) Duplicate	3048-DU7-1B	✓	✓	✓		✓	✓	
			MI (75) Triplicate	3048-DU7-1C	✓	✓	✓		✓	✓	
		1-2	MI (75)	3048-DU7-2A	✓	✓	✓				

**Acronyms and Abbreviations:**

ft bgs feet below ground surface

MI Multi-Incremental

PCB Polychlorinated Biphenyls

RCRA Resource Conservation and Recovery Act

SVOC Semi-Volatile Organic Compounds

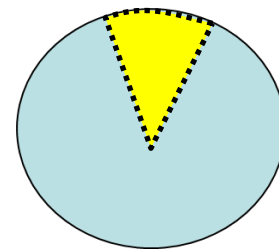
TPH-DRO/RRO Total Petroleum Hydrocarbons as Diesel and Residual Range Organics

### 3.2 Soil Sample Collection

Samples were collected using either a hand-held drill equipped with an auger attachment, or a direct-push drill rig, depending on the sampling depth and the DUs. Soil samples for analysis of non-volatile compounds were shipped to Enthalpy Analytical laboratory, Berkeley, California, via overnight express. Field notes are provided in Appendix B.

Entire cores were collected from DU-1, which were collected using a hand-held drill equipped with an auger attachment and a 5-gallon decontaminated sampling bucket. The auger was advanced to the predetermined sampling depth, and the soil spoils were captured in the 5-gallon bucket. Soil spoils were then transferred into a one-gallon plastic sealable bag(s) then sealed, labeled, and placed in a chilled insulated chest.

A core wedge sample technique was used for the core samples collected with a drill rig in DU-2 to 7. Once the plastic liner containing the cored soil was placed onto the sampling table, a continuous wedge from the entire length of the core (0-1 ft bgs) was collected as the sample increment. For example, the sample 3048-DU2-1A had a continuous core wedge between 0-1 ft bgs collected from all 75 borings, to generate one bulk MI sample. A conservative sample mass of approximately 20 gram of soil for all DUs (75 increments per MI sample) was collected per boring, homogenized in the field per sampling depth to create a bulk MI sample of at least 1.5 kilograms (e.g., 1,500 grams = 20 grams/boring x 75 borings), and provided to the analytical laboratory for analysis. The samples were transferred into a 1-gallon plastic sealable bag(s) then sealed, labeled, and placed in a chilled insulated chest.



**Core Wedge Sampling Technique**

The samples were submitted to Enthalpy Analytical laboratory (refer to Section 3.5 for the details). Enthalpy Analytical laboratory processed samples using the MI procedure for all samples which included drying, sieving, and sub-sampling prior to weighting, digestion, and analysis, as indicated in Section 3.4.

A set of triplicate samples were collected from DU-1 (0-0.5 ft bgs) and DU-7 (0-1 ft bgs) of surface soil at predetermined, independent locations. The following sampling protocol was used to collect the primary, duplicate, and triplicate samples.

- Step 1: Collect primary incremental soil samples (3048-DU1-1A).
- Step 2: Collect duplicate incremental soil samples approximately 0.5 ft west (3048-DU1-1B) of the primary increment locations (separate borings from primary).
- Step 3: Collect triplicate incremental soil samples approximate 0.5 ft east (3048-DU1-1C) of the primary increment locations (separate borings from primary and duplicate).

Field notes are provided in Appendix B.

### **3.3 Borehole Closure, Decontamination, and Investigation-Derived Waste**

Upon completion of soil sampling, boreholes were closed by filling any remaining soil spoils and topped with hydrated bentonite to ground surface, or for paved areas, soil spoils to 0.5 ft bgs then topped with cold patch.

Decontamination requirements were reduced by using disposable tools and disposable core sleeves. Sampling equipment requiring decontamination was the drill rig sample core, drill auger bit, and small sampling tools (e.g., bucket, trowels). In between DU sampling, the sampling tools were decontaminated as follows: (1) wash with a non-phosphate detergent Liquinox® and potable water solution; (2) rinse with potable water; and (3) rinse with distilled water.

Investigation-derived waste (IDW) included disposable personal protective equipment (PPE) and disposable plastic sample liners. Approximately 10 trash bags of PPE and plastic sample liners were generated and disposed of in a municipal waste dumpster.

### **3.4 Preservation and Transportation**

All samples were labeled and recorded on a chain-of-custody (COC) document. Chilled samples were packed in a cooler with frozen blue ice for shipping. The samples were shipped to Enthalpy Analytical laboratory, Berkeley, California, via overnight express.

### **3.5 Laboratory MI Sample Processing**

The MI soil samples were processed by Enthalpy Analytical laboratory, using an incremental sub-sampling procedure (Lab. SOP No. CS 2.4), as follows:

1. Empty the entire field sample into a clean, stainless steel sheet pan. Remove extraneous materials such as twigs, large stones, etc., then distribute the sample across the pan to a depth of ¼ to ½ inches.
2. Place the pan in a drying rack. Dry at room temperature until the sample is visibly dry. This process takes anywhere from overnight to a week, depending on the material.
3. After the sample is dry and free-flowing, sieve the entire remaining sample through a 2-millimeter sieve. Place the sieve into another clean stainless steel pan and pour some of the sample into the sieve. Shake to allow the smaller material to pass through the sieve. Aggregates are considered part of the sample and are broken up to pass through the sieve.
4. Redistribute the sieved sample across the pan to a uniform depth of ¼ to ½ inch.
5. Use a small spatula or scoop with a flat bottom and rectangular shape to ensure a representative distribution of particle size. Incrementally sample the spread-out soil using a random grid pattern by collecting 30 increments to approximately 1 gram sub-sample each for a 30-gram sample.
6. Record the final weight and proceed to the applicable extraction or digestion procedure.

## **4.0 ANALYTICAL RESULTS**

The analytical results for contaminants were compared to the Hawaii Department of Health (HDOH) Tier 1 Environmental Action Levels (EAL) above a drinking water resource and located less than 150 meters from surface water for unrestricted (residential) and restricted (commercial/industrial) land uses (State of Hawaii Department of Health, rev. Fall 2017). Tables 2 through 5 provide summaries for the measured analytes. Summaries of data will all COPCs are included in Appendix C. The laboratory analytical reports are provided in Appendix D.

### **4.1 DU-1: Building Perimeter of Sheds**

MI soil samples were collected from two sampling depths, 0-0.5 ft and 0.5-1 ft bgs, using a hand-held drill with auger attachment. For each MI sample, 75 increments were collected around the buildings' perimeters, from the building foundation to 2 feet out from the foundation. For the sample collected at 0-0.5 ft bgs, duplicate and triplicate samples were collected. There were no indications of contamination such as discolored/stained soils or odors.

Reportable levels of arsenic were measured ranging from 1.1 to 1.7 milligrams per kilogram (mg/kg), below the Tier 1 EAL of 24 mg/kg for unrestricted land use. Lead was measured in all samples ranging from 7.9 to 9.8 mg/kg, below the EAL of 200 mg/kg for unrestricted land use.

No measurable levels of organochlorine pesticides were found in any of the MI soil samples (Tables 2).

### **4.2 DU-2: Parking Area and Driveways**

MI soil samples were collected from two sampling depths, 0-1 ft and 1-2 ft bgs, using a direct-push drill rig. For each MI sample, 75 increments were collected from each sampling depth. There were no indications of contamination such as discolored/stained soils or odors.

Reportable levels of arsenic, barium, chromium, and lead were measured in the soil samples, below the EALs for unrestricted land use. No measurable levels of TPH-DRO/RRO, SVOC, PCB, and organochlorine pesticides were found in any of the MI soil samples (Table 3).

### **4.3 DU-3: Vegetated Area**

MI soil samples were collected from two sampling depths, 0-1 ft and 1-2 ft bgs, using a direct-push drill rig. For each MI sample, 75 increments were collected from each sampling depth. There were no indications of contamination such as discolored/stained soils or odors observed.

Reportable levels of arsenic, barium, chromium, and lead were measured in the soil samples, below the EALs for unrestricted land use. No measurable levels of TPH-DRO/RRO, SVOC, PCB, and organochlorine pesticides were found in any of the MI soil samples (Table 3).

**Table 2. Summary of Measured Soil Analytes: DU-1**

Sample ID (3048-)/ Depth Analytes	Analytical Results (mg/kg)				Tier 1 Environmental Action Level (mg/kg)	
	DU1-1A 0-0.5 ft bgs Primary	DU1-1B 0-0.5 ft bgs Duplicate	DU1-1C 0-0.5 ft bgs TriPLICATE	DU1-2A 0.5-1 ft bgs	Unrestricted	Restricted
<b>Metals (EPA 6010B)</b>						
Arsenic	1.3	1.7	1.4	1.1	24	95
Lead	8.6	8.4	9.8	7.9	200	800

**Table 3. Summary of Measured Soil Analytes: DU-2 to 3**

Decision Unit Sample ID (3048-)/ Analytes Depth	Analytical Results (mg/kg)				Tier 1 Environmental Screening Level (mg/kg)	
	DU-2		DU-3		Unrestricted	Restricted
	DU2-1A 0-1 ft bgs	DU2-2A 1-2 ft bgs	DU3-1A 0-1 ft bgs	DU3-2A 1-2 ft bgs		
<b>Metals (EPA 6010B)</b>						
Arsenic	5.9	ND (0.50)	2.4	2.8	24	95
Barium	50	82	65	95	1,000	2,500
Chromium	76	120	170	140	1,100	1,100
Lead	2.5	3.5	10	13	200	800

**Table 4. Summary of Measured Soil Analytes: DU-4 to 5**

Decision Unit Sample ID (3048-)/ Analytes Depth	Analytical Results (mg/kg)				Tier 1 Environmental Screening Level (mg/kg)	
	DU-4		DU-5		Unrestricted	Restricted
	DU4-1A 0-1 ft bgs	DU4-2A 1-2 ft bgs	DU5-1A 0-1 ft bgs	DU5-2A 1-2 ft bgs		
Aroclor-1260	ND (0.083)	ND (0.083)	ND (0.083)	0.13	17	23
<b>Metals (EPA 6010B)</b>						
Arsenic	4.7	3.6	2.2	5.5	24	95
Barium	110	110	64	140	1,000	2,500
Chromium	200	180	170	170	1,100	1,100
Lead	15	12	11	20	200	800

**Table 5. Summary of Measured Soil Analytes: DU-6 to 7**

Decision Unit Sample ID (3048-)/ Analytes Depth	Analytical Results (mg/kg)						Tier 1 Environmental Screening Level (mg/kg)	
	DU-6		DU-7				Un Restricted	Restricted
	DU6-1A 0-1 ft bgs	DU6-2A 1-2 ft bgs	DU7-1A 0-0.5 ft bgs Primary	DU7-1B 0-0.5 ft bgs Duplicate	DU7-1C 0-0.5 ft bgs TriPLICATE	DU7-2A 0.5-1 ft bgs		
<b>Polychlorinated Biphenyls (EPA 8082)</b>								
Aroclor-1260	0.11	0.15	ND (0.083)	0.21	ND (0.081)	0.32	1.2	8.6
<b>Metals (EPA 6010B)</b>								
Arsenic	3.1	5.8	2.2	3.8	3.8	5.9	24	95
Barium	81	110	86	100	96	160	1,000	2,500
Chromium	200	160	170	200	200	180	1,100	1,100
Lead	14	16	13	13	15	41	200	800
<b>Organochlorine Pesticides (EPA 8081A)</b>								
Chlordane (technical)	ND (0.16)	ND (0.16)	0.28	ND (0.18)	0.34	ND (0.16)	17 <sup>4</sup>	23 <sup>4</sup>

**Criteria:** Hawaii Department of Health Tier 1 Environmental Action Levels with unrestricted (residential) and restricted (commercial/industrial) land uses above a drinking water resource and located less than 150 meters from surface water (State of Hawaii Department of Health, rev. Fall 2017).

**Abbreviations/Acronyms:**

ft bgs      feet below ground surface                      mg/kg      milligrams per kilogram  
ID            identifier    ND (00)    not detected (laboratory reporting limit)

#### 4.4 DU-4 to 7: Pasture Areas

MI soil samples were collected from two sampling depths, 0-1 ft and 1-2 ft bgs, using a direct-push drill rig. For each MI sample, 75 increments were collected from each sampling depth. A triplicate sample set was collected from DU-7 at 0-1 ft bgs. Although there were no indications of contamination observed (e.g., discolored/stained soils or odors), various fill materials, including concrete, gravel, coral, and brick, were visible in the 0-2 ft bgs soil cores.

Reportable levels of arsenic, barium, chromium, and lead were measured in the soil samples, below the EALs for unrestricted land use. Aroclor-1260 was measured in DU-5 to 7, ranging from 0.11-0.32 mg/kg, below the EAL of 1.2 for total PCB. Chlordane was measured at 0.24 and 0.34 mg/kg in two of the triplicates soil samples collected from DU-7 at 0-1 ft bgs, below the EAL of 17 mg/kg for unrestricted land use. No measurable levels of TPH-DRO/RRO and SVOC were found in any of the MI soil samples (Tables 4 and 5).

#### 5.0 DATA QUALITY REVIEW

MNA conducted an analytical data quality review to determine the usability of the data generated by performing a data check for sample preservation methods, technical sample holding times, method blanks, laboratory control sample/laboratory control sample duplicate (LCS/LCSD), matrix spike/matrix spike duplicate (MS/MSD), and surrogate recoveries. All samples were labeled and recorded in a COC document. The LCS/LCSD, MS/MSD, and surrogate recoveries were within the laboratory acceptable ranges. Technical holding times for all analytes were met.

All COPC reporting limits were below the Tier 1 EALs for unrestricted land use, with the exception of various SVOCs. Sample 3048-DU2-1A was diluted about 200 times due to the dark color of the sample extracts, resulting in a higher reporting limit. SVOCs with reporting limits below the EALs did not have measurable levels of SVOCs. Additionally, no other COPCs were measured in these samples above the EALs; therefore, it is unlikely that SVOCs are present in soil samples above the EALs for unrestricted land use.

Field performance was reviewed by comparing the results of triplicate MI samples to support the reproducibility of the sampling technique and analytical practice and representativeness of the samples. Average, standard deviation, and relative standard deviation (RSD) between the triplicate samples were evaluated when analytes were detected above the reporting limits. If the RSD between field triplicate samples is 35% or less, the total error is considered within a reasonable range for precision and reproducibility for field sampling activities. The RSD was calculated using the following equation.

$$RSD (\%) = \frac{100s}{\bar{x}}$$

Where:  $\bar{x}$  = Average, s = Standard deviation

The upper confidence level (UCL) of the average was calculated using the Chebyshev method for comparison to the EALs. The UCL was calculated using the following equation.

$$95\% \text{ UCL} = \text{average} + \left( \sqrt{\frac{1}{\alpha}} - 1 \times \frac{SD}{\sqrt{r}} \right)$$

Where: SD = Standard deviation; r = number of replicate samples;  
 $\alpha$  = acceptable level of potential decision error (0.05 for a 95% UCL);  
t = (1- $\alpha$ )<sup>th</sup> quantile of the Student's-t distribution with (r-1) degrees of freedom

A set of triplicate MI sample was collected from DU-1 at 0-0.5 ft bgs and DU-7 at 0-1 ft bgs. The primary, duplicate, and triplicate MI samples were collected at independent locations, with separate samples collected in the same method as the primary sample. The data comparison between triplicate samples is presented in Tables 6 and 7. If the RSD between field triplicate samples is 35% or less, the total error is considered within a reasonable range for precision and reproducibility for field sampling activities. The RSD for the measured analytes, arsenic, barium, chromium, and lead, ranged from 8% to 28%, below the 35% agreement, indicating acceptable precision.

**Table 6. Summary of Data Quality Review for DU-1**

Analytes	Sample ID Depth	Analytical Results (mg/kg)			Field Performance Review			Tier 1 EAL (mg/kg)
		3048-DU1-1A Primary	3048-DU1-1B Duplicate	3048-DU1-1C TriPLICATE	Average (mg/kg)	Standard Deviation	RSD (%)	Unrestricted
<b>Metals (EPA 6010B)</b>								
Arsenic		1.3	1.7	1.4	1.5	0.2	14%	24
Lead		19	12	14	15	4	24%	200

**Table 7. Summary of Data Quality Review for DU-7**

Analytes	Sample ID Depth	Analytical Results (mg/kg)			Field Performance Review			Tier 1 EAL (mg/kg)
		3048-DU7-1A Primary	3048-DU7-1B Duplicate	3048-DU7-1C TriPLICATE	Average (mg/kg)	Standard Deviation	RSD (%)	Unrestricted
<b>Metals (EPA 6010B)</b>								
Arsenic		2.2	3.8	3.8	3.3	0.9	28%	24
Barium		86	100	96	94.0	7.2	8%	1,000
Chromium		170	200	200	190.0	17.3	9%	1,100
Lead		13	13	15	13.7	1.2	8%	200

**Criteria:** Hawaii Department of Health Tier 1 Environmental Action Levels with unrestricted (residential) land uses above a drinking water resource and less than 150 meters from surface water (State of Hawaii Department of Health, rev. Fall 2017).

**Abbreviations/Acronyms:**

ID identifier  
ft bgs feet below ground surface  
mg/kg milligrams per kilogram  
RSD relative standard deviation



## **6.0 CONCLUSION AND RECOMMENDATION**

The objective of the screening survey was to identify the presence of potentially hazardous soil contaminants and associated risks that may be encountered during earthwork and construction.

In August 2021, MNA conducted a soil sampling at the HDOA Large Animal Holding Facility, which is the proposed site for the new AQS. Based on review of previous environmental assessments, lead paints on buildings, potential former pesticide use, and unknown origin of fill material, the soil COPCs were identified as TPH-DRO/RRO, SVOC, PCB, RCRA 8 Metals, and organochlorine pesticides. The analytical results were compared to the HDOH EAL for sites located within 150 meter from surface water and above a drinking water resource for unrestricted (i.e., residential) and restricted (i.e., commercial/industrial) land use.

No COPCs were measured exceeding the Tier 1 EALs for unrestricted land use. Measurable levels of heavy metals (arsenic, barium, chromium, and lead), PCB (as Aroclor-1260), and pesticides (technical chlordane) were found, but levels were below the EALs for unrestricted land use. No measurable levels of TPH-DRO/RRO and SVOC were found.

A steep vegetated area was located to the south of the parking area (DU-2) was inaccessible to the drill rig and was not sampled. Assume soil in the area has levels of Aroclor-1260, arsenic, barium, chromium, and chlordane below the EALs,

### **RECOMMENDATIONS**

Based on the review of previous site investigations and findings of the screening survey, MNA recommends the following:

- Soils may be used as backfill in the same area and depths where they are excavated from if they meet the geotechnical criteria. Excess soils that will be transported offsite for disposal must be characterized to ensure compliance with recipient guidelines and requirements. For soil or waste characterization, the Contractor must collect representative soil samples (e.g., multi-incremental sampling technique).
- For other demolition/construction areas, there are reportable levels of PCB, heavy metals, and pesticides. While the findings were below the EALs for unrestricted land use, earthwork may cause potential exposures to the site workers and nearby facility users via fugitive dust. The Contractor must anticipate hazards and implement engineering controls, such as water misting and wind barriers, to prevent exposures to humans and the environment.
- The Contractor must conduct excavation monitoring for signs of contamination or anomalies, such as discolored/stained soil or odors. The Contractor must provide hazard communication for the workers prior to any earthwork.
- Erosion control measures shall be implemented, and precautions must be taken to avoid impacts to storm drain systems and/or nearby body of water.

- The use of Best Management Practices, such as dust control and erosion control, must be implemented to minimize exposure of workers and other facility users to these soils and to prevent surface runoff to the marine environment.
- Worker protection from silica exposures is enforced by OSHA. All appropriate engineering controls must be implemented and PPE may be considered as added protection.

## **7.0 LIMITATIONS**

The information provided in this report is for the Contractor's information and is limited to soil conditions at the specific time, sample locations, and depths. The Contractor must perform due diligence as required for the earthwork and construction and conduct work in accordance with all applicable federal, state, and local regulations and procedures.

## REFERENCES

HDOH HEER Office. (2008). *Technical Guidance Manual for the Implementation of the Hawaii State Contingency Plan*. Honolulu: HDOH HEER Office.

Louis Berger U.S. (2018). *Final Phase I Environmental Site Assessment Report for Animal Quarantine Station Site*. Honolulu: Louis Berger U.S.

Myounghee Noh & Associates, L.L.C. (2021). *Sampling and Analysis Plan for Phase 2 Animal Quarantine Station Relocation*. Aiea: Myounghee Noh & Associates, L.L.C.

State of Hawaii Department of Health. (rev. Fall 2017). *Environmental Action Levels Surfer*. Retrieved from Environmental Hazard Evaluation and Environmental Action Levels: <http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/environmental-hazard-evaluation-and-environmental-action-levels>

## **APPENDIX A    FIGURES**

Figure 1.    Site Location Map

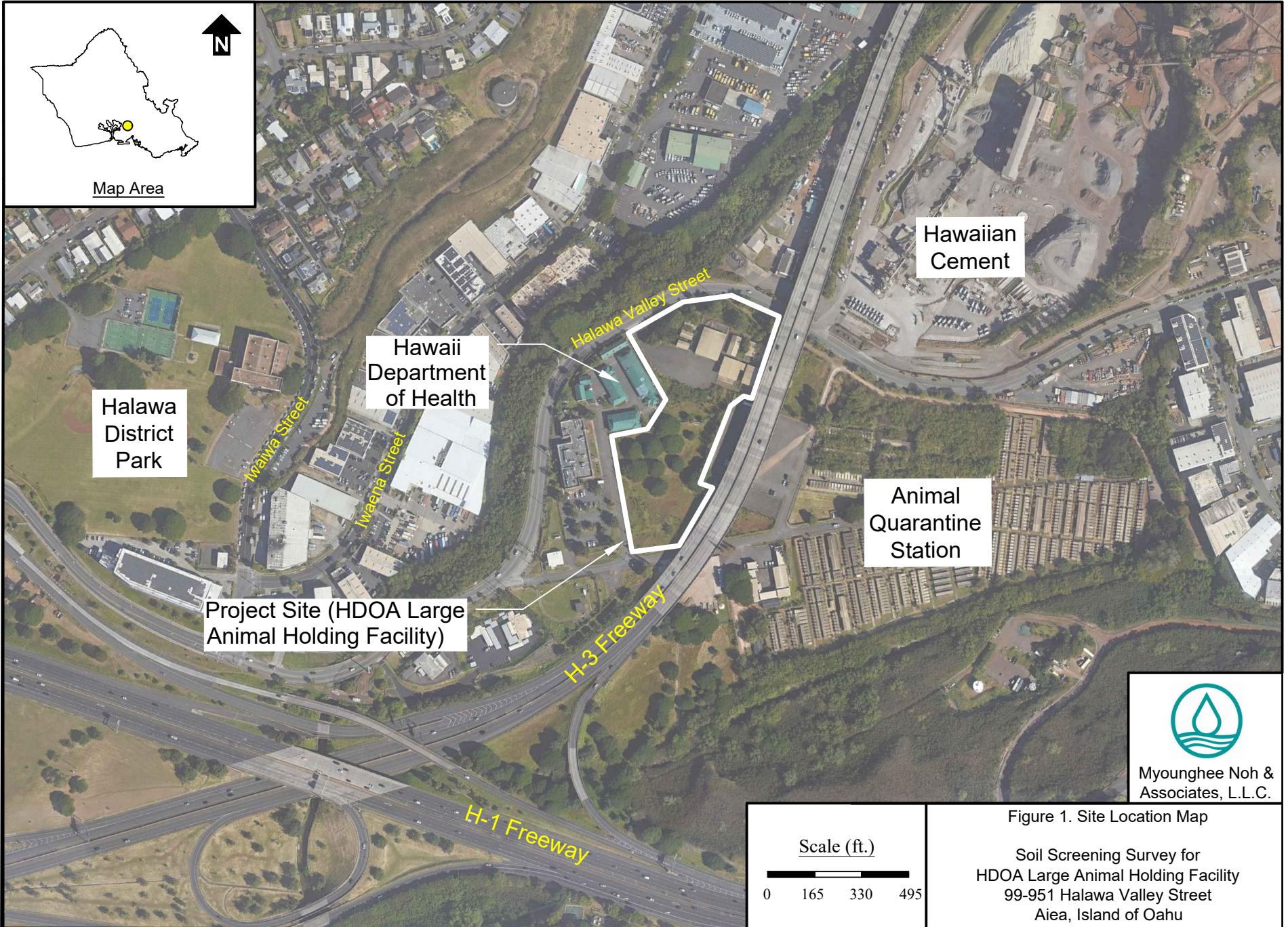
Figure 2.    Decision Unit Boundary Map

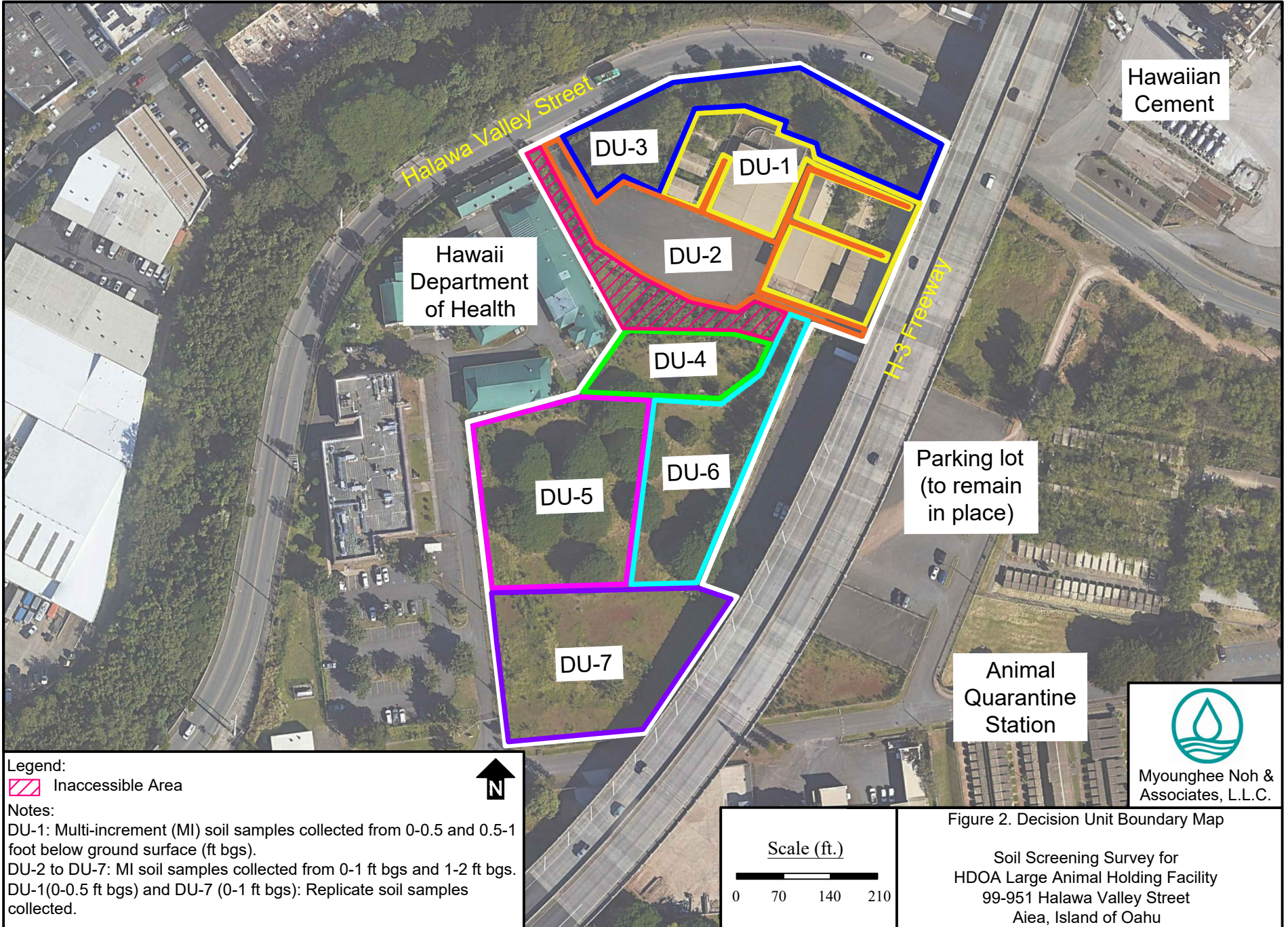
Figure 3a.    DU-1 Sample Locations

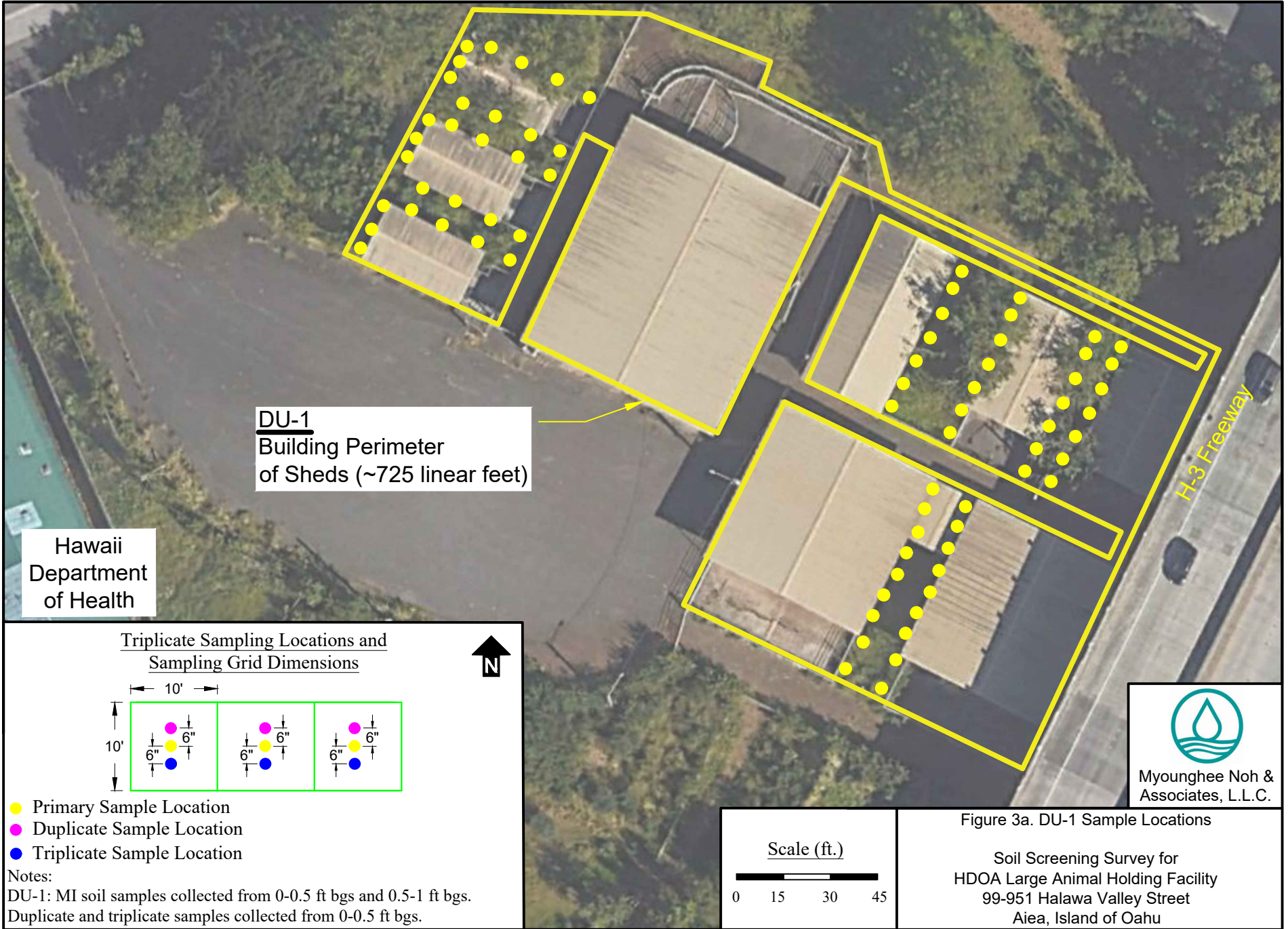
Figure 3b.    DU-2 and 3 Sample Locations

Figure 3c.    DU-4 to 7 Sample Locations

Figure 3d.    DU-7 Sample Locations

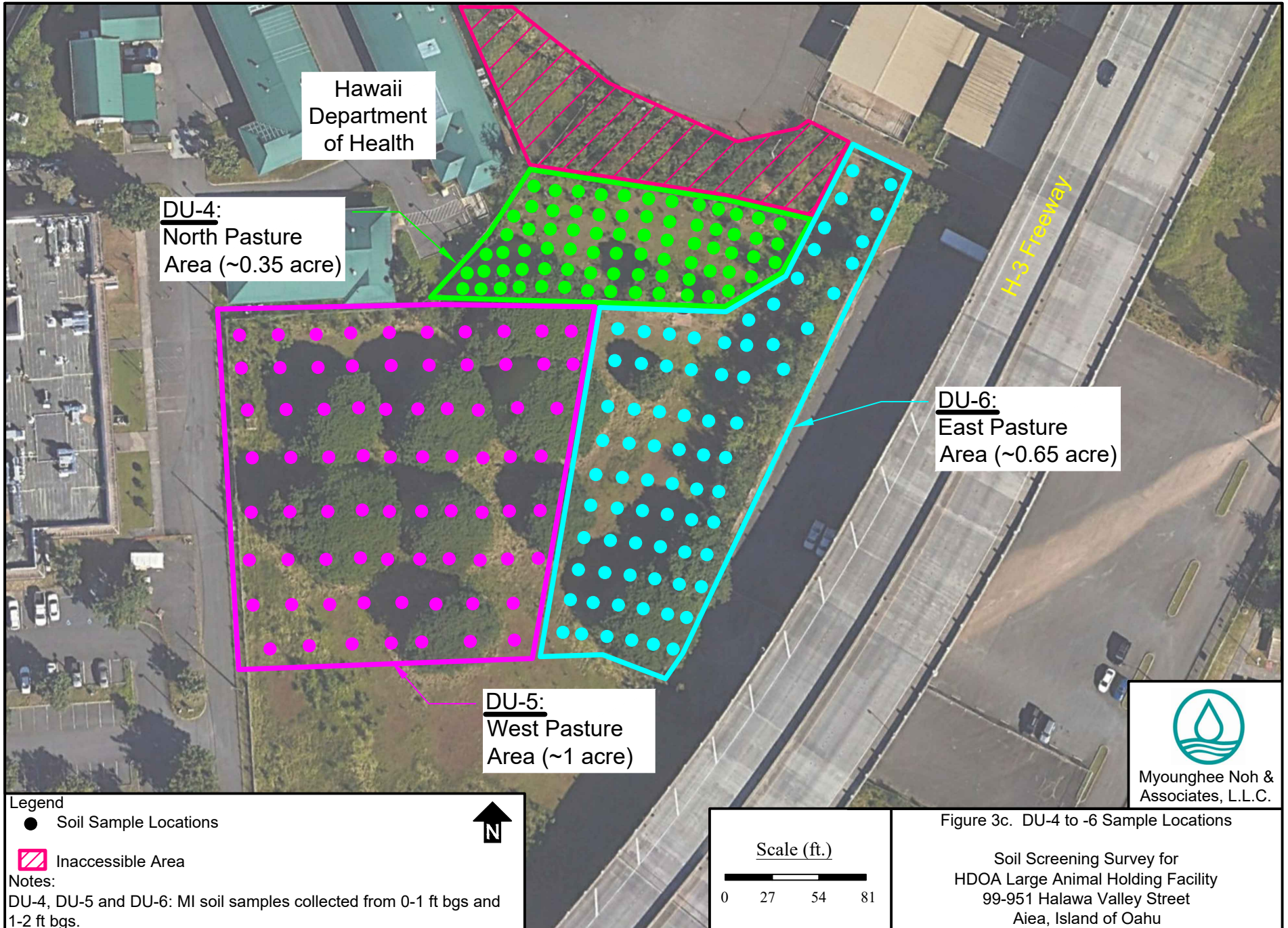


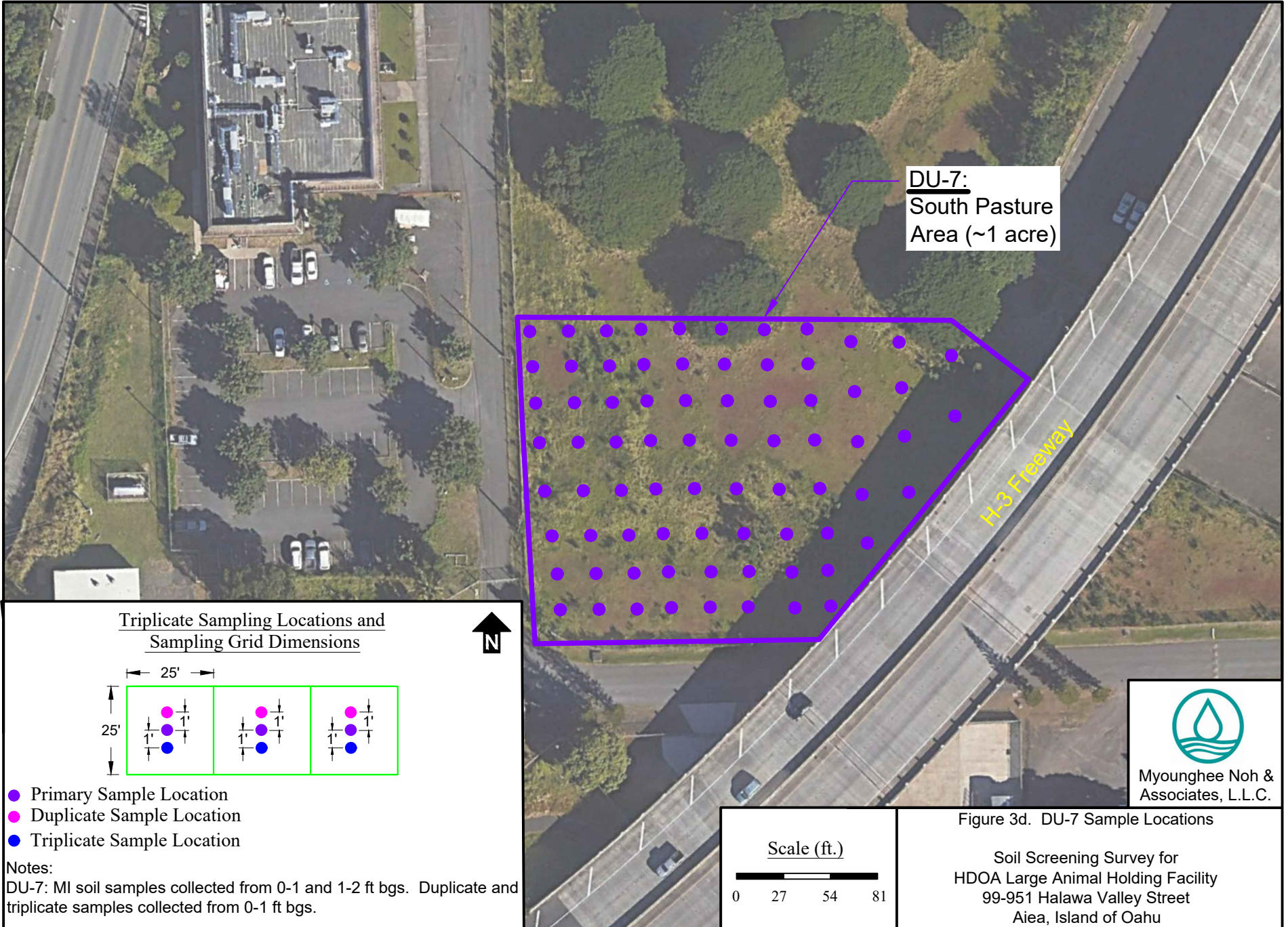












## **APPENDIX B    FIELD NOTES**

8:00

Arrive on site

Call Xaver - open  
front gate

GTH - Gabe + John

8:30

Show GTH DU areas +  
access issues

8:40

Start drilling DU2

11:30 - 12:15

lunch

12:15

Continue drilling DU2

Photos

2137 - 2147

DU2 →

"Action photos"

13:40

Finish DU2 - GTH plug  
punchholes

MAN:

DU

DU5

800 Arrive on site  
 815 HDDA unlock front gate  
 GTH - John + Gabe

850 Start drilling DU7  
 Triplicate  
 • A  
 N • B S 6 inches apart  
 • C  
 W

3PM Depart site

8/31/2021 BC + CL onsite w/ Gabe/John.  
 0810 Onsite w/ Gertak  
 0815 Start DU-4 at Boring 42  
 1010 Finished DU-4  
 1030 Start DU-3  
 1300 Back on site

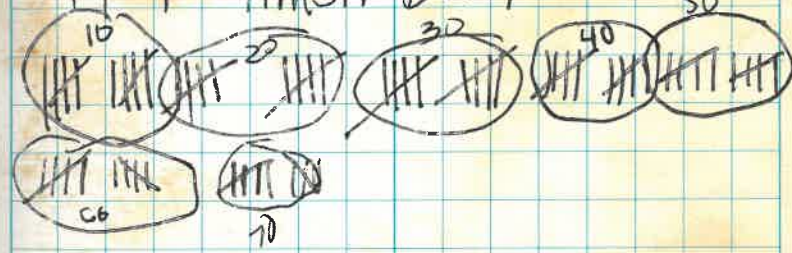
1000 Arrive on site  
 1010 Start - Continue DU7  
 1530 Depart site

8/30/21  
 GTH - Gabe, Kendall

8:20 Arrive onsite  
 8:50 Gate open  
 9:11 Start DU-04 0-2' 75  
 increments



1407 finish DU-4

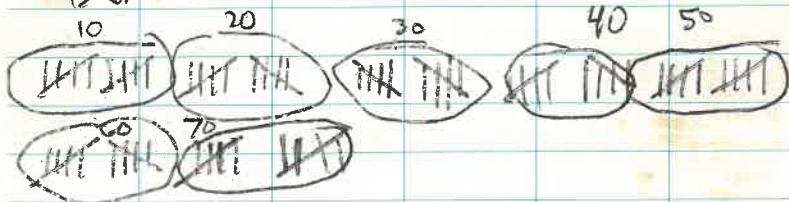


Location AQS

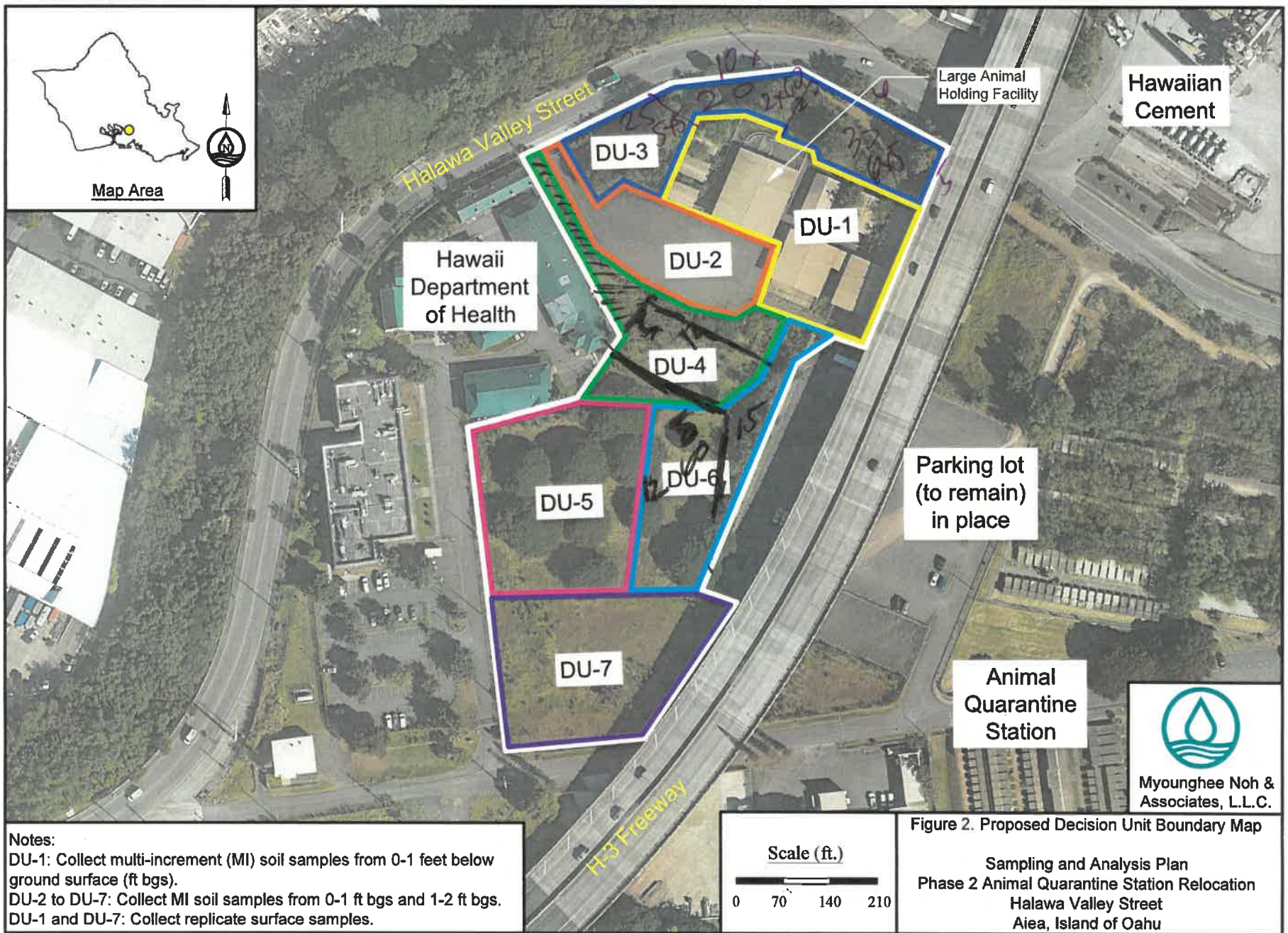
Date 8/31/2021

Project / Client 3048-2

DU-3



11  
0  
0  
10  
1  
1



**Notes:**  
 DU-1: Collect multi-increment (MI) soil samples from 0-1 feet below ground surface (ft bgs).  
 DU-2 to DU-7: Collect MI soil samples from 0-1 ft bgs and 1-2 ft bgs.  
 DU-1 and DU-7: Collect replicate surface samples.

Figure 2. Proposed Decision Unit Boundary Map

Sampling and Analysis Plan  
 Phase 2 Animal Quarantine Station Relocation  
 Halawa Valley Street  
 Aiea, Island of Oahu



Google Earth

© 2021 Google

300 ft

Halawa Crusher Rd





Halawa Crusher Rd

Google Earth

© 2021 Google

200 ft

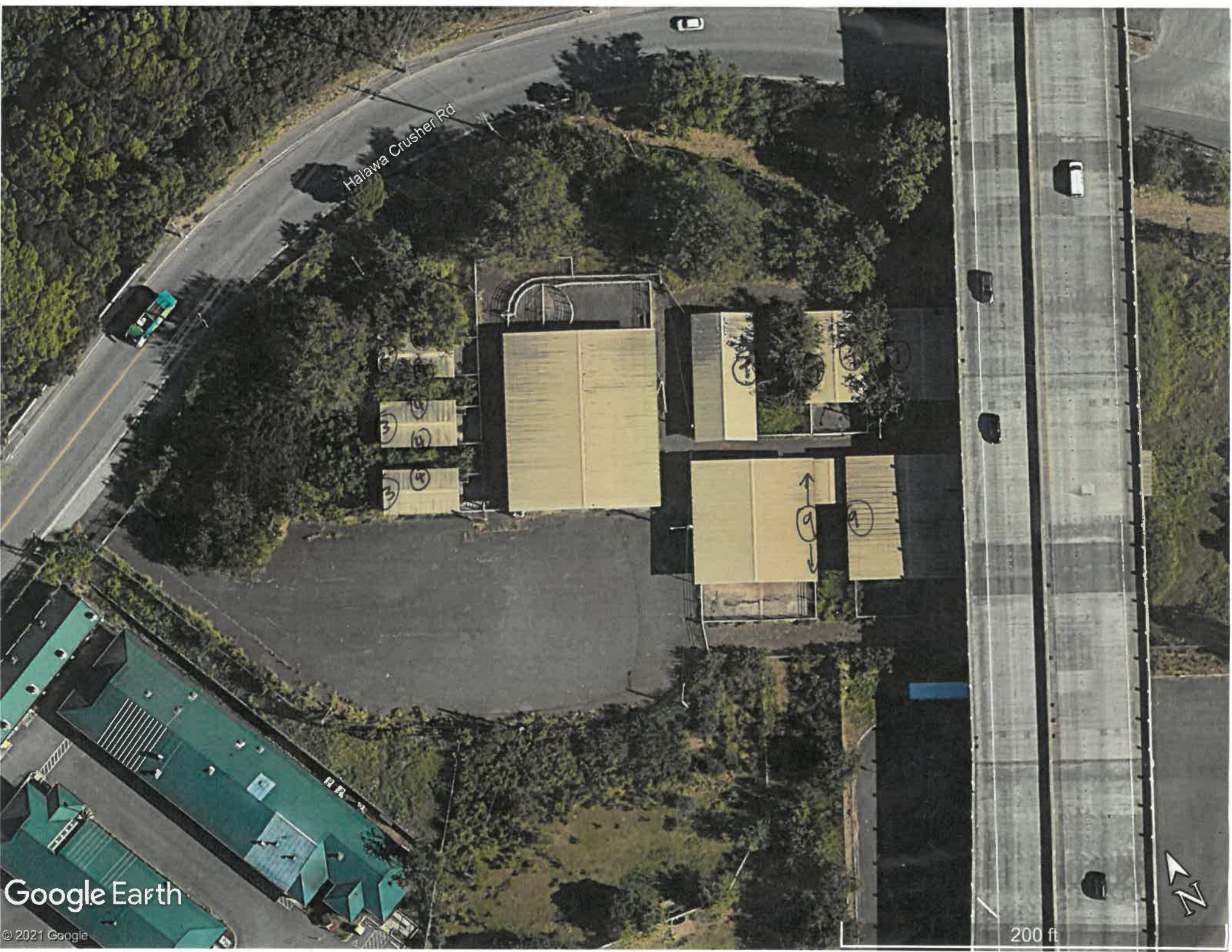


Halawa Crusher Rd

Google Earth

© 2021 Google

200 ft



## **APPENDIX C    SOIL ANALYTICAL RESULTS TABLES**

**Table 1. Soil Analytical Results: DU-1**

Sample ID (3048-)/ Depth Analytes	Analytical Results (mg/kg)				Tier 1 Environmental Action Level (mg/kg)	
	DU1-1A 0-0.5 ft bgs Primary	DU1-1B 0-0.5 ft bgs Duplicate	DU1-1C 0-0.5 ft bgs TriPLICATE	DU1-2A 0.5-1 ft bgs	Unrestricted	Restricted
<b>Metals (EPA 6010B)</b>						
Arsenic	1.3	1.7	1.4	1.1	24	95
Lead	8.6	8.4	9.8	7.9	200	800
<b>Organochlorine Pesticides (EPA 8081A)</b>						
alpha-BHC	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.075 <sup>1</sup>	0.075 <sup>1</sup>
beta-BHC	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)		
gamma-BHC	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)		
delta-BHC	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)		
Heptachlor	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	1.3	5.6
Aldrin	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	3.9	8.4
Heptachlor epoxide	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	0.2	2.7
Endosulfan I	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	13 <sup>2</sup>	13 <sup>2</sup>
Endosulfan II	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)		
Endosulfan sulfate	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)		
Dieldrin	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	2.5	24
4,4'-DDD	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	2.2	8.4
4,4'-DDE	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	1.9	8.2
4,4'-DDT	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	1.8	5.6
Endrin	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)	3.8 <sup>3</sup>	30 <sup>3</sup>
Endrin aldehyde	ND (0.0083)	ND (0.0083)	ND (0.0083)	ND (0.0083)		
Chlordane (technical)	ND (0.083)	ND (0.083)	ND (0.083)	ND (0.083)	17	23
Methoxychlor	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	16	16
Toxaphene	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	0.48	1.8

**Criteria:** Hawaii Department of Health Tier 1 Environmental Action Levels with unrestricted (residential) and restricted (commercial/industrial) land uses above a drinking water resource and less than 150 meters from surface water (State of Hawaii Department of Health, rev. Fall 2017).

**Notes:**

<sup>1</sup> EAL is for Hexachlorocyclohexane ("BHC" as Lindane) = Alpha- + Beta- + Gamma- + Delta-BHC

<sup>2</sup> EAL is for Endosulfan = Endosulfan I + Endosulfan II + Endosulfan sulfate

<sup>3</sup> EAL is for Endrin = Endrin + Endrin aldehyde + Endrin ketone

**Abbreviations/Acronyms:**

EPA U.S. Environmental Protection Agency mg/kg milligrams per kilogram  
ft bgs feet below ground surface ND (00) not detected (laboratory reporting limit)  
ID identifier

**Table 2. Soil Analytical Results: DU-2 to 3**

Decision Unit Sample ID (3048-)/ Analytes Depth	Analytical Results (mg/kg)				Tier 1 Environmental Screening Level (mg/kg)	
	DU-2		DU-3		Unrestricted	Restricted
	DU2-1A 0-1 ft bgs	DU2-2A 1-2 ft bgs	DU3-1A 0-1 ft bgs	DU3-2A 1-2 ft bgs		
<b>Total Petroleum Hydrocarbons (EPA 8015M)</b>						
Diesel Range Organics	ND (220)	ND (24)	ND (23)	ND (22)	220	680
Residual Range Organics	ND (450)	ND (48)	ND (46)	ND (44)	500	1,000
<b>Semi-Volatile Organic Compounds (EPA 8270C)</b>						
Carbazole	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
1-Methylnaphthalene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.89	0.89
Pyridine	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
N-Nitrosodimethylamine	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
Phenol	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	1.8	1.8
Aniline	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
bis(2-Chloroethyl)ether	ND (180)	ND (0.95)	ND (1.8)	ND (1.8)	0.004	0.004
2-Chlorophenol	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.012	0.012
1,3-Dichlorobenzene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.57	0.57
1,4-Dichlorobenzene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.055	0.39
Benzyl alcohol	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
1,2-Dichlorobenzene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.75	0.75
2-Methylphenol	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
bis(2-Chloroisopropyl) ether	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
3,4-Methylphenol	ND (60)	ND (0.32)	ND (0.61)	ND (0.59)	---	---
N-Nitroso-di-n- propylamine	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
Hexachloroethane	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.023	0.023
Nitrobenzene	ND (180)	ND (0.95)	ND (1.8)	ND (1.8)	0.0053	0.0053
Isophorone	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.89	0.89
2-Nitrophenol	ND(37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
2,4-Dimethylphenol	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	9.8	9.8
Benzoic acid	ND (180)	ND (0.95)	ND (1.8)	ND (1.8)	---	---
bis(2-Chloroethoxy) methane	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
2,4-Dichlorophenol	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.0073	0.0073
1,2,4-Trichlorobenzene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.18	1.4
Naphthalene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	3.1	3.1
4-Chloroaniline	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.0073	0.0073
Hexachlorobutadiene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.041	0.041
4-Chloro-3-methylphenol	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
2-Methylnaphthalene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	1.9	1.9
Hexachlorocyclo pentadiene	ND (180)	ND (0.95)	ND (1.8)	ND (1.8)	---	---
2,4,6-Trichlorophenol	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.31	0.31
2,4,5-Trichlorophenol	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.5	0.5
2-Chloronaphthalene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
2-Nitroaniline	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
Dimethylphthalate	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	26	26
Acenaphthylene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	120	120
2,6-Dinitrotoluene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.0051	0.0051
3-Nitroaniline	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
Acenaphthene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	120	120
2,4-Dinitrophenol	ND (180)	ND(0.95)	ND (1.8)	ND (1.8)	0.024	0.024
4-Nitrophenol	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
Dibenzofuran	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---

Architects Hawaii Limited – Soil Screening Survey for New Animal Quarantine Station  
HDOA Large Animal Holding Facility, 99-951 Halawa Valley Street, Aiea, Oahu

Decision Unit Sample ID (3048-)/ Analytes Depth	Analytical Results (mg/kg)				Tier 1 Environmental Screening Level (mg/kg)	
	DU-2		DU-3		Unrestricted	Restricted
	DU2-1A 0-1 ft bgs	DU2-2A 1-2 ft bgs	DU3-1A 0-1 ft bgs	DU3-2A 1-2 ft bgs		
2,4-Dinitrotoluene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.024	0.024
Diethylphthalate	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	3.7	3.7
Fluorene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	93	93
4-Chlorophenyl-phenylether	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
4-Nitroaniline	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
4,6-Dinitro-2methylphenol	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
N-Nitrosodiphenylamine	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
1,2-diphenylhydrazine (as azobenzene)	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
4-Bromophenyl-phenylether	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
Hexachlorobenzene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	0.22	0.23
Pentachlorophenol	ND (180)	ND (0.95)	ND (1.8)	ND (0.37)	0.78	0.78
Phenanthrene	ND (37)	ND (0.2)	ND (0.38)	ND (1.8)	0.098	0.098
Anthracene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	69	69
Di-n-butylphthalate	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
Fluoranthene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	87	87
Benzidine	ND (180)	ND (0.95)	ND (1.8)	ND (1.8)	---	---
Pyrene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	44	44
Butylbenzylphthalate	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
3,3'-Dichlorobenzidine	ND (180)	ND (0.95)	ND (1.8)	ND (1.8)	0.092	0.092
Benzo(a)anthracene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	10	10
Chrysene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	30	30
bis(2-Ethylhexyl)phthalate	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	37	140
Di-n-octylphthalate	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	---	---
Benzo(b)fluoranthene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	11	21
Benzo(k)fluoranthene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	39	39
Benzo(a)pyrene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	3.6	5.9
Indeno(1,2,3-cd)pyrene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	11	31
Dibenz(a,h)anthracene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	1.1	18
Benzo(g,h,i)perylene	ND (37)	ND (0.2)	ND (0.38)	ND (0.37)	35	35
<b>Polychlorinated Biphenyls (EPA 8082)</b>						
Aroclor-1016	ND (0.083)	ND (0.033)	ND (0.083)	ND (0.083)	1.2	8.6
Aroclor-1221	ND (0.083)	ND (0.033)	ND (0.083)	ND (0.083)		
Aroclor-1232	ND (0.083)	ND (0.033)	ND (0.083)	ND (0.083)		
Aroclor-1242	ND (0.083)	ND (0.033)	ND (0.083)	ND (0.083)		
Aroclor-1248	ND (0.083)	ND (0.033)	ND (0.083)	ND (0.083)		
Aroclor-1254	ND (0.083)	ND (0.033)	ND (0.083)	ND (0.083)		
Aroclor-1260	ND (0.083)	ND (0.033)	ND (0.083)	ND (0.083)		
Aroclor-1262	ND (0.083)	ND (0.033)	ND (0.083)	ND (0.083)		
Aroclor-1268	ND (0.083)	ND (0.033)	ND (0.083)	ND (0.083)		
<b>Resource Conservation and Recovery Act Metals (EPA 6010B/7471A)</b>						
Arsenic	5.9	ND (0.50)	2.4	2.8	24	95
Barium	50	82	65	95	1,000	2,500
Cadmium	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	14	72
Chromium	76	120	170	140	1,100	1,100
Lead	2.5	3.5	10	13	200	800
Mercury	ND (0.19)	ND (0.19)	ND (0.16)	ND (0.17)	4.7	61
Selenium	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	78	1,000

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HDOA Large Animal Holding Facility, 99-951 Halawa Valley Street, Aiea, Oahu

Decision Unit Sample ID (3048-)/ Analytes Depth	Analytical Results (mg/kg)				Tier 1 Environmental Screening Level (mg/kg)	
	DU-2		DU-3		Unrestricted	Restricted
	DU2-1A 0-1 ft bgs	DU2-2A 1-2 ft bgs	DU3-1A 0-1 ft bgs	DU3-2A 1-2 ft bgs		
Silver	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	78	1,000
<b>Organochlorine Pesticides (EPA 8081A)</b>						
alpha-BHC	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)	0.075 <sup>1</sup>	0.075 <sup>1</sup>
beta-BHC	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)		
gamma-BHC	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)		
delta-BHC	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)		
Heptachlor	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)	1.3	5.6
Aldrin	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)	3.9	8.4
Heptachlor epoxide	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)	0.2	2.7
Endosulfan I	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)	13 <sup>2</sup>	13 <sup>2</sup>
Endosulfan II	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)		
Endosulfan sulfate	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)		
Dieldrin	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)	2.5	24
4,4'-DDD	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)	2.2	8.4
4,4'-DDE	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)	1.9	8.2
4,4'-DDT	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)	1.8	5.6
Endrin	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)	3.8 <sup>3</sup>	30 <sup>3</sup>
Endrin aldehyde	ND (0.033)	ND (0.017)	ND (0.017)	ND (0.017)		
Chlordane (technical)	ND (0.33)	ND (0.17)	ND (0.17)	ND (0.17)	17	23
Methoxychlor	ND (0.066)	ND (0.033)	ND (0.033)	ND (0.033)	16	16
Toxaphene	ND (0.66)	ND (0.33)	ND (0.33)	ND (0.33)	0.48	1.8

**Criteria:** Hawaii Department of Health Tier 1 Environmental Action Levels with unrestricted (residential) and restricted (commercial/industrial) land uses above a drinking water resource and less than 150 meters from surface water (State of Hawaii Department of Health, rev. Fall 2017).

**Notes:**

<sup>1</sup> EAL is for Hexachlorocyclohexane ("BHC" as Lindane) = Alpha- + Beta- + Gamma- + Delta-BHC

<sup>2</sup> EAL is for Endosulfan = Endosulfan I + Endosulfan II + Endosulfan sulfate

<sup>3</sup> EAL is for Endrin = Endrin + Endrin aldehyde + Endrin ketone

**Abbreviations/Acronyms:**

EPA	U.S. Environmental Protection Agency	mg/kg	milligrams per kilogram
ft bgs	feet below ground surface	ND (00)	not detected (laboratory reporting limit)
ID	identifier		

**Table 3. Soil Analytical Results: DU-4 to 5**

Decision Unit Sample ID (3048-)/ Analytes Depth	Analytical Results (mg/kg)				Tier 1 Environmental Screening Level (mg/kg)	
	DU-4		DU-5		Unrestricted	Restricted
	DU4-1A 0-1 ft bgs	DU4-2A 1-2 ft bgs	DU5-1A 0-1 ft bgs	DU5-2A 1-2 ft bgs		
<b>Total Petroleum Hydrocarbons (EPA 8015M)</b>						
Diesel Range Organics	ND (23)	ND (23)	ND (23)	ND (23)	220	680
Residual Range Organics	ND (46)	ND (46)	ND (47)	ND (45)	500	1,000
<b>Semi-Volatile Organic Compounds (EPA 8270C)</b>						
Carbazole	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
1-Methylnaphthalene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.89	0.89
Pyridine	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
N-Nitrosodimethylamine	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
Phenol	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	1.8	1.8
Aniline	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
bis(2-Chloroethyl)ether	ND (9.2)	ND (0.91)	ND (3.8)	ND (0.90)	0.004	0.004
2-Chlorophenol	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.012	0.012
1,3-Dichlorobenzene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.57	0.57
1,4-Dichlorobenzene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.055	0.39
Benzyl alcohol	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
1,2-Dichlorobenzene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.75	0.75
2-Methylphenol	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
bis(2-Chloroisopropyl) ether	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
3,4-Methylphenol	ND (3.1)	ND (0.30)	ND (1.3)	ND (0.3)	---	---
N-Nitroso-di-n- propylamine	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
Hexachloroethane	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.023	0.023
Nitrobenzene	ND (9.2)	ND (0.91)	ND (3.8)	ND(0.9)	0.0053	0.0053
Isophorone	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.89	0.89
2-Nitrophenol	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
2,4-Dimethylphenol	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	9.8	9.8
Benzoic acid	ND (9.2)	ND (0.91)	ND (3.8)	ND (0.9)	---	---
bis(2- Chloroethoxy)methane	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
2,4-Dichlorophenol	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.0073	0.0073
1,2,4-Trichlorobenzene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.18	1.4
Naphthalene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	3.1	3.1
4-Chloroaniline	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.0073	0.0073
Hexachlorobutadiene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.041	0.041
4-Chloro-3-methylphenol	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
2-Methylnaphthalene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	1.9	1.9
Hexachlorocyclo pentadiene	ND (9.2)	ND (0.91)	ND (3.8)	ND (0.9)	---	---
2,4,6-Trichlorophenol	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.31	0.31
2,4,5-Trichlorophenol	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.5	0.5
2-Chloronaphthalene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
2-Nitroaniline	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
Dimethylphthalate	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	26	26
Acenaphthylene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	120	120
2,6-Dinitrotoluene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.0051	0.0051
3-Nitroaniline	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
Acenaphthene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	120	120
2,4-Dinitrophenol	ND (9.2)	ND (0.91)	ND (3.8)	ND (0.9)	0.024	0.024
4-Nitrophenol	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
Dibenzofuran	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---



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HDOA Large Animal Holding Facility, 99-951 Halawa Valley Street, Aiea, Oahu

Decision Unit Sample ID (3048-)/ Analytes Depth	Analytical Results (mg/kg)				Tier 1 Environmental Screening Level (mg/kg)	
	DU-4		DU-5		Unrestricted	Restricted
	DU4-1A 0-1 ft bgs	DU4-2A 1-2 ft bgs	DU5-1A 0-1 ft bgs	DU5-2A 1-2 ft bgs		
2,4-Dinitrotoluene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.024	0.024
Diethylphthalate	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	3.7	3.7
Fluorene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	93	93
4-Chlorophenyl-phenylether	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
4-Nitroaniline	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
4,6-Dinitro-2methylphenol	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
N-Nitrosodiphenylamine	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
1,2-diphenylhydrazine (as azobenzene)	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
4-Bromophenyl-phenylether	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
Hexachlorobenzene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.22	0.23
Pentachlorophenol	ND (9.2)	ND (0.91)	ND (3.8)	ND (0.9)	0.78	0.78
Phenanthrene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	0.098	0.098
Anthracene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	69	69
Di-n-butylphthalate	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
Fluoranthene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	87	87
Benzidine	ND (9.2)	ND (0.91)	ND (3.8)	ND (0.9)	---	---
Pyrene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	44	44
Butylbenzylphthalate	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
3,3'-Dichlorobenzidine	ND(9.2)	ND (0.91)	ND (3.8)	ND (0.9)	0.092	0.092
Benzo(a)anthracene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	10	10
Chrysene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	30	30
bis(2-Ethylhexyl)phthalate	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	37	140
Di-n-octylphthalate	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	---	---
Benzo(b)fluoranthene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	11	21
Benzo(k)fluoranthene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	39	39
Benzo(a)pyrene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	3.6	5.9
Indeno(1,2,3-cd)pyrene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	11	31
Dibenz(a,h)anthracene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	1.1	18
Benzo(g,h,i)perylene	ND (1.9)	ND (0.19)	ND (0.79)	ND (0.19)	35	35
<b>Polychlorinated Biphenyls (EPA 8082)</b>						
Aroclor-1016	ND (0.083)	ND (0.083)	ND (0.083)	ND (0.083)	1.2	8.6
Aroclor-1221	ND (0.083)	ND (0.083)	ND (0.083)	ND (0.083)		
Aroclor-1232	ND (0.083)	ND (0.083)	ND (0.083)	ND (0.083)		
Aroclor-1242	ND (0.083)	ND (0.083)	ND (0.083)	ND (0.083)		
Aroclor-1248	ND (0.083)	ND (0.083)	ND (0.083)	ND (0.083)		
Aroclor-1254	ND (0.083)	ND (0.083)	ND (0.083)	ND (0.083)		
Aroclor-1260	ND (0.083)	ND (0.083)	ND (0.083)	0.13		
Aroclor-1262	ND (0.083)	ND (0.083)	ND (0.083)	ND (0.083)		
Aroclor-1268	ND (0.083)	ND (0.083)	ND (0.083)	ND (0.083)		
<b>Resource Conservation and Recovery Act Metals (EPA 6010B/7471A)</b>						
Arsenic	4.7	3.6	2.2	5.5	24	95
Barium	110	110	64	140	1,000	2,500
Cadmium	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	14	72
Chromium	200	180	170	170	1,100	1,100
Lead	15	12	11	20	200	800
Mercury	ND (0.17)	ND (0.18)	ND (0.18)	ND (0.17)	4.7	61
Selenium	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	78	1,000

Architects Hawaii Limited – Soil Screening Survey for New Animal Quarantine Station  
HDOA Large Animal Holding Facility, 99-951 Halawa Valley Street, Aiea, Oahu

Decision Unit Sample ID (3048-)/ Analytes Depth	Analytical Results (mg/kg)				Tier 1 Environmental Screening Level (mg/kg)	
	DU-4		DU-5		Unrestricted	Restricted
	DU4-1A 0-1 ft bgs	DU4-2A 1-2 ft bgs	DU5-1A 0-1 ft bgs	DU5-2A 1-2 ft bgs		
Silver	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	78	1,000
<b>Organochlorine Pesticides (EPA 8081A)</b>						
alpha-BHC	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	0.075 <sup>1</sup>	0.075 <sup>1</sup>
beta-BHC	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)		
gamma-BHC	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)		
delta-BHC	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)		
Heptachlor	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	1.3	5.6
Aldrin	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	3.9	8.4
Heptachlor epoxide	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	0.2	2.7
Endosulfan I	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	13 <sup>2</sup>	13 <sup>2</sup>
Endosulfan II	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)		
Endosulfan sulfate	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)		
Dieldrin	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	2.5	24
4,4'-DDD	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	2.2	8.4
4,4'-DDE	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	1.9	8.2
4,4'-DDT	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	1.8	5.6
Endrin	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)	3.8 <sup>3</sup>	30 <sup>3</sup>
Endrin aldehyde	ND (0.017)	ND (0.017)	ND (0.017)	ND (0.017)		
Chlordane (technical)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	17	23
Methoxychlor	ND (0.033)	ND (0.033)	ND (0.033)	ND (0.033)	16	16
Toxaphene	ND (0.33)	ND (0.33)	ND (0.33)	ND (0.33)	0.48	1.8

**Criteria:** Hawaii Department of Health Tier 1 Environmental Action Levels with unrestricted (residential) and restricted (commercial/industrial) land uses above a drinking water resource and less than 150 meters from surface water (State of Hawaii Department of Health, rev. Fall 2017).

**Notes:**

<sup>1</sup> EAL is for Hexachlorocyclohexane ("BHC" as Lindane) = Alpha- + Beta- + Gamma- + Delta-BHC

<sup>2</sup> EAL is for Endosulfan = Endosulfan I + Endosulfan II + Endosulfan sulfate

<sup>3</sup> EAL is for Endrin = Endrin + Endrin aldehyde + Endrin ketone

**Abbreviations/Acronyms:**

EPA	U.S. Environmental Protection Agency	mg/kg	milligrams per kilogram
ft bgs	feet below ground surface	ND (00)	not detected (laboratory reporting limit)
ID	identifier		

**Table 4. Soil Analytical Results: DU-6 to 7**

Decision Unit Sample ID (3048-)/ Analytes Depth	Analytical Results (mg/kg)						Tier 1 Environmental Screening Level (mg/kg)	
	DU-6		DU-7				Unrestricted	Restricted
	DU6-1A 0-1 ft bgs	DU6-2A 1-2 ft bgs	DU7-1A 0-0.5 ft bgs Primary	DU7-1B 0-0.5 ft bgs Duplicate	DU7-1C 0-0.5 ft bgs TriPLICATE	DU7-2A 0.5-1 ft bgs		
<b>Total Petroleum Hydrocarbons (EPA 8015M)</b>								
Diesel Range Organics	ND (23)	ND (22)	ND (24)	ND (23)	ND (23)	ND (22)	220	680
Residual Range Organics	ND (47)	ND (45)	ND (47)	ND (47)	ND (47)	ND (45)	500	1,000
<b>Semi-Volatile Organic Compounds (EPA 8270C)</b>								
Carbazole	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
1-Methylnaphthalene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.89	0.89
Pyridine	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
N-Nitrosodimethylamine	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
Phenol	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	1.8	1.8
Aniline	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
bis(2-Chloroethyl)ether	ND (1.8)	ND (1.8)	ND (3.8)	ND (9.3)	ND (4.7)	ND (1.8)	0.004	0.004
2-Chlorophenol	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.012	0.012
1,3-Dichlorobenzene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.57	0.57
1,4-Dichlorobenzene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.055	0.39
Benzyl alcohol	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
1,2-Dichlorobenzene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.75	0.75
2-Methylphenol	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
bis(2-Chloroisopropyl) ether	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
3,4-Methylphenol	ND (0.62)	ND (0.6)	ND (3.8)	ND (3.1)	ND (1.6)	ND (0.6)	---	---
N-Nitroso-di-n-propylamine	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
Hexachloroethane	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.023	0.023
Nitrobenzene	ND (1.8)	ND (1.8)	ND (3.8)	ND (9.3)	ND (4.7)	ND (1.8)	0.0053	0.0053
Isophorone	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.89	0.89
2-Nitrophenol	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
2,4-Dimethylphenol	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	9.8	9.8
Benzoic acid	ND (1.8)	ND (1.8)	ND (3.8)	ND (9.3)	ND (4.7)	ND (1.8)	---	---
bis(2-Chloroethoxy) methane	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
2,4-Dichlorophenol	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.0073	0.0073
1,2,4-Trichlorobenzene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.18	1.4
Naphthalene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	3.1	3.1
4-Chloroaniline	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.0073	0.0073
Hexachlorobutadiene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.041	0.041
4-Chloro-3-methylphenol	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
2-Methylnaphthalene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	1.9	1.9
Hexachlorocyclo pentadiene	ND (1.8)	ND (1.8)	ND (3.8)	ND (9.3)	ND (4.7)	ND (1.8)	---	---

Analytes	Analytical Results (mg/kg)						Tier 1 Environmental Screening Level (mg/kg)	
	DU-6		DU-7				Unrestricted	Restricted
	DU6-1A 0-1 ft bgs	DU6-2A 1-2 ft bgs	DU7-1A 0-0.5 ft bgs Primary	DU7-1B 0-0.5 ft bgs Duplicate	DU7-1C 0-0.5 ft bgs TriPLICATE	DU7-2A 0.5-1 ft bgs		
2,4,6-Trichlorophenol	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.31	0.31
2,4,5-Trichlorophenol	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.5	0.5
2-Chloronaphthalene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
2-Nitroaniline	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
Dimethylphthalate	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	26	26
Acenaphthylene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	120	120
2,6-Dinitrotoluene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.0051	0.0051
3-Nitroaniline	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
Acenaphthene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	120	120
2,4-Dinitrophenol	ND (1.8)	ND (1.8)	ND (3.8)	ND (9.3)	ND (4.7)	ND (1.8)	0.024	0.024
4-Nitrophenol	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
Dibenzofuran	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
2,4-Dinitrotoluene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.024	0.024
Diethylphthalate	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	3.7	3.7
Fluorene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	93	93
4-Chlorophenyl-phenylether	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
4-Nitroaniline	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
4,6-Dinitro-2methylphenol	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
N-Nitrosodiphenylamine	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
1,2-diphenylhydrazine (as azobenzene)	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
4-Bromophenyl-phenylether	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
Hexachlorobenzene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.22	0.23
Pentachlorophenol	ND (1.8)	ND (1.8)	ND (3.8)	ND (9.3)	ND (4.7)	ND (1.8)	0.78	0.78
Phenanthrene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	0.098	0.098
Anthracene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	69	69
Di-n-butylphthalate	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
Fluoranthene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	87	87
Benzidine	ND (1.8)	ND (1.8)	ND (3.8)	ND (9.3)	ND (4.7)	ND (1.8)	---	---
Pyrene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	44	44
Butylbenzylphthalate	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
3,3'-Dichlorobenzidine	ND (1.8)	ND (1.8)	ND (3.8)	ND (9.3)	ND (4.7)	ND (1.8)	0.092	0.092
Benzo(a)anthracene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	10	10
Chrysene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	30	30
bis(2-Ethylhexyl) phthalate	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	37	140
Di-n-octylphthalate	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	---	---
Benzo(b)fluoranthene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	11	21

Decision Unit Sample ID (3048-)/ Depth	Analytical Results (mg/kg)						Tier 1 Environmental Screening Level (mg/kg)	
	DU-6		DU-7				Unrestricted	Restricted
	DU6-1A 0-1 ft bgs	DU6-2A 1-2 ft bgs	DU7-1A 0-0.5 ft bgs Primary	DU7-1B 0-0.5 ft bgs Duplicate	DU7-1C 0-0.5 ft bgs TriPLICATE	DU7-2A 0.5-1 ft bgs		
Benzo(k)fluoranthene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	39	39
Benzo(a)pyrene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	3.6	5.9
Indeno(1,2,3-cd)pyrene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	11	31
Dibenz(a,h)anthracene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	1.1	18
Benzo(g,h,i)perylene	ND (0.39)	ND (0.37)	ND (0.79)	ND (1.9)	ND (0.98)	ND (0.37)	35	35
<b>Polychlorinated Biphenyls (EPA 8082)</b>								
Aroclor-1016	ND (0.033)	ND (0.082)	ND (0.083)	ND (0.088)	ND (0.081)	ND (0.033)	1.2	8.6
Aroclor-1221	ND (0.033)	ND (0.082)	ND (0.083)	ND (0.088)	ND (0.081)	ND (0.033)		
Aroclor-1232	ND (0.033)	ND (0.082)	ND (0.083)	ND (0.088)	ND (0.081)	ND (0.033)		
Aroclor-1242	ND (0.033)	ND (0.082)	ND (0.083)	ND (0.088)	ND (0.081)	ND (0.033)		
Aroclor-1248	ND (0.033)	ND (0.082)	ND (0.083)	ND (0.088)	ND (0.081)	ND (0.033)		
Aroclor-1254	ND (0.033)	ND (0.082)	ND (0.083)	ND (0.088)	ND (0.081)	ND (0.033)		
Aroclor-1260	0.11	0.15	ND (0.083)	0.21	ND (0.081)	0.32		
Aroclor-1262	ND (0.033)	ND (0.082)	ND (0.083)	ND (0.088)	ND (0.081)	ND (0.033)		
Aroclor-1268	ND (0.033)	ND (0.082)	ND (0.083)	ND (0.088)	ND (0.081)	ND (0.033)		
<b>Resource Conservation and Recovery Act Metals (EPA 6010B/7471A)</b>								
Arsenic	3.1	5.8	2.2	3.8	3.8	5.9	24	95
Barium	81	110	86	100	96	160	1,000	2,500
Cadmium	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	14	72
Chromium	200	160	170	200	200	180	1,100	1,100
Lead	14	16	13	13	15	41	200	800
Mercury	ND (0.18)	ND (0.17)	ND (0.16)	ND (0.17)	ND (0.17)	ND (0.16)	4.7	61
Selenium	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	78	1,000
Silver	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	78	1,000
<b>Organochlorine Pesticides (EPA 8081A)</b>								
alpha-BHC	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)	0.075 <sup>1</sup>	0.075 <sup>1</sup>
beta-BHC	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)		
gamma-BHC	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)		
delta-BHC	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)		
Heptachlor	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)	1.3	5.6
Aldrin	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)	3.9	8.4
Heptachlor epoxide	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)	0.2	2.7
Endosulfan I	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)	13 <sup>2</sup>	13 <sup>2</sup>
Endosulfan II	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)		
Endosulfan sulfate	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)		
Dieldrin	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)	2.5	24
4,4'-DDD	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)	2.2	8.4

Decision Unit Sample ID (3048-)/ Depth	Analytical Results (mg/kg)						Tier 1 Environmental Screening Level (mg/kg)	
	DU-6		DU-7				Unrestricted	Restricted
	DU6-1A 0-1 ft bgs	DU6-2A 1-2 ft bgs	DU7-1A 0-0.5 ft bgs Primary	DU7-1B 0-0.5 ft bgs Duplicate	DU7-1C 0-0.5 ft bgs TriPLICATE	DU7-2A 0.5-1 ft bgs		
4,4'-DDE	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)	1.9	8.2
4,4'-DDT	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)	1.8	5.6
Endrin	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)	3.8 <sup>3</sup>	30 <sup>3</sup>
Endrin aldehyde	ND (0.016)	ND (0.016)	ND (0.017)	ND (0.018)	ND (0.016)	ND (0.016)		
Chlordane (technical)	ND (0.16)	ND (0.16)	0.28	ND (0.18)	0.34	ND (0.16)	17	23
Methoxychlor	ND (0.033)	ND (0.033)	ND (0.033)	ND (0.035)	ND (0.032)	ND (0.033)	16	16
Toxaphene	ND (0.33)	ND (0.33)	ND (0.33)	ND (0.35)	ND (0.16)	ND (0.33)	0.48	1.8

**Criteria:** Hawaii Department of Health Tier 1 Environmental Action Levels with unrestricted (residential) and restricted (commercial/industrial) land uses above a drinking water resource and less than 150 meters from surface water (State of Hawaii Department of Health, rev. Fall 2017).

**Notes:**

<sup>1</sup> EAL is for Hexachlorocyclohexane ("BHC" as Lindane) = Alpha- + Beta- + Gamma- + Delta-BHC

<sup>2</sup> EAL is for Endosulfan = Endosulfan I + Endosulfan II + Endosulfan sulfate

<sup>3</sup> EAL is for Endrin = Endrin + Endrin aldehyde + Endrin ketone

**Abbreviations/Acronyms:**

EPA U.S. Environmental Protection Agency mg/kg milligrams per kilogram  
ft bgs feet below ground surface ND (00) not detected (laboratory reporting limit)  
ID identifier

## **APPENDIX D    LABORATORY ANALYTICAL REPORTS**



**ENTHALPY**  
ANALYTICAL

Enthalpy Analytical  
931 West Barkley Ave  
Orange, CA 92868  
(714) 771-6900

enthalpy.com

Lab Job Number: 449770  
Report Level: II  
Report Date: 09/08/2021

**Analytical Report** *prepared for:*

Jennah Oshiro  
Myounghee Noh & Associates  
99-1046 Iwaena Street  
210A  
Aiea, HI 96701

Project: 3048\_2 - AQS

*Authorized for release by:*

Jess Silberman, Project Manager  
510-204-2236  
[jessica.silberman@enthalpy.com](mailto:jessica.silberman@enthalpy.com)

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

CA ELAP# 1338, NELAP# 4038, SCAQMD LAP# 18LA0518, LACSD ID# 10105, CDC ELITE  
Member



## Sample Summary

Jannah Oshiro  
 Myounghee Noh & Associates  
 99-1046 Iwaena Street  
 210A  
 Aiea, HI 96701

Lab Job #: 449770  
 Project No: 3048\_2  
 Location: AQS  
 Date Received: 08/27/21

Sample ID	Lab ID	Collected	Matrix
3048-DU2-1A	449770-001	08/23/21 13:35	Soil
3048-DU2-2A	449770-002	08/23/21 13:35	Soil
3048-DU7-1A	449770-003	08/25/21 12:02	Soil
3048-DU7-1B	449770-004	08/25/21 12:02	Soil
3048-DU7-1C	449770-005	08/25/21 12:02	Soil
3048-DU7-2A	449770-006	08/25/21 12:02	Soil
3048-DU6-1A	449770-007	08/25/21 15:16	Soil
3048-DU6-2A	449770-008	08/25/21 15:16	Soil

## Case Narrative

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Myounghee Noh & Associates  
99-1046 Iwaena Street  
210A  
Aiea, HI 96701  
Jennah Oshiro

Lab Job Number: 449770  
Project No: 3048\_2  
Location: AQS  
Date Received: 08/27/21

---

This data package contains sample and QC results for eight soil samples, requested for the above referenced project on 08/27/21. The samples were received cold and intact. Multi-Increment Sampling (ISM) was performed on all samples in accordance with HDOH specifications.

### **TPH-Extractables by GC (EPA 8015M):**

Low recovery was observed for diesel C10-C28 in the BSD for batch 273267; the low recovery was not associated with any reported results. High RPD was also observed for diesel C10-C28 in the BS/BSD for batch 273267; the high RPD was not associated with any reported results. 3048-DU2-1A (lab # 449770-001) was diluted due to the dark color of the sample extract. No other analytical problems were encountered.

### **Semivolatile Organics by GC/MS (EPA 8270C):**

High response was observed for 2,4-dinitrotoluene in the CCV analyzed 09/02/21 10:19; affected data was qualified with "b". High surrogate recovery was observed for phenol-d6 in 3048-DU6-1A (lab # 449770-007); no target analytes were detected in the sample. 3048-DU2-1A (lab # 449770-001) was diluted due to the dark and viscous nature of the sample extract. A number of samples were diluted due to the dark color of the sample extracts. No other analytical problems were encountered.

### **Pesticides (EPA 8081A):**

High RPD was observed for endrin aldehyde in the BS/BSD for batch 273331; this analyte was not detected at or above the RL in the associated samples. Many samples were diluted due to the dark color of the sample extracts. No other analytical problems were encountered.

### **PCBs (EPA 8082):**

Many samples were diluted due to the dark color of the sample extracts. 3048-DU7-2A (lab # 449770-006) and 3048-DU6-1A (lab # 449770-007) were diluted due to the color of the sample extracts. No other analytical problems were encountered.

### **Metals (EPA 6010B and EPA 7471A):**

No analytical problems were encountered.

### **Moisture (ASTM D2216):**

No analytical problems were encountered.

# CHAIN OF CUSTODY



Formerly Curtis & Tompkins Labs

2323 Fifth Street  
Berkeley, CA 94710

Phone (510) 486-0900  
Fax (510) 486-0532

Chain of Custody # \_\_\_\_\_

C&T LOGIN # 449770

Project No: 3048-2 Sampler: Jannah Oshiro  
 Project Name: AQS Report To: Jannah Oshiro  
 Project P. O. No: 3048-2 Company: Myanmar New World Associ  
 EDD Format: Report Level  II  III  IV Telephone: 808-936-7382  
 Turnaround Time:  RUSH  Standard Email: jannah@nwn-associates.com

### ANALYTICAL REQUEST

Lab No.	Sample ID.	SAMPLING		MATRIX		# of Containers	CHEMICAL PRESERVATIVE				
		Date Collected	Time Collected	Water	Solid		HCl	H2SO4	HNO3	NaOH	None
		1	3048-DU2-1A	8/23/21	13:35			X	-		
2	3048-DU2-2A	8/23/21	13:35		X	-					X
3	3048-DU3-1A	8/25/21	12:02		X	-					X
4	3048-DU3-1B	8/25/21	12:02		X	-					X
5	3048-DU3-1C	8/25/21	12:02		X	-					X
6	3048-DU3-2A	8/25/21	12:02		X	-					X
7	3048-DU6-1A	8/25/21	15:16		X	-					X
8	3048-DU6-2A	8/25/21	15:16		X	-					X

WIS Prep	TPH-DRO (8015)	SVOC (8260)	PCRA & Metals (600/747)	PCB (8082)	Pesticides (8081A)													
----------	----------------	-------------	-------------------------	------------	--------------------	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

**SAMPLE RECEIPT**

Intact  
 Cold  
 On Ice  
 Ambient

**RELINQUISHED BY:**

*Jannah Oshiro*  
 DATE: 8/26/21 TIME: 11:42  
*Jannah Oshiro*  
 DATE: 9/3/21 TIME: 1500  
 DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

**RECEIVED BY:**

*Jannah Oshiro*  
 DATE: 8/27/21 TIME: 10:10  
*EA-Orange*  
 DATE: 9/1/21 TIME: 13:24  
 DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

**SAMPLE RECEIPT CHECKLIST**



Section 1: Login # 449770 Client: MNA  
 Date Received: 8/27/21 Project: \_\_\_\_\_

Section 2: Shipping info (if applicable) FedEx 7746 5174 7510  
 Are custody seals present?  No, or  Yes. If yes, where?  on cooler,  on samples,  on package  
 Date: \_\_\_\_\_ How many \_\_\_\_\_  Signature,  Initials,  None  
 Were custody seals intact upon arrival?  Yes  No  N/A  
 Samples received in a cooler?  Yes, how many? 1  No (skip Section 3 below)  
 If no cooler Sample Temp (°C): \_\_\_\_\_ using IR Gun #  B, or  C  
 Samples received on ice directly from the field. Cooling process had begun  
 If in cooler: Date Opened 8/27/21 By (print) MAG (sign) \_\_\_\_\_

Section 3: **Important : Notify PM if temperature exceeds 6°C or arrive frozen.**  
 Packing in cooler: (if other, describe) \_\_\_\_\_  
 Bubble Wrap,  Foam blocks,  Bags,  None,  Cloth material,  Cardboard,  Styrofoam,  Paper towels  
 Samples received on ice directly from the field. Cooling process had begun  
 Type of ice used :  Wet,  Blue/Gel,  None Temperature blank(s) included?  Yes,  No  
 Temperature measured using  Thermometer ID: \_\_\_\_\_, or IR Gun #  B  C  
 Cooler Temp (°C): #1: 4.1, #2: \_\_\_\_\_, #3: \_\_\_\_\_, #4: \_\_\_\_\_, #5: \_\_\_\_\_, #6: \_\_\_\_\_, #7: \_\_\_\_\_

Section 4:	YES	NO	N/A
Were custody papers dry, filled out properly, and the project identifiable	/		
Were Method 5035 sampling containers present?		/	
If YES, what time were they transferred to freezer? _____			
Did all bottles arrive unbroken/unopened?	/		
Are there any missing / extra samples?		/	
Are samples in the appropriate containers for indicated tests?	/		
Are sample labels present, in good condition and complete?	/		
Does the container count match the COC?	/		
Do the sample labels agree with custody papers?	/		
Was sufficient amount of sample sent for tests requested?	/		
Did you change the hold time in LIMS for unpreserved VOAs?			/
Did you change the hold time in LIMS for preserved terracores?			/
Are bubbles > 6mm present in VOA samples?			/
Was the client contacted concerning this sample delivery?		/	
If YES, who was called? _____ By _____ Date: _____			

Section 5:	YES	NO	N/A
Are the samples appropriately preserved? (if N/A, skip the rest of section 5)			
Did you check preservatives for all bottles for each sample?			
Did you document your preservative check? pH strip lot# _____, pH strip lot# _____, pH strip lot# _____			
Preservative added:			
<input type="checkbox"/> H2SO4 lot# _____ added to samples _____ on/at _____			
<input type="checkbox"/> HCL lot# _____ added to samples _____ on/at _____			
<input type="checkbox"/> HNO3 lot# _____ added to samples _____ on/at _____			
<input type="checkbox"/> NaOH lot# _____ added to samples _____ on/at _____			

Section 6:  
 Explanations/Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Date Logged in 8/27/21 By (print) MAG (sign) \_\_\_\_\_  
 Date Labeled 8/27/21 By (print) MAG (sign) \_\_\_\_\_



# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

**Section 1**  
 Client: Myounghee Noh & Associates Project: AQS  
 Date Received: 9/1/21 Sampler's Name Present:  Yes  No

**Section 2**  
 Sample(s) received in a cooler?  Yes, How many? 1  No (skip section 2) Sample Temp (°C) (No Cooler) : \_\_\_\_\_  
 Sample Temp (°C), One from each cooler: #1: 3.6 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_  
*(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)*  
 Shipping Information: \_\_\_\_\_

**Section 3**  
 Was the cooler packed with:  Ice  Ice Packs  Bubble Wrap  Styrofoam  
 Paper  None  Other \_\_\_\_\_  
 Cooler Temp (°C): #1: 0.3 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

Section 4	YES	NO	N/A
Was a COC received?	<input checked="" type="checkbox"/>		
Are sample IDs present?	<input checked="" type="checkbox"/>		
Are sampling dates & times present?	<input checked="" type="checkbox"/>		
Is a relinquished signature present?	<input checked="" type="checkbox"/>		
Are the tests required clearly indicated on the COC?	<input checked="" type="checkbox"/>		
Are custody seals present?		<input checked="" type="checkbox"/>	
If custody seals are present, were they intact?			<input checked="" type="checkbox"/>
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)	<input checked="" type="checkbox"/>		
Did all samples arrive intact? If no, indicate in Section 4 below.	<input checked="" type="checkbox"/>		
Did all bottle labels agree with COC? (ID, dates and times)	<input checked="" type="checkbox"/>		
Were the samples collected in the correct containers for the required tests?	<input checked="" type="checkbox"/>		
Are the containers labeled with the correct preservatives?			<input checked="" type="checkbox"/>
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			<input checked="" type="checkbox"/>
Was a sufficient amount of sample submitted for the requested tests?	<input checked="" type="checkbox"/>		

**Section 5 Explanations/Comments**  
24-2oz soil jars received.

**Section 6**  
 For discrepancies, how was the Project Manager notified?  Verbal PM Initials: \_\_\_\_\_ Date/Time \_\_\_\_\_  
 Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_  
 Project Manager's response: \_\_\_\_\_

Completed By:  Date: 9/1/2021

Enthalpy Analytical, a subsidiary of Montrose Environmental Group, Inc.  
 931 W. Barkley Ave, Orange, CA 92868 • T: (714) 771-6900 • F: (714) 538-1209  
 www.enthalpy.com/socal

Sample Acceptance Checklist -- Rev 4, 8/8/2017

8/31/2021

#2



800-322-5555  
www.gls-us.com

**Ship From**

ENTHALPY ANALYTICAL  
BERKELEY SERVICE CENTER  
2323 5TH STREET  
BERKELEY, CA 94710

Tracking #: 554480353

CPS



**Ship To**

ENTHALPY ANALYTICAL (ORG)  
SAMPLE RECEIVING  
931 W BARKLEY AVE.  
ORANGE, CA 92868

ORANGE

S10003H

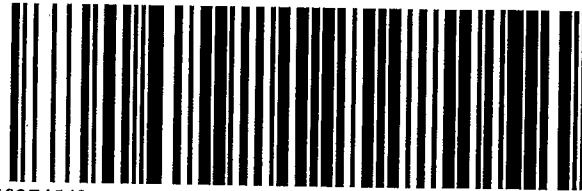
COD: \$0.00

Weight: 0 lb(s)

Reference:

Delivery Instructions:

Signature Type: STANDARD



48374549

ORC CA927-EH1

Print Date: 8/31/2021 1:14 PM

Package 2 of 4

**LABEL INSTRUCTIONS:**

9/1/2021

13:24

**Do not copy or reprint this label for additional shipments - each package must have a unique barcode.**

Step 1: Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer.

Step 2: Fold this page in half.

Step 3: Securely attach this label to your package and do not cover the barcode.

3.6/0.3

**TERMS AND CONDITIONS:**

By giving us your shipment to deliver, you agree to all of the General Logistics Systems US, Inc. (GLS) service terms & conditions including, but not limited to; limits of liability, declared value conditions, and claim procedures which are available on our website at [www.gls-us.com](http://www.gls-us.com).



# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

**Section 1**  
 Client: Myounghee Assoc. Project: ALQS  
 Date Received: 9/2/22 Sampler's Name Present:  Yes  No

**Section 2**  
 Sample(s) received in a cooler?  Yes, How many? 1  No (skip section 2) Sample Temp (°C) (No Cooler): \_\_\_\_\_  
 Sample Temp (°C), One from each cooler: #1: 6.2 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_  
 (Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)  
 Shipping Information: \_\_\_\_\_

**Section 3**  
 Was the cooler packed with:  Ice  Ice Packs  Bubble Wrap  Styrofoam  
 Paper  None  Other \_\_\_\_\_  
 Cooler Temp (°C): #1: 2.3 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

Section 4	YES	NO	N/A
Was a COC received?	<input checked="" type="checkbox"/>		
Are sample IDs present?	<input checked="" type="checkbox"/>		
Are sampling dates & times present?	<input checked="" type="checkbox"/>		
Is a relinquished signature present?	<input checked="" type="checkbox"/>		
Are the tests required clearly indicated on the COC?	<input checked="" type="checkbox"/>		
Are custody seals present?		<input checked="" type="checkbox"/>	
If custody seals are present, were they intact?			<input checked="" type="checkbox"/>
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)	<input checked="" type="checkbox"/>		
Did all samples arrive intact? If no, indicate in Section 4 below.	<input checked="" type="checkbox"/>		
Did all bottle labels agree with COC? (ID, dates and times)	<input checked="" type="checkbox"/>		
Were the samples collected in the correct containers for the required tests?	<input checked="" type="checkbox"/>		
Are the containers labeled with the correct preservatives?			<input checked="" type="checkbox"/>
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			<input checked="" type="checkbox"/>
Was a sufficient amount of sample submitted for the requested tests?	<input checked="" type="checkbox"/>		

**Section 5 Explanations/Comments**  
Received 16 small jars.

**Section 6**  
 For discrepancies, how was the Project Manager notified?  Verbal PM Initials: \_\_\_\_\_ Date/Time \_\_\_\_\_  
 Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_  
 Project Manager's response: \_\_\_\_\_

Completed By: Devin Sylvester Date: 9/2/22



800-322-5555  
www.gls-us.com

**Ship From**

ENTHALPY ANALYTICAL  
BERKELEY SERVICE CENTER  
2323 5TH STREET  
BERKELEY, CA 94710

Tracking #: 554503017

CPS



**Ship To**

ENTHALPY ANALYTICAL (ORG)  
SAMPLE RECEIVING  
931 W BARKLEY AVE.  
ORANGE, CA 92868

**ORANGE**

**S10003H**

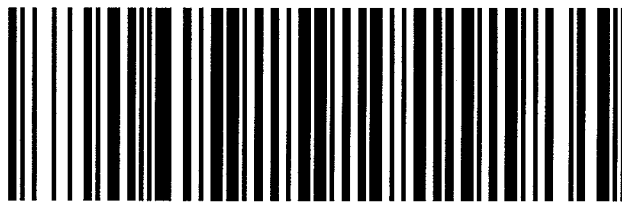
**COD:** \$0.00

**Weight:** 0 lb(s)

**Reference:**

**Delivery Instructions:**

**Signature Type:** STANDARD



48485166

**ORC CA927-EH1**

Print Date: 9/1/2021 4:59 PM

Package 3 of 4

**LABEL INSTRUCTIONS:**

**Do not copy or reprint this label for additional shipments - each package must have a unique barcode.**

Step 1: Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer.

Step 2: Fold this page in half.

Step 3: Securely attach this label to your package and do not cover the barcode.

**TERMS AND CONDITIONS:**

By giving us your shipment to deliver, you agree to all of the General Logistics Systems US, Inc. (GLS) service terms & conditions including, but not limited to; limits of liability, declared value conditions, and claim procedures which are available on our website at [www.gls-us.com](http://www.gls-us.com).

6.2/2.3 @ 12.20



## Extractable Carbon Chain

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU2-1A

**Moisture:** 11%

**Prepared:** 09/02/21

**Type:** SAMPLE

**DiIn Fac:** 10.00

**Analyzed:** 09/02/21

**Lab ID:** 449770-001

**Batch#:** 273267

**Prep:** EPA 3580

**Matrix:** Soil

**Sampled:** 08/23/21

**Analysis:** EPA 8015M

**Basis:** dry

**Received:** 08/27/21

**Analyst:** MES

Analyte	Result	RL	Units
DRO C10-C28	ND	220	mg/Kg
RRO C28-C44	ND	450	mg/Kg
Surrogate	%REC	Limits	
n-Triacontane	127	70-130	

**Field ID:** 3048-DU2-2A

**Moisture:** 16%

**Prepared:** 09/02/21

**Type:** SAMPLE

**DiIn Fac:** 1.000

**Analyzed:** 09/02/21

**Lab ID:** 449770-002

**Batch#:** 273267

**Prep:** EPA 3580

**Matrix:** Soil

**Sampled:** 08/23/21

**Analysis:** EPA 8015M

**Basis:** dry

**Received:** 08/27/21

**Analyst:** MES

Analyte	Result	RL	Units
DRO C10-C28	ND	24	mg/Kg
RRO C28-C44	ND	48	mg/Kg
Surrogate	%REC	Limits	
n-Triacontane	98	70-130	

**Field ID:** 3048-DU7-1A

**Moisture:** 15%

**Prepared:** 09/02/21

**Type:** SAMPLE

**DiIn Fac:** 1.000

**Analyzed:** 09/02/21

**Lab ID:** 449770-003

**Batch#:** 273267

**Prep:** EPA 3580

**Matrix:** Soil

**Sampled:** 08/25/21

**Analysis:** EPA 8015M

**Basis:** dry

**Received:** 08/27/21

**Analyst:** MES

Analyte	Result	RL	Units
DRO C10-C28	ND	24	mg/Kg
RRO C28-C44	ND	47	mg/Kg
Surrogate	%REC	Limits	
n-Triacontane	95	70-130	

## Extractable Carbon Chain

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU7-1B

**Moisture:** 14%

**Prepared:** 09/02/21

**Type:** SAMPLE

**DiIn Fac:** 1.000

**Analyzed:** 09/02/21

**Lab ID:** 449770-004

**Batch#:** 273267

**Prep:** EPA 3580

**Matrix:** Soil

**Sampled:** 08/25/21

**Analysis:** EPA 8015M

**Basis:** dry

**Received:** 08/27/21

**Analyst:** MES

Analyte	Result	RL	Units
DRO C10-C28	ND	23	mg/Kg
RRO C28-C44	ND	47	mg/Kg
Surrogate	%REC	Limits	
n-Triacontane	95	70-130	

**Field ID:** 3048-DU7-1C

**Moisture:** 14%

**Prepared:** 09/02/21

**Type:** SAMPLE

**DiIn Fac:** 1.000

**Analyzed:** 09/02/21

**Lab ID:** 449770-005

**Batch#:** 273267

**Prep:** EPA 3580

**Matrix:** Soil

**Sampled:** 08/25/21

**Analysis:** EPA 8015M

**Basis:** dry

**Received:** 08/27/21

**Analyst:** MES

Analyte	Result	RL	Units
DRO C10-C28	ND	23	mg/Kg
RRO C28-C44	ND	47	mg/Kg
Surrogate	%REC	Limits	
n-Triacontane	95	70-130	

**Field ID:** 3048-DU7-2A

**Moisture:** 11%

**Prepared:** 09/02/21

**Type:** SAMPLE

**DiIn Fac:** 1.000

**Analyzed:** 09/02/21

**Lab ID:** 449770-006

**Batch#:** 273267

**Prep:** EPA 3580

**Matrix:** Soil

**Sampled:** 08/25/21

**Analysis:** EPA 8015M

**Basis:** dry

**Received:** 08/27/21

**Analyst:** MES

Analyte	Result	RL	Units
DRO C10-C28	ND	22	mg/Kg
RRO C28-C44	ND	45	mg/Kg
Surrogate	%REC	Limits	
n-Triacontane	97	70-130	

## Extractable Carbon Chain

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU6-1A

**Moisture:** 14%

**Prepared:** 09/02/21

**Type:** SAMPLE

**Diln Fac:** 1.000

**Analyzed:** 09/02/21

**Lab ID:** 449770-007

**Batch#:** 273267

**Prep:** EPA 3580

**Matrix:** Soil

**Sampled:** 08/25/21

**Analysis:** EPA 8015M

**Basis:** dry

**Received:** 08/27/21

**Analyst:** MES

Analyte	Result	RL	Units
DRO C10-C28	ND	23	mg/Kg
RRO C28-C44	ND	47	mg/Kg

Surrogate	%REC	Limits
n-Triacontane	94	70-130

**Field ID:** 3048-DU6-2A

**Moisture:** 11%

**Prepared:** 09/02/21

**Type:** SAMPLE

**Diln Fac:** 1.000

**Analyzed:** 09/02/21

**Lab ID:** 449770-008

**Batch#:** 273267

**Prep:** EPA 3580

**Matrix:** Soil

**Sampled:** 08/25/21

**Analysis:** EPA 8015M

**Basis:** dry

**Received:** 08/27/21

**Analyst:** MES

Analyte	Result	RL	Units
DRO C10-C28	ND	22	mg/Kg
RRO C28-C44	ND	45	mg/Kg

Surrogate	%REC	Limits
n-Triacontane	95	70-130

**Type:** BLANK

**Batch#:** 273267

**Analysis:** EPA 8015M

**Lab ID:** QC941823

**Prepared:** 09/02/21

**Analyst:** MES

**Matrix:** Soil

**Analyzed:** 09/02/21

**Diln Fac:** 1.000

**Prep:** EPA 3580

Analyte	Result	RL	Units
DRO C10-C28	ND	20	mg/Kg
RRO C28-C44	ND	40	mg/Kg

Surrogate	%REC	Limits
n-Triacontane	95	70-130

## Legend

**ND:** Not Detected

**RL:** Reporting Limit

### Extractable Carbon Chain: Batch QC

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BS

**Batch#:** 273267

**Analysis:** EPA 8015M

**Lab ID:** QC941824

**Prepared:** 09/02/21

**Analyst:** MES

**Matrix:** Soil

**Analyzed:** 09/02/21

**Diln Fac:** 1.000

**Prep:** EPA 3580

Analyte	Spiked	Result	%REC	Limits	Units
DRO C10-C28	500.0	420.9	84	76-122	mg/Kg

Surrogate	%REC	Limits
n-Triacontane	93	70-130

**Type:** BSD

**Batch#:** 273267

**Analysis:** EPA 8015M

**Lab ID:** QC941825

**Prepared:** 09/02/21

**Analyst:** MES

**Matrix:** Soil

**Analyzed:** 09/02/21

**Diln Fac:** 1.000

**Prep:** EPA 3580

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
DRO C10-C28	500.0	118.9	24 *	76-122	mg/Kg	112 *	20

Surrogate	%REC	Limits
n-Triacontane	98	70-130

Legend

\*: Value is outside QC limits

RPD: Relative Percent Difference

## EPA 8270 Semi-Volatile Organics

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU2-1A

**Diln Fac:** 200.0

**Analyzed:** 09/02/21

**Lab ID:** 449770-001

**Batch#:** 273303

**Prep:** EPA 3550C

**Matrix:** Soil

**Sampled:** 08/23/21

**Analysis:** EPA 8270C

**Basis:** dry

**Received:** 08/27/21

**Analyst:** DJL

**Moisture:** 11%

**Prepared:** 09/02/21

Analyte	Result	RL	Units
Carbazole	ND	37,000	ug/Kg
1-Methylnaphthalene	ND	37,000	ug/Kg
Pyridine	ND	37,000	ug/Kg
N-Nitrosodimethylamine	ND	37,000	ug/Kg
Phenol	ND	37,000	ug/Kg
Aniline	ND	37,000	ug/Kg
bis(2-Chloroethyl)ether	ND	180,000	ug/Kg
2-Chlorophenol	ND	37,000	ug/Kg
1,3-Dichlorobenzene	ND	37,000	ug/Kg
1,4-Dichlorobenzene	ND	37,000	ug/Kg
Benzyl alcohol	ND	37,000	ug/Kg
1,2-Dichlorobenzene	ND	37,000	ug/Kg
2-Methylphenol	ND	37,000	ug/Kg
bis(2-Chloroisopropyl) ether	ND	37,000	ug/Kg
3-,4-Methylphenol	ND	60,000	ug/Kg
N-Nitroso-di-n-propylamine	ND	37,000	ug/Kg
Hexachloroethane	ND	37,000	ug/Kg
Nitrobenzene	ND	180,000	ug/Kg
Isophorone	ND	37,000	ug/Kg
2-Nitrophenol	ND	37,000	ug/Kg
2,4-Dimethylphenol	ND	37,000	ug/Kg
Benzoic acid	ND	180,000	ug/Kg
bis(2-Chloroethoxy)methane	ND	37,000	ug/Kg
2,4-Dichlorophenol	ND	37,000	ug/Kg
1,2,4-Trichlorobenzene	ND	37,000	ug/Kg
Naphthalene	ND	37,000	ug/Kg
4-Chloroaniline	ND	37,000	ug/Kg
Hexachlorobutadiene	ND	37,000	ug/Kg
4-Chloro-3-methylphenol	ND	37,000	ug/Kg
2-Methylnaphthalene	ND	37,000	ug/Kg
Hexachlorocyclopentadiene	ND	180,000	ug/Kg
2,4,6-Trichlorophenol	ND	37,000	ug/Kg
2,4,5-Trichlorophenol	ND	37,000	ug/Kg
2-Chloronaphthalene	ND	37,000	ug/Kg
2-Nitroaniline	ND	37,000	ug/Kg
Dimethylphthalate	ND	37,000	ug/Kg
Acenaphthylene	ND	37,000	ug/Kg
2,6-Dinitrotoluene	ND	37,000	ug/Kg
3-Nitroaniline	ND	37,000	ug/Kg
Acenaphthene	ND	37,000	ug/Kg

**EPA 8270 Semi-Volatile Organics**
**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
2,4-Dinitrophenol	ND	180,000	ug/Kg
4-Nitrophenol	ND	37,000	ug/Kg
Dibenzofuran	ND	37,000	ug/Kg
2,4-Dinitrotoluene	ND	37,000	ug/Kg
Diethylphthalate	ND	37,000	ug/Kg
Fluorene	ND	37,000	ug/Kg
4-Chlorophenyl-phenylether	ND	37,000	ug/Kg
4-Nitroaniline	ND	37,000	ug/Kg
4,6-Dinitro-2-methylphenol	ND	37,000	ug/Kg
N-Nitrosodiphenylamine	ND	37,000	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	37,000	ug/Kg
4-Bromophenyl-phenylether	ND	37,000	ug/Kg
Hexachlorobenzene	ND	37,000	ug/Kg
Pentachlorophenol	ND	180,000	ug/Kg
Phenanthrene	ND	37,000	ug/Kg
Anthracene	ND	37,000	ug/Kg
Di-n-butylphthalate	ND	37,000	ug/Kg
Fluoranthene	ND	37,000	ug/Kg
Benzidine	ND	180,000	ug/Kg
Pyrene	ND	37,000	ug/Kg
Butylbenzylphthalate	ND	37,000	ug/Kg
3,3'-Dichlorobenzidine	ND	180,000	ug/Kg
Benzo(a)anthracene	ND	37,000	ug/Kg
Chrysene	ND	37,000	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	37,000	ug/Kg
Di-n-octylphthalate	ND	37,000	ug/Kg
Benzo(b)fluoranthene	ND	37,000	ug/Kg
Benzo(k)fluoranthene	ND	37,000	ug/Kg
Benzo(a)pyrene	ND	37,000	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	37,000	ug/Kg
Dibenz(a,h)anthracene	ND	37,000	ug/Kg
Benzo(g,h,i)perylene	ND	37,000	ug/Kg

Surrogate	%REC	Limits
2-Fluorophenol	DO	29-120
Phenol-d6	DO	30-120
2,4,6-Tribromophenol	DO	32-120
Nitrobenzene-d5	DO	33-120
2-Fluorobiphenyl	DO	39-120
Terphenyl-d14	DO	44-125

## Legend

**DO:** Diluted Out

**ND:** Not Detected

**RL:** Reporting Limit

## EPA 8270 Semi-Volatile Organics

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU2-2A

**Diln Fac:** 1.000

**Analyzed:** 09/02/21

**Lab ID:** 449770-002

**Batch#:** 273303

**Prep:** EPA 3550C

**Matrix:** Soil

**Sampled:** 08/23/21

**Analysis:** EPA 8270C

**Basis:** dry

**Received:** 08/27/21

**Analyst:** DJL

**Moisture:** 16%

**Prepared:** 09/02/21

Analyte	Result	RL	Units
Carbazole	ND	200	ug/Kg
1-Methylnaphthalene	ND	200	ug/Kg
Pyridine	ND	200	ug/Kg
N-Nitrosodimethylamine	ND	200	ug/Kg
Phenol	ND	200	ug/Kg
Aniline	ND	200	ug/Kg
bis(2-Chloroethyl)ether	ND	950	ug/Kg
2-Chlorophenol	ND	200	ug/Kg
1,3-Dichlorobenzene	ND	200	ug/Kg
1,4-Dichlorobenzene	ND	200	ug/Kg
Benzyl alcohol	ND	200	ug/Kg
1,2-Dichlorobenzene	ND	200	ug/Kg
2-Methylphenol	ND	200	ug/Kg
bis(2-Chloroisopropyl) ether	ND	200	ug/Kg
3-,4-Methylphenol	ND	320	ug/Kg
N-Nitroso-di-n-propylamine	ND	200	ug/Kg
Hexachloroethane	ND	200	ug/Kg
Nitrobenzene	ND	950	ug/Kg
Isophorone	ND	200	ug/Kg
2-Nitrophenol	ND	200	ug/Kg
2,4-Dimethylphenol	ND	200	ug/Kg
Benzoic acid	ND	950	ug/Kg
bis(2-Chloroethoxy)methane	ND	200	ug/Kg
2,4-Dichlorophenol	ND	200	ug/Kg
1,2,4-Trichlorobenzene	ND	200	ug/Kg
Naphthalene	ND	200	ug/Kg
4-Chloroaniline	ND	200	ug/Kg
Hexachlorobutadiene	ND	200	ug/Kg
4-Chloro-3-methylphenol	ND	200	ug/Kg
2-Methylnaphthalene	ND	200	ug/Kg
Hexachlorocyclopentadiene	ND	950	ug/Kg
2,4,6-Trichlorophenol	ND	200	ug/Kg
2,4,5-Trichlorophenol	ND	200	ug/Kg
2-Chloronaphthalene	ND	200	ug/Kg
2-Nitroaniline	ND	200	ug/Kg
Dimethylphthalate	ND	200	ug/Kg
Acenaphthylene	ND	200	ug/Kg
2,6-Dinitrotoluene	ND	200	ug/Kg
3-Nitroaniline	ND	200	ug/Kg
Acenaphthene	ND	200	ug/Kg

**EPA 8270 Semi-Volatile Organics**
**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
2,4-Dinitrophenol	ND	950	ug/Kg
4-Nitrophenol	ND	200	ug/Kg
Dibenzofuran	ND	200	ug/Kg
2,4-Dinitrotoluene	ND	200	ug/Kg
Diethylphthalate	ND	200	ug/Kg
Fluorene	ND	200	ug/Kg
4-Chlorophenyl-phenylether	ND	200	ug/Kg
4-Nitroaniline	ND	200	ug/Kg
4,6-Dinitro-2-methylphenol	ND	200	ug/Kg
N-Nitrosodiphenylamine	ND	200	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	200	ug/Kg
4-Bromophenyl-phenylether	ND	200	ug/Kg
Hexachlorobenzene	ND	200	ug/Kg
Pentachlorophenol	ND	950	ug/Kg
Phenanthrene	ND	200	ug/Kg
Anthracene	ND	200	ug/Kg
Di-n-butylphthalate	ND	200	ug/Kg
Fluoranthene	ND	200	ug/Kg
Benzidine	ND	950	ug/Kg
Pyrene	ND	200	ug/Kg
Butylbenzylphthalate	ND	200	ug/Kg
3,3'-Dichlorobenzidine	ND	950	ug/Kg
Benzo(a)anthracene	ND	200	ug/Kg
Chrysene	ND	200	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	200	ug/Kg
Di-n-octylphthalate	ND	200	ug/Kg
Benzo(b)fluoranthene	ND	200	ug/Kg
Benzo(k)fluoranthene	ND	200	ug/Kg
Benzo(a)pyrene	ND	200	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	200	ug/Kg
Dibenz(a,h)anthracene	ND	200	ug/Kg
Benzo(g,h,i)perylene	ND	200	ug/Kg

Surrogate	%REC	Limits
2-Fluorophenol	85	29-120
Phenol-d6	91	30-120
2,4,6-Tribromophenol	83	32-120
Nitrobenzene-d5	82	33-120
2-Fluorobiphenyl	87	39-120
Terphenyl-d14	97	44-125

## Legend

**ND:** Not Detected

**RL:** Reporting Limit



## EPA 8270 Semi-Volatile Organics

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU7-1A

**Diln Fac:** 4.000

**Analyzed:** 09/02/21

**Lab ID:** 449770-003

**Batch#:** 273303

**Prep:** EPA 3550C

**Matrix:** Soil

**Sampled:** 08/25/21

**Analysis:** EPA 8270C

**Basis:** dry

**Received:** 08/27/21

**Analyst:** DJL

**Moisture:** 15%

**Prepared:** 09/02/21

Analyte	Result	RL	Units
Carbazole	ND	790	ug/Kg
1-Methylnaphthalene	ND	790	ug/Kg
Pyridine	ND	790	ug/Kg
N-Nitrosodimethylamine	ND	790	ug/Kg
Phenol	ND	790	ug/Kg
Aniline	ND	790	ug/Kg
bis(2-Chloroethyl)ether	ND	3,800	ug/Kg
2-Chlorophenol	ND	790	ug/Kg
1,3-Dichlorobenzene	ND	790	ug/Kg
1,4-Dichlorobenzene	ND	790	ug/Kg
Benzyl alcohol	ND	790	ug/Kg
1,2-Dichlorobenzene	ND	790	ug/Kg
2-Methylphenol	ND	790	ug/Kg
bis(2-Chloroisopropyl) ether	ND	790	ug/Kg
3-,4-Methylphenol	ND	1,300	ug/Kg
N-Nitroso-di-n-propylamine	ND	790	ug/Kg
Hexachloroethane	ND	790	ug/Kg
Nitrobenzene	ND	3,800	ug/Kg
Isophorone	ND	790	ug/Kg
2-Nitrophenol	ND	790	ug/Kg
2,4-Dimethylphenol	ND	790	ug/Kg
Benzoic acid	ND	3,800	ug/Kg
bis(2-Chloroethoxy)methane	ND	790	ug/Kg
2,4-Dichlorophenol	ND	790	ug/Kg
1,2,4-Trichlorobenzene	ND	790	ug/Kg
Naphthalene	ND	790	ug/Kg
4-Chloroaniline	ND	790	ug/Kg
Hexachlorobutadiene	ND	790	ug/Kg
4-Chloro-3-methylphenol	ND	790	ug/Kg
2-Methylnaphthalene	ND	790	ug/Kg
Hexachlorocyclopentadiene	ND	3,800	ug/Kg
2,4,6-Trichlorophenol	ND	790	ug/Kg
2,4,5-Trichlorophenol	ND	790	ug/Kg
2-Chloronaphthalene	ND	790	ug/Kg
2-Nitroaniline	ND	790	ug/Kg
Dimethylphthalate	ND	790	ug/Kg
Acenaphthylene	ND	790	ug/Kg
2,6-Dinitrotoluene	ND	790	ug/Kg
3-Nitroaniline	ND	790	ug/Kg
Acenaphthene	ND	790	ug/Kg

**EPA 8270 Semi-Volatile Organics**
**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
2,4-Dinitrophenol	ND	3,800	ug/Kg
4-Nitrophenol	ND	790	ug/Kg
Dibenzofuran	ND	790	ug/Kg
2,4-Dinitrotoluene	ND	790	ug/Kg
Diethylphthalate	ND	790	ug/Kg
Fluorene	ND	790	ug/Kg
4-Chlorophenyl-phenylether	ND	790	ug/Kg
4-Nitroaniline	ND	790	ug/Kg
4,6-Dinitro-2-methylphenol	ND	790	ug/Kg
N-Nitrosodiphenylamine	ND	790	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	790	ug/Kg
4-Bromophenyl-phenylether	ND	790	ug/Kg
Hexachlorobenzene	ND	790	ug/Kg
Pentachlorophenol	ND	3,800	ug/Kg
Phenanthrene	ND	790	ug/Kg
Anthracene	ND	790	ug/Kg
Di-n-butylphthalate	ND	790	ug/Kg
Fluoranthene	ND	790	ug/Kg
Benzidine	ND	3,800	ug/Kg
Pyrene	ND	790	ug/Kg
Butylbenzylphthalate	ND	790	ug/Kg
3,3'-Dichlorobenzidine	ND	3,800	ug/Kg
Benzo(a)anthracene	ND	790	ug/Kg
Chrysene	ND	790	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	790	ug/Kg
Di-n-octylphthalate	ND	790	ug/Kg
Benzo(b)fluoranthene	ND	790	ug/Kg
Benzo(k)fluoranthene	ND	790	ug/Kg
Benzo(a)pyrene	ND	790	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	790	ug/Kg
Dibenz(a,h)anthracene	ND	790	ug/Kg
Benzo(g,h,i)perylene	ND	790	ug/Kg
Surrogate	%REC	Limits	
2-Fluorophenol	89	29-120	
Phenol-d6	95	30-120	
2,4,6-Tribromophenol	84	32-120	
Nitrobenzene-d5	82	33-120	
2-Fluorobiphenyl	91	39-120	
Terphenyl-d14	98	44-125	

## Legend

**ND:** Not Detected

**RL:** Reporting Limit

## EPA 8270 Semi-Volatile Organics

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU7-1B

**Diln Fac:** 10.00

**Analyzed:** 09/02/21

**Lab ID:** 449770-004

**Batch#:** 273303

**Prep:** EPA 3550C

**Matrix:** Soil

**Sampled:** 08/25/21

**Analysis:** EPA 8270C

**Basis:** dry

**Received:** 08/27/21

**Analyst:** HQN

**Moisture:** 14%

**Prepared:** 09/02/21

Analyte	Result	RL	Units
Carbazole	ND	1,900	ug/Kg
1-Methylnaphthalene	ND	1,900	ug/Kg
Pyridine	ND	1,900	ug/Kg
N-Nitrosodimethylamine	ND	1,900	ug/Kg
Phenol	ND	1,900	ug/Kg
Aniline	ND	1,900	ug/Kg
bis(2-Chloroethyl)ether	ND	9,300	ug/Kg
2-Chlorophenol	ND	1,900	ug/Kg
1,3-Dichlorobenzene	ND	1,900	ug/Kg
1,4-Dichlorobenzene	ND	1,900	ug/Kg
Benzyl alcohol	ND	1,900	ug/Kg
1,2-Dichlorobenzene	ND	1,900	ug/Kg
2-Methylphenol	ND	1,900	ug/Kg
bis(2-Chloroisopropyl) ether	ND	1,900	ug/Kg
3-,4-Methylphenol	ND	3,100	ug/Kg
N-Nitroso-di-n-propylamine	ND	1,900	ug/Kg
Hexachloroethane	ND	1,900	ug/Kg
Nitrobenzene	ND	9,300	ug/Kg
Isophorone	ND	1,900	ug/Kg
2-Nitrophenol	ND	1,900	ug/Kg
2,4-Dimethylphenol	ND	1,900	ug/Kg
Benzoic acid	ND	9,300	ug/Kg
bis(2-Chloroethoxy)methane	ND	1,900	ug/Kg
2,4-Dichlorophenol	ND	1,900	ug/Kg
1,2,4-Trichlorobenzene	ND	1,900	ug/Kg
Naphthalene	ND	1,900	ug/Kg
4-Chloroaniline	ND	1,900	ug/Kg
Hexachlorobutadiene	ND	1,900	ug/Kg
4-Chloro-3-methylphenol	ND	1,900	ug/Kg
2-Methylnaphthalene	ND	1,900	ug/Kg
Hexachlorocyclopentadiene	ND	9,300	ug/Kg
2,4,6-Trichlorophenol	ND	1,900	ug/Kg
2,4,5-Trichlorophenol	ND	1,900	ug/Kg
2-Chloronaphthalene	ND	1,900	ug/Kg
2-Nitroaniline	ND	1,900	ug/Kg
Dimethylphthalate	ND	1,900	ug/Kg
Acenaphthylene	ND	1,900	ug/Kg
2,6-Dinitrotoluene	ND	1,900	ug/Kg
3-Nitroaniline	ND	1,900	ug/Kg
Acenaphthene	ND	1,900	ug/Kg

**EPA 8270 Semi-Volatile Organics**
**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
2,4-Dinitrophenol	ND	9,300	ug/Kg
4-Nitrophenol	ND	1,900	ug/Kg
Dibenzofuran	ND	1,900	ug/Kg
2,4-Dinitrotoluene	ND	1,900	ug/Kg
Diethylphthalate	ND	1,900	ug/Kg
Fluorene	ND	1,900	ug/Kg
4-Chlorophenyl-phenylether	ND	1,900	ug/Kg
4-Nitroaniline	ND	1,900	ug/Kg
4,6-Dinitro-2-methylphenol	ND	1,900	ug/Kg
N-Nitrosodiphenylamine	ND	1,900	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	1,900	ug/Kg
4-Bromophenyl-phenylether	ND	1,900	ug/Kg
Hexachlorobenzene	ND	1,900	ug/Kg
Pentachlorophenol	ND	9,300	ug/Kg
Phenanthrene	ND	1,900	ug/Kg
Anthracene	ND	1,900	ug/Kg
Di-n-butylphthalate	ND	1,900	ug/Kg
Fluoranthene	ND	1,900	ug/Kg
Benzidine	ND	9,300	ug/Kg
Pyrene	ND	1,900	ug/Kg
Butylbenzylphthalate	ND	1,900	ug/Kg
3,3'-Dichlorobenzidine	ND	9,300	ug/Kg
Benzo(a)anthracene	ND	1,900	ug/Kg
Chrysene	ND	1,900	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	1,900	ug/Kg
Di-n-octylphthalate	ND	1,900	ug/Kg
Benzo(b)fluoranthene	ND	1,900	ug/Kg
Benzo(k)fluoranthene	ND	1,900	ug/Kg
Benzo(a)pyrene	ND	1,900	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	1,900	ug/Kg
Dibenz(a,h)anthracene	ND	1,900	ug/Kg
Benzo(g,h,i)perylene	ND	1,900	ug/Kg

Surrogate	%REC	Limits
2-Fluorophenol	85	29-120
Phenol-d6	94	30-120
2,4,6-Tribromophenol	83	32-120
Nitrobenzene-d5	81	33-120
2-Fluorobiphenyl	80	39-120
Terphenyl-d14	89	44-125

## Legend

**ND:** Not Detected

**RL:** Reporting Limit

## EPA 8270 Semi-Volatile Organics

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU7-1C

**Diln Fac:** 5.000

**Analyzed:** 09/02/21

**Lab ID:** 449770-005

**Batch#:** 273303

**Prep:** EPA 3550C

**Matrix:** Soil

**Sampled:** 08/25/21

**Analysis:** EPA 8270C

**Basis:** dry

**Received:** 08/27/21

**Analyst:** HQN

**Moisture:** 14%

**Prepared:** 09/02/21

Analyte	Result	RL	Units
Carbazole	ND	980	ug/Kg
1-Methylnaphthalene	ND	980	ug/Kg
Pyridine	ND	980	ug/Kg
N-Nitrosodimethylamine	ND	980	ug/Kg
Phenol	ND	980	ug/Kg
Aniline	ND	980	ug/Kg
bis(2-Chloroethyl)ether	ND	4,700	ug/Kg
2-Chlorophenol	ND	980	ug/Kg
1,3-Dichlorobenzene	ND	980	ug/Kg
1,4-Dichlorobenzene	ND	980	ug/Kg
Benzyl alcohol	ND	980	ug/Kg
1,2-Dichlorobenzene	ND	980	ug/Kg
2-Methylphenol	ND	980	ug/Kg
bis(2-Chloroisopropyl) ether	ND	980	ug/Kg
3-,4-Methylphenol	ND	1,600	ug/Kg
N-Nitroso-di-n-propylamine	ND	980	ug/Kg
Hexachloroethane	ND	980	ug/Kg
Nitrobenzene	ND	4,700	ug/Kg
Isophorone	ND	980	ug/Kg
2-Nitrophenol	ND	980	ug/Kg
2,4-Dimethylphenol	ND	980	ug/Kg
Benzoic acid	ND	4,700	ug/Kg
bis(2-Chloroethoxy)methane	ND	980	ug/Kg
2,4-Dichlorophenol	ND	980	ug/Kg
1,2,4-Trichlorobenzene	ND	980	ug/Kg
Naphthalene	ND	980	ug/Kg
4-Chloroaniline	ND	980	ug/Kg
Hexachlorobutadiene	ND	980	ug/Kg
4-Chloro-3-methylphenol	ND	980	ug/Kg
2-Methylnaphthalene	ND	980	ug/Kg
Hexachlorocyclopentadiene	ND	4,700	ug/Kg
2,4,6-Trichlorophenol	ND	980	ug/Kg
2,4,5-Trichlorophenol	ND	980	ug/Kg
2-Chloronaphthalene	ND	980	ug/Kg
2-Nitroaniline	ND	980	ug/Kg
Dimethylphthalate	ND	980	ug/Kg
Acenaphthylene	ND	980	ug/Kg
2,6-Dinitrotoluene	ND	980	ug/Kg
3-Nitroaniline	ND	980	ug/Kg
Acenaphthene	ND	980	ug/Kg

**EPA 8270 Semi-Volatile Organics**
**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
2,4-Dinitrophenol	ND	4,700	ug/Kg
4-Nitrophenol	ND	980	ug/Kg
Dibenzofuran	ND	980	ug/Kg
2,4-Dinitrotoluene	ND	980	ug/Kg
Diethylphthalate	ND	980	ug/Kg
Fluorene	ND	980	ug/Kg
4-Chlorophenyl-phenylether	ND	980	ug/Kg
4-Nitroaniline	ND	980	ug/Kg
4,6-Dinitro-2-methylphenol	ND	980	ug/Kg
N-Nitrosodiphenylamine	ND	980	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	980	ug/Kg
4-Bromophenyl-phenylether	ND	980	ug/Kg
Hexachlorobenzene	ND	980	ug/Kg
Pentachlorophenol	ND	4,700	ug/Kg
Phenanthrene	ND	980	ug/Kg
Anthracene	ND	980	ug/Kg
Di-n-butylphthalate	ND	980	ug/Kg
Fluoranthene	ND	980	ug/Kg
Benzidine	ND	4,700	ug/Kg
Pyrene	ND	980	ug/Kg
Butylbenzylphthalate	ND	980	ug/Kg
3,3'-Dichlorobenzidine	ND	4,700	ug/Kg
Benzo(a)anthracene	ND	980	ug/Kg
Chrysene	ND	980	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	980	ug/Kg
Di-n-octylphthalate	ND	980	ug/Kg
Benzo(b)fluoranthene	ND	980	ug/Kg
Benzo(k)fluoranthene	ND	980	ug/Kg
Benzo(a)pyrene	ND	980	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	980	ug/Kg
Dibenz(a,h)anthracene	ND	980	ug/Kg
Benzo(g,h,i)perylene	ND	980	ug/Kg

Surrogate	%REC	Limits
2-Fluorophenol	81	29-120
Phenol-d6	93	30-120
2,4,6-Tribromophenol	86	32-120
Nitrobenzene-d5	78	33-120
2-Fluorobiphenyl	76	39-120
Terphenyl-d14	90	44-125

## Legend

**ND:** Not Detected

**RL:** Reporting Limit

## EPA 8270 Semi-Volatile Organics

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU7-2A

**Diln Fac:** 2.000

**Analyzed:** 09/02/21

**Lab ID:** 449770-006

**Batch#:** 273303

**Prep:** EPA 3550C

**Matrix:** Soil

**Sampled:** 08/25/21

**Analysis:** EPA 8270C

**Basis:** dry

**Received:** 08/27/21

**Analyst:** HQN

**Moisture:** 11%

**Prepared:** 09/02/21

Analyte	Result	RL	Units
Carbazole	ND	370	ug/Kg
1-Methylnaphthalene	ND	370	ug/Kg
Pyridine	ND	370	ug/Kg
N-Nitrosodimethylamine	ND	370	ug/Kg
Phenol	ND	370	ug/Kg
Aniline	ND	370	ug/Kg
bis(2-Chloroethyl)ether	ND	1,800	ug/Kg
2-Chlorophenol	ND	370	ug/Kg
1,3-Dichlorobenzene	ND	370	ug/Kg
1,4-Dichlorobenzene	ND	370	ug/Kg
Benzyl alcohol	ND	370	ug/Kg
1,2-Dichlorobenzene	ND	370	ug/Kg
2-Methylphenol	ND	370	ug/Kg
bis(2-Chloroisopropyl) ether	ND	370	ug/Kg
3-,4-Methylphenol	ND	600	ug/Kg
N-Nitroso-di-n-propylamine	ND	370	ug/Kg
Hexachloroethane	ND	370	ug/Kg
Nitrobenzene	ND	1,800	ug/Kg
Isophorone	ND	370	ug/Kg
2-Nitrophenol	ND	370	ug/Kg
2,4-Dimethylphenol	ND	370	ug/Kg
Benzoic acid	ND	1,800	ug/Kg
bis(2-Chloroethoxy)methane	ND	370	ug/Kg
2,4-Dichlorophenol	ND	370	ug/Kg
1,2,4-Trichlorobenzene	ND	370	ug/Kg
Naphthalene	ND	370	ug/Kg
4-Chloroaniline	ND	370	ug/Kg
Hexachlorobutadiene	ND	370	ug/Kg
4-Chloro-3-methylphenol	ND	370	ug/Kg
2-Methylnaphthalene	ND	370	ug/Kg
Hexachlorocyclopentadiene	ND	1,800	ug/Kg
2,4,6-Trichlorophenol	ND	370	ug/Kg
2,4,5-Trichlorophenol	ND	370	ug/Kg
2-Chloronaphthalene	ND	370	ug/Kg
2-Nitroaniline	ND	370	ug/Kg
Dimethylphthalate	ND	370	ug/Kg
Acenaphthylene	ND	370	ug/Kg
2,6-Dinitrotoluene	ND	370	ug/Kg
3-Nitroaniline	ND	370	ug/Kg
Acenaphthene	ND	370	ug/Kg

**EPA 8270 Semi-Volatile Organics**
**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
2,4-Dinitrophenol	ND	1,800	ug/Kg
4-Nitrophenol	ND	370	ug/Kg
Dibenzofuran	ND	370	ug/Kg
2,4-Dinitrotoluene	ND	370	ug/Kg
Diethylphthalate	ND	370	ug/Kg
Fluorene	ND	370	ug/Kg
4-Chlorophenyl-phenylether	ND	370	ug/Kg
4-Nitroaniline	ND	370	ug/Kg
4,6-Dinitro-2-methylphenol	ND	370	ug/Kg
N-Nitrosodiphenylamine	ND	370	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	370	ug/Kg
4-Bromophenyl-phenylether	ND	370	ug/Kg
Hexachlorobenzene	ND	370	ug/Kg
Pentachlorophenol	ND	1,800	ug/Kg
Phenanthrene	ND	370	ug/Kg
Anthracene	ND	370	ug/Kg
Di-n-butylphthalate	ND	370	ug/Kg
Fluoranthene	ND	370	ug/Kg
Benzidine	ND	1,800	ug/Kg
Pyrene	ND	370	ug/Kg
Butylbenzylphthalate	ND	370	ug/Kg
3,3'-Dichlorobenzidine	ND	1,800	ug/Kg
Benzo(a)anthracene	ND	370	ug/Kg
Chrysene	ND	370	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	370	ug/Kg
Di-n-octylphthalate	ND	370	ug/Kg
Benzo(b)fluoranthene	ND	370	ug/Kg
Benzo(k)fluoranthene	ND	370	ug/Kg
Benzo(a)pyrene	ND	370	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	370	ug/Kg
Dibenz(a,h)anthracene	ND	370	ug/Kg
Benzo(g,h,i)perylene	ND	370	ug/Kg

Surrogate	%REC	Limits
2-Fluorophenol	89	29-120
Phenol-d6	98	30-120
2,4,6-Tribromophenol	101	32-120
Nitrobenzene-d5	89	33-120
2-Fluorobiphenyl	88	39-120
Terphenyl-d14	110	44-125

## Legend

**ND:** Not Detected

**RL:** Reporting Limit



## EPA 8270 Semi-Volatile Organics

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU6-1A

**Diln Fac:** 2.000

**Analyzed:** 09/02/21

**Lab ID:** 449770-007

**Batch#:** 273303

**Prep:** EPA 3550C

**Matrix:** Soil

**Sampled:** 08/25/21

**Analysis:** EPA 8270C

**Basis:** dry

**Received:** 08/27/21

**Analyst:** HQN

**Moisture:** 14%

**Prepared:** 09/02/21

Analyte	Result	RL	Units
Carbazole	ND	390	ug/Kg
1-Methylnaphthalene	ND	390	ug/Kg
Pyridine	ND	390	ug/Kg
N-Nitrosodimethylamine	ND	390	ug/Kg
Phenol	ND	390	ug/Kg
Aniline	ND	390	ug/Kg
bis(2-Chloroethyl)ether	ND	1,800	ug/Kg
2-Chlorophenol	ND	390	ug/Kg
1,3-Dichlorobenzene	ND	390	ug/Kg
1,4-Dichlorobenzene	ND	390	ug/Kg
Benzyl alcohol	ND	390	ug/Kg
1,2-Dichlorobenzene	ND	390	ug/Kg
2-Methylphenol	ND	390	ug/Kg
bis(2-Chloroisopropyl) ether	ND	390	ug/Kg
3-,4-Methylphenol	ND	620	ug/Kg
N-Nitroso-di-n-propylamine	ND	390	ug/Kg
Hexachloroethane	ND	390	ug/Kg
Nitrobenzene	ND	1,800	ug/Kg
Isophorone	ND	390	ug/Kg
2-Nitrophenol	ND	390	ug/Kg
2,4-Dimethylphenol	ND	390	ug/Kg
Benzoic acid	ND	1,800	ug/Kg
bis(2-Chloroethoxy)methane	ND	390	ug/Kg
2,4-Dichlorophenol	ND	390	ug/Kg
1,2,4-Trichlorobenzene	ND	390	ug/Kg
Naphthalene	ND	390	ug/Kg
4-Chloroaniline	ND	390	ug/Kg
Hexachlorobutadiene	ND	390	ug/Kg
4-Chloro-3-methylphenol	ND	390	ug/Kg
2-Methylnaphthalene	ND	390	ug/Kg
Hexachlorocyclopentadiene	ND	1,800	ug/Kg
2,4,6-Trichlorophenol	ND	390	ug/Kg
2,4,5-Trichlorophenol	ND	390	ug/Kg
2-Chloronaphthalene	ND	390	ug/Kg
2-Nitroaniline	ND	390	ug/Kg
Dimethylphthalate	ND	390	ug/Kg
Acenaphthylene	ND	390	ug/Kg
2,6-Dinitrotoluene	ND	390	ug/Kg
3-Nitroaniline	ND	390	ug/Kg
Acenaphthene	ND	390	ug/Kg

**EPA 8270 Semi-Volatile Organics**
**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
2,4-Dinitrophenol	ND	1,800	ug/Kg
4-Nitrophenol	ND	390	ug/Kg
Dibenzofuran	ND	390	ug/Kg
2,4-Dinitrotoluene	ND	390	ug/Kg
Diethylphthalate	ND	390	ug/Kg
Fluorene	ND	390	ug/Kg
4-Chlorophenyl-phenylether	ND	390	ug/Kg
4-Nitroaniline	ND	390	ug/Kg
4,6-Dinitro-2-methylphenol	ND	390	ug/Kg
N-Nitrosodiphenylamine	ND	390	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	390	ug/Kg
4-Bromophenyl-phenylether	ND	390	ug/Kg
Hexachlorobenzene	ND	390	ug/Kg
Pentachlorophenol	ND	1,800	ug/Kg
Phenanthrene	ND	390	ug/Kg
Anthracene	ND	390	ug/Kg
Di-n-butylphthalate	ND	390	ug/Kg
Fluoranthene	ND	390	ug/Kg
Benzidine	ND	1,800	ug/Kg
Pyrene	ND	390	ug/Kg
Butylbenzylphthalate	ND	390	ug/Kg
3,3'-Dichlorobenzidine	ND	1,800	ug/Kg
Benzo(a)anthracene	ND	390	ug/Kg
Chrysene	ND	390	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	390	ug/Kg
Di-n-octylphthalate	ND	390	ug/Kg
Benzo(b)fluoranthene	ND	390	ug/Kg
Benzo(k)fluoranthene	ND	390	ug/Kg
Benzo(a)pyrene	ND	390	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	390	ug/Kg
Dibenz(a,h)anthracene	ND	390	ug/Kg
Benzo(g,h,i)perylene	ND	390	ug/Kg

Surrogate	%REC	Limits
2-Fluorophenol	114	29-120
Phenol-d6	125 *	30-120
2,4,6-Tribromophenol	118	32-120
Nitrobenzene-d5	107	33-120
2-Fluorobiphenyl	106	39-120
Terphenyl-d14	124	44-125

## Legend

\*: Value is outside QC limits

**ND:** Not Detected

**RL:** Reporting Limit

## EPA 8270 Semi-Volatile Organics

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU6-2A

**Diln Fac:** 2.000

**Analyzed:** 09/02/21

**Lab ID:** 449770-008

**Batch#:** 273303

**Prep:** EPA 3550C

**Matrix:** Soil

**Sampled:** 08/25/21

**Analysis:** EPA 8270C

**Basis:** dry

**Received:** 08/27/21

**Analyst:** HQN

**Moisture:** 11%

**Prepared:** 09/02/21

Analyte	Result	RL	Units
Carbazole	ND	370	ug/Kg
1-Methylnaphthalene	ND	370	ug/Kg
Pyridine	ND	370	ug/Kg
N-Nitrosodimethylamine	ND	370	ug/Kg
Phenol	ND	370	ug/Kg
Aniline	ND	370	ug/Kg
bis(2-Chloroethyl)ether	ND	1,800	ug/Kg
2-Chlorophenol	ND	370	ug/Kg
1,3-Dichlorobenzene	ND	370	ug/Kg
1,4-Dichlorobenzene	ND	370	ug/Kg
Benzyl alcohol	ND	370	ug/Kg
1,2-Dichlorobenzene	ND	370	ug/Kg
2-Methylphenol	ND	370	ug/Kg
bis(2-Chloroisopropyl) ether	ND	370	ug/Kg
3-,4-Methylphenol	ND	600	ug/Kg
N-Nitroso-di-n-propylamine	ND	370	ug/Kg
Hexachloroethane	ND	370	ug/Kg
Nitrobenzene	ND	1,800	ug/Kg
Isophorone	ND	370	ug/Kg
2-Nitrophenol	ND	370	ug/Kg
2,4-Dimethylphenol	ND	370	ug/Kg
Benzoic acid	ND	1,800	ug/Kg
bis(2-Chloroethoxy)methane	ND	370	ug/Kg
2,4-Dichlorophenol	ND	370	ug/Kg
1,2,4-Trichlorobenzene	ND	370	ug/Kg
Naphthalene	ND	370	ug/Kg
4-Chloroaniline	ND	370	ug/Kg
Hexachlorobutadiene	ND	370	ug/Kg
4-Chloro-3-methylphenol	ND	370	ug/Kg
2-Methylnaphthalene	ND	370	ug/Kg
Hexachlorocyclopentadiene	ND	1,800	ug/Kg
2,4,6-Trichlorophenol	ND	370	ug/Kg
2,4,5-Trichlorophenol	ND	370	ug/Kg
2-Chloronaphthalene	ND	370	ug/Kg
2-Nitroaniline	ND	370	ug/Kg
Dimethylphthalate	ND	370	ug/Kg
Acenaphthylene	ND	370	ug/Kg
2,6-Dinitrotoluene	ND	370	ug/Kg
3-Nitroaniline	ND	370	ug/Kg
Acenaphthene	ND	370	ug/Kg

**EPA 8270 Semi-Volatile Organics**
**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
2,4-Dinitrophenol	ND	1,800	ug/Kg
4-Nitrophenol	ND	370	ug/Kg
Dibenzofuran	ND	370	ug/Kg
2,4-Dinitrotoluene	ND	370	ug/Kg
Diethylphthalate	ND	370	ug/Kg
Fluorene	ND	370	ug/Kg
4-Chlorophenyl-phenylether	ND	370	ug/Kg
4-Nitroaniline	ND	370	ug/Kg
4,6-Dinitro-2-methylphenol	ND	370	ug/Kg
N-Nitrosodiphenylamine	ND	370	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	370	ug/Kg
4-Bromophenyl-phenylether	ND	370	ug/Kg
Hexachlorobenzene	ND	370	ug/Kg
Pentachlorophenol	ND	1,800	ug/Kg
Phenanthrene	ND	370	ug/Kg
Anthracene	ND	370	ug/Kg
Di-n-butylphthalate	ND	370	ug/Kg
Fluoranthene	ND	370	ug/Kg
Benzidine	ND	1,800	ug/Kg
Pyrene	ND	370	ug/Kg
Butylbenzylphthalate	ND	370	ug/Kg
3,3'-Dichlorobenzidine	ND	1,800	ug/Kg
Benzo(a)anthracene	ND	370	ug/Kg
Chrysene	ND	370	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	370	ug/Kg
Di-n-octylphthalate	ND	370	ug/Kg
Benzo(b)fluoranthene	ND	370	ug/Kg
Benzo(k)fluoranthene	ND	370	ug/Kg
Benzo(a)pyrene	ND	370	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	370	ug/Kg
Dibenz(a,h)anthracene	ND	370	ug/Kg
Benzo(g,h,i)perylene	ND	370	ug/Kg
Surrogate	%REC	Limits	
2-Fluorophenol	101	29-120	
Phenol-d6	108	30-120	
2,4,6-Tribromophenol	103	32-120	
Nitrobenzene-d5	97	33-120	
2-Fluorobiphenyl	96	39-120	
Terphenyl-d14	109	44-125	

## Legend

**ND:** Not Detected

**RL:** Reporting Limit

**EPA 8270 Semi-Volatile Organics: Batch QC**
**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BLANK

**Batch#:** 273303

**Analysis:** EPA 8270C

**Lab ID:** QC941936

**Prepared:** 09/02/21

**Analyst:** DJL

**Matrix:** Soil

**Analyzed:** 09/02/21

**DiIn Fac:** 1.000

**Prep:** EPA 3550C

Analyte	Result	RL	Units
Carbazole	ND	170	ug/Kg
1-Methylnaphthalene	ND	170	ug/Kg
Pyridine	ND	170	ug/Kg
N-Nitrosodimethylamine	ND	170	ug/Kg
Phenol	ND	170	ug/Kg
Aniline	ND	170	ug/Kg
bis(2-Chloroethyl)ether	ND	800	ug/Kg
2-Chlorophenol	ND	170	ug/Kg
1,3-Dichlorobenzene	ND	170	ug/Kg
1,4-Dichlorobenzene	ND	170	ug/Kg
Benzyl alcohol	ND	170	ug/Kg
1,2-Dichlorobenzene	ND	170	ug/Kg
2-Methylphenol	ND	170	ug/Kg
bis(2-Chloroisopropyl) ether	ND	170	ug/Kg
3-,4-Methylphenol	ND	270	ug/Kg
N-Nitroso-di-n-propylamine	ND	170	ug/Kg
Hexachloroethane	ND	170	ug/Kg
Nitrobenzene	ND	800	ug/Kg
Isophorone	ND	170	ug/Kg
2-Nitrophenol	ND	170	ug/Kg
2,4-Dimethylphenol	ND	170	ug/Kg
Benzoic acid	ND	800	ug/Kg
bis(2-Chloroethoxy)methane	ND	170	ug/Kg
2,4-Dichlorophenol	ND	170	ug/Kg
1,2,4-Trichlorobenzene	ND	170	ug/Kg
Naphthalene	ND	170	ug/Kg
4-Chloroaniline	ND	170	ug/Kg
Hexachlorobutadiene	ND	170	ug/Kg
4-Chloro-3-methylphenol	ND	170	ug/Kg
2-Methylnaphthalene	ND	170	ug/Kg
Hexachlorocyclopentadiene	ND	800	ug/Kg
2,4,6-Trichlorophenol	ND	170	ug/Kg
2,4,5-Trichlorophenol	ND	170	ug/Kg
2-Chloronaphthalene	ND	170	ug/Kg
2-Nitroaniline	ND	170	ug/Kg
Dimethylphthalate	ND	170	ug/Kg
Acenaphthylene	ND	170	ug/Kg
2,6-Dinitrotoluene	ND	170	ug/Kg
3-Nitroaniline	ND	170	ug/Kg
Acenaphthene	ND	170	ug/Kg
2,4-Dinitrophenol	ND	800	ug/Kg

**EPA 8270 Semi-Volatile Organics: Batch QC**
**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
4-Nitrophenol	ND	170	ug/Kg
Dibenzofuran	ND	170	ug/Kg
2,4-Dinitrotoluene	ND	170	ug/Kg
Diethylphthalate	ND	170	ug/Kg
Fluorene	ND	170	ug/Kg
4-Chlorophenyl-phenylether	ND	170	ug/Kg
4-Nitroaniline	ND	170	ug/Kg
4,6-Dinitro-2-methylphenol	ND	170	ug/Kg
N-Nitrosodiphenylamine	ND	170	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	170	ug/Kg
4-Bromophenyl-phenylether	ND	170	ug/Kg
Hexachlorobenzene	ND	170	ug/Kg
Pentachlorophenol	ND	800	ug/Kg
Phenanthrene	ND	170	ug/Kg
Anthracene	ND	170	ug/Kg
Di-n-butylphthalate	ND	170	ug/Kg
Fluoranthene	ND	170	ug/Kg
Benzidine	ND	800	ug/Kg
Pyrene	ND	170	ug/Kg
Butylbenzylphthalate	ND	170	ug/Kg
3,3'-Dichlorobenzidine	ND	800	ug/Kg
Benzo(a)anthracene	ND	170	ug/Kg
Chrysene	ND	170	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	170	ug/Kg
Di-n-octylphthalate	ND	170	ug/Kg
Benzo(b)fluoranthene	ND	170	ug/Kg
Benzo(k)fluoranthene	ND	170	ug/Kg
Benzo(a)pyrene	ND	170	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	170	ug/Kg
Dibenz(a,h)anthracene	ND	170	ug/Kg
Benzo(g,h,i)perylene	ND	170	ug/Kg
Surrogate	%REC	Limits	
2-Fluorophenol	79	29-120	
Phenol-d6	84	30-120	
2,4,6-Tribromophenol	86	32-120	
Nitrobenzene-d5	76	33-120	
2-Fluorobiphenyl	83	39-120	
Terphenyl-d14	94	44-125	

Legend

**ND:** Not Detected

**RL:** Reporting Limit

### EPA 8270 Semi-Volatile Organics: Batch QC

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BS

**Batch#:** 273303

**Analysis:** EPA 8270C

**Lab ID:** QC941937

**Prepared:** 09/02/21

**Analyst:** DJL

**Matrix:** Soil

**Analyzed:** 09/02/21

**DiIn Fac:** 1.000

**Prep:** EPA 3550C

Analyte	Spiked	Result	%REC	Limits	Units	Qual
Phenol	1,329	1,238	93	42-120	ug/Kg	
2-Chlorophenol	1,329	1,221	92	41-120	ug/Kg	
1,4-Dichlorobenzene	1,329	1,174	88	36-120	ug/Kg	
3-,4-Methylphenol	1,329	1,273	96	42-120	ug/Kg	
N-Nitroso-di-n-propylamine	1,329	1,206	91	43-121	ug/Kg	
2,4-Dimethylphenol	1,329	1,027	77	25-120	ug/Kg	
1,2,4-Trichlorobenzene	1,329	1,216	91	38-120	ug/Kg	
4-Chloro-3-methylphenol	1,329	1,228	92	40-125	ug/Kg	
2,4,5-Trichlorophenol	1,329	1,366	103	40-124	ug/Kg	
Acenaphthene	1,329	1,257	95	35-126	ug/Kg	
4-Nitrophenol	1,329	1,392	105	24-128	ug/Kg	
2,4-Dinitrotoluene	1,329	1,501	113	40-131	ug/Kg	b
Pentachlorophenol	1,329	986.4	74	35-120	ug/Kg	
Pyrene	1,329	1,348	101	37-135	ug/Kg	
Chrysene	1,329	1,354	102	38-132	ug/Kg	
Benzo(b)fluoranthene	1,329	1,301	98	38-135	ug/Kg	
<b>Surrogate</b>			<b>%REC</b>	<b>Limits</b>		
2-Fluorophenol			89	29-120		
Phenol-d6			97	30-120		
2,4,6-Tribromophenol			106	32-120		
Nitrobenzene-d5			91	33-120		
2-Fluorobiphenyl			95	39-120		
Terphenyl-d14			111	44-125		

## EPA 8270 Semi-Volatile Organics: Batch QC

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BSD

**Batch#:** 273303

**Analysis:** EPA 8270C

**Lab ID:** QC941938

**Prepared:** 09/02/21

**Analyst:** DJL

**Matrix:** Soil

**Analyzed:** 09/02/21

**DiIn Fac:** 1.000

**Prep:** EPA 3550C

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim	Qual
Phenol	1,333	1,152	86	42-120	ug/Kg	8	20	
2-Chlorophenol	1,333	1,194	90	41-120	ug/Kg	3	20	
1,4-Dichlorobenzene	1,333	1,124	84	36-120	ug/Kg	5	20	
3-,4-Methylphenol	1,333	1,214	91	42-120	ug/Kg	5	20	
N-Nitroso-di-n-propylamine	1,333	1,159	87	43-121	ug/Kg	4	20	
2,4-Dimethylphenol	1,333	906.4	68	25-120	ug/Kg	13	20	
1,2,4-Trichlorobenzene	1,333	1,170	88	38-120	ug/Kg	4	20	
4-Chloro-3-methylphenol	1,333	1,151	86	40-125	ug/Kg	7	20	
2,4,5-Trichlorophenol	1,333	1,242	93	40-124	ug/Kg	10	20	
Acenaphthene	1,333	1,176	88	35-126	ug/Kg	7	20	
4-Nitrophenol	1,333	1,297	97	24-128	ug/Kg	7	20	
2,4-Dinitrotoluene	1,333	1,365	102	40-131	ug/Kg	10	20	b
Pentachlorophenol	1,333	983.7	74	35-120	ug/Kg	1	20	
Pyrene	1,333	1,277	96	37-135	ug/Kg	6	20	
Chrysene	1,333	1,281	96	38-132	ug/Kg	6	20	
Benzo(b)fluoranthene	1,333	1,225	92	38-135	ug/Kg	6	20	

Surrogate	%REC	Limits
2-Fluorophenol	85	29-120
Phenol-d6	92	30-120
2,4,6-Tribromophenol	96	32-120
Nitrobenzene-d5	87	33-120
2-Fluorobiphenyl	89	39-120
Terphenyl-d14	103	44-125

## Legend

**RPD:** Relative Percent Difference

**b:** See narrative



## Organochlorine Pesticides

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU2-1A

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-001

**Sampled:** 08/23/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

**Diln Fac:** 20.00

**Analyzed:** 09/03/21

Analyte	Result	RL	Units
alpha-BHC	ND	33	ug/Kg
beta-BHC	ND	33	ug/Kg
gamma-BHC	ND	33	ug/Kg
delta-BHC	ND	33	ug/Kg
Heptachlor	ND	33	ug/Kg
Aldrin	ND	33	ug/Kg
Heptachlor epoxide	ND	33	ug/Kg
Endosulfan I	ND	33	ug/Kg
Dieldrin	ND	33	ug/Kg
4,4'-DDE	ND	33	ug/Kg
Endrin	ND	33	ug/Kg
Endosulfan II	ND	33	ug/Kg
Endosulfan sulfate	ND	33	ug/Kg
4,4'-DDD	ND	33	ug/Kg
Endrin aldehyde	ND	33	ug/Kg
Endrin ketone	ND	33	ug/Kg
4,4'-DDT	ND	33	ug/Kg
Methoxychlor	ND	66	ug/Kg
Toxaphene	ND	660	ug/Kg
Chlordane (Technical)	ND	330	ug/Kg

Surrogate	%REC	Limits
TCMX	DO	23-120
Decachlorobiphenyl	DO	24-120

**Legend**

- DO:** Diluted Out
- ND:** Not Detected
- RL:** Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU2-2A

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-002

**Sampled:** 08/23/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

**Diln Fac:** 10.00

**Analyzed:** 09/03/21

Analyte	Result	RL	Units
alpha-BHC	ND	17	ug/Kg
beta-BHC	ND	17	ug/Kg
gamma-BHC	ND	17	ug/Kg
delta-BHC	ND	17	ug/Kg
Heptachlor	ND	17	ug/Kg
Aldrin	ND	17	ug/Kg
Heptachlor epoxide	ND	17	ug/Kg
Endosulfan I	ND	17	ug/Kg
Dieldrin	ND	17	ug/Kg
4,4'-DDE	ND	17	ug/Kg
Endrin	ND	17	ug/Kg
Endosulfan II	ND	17	ug/Kg
Endosulfan sulfate	ND	17	ug/Kg
4,4'-DDD	ND	17	ug/Kg
Endrin aldehyde	ND	17	ug/Kg
Endrin ketone	ND	17	ug/Kg
4,4'-DDT	ND	17	ug/Kg
Methoxychlor	ND	33	ug/Kg
Toxaphene	ND	330	ug/Kg
Chlordane (Technical)	ND	170	ug/Kg

Surrogate	%REC	Limits
TCMX	DO	23-120
Decachlorobiphenyl	DO	24-120

**Legend**

- DO:** Diluted Out
- ND:** Not Detected
- RL:** Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU7-1A

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-003

**Sampled:** 08/25/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

**Diln Fac:** 10.00

**Analyzed:** 09/03/21

Analyte	Result	RL	Units
alpha-BHC	ND	17	ug/Kg
beta-BHC	ND	17	ug/Kg
gamma-BHC	ND	17	ug/Kg
delta-BHC	ND	17	ug/Kg
Heptachlor	ND	17	ug/Kg
Aldrin	ND	17	ug/Kg
Heptachlor epoxide	ND	17	ug/Kg
Endosulfan I	ND	17	ug/Kg
Dieldrin	ND	17	ug/Kg
4,4'-DDE	ND	17	ug/Kg
Endrin	ND	17	ug/Kg
Endosulfan II	ND	17	ug/Kg
Endosulfan sulfate	ND	17	ug/Kg
4,4'-DDD	ND	17	ug/Kg
Endrin aldehyde	ND	17	ug/Kg
Endrin ketone	ND	17	ug/Kg
4,4'-DDT	ND	17	ug/Kg
Methoxychlor	ND	33	ug/Kg
Toxaphene	ND	330	ug/Kg
<b>Chlordane (Technical)</b>	<b>280</b>	<b>170</b>	<b>ug/Kg</b>

Surrogate	%REC	Limits
TCMX	DO	23-120
Decachlorobiphenyl	DO	24-120

Legend

**DO:** Diluted Out

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU7-1B

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-004

**Sampled:** 08/25/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

**Diln Fac:** 10.00

**Analyzed:** 09/03/21

Analyte	Result	RL	Units
alpha-BHC	ND	18	ug/Kg
beta-BHC	ND	18	ug/Kg
gamma-BHC	ND	18	ug/Kg
delta-BHC	ND	18	ug/Kg
Heptachlor	ND	18	ug/Kg
Aldrin	ND	18	ug/Kg
Heptachlor epoxide	ND	18	ug/Kg
Endosulfan I	ND	18	ug/Kg
Dieldrin	ND	18	ug/Kg
4,4'-DDE	ND	18	ug/Kg
Endrin	ND	18	ug/Kg
Endosulfan II	ND	18	ug/Kg
Endosulfan sulfate	ND	18	ug/Kg
4,4'-DDD	ND	18	ug/Kg
Endrin aldehyde	ND	18	ug/Kg
Endrin ketone	ND	18	ug/Kg
4,4'-DDT	ND	18	ug/Kg
Methoxychlor	ND	35	ug/Kg
Toxaphene	ND	350	ug/Kg
Chlordane (Technical)	ND	180	ug/Kg

Surrogate	%REC	Limits
TCMX	DO	23-120
Decachlorobiphenyl	DO	24-120

## Legend

**DO:** Diluted Out

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU7-1C

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-005

**Sampled:** 08/25/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

**Diln Fac:** 10.00

**Analyzed:** 09/03/21

Analyte	Result	RL	Units
alpha-BHC	ND	16	ug/Kg
beta-BHC	ND	16	ug/Kg
gamma-BHC	ND	16	ug/Kg
delta-BHC	ND	16	ug/Kg
Heptachlor	ND	16	ug/Kg
Aldrin	ND	16	ug/Kg
Heptachlor epoxide	ND	16	ug/Kg
Endosulfan I	ND	16	ug/Kg
Dieldrin	ND	16	ug/Kg
4,4'-DDE	ND	16	ug/Kg
Endrin	ND	16	ug/Kg
Endosulfan II	ND	16	ug/Kg
Endosulfan sulfate	ND	16	ug/Kg
4,4'-DDD	ND	16	ug/Kg
Endrin aldehyde	ND	16	ug/Kg
Endrin ketone	ND	16	ug/Kg
4,4'-DDT	ND	16	ug/Kg
Methoxychlor	ND	32	ug/Kg
Toxaphene	ND	320	ug/Kg
<b>Chlordane (Technical)</b>	<b>340</b>	<b>160</b>	<b>ug/Kg</b>

Surrogate	%REC	Limits
TCMX	DO	23-120
Decachlorobiphenyl	DO	24-120

Legend

- DO: Diluted Out
- ND: Not Detected
- RL: Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU7-2A

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-006

**Sampled:** 08/25/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

**Diln Fac:** 10.00

**Analyzed:** 09/03/21

Analyte	Result	RL	Units
alpha-BHC	ND	16	ug/Kg
beta-BHC	ND	16	ug/Kg
gamma-BHC	ND	16	ug/Kg
delta-BHC	ND	16	ug/Kg
Heptachlor	ND	16	ug/Kg
Aldrin	ND	16	ug/Kg
Heptachlor epoxide	ND	16	ug/Kg
Endosulfan I	ND	16	ug/Kg
Dieldrin	ND	16	ug/Kg
4,4'-DDE	ND	16	ug/Kg
Endrin	ND	16	ug/Kg
Endosulfan II	ND	16	ug/Kg
Endosulfan sulfate	ND	16	ug/Kg
4,4'-DDD	ND	16	ug/Kg
Endrin aldehyde	ND	16	ug/Kg
Endrin ketone	ND	16	ug/Kg
4,4'-DDT	ND	16	ug/Kg
Methoxychlor	ND	33	ug/Kg
Toxaphene	ND	330	ug/Kg
Chlordane (Technical)	ND	160	ug/Kg

Surrogate	%REC	Limits
TCMX	DO	23-120
Decachlorobiphenyl	DO	24-120

## Legend

**DO:** Diluted Out

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU6-1A

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-007

**Sampled:** 08/25/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

**Diln Fac:** 10.00

**Analyzed:** 09/03/21

Analyte	Result	RL	Units
alpha-BHC	ND	16	ug/Kg
beta-BHC	ND	16	ug/Kg
gamma-BHC	ND	16	ug/Kg
delta-BHC	ND	16	ug/Kg
Heptachlor	ND	16	ug/Kg
Aldrin	ND	16	ug/Kg
Heptachlor epoxide	ND	16	ug/Kg
Endosulfan I	ND	16	ug/Kg
Dieldrin	ND	16	ug/Kg
4,4'-DDE	ND	16	ug/Kg
Endrin	ND	16	ug/Kg
Endosulfan II	ND	16	ug/Kg
Endosulfan sulfate	ND	16	ug/Kg
4,4'-DDD	ND	16	ug/Kg
Endrin aldehyde	ND	16	ug/Kg
Endrin ketone	ND	16	ug/Kg
4,4'-DDT	ND	16	ug/Kg
Methoxychlor	ND	33	ug/Kg
Toxaphene	ND	330	ug/Kg
Chlordane (Technical)	ND	160	ug/Kg

Surrogate	%REC	Limits
TCMX	DO	23-120
Decachlorobiphenyl	DO	24-120

## Legend

**DO:** Diluted Out  
**ND:** Not Detected  
**RL:** Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU6-2A

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-008

**Sampled:** 08/25/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

**Diln Fac:** 10.00

**Analyzed:** 09/03/21

Analyte	Result	RL	Units
alpha-BHC	ND	16	ug/Kg
beta-BHC	ND	16	ug/Kg
gamma-BHC	ND	16	ug/Kg
delta-BHC	ND	16	ug/Kg
Heptachlor	ND	16	ug/Kg
Aldrin	ND	16	ug/Kg
Heptachlor epoxide	ND	16	ug/Kg
Endosulfan I	ND	16	ug/Kg
Dieldrin	ND	16	ug/Kg
4,4'-DDE	ND	16	ug/Kg
Endrin	ND	16	ug/Kg
Endosulfan II	ND	16	ug/Kg
Endosulfan sulfate	ND	16	ug/Kg
4,4'-DDD	ND	16	ug/Kg
Endrin aldehyde	ND	16	ug/Kg
Endrin ketone	ND	16	ug/Kg
4,4'-DDT	ND	16	ug/Kg
Methoxychlor	ND	33	ug/Kg
Toxaphene	ND	330	ug/Kg
Chlordane (Technical)	ND	160	ug/Kg

Surrogate	%REC	Limits
TCMX	DO	23-120
Decachlorobiphenyl	DO	24-120

## Legend

**DO:** Diluted Out

**ND:** Not Detected

**RL:** Reporting Limit



## Organochlorine Pesticides: Batch QC

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BLANK

**Batch#:** 273331

**Analysis:** EPA 8081A

**Lab ID:** QC942009

**Prepared:** 09/03/21

**Analyst:** TRN

**Matrix:** Soil

**Analyzed:** 09/03/21

**Diln Fac:** 1.000

**Prep:** EPA 3546

Analyte	Result	RL	Units
alpha-BHC	ND	1.7	ug/Kg
beta-BHC	ND	1.7	ug/Kg
gamma-BHC	ND	1.7	ug/Kg
delta-BHC	ND	1.7	ug/Kg
Heptachlor	ND	1.7	ug/Kg
Aldrin	ND	1.7	ug/Kg
Heptachlor epoxide	ND	1.7	ug/Kg
Endosulfan I	ND	1.7	ug/Kg
Dieldrin	ND	1.7	ug/Kg
4,4'-DDE	ND	1.7	ug/Kg
Endrin	ND	1.7	ug/Kg
Endosulfan II	ND	1.7	ug/Kg
Endosulfan sulfate	ND	1.7	ug/Kg
4,4'-DDD	ND	1.7	ug/Kg
Endrin aldehyde	ND	1.7	ug/Kg
Endrin ketone	ND	1.7	ug/Kg
4,4'-DDT	ND	1.7	ug/Kg
Methoxychlor	ND	3.3	ug/Kg
Toxaphene	ND	33	ug/Kg
Chlordane (Technical)	ND	17	ug/Kg

Surrogate	%REC	Limits
TCMX	106	23-120
Decachlorobiphenyl	67	24-120

## Legend

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides: Batch QC

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BS

**Batch#:** 273331

**Analysis:** EPA 8081A

**Lab ID:** QC942010

**Prepared:** 09/03/21

**Analyst:** TRN

**Matrix:** Soil

**Analyzed:** 09/03/21

**Diln Fac:** 1.000

**Prep:** EPA 3546

Analyte	Spiked	Result	%REC	Limits	Units	Qual
alpha-BHC	16.67	18.85	113	22-129	ug/Kg	#
beta-BHC	16.67	16.49	99	28-125	ug/Kg	
gamma-BHC	16.67	19.78	119	22-128	ug/Kg	#
delta-BHC	16.67	18.36	110	24-131	ug/Kg	#
Heptachlor	16.67	16.55	99	18-124	ug/Kg	
Aldrin	16.67	13.46	81	23-120	ug/Kg	
Heptachlor epoxide	16.67	14.22	85	26-120	ug/Kg	
Endosulfan I	16.67	15.95	96	25-126	ug/Kg	
Dieldrin	16.67	15.82	95	23-124	ug/Kg	
4,4'-DDE	16.67	15.27	92	28-121	ug/Kg	
Endrin	16.67	16.94	102	25-127	ug/Kg	
Endosulfan II	16.67	15.49	93	29-121	ug/Kg	
Endosulfan sulfate	16.67	14.28	86	30-121	ug/Kg	
4,4'-DDD	16.67	13.67	82	26-120	ug/Kg	
Endrin aldehyde	16.67	7.440	45	10-120	ug/Kg	
Endrin ketone	16.67	13.25	80	28-125	ug/Kg	
4,4'-DDT	16.67	13.82	83	22-125	ug/Kg	
Methoxychlor	16.67	12.71	76	28-130	ug/Kg	
<b>Surrogate</b>			<b>%REC</b>	<b>Limits</b>		
TCMX			107	23-120		
Decachlorobiphenyl			77	24-120		

## Organochlorine Pesticides: Batch QC

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BSD

**Batch#:** 273331

**Analysis:** EPA 8081A

**Lab ID:** QC942011

**Prepared:** 09/03/21

**Analyst:** TRN

**Matrix:** Soil

**Analyzed:** 09/03/21

**Diln Fac:** 1.000

**Prep:** EPA 3546

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim	Qual
alpha-BHC	16.67	20.24	121	22-129	ug/Kg	7	20	#
beta-BHC	16.67	19.20	115	28-125	ug/Kg	15	20	
gamma-BHC	16.67	20.07	120	22-128	ug/Kg	1	20	#
delta-BHC	16.67	18.27	110	24-131	ug/Kg	1	20	#
Heptachlor	16.67	17.19	103	18-124	ug/Kg	4	20	
Aldrin	16.67	13.66	82	23-120	ug/Kg	2	20	
Heptachlor epoxide	16.67	16.43	99	26-120	ug/Kg	14	20	
Endosulfan I	16.67	17.02	102	25-126	ug/Kg	6	20	
Dieldrin	16.67	17.08	102	23-124	ug/Kg	8	20	
4,4'-DDE	16.67	16.47	99	28-121	ug/Kg	8	20	
Endrin	16.67	17.43	105	25-127	ug/Kg	3	20	
Endosulfan II	16.67	16.38	98	29-121	ug/Kg	6	20	
Endosulfan sulfate	16.67	14.71	88	30-121	ug/Kg	3	20	
4,4'-DDD	16.67	14.13	85	26-120	ug/Kg	3	20	
Endrin aldehyde	16.67	4.962	30	10-120	ug/Kg	40 *	20	
Endrin ketone	16.67	13.75	83	28-125	ug/Kg	4	20	
4,4'-DDT	16.67	13.16	79	22-125	ug/Kg	5	20	
Methoxychlor	16.67	12.35	74	28-130	ug/Kg	3	20	
<b>Surrogate</b>						<b>%REC</b>	<b>Limits</b>	
TCMX						111	23-120	
Decachlorobiphenyl						80	24-120	

Legend

#: CCV drift outside limits; average CCV drift within limits per method requirements

\*: Value is outside QC limits

RPD: Relative Percent Difference

## Polychlorinated Biphenyls (PCBs)

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU2-1A

**Diln Fac:** 5.000

**Analyzed:** 09/03/21

**Type:** SAMPLE

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-001

**Sampled:** 08/23/21

**Analysis:** EPA 8082

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

Analyte	Result	RL	Units
Aroclor-1016	ND	83	ug/Kg
Aroclor-1221	ND	83	ug/Kg
Aroclor-1232	ND	83	ug/Kg
Aroclor-1242	ND	83	ug/Kg
Aroclor-1248	ND	83	ug/Kg
Aroclor-1254	ND	83	ug/Kg
Aroclor-1260	ND	83	ug/Kg
Aroclor-1262	ND	83	ug/Kg
Aroclor-1268	ND	83	ug/Kg
Surrogate		%REC	Limits
Decachlorobiphenyl (PCB)		101	19-121

**Field ID:** 3048-DU2-2A

**Diln Fac:** 2.000

**Analyzed:** 09/03/21

**Type:** SAMPLE

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-002

**Sampled:** 08/23/21

**Analysis:** EPA 8082

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

Analyte	Result	RL	Units
Aroclor-1016	ND	33	ug/Kg
Aroclor-1221	ND	33	ug/Kg
Aroclor-1232	ND	33	ug/Kg
Aroclor-1242	ND	33	ug/Kg
Aroclor-1248	ND	33	ug/Kg
Aroclor-1254	ND	33	ug/Kg
Aroclor-1260	ND	33	ug/Kg
Aroclor-1262	ND	33	ug/Kg
Aroclor-1268	ND	33	ug/Kg
Surrogate		%REC	Limits
Decachlorobiphenyl (PCB)		75	19-121

## Polychlorinated Biphenyls (PCBs)

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU7-1A

**Diln Fac:** 5.000

**Analyzed:** 09/07/21

**Type:** SAMPLE

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-003

**Sampled:** 08/25/21

**Analysis:** EPA 8082

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

Analyte	Result	RL	Units
Aroclor-1016	ND	83	ug/Kg
Aroclor-1221	ND	83	ug/Kg
Aroclor-1232	ND	83	ug/Kg
Aroclor-1242	ND	83	ug/Kg
Aroclor-1248	ND	83	ug/Kg
Aroclor-1254	ND	83	ug/Kg
Aroclor-1260	ND	83	ug/Kg
Aroclor-1262	ND	83	ug/Kg
Aroclor-1268	ND	83	ug/Kg

Surrogate	%REC	Limits
Decachlorobiphenyl (PCB)	86	19-121

**Field ID:** 3048-DU7-1B

**Diln Fac:** 5.000

**Analyzed:** 09/07/21

**Type:** SAMPLE

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-004

**Sampled:** 08/25/21

**Analysis:** EPA 8082

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

Analyte	Result	RL	Units
Aroclor-1016	ND	88	ug/Kg
Aroclor-1221	ND	88	ug/Kg
Aroclor-1232	ND	88	ug/Kg
Aroclor-1242	ND	88	ug/Kg
Aroclor-1248	ND	88	ug/Kg
Aroclor-1254	ND	88	ug/Kg
<b>Aroclor-1260</b>	<b>210</b>	<b>88</b>	<b>ug/Kg</b>
Aroclor-1262	ND	88	ug/Kg
Aroclor-1268	ND	88	ug/Kg

Surrogate	%REC	Limits
Decachlorobiphenyl (PCB)	84	19-121

## Polychlorinated Biphenyls (PCBs)

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU7-1C

**Diln Fac:** 5.000

**Analyzed:** 09/07/21

**Type:** SAMPLE

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-005

**Sampled:** 08/25/21

**Analysis:** EPA 8082

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

Analyte	Result	RL	Units
Aroclor-1016	ND	81	ug/Kg
Aroclor-1221	ND	81	ug/Kg
Aroclor-1232	ND	81	ug/Kg
Aroclor-1242	ND	81	ug/Kg
Aroclor-1248	ND	81	ug/Kg
Aroclor-1254	ND	81	ug/Kg
Aroclor-1260	ND	81	ug/Kg
Aroclor-1262	ND	81	ug/Kg
Aroclor-1268	ND	81	ug/Kg

Surrogate	%REC	Limits
Decachlorobiphenyl (PCB)	81	19-121

**Field ID:** 3048-DU7-2A

**Diln Fac:** 2.000

**Analyzed:** 09/07/21

**Type:** SAMPLE

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-006

**Sampled:** 08/25/21

**Analysis:** EPA 8082

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

Analyte	Result	RL	Units
Aroclor-1016	ND	33	ug/Kg
Aroclor-1221	ND	33	ug/Kg
Aroclor-1232	ND	33	ug/Kg
Aroclor-1242	ND	33	ug/Kg
Aroclor-1248	ND	33	ug/Kg
Aroclor-1254	ND	33	ug/Kg
<b>Aroclor-1260</b>	<b>320</b>	33	ug/Kg
Aroclor-1262	ND	33	ug/Kg
Aroclor-1268	ND	33	ug/Kg

Surrogate	%REC	Limits
Decachlorobiphenyl (PCB)	51	19-121

## Polychlorinated Biphenyls (PCBs)

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU6-1A

**Diln Fac:** 2.000

**Analyzed:** 09/07/21

**Type:** SAMPLE

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-007

**Sampled:** 08/25/21

**Analysis:** EPA 8082

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

Analyte	Result	RL	Units
Aroclor-1016	ND	33	ug/Kg
Aroclor-1221	ND	33	ug/Kg
Aroclor-1232	ND	33	ug/Kg
Aroclor-1242	ND	33	ug/Kg
Aroclor-1248	ND	33	ug/Kg
Aroclor-1254	ND	33	ug/Kg
<b>Aroclor-1260</b>	<b>110</b>	33	ug/Kg
Aroclor-1262	ND	33	ug/Kg
Aroclor-1268	ND	33	ug/Kg

Surrogate	%REC	Limits
Decachlorobiphenyl (PCB)	50	19-121

**Field ID:** 3048-DU6-2A

**Diln Fac:** 5.000

**Analyzed:** 09/07/21

**Type:** SAMPLE

**Batch#:** 273331

**Prep:** EPA 3546

**Lab ID:** 449770-008

**Sampled:** 08/25/21

**Analysis:** EPA 8082

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/03/21

Analyte	Result	RL	Units
Aroclor-1016	ND	82	ug/Kg
Aroclor-1221	ND	82	ug/Kg
Aroclor-1232	ND	82	ug/Kg
Aroclor-1242	ND	82	ug/Kg
Aroclor-1248	ND	82	ug/Kg
Aroclor-1254	ND	82	ug/Kg
<b>Aroclor-1260</b>	<b>150</b>	82	ug/Kg
Aroclor-1262	ND	82	ug/Kg
Aroclor-1268	ND	82	ug/Kg

Surrogate	%REC	Limits
Decachlorobiphenyl (PCB)	58	19-121

## Polychlorinated Biphenyls (PCBs)

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BLANK

**Batch#:** 273331

**Analysis:** EPA 8082

**Lab ID:** QC942009

**Prepared:** 09/03/21

**Analyst:** TRN

**Matrix:** Soil

**Analyzed:** 09/03/21

**Diln Fac:** 1.000

**Prep:** EPA 3546

Analyte	Result	RL	Units
Aroclor-1016	ND	17	ug/Kg
Aroclor-1221	ND	17	ug/Kg
Aroclor-1232	ND	17	ug/Kg
Aroclor-1242	ND	17	ug/Kg
Aroclor-1248	ND	17	ug/Kg
Aroclor-1254	ND	17	ug/Kg
Aroclor-1260	ND	17	ug/Kg
Aroclor-1262	ND	17	ug/Kg
Aroclor-1268	ND	17	ug/Kg
Surrogate		%REC	Limits
Decachlorobiphenyl (PCB)		90	19-121

Legend

**ND:** Not Detected

**RL:** Reporting Limit



## Polychlorinated Biphenyls (PCBs): Batch QC

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BS

**Batch#:** 273331

**Analysis:** EPA 8082

**Lab ID:** QC942012

**Prepared:** 09/03/21

**Analyst:** TRN

**Matrix:** Soil

**Analyzed:** 09/03/21

**DiIn Fac:** 1.000

**Prep:** EPA 3546

Analyte	Spiked	Result	%REC	Limits	Units
Aroclor-1016	166.7	154.9	93	14-150	ug/Kg
Aroclor-1260	166.7	127.2	76	10-150	ug/Kg

Surrogate	%REC	Limits
Decachlorobiphenyl (PCB)	75	19-121

**Type:** BSD

**Batch#:** 273331

**Analysis:** EPA 8082

**Lab ID:** QC942013

**Prepared:** 09/03/21

**Analyst:** TRN

**Matrix:** Soil

**Analyzed:** 09/03/21

**DiIn Fac:** 1.000

**Prep:** EPA 3546

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Aroclor-1016	166.7	189.6	114	14-150	ug/Kg	20	20
Aroclor-1260	166.7	156.0	94	10-150	ug/Kg	20	20

Surrogate	%REC	Limits
Decachlorobiphenyl (PCB)	102	19-121

Legend

**RPD:** Relative Percent Difference

## Metals Analytical Report

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU2-1A

**Lab ID:** 449770-001

**Diln Fac:** 1.000

**Received:** 08/27/21

**Type:** SAMPLE

**Matrix:** Soil

**Sampled:** 08/23/21

**Prepared:** 09/07/21

Analyte	Result	RL	Units	Basis	Moisture	Batch#	Analyzed	Prep	Analysis	Analyst
<b>Arsenic</b>	<b>5.9</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Barium</b>	<b>50</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Cadmium	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Chromium</b>	<b>76</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Lead</b>	<b>2.5</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Mercury	ND	0.19	mg/Kg	dry	11%	273498	09/08/21	METHOD	EPA 7471A	TNN
Selenium	ND	1.5	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Silver	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP

**Field ID:** 3048-DU2-2A

**Lab ID:** 449770-002

**Diln Fac:** 1.000

**Received:** 08/27/21

**Type:** SAMPLE

**Matrix:** Soil

**Sampled:** 08/23/21

**Prepared:** 09/07/21

Analyte	Result	RL	Units	Basis	Moisture	Batch#	Analyzed	Prep	Analysis	Analyst
Arsenic	ND	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Barium</b>	<b>82</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Cadmium	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Chromium</b>	<b>120</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Lead</b>	<b>3.5</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Mercury	ND	0.19	mg/Kg	dry	16%	273498	09/08/21	METHOD	EPA 7471A	TNN
Selenium	ND	1.5	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Silver	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP

**Field ID:** 3048-DU7-1A

**Lab ID:** 449770-003

**Diln Fac:** 1.000

**Received:** 08/27/21

**Type:** SAMPLE

**Matrix:** Soil

**Sampled:** 08/25/21

**Prepared:** 09/07/21

Analyte	Result	RL	Units	Basis	Moisture	Batch#	Analyzed	Prep	Analysis	Analyst
<b>Arsenic</b>	<b>2.2</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Barium</b>	<b>86</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Cadmium	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Chromium</b>	<b>170</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Lead</b>	<b>13</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Mercury	ND	0.16	mg/Kg	dry	15%	273498	09/08/21	METHOD	EPA 7471A	TNN
Selenium	ND	1.5	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Silver	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP

## Metals Analytical Report

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU7-1B

**Lab ID:** 449770-004

**Diln Fac:** 1.000

**Received:** 08/27/21

**Type:** SAMPLE

**Matrix:** Soil

**Sampled:** 08/25/21

**Prepared:** 09/07/21

Analyte	Result	RL	Units	Basis	Moisture	Batch#	Analyzed	Prep	Analysis	Analyst
<b>Arsenic</b>	<b>3.8</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Barium</b>	<b>100</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Cadmium	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Chromium</b>	<b>200</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Lead</b>	<b>13</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Mercury	ND	0.17	mg/Kg	dry	14%	273498	09/08/21	METHOD	EPA 7471A	TNN
Selenium	ND	1.5	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Silver	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP

**Field ID:** 3048-DU7-1C

**Lab ID:** 449770-005

**Diln Fac:** 1.000

**Received:** 08/27/21

**Type:** SAMPLE

**Matrix:** Soil

**Sampled:** 08/25/21

**Prepared:** 09/07/21

Analyte	Result	RL	Units	Basis	Moisture	Batch#	Analyzed	Prep	Analysis	Analyst
<b>Arsenic</b>	<b>3.8</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Barium</b>	<b>96</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Cadmium	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Chromium</b>	<b>200</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Lead</b>	<b>15</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Mercury	ND	0.17	mg/Kg	dry	14%	273498	09/08/21	METHOD	EPA 7471A	TNN
Selenium	ND	1.5	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Silver	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP

**Field ID:** 3048-DU7-2A

**Lab ID:** 449770-006

**Diln Fac:** 1.000

**Received:** 08/27/21

**Type:** SAMPLE

**Matrix:** Soil

**Sampled:** 08/25/21

**Prepared:** 09/07/21

Analyte	Result	RL	Units	Basis	Moisture	Batch#	Analyzed	Prep	Analysis	Analyst
<b>Arsenic</b>	<b>5.9</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Barium</b>	<b>160</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Cadmium	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Chromium</b>	<b>180</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Lead</b>	<b>41</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Mercury	ND	0.16	mg/Kg	dry	11%	273498	09/08/21	METHOD	EPA 7471A	TNN
Selenium	ND	1.5	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Silver	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP

## Metals Analytical Report

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU6-1A

**Lab ID:** 449770-007

**DiIn Fac:** 1.000

**Received:** 08/27/21

**Type:** SAMPLE

**Matrix:** Soil

**Sampled:** 08/25/21

**Prepared:** 09/07/21

Analyte	Result	RL	Units	Basis	Moisture	Batch#	Analyzed	Prep	Analysis	Analyst
<b>Arsenic</b>	<b>3.1</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Barium</b>	<b>81</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Cadmium	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Chromium</b>	<b>200</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Lead</b>	<b>14</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Mercury	ND	0.18	mg/Kg	dry	14%	273498	09/08/21	METHOD	EPA 7471A	TNN
Selenium	ND	1.5	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Silver	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP

**Field ID:** 3048-DU6-2A

**Lab ID:** 449770-008

**DiIn Fac:** 1.000

**Received:** 08/27/21

**Type:** SAMPLE

**Matrix:** Soil

**Sampled:** 08/25/21

**Prepared:** 09/07/21

Analyte	Result	RL	Units	Basis	Moisture	Batch#	Analyzed	Prep	Analysis	Analyst
<b>Arsenic</b>	<b>5.8</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Barium</b>	<b>110</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Cadmium	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Chromium</b>	<b>160</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
<b>Lead</b>	<b>16</b>	0.50	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Mercury	ND	0.17	mg/Kg	dry	11%	273498	09/08/21	METHOD	EPA 7471A	TNN
Selenium	ND	1.5	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP
Silver	ND	0.25	mg/Kg	air dried		273438	09/07/21	EPA 3050B	EPA 6010B	JCP

**Type:** BLANK

**Batch#:** 273438

**Analysis:** EPA 6010B

**Lab ID:** QC942323

**Prepared:** 09/07/21

**Analyst:** JCP

**Matrix:** Soil

**Analyzed:** 09/07/21

**DiIn Fac:** 1.000

**Prep:** EPA 3050B

Analyte	Result	RL	Units
Arsenic	ND	0.50	mg/Kg
Barium	ND	0.50	mg/Kg
Cadmium	ND	0.25	mg/Kg
Chromium	ND	0.50	mg/Kg
Lead	ND	0.50	mg/Kg
Selenium	ND	1.5	mg/Kg
Silver	ND	0.25	mg/Kg

**Type:** BLANK

**Batch#:** 273498

**Analysis:** EPA 7471A

**Lab ID:** QC942492

**Prepared:** 09/07/21

**Analyst:** TNN

**Matrix:** Soil

**Analyzed:** 09/08/21

**DiIn Fac:** 1.000

**Prep:** METHOD

Analyte	Result	RL	Units
Mercury	ND	0.14	mg/Kg

## Metals Analytical Report

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**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

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Legend

**ND:** Not Detected

**RL:** Reporting Limit

## Metals Analytical Report: Batch QC

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BS

**Batch#:** 273438

**Analysis:** EPA 6010B

**Lab ID:** QC942324

**Prepared:** 09/07/21

**Analyst:** JCP

**Matrix:** Soil

**Analyzed:** 09/07/21

**DiIn Fac:** 1.000

**Prep:** EPA 3050B

Analyte	Spiked	Result	%REC	Limits	Units
Arsenic	50.00	52.45	105	80-120	mg/Kg
Barium	50.00	49.50	99	80-120	mg/Kg
Cadmium	50.00	49.31	99	80-120	mg/Kg
Chromium	50.00	49.83	100	80-120	mg/Kg
Lead	50.00	51.42	103	80-120	mg/Kg
Selenium	50.00	45.55	91	80-120	mg/Kg
Silver	25.00	22.63	91	80-120	mg/Kg

**Type:** BSD

**Batch#:** 273438

**Analysis:** EPA 6010B

**Lab ID:** QC942325

**Prepared:** 09/07/21

**Analyst:** JCP

**Matrix:** Soil

**Analyzed:** 09/07/21

**DiIn Fac:** 1.000

**Prep:** EPA 3050B

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Arsenic	50.00	53.78	108	80-120	mg/Kg	3	20
Barium	50.00	51.48	103	80-120	mg/Kg	4	20
Cadmium	50.00	50.79	102	80-120	mg/Kg	3	20
Chromium	50.00	51.44	103	80-120	mg/Kg	3	20
Lead	50.00	53.00	106	80-120	mg/Kg	3	20
Selenium	50.00	46.52	93	80-120	mg/Kg	2	20
Silver	25.00	23.55	94	80-120	mg/Kg	4	20

Legend

**RPD:** Relative Percent Difference

### Metals Analytical Report: Batch QC

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** LCS

**Batch#:** 273498

**Analysis:** EPA 7471A

**Lab ID:** QC942493

**Prepared:** 09/07/21

**Analyst:** TNN

**Matrix:** Soil

**Analyzed:** 09/08/21

**Diln Fac:** 1.000

**Prep:** METHOD

Analyte	Spiked	Result	%REC	Limits	Units
Mercury	0.8333	0.8302	100	80-120	mg/Kg

## Metals Analytical Report: Batch QC

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** ZZZZZZZZZZ

**Basis:** as received

**Prepared:** 09/07/21

**Type:** MS

**Diln Fac:** 1.000

**Analyzed:** 09/08/21

**MSS Lab ID:** 449994-001

**Batch#:** 273498

**Prep:** METHOD

**Lab ID:** QC942494

**Sampled:** 09/01/21

**Analysis:** EPA 7471A

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TNN

Analyte	MSS Result	Spiked	Result	%REC	Limits	Units
Mercury	<0.04587	0.9259	0.9312	101	75-125	mg/Kg

**Field ID:** ZZZZZZZZZZ

**Basis:** as received

**Prepared:** 09/07/21

**Type:** MSD

**Diln Fac:** 1.000

**Analyzed:** 09/08/21

**MSS Lab ID:** 449994-001

**Batch#:** 273498

**Prep:** METHOD

**Lab ID:** QC942495

**Sampled:** 09/01/21

**Analysis:** EPA 7471A

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TNN

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Mercury	0.9804	1.008	103	75-125	mg/Kg	2	20

Legend

**RPD:** Relative Percent Difference



## Moisture

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU2-1A

**Batch#:** 273307

**Prep:** METHOD

**Lab ID:** 449770-001

**Sampled:** 08/23/21

**Analysis:** ASTM D2216

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** ECC

**Diln Fac:** 1.000

**Analyzed:** 09/02/21

Analyte	Result	RL	Units
Moisture, Percent	11	1	%

**Field ID:** 3048-DU2-2A

**Batch#:** 273307

**Prep:** METHOD

**Lab ID:** 449770-002

**Sampled:** 08/23/21

**Analysis:** ASTM D2216

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** ECC

**Diln Fac:** 1.000

**Analyzed:** 09/02/21

Analyte	Result	RL	Units
Moisture, Percent	16	1	%

**Field ID:** 3048-DU7-1A

**Batch#:** 273307

**Prep:** METHOD

**Lab ID:** 449770-003

**Sampled:** 08/25/21

**Analysis:** ASTM D2216

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** ECC

**Diln Fac:** 1.000

**Analyzed:** 09/02/21

Analyte	Result	RL	Units
Moisture, Percent	15	1	%

**Field ID:** 3048-DU7-1B

**Batch#:** 273307

**Prep:** METHOD

**Lab ID:** 449770-004

**Sampled:** 08/25/21

**Analysis:** ASTM D2216

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** ECC

**Diln Fac:** 1.000

**Analyzed:** 09/02/21

Analyte	Result	RL	Units
Moisture, Percent	14	1	%

**Field ID:** 3048-DU7-1C

**Batch#:** 273307

**Prep:** METHOD

**Lab ID:** 449770-005

**Sampled:** 08/25/21

**Analysis:** ASTM D2216

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** ECC

**Diln Fac:** 1.000

**Analyzed:** 09/02/21

Analyte	Result	RL	Units
Moisture, Percent	14	1	%

**Field ID:** 3048-DU7-2A

**Batch#:** 273307

**Prep:** METHOD

**Lab ID:** 449770-006

**Sampled:** 08/25/21

**Analysis:** ASTM D2216

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** ECC

**Diln Fac:** 1.000

**Analyzed:** 09/02/21

Analyte	Result	RL	Units
Moisture, Percent	11	1	%

## Moisture

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU6-1A

**Batch#:** 273307

**Prep:** METHOD

**Lab ID:** 449770-007

**Sampled:** 08/25/21

**Analysis:** ASTM D2216

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** ECC

**Diln Fac:** 1.000

**Analyzed:** 09/02/21

Analyte	Result	RL	Units
Moisture, Percent	14	1	%

**Field ID:** 3048-DU6-2A

**Batch#:** 273307

**Prep:** METHOD

**Lab ID:** 449770-008

**Sampled:** 08/25/21

**Analysis:** ASTM D2216

**Matrix:** Soil

**Received:** 08/27/21

**Analyst:** ECC

**Diln Fac:** 1.000

**Analyzed:** 09/02/21

Analyte	Result	RL	Units
Moisture, Percent	11	1	%

Legend

RL: Reporting Limit

## Moisture: Batch QC

**Lab #:** 449770

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU2-1A

**Diln Fac:** 1.000

**Prep:** METHOD

**Type:** SDUP

**Batch#:** 273307

**Analysis:** ASTM D2216

**MSS Lab ID:** 449770-001

**Sampled:** 08/23/21

**Analyst:** ECC

**Lab ID:** QC941946

**Received:** 08/27/21

**Matrix:** Soil

**Analyzed:** 09/02/21

Analyte	MSS Result	Result	RL	Units	RPD	Lim
Moisture, Percent	10.77	10.86	1.000	%	1	26

Legend

**RL:** Reporting Limit

**RPD:** Relative Percent Difference



**ENTHALPY**  
ANALYTICAL

Enthalpy Analytical  
931 West Barkley Ave  
Orange, CA 92868  
(714) 771-6900

enthalpy.com

Lab Job Number: 449877  
Report Level: II  
Report Date: 09/13/2021

**Analytical Report** *prepared for:*

Jennah Oshiro  
Myounghee Noh & Associates  
99-1046 Iwaena Street  
210A  
Aiea, HI 96701

Project: 3048\_2 - AQS

*Authorized for release by:*

Jess Silberman, Project Manager  
510-204-2236  
[jessica.silberman@enthalpy.com](mailto:jessica.silberman@enthalpy.com)

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

CA ELAP# 1338, NELAP# 4038, SCAQMD LAP# 18LA0518, LACSD ID# 10105, CDC ELITE  
Member

## Sample Summary

Jennah Oshiro Myounghee Noh & Associates 99-1046 Iwaena Street 210A Aiea, HI 96701	Lab Job #: 449877 Project No: 3048_2 Location: AQS Date Received: 08/31/21
--	---

Sample ID	Lab ID	Collected	Matrix
3048-DU1-1A	449877-001	08/27/21 10:00	Soil
3048-DU1-1B	449877-002	08/27/21 11:00	Soil
3048-DU1-1C	449877-003	08/27/21 12:00	Soil
3048-DU1-2A	449877-004	08/27/21 15:00	Soil

## Case Narrative

---

Myounghee Noh & Associates  
99-1046 Iwaena Street  
210A  
Aiea, HI 96701  
Jennah Oshiro

Lab Job Number: 449877  
Project No: 3048\_2  
Location: AQS  
Date Received: 08/31/21

---

This data package contains sample and QC results for four soil samples, requested for the above referenced project on 08/31/21. The samples were received cold and intact. Multi-Increment Sampling (ISM) was performed on all samples in accordance with HDOH specifications.

### **Pesticides (EPA 8081A):**

High recoveries were observed for a number of analytes in the BS for batch 273477; the associated RPDs were within limits, and these analytes were not detected at or above the RL in the associated samples. High RPD was observed for dieldrin, endrin, and endrin aldehyde in the BS/BSD for batch 273477; these analytes were not detected at or above the RL in the associated samples. A number of samples were diluted due to the dark color of the sample extracts. No other analytical problems were encountered.

### **Metals (EPA 6010B):**

No analytical problems were encountered.

# CHAIN OF CUSTODY



Formerly Curtis & Tompkins Labs

2323 Fifth Street  
Berkeley, CA 94710

Phone (510) 486-0900  
Fax (510) 486-0532

Project No: 3048-2

Project Name: AQS

Project P. O. No: 3048-2

EDD Format: Report Level  II  III  IV

Turnaround Time:  RUSH  Standard

C&T LOGIN # 449877

Sampler: Jennah Oshino

Report To: Jennah Oshino

Company: Myaunghee Non-Associates

Telephone: 808-926-7382

Email: jennah@non-associates.com

Page 1 of 1  
Chain of Custody #

## ANALYTICAL REQUEST

Lab No.	Sample ID.	SAMPLING		MATRIX		# of Containers	CHEMICAL PRESERVATIVE				
		Date Collected	Time Collected	Water	Solid		HCl	H2SO4	HNO3	NaOH	None
1	3048-DUI-1A	8/27/21	1000	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>
2	3048-DUI-1B	8/27/21	1100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>
3	3048-DUI-1C	8/27/21	1200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>
4	3048-DUI-2A	8/27/21	1500	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>

Lead + Arsenic (6010)																			
Pesticides (8081A)																			
MIS Prep																			

Notes:

**SAMPLE RECEIPT**

Intact  
 Cold  
 On Ice  
 Ambient

**RELINQUISHED BY:**

Klaudia  
 to 2/9/21  
 DATE: 8/30 TIME: 9:15  
 DATE: TIME:  
 DATE: TIME:

**RECEIVED BY:**

[Signature]  
 DATE: 8/30/21 TIME: 1010  
 [Signature]  
 DATE: 9/2/21 TIME: 1230  
 DATE: TIME:

**SAMPLE RECEIPT CHECKLIST**



**Section 1:** Login # 449877 Client: MNA  
 Date Received: 8/31/21 Project: \_\_\_\_\_

**Section 2:** Shipping info (if applicable) FedEx 7746 7564 9520  
 Are custody seals present?  No, or  Yes. If yes, where?  on cooler,  on samples,  on package  
 Date: 8/30/2021 How many 1  Signature,  Initials,  None  
 Were custody seals intact upon arrival?  Yes  No  N/A  
 Samples received in a cooler?  Yes, how many? 1  No (skip Section 3 below)  
 If no cooler Sample Temp (°C): \_\_\_\_\_ using IR Gun #  B, or  C  
 Samples received on ice directly from the field. Cooling process had begun  
 If in cooler: Date Opened 8/31/21 By (print) MAG (sign) \_\_\_\_\_

**Section 3:** **Important: Notify PM if temperature exceeds 6°C or arrive frozen.**  
 Packing in cooler: (if other, describe) \_\_\_\_\_  
 Bubble Wrap,  Foam blocks,  Bags,  None,  Cloth material,  Cardboard,  Styrofoam,  Paper towels  
 Samples received on ice directly from the field. Cooling process had begun  
 Type of ice used:  Wet,  Blue/Gel,  None Temperature blank(s) included?  Yes,  No  
 Temperature measured using  Thermometer ID: \_\_\_\_\_, or IR Gun #  B  C  
 Cooler Temp (°C): #1: 4.7, #2: \_\_\_\_\_, #3: \_\_\_\_\_, #4: \_\_\_\_\_, #5: \_\_\_\_\_, #6: \_\_\_\_\_, #7: \_\_\_\_\_

Section 4:	YES	NO	N/A
Were custody papers dry, filled out properly, and the project identifiable	/		
Were Method 5035 sampling containers present?		/	
If YES, what time were they transferred to freezer?			
Did all bottles arrive unbroken/unopened?	/		
Are there any missing / extra samples?		/	
Are samples in the appropriate containers for indicated tests?	/		
Are sample labels present, in good condition and complete?	/		
Does the container count match the COC?	/		
Do the sample labels agree with custody papers?	/		
Was sufficient amount of sample sent for tests requested?	/		
Did you change the hold time in LIMS for unpreserved VOAs?			/
Did you change the hold time in LIMS for preserved terracores?			/
Are bubbles > 6mm present in VOA samples?			/
Was the client contacted concerning this sample delivery?		/	
If YES, who was called? _____ By _____ Date: _____			

**Section 5:**

	YES	NO	N/A
Are the samples appropriately preserved? (if N/A, skip the rest of section 5)			
Did you check preservatives for all bottles for each sample?			
Did you document your preservative check? pH strip lot# _____, pH strip lot# _____, pH strip lot# _____			

Preservative added:  
 H2SO4 lot# \_\_\_\_\_ added to samples \_\_\_\_\_ on/at \_\_\_\_\_  
 HCL lot# \_\_\_\_\_ added to samples \_\_\_\_\_ on/at \_\_\_\_\_  
 HNO3 lot# \_\_\_\_\_ added to samples \_\_\_\_\_ on/at \_\_\_\_\_  
 NaOH lot# \_\_\_\_\_ added to samples \_\_\_\_\_ on/at \_\_\_\_\_

**Section 6:**  
 Explanations/Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Date Logged in 8/31/21 By (print) MAG (sign) \_\_\_\_\_  
 Date Labeled 8/31/21 By (print) MAG (sign) \_\_\_\_\_





# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

**Section 1**  
 Client: Myounghee Noh and Associates Project: 3048-2  
 Date Received: 9/3/21 Sampler's Name Present:  Yes  No

**Section 2**  
 Sample(s) received in a cooler?  Yes, How many? 1  No (skip section 2) Sample Temp (°C) (No Cooler) : \_\_\_\_\_  
 Sample Temp (°C), One from each cooler: #1: 2.2 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_  
*(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)*  
 Shipping Information: \_\_\_\_\_

**Section 3**  
 Was the cooler packed with:  Ice  Ice Packs  Bubble Wrap  Styrofoam  
 Paper  None  Other \_\_\_\_\_  
 Cooler Temp (°C): #1: 2.4 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

Section 4	YES	NO	N/A
Was a COC received?	<input checked="" type="checkbox"/>		
Are sample IDs present?	<input checked="" type="checkbox"/>		
Are sampling dates & times present?	<input checked="" type="checkbox"/>		
Is a relinquished signature present?	<input checked="" type="checkbox"/>		
Are the tests required clearly indicated on the COC?	<input checked="" type="checkbox"/>		
Are custody seals present?		<input checked="" type="checkbox"/>	
If custody seals are present, were they intact?			<input checked="" type="checkbox"/>
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)	<input checked="" type="checkbox"/>		
Did all samples arrive intact? If no, indicate in Section 4 below.	<input checked="" type="checkbox"/>		
Did all bottle labels agree with COC? (ID, dates and times)	<input checked="" type="checkbox"/>		
Were the samples collected in the correct containers for the required tests?	<input checked="" type="checkbox"/>		
Are the containers labeled with the correct preservatives?			<input checked="" type="checkbox"/>
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			<input checked="" type="checkbox"/>
Was a sufficient amount of sample submitted for the requested tests?	<input checked="" type="checkbox"/>		

**Section 5 Explanations/Comments**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Section 6**  
 For discrepancies, how was the Project Manager notified?  Verbal PM Initials: \_\_\_\_\_ Date/Time \_\_\_\_\_  
 Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_  
 Project Manager's response:  
 \_\_\_\_\_

Completed By:  Date: 9/3/21

9/2/2021



800-322-5555  
www.gls-us.com

**Ship From**

ENTHALPY ANALYTICAL  
BERKELEY SERVICE CENTER  
2323 5TH STREET  
BERKELEY, CA 94710

Tracking #: 554512247

CPS



**Ship To**

ENTHALPY ANALYTICAL (ORG)  
SAMPLE RECEIVING  
931 W BARKLEY AVE.  
ORANGE, CA 92868

ORANGE

*2.2/11*

COD: \$0.00

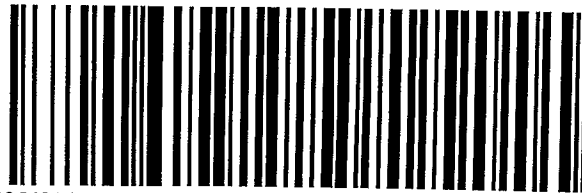
Weight: 0 lb(s)

Reference:

Delivery Instructions:

Signature Type: STANDARD

S10003H



48549142

ORC CA927-EH1

Print Date: 9/2/2021 1:45 PM

Package 4 of 5

**LABEL INSTRUCTIONS:**

**Do not copy or reprint this label for additional shipments - each package must have a unique barcode.**

Step 1: Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer.

Step 2: Fold this page in half.

Step 3: Securely attach this label to your package and do not cover the barcode.

**TERMS AND CONDITIONS:**

By giving us your shipment to deliver, you agree to all of the General Logistics Systems US, Inc. (GLS) service terms & conditions including, but not limited to; limits of liability, declared value conditions, and claim procedures which are available on our website at [www.gls-us.com](http://www.gls-us.com).

## Organochlorine Pesticides

**Lab #:** 449877

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU1-1A

**Batch#:** 273477

**Prep:** EPA 3546

**Lab ID:** 449877-001

**Sampled:** 08/27/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 08/31/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/08/21

**Diln Fac:** 5.000

**Analyzed:** 09/08/21

Analyte	Result	RL	Units
alpha-BHC	ND	8.3	ug/Kg
beta-BHC	ND	8.3	ug/Kg
gamma-BHC	ND	8.3	ug/Kg
delta-BHC	ND	8.3	ug/Kg
Heptachlor	ND	8.3	ug/Kg
Aldrin	ND	8.3	ug/Kg
Heptachlor epoxide	ND	8.3	ug/Kg
Endosulfan I	ND	8.3	ug/Kg
Dieldrin	ND	8.3	ug/Kg
4,4'-DDE	ND	8.3	ug/Kg
Endrin	ND	8.3	ug/Kg
Endosulfan II	ND	8.3	ug/Kg
Endosulfan sulfate	ND	8.3	ug/Kg
4,4'-DDD	ND	8.3	ug/Kg
Endrin aldehyde	ND	8.3	ug/Kg
Endrin ketone	ND	8.3	ug/Kg
4,4'-DDT	ND	8.3	ug/Kg
Methoxychlor	ND	17	ug/Kg
Toxaphene	ND	170	ug/Kg
Chlordane (Technical)	ND	83	ug/Kg

Surrogate	%REC	Limits
TCMX	73	23-120
Decachlorobiphenyl	57	24-120

Legend

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449877

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU1-1B

**Batch#:** 273477

**Prep:** EPA 3546

**Lab ID:** 449877-002

**Sampled:** 08/27/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 08/31/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/08/21

**Diln Fac:** 5.000

**Analyzed:** 09/08/21

Analyte	Result	RL	Units
alpha-BHC	ND	8.3	ug/Kg
beta-BHC	ND	8.3	ug/Kg
gamma-BHC	ND	8.3	ug/Kg
delta-BHC	ND	8.3	ug/Kg
Heptachlor	ND	8.3	ug/Kg
Aldrin	ND	8.3	ug/Kg
Heptachlor epoxide	ND	8.3	ug/Kg
Endosulfan I	ND	8.3	ug/Kg
Dieldrin	ND	8.3	ug/Kg
4,4'-DDE	ND	8.3	ug/Kg
Endrin	ND	8.3	ug/Kg
Endosulfan II	ND	8.3	ug/Kg
Endosulfan sulfate	ND	8.3	ug/Kg
4,4'-DDD	ND	8.3	ug/Kg
Endrin aldehyde	ND	8.3	ug/Kg
Endrin ketone	ND	8.3	ug/Kg
4,4'-DDT	ND	8.3	ug/Kg
Methoxychlor	ND	17	ug/Kg
Toxaphene	ND	170	ug/Kg
Chlordane (Technical)	ND	83	ug/Kg

Surrogate	%REC	Limits
TCMX	40	23-120
Decachlorobiphenyl	47	24-120

Legend

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449877

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU1-1C

**Batch#:** 273477

**Prep:** EPA 3546

**Lab ID:** 449877-003

**Sampled:** 08/27/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 08/31/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/08/21

**Diln Fac:** 5.000

**Analyzed:** 09/08/21

Analyte	Result	RL	Units
alpha-BHC	ND	8.3	ug/Kg
beta-BHC	ND	8.3	ug/Kg
gamma-BHC	ND	8.3	ug/Kg
delta-BHC	ND	8.3	ug/Kg
Heptachlor	ND	8.3	ug/Kg
Aldrin	ND	8.3	ug/Kg
Heptachlor epoxide	ND	8.3	ug/Kg
Endosulfan I	ND	8.3	ug/Kg
Dieldrin	ND	8.3	ug/Kg
4,4'-DDE	ND	8.3	ug/Kg
Endrin	ND	8.3	ug/Kg
Endosulfan II	ND	8.3	ug/Kg
Endosulfan sulfate	ND	8.3	ug/Kg
4,4'-DDD	ND	8.3	ug/Kg
Endrin aldehyde	ND	8.3	ug/Kg
Endrin ketone	ND	8.3	ug/Kg
4,4'-DDT	ND	8.3	ug/Kg
Methoxychlor	ND	17	ug/Kg
Toxaphene	ND	170	ug/Kg
Chlordane (Technical)	ND	83	ug/Kg

Surrogate	%REC	Limits
TCMX	61	23-120
Decachlorobiphenyl	76	24-120

Legend

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449877

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU1-2A

**Batch#:** 273477

**Prep:** EPA 3546

**Lab ID:** 449877-004

**Sampled:** 08/27/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 08/31/21

**Analyst:** TRN

**Basis:** air dried

**Prepared:** 09/08/21

**Diln Fac:** 5.000

**Analyzed:** 09/08/21

Analyte	Result	RL	Units
alpha-BHC	ND	8.3	ug/Kg
beta-BHC	ND	8.3	ug/Kg
gamma-BHC	ND	8.3	ug/Kg
delta-BHC	ND	8.3	ug/Kg
Heptachlor	ND	8.3	ug/Kg
Aldrin	ND	8.3	ug/Kg
Heptachlor epoxide	ND	8.3	ug/Kg
Endosulfan I	ND	8.3	ug/Kg
Dieldrin	ND	8.3	ug/Kg
4,4'-DDE	ND	8.3	ug/Kg
Endrin	ND	8.3	ug/Kg
Endosulfan II	ND	8.3	ug/Kg
Endosulfan sulfate	ND	8.3	ug/Kg
4,4'-DDD	ND	8.3	ug/Kg
Endrin aldehyde	ND	8.3	ug/Kg
Endrin ketone	ND	8.3	ug/Kg
4,4'-DDT	ND	8.3	ug/Kg
Methoxychlor	ND	17	ug/Kg
Toxaphene	ND	170	ug/Kg
Chlordane (Technical)	ND	83	ug/Kg

Surrogate	%REC	Limits
TCMX	89	23-120
Decachlorobiphenyl	83	24-120

Legend

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides: Batch QC

**Lab #:** 449877

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BLANK

**Batch#:** 273477

**Analysis:** EPA 8081A

**Lab ID:** QC942450

**Prepared:** 09/08/21

**Analyst:** TRN

**Matrix:** Soil

**Analyzed:** 09/08/21

**Diln Fac:** 1.000

**Prep:** EPA 3546

Analyte	Result	RL	Units
alpha-BHC	ND	1.7	ug/Kg
beta-BHC	ND	1.7	ug/Kg
gamma-BHC	ND	1.7	ug/Kg
delta-BHC	ND	1.7	ug/Kg
Heptachlor	ND	1.7	ug/Kg
Aldrin	ND	1.7	ug/Kg
Heptachlor epoxide	ND	1.7	ug/Kg
Endosulfan I	ND	1.7	ug/Kg
Dieldrin	ND	1.7	ug/Kg
4,4'-DDE	ND	1.7	ug/Kg
Endrin	ND	1.7	ug/Kg
Endosulfan II	ND	1.7	ug/Kg
Endosulfan sulfate	ND	1.7	ug/Kg
4,4'-DDD	ND	1.7	ug/Kg
Endrin aldehyde	ND	1.7	ug/Kg
Endrin ketone	ND	1.7	ug/Kg
4,4'-DDT	ND	1.7	ug/Kg
Methoxychlor	ND	3.3	ug/Kg
Toxaphene	ND	33	ug/Kg
Chlordane (Technical)	ND	17	ug/Kg

Surrogate	%REC	Limits
TCMX	98	23-120
Decachlorobiphenyl	73	24-120

## Legend

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides: Batch QC

**Lab #:** 449877

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BS

**Batch#:** 273477

**Analysis:** EPA 8081A

**Lab ID:** QC942451

**Prepared:** 09/08/21

**Analyst:** TRN

**Matrix:** Soil

**Analyzed:** 09/08/21

**Diln Fac:** 1.000

**Prep:** EPA 3546

Analyte	Spiked	Result	%REC	Limits	Units	Qual
alpha-BHC	16.67	22.61	136 *	22-129	ug/Kg	
beta-BHC	16.67	21.89	131 *	28-125	ug/Kg	
gamma-BHC	16.67	22.88	137 *	22-128	ug/Kg	
delta-BHC	16.67	22.88	137 *	24-131	ug/Kg	
Heptachlor	16.67	20.70	124	18-124	ug/Kg	
Aldrin	16.67	16.72	100	23-120	ug/Kg	
Heptachlor epoxide	16.67	17.43	105	26-120	ug/Kg	
Endosulfan I	16.67	19.73	118	25-126	ug/Kg	
Dieldrin	16.67	20.35	122	23-124	ug/Kg	
4,4'-DDE	16.67	19.18	115	28-121	ug/Kg	
Endrin	16.67	19.01	114	25-127	ug/Kg	
Endosulfan II	16.67	19.04	114	29-121	ug/Kg	
Endosulfan sulfate	16.67	15.04	90	30-121	ug/Kg	
4,4'-DDD	16.67	17.10	103	26-120	ug/Kg	
Endrin aldehyde	16.67	5.094	31	10-120	ug/Kg	
Endrin ketone	16.67	14.47	87	28-125	ug/Kg	
4,4'-DDT	16.67	13.14	79	22-125	ug/Kg	
Methoxychlor	16.67	12.70	76	28-130	ug/Kg	#
<b>Surrogate</b>			<b>%REC</b>	<b>Limits</b>		
TCMX			104	23-120		
Decachlorobiphenyl			75	24-120		



## Organochlorine Pesticides: Batch QC

**Lab #:** 449877

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BSD

**Batch#:** 273477

**Analysis:** EPA 8081A

**Lab ID:** QC942452

**Prepared:** 09/08/21

**Analyst:** TRN

**Matrix:** Soil

**Analyzed:** 09/08/21

**Diln Fac:** 1.000

**Prep:** EPA 3546

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim	Qual
alpha-BHC	16.67	20.04	120	22-129	ug/Kg	12	20	
beta-BHC	16.67	18.20	109	28-125	ug/Kg	18	20	
gamma-BHC	16.67	20.32	122	22-128	ug/Kg	12	20	
delta-BHC	16.67	20.04	120	24-131	ug/Kg	13	20	
Heptachlor	16.67	17.26	104	18-124	ug/Kg	18	20	
Aldrin	16.67	14.33	86	23-120	ug/Kg	15	20	
Heptachlor epoxide	16.67	14.87	89	26-120	ug/Kg	16	20	
Endosulfan I	16.67	16.98	102	25-126	ug/Kg	15	20	
Dieldrin	16.67	16.50	99	23-124	ug/Kg	21 *	20	
4,4'-DDE	16.67	16.15	97	28-121	ug/Kg	17	20	
Endrin	16.67	14.01	84	25-127	ug/Kg	30 *	20	
Endosulfan II	16.67	16.73	100	29-121	ug/Kg	13	20	
Endosulfan sulfate	16.67	14.06	84	30-121	ug/Kg	7	20	
4,4'-DDD	16.67	15.03	90	26-120	ug/Kg	13	20	
Endrin aldehyde	16.67	6.963	42	10-120	ug/Kg	31 *	20	
Endrin ketone	16.67	14.40	86	28-125	ug/Kg	0	20	
4,4'-DDT	16.67	12.02	72	22-125	ug/Kg	9	20	
Methoxychlor	16.67	11.79	71	28-130	ug/Kg	7	20	#
Surrogate					%REC	Limits		
TCMX					91	23-120		
Decachlorobiphenyl					69	24-120		

## Legend

#: CCV drift outside limits; average CCV drift within limits per method requirements

\*: Value is outside QC limits

RPD: Relative Percent Difference

## Metals Analytical Report

**Lab #:** 449877

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU1-1A

**DiIn Fac:** 1.000

**Analyzed:** 09/09/21

**Type:** SAMPLE

**Batch#:** 273561

**Prep:** EPA 3050B

**Lab ID:** 449877-001

**Sampled:** 08/27/21

**Analysis:** EPA 6010B

**Matrix:** Soil

**Received:** 08/31/21

**Analyst:** KLN

**Basis:** air dried

**Prepared:** 09/08/21

Analyte	Result	RL	Units
Arsenic	1.3	0.49	mg/Kg
Lead	8.6	0.49	mg/Kg

**Field ID:** 3048-DU1-1B

**DiIn Fac:** 1.000

**Analyzed:** 09/09/21

**Type:** SAMPLE

**Batch#:** 273561

**Prep:** EPA 3050B

**Lab ID:** 449877-002

**Sampled:** 08/27/21

**Analysis:** EPA 6010B

**Matrix:** Soil

**Received:** 08/31/21

**Analyst:** KLN

**Basis:** air dried

**Prepared:** 09/08/21

Analyte	Result	RL	Units
Arsenic	1.7	0.49	mg/Kg
Lead	8.4	0.49	mg/Kg

**Field ID:** 3048-DU1-1C

**DiIn Fac:** 1.000

**Analyzed:** 09/09/21

**Type:** SAMPLE

**Batch#:** 273561

**Prep:** EPA 3050B

**Lab ID:** 449877-003

**Sampled:** 08/27/21

**Analysis:** EPA 6010B

**Matrix:** Soil

**Received:** 08/31/21

**Analyst:** KLN

**Basis:** air dried

**Prepared:** 09/08/21

Analyte	Result	RL	Units
Arsenic	1.4	0.49	mg/Kg
Lead	9.8	0.49	mg/Kg

**Field ID:** 3048-DU1-2A

**DiIn Fac:** 1.000

**Analyzed:** 09/09/21

**Type:** SAMPLE

**Batch#:** 273561

**Prep:** EPA 3050B

**Lab ID:** 449877-004

**Sampled:** 08/27/21

**Analysis:** EPA 6010B

**Matrix:** Soil

**Received:** 08/31/21

**Analyst:** KLN

**Basis:** air dried

**Prepared:** 09/08/21

Analyte	Result	RL	Units
Arsenic	1.1	0.49	mg/Kg
Lead	7.9	0.49	mg/Kg

## Metals Analytical Report

**Lab #:** 449877

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BLANK

**Batch#:** 273561

**Analysis:** EPA 6010B

**Lab ID:** QC942671

**Prepared:** 09/08/21

**Analyst:** KLN

**Matrix:** Soil

**Analyzed:** 09/09/21

**DiIn Fac:** 1.000

**Prep:** EPA 3050B

Analyte	Result	RL	Units
Arsenic	ND	0.50	mg/Kg
Lead	ND	0.50	mg/Kg

Legend

**ND:** Not Detected

**RL:** Reporting Limit

## Metals Analytical Report: Batch QC

**Lab #:** 449877

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BS

**Batch#:** 273561

**Analysis:** EPA 6010B

**Lab ID:** QC942672

**Prepared:** 09/08/21

**Analyst:** KLN

**Matrix:** Soil

**Analyzed:** 09/09/21

**DiIn Fac:** 1.000

**Prep:** EPA 3050B

Analyte	Spiked	Result	%REC	Limits	Units
Arsenic	50.00	49.53	99	80-120	mg/Kg
Lead	50.00	50.20	100	80-120	mg/Kg

**Type:** BSD

**Batch#:** 273561

**Analysis:** EPA 6010B

**Lab ID:** QC942673

**Prepared:** 09/08/21

**Analyst:** KLN

**Matrix:** Soil

**Analyzed:** 09/09/21

**DiIn Fac:** 1.000

**Prep:** EPA 3050B

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Arsenic	50.00	49.86	100	80-120	mg/Kg	1	20
Lead	50.00	50.27	101	80-120	mg/Kg	0	20

Legend

**RPD:** Relative Percent Difference



**ENTHALPY**  
ANALYTICAL

Enthalpy Analytical  
931 West Barkley Ave  
Orange, CA 92868  
(714) 771-6900

enthalpy.com

Lab Job Number: 449991  
Report Level: II  
Report Date: 09/15/2021

**Analytical Report** *prepared for:*

Jannah Oshiro  
Myounghee Noh & Associates  
99-1046 Iwaena Street  
210A  
Aiea, HI 96701

Project: 3048\_2 - AQS

*Authorized for release by:*

Sophia Baughman, Project Manager Assistant  
[sophia.baughman@enthalpy.com](mailto:sophia.baughman@enthalpy.com)

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

CA ELAP# 1338, NELAP# 4038, SCAQMD LAP# 18LA0518, LACSD ID# 10105, CDC ELITE  
Member

## Sample Summary

Jannah Oshiro  
 Myounghee Noh & Associates  
 99-1046 Iwaena Street  
 210A  
 Aiea, HI 96701

Lab Job #: 449991  
 Project No: 3048\_2  
 Location: AQS  
 Date Received: 09/02/21

Sample ID	Lab ID	Collected	Matrix
3048-DU4-1A	449991-001	08/30/21 14:06	Soil
3048-DU4-2A	449991-002	08/30/21 14:06	Soil
3048-DU5-1A	449991-003	08/31/21 10:10	Soil
3048-DU5-2A	449991-004	08/31/21 10:10	Soil
3048-DU3-1A	449991-005	08/31/21 16:05	Soil
3048-DU3-2A	449991-006	08/31/21 16:05	Soil

## Case Narrative

---

Myounghee Noh & Associates  
99-1046 Iwaena Street  
210A  
Aiea, HI 96701  
Jennah Oshiro

Lab Job Number: 449991  
Project No: 3048\_2  
Location: AQS  
Date Received: 09/02/21

---

This data package contains sample and QC results for six soil samples, requested for the above referenced project on 09/02/21. The samples were received cold and intact. Multi-Increment Sampling (ISM) was performed on all samples in accordance with HDOH specifications.

**TPH-Extractables by GC (EPA 8015M):**

No analytical problems were encountered.

**Semivolatile Organics by GC/MS (EPA 8270C):**

A number of samples were diluted due to the dark color of the sample extracts. No other analytical problems were encountered.

**Pesticides (EPA 8081A):**

High RPD was observed for many analytes in the BS/BSD for batch 273602; these analytes were not detected at or above the RL in the associated samples. Many samples were diluted due to the dark color of the sample extracts. No other analytical problems were encountered.

**PCBs (EPA 8082):**

Low surrogate recovery was observed for decachlorobiphenyl (PCB) in 3048-DU4-2A (lab # 449991-002). Many samples were diluted due to the dark color of the sample extracts. No other analytical problems were encountered.

**Metals (EPA 6010B and EPA 7471A):**

No analytical problems were encountered.

**Moisture (ASTM D2216):**

No analytical problems were encountered.

# CHAIN OF CUSTODY



Formerly Curtis & Tompkins Labs

2323 Fifth Street  
Berkeley, CA 94710

Phone (510) 486-0900  
Fax (510) 486-0532

C&T LOGIN # 449991

Project No: 3048-2

Sampler: Jennah Oshiro

Project Name: AS

Report To: Jennah Oshiro

Project P. O. No: 3048-2

Company: Myonghee Noh. Associate

EDD Format: Report Level  II  III  IV

Telephone: 805-436-7382

Turnaround Time:  RUSH  Standard

Email: jennah@gmail.com

### ANALYTICAL REQUEST

Lab No.	Sample ID.	SAMPLING		MATRIX			# of Containers	CHEMICAL PRESERVATIVE												
		Date Collected	Time Collected	Water	Solid			HCl	H2SO4	HNO3	NaOH	None								
1	3048-DU4-1A	8/30/21	14:06		X		1													
2	3048-DU4-2A	8/30/21	14:06		X		1													
3	3048-DU5-1A	8/31/21	10:10		X		1													
4	3048-DU5-2A	8/31/21	10:10		X		1													
5	3048-DU3-1A	8/31/21	16:05		X		1													
6	3048-DU3-2A	8/31/21	16:05		X		1													

		MIS Prep	IPH-DRO/RRD (8015)	SVOC (8260)	RCRA8 Metals (6010/471A)	PCBs (8082)	Pesticides (8081A)														
X	X	X	X	X	X	X	X														

Notes:

**SAMPLE RECEIPT**

Intact

Cold

On Ice

Ambient

**RELINQUISHED BY:**

*[Signature]* DATE: 9/1/21 TIME: 10:25

*[Signature]* DATE: 9/2/21 TIME: 16:10

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

**RECEIVED BY:**

*[Signature]* DATE: 9/2/21 TIME: 10:10

*[Signature]* DATE: 9/13/21 TIME: 18:30

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_



**SAMPLE RECEIPT CHECKLIST**



Section 1: Login # 449991  
 Date Received: 9/2/21

Client: MMA  
 Project: \_\_\_\_\_

Section 2: Shipping info (if applicable) FedEx 7747 0905 8274  
 Are custody seals present?  No, or  Yes. If yes, where?  on cooler,  on samples,  on package  
 Date: 9/1/21 How many 2  Signature,  Initials,  None  
 Were custody seals intact upon arrival?  Yes  No  N/A  
 Samples received in a cooler?  Yes, how many? 1  No (skip Section 3 below)  
 If no cooler Sample Temp (°C): \_\_\_\_\_ using IR Gun #  B, or  C  
 Samples received on ice directly from the field. Cooling process had begun  
 If in cooler: Date Opened 9/2/21 By (print) MTC (sign) [Signature]

Section 3: **Important: Notify PM if temperature exceeds 6°C or arrive frozen.**  
 Packing in cooler: (if other, describe) \_\_\_\_\_  
 Bubble Wrap,  Foam blocks,  Bags,  None,  Cloth material,  Cardboard,  Styrofoam,  Paper towels  
 Samples received on ice directly from the field. Cooling process had begun  
 Type of ice used:  Wet,  Blue/Gel,  None Temperature blank(s) included?  Yes,  No  
 Temperature measured using  Thermometer ID: \_\_\_\_\_, or IR Gun #  B  C  
 Cooler Temp (°C): #1: 4.8, #2: \_\_\_\_\_, #3: \_\_\_\_\_, #4: \_\_\_\_\_, #5: \_\_\_\_\_, #6: \_\_\_\_\_, #7: \_\_\_\_\_

Section 4:	YES	NO	N/A
Were custody papers dry, filled out properly, and the project identifiable	/		
Were Method 5035 sampling containers present?		/	
If YES, what time were they transferred to freezer? _____			
Did all bottles arrive unbroken/unopened?	/		
Are there any missing / extra samples?		/	
Are samples in the appropriate containers for indicated tests?	/		
Are sample labels present, in good condition and complete?	/		
Does the container count match the COC?	/		
Do the sample labels agree with custody papers?	/		
Was sufficient amount of sample sent for tests requested?	/		
Did you change the hold time in LIMS for unpreserved VOAs?			/
Did you change the hold time in LIMS for preserved terracores?			/
Are bubbles > 6mm present in VOA samples?			/
Was the client contacted concerning this sample delivery?		/	
If YES, who was called? _____ By _____ Date: _____			

Section 5:	YES	NO	N/A
Are the samples appropriately preserved? (if N/A, skip the rest of section 5)			
Did you check preservatives for all bottles for each sample?			
Did you document your preservative check? pH strip lot# _____, pH strip lot# _____, pH strip lot# _____			
Preservative added:			
<input type="checkbox"/> H2SO4 lot# _____ added to samples _____ on/at _____			
<input type="checkbox"/> HCL lot# _____ added to samples _____ on/at _____			
<input type="checkbox"/> HNO3 lot# _____ added to samples _____ on/at _____			
<input type="checkbox"/> NaOH lot# _____ added to samples _____ on/at _____			

Section 6:  
 Explanations/Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Date Logged in 9/2/21 By (print) MTC (sign) [Signature]  
 Date Labeled 9/2/21 By (print) MTC (sign) [Signature]



# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

### Section 1

Client: Myounghee Noh and Associates Project: 3048-2  
 Date Received: 9/3/21 Sampler's Name Present:  Yes  No

### Section 2

Sample(s) received in a cooler?  Yes, How many? 1  No (skip section 2) Sample Temp (°C) (No Cooler) : \_\_\_\_\_  
 Sample Temp (°C), One from each cooler: #1: 2.2 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_  
*(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)*  
 Shipping Information: \_\_\_\_\_

### Section 3

Was the cooler packed with:  Ice  Ice Packs  Bubble Wrap  Styrofoam  
 Paper  None  Other \_\_\_\_\_  
 Cooler Temp (°C): #1: 2.4 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

### Section 4

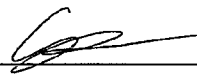
	YES	NO	N/A
Was a COC received?	<input checked="" type="checkbox"/>		
Are sample IDs present?	<input checked="" type="checkbox"/>		
Are sampling dates & times present?	<input checked="" type="checkbox"/>		
Is a relinquished signature present?	<input checked="" type="checkbox"/>		
Are the tests required clearly indicated on the COC?	<input checked="" type="checkbox"/>		
Are custody seals present?		<input checked="" type="checkbox"/>	
If custody seals are present, were they intact?			<input checked="" type="checkbox"/>
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)	<input checked="" type="checkbox"/>		
Did all samples arrive intact? If no, indicate in Section 4 below.	<input checked="" type="checkbox"/>		
Did all bottle labels agree with COC? (ID, dates and times)	<input checked="" type="checkbox"/>		
Were the samples collected in the correct containers for the required tests?	<input checked="" type="checkbox"/>		
Are the containers labeled with the correct preservatives?			<input checked="" type="checkbox"/>
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			<input checked="" type="checkbox"/>
Was a sufficient amount of sample submitted for the requested tests?	<input checked="" type="checkbox"/>		

### Section 5 Explanations/Comments

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### Section 6

For discrepancies, how was the Project Manager notified?  Verbal PM Initials: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_  
 Project Manager's response:  
 \_\_\_\_\_

Completed By:  Date: 9/3/21

9/2/2021



800-322-5555  
www.gls-us.com

**Ship From**

ENTHALPY ANALYTICAL  
BERKELEY SERVICE CENTER  
2323 5TH STREET  
BERKELEY, CA 94710

Tracking #: 554512247

CPS



**Ship To**

ENTHALPY ANALYTICAL (ORG)  
SAMPLE RECEIVING  
931 W BARKLEY AVE.  
ORANGE, CA 92868

ORANGE

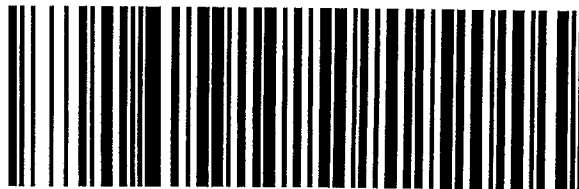
*22/24*

S10003H

COD: \$0.00

Weight: 0 lb(s)

Reference:



Delivery Instructions:

Signature Type: STANDARD

48549142

ORC CA927-EH1

Print Date: 9/2/2021 1:45 PM

Package 4 of 5

**LABEL INSTRUCTIONS:**

**Do not copy or reprint this label for additional shipments - each package must have a unique barcode.**

Step 1: Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer.

Step 2: Fold this page in half.

Step 3: Securely attach this label to your package and do not cover the barcode.

**TERMS AND CONDITIONS:**

By giving us your shipment to deliver, you agree to all of the General Logistics Systems US, Inc. (GLS) service terms & conditions including, but not limited to; limits of liability, declared value conditions, and claim procedures which are available on our website at [www.gls-us.com](http://www.gls-us.com).



# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

**Section 1**  
 Client: Myounghee Noh & Associates Project: AQS, 3048-2  
 Date Received: 09/09/21 Sampler's Name Present:  Yes  No

**Section 2**  
 Sample(s) received in a cooler?  Yes, How many? 1  NO (skip section 2) Sample Temp (°C) (No Cooler) : \_\_\_\_\_  
 Sample Temp (°C), One from each cooler: #1: 4.5 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_  
*(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)*  
 Shipping Information: GLS

**Section 3**  
 Was the cooler packed with:  Ice  Ice Packs  Bubble Wrap  Styrofoam  
 Paper  None  Other \_\_\_\_\_  
 Cooler Temp (°C): #1: 1.0 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

Section 4	YES	NO	N/A
Was a COC received?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are sample IDs present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are sampling dates & times present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is a relinquished signature present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the tests required clearly indicated on the COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are custody seals present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If custody seals are present, were they intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Did all samples arrive intact? If no, indicate in Section 4 below.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did all bottle labels agree with COC? (ID, dates and times)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were the samples collected in the correct containers for the required tests?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the containers labeled with the correct preservatives?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there headspace in the VOA vials greater than 5-6 mm in diameter?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Was a sufficient amount of sample submitted for the requested tests?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Section 5 Explanations/Comments**  
Received MIS samples for metals and 8081/8082.

**Section 6**  
 For discrepancies, how was the Project Manager notified?  Verbal PM Initials: \_\_\_\_\_ Date/Time \_\_\_\_\_  
 Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_  
 Project Manager's response:

Completed By: [Signature] Date: 9/9/21



800-322-5555  
www.gls-us.com

**Ship From**  
ENTHALPY ANALYTICAL  
BERKELEY SERVICE CENTER  
2323 5TH STREET  
BERKELEY, CA 94710

**Tracking #: 554563087**

**CPS**

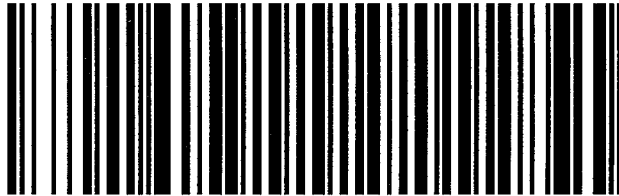


**Ship To**  
ENTHALPY ANALYTICAL (ORG)  
SAMPLE RECEIVING  
931 W BARKLEY AVE.  
ORANGE, CA 92868

**ORANGE**

**COD: \$0.00**  
**Weight: 0 lb(s)**  
**Reference:**

**S10003H**



**Delivery Instructions:**

**Signature Type: STANDARD**

48885265

**ORC CA927-EH1**

Print Date: 9/8/2021 3:43 PM

Package 1 of 4

**LABEL INSTRUCTIONS:**

**Do not copy or reprint this label for additional shipments - each package must have a unique barcode.**

Step 1: Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer.

Step 2: Fold this page in half.

Step 3: Securely attach this label to your package and do not cover the barcode.

**TERMS AND CONDITIONS:**

By giving us your shipment to deliver, you agree to all of the General Logistics Systems US, Inc. (GLS) service terms & conditions including, but not limited to; limits of liability, declared value conditions, and claim procedures which are available on our website at [www.gls-us.com](http://www.gls-us.com).

1.0 / 4.5

## Extractable Carbon Chain

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU4-1A

**Moisture:** 13%

**Prepared:** 09/07/21

**Type:** SAMPLE

**DiIn Fac:** 1.000

**Analyzed:** 09/07/21

**Lab ID:** 449991-001

**Batch#:** 273441

**Prep:** EPA 3580

**Matrix:** Soil

**Sampled:** 08/30/21

**Analysis:** EPA 8015M

**Basis:** dry

**Received:** 09/02/21

**Analyst:** MES

Analyte	Result	RL	Units
DRO C10-C28	ND	23	mg/Kg
RRO C28-C44	ND	46	mg/Kg
Surrogate	%REC	Limits	
n-Triacontane	90	70-130	

**Field ID:** 3048-DU4-2A

**Moisture:** 13%

**Prepared:** 09/07/21

**Type:** SAMPLE

**DiIn Fac:** 1.000

**Analyzed:** 09/07/21

**Lab ID:** 449991-002

**Batch#:** 273441

**Prep:** EPA 3580

**Matrix:** Soil

**Sampled:** 08/30/21

**Analysis:** EPA 8015M

**Basis:** dry

**Received:** 09/02/21

**Analyst:** MES

Analyte	Result	RL	Units
DRO C10-C28	ND	23	mg/Kg
RRO C28-C44	ND	46	mg/Kg
Surrogate	%REC	Limits	
n-Triacontane	91	70-130	

**Field ID:** 3048-DU5-1A

**Moisture:** 15%

**Prepared:** 09/07/21

**Type:** SAMPLE

**DiIn Fac:** 1.000

**Analyzed:** 09/07/21

**Lab ID:** 449991-003

**Batch#:** 273441

**Prep:** EPA 3580

**Matrix:** Soil

**Sampled:** 08/31/21

**Analysis:** EPA 8015M

**Basis:** dry

**Received:** 09/02/21

**Analyst:** MES

Analyte	Result	RL	Units
DRO C10-C28	ND	23	mg/Kg
RRO C28-C44	ND	47	mg/Kg
Surrogate	%REC	Limits	
n-Triacontane	75	70-130	

## Extractable Carbon Chain

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU5-2A

**Moisture:** 12%

**Prepared:** 09/07/21

**Type:** SAMPLE

**DiIn Fac:** 1.000

**Analyzed:** 09/07/21

**Lab ID:** 449991-004

**Batch#:** 273441

**Prep:** EPA 3580

**Matrix:** Soil

**Sampled:** 08/31/21

**Analysis:** EPA 8015M

**Basis:** dry

**Received:** 09/02/21

**Analyst:** MES

Analyte	Result	RL	Units
DRO C10-C28	ND	23	mg/Kg
RRO C28-C44	ND	45	mg/Kg
Surrogate	%REC	Limits	
n-Triacontane	77	70-130	

**Field ID:** 3048-DU3-1A

**Moisture:** 13%

**Prepared:** 09/07/21

**Type:** SAMPLE

**DiIn Fac:** 1.000

**Analyzed:** 09/07/21

**Lab ID:** 449991-005

**Batch#:** 273441

**Prep:** EPA 3580

**Matrix:** Soil

**Sampled:** 08/31/21

**Analysis:** EPA 8015M

**Basis:** dry

**Received:** 09/02/21

**Analyst:** MES

Analyte	Result	RL	Units
DRO C10-C28	ND	23	mg/Kg
RRO C28-C44	ND	46	mg/Kg
Surrogate	%REC	Limits	
n-Triacontane	73	70-130	

**Field ID:** 3048-DU3-2A

**Moisture:** 10%

**Prepared:** 09/07/21

**Type:** SAMPLE

**DiIn Fac:** 1.000

**Analyzed:** 09/07/21

**Lab ID:** 449991-006

**Batch#:** 273441

**Prep:** EPA 3580

**Matrix:** Soil

**Sampled:** 08/31/21

**Analysis:** EPA 8015M

**Basis:** dry

**Received:** 09/02/21

**Analyst:** MES

Analyte	Result	RL	Units
DRO C10-C28	ND	22	mg/Kg
RRO C28-C44	ND	44	mg/Kg
Surrogate	%REC	Limits	
n-Triacontane	84	70-130	

## Extractable Carbon Chain

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BLANK

**Batch#:** 273441

**Analysis:** EPA 8015M

**Lab ID:** QC942336

**Prepared:** 09/07/21

**Analyst:** MES

**Matrix:** Soil

**Analyzed:** 09/07/21

**Diln Fac:** 1.000

**Prep:** EPA 3580

Analyte	Result	RL	Units
DRO C10-C28	ND	20	mg/Kg
RRO C28-C44	ND	40	mg/Kg

Surrogate	%REC	Limits
n-Triacontane	101	70-130

Legend

**ND:** Not Detected

**RL:** Reporting Limit



### Extractable Carbon Chain: Batch QC

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BS

**Batch#:** 273441

**Analysis:** EPA 8015M

**Lab ID:** QC942337

**Prepared:** 09/07/21

**Analyst:** MES

**Matrix:** Soil

**Analyzed:** 09/07/21

**Diln Fac:** 1.000

**Prep:** EPA 3580

Analyte	Spiked	Result	%REC	Limits	Units
DRO C10-C28	498.3	445.2	89	76-122	mg/Kg

Surrogate	%REC	Limits
n-Triacontane	99	70-130

**Type:** BSD

**Batch#:** 273441

**Analysis:** EPA 8015M

**Lab ID:** QC942338

**Prepared:** 09/07/21

**Analyst:** MES

**Matrix:** Soil

**Analyzed:** 09/07/21

**Diln Fac:** 1.000

**Prep:** EPA 3580

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
DRO C10-C28	496.7	412.8	83	76-122	mg/Kg	7	20

Surrogate	%REC	Limits
n-Triacontane	97	70-130

Legend

**RPD:** Relative Percent Difference

## EPA 8270 Semi-Volatile Organics

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU4-1A

**Diln Fac:** 10.00

**Analyzed:** 09/09/21

**Lab ID:** 449991-001

**Batch#:** 273582

**Prep:** EPA 3546

**Matrix:** Soil

**Sampled:** 08/30/21

**Analysis:** EPA 8270C

**Basis:** dry

**Received:** 09/02/21

**Analyst:** HQN

**Moisture:** 13%

**Prepared:** 09/09/21

Analyte	Result	RL	Units
Carbazole	ND	1,900	ug/Kg
1-Methylnaphthalene	ND	1,900	ug/Kg
Pyridine	ND	1,900	ug/Kg
N-Nitrosodimethylamine	ND	1,900	ug/Kg
Phenol	ND	1,900	ug/Kg
Aniline	ND	1,900	ug/Kg
bis(2-Chloroethyl)ether	ND	9,200	ug/Kg
2-Chlorophenol	ND	1,900	ug/Kg
1,3-Dichlorobenzene	ND	1,900	ug/Kg
1,4-Dichlorobenzene	ND	1,900	ug/Kg
Benzyl alcohol	ND	1,900	ug/Kg
1,2-Dichlorobenzene	ND	1,900	ug/Kg
2-Methylphenol	ND	1,900	ug/Kg
bis(2-Chloroisopropyl) ether	ND	1,900	ug/Kg
3-,4-Methylphenol	ND	3,100	ug/Kg
N-Nitroso-di-n-propylamine	ND	1,900	ug/Kg
Hexachloroethane	ND	1,900	ug/Kg
Nitrobenzene	ND	9,200	ug/Kg
Isophorone	ND	1,900	ug/Kg
2-Nitrophenol	ND	1,900	ug/Kg
2,4-Dimethylphenol	ND	1,900	ug/Kg
Benzoic acid	ND	9,200	ug/Kg
bis(2-Chloroethoxy)methane	ND	1,900	ug/Kg
2,4-Dichlorophenol	ND	1,900	ug/Kg
1,2,4-Trichlorobenzene	ND	1,900	ug/Kg
Naphthalene	ND	1,900	ug/Kg
4-Chloroaniline	ND	1,900	ug/Kg
Hexachlorobutadiene	ND	1,900	ug/Kg
4-Chloro-3-methylphenol	ND	1,900	ug/Kg
2-Methylnaphthalene	ND	1,900	ug/Kg
Hexachlorocyclopentadiene	ND	9,200	ug/Kg
2,4,6-Trichlorophenol	ND	1,900	ug/Kg
2,4,5-Trichlorophenol	ND	1,900	ug/Kg
2-Chloronaphthalene	ND	1,900	ug/Kg
2-Nitroaniline	ND	1,900	ug/Kg
Dimethylphthalate	ND	1,900	ug/Kg
Acenaphthylene	ND	1,900	ug/Kg
2,6-Dinitrotoluene	ND	1,900	ug/Kg
3-Nitroaniline	ND	1,900	ug/Kg
Acenaphthene	ND	1,900	ug/Kg

**EPA 8270 Semi-Volatile Organics**
**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
2,4-Dinitrophenol	ND	9,200	ug/Kg
4-Nitrophenol	ND	1,900	ug/Kg
Dibenzofuran	ND	1,900	ug/Kg
2,4-Dinitrotoluene	ND	1,900	ug/Kg
Diethylphthalate	ND	1,900	ug/Kg
Fluorene	ND	1,900	ug/Kg
4-Chlorophenyl-phenylether	ND	1,900	ug/Kg
4-Nitroaniline	ND	1,900	ug/Kg
4,6-Dinitro-2-methylphenol	ND	1,900	ug/Kg
N-Nitrosodiphenylamine	ND	1,900	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	1,900	ug/Kg
4-Bromophenyl-phenylether	ND	1,900	ug/Kg
Hexachlorobenzene	ND	1,900	ug/Kg
Pentachlorophenol	ND	9,200	ug/Kg
Phenanthrene	ND	1,900	ug/Kg
Anthracene	ND	1,900	ug/Kg
Di-n-butylphthalate	ND	1,900	ug/Kg
Fluoranthene	ND	1,900	ug/Kg
Benzidine	ND	9,200	ug/Kg
Pyrene	ND	1,900	ug/Kg
Butylbenzylphthalate	ND	1,900	ug/Kg
3,3'-Dichlorobenzidine	ND	9,200	ug/Kg
Benzo(a)anthracene	ND	1,900	ug/Kg
Chrysene	ND	1,900	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	1,900	ug/Kg
Di-n-octylphthalate	ND	1,900	ug/Kg
Benzo(b)fluoranthene	ND	1,900	ug/Kg
Benzo(k)fluoranthene	ND	1,900	ug/Kg
Benzo(a)pyrene	ND	1,900	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	1,900	ug/Kg
Dibenz(a,h)anthracene	ND	1,900	ug/Kg
Benzo(g,h,i)perylene	ND	1,900	ug/Kg

Surrogate	%REC	Limits
2-Fluorophenol	41	29-120
Phenol-d6	43	30-120
2,4,6-Tribromophenol	53	32-120
Nitrobenzene-d5	51	33-120
2-Fluorobiphenyl	55	39-120
Terphenyl-d14	56	44-125

## Legend

**ND:** Not Detected

**RL:** Reporting Limit

## EPA 8270 Semi-Volatile Organics

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU4-2A

**Diln Fac:** 1.000

**Analyzed:** 09/09/21

**Lab ID:** 449991-002

**Batch#:** 273582

**Prep:** EPA 3546

**Matrix:** Soil

**Sampled:** 08/30/21

**Analysis:** EPA 8270C

**Basis:** dry

**Received:** 09/02/21

**Analyst:** HQN

**Moisture:** 13%

**Prepared:** 09/09/21

Analyte	Result	RL	Units
Carbazole	ND	190	ug/Kg
1-Methylnaphthalene	ND	190	ug/Kg
Pyridine	ND	190	ug/Kg
N-Nitrosodimethylamine	ND	190	ug/Kg
Phenol	ND	190	ug/Kg
Aniline	ND	190	ug/Kg
bis(2-Chloroethyl)ether	ND	910	ug/Kg
2-Chlorophenol	ND	190	ug/Kg
1,3-Dichlorobenzene	ND	190	ug/Kg
1,4-Dichlorobenzene	ND	190	ug/Kg
Benzyl alcohol	ND	190	ug/Kg
1,2-Dichlorobenzene	ND	190	ug/Kg
2-Methylphenol	ND	190	ug/Kg
bis(2-Chloroisopropyl) ether	ND	190	ug/Kg
3-,4-Methylphenol	ND	300	ug/Kg
N-Nitroso-di-n-propylamine	ND	190	ug/Kg
Hexachloroethane	ND	190	ug/Kg
Nitrobenzene	ND	910	ug/Kg
Isophorone	ND	190	ug/Kg
2-Nitrophenol	ND	190	ug/Kg
2,4-Dimethylphenol	ND	190	ug/Kg
Benzoic acid	ND	910	ug/Kg
bis(2-Chloroethoxy)methane	ND	190	ug/Kg
2,4-Dichlorophenol	ND	190	ug/Kg
1,2,4-Trichlorobenzene	ND	190	ug/Kg
Naphthalene	ND	190	ug/Kg
4-Chloroaniline	ND	190	ug/Kg
Hexachlorobutadiene	ND	190	ug/Kg
4-Chloro-3-methylphenol	ND	190	ug/Kg
2-Methylnaphthalene	ND	190	ug/Kg
Hexachlorocyclopentadiene	ND	910	ug/Kg
2,4,6-Trichlorophenol	ND	190	ug/Kg
2,4,5-Trichlorophenol	ND	190	ug/Kg
2-Chloronaphthalene	ND	190	ug/Kg
2-Nitroaniline	ND	190	ug/Kg
Dimethylphthalate	ND	190	ug/Kg
Acenaphthylene	ND	190	ug/Kg
2,6-Dinitrotoluene	ND	190	ug/Kg
3-Nitroaniline	ND	190	ug/Kg
Acenaphthene	ND	190	ug/Kg

**EPA 8270 Semi-Volatile Organics**
**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
2,4-Dinitrophenol	ND	910	ug/Kg
4-Nitrophenol	ND	190	ug/Kg
Dibenzofuran	ND	190	ug/Kg
2,4-Dinitrotoluene	ND	190	ug/Kg
Diethylphthalate	ND	190	ug/Kg
Fluorene	ND	190	ug/Kg
4-Chlorophenyl-phenylether	ND	190	ug/Kg
4-Nitroaniline	ND	190	ug/Kg
4,6-Dinitro-2-methylphenol	ND	190	ug/Kg
N-Nitrosodiphenylamine	ND	190	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	190	ug/Kg
4-Bromophenyl-phenylether	ND	190	ug/Kg
Hexachlorobenzene	ND	190	ug/Kg
Pentachlorophenol	ND	910	ug/Kg
Phenanthrene	ND	190	ug/Kg
Anthracene	ND	190	ug/Kg
Di-n-butylphthalate	ND	190	ug/Kg
Fluoranthene	ND	190	ug/Kg
Benzidine	ND	910	ug/Kg
Pyrene	ND	190	ug/Kg
Butylbenzylphthalate	ND	190	ug/Kg
3,3'-Dichlorobenzidine	ND	910	ug/Kg
Benzo(a)anthracene	ND	190	ug/Kg
Chrysene	ND	190	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	190	ug/Kg
Di-n-octylphthalate	ND	190	ug/Kg
Benzo(b)fluoranthene	ND	190	ug/Kg
Benzo(k)fluoranthene	ND	190	ug/Kg
Benzo(a)pyrene	ND	190	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	190	ug/Kg
Dibenz(a,h)anthracene	ND	190	ug/Kg
Benzo(g,h,i)perylene	ND	190	ug/Kg

Surrogate	%REC	Limits
2-Fluorophenol	44	29-120
Phenol-d6	50	30-120
2,4,6-Tribromophenol	56	32-120
Nitrobenzene-d5	60	33-120
2-Fluorobiphenyl	61	39-120
Terphenyl-d14	71	44-125

## Legend

**ND:** Not Detected

**RL:** Reporting Limit

## EPA 8270 Semi-Volatile Organics

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU5-1A

**Diln Fac:** 4.000

**Analyzed:** 09/09/21

**Lab ID:** 449991-003

**Batch#:** 273582

**Prep:** EPA 3546

**Matrix:** Soil

**Sampled:** 08/31/21

**Analysis:** EPA 8270C

**Basis:** dry

**Received:** 09/02/21

**Analyst:** HQN

**Moisture:** 15%

**Prepared:** 09/09/21

Analyte	Result	RL	Units
Carbazole	ND	790	ug/Kg
1-Methylnaphthalene	ND	790	ug/Kg
Pyridine	ND	790	ug/Kg
N-Nitrosodimethylamine	ND	790	ug/Kg
Phenol	ND	790	ug/Kg
Aniline	ND	790	ug/Kg
bis(2-Chloroethyl)ether	ND	3,800	ug/Kg
2-Chlorophenol	ND	790	ug/Kg
1,3-Dichlorobenzene	ND	790	ug/Kg
1,4-Dichlorobenzene	ND	790	ug/Kg
Benzyl alcohol	ND	790	ug/Kg
1,2-Dichlorobenzene	ND	790	ug/Kg
2-Methylphenol	ND	790	ug/Kg
bis(2-Chloroisopropyl) ether	ND	790	ug/Kg
3-,4-Methylphenol	ND	1,300	ug/Kg
N-Nitroso-di-n-propylamine	ND	790	ug/Kg
Hexachloroethane	ND	790	ug/Kg
Nitrobenzene	ND	3,800	ug/Kg
Isophorone	ND	790	ug/Kg
2-Nitrophenol	ND	790	ug/Kg
2,4-Dimethylphenol	ND	790	ug/Kg
Benzoic acid	ND	3,800	ug/Kg
bis(2-Chloroethoxy)methane	ND	790	ug/Kg
2,4-Dichlorophenol	ND	790	ug/Kg
1,2,4-Trichlorobenzene	ND	790	ug/Kg
Naphthalene	ND	790	ug/Kg
4-Chloroaniline	ND	790	ug/Kg
Hexachlorobutadiene	ND	790	ug/Kg
4-Chloro-3-methylphenol	ND	790	ug/Kg
2-Methylnaphthalene	ND	790	ug/Kg
Hexachlorocyclopentadiene	ND	3,800	ug/Kg
2,4,6-Trichlorophenol	ND	790	ug/Kg
2,4,5-Trichlorophenol	ND	790	ug/Kg
2-Chloronaphthalene	ND	790	ug/Kg
2-Nitroaniline	ND	790	ug/Kg
Dimethylphthalate	ND	790	ug/Kg
Acenaphthylene	ND	790	ug/Kg
2,6-Dinitrotoluene	ND	790	ug/Kg
3-Nitroaniline	ND	790	ug/Kg
Acenaphthene	ND	790	ug/Kg

**EPA 8270 Semi-Volatile Organics**
**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
2,4-Dinitrophenol	ND	3,800	ug/Kg
4-Nitrophenol	ND	790	ug/Kg
Dibenzofuran	ND	790	ug/Kg
2,4-Dinitrotoluene	ND	790	ug/Kg
Diethylphthalate	ND	790	ug/Kg
Fluorene	ND	790	ug/Kg
4-Chlorophenyl-phenylether	ND	790	ug/Kg
4-Nitroaniline	ND	790	ug/Kg
4,6-Dinitro-2-methylphenol	ND	790	ug/Kg
N-Nitrosodiphenylamine	ND	790	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	790	ug/Kg
4-Bromophenyl-phenylether	ND	790	ug/Kg
Hexachlorobenzene	ND	790	ug/Kg
Pentachlorophenol	ND	3,800	ug/Kg
Phenanthrene	ND	790	ug/Kg
Anthracene	ND	790	ug/Kg
Di-n-butylphthalate	ND	790	ug/Kg
Fluoranthene	ND	790	ug/Kg
Benzidine	ND	3,800	ug/Kg
Pyrene	ND	790	ug/Kg
Butylbenzylphthalate	ND	790	ug/Kg
3,3'-Dichlorobenzidine	ND	3,800	ug/Kg
Benzo(a)anthracene	ND	790	ug/Kg
Chrysene	ND	790	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	790	ug/Kg
Di-n-octylphthalate	ND	790	ug/Kg
Benzo(b)fluoranthene	ND	790	ug/Kg
Benzo(k)fluoranthene	ND	790	ug/Kg
Benzo(a)pyrene	ND	790	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	790	ug/Kg
Dibenz(a,h)anthracene	ND	790	ug/Kg
Benzo(g,h,i)perylene	ND	790	ug/Kg
Surrogate	%REC	Limits	
2-Fluorophenol	40	29-120	
Phenol-d6	43	30-120	
2,4,6-Tribromophenol	49	32-120	
Nitrobenzene-d5	45	33-120	
2-Fluorobiphenyl	49	39-120	
Terphenyl-d14	55	44-125	

## Legend

**ND:** Not Detected

**RL:** Reporting Limit

## EPA 8270 Semi-Volatile Organics

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU5-2A

**Diln Fac:** 1.000

**Analyzed:** 09/09/21

**Lab ID:** 449991-004

**Batch#:** 273582

**Prep:** EPA 3546

**Matrix:** Soil

**Sampled:** 08/31/21

**Analysis:** EPA 8270C

**Basis:** dry

**Received:** 09/02/21

**Analyst:** HQN

**Moisture:** 12%

**Prepared:** 09/09/21

Analyte	Result	RL	Units
Carbazole	ND	190	ug/Kg
1-Methylnaphthalene	ND	190	ug/Kg
Pyridine	ND	190	ug/Kg
N-Nitrosodimethylamine	ND	190	ug/Kg
Phenol	ND	190	ug/Kg
Aniline	ND	190	ug/Kg
bis(2-Chloroethyl)ether	ND	900	ug/Kg
2-Chlorophenol	ND	190	ug/Kg
1,3-Dichlorobenzene	ND	190	ug/Kg
1,4-Dichlorobenzene	ND	190	ug/Kg
Benzyl alcohol	ND	190	ug/Kg
1,2-Dichlorobenzene	ND	190	ug/Kg
2-Methylphenol	ND	190	ug/Kg
bis(2-Chloroisopropyl) ether	ND	190	ug/Kg
3-,4-Methylphenol	ND	300	ug/Kg
N-Nitroso-di-n-propylamine	ND	190	ug/Kg
Hexachloroethane	ND	190	ug/Kg
Nitrobenzene	ND	900	ug/Kg
Isophorone	ND	190	ug/Kg
2-Nitrophenol	ND	190	ug/Kg
2,4-Dimethylphenol	ND	190	ug/Kg
Benzoic acid	ND	900	ug/Kg
bis(2-Chloroethoxy)methane	ND	190	ug/Kg
2,4-Dichlorophenol	ND	190	ug/Kg
1,2,4-Trichlorobenzene	ND	190	ug/Kg
Naphthalene	ND	190	ug/Kg
4-Chloroaniline	ND	190	ug/Kg
Hexachlorobutadiene	ND	190	ug/Kg
4-Chloro-3-methylphenol	ND	190	ug/Kg
2-Methylnaphthalene	ND	190	ug/Kg
Hexachlorocyclopentadiene	ND	900	ug/Kg
2,4,6-Trichlorophenol	ND	190	ug/Kg
2,4,5-Trichlorophenol	ND	190	ug/Kg
2-Chloronaphthalene	ND	190	ug/Kg
2-Nitroaniline	ND	190	ug/Kg
Dimethylphthalate	ND	190	ug/Kg
Acenaphthylene	ND	190	ug/Kg
2,6-Dinitrotoluene	ND	190	ug/Kg
3-Nitroaniline	ND	190	ug/Kg
Acenaphthene	ND	190	ug/Kg



**EPA 8270 Semi-Volatile Organics**
**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
2,4-Dinitrophenol	ND	900	ug/Kg
4-Nitrophenol	ND	190	ug/Kg
Dibenzofuran	ND	190	ug/Kg
2,4-Dinitrotoluene	ND	190	ug/Kg
Diethylphthalate	ND	190	ug/Kg
Fluorene	ND	190	ug/Kg
4-Chlorophenyl-phenylether	ND	190	ug/Kg
4-Nitroaniline	ND	190	ug/Kg
4,6-Dinitro-2-methylphenol	ND	190	ug/Kg
N-Nitrosodiphenylamine	ND	190	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	190	ug/Kg
4-Bromophenyl-phenylether	ND	190	ug/Kg
Hexachlorobenzene	ND	190	ug/Kg
Pentachlorophenol	ND	900	ug/Kg
Phenanthrene	ND	190	ug/Kg
Anthracene	ND	190	ug/Kg
Di-n-butylphthalate	ND	190	ug/Kg
Fluoranthene	ND	190	ug/Kg
Benzidine	ND	900	ug/Kg
Pyrene	ND	190	ug/Kg
Butylbenzylphthalate	ND	190	ug/Kg
3,3'-Dichlorobenzidine	ND	900	ug/Kg
Benzo(a)anthracene	ND	190	ug/Kg
Chrysene	ND	190	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	190	ug/Kg
Di-n-octylphthalate	ND	190	ug/Kg
Benzo(b)fluoranthene	ND	190	ug/Kg
Benzo(k)fluoranthene	ND	190	ug/Kg
Benzo(a)pyrene	ND	190	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	190	ug/Kg
Dibenz(a,h)anthracene	ND	190	ug/Kg
Benzo(g,h,i)perylene	ND	190	ug/Kg

Surrogate	%REC	Limits
2-Fluorophenol	44	29-120
Phenol-d6	50	30-120
2,4,6-Tribromophenol	53	32-120
Nitrobenzene-d5	57	33-120
2-Fluorobiphenyl	58	39-120
Terphenyl-d14	66	44-125

## Legend

**ND:** Not Detected

**RL:** Reporting Limit

## EPA 8270 Semi-Volatile Organics

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU3-1A

**Diln Fac:** 2.000

**Analyzed:** 09/09/21

**Lab ID:** 449991-005

**Batch#:** 273582

**Prep:** EPA 3546

**Matrix:** Soil

**Sampled:** 08/31/21

**Analysis:** EPA 8270C

**Basis:** dry

**Received:** 09/02/21

**Analyst:** HQN

**Moisture:** 13%

**Prepared:** 09/09/21

Analyte	Result	RL	Units
Carbazole	ND	380	ug/Kg
1-Methylnaphthalene	ND	380	ug/Kg
Pyridine	ND	380	ug/Kg
N-Nitrosodimethylamine	ND	380	ug/Kg
Phenol	ND	380	ug/Kg
Aniline	ND	380	ug/Kg
bis(2-Chloroethyl)ether	ND	1,800	ug/Kg
2-Chlorophenol	ND	380	ug/Kg
1,3-Dichlorobenzene	ND	380	ug/Kg
1,4-Dichlorobenzene	ND	380	ug/Kg
Benzyl alcohol	ND	380	ug/Kg
1,2-Dichlorobenzene	ND	380	ug/Kg
2-Methylphenol	ND	380	ug/Kg
bis(2-Chloroisopropyl) ether	ND	380	ug/Kg
3-,4-Methylphenol	ND	610	ug/Kg
N-Nitroso-di-n-propylamine	ND	380	ug/Kg
Hexachloroethane	ND	380	ug/Kg
Nitrobenzene	ND	1,800	ug/Kg
Isophorone	ND	380	ug/Kg
2-Nitrophenol	ND	380	ug/Kg
2,4-Dimethylphenol	ND	380	ug/Kg
Benzoic acid	ND	1,800	ug/Kg
bis(2-Chloroethoxy)methane	ND	380	ug/Kg
2,4-Dichlorophenol	ND	380	ug/Kg
1,2,4-Trichlorobenzene	ND	380	ug/Kg
Naphthalene	ND	380	ug/Kg
4-Chloroaniline	ND	380	ug/Kg
Hexachlorobutadiene	ND	380	ug/Kg
4-Chloro-3-methylphenol	ND	380	ug/Kg
2-Methylnaphthalene	ND	380	ug/Kg
Hexachlorocyclopentadiene	ND	1,800	ug/Kg
2,4,6-Trichlorophenol	ND	380	ug/Kg
2,4,5-Trichlorophenol	ND	380	ug/Kg
2-Chloronaphthalene	ND	380	ug/Kg
2-Nitroaniline	ND	380	ug/Kg
Dimethylphthalate	ND	380	ug/Kg
Acenaphthylene	ND	380	ug/Kg
2,6-Dinitrotoluene	ND	380	ug/Kg
3-Nitroaniline	ND	380	ug/Kg
Acenaphthene	ND	380	ug/Kg

**EPA 8270 Semi-Volatile Organics**
**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
2,4-Dinitrophenol	ND	1,800	ug/Kg
4-Nitrophenol	ND	380	ug/Kg
Dibenzofuran	ND	380	ug/Kg
2,4-Dinitrotoluene	ND	380	ug/Kg
Diethylphthalate	ND	380	ug/Kg
Fluorene	ND	380	ug/Kg
4-Chlorophenyl-phenylether	ND	380	ug/Kg
4-Nitroaniline	ND	380	ug/Kg
4,6-Dinitro-2-methylphenol	ND	380	ug/Kg
N-Nitrosodiphenylamine	ND	380	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	380	ug/Kg
4-Bromophenyl-phenylether	ND	380	ug/Kg
Hexachlorobenzene	ND	380	ug/Kg
Pentachlorophenol	ND	1,800	ug/Kg
Phenanthrene	ND	380	ug/Kg
Anthracene	ND	380	ug/Kg
Di-n-butylphthalate	ND	380	ug/Kg
Fluoranthene	ND	380	ug/Kg
Benzidine	ND	1,800	ug/Kg
Pyrene	ND	380	ug/Kg
Butylbenzylphthalate	ND	380	ug/Kg
3,3'-Dichlorobenzidine	ND	1,800	ug/Kg
Benzo(a)anthracene	ND	380	ug/Kg
Chrysene	ND	380	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	380	ug/Kg
Di-n-octylphthalate	ND	380	ug/Kg
Benzo(b)fluoranthene	ND	380	ug/Kg
Benzo(k)fluoranthene	ND	380	ug/Kg
Benzo(a)pyrene	ND	380	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	380	ug/Kg
Dibenz(a,h)anthracene	ND	380	ug/Kg
Benzo(g,h,i)perylene	ND	380	ug/Kg
Surrogate	%REC	Limits	
2-Fluorophenol	46	29-120	
Phenol-d6	52	30-120	
2,4,6-Tribromophenol	61	32-120	
Nitrobenzene-d5	55	33-120	
2-Fluorobiphenyl	55	39-120	
Terphenyl-d14	64	44-125	

## Legend

**ND:** Not Detected

**RL:** Reporting Limit

## EPA 8270 Semi-Volatile Organics

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU3-2A

**Diln Fac:** 2.000

**Analyzed:** 09/09/21

**Lab ID:** 449991-006

**Batch#:** 273582

**Prep:** EPA 3546

**Matrix:** Soil

**Sampled:** 08/31/21

**Analysis:** EPA 8270C

**Basis:** dry

**Received:** 09/02/21

**Analyst:** HQN

**Moisture:** 10%

**Prepared:** 09/09/21

Analyte	Result	RL	Units
Carbazole	ND	370	ug/Kg
1-Methylnaphthalene	ND	370	ug/Kg
Pyridine	ND	370	ug/Kg
N-Nitrosodimethylamine	ND	370	ug/Kg
Phenol	ND	370	ug/Kg
Aniline	ND	370	ug/Kg
bis(2-Chloroethyl)ether	ND	1,800	ug/Kg
2-Chlorophenol	ND	370	ug/Kg
1,3-Dichlorobenzene	ND	370	ug/Kg
1,4-Dichlorobenzene	ND	370	ug/Kg
Benzyl alcohol	ND	370	ug/Kg
1,2-Dichlorobenzene	ND	370	ug/Kg
2-Methylphenol	ND	370	ug/Kg
bis(2-Chloroisopropyl) ether	ND	370	ug/Kg
3-,4-Methylphenol	ND	590	ug/Kg
N-Nitroso-di-n-propylamine	ND	370	ug/Kg
Hexachloroethane	ND	370	ug/Kg
Nitrobenzene	ND	1,800	ug/Kg
Isophorone	ND	370	ug/Kg
2-Nitrophenol	ND	370	ug/Kg
2,4-Dimethylphenol	ND	370	ug/Kg
Benzoic acid	ND	1,800	ug/Kg
bis(2-Chloroethoxy)methane	ND	370	ug/Kg
2,4-Dichlorophenol	ND	370	ug/Kg
1,2,4-Trichlorobenzene	ND	370	ug/Kg
Naphthalene	ND	370	ug/Kg
4-Chloroaniline	ND	370	ug/Kg
Hexachlorobutadiene	ND	370	ug/Kg
4-Chloro-3-methylphenol	ND	370	ug/Kg
2-Methylnaphthalene	ND	370	ug/Kg
Hexachlorocyclopentadiene	ND	1,800	ug/Kg
2,4,6-Trichlorophenol	ND	370	ug/Kg
2,4,5-Trichlorophenol	ND	370	ug/Kg
2-Chloronaphthalene	ND	370	ug/Kg
2-Nitroaniline	ND	370	ug/Kg
Dimethylphthalate	ND	370	ug/Kg
Acenaphthylene	ND	370	ug/Kg
2,6-Dinitrotoluene	ND	370	ug/Kg
3-Nitroaniline	ND	370	ug/Kg
Acenaphthene	ND	370	ug/Kg

**EPA 8270 Semi-Volatile Organics**
**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
2,4-Dinitrophenol	ND	1,800	ug/Kg
4-Nitrophenol	ND	370	ug/Kg
Dibenzofuran	ND	370	ug/Kg
2,4-Dinitrotoluene	ND	370	ug/Kg
Diethylphthalate	ND	370	ug/Kg
Fluorene	ND	370	ug/Kg
4-Chlorophenyl-phenylether	ND	370	ug/Kg
4-Nitroaniline	ND	370	ug/Kg
4,6-Dinitro-2-methylphenol	ND	370	ug/Kg
N-Nitrosodiphenylamine	ND	370	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	370	ug/Kg
4-Bromophenyl-phenylether	ND	370	ug/Kg
Hexachlorobenzene	ND	370	ug/Kg
Pentachlorophenol	ND	1,800	ug/Kg
Phenanthrene	ND	370	ug/Kg
Anthracene	ND	370	ug/Kg
Di-n-butylphthalate	ND	370	ug/Kg
Fluoranthene	ND	370	ug/Kg
Benzidine	ND	1,800	ug/Kg
Pyrene	ND	370	ug/Kg
Butylbenzylphthalate	ND	370	ug/Kg
3,3'-Dichlorobenzidine	ND	1,800	ug/Kg
Benzo(a)anthracene	ND	370	ug/Kg
Chrysene	ND	370	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	370	ug/Kg
Di-n-octylphthalate	ND	370	ug/Kg
Benzo(b)fluoranthene	ND	370	ug/Kg
Benzo(k)fluoranthene	ND	370	ug/Kg
Benzo(a)pyrene	ND	370	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	370	ug/Kg
Dibenz(a,h)anthracene	ND	370	ug/Kg
Benzo(g,h,i)perylene	ND	370	ug/Kg

Surrogate	%REC	Limits
2-Fluorophenol	41	29-120
Phenol-d6	49	30-120
2,4,6-Tribromophenol	51	32-120
Nitrobenzene-d5	56	33-120
2-Fluorobiphenyl	60	39-120
Terphenyl-d14	69	44-125

## Legend

**ND:** Not Detected

**RL:** Reporting Limit

**EPA 8270 Semi-Volatile Organics: Batch QC**
**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BLANK

**Batch#:** 273582

**Analysis:** EPA 8270C

**Lab ID:** QC942747

**Prepared:** 09/09/21

**Analyst:** HQN

**Matrix:** Soil

**Analyzed:** 09/09/21

**Diln Fac:** 1.000

**Prep:** EPA 3546

Analyte	Result	RL	Units
Carbazole	ND	170	ug/Kg
1-Methylnaphthalene	ND	170	ug/Kg
Pyridine	ND	170	ug/Kg
N-Nitrosodimethylamine	ND	170	ug/Kg
Phenol	ND	170	ug/Kg
Aniline	ND	170	ug/Kg
bis(2-Chloroethyl)ether	ND	800	ug/Kg
2-Chlorophenol	ND	170	ug/Kg
1,3-Dichlorobenzene	ND	170	ug/Kg
1,4-Dichlorobenzene	ND	170	ug/Kg
Benzyl alcohol	ND	170	ug/Kg
1,2-Dichlorobenzene	ND	170	ug/Kg
2-Methylphenol	ND	170	ug/Kg
bis(2-Chloroisopropyl) ether	ND	170	ug/Kg
3-,4-Methylphenol	ND	270	ug/Kg
N-Nitroso-di-n-propylamine	ND	170	ug/Kg
Hexachloroethane	ND	170	ug/Kg
Nitrobenzene	ND	800	ug/Kg
Isophorone	ND	170	ug/Kg
2-Nitrophenol	ND	170	ug/Kg
2,4-Dimethylphenol	ND	170	ug/Kg
Benzoic acid	ND	800	ug/Kg
bis(2-Chloroethoxy)methane	ND	170	ug/Kg
2,4-Dichlorophenol	ND	170	ug/Kg
1,2,4-Trichlorobenzene	ND	170	ug/Kg
Naphthalene	ND	170	ug/Kg
4-Chloroaniline	ND	170	ug/Kg
Hexachlorobutadiene	ND	170	ug/Kg
4-Chloro-3-methylphenol	ND	170	ug/Kg
2-Methylnaphthalene	ND	170	ug/Kg
Hexachlorocyclopentadiene	ND	800	ug/Kg
2,4,6-Trichlorophenol	ND	170	ug/Kg
2,4,5-Trichlorophenol	ND	170	ug/Kg
2-Chloronaphthalene	ND	170	ug/Kg
2-Nitroaniline	ND	170	ug/Kg
Dimethylphthalate	ND	170	ug/Kg
Acenaphthylene	ND	170	ug/Kg
2,6-Dinitrotoluene	ND	170	ug/Kg
3-Nitroaniline	ND	170	ug/Kg
Acenaphthene	ND	170	ug/Kg
2,4-Dinitrophenol	ND	800	ug/Kg

**EPA 8270 Semi-Volatile Organics: Batch QC**
**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

Analyte	Result	RL	Units
4-Nitrophenol	ND	170	ug/Kg
Dibenzofuran	ND	170	ug/Kg
2,4-Dinitrotoluene	ND	170	ug/Kg
Diethylphthalate	ND	170	ug/Kg
Fluorene	ND	170	ug/Kg
4-Chlorophenyl-phenylether	ND	170	ug/Kg
4-Nitroaniline	ND	170	ug/Kg
4,6-Dinitro-2-methylphenol	ND	170	ug/Kg
N-Nitrosodiphenylamine	ND	170	ug/Kg
1,2-diphenylhydrazine (as azobenzene)	ND	170	ug/Kg
4-Bromophenyl-phenylether	ND	170	ug/Kg
Hexachlorobenzene	ND	170	ug/Kg
Pentachlorophenol	ND	800	ug/Kg
Phenanthrene	ND	170	ug/Kg
Anthracene	ND	170	ug/Kg
Di-n-butylphthalate	ND	170	ug/Kg
Fluoranthene	ND	170	ug/Kg
Benzidine	ND	800	ug/Kg
Pyrene	ND	170	ug/Kg
Butylbenzylphthalate	ND	170	ug/Kg
3,3'-Dichlorobenzidine	ND	800	ug/Kg
Benzo(a)anthracene	ND	170	ug/Kg
Chrysene	ND	170	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	170	ug/Kg
Di-n-octylphthalate	ND	170	ug/Kg
Benzo(b)fluoranthene	ND	170	ug/Kg
Benzo(k)fluoranthene	ND	170	ug/Kg
Benzo(a)pyrene	ND	170	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	170	ug/Kg
Dibenz(a,h)anthracene	ND	170	ug/Kg
Benzo(g,h,i)perylene	ND	170	ug/Kg
Surrogate	%REC	Limits	
2-Fluorophenol	80	29-120	
Phenol-d6	85	30-120	
2,4,6-Tribromophenol	85	32-120	
Nitrobenzene-d5	82	33-120	
2-Fluorobiphenyl	80	39-120	
Terphenyl-d14	87	44-125	

Legend

**ND:** Not Detected

**RL:** Reporting Limit

**EPA 8270 Semi-Volatile Organics: Batch QC**
**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BS

**Batch#:** 273582

**Analysis:** EPA 8270C

**Lab ID:** QC942748

**Prepared:** 09/09/21

**Analyst:** HQN

**Matrix:** Soil

**Analyzed:** 09/09/21

**Diln Fac:** 1.000

**Prep:** EPA 3546

Analyte	Spiked	Result	%REC	Limits	Units
Phenol	1,333	1,144	86	42-120	ug/Kg
2-Chlorophenol	1,333	1,092	82	41-120	ug/Kg
1,4-Dichlorobenzene	1,333	1,101	83	36-120	ug/Kg
3-,4-Methylphenol	1,333	1,129	85	42-120	ug/Kg
N-Nitroso-di-n-propylamine	1,333	1,082	81	43-121	ug/Kg
2,4-Dimethylphenol	1,333	1,025	77	25-120	ug/Kg
1,2,4-Trichlorobenzene	1,333	1,088	82	38-120	ug/Kg
4-Chloro-3-methylphenol	1,333	1,100	83	40-125	ug/Kg
2,4,5-Trichlorophenol	1,333	1,142	86	40-124	ug/Kg
Acenaphthene	1,333	1,035	78	35-126	ug/Kg
4-Nitrophenol	1,333	1,163	87	24-128	ug/Kg
2,4-Dinitrotoluene	1,333	1,105	83	40-131	ug/Kg
Pentachlorophenol	1,333	929.7	70	35-120	ug/Kg
Pyrene	1,333	1,062	80	37-135	ug/Kg
Chrysene	1,333	1,070	80	38-132	ug/Kg
Benzo(b)fluoranthene	1,333	1,080	81	38-135	ug/Kg
Surrogate			%REC	Limits	
2-Fluorophenol			85	29-120	
Phenol-d6			86	30-120	
2,4,6-Tribromophenol			86	32-120	
Nitrobenzene-d5			85	33-120	
2-Fluorobiphenyl			81	39-120	
Terphenyl-d14			84	44-125	



## EPA 8270 Semi-Volatile Organics: Batch QC

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BSD

**Batch#:** 273582

**Analysis:** EPA 8270C

**Lab ID:** QC942749

**Prepared:** 09/09/21

**Analyst:** HQN

**Matrix:** Soil

**Analyzed:** 09/09/21

**Diln Fac:** 1.000

**Prep:** EPA 3546

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Phenol	1,333	1,022	77	42-120	ug/Kg	11	20
2-Chlorophenol	1,333	960.4	72	41-120	ug/Kg	13	20
1,4-Dichlorobenzene	1,333	1,001	75	36-120	ug/Kg	10	20
3-,4-Methylphenol	1,333	1,040	78	42-120	ug/Kg	8	20
N-Nitroso-di-n-propylamine	1,333	969.8	73	43-121	ug/Kg	11	20
2,4-Dimethylphenol	1,333	922.7	69	25-120	ug/Kg	10	20
1,2,4-Trichlorobenzene	1,333	981.3	74	38-120	ug/Kg	10	20
4-Chloro-3-methylphenol	1,333	1,014	76	40-125	ug/Kg	8	20
2,4,5-Trichlorophenol	1,333	1,061	80	40-124	ug/Kg	7	20
Acenaphthene	1,333	949.9	71	35-126	ug/Kg	9	20
4-Nitrophenol	1,333	1,027	77	24-128	ug/Kg	12	20
2,4-Dinitrotoluene	1,333	1,046	78	40-131	ug/Kg	5	20
Pentachlorophenol	1,333	844.7	63	35-120	ug/Kg	10	20
Pyrene	1,333	966.7	73	37-135	ug/Kg	9	20
Chrysene	1,333	983.2	74	38-132	ug/Kg	8	20
Benzo(b)fluoranthene	1,333	999.2	75	38-135	ug/Kg	8	20

Surrogate	%REC	Limits
2-Fluorophenol	75	29-120
Phenol-d6	80	30-120
2,4,6-Tribromophenol	76	32-120
Nitrobenzene-d5	77	33-120
2-Fluorobiphenyl	72	39-120
Terphenyl-d14	76	44-125

Legend

**RPD:** Relative Percent Difference

## Organochlorine Pesticides

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU4-1A

**Batch#:** 273602

**Prep:** EPA 3546

**Lab ID:** 449991-001

**Sampled:** 08/30/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TJW

**Basis:** air dried

**Prepared:** 09/09/21

**Diln Fac:** 10.00

**Analyzed:** 09/10/21

Analyte	Result	RL	Units
alpha-BHC	ND	17	ug/Kg
beta-BHC	ND	17	ug/Kg
gamma-BHC	ND	17	ug/Kg
delta-BHC	ND	17	ug/Kg
Heptachlor	ND	17	ug/Kg
Aldrin	ND	17	ug/Kg
Heptachlor epoxide	ND	17	ug/Kg
Endosulfan I	ND	17	ug/Kg
Dieldrin	ND	17	ug/Kg
4,4'-DDE	ND	17	ug/Kg
Endrin	ND	17	ug/Kg
Endosulfan II	ND	17	ug/Kg
Endosulfan sulfate	ND	17	ug/Kg
4,4'-DDD	ND	17	ug/Kg
Endrin aldehyde	ND	17	ug/Kg
Endrin ketone	ND	17	ug/Kg
4,4'-DDT	ND	17	ug/Kg
Methoxychlor	ND	33	ug/Kg
Toxaphene	ND	330	ug/Kg
Chlordane (Technical)	ND	170	ug/Kg

Surrogate	%REC	Limits
TCMX	DO	23-120
Decachlorobiphenyl	DO	24-120

**Legend**

**DO:** Diluted Out

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU4-2A

**Batch#:** 273602

**Prep:** EPA 3546

**Lab ID:** 449991-002

**Sampled:** 08/30/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TJW

**Basis:** air dried

**Prepared:** 09/09/21

**Diln Fac:** 10.00

**Analyzed:** 09/10/21

Analyte	Result	RL	Units
alpha-BHC	ND	17	ug/Kg
beta-BHC	ND	17	ug/Kg
gamma-BHC	ND	17	ug/Kg
delta-BHC	ND	17	ug/Kg
Heptachlor	ND	17	ug/Kg
Aldrin	ND	17	ug/Kg
Heptachlor epoxide	ND	17	ug/Kg
Endosulfan I	ND	17	ug/Kg
Dieldrin	ND	17	ug/Kg
4,4'-DDE	ND	17	ug/Kg
Endrin	ND	17	ug/Kg
Endosulfan II	ND	17	ug/Kg
Endosulfan sulfate	ND	17	ug/Kg
4,4'-DDD	ND	17	ug/Kg
Endrin aldehyde	ND	17	ug/Kg
Endrin ketone	ND	17	ug/Kg
4,4'-DDT	ND	17	ug/Kg
Methoxychlor	ND	33	ug/Kg
Toxaphene	ND	330	ug/Kg
Chlordane (Technical)	ND	170	ug/Kg

Surrogate	%REC	Limits
TCMX	DO	23-120
Decachlorobiphenyl	DO	24-120

## Legend

**DO:** Diluted Out

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU5-1A

**Batch#:** 273602

**Prep:** EPA 3546

**Lab ID:** 449991-003

**Sampled:** 08/31/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TJW

**Basis:** air dried

**Prepared:** 09/09/21

**Diln Fac:** 10.00

**Analyzed:** 09/10/21

Analyte	Result	RL	Units
alpha-BHC	ND	17	ug/Kg
beta-BHC	ND	17	ug/Kg
gamma-BHC	ND	17	ug/Kg
delta-BHC	ND	17	ug/Kg
Heptachlor	ND	17	ug/Kg
Aldrin	ND	17	ug/Kg
Heptachlor epoxide	ND	17	ug/Kg
Endosulfan I	ND	17	ug/Kg
Dieldrin	ND	17	ug/Kg
4,4'-DDE	ND	17	ug/Kg
Endrin	ND	17	ug/Kg
Endosulfan II	ND	17	ug/Kg
Endosulfan sulfate	ND	17	ug/Kg
4,4'-DDD	ND	17	ug/Kg
Endrin aldehyde	ND	17	ug/Kg
Endrin ketone	ND	17	ug/Kg
4,4'-DDT	ND	17	ug/Kg
Methoxychlor	ND	33	ug/Kg
Toxaphene	ND	330	ug/Kg
Chlordane (Technical)	ND	170	ug/Kg

Surrogate	%REC	Limits
TCMX	DO	23-120
Decachlorobiphenyl	DO	24-120

## Legend

**DO:** Diluted Out

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU5-2A

**Batch#:** 273602

**Prep:** EPA 3546

**Lab ID:** 449991-004

**Sampled:** 08/31/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TJW

**Basis:** air dried

**Prepared:** 09/09/21

**Diln Fac:** 10.00

**Analyzed:** 09/10/21

Analyte	Result	RL	Units
alpha-BHC	ND	17	ug/Kg
beta-BHC	ND	17	ug/Kg
gamma-BHC	ND	17	ug/Kg
delta-BHC	ND	17	ug/Kg
Heptachlor	ND	17	ug/Kg
Aldrin	ND	17	ug/Kg
Heptachlor epoxide	ND	17	ug/Kg
Endosulfan I	ND	17	ug/Kg
Dieldrin	ND	17	ug/Kg
4,4'-DDE	ND	17	ug/Kg
Endrin	ND	17	ug/Kg
Endosulfan II	ND	17	ug/Kg
Endosulfan sulfate	ND	17	ug/Kg
4,4'-DDD	ND	17	ug/Kg
Endrin aldehyde	ND	17	ug/Kg
Endrin ketone	ND	17	ug/Kg
4,4'-DDT	ND	17	ug/Kg
Methoxychlor	ND	33	ug/Kg
Toxaphene	ND	330	ug/Kg
Chlordane (Technical)	ND	170	ug/Kg

Surrogate	%REC	Limits
TCMX	DO	23-120
Decachlorobiphenyl	DO	24-120

## Legend

**DO:** Diluted Out

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU3-1A

**Batch#:** 273602

**Prep:** EPA 3546

**Lab ID:** 449991-005

**Sampled:** 08/31/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TJW

**Basis:** air dried

**Prepared:** 09/09/21

**Diln Fac:** 10.00

**Analyzed:** 09/10/21

Analyte	Result	RL	Units
alpha-BHC	ND	17	ug/Kg
beta-BHC	ND	17	ug/Kg
gamma-BHC	ND	17	ug/Kg
delta-BHC	ND	17	ug/Kg
Heptachlor	ND	17	ug/Kg
Aldrin	ND	17	ug/Kg
Heptachlor epoxide	ND	17	ug/Kg
Endosulfan I	ND	17	ug/Kg
Dieldrin	ND	17	ug/Kg
4,4'-DDE	ND	17	ug/Kg
Endrin	ND	17	ug/Kg
Endosulfan II	ND	17	ug/Kg
Endosulfan sulfate	ND	17	ug/Kg
4,4'-DDD	ND	17	ug/Kg
Endrin aldehyde	ND	17	ug/Kg
Endrin ketone	ND	17	ug/Kg
4,4'-DDT	ND	17	ug/Kg
Methoxychlor	ND	33	ug/Kg
Toxaphene	ND	330	ug/Kg
Chlordane (Technical)	ND	170	ug/Kg

Surrogate	%REC	Limits
TCMX	DO	23-120
Decachlorobiphenyl	DO	24-120

## Legend

**DO:** Diluted Out

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU3-2A

**Batch#:** 273602

**Prep:** EPA 3546

**Lab ID:** 449991-006

**Sampled:** 08/31/21

**Analysis:** EPA 8081A

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TJW

**Basis:** air dried

**Prepared:** 09/09/21

**Diln Fac:** 10.00

**Analyzed:** 09/10/21

Analyte	Result	RL	Units
alpha-BHC	ND	17	ug/Kg
beta-BHC	ND	17	ug/Kg
gamma-BHC	ND	17	ug/Kg
delta-BHC	ND	17	ug/Kg
Heptachlor	ND	17	ug/Kg
Aldrin	ND	17	ug/Kg
Heptachlor epoxide	ND	17	ug/Kg
Endosulfan I	ND	17	ug/Kg
Dieldrin	ND	17	ug/Kg
4,4'-DDE	ND	17	ug/Kg
Endrin	ND	17	ug/Kg
Endosulfan II	ND	17	ug/Kg
Endosulfan sulfate	ND	17	ug/Kg
4,4'-DDD	ND	17	ug/Kg
Endrin aldehyde	ND	17	ug/Kg
Endrin ketone	ND	17	ug/Kg
4,4'-DDT	ND	17	ug/Kg
Methoxychlor	ND	33	ug/Kg
Toxaphene	ND	330	ug/Kg
Chlordane (Technical)	ND	170	ug/Kg

Surrogate	%REC	Limits
TCMX	DO	23-120
Decachlorobiphenyl	DO	24-120

## Legend

**DO:** Diluted Out

**ND:** Not Detected

**RL:** Reporting Limit

## Organochlorine Pesticides: Batch QC

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BLANK

**Batch#:** 273602

**Analysis:** EPA 8081A

**Lab ID:** QC942816

**Prepared:** 09/09/21

**Analyst:** TJW

**Matrix:** Soil

**Analyzed:** 09/10/21

**Diln Fac:** 1.000

**Prep:** EPA 3546

Analyte	Result	RL	Units
alpha-BHC	ND	1.7	ug/Kg
beta-BHC	ND	1.7	ug/Kg
gamma-BHC	ND	1.7	ug/Kg
delta-BHC	ND	1.7	ug/Kg
Heptachlor	ND	1.7	ug/Kg
Aldrin	ND	1.7	ug/Kg
Heptachlor epoxide	ND	1.7	ug/Kg
Endosulfan I	ND	1.7	ug/Kg
Dieldrin	ND	1.7	ug/Kg
4,4'-DDE	ND	1.7	ug/Kg
Endrin	ND	1.7	ug/Kg
Endosulfan II	ND	1.7	ug/Kg
Endosulfan sulfate	ND	1.7	ug/Kg
4,4'-DDD	ND	1.7	ug/Kg
Endrin aldehyde	ND	1.7	ug/Kg
Endrin ketone	ND	1.7	ug/Kg
4,4'-DDT	ND	1.7	ug/Kg
Methoxychlor	ND	3.3	ug/Kg
Toxaphene	ND	33	ug/Kg
Chlordane (Technical)	ND	17	ug/Kg

Surrogate	%REC	Limits
TCMX	93	23-120
Decachlorobiphenyl	90	24-120

## Legend

**ND:** Not Detected

**RL:** Reporting Limit



## Organochlorine Pesticides: Batch QC

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BS

**Batch#:** 273602

**Analysis:** EPA 8081A

**Lab ID:** QC942817

**Prepared:** 09/09/21

**Analyst:** TJW

**Matrix:** Soil

**Analyzed:** 09/10/21

**Diln Fac:** 1.000

**Prep:** EPA 3546

Analyte	Spiked	Result	%REC	Limits	Units
alpha-BHC	16.67	16.94	102	22-129	ug/Kg
beta-BHC	16.67	16.85	101	28-125	ug/Kg
gamma-BHC	16.67	16.48	99	22-128	ug/Kg
delta-BHC	16.67	15.90	95	24-131	ug/Kg
Heptachlor	16.67	16.44	99	18-124	ug/Kg
Aldrin	16.67	14.86	89	23-120	ug/Kg
Heptachlor epoxide	16.67	15.47	93	26-120	ug/Kg
Endosulfan I	16.67	18.20	109	25-126	ug/Kg
Dieldrin	16.67	16.62	100	23-124	ug/Kg
4,4'-DDE	16.67	16.69	100	28-121	ug/Kg
Endrin	16.67	17.06	102	25-127	ug/Kg
Endosulfan II	16.67	16.40	98	29-121	ug/Kg
Endosulfan sulfate	16.67	15.19	91	30-121	ug/Kg
4,4'-DDD	16.67	14.54	87	26-120	ug/Kg
Endrin aldehyde	16.67	5.813	35	10-120	ug/Kg
Endrin ketone	16.67	14.90	89	28-125	ug/Kg
4,4'-DDT	16.67	12.90	77	22-125	ug/Kg
Methoxychlor	16.67	13.34	80	28-130	ug/Kg
<b>Surrogate</b>			<b>%REC</b>	<b>Limits</b>	
TCMX			96	23-120	
Decachlorobiphenyl			92	24-120	

## Organochlorine Pesticides: Batch QC

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BSD

**Batch#:** 273602

**Analysis:** EPA 8081A

**Lab ID:** QC942818

**Prepared:** 09/09/21

**Analyst:** TJW

**Matrix:** Soil

**Analyzed:** 09/10/21

**Diln Fac:** 1.000

**Prep:** EPA 3546

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
alpha-BHC	16.67	13.43	81	22-129	ug/Kg	23 *	20
beta-BHC	16.67	13.46	81	28-125	ug/Kg	22 *	20
gamma-BHC	16.67	12.72	76	22-128	ug/Kg	26 *	20
delta-BHC	16.67	12.72	76	24-131	ug/Kg	22 *	20
Heptachlor	16.67	13.95	84	18-124	ug/Kg	16	20
Aldrin	16.67	12.50	75	23-120	ug/Kg	17	20
Heptachlor epoxide	16.67	12.38	74	26-120	ug/Kg	22 *	20
Endosulfan I	16.67	15.07	90	25-126	ug/Kg	19	20
Dieldrin	16.67	13.63	82	23-124	ug/Kg	20	20
4,4'-DDE	16.67	14.22	85	28-121	ug/Kg	16	20
Endrin	16.67	14.48	87	25-127	ug/Kg	16	20
Endosulfan II	16.67	13.28	80	29-121	ug/Kg	21 *	20
Endosulfan sulfate	16.67	10.78	65	30-121	ug/Kg	34 *	20
4,4'-DDD	16.67	11.48	69	26-120	ug/Kg	24 *	20
Endrin aldehyde	16.67	4.969	30	10-120	ug/Kg	16	20
Endrin ketone	16.67	12.48	75	28-125	ug/Kg	18	20
4,4'-DDT	16.67	12.51	75	22-125	ug/Kg	3	20
Methoxychlor	16.67	11.54	69	28-130	ug/Kg	14	20

Surrogate	%REC	Limits
TCMX	86	23-120
Decachlorobiphenyl	84	24-120

## Legend

\*: Value is outside QC limits

RPD: Relative Percent Difference

## Polychlorinated Biphenyls (PCBs)

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU4-1A

**Diln Fac:** 5.000

**Analyzed:** 09/10/21

**Type:** SAMPLE

**Batch#:** 273602

**Prep:** EPA 3546

**Lab ID:** 449991-001

**Sampled:** 08/30/21

**Analysis:** EPA 8082

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TJW

**Basis:** air dried

**Prepared:** 09/09/21

Analyte	Result	RL	Units
Aroclor-1016	ND	83	ug/Kg
Aroclor-1221	ND	83	ug/Kg
Aroclor-1232	ND	83	ug/Kg
Aroclor-1242	ND	83	ug/Kg
Aroclor-1248	ND	83	ug/Kg
Aroclor-1254	ND	83	ug/Kg
Aroclor-1260	ND	83	ug/Kg
Aroclor-1262	ND	83	ug/Kg
Aroclor-1268	ND	83	ug/Kg
Surrogate		%REC	Limits
Decachlorobiphenyl (PCB)		52	19-121

**Field ID:** 3048-DU4-2A

**Diln Fac:** 5.000

**Analyzed:** 09/10/21

**Type:** SAMPLE

**Batch#:** 273602

**Prep:** EPA 3546

**Lab ID:** 449991-002

**Sampled:** 08/30/21

**Analysis:** EPA 8082

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TJW

**Basis:** air dried

**Prepared:** 09/09/21

Analyte	Result	RL	Units
Aroclor-1016	ND	83	ug/Kg
Aroclor-1221	ND	83	ug/Kg
Aroclor-1232	ND	83	ug/Kg
Aroclor-1242	ND	83	ug/Kg
Aroclor-1248	ND	83	ug/Kg
Aroclor-1254	ND	83	ug/Kg
Aroclor-1260	ND	83	ug/Kg
Aroclor-1262	ND	83	ug/Kg
Aroclor-1268	ND	83	ug/Kg
Surrogate		%REC	Limits
Decachlorobiphenyl (PCB)		13 *	19-121

## Polychlorinated Biphenyls (PCBs)

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU5-1A

**Diln Fac:** 5.000

**Analyzed:** 09/10/21

**Type:** SAMPLE

**Batch#:** 273602

**Prep:** EPA 3546

**Lab ID:** 449991-003

**Sampled:** 08/31/21

**Analysis:** EPA 8082

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TJW

**Basis:** air dried

**Prepared:** 09/09/21

Analyte	Result	RL	Units
Aroclor-1016	ND	83	ug/Kg
Aroclor-1221	ND	83	ug/Kg
Aroclor-1232	ND	83	ug/Kg
Aroclor-1242	ND	83	ug/Kg
Aroclor-1248	ND	83	ug/Kg
Aroclor-1254	ND	83	ug/Kg
Aroclor-1260	ND	83	ug/Kg
Aroclor-1262	ND	83	ug/Kg
Aroclor-1268	ND	83	ug/Kg
Surrogate		%REC	Limits
Decachlorobiphenyl (PCB)		32	19-121

**Field ID:** 3048-DU5-2A

**Diln Fac:** 5.000

**Analyzed:** 09/10/21

**Type:** SAMPLE

**Batch#:** 273602

**Prep:** EPA 3546

**Lab ID:** 449991-004

**Sampled:** 08/31/21

**Analysis:** EPA 8082

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TJW

**Basis:** air dried

**Prepared:** 09/09/21

Analyte	Result	RL	Units
Aroclor-1016	ND	83	ug/Kg
Aroclor-1221	ND	83	ug/Kg
Aroclor-1232	ND	83	ug/Kg
Aroclor-1242	ND	83	ug/Kg
Aroclor-1248	ND	83	ug/Kg
Aroclor-1254	ND	83	ug/Kg
<b>Aroclor-1260</b>	<b>130</b>	83	ug/Kg
Aroclor-1262	ND	83	ug/Kg
Aroclor-1268	ND	83	ug/Kg
Surrogate		%REC	Limits
Decachlorobiphenyl (PCB)		64	19-121

## Polychlorinated Biphenyls (PCBs)

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU3-1A

**Diln Fac:** 5.000

**Analyzed:** 09/10/21

**Type:** SAMPLE

**Batch#:** 273602

**Prep:** EPA 3546

**Lab ID:** 449991-005

**Sampled:** 08/31/21

**Analysis:** EPA 8082

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TJW

**Basis:** air dried

**Prepared:** 09/09/21

Analyte	Result	RL	Units
Aroclor-1016	ND	83	ug/Kg
Aroclor-1221	ND	83	ug/Kg
Aroclor-1232	ND	83	ug/Kg
Aroclor-1242	ND	83	ug/Kg
Aroclor-1248	ND	83	ug/Kg
Aroclor-1254	ND	83	ug/Kg
Aroclor-1260	ND	83	ug/Kg
Aroclor-1262	ND	83	ug/Kg
Aroclor-1268	ND	83	ug/Kg
Surrogate		%REC	Limits
Decachlorobiphenyl (PCB)		53	19-121

**Field ID:** 3048-DU3-2A

**Diln Fac:** 5.000

**Analyzed:** 09/10/21

**Type:** SAMPLE

**Batch#:** 273602

**Prep:** EPA 3546

**Lab ID:** 449991-006

**Sampled:** 08/31/21

**Analysis:** EPA 8082

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TJW

**Basis:** air dried

**Prepared:** 09/09/21

Analyte	Result	RL	Units
Aroclor-1016	ND	83	ug/Kg
Aroclor-1221	ND	83	ug/Kg
Aroclor-1232	ND	83	ug/Kg
Aroclor-1242	ND	83	ug/Kg
Aroclor-1248	ND	83	ug/Kg
Aroclor-1254	ND	83	ug/Kg
Aroclor-1260	ND	83	ug/Kg
Aroclor-1262	ND	83	ug/Kg
Aroclor-1268	ND	83	ug/Kg
Surrogate		%REC	Limits
Decachlorobiphenyl (PCB)		91	19-121

## Polychlorinated Biphenyls (PCBs)

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BLANK

**Batch#:** 273602

**Analysis:** EPA 8082

**Lab ID:** QC942816

**Prepared:** 09/09/21

**Analyst:** TJW

**Matrix:** Soil

**Analyzed:** 09/10/21

**Diln Fac:** 1.000

**Prep:** EPA 3546

Analyte	Result	RL	Units
Aroclor-1016	ND	17	ug/Kg
Aroclor-1221	ND	17	ug/Kg
Aroclor-1232	ND	17	ug/Kg
Aroclor-1242	ND	17	ug/Kg
Aroclor-1248	ND	17	ug/Kg
Aroclor-1254	ND	17	ug/Kg
Aroclor-1260	ND	17	ug/Kg
Aroclor-1262	ND	17	ug/Kg
Aroclor-1268	ND	17	ug/Kg

Surrogate	%REC	Limits
Decachlorobiphenyl (PCB)	87	19-121

## Legend

\*: Value is outside QC limits

ND: Not Detected

RL: Reporting Limit

## Polychlorinated Biphenyls (PCBs): Batch QC

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BS

**Batch#:** 273602

**Analysis:** EPA 8082

**Lab ID:** QC942819

**Prepared:** 09/09/21

**Analyst:** TJW

**Matrix:** Soil

**Analyzed:** 09/10/21

**DiIn Fac:** 1.000

**Prep:** EPA 3546

Analyte	Spiked	Result	%REC	Limits	Units
Aroclor-1016	166.7	140.9	85	14-150	ug/Kg
Aroclor-1260	166.7	140.7	84	10-150	ug/Kg

Surrogate	%REC	Limits
Decachlorobiphenyl (PCB)	87	19-121

**Type:** BSD

**Batch#:** 273602

**Analysis:** EPA 8082

**Lab ID:** QC942820

**Prepared:** 09/09/21

**Analyst:** TJW

**Matrix:** Soil

**Analyzed:** 09/10/21

**DiIn Fac:** 1.000

**Prep:** EPA 3546

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Aroclor-1016	166.7	153.3	92	14-150	ug/Kg	8	20
Aroclor-1260	166.7	150.3	90	10-150	ug/Kg	7	20

Surrogate	%REC	Limits
Decachlorobiphenyl (PCB)	85	19-121

Legend

**RPD:** Relative Percent Difference

## Metals Analytical Report

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU4-1A

**Matrix:** Soil

**Received:** 09/02/21

**Type:** SAMPLE

**Diln Fac:** 1.000

**Lab ID:** 449991-001

**Sampled:** 08/30/21

Analyte	Result	RL	Units	Basis	Moisture	Batch#	Prepared	Analyzed	Prep	Analysis	Analyst
<b>Arsenic</b>	<b>4.7</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Barium</b>	<b>110</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Cadmium	ND	0.25	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Chromium</b>	<b>200</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Lead</b>	<b>15</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Mercury	ND	0.17	mg/Kg	dry	13%	273498	09/07/21	09/08/21	METHOD	EPA 7471A	TNN
Selenium	ND	1.5	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Silver	ND	0.25	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW

**Field ID:** 3048-DU4-2A

**Matrix:** Soil

**Received:** 09/02/21

**Type:** SAMPLE

**Diln Fac:** 1.000

**Lab ID:** 449991-002

**Sampled:** 08/30/21

Analyte	Result	RL	Units	Basis	Moisture	Batch#	Prepared	Analyzed	Prep	Analysis	Analyst
<b>Arsenic</b>	<b>3.6</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Barium</b>	<b>110</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Cadmium	ND	0.25	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Chromium</b>	<b>180</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Lead</b>	<b>12</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Mercury	ND	0.18	mg/Kg	dry	13%	273498	09/07/21	09/08/21	METHOD	EPA 7471A	TNN
Selenium	ND	1.5	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Silver	ND	0.25	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW

**Field ID:** 3048-DU5-1A

**Matrix:** Soil

**Received:** 09/02/21

**Type:** SAMPLE

**Diln Fac:** 1.000

**Lab ID:** 449991-003

**Sampled:** 08/31/21

Analyte	Result	RL	Units	Basis	Moisture	Batch#	Prepared	Analyzed	Prep	Analysis	Analyst
<b>Arsenic</b>	<b>2.2</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Barium</b>	<b>64</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Cadmium	ND	0.25	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Chromium</b>	<b>170</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Lead</b>	<b>11</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Mercury	ND	0.18	mg/Kg	dry	15%	273498	09/07/21	09/08/21	METHOD	EPA 7471A	TNN
Selenium	ND	1.5	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Silver	ND	0.25	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW



## Metals Analytical Report

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU5-2A

**Matrix:** Soil

**Received:** 09/02/21

**Type:** SAMPLE

**Diln Fac:** 1.000

**Lab ID:** 449991-004

**Sampled:** 08/31/21

Analyte	Result	RL	Units	Basis	Moisture	Batch#	Prepared	Analyzed	Prep	Analysis	Analyst
<b>Arsenic</b>	<b>5.5</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Barium</b>	<b>140</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Cadmium	ND	0.25	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Chromium</b>	<b>170</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Lead</b>	<b>20</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Mercury	ND	0.17	mg/Kg	dry	12%	273498	09/07/21	09/08/21	METHOD	EPA 7471A	TNN
Selenium	ND	1.5	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Silver	ND	0.25	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW

**Field ID:** 3048-DU3-1A

**Matrix:** Soil

**Received:** 09/02/21

**Type:** SAMPLE

**Diln Fac:** 1.000

**Lab ID:** 449991-005

**Sampled:** 08/31/21

Analyte	Result	RL	Units	Basis	Moisture	Batch#	Prepared	Analyzed	Prep	Analysis	Analyst
<b>Arsenic</b>	<b>2.4</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Barium</b>	<b>65</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Cadmium	ND	0.25	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Chromium</b>	<b>170</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Lead</b>	<b>10</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Mercury	ND	0.16	mg/Kg	dry	13%	273498	09/07/21	09/08/21	METHOD	EPA 7471A	TNN
Selenium	ND	1.5	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Silver	ND	0.25	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW

**Field ID:** 3048-DU3-2A

**Matrix:** Soil

**Received:** 09/02/21

**Type:** SAMPLE

**Diln Fac:** 1.000

**Lab ID:** 449991-006

**Sampled:** 08/31/21

Analyte	Result	RL	Units	Basis	Moisture	Batch#	Prepared	Analyzed	Prep	Analysis	Analyst
<b>Arsenic</b>	<b>2.8</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Barium</b>	<b>95</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Cadmium	ND	0.25	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Chromium</b>	<b>140</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
<b>Lead</b>	<b>13</b>	0.50	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Mercury	ND	0.17	mg/Kg	dry	10%	273498	09/07/21	09/08/21	METHOD	EPA 7471A	TNN
Selenium	ND	1.5	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW
Silver	ND	0.25	mg/Kg	air dried		273787	09/13/21	09/14/21	EPA 3050B	EPA 6010B	SBW

## Metals Analytical Report

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BLANK  
**Lab ID:** QC942492  
**Matrix:** Soil  
**Diln Fac:** 1.000

**Batch#:** 273498  
**Prepared:** 09/07/21  
**Analyzed:** 09/08/21  
**Prep:** METHOD

**Analysis:** EPA 7471A  
**Analyst:** TNN

Analyte	Result	RL	Units
Mercury	ND	0.14	mg/Kg

**Type:** BLANK  
**Lab ID:** QC943347  
**Matrix:** Soil  
**Diln Fac:** 1.000

**Batch#:** 273787  
**Prepared:** 09/13/21  
**Analyzed:** 09/14/21  
**Prep:** EPA 3050B

**Analysis:** EPA 6010B  
**Analyst:** SBW

Analyte	Result	RL	Units
Arsenic	ND	0.50	mg/Kg
Barium	ND	0.50	mg/Kg
Cadmium	ND	0.25	mg/Kg
Chromium	ND	0.50	mg/Kg
Lead	ND	0.50	mg/Kg
Selenium	ND	1.5	mg/Kg
Silver	ND	0.25	mg/Kg

## Legend

**ND:** Not Detected

**RL:** Reporting Limit

### Metals Analytical Report: Batch QC

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** LCS

**Batch#:** 273498

**Analysis:** EPA 7471A

**Lab ID:** QC942493

**Prepared:** 09/07/21

**Analyst:** TNN

**Matrix:** Soil

**Analyzed:** 09/08/21

**Diln Fac:** 1.000

**Prep:** METHOD

Analyte	Spiked	Result	%REC	Limits	Units
Mercury	0.8333	0.8302	100	80-120	mg/Kg

## Metals Analytical Report: Batch QC

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** ZZZZZZZZZZ

**Basis:** as received

**Prepared:** 09/07/21

**Type:** MS

**Diln Fac:** 1.000

**Analyzed:** 09/08/21

**MSS Lab ID:** 449994-001

**Batch#:** 273498

**Prep:** METHOD

**Lab ID:** QC942494

**Sampled:** 09/01/21

**Analysis:** EPA 7471A

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TNN

Analyte	MSS Result	Spiked	Result	%REC	Limits	Units
Mercury	<0.04587	0.9259	0.9312	101	75-125	mg/Kg

**Field ID:** ZZZZZZZZZZ

**Basis:** as received

**Prepared:** 09/07/21

**Type:** MSD

**Diln Fac:** 1.000

**Analyzed:** 09/08/21

**MSS Lab ID:** 449994-001

**Batch#:** 273498

**Prep:** METHOD

**Lab ID:** QC942495

**Sampled:** 09/01/21

**Analysis:** EPA 7471A

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** TNN

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Mercury	0.9804	1.008	103	75-125	mg/Kg	2	20

Legend

**RPD:** Relative Percent Difference

## Metals Analytical Report: Batch QC

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Type:** BS

**Batch#:** 273787

**Analysis:** EPA 6010B

**Lab ID:** QC943348

**Prepared:** 09/13/21

**Analyst:** SBW

**Matrix:** Soil

**Analyzed:** 09/14/21

**DiIn Fac:** 1.000

**Prep:** EPA 3050B

Analyte	Spiked	Result	%REC	Limits	Units
Arsenic	50.00	49.63	99	80-120	mg/Kg
Barium	50.00	50.39	101	80-120	mg/Kg
Cadmium	50.00	49.43	99	80-120	mg/Kg
Chromium	50.00	48.71	97	80-120	mg/Kg
Lead	50.00	50.33	101	80-120	mg/Kg
Selenium	50.00	42.96	86	80-120	mg/Kg
Silver	25.00	22.93	92	80-120	mg/Kg

**Type:** BSD

**Batch#:** 273787

**Analysis:** EPA 6010B

**Lab ID:** QC943349

**Prepared:** 09/13/21

**Analyst:** SBW

**Matrix:** Soil

**Analyzed:** 09/14/21

**DiIn Fac:** 1.000

**Prep:** EPA 3050B

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Arsenic	50.00	50.71	101	80-120	mg/Kg	2	20
Barium	50.00	52.04	104	80-120	mg/Kg	3	20
Cadmium	50.00	50.62	101	80-120	mg/Kg	2	20
Chromium	50.00	49.91	100	80-120	mg/Kg	2	20
Lead	50.00	50.31	101	80-120	mg/Kg	0	20
Selenium	50.00	43.96	88	80-120	mg/Kg	2	20
Silver	25.00	23.35	93	80-120	mg/Kg	2	20

Legend

**RPD:** Relative Percent Difference

## Moisture

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** 3048-DU4-1A

**Batch#:** 273386

**Prep:** METHOD

**Lab ID:** 449991-001

**Sampled:** 08/30/21

**Analysis:** ASTM D2216

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** ECC

**Diln Fac:** 1.000

**Analyzed:** 09/03/21

Analyte	Result	RL	Units
Moisture, Percent	13	1	%

**Field ID:** 3048-DU4-2A

**Batch#:** 273386

**Prep:** METHOD

**Lab ID:** 449991-002

**Sampled:** 08/30/21

**Analysis:** ASTM D2216

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** ECC

**Diln Fac:** 1.000

**Analyzed:** 09/03/21

Analyte	Result	RL	Units
Moisture, Percent	13	1	%

**Field ID:** 3048-DU5-1A

**Batch#:** 273386

**Prep:** METHOD

**Lab ID:** 449991-003

**Sampled:** 08/31/21

**Analysis:** ASTM D2216

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** ECC

**Diln Fac:** 1.000

**Analyzed:** 09/03/21

Analyte	Result	RL	Units
Moisture, Percent	15	1	%

**Field ID:** 3048-DU5-2A

**Batch#:** 273386

**Prep:** METHOD

**Lab ID:** 449991-004

**Sampled:** 08/31/21

**Analysis:** ASTM D2216

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** ECC

**Diln Fac:** 1.000

**Analyzed:** 09/03/21

Analyte	Result	RL	Units
Moisture, Percent	12	1	%

**Field ID:** 3048-DU3-1A

**Batch#:** 273386

**Prep:** METHOD

**Lab ID:** 449991-005

**Sampled:** 08/31/21

**Analysis:** ASTM D2216

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** ECC

**Diln Fac:** 1.000

**Analyzed:** 09/03/21

Analyte	Result	RL	Units
Moisture, Percent	13	1	%

**Field ID:** 3048-DU3-2A

**Batch#:** 273386

**Prep:** METHOD

**Lab ID:** 449991-006

**Sampled:** 08/31/21

**Analysis:** ASTM D2216

**Matrix:** Soil

**Received:** 09/02/21

**Analyst:** ECC

**Diln Fac:** 1.000

**Analyzed:** 09/03/21

Analyte	Result	RL	Units
Moisture, Percent	10	1	%

## Moisture

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**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

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Legend

**RL:** Reporting Limit

## Moisture: Batch QC

**Lab #:** 449991

**Project#:** 3048\_2

**Client:** Myounghee Noh & Associates

**Location:** AQS

**Field ID:** ZZZZZZZZZZ

**DiIn Fac:** 1.000

**Prep:** METHOD

**Type:** SDUP

**Batch#:** 273386

**Analysis:** ASTM D2216

**MSS Lab ID:** 449994-001

**Sampled:** 09/01/21

**Analyst:** ECC

**Lab ID:** QC942154

**Received:** 09/02/21

**Matrix:** Soil

**Analyzed:** 09/03/21

Analyte	MSS Result	Result	RL	Units	RPD	Lim
Moisture, Percent	2.011	2.118	1.000	%	5	26

Legend

**RL:** Reporting Limit

**RPD:** Relative Percent Difference