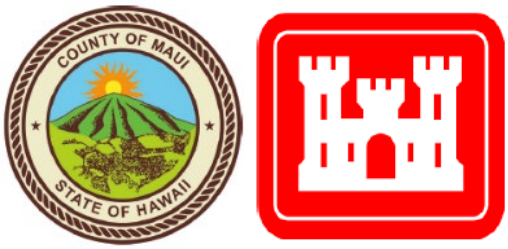
Environmental Monitoring Quarterly Report 1
West Maui Temporary Debris Storage Site
April 2024

Pursuant to Ordinance 5596, Bill 120, CD1, FD2 (2023)

Monitoring Period: January 21–April 21, 2024

Prepared by:



The County of Maui Department of Environmental Management

The U.S. Army Corps of Engineers

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Abbreviations

Abbreviation	Definition
µg/m^3	micrograms per cubic meter
AMSP	air monitoring and surveillance plan
ATP	archaeological treatment plan
DLNR	Hawai‘i Department of Land and Natural Resources
DOH	Hawai‘i Department of Health
ECC	Environmental Chemical Corporation
ERP	emergency response plan
FEMA	Federal Emergency Management Agency
MCDEM	Maui County Department of Environmental Management
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
OSHA	Occupational Safety and Health Administration
PM	particulate matter
SHPO	state historic preservation officer
SWPPP	storm water pollution prevention plan
TDS	temporary debris storage
Tetra Tech	Tetra Tech, Inc.
TPH	total petroleum hydrocarbons
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency

1. Introduction and Overview

On October 27, 2023, the Hawai‘i Department of Land and Natural Resources (DLNR) approved an immediate management right-of-entry permit the County of Maui. This permit applied to land parcels in West Maui that were to be occupied by a temporary debris storage (TDS) site; subsequently, this site was subject to a license agreement—included as Attachment 1—between the County of Maui and Environmental Chemical Corporation (ECC), a contractor for the United States Army Corps of Engineers (USACE), on November 27, 2023. The agreement, with an initial 12-month term (beginning on November 24, 2023) was for the installation of the TDS site subject to terms and conditions for the design, construction, operation, and maintenance of the site.

Regarding the TDS site, on January 21, 2024, the County of Maui approved Bill 120 of Ordinance 5596, which is included as Attachment 2. The bill authorized the mayor of the county to enter into an agreement with DLNR. Among other recordkeeping, operational, and planning requirements, the ordinance required environmental monitoring of the TDS area. USACE and ECC, which constructed and operate the TDS site, are therefore collaborating with the Maui County Department of Environmental Management (MCDEM) Solid Waste Division, the Hawai‘i Department of Health (DOH), and the United States Environmental Protection Agency (USEPA) to comply with the ordinance. A weekly coordination meeting is facilitated by Maui County Solid Waste Division personnel to ensure ongoing dialogue, communication and coordination on all matters relating to the TDS. In addition, USACE is working with their contractor, ECC, to ensure that best practices are being employed at the TDS to ensure that there are no impacts to human health and the environment from TDS operations.

Section 2.3.a of Bill 120 requires quarterly environmental monitoring reports for the TDS site. This document is one such report; it applies to the monitoring period beginning on January 21, 2024, and ending on April 21, 2024. After specifying the requirements from Bill 120, this report assesses the TDS site’s public availability, work plans, and monitoring data.

It is anticipated that a similar report will be generated every 90 days (quarterly) for the duration of TDS operations until (1) ash and debris at the site is transferred to the Central Maui Landfill, (2) the TDS site is removed from the site, and (3) the site is restored.

Overall, over 600 residential and commercial properties have been cleared of over 110,000 tons ash and debris in Lahaina. Additionally, over 7,000 truckloads of ash and debris have safely arrived from Lahaina

to the TDS site. There have been no reports or complaints received by the County of Maui regarding odors, dust, or environmental issues related to the disposal of ash and debris.

2. Requirements from Bill 120

Bill 120 requires recordkeeping as well as operational, planning, and environmental monitoring of the TDS site in West Maui. It specifies monitoring of the following:

- Leachate (liquids from the waste) quantity, quality, and treatment processes, if required
- Surface water runoff, including any impacts on nearby waterways
- Surrounding air quality regarding toxins and contaminants

Table 1 details provisions in Bill 120 that pertain to this report:

Table 1 — Bill 120 Provisions

Section	Description	Notes
2.3.a.	Recordkeeping and Reporting	Detailed records of leachate quantity, quality, and treatment processes be logged because these records are important for regulatory compliance and for making informed decisions about site management. All designs and construction documents, operating plans, stormwater pollution prevention plans, and sampling and analysis plans must be submitted to the county and made available to the public. The TDS site must be monitored for runoff, including nearby waterways and surrounding air quality for toxins and contaminants.
2.3.b	Compliance with Regulations	Leachate treatment and disposal will adhere to county, state, and federal environmental regulations to include the reuse of leachate as dust mitigation within the TDS site.

Section	Description	Notes
2.3.c	Emergency Response Plan	An emergency response plan will be in place to handle any unexpected leachate breaches or spills, including the following: • Alerting relevant authorities and response teams as soon as the spill is identified • Implementing barriers, absorbents, or other containment methods to minimize environmental impact • Conducting a rapid assessment to understand potential environmental and health impacts • Monitoring for changes in water quality, soil contamination, and impacts on local wildlife and vegetation • Implementing cleanup procedures such as skimming, vacuuming, or neutralizing agents, as needed • Implementing immediate and long-term remediation to restore the affected area, such as soil remediation, water treatment, or habitat restoration, as needed • Keeping all stakeholders, including the public, informed about response measures • Documenting the incident and response actions in a report for the appropriate regulatory authorities, as required by law • Updating the emergency response plan following a review of the response based on new insights • Ensuring that all relevant personnel are trained in emergency response • Collaborating with local emergency services, environmental experts, and other relevant agencies to ensure a coordinated and effective response
2.3.d.	Preparation for Storm Events	Develop a plan to prevent stormwater pollution and comply with Appendix B, "NPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP)" of Chapter 55, Title 11 of the *Hawai'i Administrative Rules*. Before heavy rain or extreme weather events, enhanced safety measures will be implemented to prevent flooding, mitigate potential overflow, and control erosion, including the following: • Deploying stormwater BMPs, such as barriers, absorbents, or other containment measures • Converting and stabilizing materials within the cell • Implementing erosion control measures on loose soils and cinder around the containment area

3. Public Availability

Section 2.3.a. of Bill #120 requires detailed records, data, design and construction documents, operating plans and other pertinent documents be submitted to the County and made available to the public consistent with chapter 92F, *Hawai'i Revised Statutes*. In addition, Bill #120 requires that this information be presented in a public forum every 90 days for the duration of the right-of-entry agreement.

3.1. Website

A website currently communicates official information about the wildfire recovery. The website also included a copy of this report on its webpage for debris containment. Additionally, the website contains weekly data summaries that provide the public with updated information regarding the TDS site.

3.2. Public Meetings

On April 10, 2024, MCDEM Director Shayne Agawa attended the Lahaina community's weekly disaster recovery meeting (Figure 1). The meeting was held at the Lahaina Civic Center. Director Agawa made a presentation—available on the recovery website—summarizing the contents of this report. A video of this presentation, and the meeting more broadly, is available on YouTube.

The County of Maui will continue to provide quarterly updates at the Lahaina Civic Center to meet the requirements of Chapter 92F of the *Hawai'i Revised Statutes*.

Figure 1 — Lahaina Community Disaster Recovery Meeting

4. Work Documents

The work documents for the TDS site address preconstruction, noise, compliance with the National Historic Preservation Act, site design and construction, and operation.

4.1. Preconstruction Assessment

Prior to construction of the TDS site, existing soil was sampled at the site according to a pre-characterization soil sampling program dated December 20, 2023. For the evaluation, the TDS area was divided into five decision units, with soil samples taken from each unit and sent to a Eurofins Scientific laboratory in Seattle for analysis. Samples underwent analysis for 22 metals via Methods 6020B and 7471B, total petroleum hydrocarbon (TPH) diesel range organics and residual range organics via Method 8015D, and TPH gasoline range organics via Method 8260. All sampling adhered to DOH's technical guidance manual. Section 5.4 summarizes the results of this analysis, and Attachment 3 provides the full sampling report.

4.2. Nuisance Noise Assessment

In December 2023, a noise assessment was conducted in the vicinity of the TDS site. The assessment was a response to concerns about nighttime noise affecting surrounding residential areas during heavy equipment operations while the site was under construction. One particular concern was noise related to backup alarms on heavy equipment, such as bulldozers, excavators, and loaders. The assessment involved the installation of noise monitoring stations (Figure 2) at three locations: (1) at the TDS site entrance, above the recycling drop-off center (Station 1); (2) in the North Olowalu residential area (Station 2); and (3) near Olowalu general stores (Station 3).

Results from the assessment found noise readings ranging from 32.2 to 59.7 decibels. For reference, noises above 70 decibels are usually considered disturbing. Additionally, the Occupational Safety and Health Administration (OSHA) permissible exposure limit for noise is 90 A-weighted decibels for all workers for an 8-hour day.

Figure 2 — Noise Assessment Decibel Meter

Attachment 4 is a copy of the full noise assessment report.

4.3. Compliance with NHPA and NEPA

The National Historic Preservation Act (NHPA) and the National Environmental Policy Act (NEPA) are separate laws which require federal agencies to take into consideration potential impacts to historic properties and the human environment prior to taking actions. Consultations were made in planning, design, and construction of the TDS in accordance with these laws as described in this section.

On March 20, 2024, the State of Hawai'i Historic Preservation Division received a letter from the Federal Emergency Management Agency (FEMA) requesting the state historic preservation officer's (SHPO) concurrence with a FEMA finding. The finding—pursuant to Stipulation II.C.4 of the 2016 programmatic agreement (as extended in 2023)—is that there are no historic properties affected by the TDS site. The agreement is between FEMA, the Hawai'i SHPO, the Office of Hawai'ian Affairs, and the State of Hawai'i Department of Defense as part of the National Historic Preservation Act. The SHPO submitted a letter of concurrence on March 25, 2024, which is included as Attachment 5.

Additionally, to comply with Bill 120, FEMA proposed to install temporary groundwater detection monitoring wells at the TDS site. On March 25, 2024, the Hawai'i SHPO reviewed and provided concurrence with the 'U.S. Department of Homeland Security's Federal Emergency Management Agency's (FEMA) proposed Olowalu Temporary Debris Staging Site Water Monitoring Wells Project.'

Other consultations involved the State of Hawai'i Office of Planning and Sustainable Development related to compliance with the Coastal Zone Management Act (August 25, 2023), Hawai'i Department of

Health related to permitting considerations for the TDS (September 9, 2023), US EPA related to the applicability of the household waste exemption (November 3, 2023) and FEMA related to Executive Order 12898 – Environmental Justice review.

Documentation related to NEPA and NHPA compliance is included in Attachment 5.

4.4. Design and Construction

The West Maui TDS site (Figure 3) is underlain by a thick (80-mil or 0.08-inch), plastic liner that protects the soil, groundwater, and ocean. ECC developed the site so that ash and debris do not impact the surrounding area or marine environment. The design also protects against leachate or rainwater runoff. The County of Maui, DOH, and USEPA also contributed to the design to incorporate standards that are protective of human health and the environment.

Figure 3 — Sign at the entrance to the TDS site

Attachment 6 includes full design plans for the TDS site.

4.5. Operations

To ensure safe, efficient, and environmentally protective operations at the TDS site, ECC and Tetra Tech, Inc. (Tetra Tech), a sub-contractor to ECC, developed a manual for operations in January 2024. Attachment 7 is a copy of this manual.

4.5.1. Access and Traffic

ECC developed a traffic plan in coordination with the Hawai'i Department of Transportation and the Highways Division of the Maui County Department of Public Works. The plan's purpose is to mitigate disruption to local traffic and maximize safety precautions for highway users, particularly those on the Honoapi'ilani Highway. Attachment 8 is a copy of this plan, along with associated drawings and permits.

4.5.2. Stormwater Pollution Prevention

To protect the surrounding environment from stormwater runoff, Haley & Aldrich—on behalf of ECC—prepared a stormwater pollution prevention plan (SWPPP) for the TDS site in December 2023; Attachment 9 is a copy of this plan. The SWPPP corresponds to the requirements contained in Chapter 11-55 of the *Hawai'i Administrative Rules*. Although the TDS site is exempt from permitting for a national pollutant discharge elimination system—following an emergency proclamation regarding the Lahaina Wildfires—the SWPPP follows the format of such a permit and is intended to meet SWPPP requirements established in the *Hawai'i Administrative Rules*.

4.5.3. Emergency Responses

ECC is finalizing an emergency response plan (ERP), which is also under review by USACE. The ERP outlines procedures for unexpected leachate breaches or spills. It includes the practices listed in Table 1 regarding Section 2.3.c of Bill 120. Once it is finalized and accepted by USACE, the ERP will be available the webpage for debris containment.

- Alerting relevant authorities and response teams as soon as the spill is identified.
- Implementing barriers, absorbents, or other containment methods to minimize environmental impact.
- Conducting rapid assessment to understand potential environmental and health impacts.

- Monitoring for changes in water quality, soil contamination, and impacts on local wildlife and vegetation.
- Implementing cleanup procedures such as skimming, vacuuming, or neutralizing agents, as needed.
- Implementing immediate and long-term remediation to restore the affected area, such as soil remediation, water treatment, or habitat restoration, as needed.
- Keeping all stakeholders, including the public, informed about the response measures.
- Documenting the incident and the response actions taken in a report to the appropriate regulatory authorities as required by law.
- Updating the emergency-response plan after a review of the response based on insights gained.
- Ensuring that all relevant personnel are trained in emergency response.
- Collaborating with local emergency services, environmental experts, and other relevant agencies to ensure a coordinated and effective response.

The ERP will be posted on the website when the final version is accepted by USACE.

4.6. Other Considerations

The TDS site also required an archaeological treatment plan and protocol for biosecurity.

4.6.1. Archaeological Treatment

On October 2, 2023, FEMA developed an archaeological treatment plan (ATP) for the TDS site as part of environmental and historic preservation efforts; Attachment 10 is a copy of this plan. The ATP outlines a process to avoid, minimize, or mitigate anticipated adverse effects involved with activities for the TDS site while limiting unexpected and potentially extensive operational delays that could otherwise result without an established protocol. It provides a programmatic approach toward treatment measures for a historic property that may be encountered.

4.6.2. Biosecurity

TDS site contractors are following protocols outlined in an environmental compliance memorandum, which is included as Attachment 11 and dated February 25, 2019. The memorandum pertains to

biosecurity for Hawai‘i and establishes protocols, either required by statute or deemed appropriate, to prevent the introduction of harmful, invasive species into local natural areas and native habitats.

5. Monitoring and Data

In compliance with Bill 120, the TDS site is subject to monitoring of the air, personnel, leachate, soil, surface water, and groundwater. Monitoring applies to the entire life cycle of the project.

5.1. Air

Particulate matter in the air can penetrate the respiratory system, either causing or exacerbating respiratory health problems. (More information on the health effects of particulate matter is provided by the USEPA.) Considering the potential health effects, air monitoring for particulate matter is required at the TDS site.

Air monitoring is conducted pursuant to an air monitoring and surveillance plan (AMSP) prepared by ECC for USACE. The AMSP, dated January 2024, is included as Attachment 12. Per the AMSP, air monitors, known as Dustrak monitors, are placed in the vicinity of the TDS site (Figure 4). Tetra Tech, as a USACE contractor, maintains and operates these monitors according to the AMSP that includes all debris removal work zones as well as the TDS site itself.

Figure 4 — Approximate Locations of Air Monitors

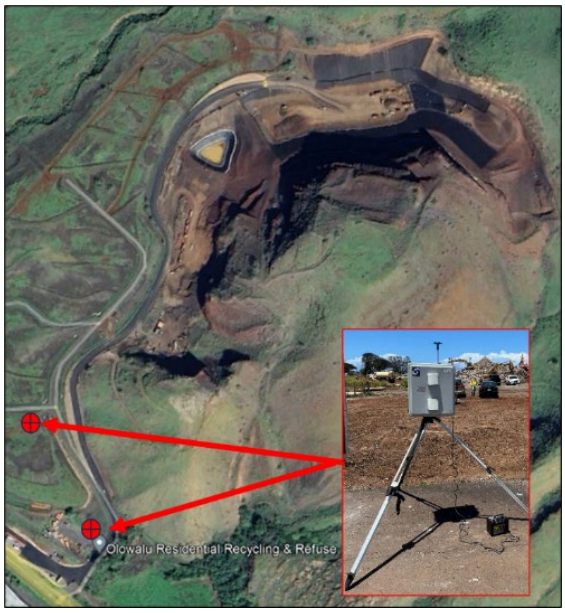


Table 2 summarizes the air monitoring readings collected to date at the TDS site:

Table 2 — Air Monitoring Measurements

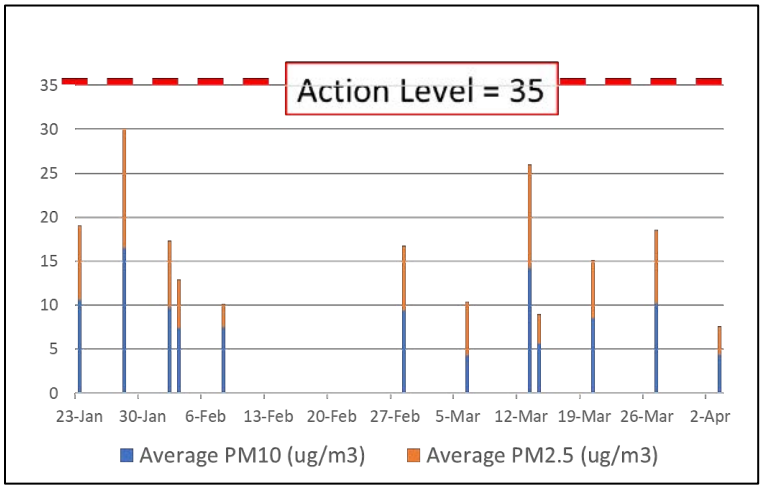
Date	Average PM_{10} (µg/m^3)	Average $PM_{2.5}$ (µg/m^3)	Monitor Identification Number
23-Jan-24	10.62	8.42	4, 5, 11
28-Jan-24	16.55	13.49	9, 10, 11
2-Feb-24	9.74	7.6	1, 10, 11
3-Feb-24	7.46	5.52	9
8-Feb-24	7.53	2.64	6, 11, 13
28-Feb-24	9.46	7.36	3, 4
6-Mar-24	4.33	6.06	3, 8
13-Mar-24	14.24	11.78	1, 4
14-Mar-24	5.75	3.24	1, 11
20-Mar-24	8.54	6.62	4, 10
27-Mar-24	10.24	8.35	5, 10
3-Apr-24	4.42	3.23	8, 14

Abbreviations:

- µg/m^3: micrograms per cubic meter
- PM_{10}: particulate matter with diameters of 10 microns or less
- $PM_{2.5}$: particulate matter with diameters of 2.5 microns or less

For the site, USACE established an acceptable threshold, or "action level," of 35 micrograms per cubic meter (µg/m^3) for particulate matter. If measurements show concentrations of particulate matter in the air above the action level, engineering or operating controls—such as water sprays and truck speed limits—are implemented to reduce the concentrations. Both Table 2 and Figure 5 show that there have been no measured readings of particulate matter above the action level.

Figure 5 — Air Monitoring Data for Particulate Matter Compared to Action Level



Abbreviations:

- µg/m^3: micrograms per cubic meter
- PM_{10}: particulate matter with diameters of 10 microns or less
- $PM_{2.5}$: particulate matter with diameters of 2.5 microns or less

USACE has also implemented wind restrictions on operations at the TDS site: 25 miles per hour as sustained for 15 minutes. If wind speeds are faster than this limit, large truck dumping is restricted. This restriction is done for safety reasons, as the trucks are subject to tipping over. Additionally—with respect to particulate matter—high, sustained winds may blow dust or debris; ECC prepares daily dust monitoring reports, included as Attachment 13, to document such circumstances. To date, wind-speed restrictions have occurred only on February 4, 2024, and April 4–6, 2024.

Lastly, DOH operates and maintains several other air monitoring stations at the locations shown in Figure 6. Specifically, DOH uses PurpleAir sensors. Data from these sensors are visualized on dashboards found on AirNow and the PurpleAir website.

Figure 6 — Locations of PurpleAir Sensors in Olowalu

Both the PurpleAir and Dustrak monitoring systems provide data for particulate matter with diameters of (1) 10 microns or less, and (2) 2.5 microns or less. The measurement units are expressed as µg/m^3, which characterizes the weight of the matter (in microns) in a defined area of space (one cubic meter).

For additional information, USACE and DOH prepared a fact sheet to present and explain air monitoring around the TDS site. The fact sheet, included as Attachment 14, is intended for the public. Additionally, DOH prepared and posted a different fact that explains air monitoring readings. This fact sheet is included as Attachment 15.

5.2. Personnel

Personnel monitoring adheres to the AMSP, which outlines air sampling procedures to assess the health and safety of ECC and contractor staff during activities that may disturb surface soil at the TDS site. The air sampling procedures apply to activities conducted by ECC and its subcontractors; they evaluate whether emission control measures are adequate to mitigate personal exposure risks. The monitoring results also provide insight regarding whether (1) site workers are using the appropriate personal protective equipment, (2) the dust emission controls are adequate to eliminate hazardous concentrations of airborne particulate matter in the worker's breathing zone, and (3) the off-site migration of dust is mitigated.

The AMSP identifies sample collection and analytical methods and associated quality assurance and quality control procedures for personnel air monitoring. Sample analytical results are evaluated against

OSHA's permissible exposure limits or threshold limit values established by the American Conference of Governmental Industrial Hygienists. The samples are analyzed by SGS Galson in Galson, New York.

ECC provides USACE with a daily air monitoring report for personnel at the TDS site. These reports are included in Attachment 16. To date, all air sampling results collected near excavator operators and laborers have not detected any violations of health-based criteria established in the AMSP (Attachment 12).

5.3. Leachate

Leachate is a liquid, usually rainwater, that percolates through ash and debris within a lined area of working boundaries. It differs from rainwater or surface water runoff, which is diverted around the TDS working area from the surrounding hills. Stormwater is intentionally diverted around the TDS debris to minimize leachate generation.

For the TDS site, although most leachate is either absorbed into the waste mass or evaporates into the air, some may pass through ash and debris. There, the water may collect contaminants in the ash and debris—including heavy metals (such as arsenic, lead, and cobalt)—as detected by DOH ash samples collected in Lahaina.

5.3.1. Leachate Basin

All leachate collected within the TDS area is drained by gravity to a low spot in the ash and debris storage area, called a sump, where it is drained via a drainpipe to a leachate basin (Figure 7). This basin is directly below the TDS working area; it is constructed with a thick, plastic liner underneath it to prevent any infiltration into underlying soil. It differs from the percolation basin, which is below the TDS site. This percolation basin is designed to receive rainwater runoff, which is then diverted around the TDS working area. The water in this second basin does not contact ash or debris. The purpose of the percolation basin is to allow rainwater runoff to percolate into the natural soils while avoiding the roadway and drainage channels.

Figure 7 — Leachate Basin Adjacent to Ash and Debris Storage Area

The leachate basin has a design capacity of 1.375 million gallons, which is more than is expected to be collected, even when accounting for a significant rain event in West Maui. As an example, during a rainstorm on January 9, 2024—during which over 3 inches of rain fell in less than 24 hours—the leachate basin successfully collected all the rainwater that fell directly into the empty TDS working area as well as the surrounding area (because construction was incomplete on the stormwater diversion canals). The leachate basin filled with approximately 500,000 gallons of rainwater, approximately one-third of its total holding capacity. A subsequent storm in early April – during which approximately 2 inches of rain fell in less than 24 hours – generated approximately 100,000 gallons of leachate.

For dust suppression, and to maintain capacity in the basin, leachate generated at the TDS site is being applied to debris via wet spray. During this process, most of the liquid evaporates. Personnel apply the spray throughout the workday, especially on drier days. As of early March, all the leachate that had accumulated during the January rain event had been recycled for dust control. The leachate basin has been mostly empty for the past several weeks—as shown in Table 3—so fresh water is being used for dust control.

Table 3 — Leachate Basin Level Monitoring Results

Date	Water Level	Estimated Gallons
11-Jan-24	One-third of the total basin capacity	480,000
15-Feb-24	5 feet	100,000
22-Feb-24	Less than 1 foot	2,000
14-Mar-24	Less than 1 foot	2,000
24-Mar-24	0 feet	0
15-Apr-24	5 feet	100,000

5.3.2. Leachate Sampling

Because of dry conditions in West Maui, ECC collected baseline samples of runoff water directly from the leachate basin 2 days after the significant storm event on January 9, 2024 (see Section 5.3.1). At the time of the storm, no ash or debris had been placed in the TDS working area, so the runoff represented typical precipitation runoff that is unaffected by waste; therefore, it was exemplary of what normally runs off the natural soils in the area.

Since the preliminary, baseline sampling event, USACE has sampled the leachate basin periodically. USACE plans to continue sampling leachate monthly directly from the leachate basin if sufficient leachate is available in the basin to conduct the analysis. To date, USACE's samples underwent analyses for the parameters shown in Table 4. Analyses were conducted wither by FQ Labs in Oahu or Eurofins Scientific in Seattle. The laboratories did not always analyze samples for all the parameters shown in the table, as additional parameters were added at the request of DOH and Maui County after the baseline sampling event. In addition, certain parameters were eliminated for analysis in subsequent sampling events if they were not detected in previous sampling events.

Table 4 — Leachate Sampling Analytical Results

Parameter	Method	11-Jan-24 (Baseline)	30-Jan-24 Sample	08-Feb-24 Sample	13-Feb-24 Sample	20-Feb-24 Sample	Unit
Aluminum		61.4	-	-	-	-	mg/L
Antimony		< 0.010		-	< 0.0011	< 0.16	mg/L
Arsenic		< 0.010	0.0027	-	0.0027	< 0.16	mg/L
Barium		0.251	0.04	-	0.025	2.6	mg/L
Beryllium		< 0.010	0.00048	-	< 0.0015	0.030	mg/L
Boron		0.107	-	-	-	-	mg/L
Cadmium		< 0.010	NS	-	< 0.0035	< 0.01	mg/L
Calcium		13.7	-	-	-	-	mg/L
Carbonate		NS	NS	1.2	5	-	mg/L
Chlorine	EPA 9250	NS	< 0.01	0.317	0.283	-	mg/L
Chromium		0.136	0.013	-	0.0075	0.56	mg/L
Cobalt		0.026	0.0033	-	0.0019	0.4	mg/L
COD	EPA 410.4	NS	NS	15.5	12	-	mg/L
Copper		0.042	0.007	-	0.0047	0.23	mg/L
Dioxins and Furans (2,3,7,8-TCDD)	8290A	NS	-	-	< 1.9	< 2.0	
Dissolved Oxygen		NS	NS	9.53	9.91	-	mg/L
Herbicides	8151A	NS	NS	NS	ND	ND	
Hexavalent Chromium	EPA 218.6	NS	0.185	NS	NS	-	mg/L
Iron		63.9	-	-	-	-	mg/L
Lead		< 0.010	0.00096	-	0.0042	< 0.071	mg/L
Magnesium		13.1	-	-	-	-	mg/L
Manganese		0.991	-	-	-	-	mg/L
Mercury	7470A	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.085	mg/L

Parameter	Method	11-Jan-24 (Baseline)	30-Jan-24 Sample	08-Feb-24 Sample	13-Feb-24 Sample	20-Feb-24 Sample	Unit
Molybdenum		< 0.010	0.0021	-	0.0024	< 0.02	mg/L
Nickel		0.078	0.011	-	0.0063	0.38	mg/L
Nitrates	EPA 353.2	NS	10.1	14.4	15	-	mg/L
Nitrites	EPA 353.2	NS	0.369	0.74	0.59	-	mg/L
Oil & Grease	EPA 1664A	< 5.0	3.9	< 5.0	9	-	mg/L
Pesticides	8081B	NS	-	-	NS	ND	µg/L
pH		NS	NS	8.21	8.88	-	
Potassium		< 5.00	-	-	-	-	mg/L
Selenium		< 0.010	< 0.005	-	< 0.025	< 0.16	mg/L
Silver		< 0.010	NS	-	< 0.008	< 0.04	mg/L
Sodium		70.3	-	-	-	-	mg/L
Strontium		0.226	-	--	-	-	mg/L
Sulfate	EPA 9038	NS	NS	107	121	-	mg/L
Sulfide	EPA 9034	NS	NS	0.057	0.058	-	mg/L
SVOCs	8270D/E	NS	-	-	NS	ND	µg/L
TDS	EPA 160.1	NS	NS	289	315	-	mg/L
Thallium		< 0.010	NS	-	NS	< 0.12	mg/L
TOC	EPA 415.3	NS	NS	7.96	9.16	-	mg/L
Total Alkalinity	EPA 310.2	NS	NS	69.9	74.1	-	mg/L
Total Nitrogen	EPA 351.2	NS	NS	15.9	16.5	-	mg/L
Total PCBs	8082A	NS	NS	ND	ND	ND	mg/L
TPH	EPA 1664A	< 5.0	NS	NS	NS	-	mg/L
TSS	SM 2450D	316	46	32	8	-	mg/L
Turbidity	EPA 180.1	650	103	NS	NS	-	NTU
Vanadium		0.13	0.019	-	0.013	0.92	mg/L

Parameter	Method	11-Jan-24 (Baseline)	30-Jan-24 Sample	08-Feb-24 Sample	13-Feb-24 Sample	20-Feb-24 Sample	Unit
VOCs	8260D	NS	ND	-	ND	ND	µg/L
Zinc		< 0.100	0.017	-	0.0052	0.49	mg/L

Note: Laboratory methods may vary.

Abbreviations and Symbols:

- <: less than
- µg/L: micrograms per liter
- COD: chemical oxygen demand
- EPA: United States Environmental Protection Agency
- mg/L: milligrams per liter
- ND: nondetect
- NS: not sampled
- NTU: nephelometric turbidity unit
- PCB: polychlorinated biphenyl
- SVOC: semivolatile organic compound
- TCDD: Tetrachlorodibenzo-P-dioxin
- TOC: total organic carbon
- TDS: total dissolved solids
- TPH: total petroleum hydrocarbons – oil
- TSS: total suspended solids
- VOC: volatile organic compound

Attachment 17 includes an overview of the leachate monitoring plan as well as the laboratory data reports regarding the samples analyzed in Table 4.

5.4. Soil

A preconstruction assessment (see Section 4.1) divided the TDS site into five decision units—or set areas—to analyze preexisting soil conditions for contaminants. Analytical results from this assessment, summarized in Table 5, will be used once debris has been removed from the site, as the soil will be sampled at similar locations for the analysis of constituents; the preassessment measurements will serve as a data comparison. Both the preconstruction and postconstruction data will be evaluated by the County of Maui and DOH to conclude whether any action is necessary prior to grading the TDS area.

Table 5 — Preconstruction Soil Sample Analysis Results

Constituent (mg/kg)	DU -1 (mg/kg)	DU- 2 (mg/kg)	DU- 3 (mg/kg)	DU- 4 (mg/kg)	DU- 5 (mg/kg)
Antimony	0.18	0.19	0.19	0.19	0.19
Arsenic	1.4	1.5	0.73	0.584	0.94
Barium	15	15	32	40	39
Beryllium	0.56	0.66	0.6	0.75	0.66
Cadmium	0.093	0.13	0.094	0.099	0.1
Chromium	0.81	1	0.84	0.53	7
Cobalt	1.1	1.4	1.2	1.2	3
Copper	1.6	4.9	1.6	0.86	4.9
Diesel Range Organics	32	33	28	30	16
Gasoline Range Organics	2.9	1.1	1.6	1.7	1.5
Lead	2.1	1	1.1	0.97	2.2
Mercury	0.010	0.011	0.0096	0.010	0.011
Molybdenum	0.51	0.54	0.5	0.67	0.9
Nickel	0.79	1	0.92	0.53	9
Oil Range Organics	18	26	30	29	30
Selenium	4.9	5.4	3.6	3.2	3.7
Silver	0.046	0.021	0.047	0.048	0.047
Thallium	0.14	0.15	0.14	0.14	0.14
Vanadium	1.2	1.4	1.2	1.0	8.5
Zinc	48	51	44	49	52

Abbreviations:

- DU: decision unit
- mg/kg: milligrams per kilogram

Attachment 3 includes a summary of the sampling approach as well as the detailed data results.

5.5. Surface Water

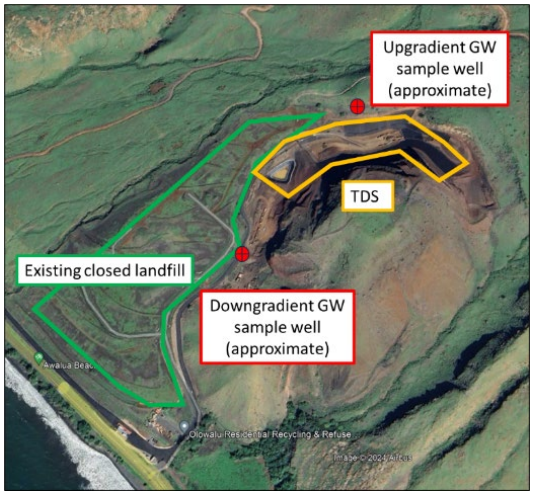
Because there have been no observable releases of leachate from the TDS site, there has been no need to sample surface water in creeks or drainage ditches adjacent to the TDS; however, DOH reviewed coastal water quality data from the University of Hawai'i and the Surfrider Foundation Maui. From the review, DOH affirms that these data show that there are no ash- or fire-related chemicals present in the surface water at concentrations that threaten human health.

DOH is initiating a water quality monitoring program that will cover nearshore monitoring and include eight locations from Olowalu to Kaanapali. Results will be available on the DOH website as well as the webpage for debris containment.

5.6. Groundwater

To comply with Bill 120, FEMA directed USACE to install temporary groundwater detection monitoring wells around the TDS site. In response, will be installing one upgradient (uphill) and one downgradient (downhill), as shown in Figure 8. USACE anticipates that, once monitoring wells are installed (which is expected in April 2024), samples will be collected quarterly (every 3 months) for laboratory analysis; this is a typical frequency for waste storage and disposal facilities. Results will be available on the webpage for debris containment.

Figure 8 — Proposed Locations of Groundwater Monitoring Wells



Abbreviations:

- GW: groundwater
- TDS: temporary debris storage site

ATTACHMENT 1. LICENSE AGREEMENT (COUNTY OF MAUI AND USACE)

LICENSE AGREEMENT – WEST MAUI TDS

This License Agreement ("Agreement") for a Temporary Debris Storage (TDS) Facility entered into on November 27, 2023 (hereafter called "Effective Date"), by and between the COUNTY OF MAUI, a political subdivision of the State of Hawaii, whose address is 200 South High Street, Wailuku, Hawaii 96793 (hereinafter called "LICENSOR"), and ECC Constructors LLC, whose mailing address at 1240 Bayshore Highway Suite 301, Burlingame, California 94010 (hereinafter called "ECC") (collectively, the "Parties").

RECITALS

A. **WHEREAS,** on August 8, 2023, several large wildfires burned in the County of Maui, including in the Kula, Olinda, and Lahaina areas ("Wildfires") that destroyed homes, burned hundreds of acres, caused catastrophic loss of lives, and forced closure of roads and schools, and forced evacuations in the Kula and Lahaina areas;

B. **WHEREAS,** pursuant to sections 127A-14 and 127A-16, Hawaii Revised Statutes (HRS), the Governor may determine whether an emergency or disaster has occurred, or whether there is an imminent danger or threat of an emergency or disaster and authorize actions under chapter 127A, HRS, and the expenditure of funds thereunder;

C. **WHEREAS,** pursuant to Section 127A-13(a)(3), HRS, the Governor may suspend any law that impedes or tends to impede or is detrimental to the expeditious and efficient execution of, or that conflicts with, emergency functions, including laws specifically made applicable to emergency personnel;

D. **WHEREAS,** pursuant to Section 127A-13(a)(2), HRS, the Governor may relieve hardships and inequities, or obstructions to the public health, safety, and welfare found by the Governor to exist in the laws and to result from the operation of federal programs or measures taken under chapter 127A, HRS, by suspending laws, in whole or in part, or by alleviating the provisions of laws on such terms and conditions as the Governor may impose;

E. **WHEREAS,** Section 127A-9, HRS, provides immunity from civil liability for certain entities and individuals while engaging in emergency management functions, including volunteers whose services are accepted by authorized persons, except in cases of willful misconduct, gross negligence, or recklessness;

F. **WHEREAS,** on August 8, 2023, due to the Wildfires, Richard T. Bissen, the Mayor of Maui County, issued an Emergency Proclamation in order to promote and protect the public health, safety, and welfare of the residents and visitors of the County of Maui;

G. **WHEREAS,** on August 8, 2023, due to the Wildfires, Acting Governor of the State of Hawaii, Sylvia Luke, issued an Emergency Proclamation and declared a state of emergency disaster pursuant to section 127A-14 HRS to exist in the County of Maui due to the Wildfires, thereby invoking the emergency measures noted above;

H. **WHEREAS,** on August 9, 2023, after the Wildfires had spread considerably and burned a number of structures in and around Lahaina, Acting Governor Sylvia Luke issued the Second Proclamation Relating to Wildfires, which extended the emergency declaration to the entire State of Hawaii;

I. **WHEREAS,** on August 10, 2023, Federal Emergency Management Agency ("FEMA"), announced that federal disaster assistance has been made available to the State of Hawaii to supplement recovery efforts in the areas affected by the Wildfires;

J. **WHEREAS,** on August 10, 2023, the President of the United States, Joseph R. Biden, Jr., approved a Major Disaster Declaration for Hawaii due to the Wildfires;

K. **WHEREAS,** on August 21, 2023, President Biden, alongside FEMA Administrator, Deanne Criswell, appointed FEMA Region 9 Administrator Bob Fenton as the Federal government's "Chief Federal Response Coordinator" for Maui. In this role, Fenton is overseeing the federal government's long-term recovery work on site in the County of Maui. President Biden directed Chief Federal Response Coordinator Fenton to ensure that every federal asset is provided to help the community rebuild as fast as possible in Maui;

L. **WHEREAS,** on August 29, 2023, Governor Josh Green, M.D., announced that the State of Hawaii and Maui County requested federal assistance and FEMA mission assigned the U.S. Army Corps of Engineers ("USACE") to lead efforts to remove fire-damaged debris from areas across Maui affected by the catastrophic Wildfires in early August;

M. **WHEREAS,** on November 6, 2023, Governor Josh Green, M.D., issued the Eighth Proclamation Relating to the Wildfires, recognizing that the need for emergency services continued and invoked additional emergency provisions;

N. **WHEREAS,** with the emergency authorizations noted above, the County of Maui is in the process of developing a permanent disposal facility adjacent to the Temporary Debris Storage ("TDS") site that anticipates the long-term disposition of debris from the Maui Wildfires. ECC's work pursuant to the FEMA mission assignment is limited to temporary debris work and not

long-term disposal. Central Maui Landfill ("CML") is the primary waste disposal site for the entire island; however, the CML has limited airspace capacity to accept ash and incidental debris from the cleanup associated with the Wildfires. Additionally, debris coming from West Maui is located over 30 miles away from the CML, which presents environmental and logistical challenges in transporting debris from the damage due to the Wildfires;

O. **WHEREAS,** by letter dated September 20, 2023, from Mayor Bissen to Governor Green, the County of Maui made a formal request to the Governor to (i) set-aside the subject area situated near the old Olowalu Landfill, Lahaina, Maui, HI 96761, referenced as: Tax Map Key (TMK) (2) 4-8-003:007 (aka Parcel ID 480030070000 or "Parcel 007") to the County of Maui, and (ii) to extend the Governor's Emergency Proclamation so that it would include the development of a disposal site at the Olowalu facilities (i.e., West Maui TDS) and to create a memorial for those lost in the Wildfires;

P. **WHEREAS**, on October 6, 2023, in response to the events noted in Recital O, the State of Hawaii issued to the County of Maui an immediate "right of entry" ("ROE") authorizing the County of Maui and the USACE as its partner agency in the remediation of the Wildfires, to conduct land surveys and due diligence studies in order to assess the suitability of a proposed TDS facility. The plan at that time was to develop approximately 12.3 acres to act as a TDS for the debris and waste generated by the Wildfires ("Debris"). The proposed TDS facility was to be located immediately east of the closed Olowalu Landfill and approximately 1,000 feet mauka (north) of Honoapiilani Highway. The TDS site is proposed to be located within the footprint of a former cinder quarry, with the site to be excavated and graded to develop floor and slope grades suitable for installation of a proposed liner system and related improvements to temporarily contain Debris pending its relocation to a permanent disposal facility ("TDS Facility");

Q. **WHEREAS,** the total area required to develop the TDS Facility and a permanent disposal facility is approximately 19.4 acres. Most of the footprint for the proposed TDS Facility will be located in Parcel 007, which is owned by the State of Hawaii. A small portion of the TDS Facility, at its northerly end, will be located on property parcel TMK: 4-8-003:039 (aka Parcel ID 480030390000 or "Parcel 039"), which is the location of the closed Olowalu Landfill that is property owned by the State of Hawaii as shown in Exhibit A. Control over Parcel 039 was previously transferred by the State of Hawaii to Maui County in 1979, and it is currently under County management;

R. **WHEREAS,** Parcel 039 was set-aside to the County of Maui in 1979 via Executive Order No. 2972 for Sanitary Landfill Site purposes; and that

transfer includes a 30-foot-wide perpetual access easement in favor of the State of Hawaii (referred to as "Easement A", and illustrated in CSF 16,281, a copy of which is attached hereto as **Exhibit C** Easement A, which connects the Honoapiilani Highway, along the shoreline, over a portion of former railroad easement encumbering lands disposed to Pioneer Mill. Co. via Grant No.11073, to the upper elevations of Parcel 039 leading toward the State's west Maui Forest Reserve;

S. **WHEREAS,** on October 27, 2023, under a separate recommendation by the Board of Directors of the Hawaii Department of Land and Natural Resources ("DLNR"), its staff sought approval to set aside a 1-acre vacant and unencumbered portion of "Parcel 008" to the County;

T. **WHEREAS,** the State of Hawaii, County of Maui, USACE and FEMA, recognizing the limited options for managing the Debris arising from the emergency remediation of the areas affected by the Wildfires, are all in favor of using the Property as the location for the temporary deposit and the final disposition of the resulting Debris. The Division of Forestry and Wildlife of the DLNR was consulted about locating the TDS Facility at the Olowalu Cinder Quarry located at the Intersection of Honoapiilani Highway and Olowalu Village Road location; it reported that it had no objections to the transfer of title to Parcel 007 from the State of Hawaii to the County of Maui for that purpose;

U. **WHEREAS,** the Hawaii Department of Health ("HDOH") is the agency that exercises jurisdiction over the permitting and closure requirements for the proposed TDS Facility, including any Special Land Use Permitting or District Boundary Amendment, Environmental Assessment ("EA") / Environmental Impact Statement ("EIS") and granting the County of Maui any use and/or entry rights to State owned properties;

V. **WHEREAS,** on October 27, 2023, after considering the potential effects of the proposed disposition of Parcel 007 as provided by Chapter 343, HRS, and Chapter 11-200.1-15, 11-200.1-16, Hawaii Administrative Rules ("HAR"), the DLNR Board declared that the traffic and installation of the proposed TDS Facility will have minimal or no significant effect on the environment and is therefore exempt from the preparation of an environmental assessment as a "de minimis" activity;

W. **WHEREAS,** on October 27, 2023, the DLNR Board authorized the issuance of an immediate management right-of-entry permit to Parcel 38 to the County of Maui, covering the TDS Facility under the terms and conditions cited above, which are by this reference incorporated herein;

X. **WHEREAS,** the County of Maui needs to establish the TDS Facility to remediate the disaster areas, and cause the removal of ash and Debris by locating these at a temporary storage facility while a permanent disposal facility for such Debris is completed, and the County acknowledges that such Debris may include hazardous materials and waste;

Y. **WHEREAS,** pursuant to FEMA mission assignment, USACE will be assisting the State of Hawaii and County of Maui in its emergency measures to manage the Debris by causing the TDS Facility to be constructed and operated; in furtherance of that need, USACE has issued to ECC a Task Order No. W9128A-24-F-0001 ("ECC Task Order") under USACE Prime Contract No. W912EK-22-D-0004 ("ECC Prime Contract") directing ECC to design, construct and operate the TDS Facility to allow Maui County to temporarily store the Debris arising from the cleanup of fire impacted areas in Maui County that were damaged by the Wildfires.

Z. **WHEREAS,** the Task Order awarded by USACE to ECC requires the design, construction, operation and maintenance of the TDS Facility, and then for ECC to facilitate the closure of the TDS Facility, subject to the completion of a final disposal site for the Debris Materials, which is to be designed and established by Maui County. Subject Task Order requires ECC to warrant its work. The TDS debris will then be relocated to the County of Maui final disposal site and the TDS closed.

AA. WHEREAS, the ECC Task Order scope provides that the design and construction of the TDS Facility will be subject to approval by USACE and other government agencies, and will be set at a location designated by USACE, FEMA, State of Hawaii, and County of Maui.

BB. **WHEREAS,** for ECC to so pursue the design, construction, operation, and maintenance of the TDS Facilities, it will require confirmation that its work is being performed under the Stafford Act and that a license by the County of Maui is issued to USACE or ECC over the Property and certain access ways in order to implement the prescribed emergency measures needed to manage the transport and disposition of the Debris, and to design, construct and operate the TDS Facilities.

NOW, THEREFORE, the parties desire to memorialize this mutual understanding and agreement to implement the County's emergency response to the Wildfires by having the County grant a license to USACE and ECC (and its subcontractors, suppliers and agents) so that the TDS Facility can be completed at the site selected by the County for the installation of the TDS Facility, as noted in the following terms and conditions for the design, construction, operation and maintenance of the TDS Facility and its surrender.

1. **Definitions**

(a) "Temporary Disposal Site" or "**TDS Facility**" shall mean the site designated by the County for the temporary storage of Debris Materials arising from the cleanup of the areas damaged by the Wildfires, as such area is defined under **Exhibit A**, inclusive of any access rights necessary to ensure access to the TDS Facility. The parties acknowledge that the Debris Materials that are stored at the TDS Facility will later be relocated to a final disposal facility, as designated and constructed by Maui County.

(b) "Debris" or "Debris Materials" shall mean and include all manner of waste and debris from the areas in Maui County damaged by the Wildfires, including, e.g., building materials, ash, potentially contaminated soil, metals, white goods/appliances, concrete from structural foundations or basements, burned registered vehicles, and asbestos-containing materials.

(c) "Wildfires" is defined above and shall mean the wildfires burning in the County of Maui on and after August 8, 2023, including in Kula, and Lahaina areas that were the subject of the emergency measures recited above.

(d) "Maui Wildfire Mission Assignments" shall mean required work assigned to ECC under the ECC Prime Contract for clearing and removing Debris.

(e) "Law Enforcement" shall mean the Maui Police and other law enforcement with jurisdiction.

(f) "**Licensed Area**" shall mean the real property that is the subject of this License Agreement and that will be developed into the TDS Facility, which is to be located on a portion of the Property consisting of approximately 10 acres, as depicted on **EXHIBIT A** attached hereto and by this reference made a part hereof.

2. Grant of License

LICENSOR grants to ECC and the ECC's Representatives (defined below) a temporary, personal, and exclusive license ("License") to use the Licensed Area for the completion of the TDS Facility and its operation and maintenance during the term of this License, subject to the terms and conditions set forth in this License Agreement (collectively, all such uses are "Permitted Uses").

(a) "Restricting Access." While conducting any Permitted Uses in the Licensed Areas, ECC may restrict access to portions of the Licensed Area to protect the health and safety of the public, and control access to parties permitted to use the TDS Facilities and to ensure compliance with the then existing legal standards for the use of the TDS Facility. LICENSOR shall cooperate with such restrictions to the extent they are reasonable in scope and duration. Despite granting ECC an exclusive license to use the Licensed Areas, LICENSOR reserves a central egress and access into the Licensed Area to allow the Maui Police and other Law Enforcement to have access and egress in case of emergency, subject to any health and safety restrictions required by law.

3. Use

(a) ECC and its employees, contractors, agents and representatives ("ECC's Representatives") may enter and use the Licensed Area for the Permitted Uses, subject to ECC's control ("ECC's Activities").

(b) Under the direction and approval of USACE, ECC will design, construct and operate the TDS Facility for the Debris so that it can be temporarily stored (until completion of a permanent disposal facility that will be constructed by Maui County to accept the Debris in the TDS). ECC agrees to install and maintain surface water controls to include installing erosion control materials to include as necessary certified weed free straw waddle, silt fencing, straw and other approved best management practices (BMPs) to prevent sediment migration, soil reeling or other impacts from non-vegetative surfaces until the submittal of the termination of site use.

(c) The State of Hawaii will be the designated generator of the Debris (and ECC shall not at any time be designated as the generator of the Debris). Subject to the foregoing, upon completion of the permanent disposal facility by Maui County or others, and with the explicit approval of USACE, the County and other agencies, and upon their direction, ECC will relocate the Debris from the TDS Facility to the permanent disposal facility established by Maui County.

(d) Nothing under this Agreement is intended to impose an obligation on ECC to pursue work at the TDS Facility that is not part of the ECC Task Order, nor does it create any obligation for ECC to complete or operate the TDS Facility if it is directed by USACE to cease such ECC Activities. If at any time ECC's License is terminated, then ECC shall be relieved of any further obligation to pursue the ECC Activities to complete the TDS Facility or to manage and operate the TDS Facility, or to move the Debris to a permanent facility. The parties shall reasonably cooperate to ensure that any transition in the completion of the design, construction, operation or surrender of the TDS Facility is pursued in a constructive and cooperative fashion to preserve public health and safety, as directed by the ECC Task Order (as it may be amended by USACE), HDOH and other government agencies with jurisdiction.

(e) ECC shall have no liability nor be exposed to any claims, causes of action, proceedings, liabilities, damages, losses or costs (including, e.g., court costs or attorney's fees), (collectively "Claims") from the County arising from the design, construction, operation, or use of the Licensed Area (or of the Property) under the License, except to the extent such Claims are proven to be the result of negligence, recklessness or willful misconduct by ECC or ECC's Representatives. Moreover, if ECC undertakes these ECC Activities, then ECC shall not be responsible for any Claims from the County arising from its operations in relocating the Debris to a permanent storage facility, except to the extent of the negligence, recklessness, or willful misconduct of ECC or the ECC Representatives.

4. Costs

(a) License Fee. There shall be no charge or license fee for its use of the Licensed Area.

(b) Water. LICENSOR agrees to allow access to any onsite water or permit ECC, at its option, to develop water on site, as required or desired at the TDS Facility. ECC will have no obligation to provide such facilities or to pay LICENSOR for any costs associated with ECC's usage of water.

5. Term

(a) This License Agreement shall be for an initial term of twelve (12) months, commencing on November 24, 2023 and ending on November 24, 2024 (herein after called "Initial Term"), except that this License Agreement can be sooner terminated (i) for breach (which shall be established if a Party's default is not cured within thirty (30) days of notice), or (ii) for convenience, except that any termination for convenience must provide for a reasonable period of time for surrender of the Licensed Areas as contemplated by this Agreement (and in any event, County shall give at least ninety (90) day's prior written notice to ECC for its termination for convenience).

(b) Absent a termination under subsection (a), above, upon expiration of the Initial Term, and absent a breach by a Party, this License Agreement shall automatically renew for a rolling extension of ninety (90) days so that the County and ECC will have at least 90 days' prior notice of the termination of the License.

6. Conditions

(a) LICENSOR represents and warrants to ECC and its agents, contractors, successors and assigns, that (i) LICENSOR is the owner of the Licensed Area and the Property, or otherwise has full rights and authority to provide the full scope of the License granted by this Agreement; (ii) LICENSOR has full authority to enter into this Agreement without the need for any other authorization or action and will be bound by its provisions; (iii) ECC is not required to obtain any land use approvals, grading permits, or other construction related permits, from the County of Maui for it to exercise the Permitted Uses or pursue the ECC Activities, nor is it obligated to obtain any business licenses, permits or approvals from the County of Maui in order to pursue the ECC Activities in or about the Licensed Areas; (iv) LICENSOR has not granted any other person or party any rights of occupancy or use of the Property that will impair or conflict with the rights granted to ECC under the License, nor will it do so during the term of this License without ECC's approval. LICENSOR acknowledges that the Licensed Area is adjacent to a closed municipal landfill and that residual levels of waste, including the possibility of hazardous materials may exist in or near to the Licensed Area. Before constructing the TDS Facility, LICENSOR or its designee and ECC will do a walk-through inspection to document pre-existing conditions, and either party may pursue a Phase I or Phase II investigation of the Licensed Area to determine its condition and so establish the "baseline condition" of the Licensed Area. LICENSOR shall advise ECC of any known defects in the Property that may affect ECC Activities. Where appropriate, ECC will also call Hawaii 811 (811) via Underground

Service Alert to obtain information on what utilities exist beneath the ground, in order to prevent damage to underground utility lines within the Licensed Area. ECC may request that LICENSOR perform alterations, modifications or repairs if and when caused by the activities of LICENSOR or any other licensee in or about the Licensed Area. However, ECC understands and agrees that LICENSOR shall not be obligated to make any alterations, modifications, repairs or improvements to the Licensed Area, and LICENSOR will not have such an obligation, unless: (i) damage or impairment was caused by LICENSOR or its agents, successors or assigns: (ii) it is required as part of the installation of the permanent disposal facility. ECC will perform pre-site sampling activities before Debris is placed in the TDS Facility and accept as-is condition, unless written notification is received prior to construction. LICENSOR acknowledges that the acceptance and management of the Debris is inherently hazardous and that ECC's operation of the TDS Facility is for the benefit of the Maui community and is being authorized through the emergency powers stated above. As such, LICENSOR confirms and warrants to ECC that it shall not be exposed to any Claims arising out of any failure of ECC to obtain permits or approvals from the County prior to pursuing or implementing the ECC Activities.

(b) The use of the Licensed Area is for the purpose of the Permitted Uses.

(c) ECC shall have no liability under any Claim (including any Claim by the County) arising out to the condition of the Licensed Area after termination or expiration of the License unless the Claim is shown to have been caused by the negligence, recklessness, or willful misconduct of ECC or ECC's Representatives. Within a reasonable time prior to the surrender by ECC of the Licensed Area, LICENSOR, or its designee and ECC will do a walk-through inspection of the Licensed Area in order to document the condition of the Licensed Area. Such a walk-through inspection shall not be construed to affect or limit the provisions of Section 3 or this Section 6, that expressly limit ECC's liability.

(d) The closure of the TDS Facility will require the eventual relocation to a permanent disposal facility of the Debris that is temporarily stored at the TDS Facility. Such a permanent disposal facility will be designed and constructed by the County of Maui and is outside of the scope of ECC's work pursuant the FEMA mission assignment and will be the responsibility of the County of Maui.

(e) County acknowledges that ECC will excavate and manage approximately 100,000 (one hundred thousand) cubic yards of existing material in the Licensed Area, and perform asphalt paving or other improvements of the existing site access road as needed by ECC for the safe and efficient construction and operations of the TDS; this is to prepare the Licensed Area to serve as a TDS. The County accepts that the excavation and road improvements will be a permanent change to the Licensed Area and ECC will have no obligation to restore the Licensed Area to its original state immediately prior to the grant of this License. ECC will transfer the Debris to the County's permanent disposal site, remove the TDS liner and reduce to manageable sizes for disposal, remove any construction equipment and incidental debris, and conduct post-site sampling activities to ensure the site is restored to at least the background levels identified in the pre-site sampling activities. If USACE changes the Task Order so that ECC is no longer tasked to pursue the transfer of the Debris to the permanent disposal facility,

ECC will surrender the Licensed Area with the Debris stored on the TDS as required by the Task Order. ECC will still remove any construction equipment and incidental debris outside of the TDS and conduct post-site sampling activities to ensure the non TDS areas of the Licensed Area are restored to at least the background levels identified in the pre-site sampling activities.

(f) ECC agrees to maintain the work environment at the TDS Facility in compliance with all applicable employee health and safety laws.

(g) ECC shall keep the Property free and clear of all mechanic's liens arising, or alleged to arise, in connection with any work performed, labor or materials supplied or delivered, or similar activities performed by ECC or at ECC's request or for ECC's benefit. If any mechanic's liens are placed on the Property in connection with ECC's use or activities, ECC shall diligently pursue all necessary actions to remove such liens from title, either by payment or by recording a lien release bond in the manner specified in the state of Hawaii or any successor statute.

(h) *Contact Information.* LICENSOR will provide ECC with contact information of staff contacts in calling order to commence an emergency use and staff contacts to be used during emergency use in **EXHIBIT B**. This attachment shall be updated as needed to reflect current names and contact information.

7. Indemnities

(a) LICENSOR shall be responsible for any Claims arising from a breach by LICENSOR of its representations and warranties in this Agreement.

(b) ECC shall be responsible for any Claims arising from (i) the negligence or willful misconduct of ECC or any ECC Representatives in causing personal injury or death, or causing damage to property (ii) from a breach of any representations or warranties made by ECC in this Agreement, and (iii) for any other Claim relating to the use of the Licensed Areas by ECC or its agents or sublicenses, if it was due to the negligence, recklessness or willful misconduct of ECC or an ECC Representative.

8. Insurance

ECC and any subcontractors for ECC shall obtain and maintain, at their own cost and expense, commercial general liability insurance with limits not less than $1,000,000 per occurrence and $2,000,000 general aggregate limit, for injury to or death of one or more persons in any one occurrence and $500,000 for damage or destruction to property in any one occurrence; or $2,000,000 minimum combined single limit coverage for bodily injury and property damage; $2,000,000 in the aggregate and must provide a "Certificate of Insurance" including LICENSOR as "additional insured" to the extent of the risks and liabilities expressly assumed herein.

9. Governing Law

This License Agreement shall in all respects be interpreted, enforced, and governed by and under the laws of the State of Hawaii.

10. Assignment

This License Agreement is personal to ECC, and ECC shall not assign, transfer, convey or encumber the license and other rights herein granted or any portion thereof or interest herein except to the extent authorized by the terms of this Agreement.

11. Attorneys' Fees

Should either party bring an action against the other party, by reason of or alleging the failure of the other party with respect to any or all of its obligations hereunder, whether for declaratory or other relief, and including any appeal thereof, then the party which prevails in such action shall be entitled to recover its reasonable attorneys' fees and expenses related to such action, in addition to all other recovery or relief, from the non-prevailing party.

12. Taxes

ECC shall have no responsibility to pay any County taxes, fees or assessments of any kind or nature based on its use of the Licensed Area, nor shall it be obligated to pay any such taxes, fees or impositions for the use of any access avenues to the Licensed Area from a public road.

13. Responsibilities Regarding Pre-existing Condition of the Licensed Area

(a) ECC shall not have the responsibility nor pay for any investigations or remediation measures required by government entities having jurisdiction with respect to the existence of Hazardous Materials on the Licensed Area that are shown to exist prior to the granting of this License.

14. Access

(a) LICENSOR and LICENSOR's contractor and consultants shall have the right to enter the Licensed Area at any time, in the case of an emergency, and otherwise at reasonable times after reasonable notice, for the purpose of inspecting the condition of the Licensed Area and for verifying compliance by ECC with its obligations contained within this License Agreement. The cost of any such inspections shall be paid by LICENSOR.

15. No Waiver

Any waiver with respect to any provision of this License Agreement shall not be effective unless in writing and signed by the party against whom it is asserted and shall be limited to the instance and circumstances of that specific waiver. No such waiver shall be construed as a waiver of the future application of that provision (unless the waiver explicitly says this) nor shall it limit the waiving party's rights or remedies for a subsequent breach or failure of the same term or condition.

16. Authority

Each party to this License Agreement warrants to the other that it has the right and authority to enter into and to consummate this License Agreement and all related documents.

17. Entire Agreement

This License Agreement supersedes all previous oral and written agreements representations by or on behalf of the parties and constitutes the entire agreement with respect to the subject matter hereof. This License Agreement may not be amended except by written agreement executed by both parties.

18. Counterparts and Electronic Signatures

This License Agreement may be executed in identical counterpart copies, each be an original, but all of which taken together shall constitute one and the same agreement. Parties agree that they may utilize and shall be bound by their electronic signatures, pursuant to Chapter 489E, Hawaii Revised Statutes.

[Signature Page Follows]

LICENSE AGREEMENT – WEST MAUI TDS

IN WITNESS WHEREOF, the Parties have executed this License Agreement set forth below each signature, effective upon the Effective Date first written above.

LICENSOR:

COUNTY OF MAUI

By: _____
RICHARD T. BISSEN, JR.
Its Mayor

Date: 11/24/23

APPROVAL RECOMMENDED:

_____
Shayne Agawa
Director, Department of Environmental Management

APPROVED AS TO FORM
AND LEGALITY:

/s/ Michael J. Hopper
Michael J. Hopper
Deputy Corporation Counsel

ECC CONSTRUCTORS LLC

August Ochabauer

(Signature)

August Ochabauer
Vice President

EXHIBIT A

TDS FACILITY SITE PARCEL MAP

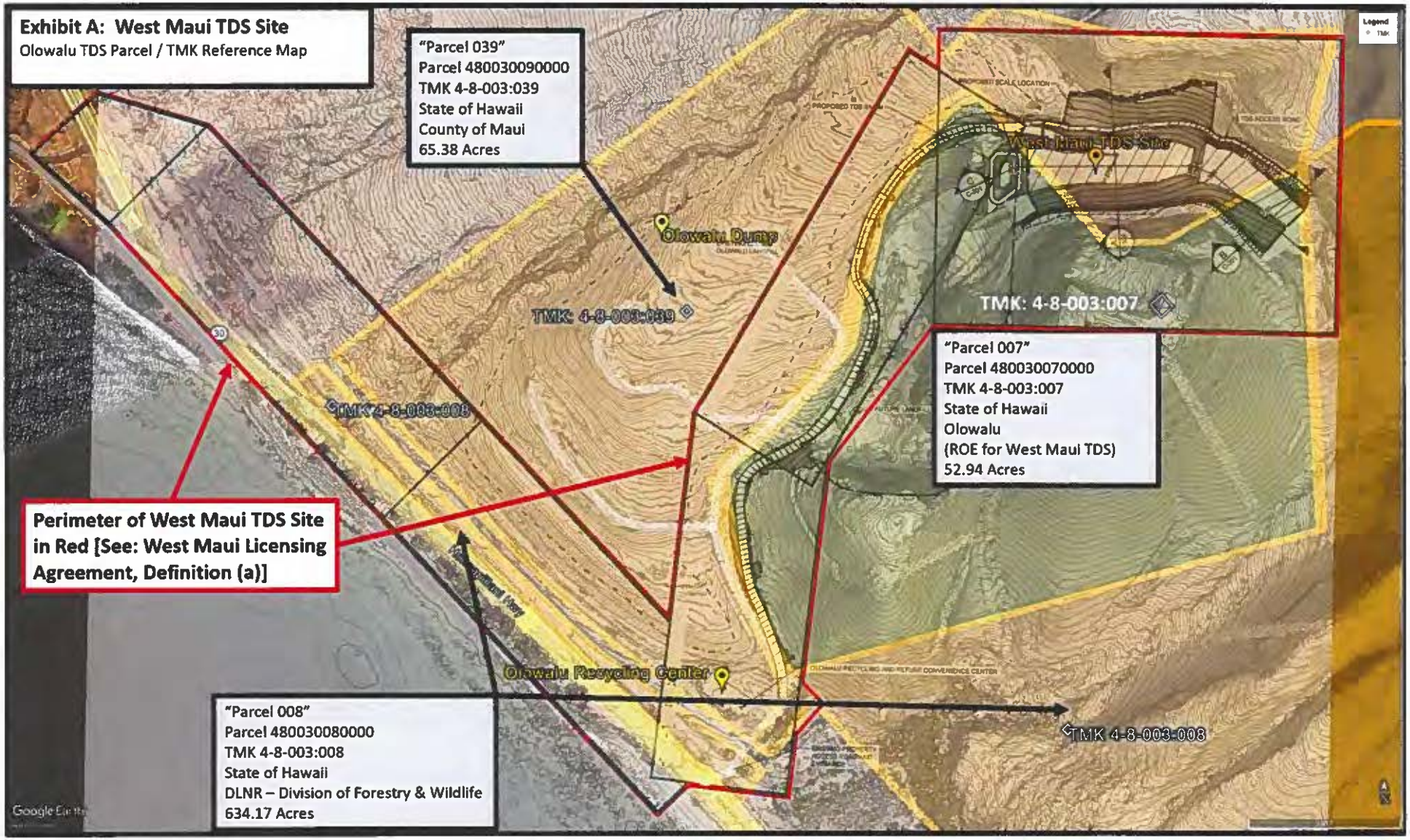


Exhibit A: West Maui TDS Site
Olowalu TDS Parcel / TMK Reference Map
"Parcel 039"
Parcel 480030090000
TMK 4-8-003:039
State of Hawaii
County of Maui
65.38 Acres
Olowalu Dump
TMK: 4-8-003:039
West Maui TDS Site
TMK: 4-8-003:007
"Parcel 007"
Parcel 480030070000
TMK 4-8-003:007
State of Hawaii
Olowalu
(ROE for West Maui TDS)
52.94 Acres
TMK 4-8-003:008
Perimeter of West Maui TDS Site in Red [See: West Maui Licensing Agreement, Definition (a)]
Olowalu Recycling Center
TMK 4-8-003:008
"Parcel 008"
Parcel 480030080000
TMK 4-8-003:008
State of Hawaii
DLNR – Division of Forestry & Wildlife
634.17 Acres

EXHIBIT B

CONTACTS

ECC Constructors LLC ("ECC") listing of contacts in calling order to commence emergency use:

ECC Constructors LLC
1240 Bayshore Highway
Suite 301
Burlingame, California 94010

Points of Contact:

Primary Contact:
Name: Kevin McCaskill
Tel: 808-479-0665

Email: kmccaskill@ecc.net

Alternative Contact:
Name: Matt Long
Tel: 774-244-7102
Email: mlong@ecc.net

County of Maui contacts in calling order to comment in emergency ("LICENSOR"):

County of Maui
200 South High Street
Wailuku, Hawaii 96793

Points of Contact:

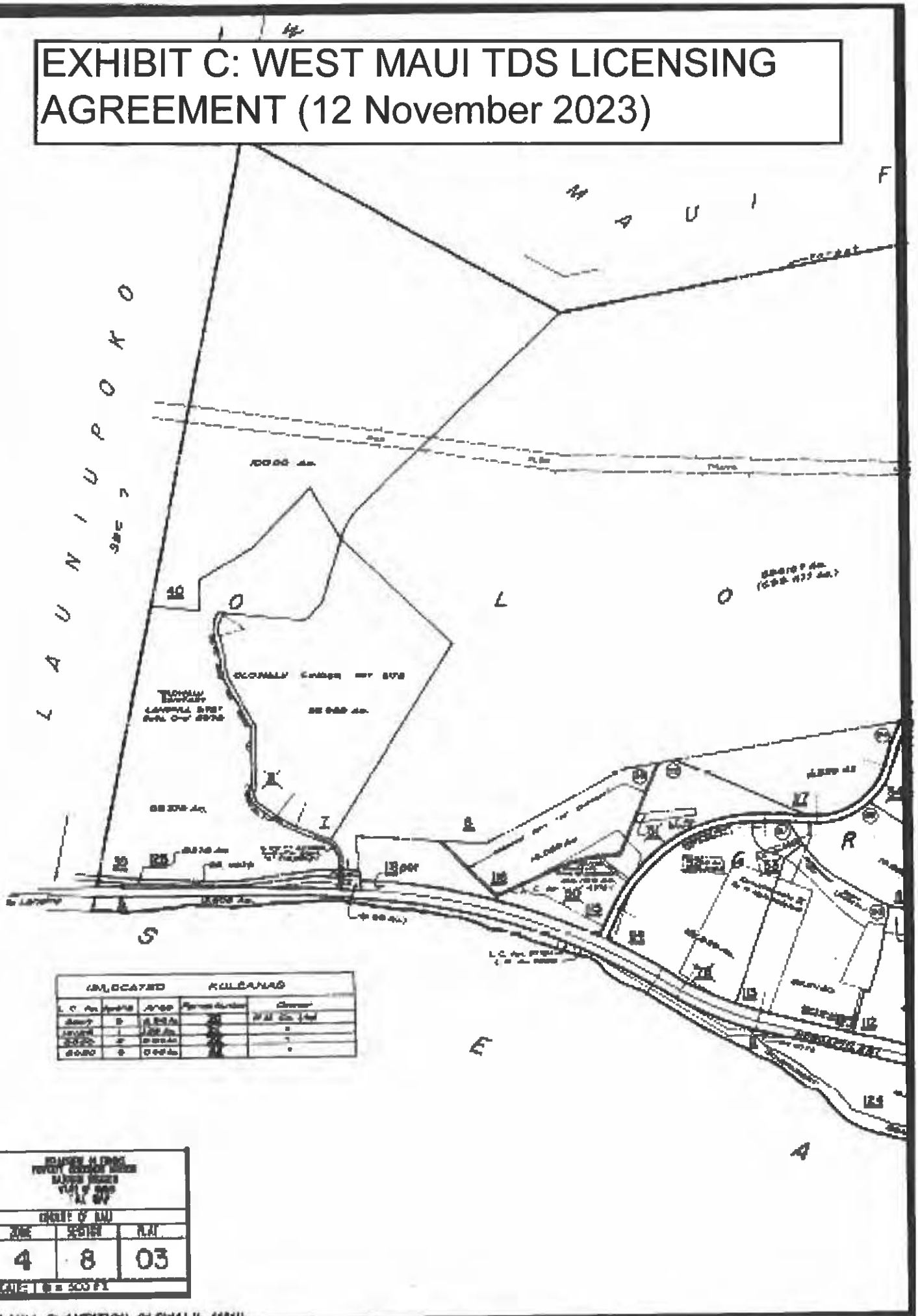
Primary Contact
Name: Sage Kiyonaga
Tel: 808-270-7941

Email:sage.kiyonaga@co.maui.hi.us

Alternative Contact
Name: Michael Kehano
Tel: 808-463-3873

Email: michael.kehano@co.maui.hi.us

EXHIBIT C: WEST MAUI TDS LICENSING AGREEMENT (12 November 2023)



ATTACHMENT 2. COUNTY OF MAUI ORDINANCE 5596 (BILL 120)

ORDINANCE NO. 5596
Effective Date: January 21, 2024

ORDINANCE NO. 5596

BILL NO. 120, CD1, FD2 (2023)

A BILL FOR AN ORDINANCE AUTHORIZING THE MAYOR OF THE COUNTY OF MAUI TO ENTER INTO AN INTERGOVERNMENTAL AGREEMENT WITH THE STATE OF HAWAI'I, DEPARTMENT OF LAND AND NATURAL RESOURCES, REGARDING THE ISSUANCE OF A MANAGEMENT RIGHT-OF-ENTRY FOR THE LAHAINA WILDFIRE TEMPORARY DISPOSITION PROJECT

BE IT ORDAINED BY THE PEOPLE OF THE COUNTY OF MAUI:

SECTION 1. Purpose. The County of Maui has requested and received a management right-of-entry to the parcels, identified as tax map keys (2) 4-8-003:007 and a 0.7-acre portion of (2) 4-8-003:008, located in Olowalu, Maui, Hawai'i, to allow for a wildfire temporary debris storage ("TDS") site and ancillary purposes.

The State of Hawai'i Board of Land and Natural Resources, at its meeting of October 27, 2023, granted the County a management right-of-entry permit (Exhibit "1").

Section 2.20.020, Maui County Code, provides that unless authorized by ordinance, the Mayor must not enter into any intergovernmental agreement or any amendment that places a financial obligation on the County or any department or agency. Paragraphs 6 and 10 of the agreement require the County to defend, indemnify, and hold harmless the State Department of Land and Natural Resources for actions related to the agreement.

SECTION 2. Authorization. The Council of the County of Maui authorizes the Mayor or the Mayor's authorized representative to execute the agreement, all

other necessary documents relating to the agreement, and any amendments. This authority is limited as follows:

1. The management right-of-entry applies only to the temporary use of the disposition site described in the agreement.
2. The site must not be used as the final disposition site, and prior to the acceptance of a set-aside of government lands by Governor's Executive Order, the Mayor or the Mayor's authorized representative must seek Council approval for a new right-of-entry.
3. Best efforts must be used to protect against the runoff of toxic debris or leachate from the TDS site to the ocean, including through run-on and run-off control, groundwater-detection monitoring, stormwater-pollution prevention, and maintenance of adequate documentation and transparent public reporting on these efforts. Best efforts are limited to the following, to the extent they do not conflict with any federal or State laws in force or which may be in force:
    a. Recordkeeping and reporting: Detailed records of leachate quantity, quality, and treatment processes will be logged because these records are important for regulatory compliance and for making informed decisions about the TDS site management. All designs and construction documents, operating plans, stormwater-pollution-prevention plans, and sampling and analysis plans must be submitted to the County

and made available to the public consistent with chapter 92F, Hawai'i Revised Statutes. Recordkeeping must be adequate to document compliance with all requirements. All monitoring results must be reported to the County and made available to the public consistent with chapter 92F, Hawai'i Revised Statutes. The TDS site must be monitored for runoff, including nearby waterways and surrounding air quality for toxins and contaminants. Data from this monitoring must be made publicly available consistent with chapter 92F, Hawai'i Revised Statutes, and presented in a public forum every 90 days for the duration of this right-of-entry agreement.

b. Compliance with regulations: Leachate treatment and disposal will adhere to County, State, and federal environmental regulations to include reuse of leachate as dust mitigation within the TDS site.

c. Emergency-response plan: An emergency-response plan will be in place to handle any unexpected leachate breaches or spills that includes:

   i. Alerting relevant authorities and response teams as soon as the spill is identified.

   ii. Implementing barriers, absorbents, or other containment methods to minimize environmental impact.

iii. Conducting rapid assessment to understand potential environmental and health impacts.

iv. Monitoring for changes in water quality, soil contamination, and impacts on local wildlife and vegetation.

v. Implementing cleanup procedures such as skimming, vacuuming, or neutralizing agents, as needed.

vi. Implementing immediate and long-term remediation to restore the affected area, such as soil remediation, water treatment, or habitat restoration, as needed.

vii. Keeping all stakeholders, including the public, informed about the response measures.

viii. Documenting the incident and the response actions taken in a report to the appropriate regulatory authorities as required by law.

ix. Updating the emergency-response plan after a review of the response based on insights gained.

x. Ensuring that all relevant personnel are trained in emergency response.

xi. Collaborating with local emergency services, environmental experts, and other relevant agencies to ensure a coordinated and effective response.

d. Preparation for storm events: Develop a plan to prevent stormwater pollution and comply with Appendix B, "NPDES Multi-Sector General Permit For Storm Water Discharges Associated With Industrial Activity (MSGP)" of Chapter 55, Title 11, Hawai'i Administrative Rules. Before heavy rain or extreme-weather events, enhanced safety measures will be implemented to prevent flooding, mitigate potential overflow, and control erosion, including:

i. Deploying stormwater BMPs, such as barriers, absorbents, or other containment methods.

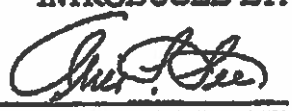
ii. Covering and stabilizing materials within the cell.

iii. Implementing erosion-control measures on loose soils and cinder around the containment area.

SECTION 3. Effective date. This Ordinance takes effect on approval and supersedes Ordinance 5573 (2023).

paf:jpp:24-011a

INTRODUCED BY:



ALICE L. LEE
Upon the request of the Mayor.

EXHIBIT "1"

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA

P O BOX 621
HONOLULU, HAWAII 96809

DAWN N.S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

LAURA H.E. KAAKUA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

October 30, 2023

PSF 23MD-109 & 110
ROE 4574

IMMEDIATE MANAGEMENT RIGHT-OF- ENTRY PERMIT

Mr. Shayne Agawa, Director
Department of Environmental Management
County of Maui
2200 Main Street
Wailuku, HI 96793

Attention: Sage Kiyonaga and Michael Kehano, DEM Solid Waste Division

Dear Mr. Agawa,

SUBJECT: Issuance of Immediate Management Right-of-Entry to County of Maui for the Lahaina Wildfire Final Disposition Project; Olowalu, Maui, Tax Map Key No. (2) 4-8-003:007 and portion of 008 (Parcel 8).

We are pleased to advise you that on Friday, October 27, 2023, under agenda items D-9 and D-10, the Board of Land and Natural Resources approved the Issuance of an Immediate Right-of-Entry Permit to the County of Maui (APPLICANT) for wildfire debris landfill and ancillary purposes.

The APPLICANT, is hereby granted a right-of-entry permit to utilize the subject lands that include all of parcel 007 consisting of 52 acres and a 0.7-acre portion of parcel 008 further identified in the attached exhibit subject to the following terms and conditions:

1. This right-of-entry shall be effective upon APPLICANT's execution of this Board-approved immediate management right-of-entry permit (ROE) and shall expire in one year or upon execution of the set-aside of government lands by Governor's Executive Order for the Proposed Lahaina Wildfire Final Disposition Project site, whichever shall first occur. The Chairperson is authorized to continue the ROE for additional one-year periods for good cause shown.

2. APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall procure, at their own cost and expense, and maintain during the entire period of this right-of-entry, from an

insurance company or companies licensed or authorized to do business in the State of Hawaii with an AM Best rating of not less than "A- VIII" or other comparable and equivalent industry rating, a policy or policies of general liability insurance or its equivalent, in an amount of at least $1,000,000 for each occurrence and $2,000,000 aggregate, and with coverage terms acceptable to the Chairperson of the Board of Land and Natural Resources (Board). The policy or policies of insurance shall name the State of Hawaii as an additional insured and a copy shall be filed with the State of Hawaii, Department of Land and Natural Resources (Department). The insurance shall cover the entire premises, including all buildings, improvements, and grounds and all roadways or sidewalks on or adjacent to the premises in the use or control of APPLICANT, its consultants, contractors and/or persons acting for or on its behalf. APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall furnish the Department with a certificate(s) showing the policy(s) to be initially in force, keep certificate(s) on deposit during the entire period and furnish a like certificate(s) upon each renewal of the policy(s). This insurance shall not be cancelled, limited to scope of coverage, or nonrenewed until written notice has been given to the Department. The Department shall retain the right at any time to review the coverage, form, and amount of the insurance required. If, in the opinion of the Department, the insurance provisions in this right-of-entry do not provide adequate protection for the Department, the Department may require APPLICANT, its consultants, contractors and/or persons acting for or on its behalf to obtain insurance sufficient in coverage, form, and amount to provide adequate protection. The Department's requirements shall be reasonable but be designed to assure protection for and against the kind and extent of the risks which exist at the time a change in insurance is required. The Department shall notify APPLICANT, its consultants, contractors and/or persons acting for or on its behalf in writing of changes in the insurance requirements and APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall deposit copies of acceptable insurance policy(s) or certificate(s) thereof, with the Department incorporating the changes within receipt of the notice. The procuring of the required policy(s) of insurance shall not be construed to limit APPLICANT, its consultants, contractors and/or persons acting for or on its behalf, liability under this right-of-entry nor to release or relieve APPLICANT, its consultants, contractors and/or persons acting for or on its behalf of the indemnification provisions and requirements of this right-of-entry. Notwithstanding the policy(s) of insurance, APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall be obligated for the full and total amount of any damage, injury, or loss caused by APPLICANT, its consultants, contractors and/or persons acting for or on its behalf negligence or neglect connected with this right-of-entry.

3. At all times herein, APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall keep the right-of-entry area or premises in a strictly clean, sanitary and orderly condition.

4. APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall be responsible for cleaning and restoring the area or premises to its original condition or a condition satisfactory to the Department upon completion of the day's event. All trash shall be removed from the area or premises.

5. APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall comply with all of the requirements of all municipal, state, and federal authorities and observe all municipal, state and federal laws applicable to the right-of-entry area or premises, now in force or which may be in force.

6. APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall indemnify, defend, and hold the State of Hawaii, Department of Land and Natural Resources harmless from and against any claim or demand for loss, liability, or damage, including claims for bodily injury, wrongful death, or property damage, arising out of or resulting from: (1) any act or omission on the part of APPLICANT, its consultants, contractors and/or persons acting for or on its behalf relating to the use, occupancy, maintenance, or enjoyment of the right-of-entry area or premises by APPLICANT, its consultants, contractors and/or persons acting for or on its behalf; (2) any failure on the part of APPLICANT, its consultants, contractors and/or persons acting for or on its behalf to maintain the right-of-entry area or premises and areas adjacent thereto in the use and control of APPLICANT, its consultants, contractors and/or persons acting for or on its behalf, and including any accident, fire or nuisance, growing out of or caused by any failure on the part of APPLICANT, its consultants, contractors and/or persons acting for or on its behalf to maintain the area or premises in a safe condition; and (3) from and against all actions, suits, damages, and claims by whomsoever brought or made by reason of the non-observance or non-performance by APPLICANT, its consultants, contractors and/or persons acting for or on its behalf, of any of the terms, covenants, and conditions of this right-of-entry or the rules, regulations, ordinances, and laws of the federal, state, municipal or county governments.

7. APPLICANT, its consultants, contractors and/or persons acting for or on its behalf will be responsible for providing security for the right-of-entry area or premises during this event.

8. APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall supply to Land Division a name and local telephone number of the contact person who can be reached at any time around the clock during this event.

9. APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall not cause or permit the escape, disposal or release of any hazardous materials except as permitted by law. APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall not allow the storage or use of such materials in any manner not sanctioned by law or by the highest standards prevailing in the industry for the storage and use of such materials, nor allow to be brought onto the right-of-entry area or premises any such materials except to use in the ordinary course of business of the APPLICANT, its consultants, contractors and/or persons acting for or on its behalf, and then only after written notice is given to the Department of the identity of such materials and upon the Department's consent which consent may be withheld at the Department's sole and absolute discretion. If any lender or governmental agency shall ever require testing to ascertain whether or not there has been any release of hazardous materials by APPLICANT, its consultants, contractors and/or persons acting for or on its behalf, then the APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall be responsible for the cost thereof. In addition, APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall execute affidavits, representations and the like from time to time at the Department's request concerning the best knowledge and belief of APPLICANT, its consultants, contractors and/or

persons acting for or on its behalf, regarding the presence of hazardous materials on the right-of-entry area or premises placed or released by APPLICANT, its consultants, contractors and/or persons acting for or on its behalf.

10. APPLICANT, its consultants, contractors and/or persons acting for or on its behalf agree to indemnify, defend and hold the State of Hawaii, Department of Land and Natural Resources harmless, from any damages and claims resulting from the release of hazardous materials on the right-of-entry area or premises occurring while APPLICANT, its consultants, contractors and/or persons acting for or on its behalf is/are in possession, or elsewhere if caused by APPLICANT, its consultants, contractors and/or persons acting for or on its behalf. These covenants shall survive the expiration or earlier termination of this right-of-entry.

    For purposes of this right-of-entry, "hazardous material" shall mean any pollutant, toxic substance, hazardous waste, hazardous material, hazardous substance, or oil as defined in or pursuant to the Resource Conservation and Recovery Act, as amended, the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, the Federal Clean Water Act, or any other federal, state, or local environmental law, regulation, ordinance, rule, or by-law, whether existing as of the date hereof, previously enforced, or subsequently enacted.

11. APPLICANT, its consultants, contractors and/or persons acting for or on its behalf in the exercise of this right-of-entry shall use appropriate precautions and measures to minimize inconveniences to surrounding residents, landowners, and the public in general.

12. All costs associated with the construction within the right-of-entry area or premises shall be the sole responsibility of the APPLICANT, its consultants, contractors and/or persons acting for or on its behalf.

13. APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall maintain and employ debris, pollution and contamination control measures, safeguards and techniques to prevent debris, pollution or contamination to the ocean waters, streams or waterways resulting from APPLICANT, its consultants, contractors and/or persons acting for or on its behalf use, maintenance, repair and operation of the right-of-entry area or premises, and shall take immediate corrective action in the event of such pollution or contamination to immediately remove the cause of such pollution or contamination, and shall immediately clean the right-of-entry area or premises and its surrounding waters of such pollutant or contaminant and restore to the Department's satisfaction the areas affected by such pollution or contamination, all at APPLICANT, its consultants, contractors and/or persons acting for or on its behalf own cost and expense.

14. In the event any unanticipated sites or remains such as bone or charcoal deposits, human burials, rock or coral alignments, pavings or walls are encountered the APPLICANT, its consultants, contractors and/or persons acting for or on its behalf shall stop work and contact the State Historic Preservations Division in Kapolei at (808) 692-8015 immediately.

15. In the event any historic properties or burial sites, as defined in section 6E-2, Hawaii Revised Statutes, are found on the premises, the APPLICANT and its agents, employees and

representatives shall immediately stop all land utilization or work or both and contact the Historic Preservation Office in compliance with chapter 6E, Hawaii Revised Statutes.

16. The parties acknowledge that reference made to persons acting for or on APPLICANT's behalf in paragraphs 2 (insurance requirement), 6 (indemnification), and 10 (indemnification, hazardous materials) of this document, does not include public officers and employees.

17. All disputes or questions arising under this right-of-entry shall be referred to the Chairperson of the Board of Land and Natural Resources for a determination and resolution of the dispute or question. The Chairperson's decision shall be final and binding on the parties herein.

18. This right-of-entry is revocable and terminable at any-time for any reason in the sole and absolute discretion of the Chairperson.

19. This right-of-entry or any rights hereunder shall not be sold, assigned, conveyed, leased, let, mortgaged, or otherwise transferred or disposed.

20. The Department of Land and Natural Resources reserves the right to impose additional, but responsible terms and conditions as it deems necessary while this right-of-entry is in force.

Should you have no objections to the above-mentioned items, kindly sign in the space provided below and submit copy of signed concurrence to the DLNR Maui Land Division Office. If you have any questions, please feel free to contact Daniel Ornellas, District Land Agent at (808) 984-8117.

Sincerely,

Dawn N. S. Chang
Chairperson

We CONCUR:

Shayne R Agawa

Mr. Shayne Agawa, Director
Department of Environmental Management

Date: _____

Cc: Board Member Canto
Maui DOCARE
Maui DOFAW
MECO
Central / District Files

WE HEREBY CERTIFY that the foregoing BILL NO. 120, CD1, FD2 (2023)

1. Passed FINAL READING at the meeting of the Council of the County of Maui, State of Hawaii, held on the 12th day of January, 2024, by the following vote:

Alice L. LEE Chair	Yuki Lei K. SUGIMURA Vice-Chair	Tom COOK	Gabriel JOHNSON	Natalie A. KAMA	Tamara A. M. PALTIN	Keani N. W. RAWLINS-FERNANDEZ	Shane M. SINENCI	Nohelani U'U-HODGINS
Aye	Aye	Aye	No	Excused	Aye	Aye	Aye	No

2. Was transmitted to the Mayor of the County of Maui, State of Hawaii, on the 18th day of January, 2024.

DATED AT WAILUKU, MAUI, HAWAII, this 18th day of January, 2024.

RECEIVED
'24 JAN 18 A8:48
OFFICE OF THE MAYOR

ALICE L. LEE, CHAIR
Council of the County of Maui

RICHELLE M. THOMSON, DEPUTY COUNTY CLERK
County of Maui

THE FOREGOING BILL IS HEREBY APPROVED THIS DAY OF January 21 ,2024.

RICHARD T. BISSEN, JR. MAYOR
County of Maui

I HEREBY CERTIFY that upon approval of the foregoing BILL by the Mayor of the County of Maui, the said BILL was designated as ORDINANCE NO. **5596** of the County of Maui, State of Hawaii.

RICHELLE M. THOMSON, DEPUTY COUNTY CLERK
County of Maui

Passed First Reading on December 22, 2023
Effective date of Ordinance January 21, 2024
supersedes Ord. 5573

RECEIVED
2024 JAN 22 AM 8:32
OFFICE OF THE COUNTY CLERK

I HEREBY CERTIFY that the foregoing is a true and correct copy of Ordinance No. 5596, the original of which is on file in the Office of the County Clerk, County of Maui, State of Hawaii.

Dated at Wailuku, Hawaii, on

County Clerk, County of Maui

ATTACHMENT 3. PRE-CHARACTERIZATION SOIL SAMPLING PROGRAM

PRE-CHARACTERIZATION SAMPLING

TEMPORARY DEBRIS STORAGE SITE

ADVANCE CONTRACTING INITIATIVE (ACI)

Prepared for

United States Army Corps of Engineers

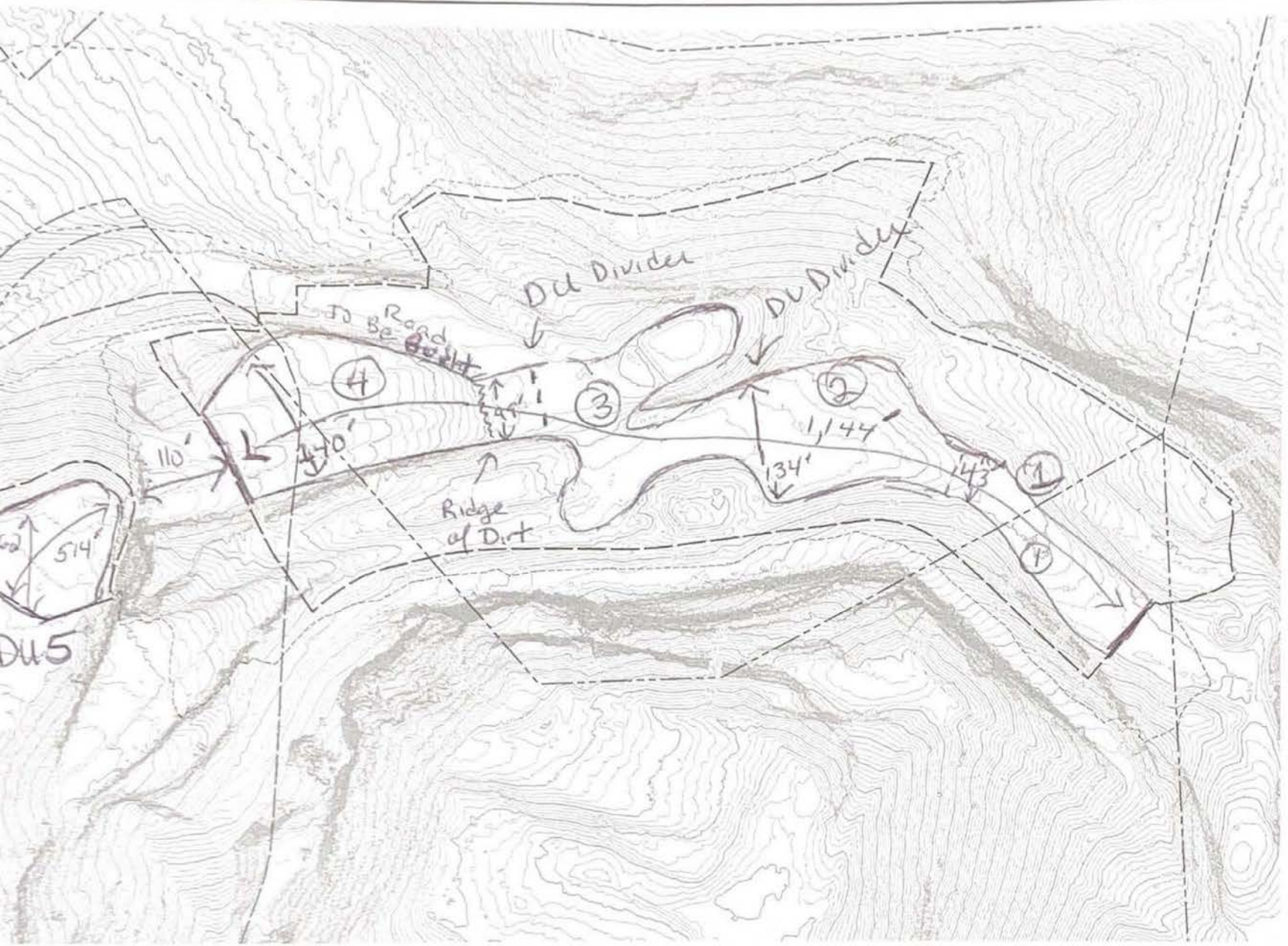
Honolulu District
Bldg 230 Otake Street
Fort Shafter, HI 96858

Contract No. W912EK-22-D-0004
Task Order No. W9128A24F0001

Document Number: PC-012

December 20, 2023

ECC Constructors LLC
1240 Bayshore Hwy
Suite 317
Burlingame, CA 94010-1805
corporate@ecc.net



end to end
1,144'

Each Du (1-4)
~ 286' long

NOTE:
1. APPROXIMATE FUTURE LANDFILL LINER LIMITS AND EXISTING REFUSE LIMITS WERE GATHERED FROM THE WEST MAUI PARK DESIGN REPORT DRAWINGS, DATED 9/27/23, PREPARED BY A-MEG-PL INC.

(rows of 15 every 20')

LEGEND
- APPROXIMATE LIMIT OF PROPERTY LINE
- APPROXIMATE RIGHT-OF-WAY EASEMENT
- PROPOSED TDS LIMIT
- LIMIT OF REFUSE
- LIMIT OF CELL GRADING / DAYLIGHT
- GRADE BREAK
- EXISTING UNPAVED ROAD
- FUTURE LANDFILL LIMIT
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- CONSTRUCTED MAJOR CONTOUR
- CONSTRUCTED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- ACCESS ROAD

TOPOGRAPHY: OCTOBER 2, 2023

NO.	REVISION DESCRIPTION	DATE

TETRA TECH
31700 Copley Drive, Suite 208
Diamond Bar, CA 91765
TEL 909.860.7777 FAX 909.860.8017

WEST MAUI - TDS SITE

SUBGRADE AND LINER PLAN

DESIGNED BY:	D.J.P.	File: Subgrade And Liner Plan - NFC.dwg	
DRAWN BY:	D.J.P.	DATE: 11-2023	SCALE: AS SHOWN
CHECKED BY:	G.R.B.	DATE: 11-2023	C-101
APPROVED BY:	C.M.M.	DATE: 11-2023	

TDS - up from the Olowalu Recyclust Refuse Conversion center and adjacent to Landfill (closed)

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Jackson Kiker
Environmental Chemical Corp.
43 Broad St
Suite A301
Hudson, Massachusetts 01749

Generated 12/6/2023 4:06:23 PM

JOB DESCRIPTION

2023 Maui Recovery - Kula, Maui

JOB NUMBER

580-134321-1

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization

Generated
12/6/2023 4:06:23 PM

Authorized for release by
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Job ID: 580-134321-1

Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE

Client: Environmental Chemical Corp.
Project: 2023 Maui Recovery - Kula, Maui
Report Number: 580-134321-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

Following DoD QSM guidelines, manual integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure, Acceptable Manual Integration Practices, SOP No.: Q-S-002. The reason(s) for manual integration have been documented on the affected chromatogram(s), which is/are provided in the raw data package. The raw data also includes the original chromatogram(s) prior to any manual integration being performed. Manual integrations are detailed in the manual integration summary forms following this narrative.

It should be noted that samples with elevated Limits of Quantitation (LOQs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the LOQs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 11/30/2023 9:25 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.7º C, 4.2º C and 5.7º C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

GASOLINE RANGE ORGANICS WITH INCREMENTAL PREPARATION

Samples TDS-PRE-1 (580-134321-1), TDS-PRE-3 (580-134321-2) and TDS-PRE-4 (580-134321-3) were analyzed for gasoline range organics with incremental preparation in accordance with EPA SW-846 Method 8260D CALUFT - GRO. The samples were leached on 12/01/2023, prepared on 12/01/2023 and analyzed on 12/05/2023.

The following samples were provided to the laboratory with a significantly different initial weight than that required by the reference method: TDS-PRE-1 (580-134321-1) and TDS-PRE-3 (580-134321-2). Deviations in the weight by more than 20% may affect reporting limits and potentially method performance. The method specifies 375g. The amount provided was below this range.

One sample container omitted from calculation due to lack of methanol preservative sufficient for sub-sampling aliquot. TDS-PRE-3 (580-134321-2)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

DIESEL AND OIL RANGE ORGANICS WITH INCREMENTAL PREPARATION

Samples TDS-PRE-1 (580-134321-1), TDS-PRE-3 (580-134321-2) and TDS-PRE-4 (580-134321-3) were analyzed for diesel and oil range organics with Incremental Prep in accordance with EPA SW-846 Method 8015D DRO. The samples were leached on 11/30/2023

Job ID: 580-134321-1 (Continued)

Laboratory: Eurofins Seattle (Continued)

and 12/01/2023, prepared on 12/01/2023 and analyzed on 12/04/2023.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY WITH INCREMENTAL PREPARATION

Samples TDS-PRE-1 (580-134321-1), TDS-PRE-3 (580-134321-2) and TDS-PRE-4 (580-134321-3) were analyzed for mercury with incremental preparation in accordance with EPA SW-846 Method 7471B. The samples were leached on 11/30/2023, and prepared and analyzed on 12/05/2023.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICPMS) WITH INCREMENTAL PREPARATION

Samples TDS-PRE-1 (580-134321-1), TDS-PRE-3 (580-134321-2) and TDS-PRE-4 (580-134321-3) were analyzed for metals (ICPMS) with incremental prep in accordance with 6020B. The samples were leached on 12/01/2023, prepared on 12/05/2023 and analyzed on 12/06/2023.

Barium and Zinc failed the recovery criteria high for the MS of sample TDS-PRE-4MS (580-134321-3) in batch 580-445606. Barium and Zinc failed the recovery criteria high for the MSD of sample TDS-PRE-4MSD (580-134321-3) in batch 580-445606. The associated LCS/LCSD were within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MOISTURE CONTENT WITH INCREMENTAL PREPARATION

Samples TDS-PRE-1 (580-134321-1), TDS-PRE-3 (580-134321-2) and TDS-PRE-4 (580-134321-3) were analyzed for moisture content with incremental preparation in accordance with Method 2540G. The samples were leached on 11/30/2023 and analyzed on 12/04/2023.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Environmental Chemical Corp. Job ID: 580-134321-1
Project/Site: 2023 Maui Recovery - Kula, Maui

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

GC Semi VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample ID: TDS-PRE-1

Date Collected: 11/28/23 15:00
Date Received: 11/30/23 09:25

Lab Sample ID: 580-134321-1

Matrix: Solid

Method: SW846 8015D DRO - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
ORO C24-C40	18	J	46	18	mg/Kg		12/01/23 11:53	12/04/23 22:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Triacontane-d62	*92*			*12/01/23 11:53*	*12/04/23 22:26*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.18	U	0.46	0.062	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Arsenic	1.4		0.46	0.091	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Barium	15		0.91	0.21	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Beryllium	0.56		0.18	0.044	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Cadmium	0.093	J	0.73	0.070	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Chromium	0.81	J	0.91	0.057	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Cobalt	1.1		0.18	0.0091	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Copper	1.6		0.91	0.20	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Lead	2.1		0.46	0.044	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Molybdenum	0.51		0.36	0.072	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Nickel	0.79		0.46	0.18	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Selenium	4.9		1.4	0.26	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Silver	0.046	U	0.18	0.018	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Thallium	0.14	U	0.36	0.050	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Vanadium	1.2	J	1.8	0.25	mg/Kg		12/05/23 11:56	12/06/23 08:26	20
Zinc	48		5.0	1.5	mg/Kg		12/05/23 11:56	12/06/23 08:26	20

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	93.2		0.1	0.1	%			12/04/23 12:55	1
Percent Moisture (SM22 2540G)	6.8		0.1	0.1	%			12/04/23 12:55	1

Client Sample ID: TDS-PRE-1

Date Collected: 11/28/23 15:00
Date Received: 11/30/23 09:25

Lab Sample ID: 580-134321-1

Matrix: Solid
Percent Solids: 93.2

Method: SW846 8260/CALUFT DOD - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	2.9	J	6.6	2.1	mg/Kg	☼	12/01/23 12:06	12/05/23 09:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*79 - 119*	*12/01/23 12:06*	*12/05/23 09:30*	*1*

Method: SW846 8015D DRO - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
DRO C9-C25	32	U	53	10	mg/Kg	☼	12/01/23 11:53	12/04/23 19:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*84*		*45 - 130*	*12/01/23 11:53*	*12/04/23 19:11*	*1*

Method: SW846 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.010	U	0.018	0.0055	mg/Kg	☼	12/05/23 09:54	12/05/23 14:25	1

Client Sample ID: TDS-PRE-3

Date Collected: 11/28/23 16:15
Date Received: 11/30/23 09:25

Lab Sample ID: 580-134321-2

Matrix: Solid

Method: SW846 8015D DRO - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
ORO C24-C40	30	U	50	20	mg/Kg		12/01/23 11:59	12/04/23 22:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Triacontane-d62	*97*			*12/01/23 11:59*	*12/04/23 22:46*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.19	U	0.47	0.063	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Arsenic	**0.73**		0.47	0.093	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Barium	**32**		0.93	0.21	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Beryllium	**0.60**		0.19	0.045	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Cadmium	**0.094**	**J**	0.75	0.072	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Chromium	**0.84**	**J**	0.93	0.059	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Cobalt	**1.2**		0.19	0.0093	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Copper	**1.6**		0.93	0.21	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Lead	**1.1**		0.47	0.045	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Molybdenum	**0.50**		0.37	0.074	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Nickel	**0.92**		0.47	0.18	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Selenium	**3.6**		1.4	0.27	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Silver	0.047	U	0.19	0.019	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Thallium	0.14	U	0.37	0.051	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Vanadium	**1.2**	**J**	1.9	0.25	mg/Kg		12/05/23 11:56	12/06/23 08:29	20
Zinc	**44**		5.1	1.5	mg/Kg		12/05/23 11:56	12/06/23 08:29	20

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	**99.5**		0.1	0.1	%			12/04/23 12:55	1
Percent Moisture (SM22 2540G)	**0.5**		0.1	0.1	%			12/04/23 12:55	1

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Recovery - Kula, Maui

Job ID: 580-134321-1

Client Sample ID: TDS-PRE-3

Date Collected: 11/28/23 16:15
Date Received: 11/30/23 09:25

Lab Sample ID: 580-134321-2

Matrix: Solid
Percent Solids: 99.5

Method: SW846 8260/CALUFT DOD - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	1.6	J	3.4	1.1	mg/Kg	☼	12/01/23 12:10	12/05/23 09:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*79 - 119*	*12/01/23 12:10*	*12/05/23 09:51*	*1*

Method: SW846 8015D DRO - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
DRO C9-C25	28	U	47	9.3	mg/Kg	☼	12/01/23 11:53	12/04/23 20:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*86*		*45 - 130*	*12/01/23 11:53*	*12/04/23 20:10*	*1*

Method: SW846 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0096	U	0.017	0.0051	mg/Kg	☼	12/05/23 09:54	12/05/23 14:32	1

Client Sample ID: TDS-PRE-4

Date Collected: 11/28/23 13:00
Date Received: 11/30/23 09:25

Lab Sample ID: 580-134321-3

Matrix: Solid

Method: SW846 8015D DRO - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
ORO C24-C40	29	U	49	20	mg/Kg		12/01/23 11:59	12/04/23 23:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Triacontane-d62	*91*			*12/01/23 11:59*	*12/04/23 23:05*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.19	U	0.48	0.065	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Arsenic	**0.58**		0.48	0.095	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Barium	**40**	**J1**	0.95	0.22	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Beryllium	**0.75**		0.19	0.046	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Cadmium	**0.099**	**J**	0.76	0.073	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Chromium	**0.53**	**J**	0.95	0.060	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Cobalt	**1.2**		0.19	0.0095	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Copper	**0.86**	**J**	0.95	0.21	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Lead	**0.97**		0.48	0.046	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Molybdenum	**0.67**		0.38	0.075	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Nickel	**0.53**		0.48	0.18	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Selenium	**3.2**		1.4	0.27	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Silver	0.048	U	0.19	0.019	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Thallium	0.14	U	0.38	0.052	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Vanadium	**1.0**	**J**	1.9	0.26	mg/Kg		12/05/23 11:56	12/06/23 07:41	20
Zinc	**49**	**J1**	5.2	1.5	mg/Kg		12/05/23 11:56	12/06/23 07:41	20

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	**99.2**		0.1	0.1	%			12/04/23 12:55	1
Percent Moisture (SM22 2540G)	**0.8**		0.1	0.1	%			12/04/23 12:55	1

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Recovery - Kula, Maui

Job ID: 580-134321-1

Client Sample ID: TDS-PRE-4

Date Collected: 11/28/23 13:00
Date Received: 11/30/23 09:25

Lab Sample ID: 580-134321-3

Matrix: Solid
Percent Solids: 99.2

Method: SW846 8260/CALUFT DOD - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	1.7	J	3.6	1.2	mg/Kg	☼	12/01/23 12:10	12/05/23 10:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*79 - 119*	*12/01/23 12:10*	*12/05/23 10:12*	*1*

Method: SW846 8015D DRO - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
DRO C9-C25	30	U	50	9.8	mg/Kg	☼	12/01/23 11:53	12/04/23 20:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*85*		*45 - 130*	*12/01/23 11:53*	*12/04/23 20:29*	*1*

Method: SW846 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.010	U	0.018	0.0053	mg/Kg	☼	12/05/23 09:54	12/05/23 14:35	1

Method: 8260/CALUFT DOD - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-445397/1-A
Matrix: Solid
Analysis Batch: 445408

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445397

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	3.0	U	4.0	1.3	mg/Kg		12/04/23 14:35	12/05/23 06:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*79 - 119*	*12/04/23 14:35*	*12/05/23 06:18*	*1*

Lab Sample ID: LCS 580-445397/4-A
Matrix: Solid
Analysis Batch: 445408

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
GRO (C6-C12)	20.0	21.4		mg/Kg		107	79 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*79 - 119*

Lab Sample ID: LCSD 580-445397/5-A
Matrix: Solid
Analysis Batch: 445408

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 445397

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
GRO (C6-C12)	20.0	21.8		mg/Kg		109	79 - 122	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*79 - 119*

Method: 8015D DRO - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 580-445231/1-A
Matrix: Solid
Analysis Batch: 445422

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445231

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
ORO C24-C40	30	U	50	20	mg/Kg		12/01/23 11:53	12/04/23 18:13	1
DRO C9-C25	30	U	50	9.9	mg/Kg		12/01/23 11:53	12/04/23 18:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*90*		*45 - 130*	*12/01/23 11:53*	*12/04/23 18:13*	*1*
n-Triacontane-d62	*89*			*12/01/23 11:53*	*12/04/23 18:13*	*1*

Lab Sample ID: LCS 580-445231/2-A
Matrix: Solid
Analysis Batch: 445422

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445231

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
ORO C24-C40	500	424		mg/Kg		85	39 - 106
DRO C9-C25	500	418		mg/Kg		84	38 - 132

Method: 8015D DRO - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 580-445231/2-A
Matrix: Solid
Analysis Batch: 445422

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445231

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	79		45 - 130
n-Triacontane-d62	78	M	

Lab Sample ID: LCSD 580-445231/3-A
Matrix: Solid
Analysis Batch: 445422

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 445231

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
ORO C24-C40			500	430		mg/Kg		86	39 - 106	1	20
DRO C9-C25			500	422		mg/Kg		84	38 - 132	1	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	78		45 - 130
n-Triacontane-d62	78	M	

Lab Sample ID: 580-134321-1 MS
Matrix: Solid
Analysis Batch: 445422

Client Sample ID: TDS-PRE-1
Prep Type: Total/NA
Prep Batch: 445231

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
ORO C24-C40	32	U	499	397		mg/Kg	☼	80	39 - 106
DRO C9-C25	32	U	499	397		mg/Kg	☼	80	38 - 132

Surrogate	MS %Recovery	MS Qualifier	Limits
o-Terphenyl	70		45 - 130
n-Triacontane-d62	71	M	

Lab Sample ID: 580-134321-1 MSD
Matrix: Solid
Analysis Batch: 445422

Client Sample ID: TDS-PRE-1
Prep Type: Total/NA
Prep Batch: 445231

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
ORO C24-C40	32	U	530	437		mg/Kg	☼	82	39 - 106	10	20
DRO C9-C25	32	U	530	422		mg/Kg	☼	80	38 - 132	6	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
o-Terphenyl	74		45 - 130
n-Triacontane-d62	72		

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-445470/18-A
Matrix: Solid
Analysis Batch: 445606

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445470

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.20	U	0.50	0.068	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Arsenic	0.40	U	0.50	0.10	mg/Kg		12/05/23 11:56	12/06/23 07:06	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 580-445470/18-A
Matrix: Solid
Analysis Batch: 445606

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445470

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.40	U	1.0	0.23	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Beryllium	0.080	U	0.20	0.048	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Cadmium	0.20	U	0.80	0.077	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Chromium	0.25	U	1.0	0.063	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Cobalt	0.040	U	0.20	0.010	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Copper	0.60	U	1.0	0.22	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Lead	0.19	U	0.50	0.048	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Molybdenum	0.16	U	0.40	0.079	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Nickel	0.25	U	0.50	0.19	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Selenium	1.0	U	1.5	0.29	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Silver	0.050	U	0.20	0.020	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Thallium	0.15	U	0.40	0.055	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Vanadium	1.0	U	2.0	0.27	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Zinc	5.0	U	5.5	1.6	mg/Kg		12/05/23 11:56	12/06/23 07:06	20

Lab Sample ID: LCS 580-445470/19-A
Matrix: Solid
Analysis Batch: 445606

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445470

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	25.0	24.2		mg/Kg		97	72 - 124
Arsenic	25.0	24.4		mg/Kg		98	82 - 118
Barium	25.0	24.0		mg/Kg		96	86 - 116
Beryllium	25.0	24.0		mg/Kg		96	80 - 120
Cadmium	25.0	24.3		mg/Kg		97	84 - 116
Chromium	25.0	25.0		mg/Kg		100	83 - 119
Cobalt	25.0	24.9		mg/Kg		100	84 - 115
Copper	25.0	25.2		mg/Kg		101	84 - 119
Lead	25.0	24.1		mg/Kg		97	84 - 118
Molybdenum	25.0	24.6		mg/Kg		98	83 - 114
Nickel	25.0	25.0		mg/Kg		100	84 - 119
Selenium	25.0	23.6		mg/Kg		94	80 - 119
Silver	25.0	24.5		mg/Kg		98	83 - 118
Thallium	25.0	24.1		mg/Kg		96	83 - 118
Vanadium	25.0	24.8		mg/Kg		99	82 - 116
Zinc	25.0	25.3		mg/Kg		101	82 - 119

Lab Sample ID: LCSD 580-445470/20-A
Matrix: Solid
Analysis Batch: 445606

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 445470

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	25.0	24.1		mg/Kg		96	72 - 124	1	20
Arsenic	25.0	24.5		mg/Kg		98	82 - 118	1	20
Barium	25.0	24.0		mg/Kg		96	86 - 116	0	20
Beryllium	25.0	24.1		mg/Kg		96	80 - 120	0	20
Cadmium	25.0	24.2		mg/Kg		97	84 - 116	1	20
Chromium	25.0	25.1		mg/Kg		101	83 - 119	0	20
Cobalt	25.0	25.3		mg/Kg		101	84 - 115	2	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 580-445470/20-A
Matrix: Solid
Analysis Batch: 445606

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 445470

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper			25.0	25.5		mg/Kg		102	84 - 119	1	20
Lead			25.0	24.3		mg/Kg		97	84 - 118	1	20
Molybdenum			25.0	24.5		mg/Kg		98	83 - 114	0	20
Nickel			25.0	25.4		mg/Kg		102	84 - 119	2	20
Selenium			25.0	23.9		mg/Kg		96	80 - 119	2	20
Silver			25.0	24.2		mg/Kg		97	83 - 118	1	20
Thallium			25.0	24.1		mg/Kg		97	83 - 118	0	20
Vanadium			25.0	24.8		mg/Kg		99	82 - 116	0	20
Zinc			25.0	25.0		mg/Kg		100	82 - 119	1	20

Lab Sample ID: 580-134321-3 MS
Matrix: Solid
Analysis Batch: 445606

Client Sample ID: TDS-PRE-4
Prep Type: Total/NA
Prep Batch: 445470

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.19	U	23.2	20.8		mg/Kg		90	72 - 124
Arsenic	0.58		23.2	22.2		mg/Kg		93	82 - 118
Barium	40	J1	23.2	80.7	J1	mg/Kg		176	86 - 116
Beryllium	0.75		23.2	23.2		mg/Kg		97	80 - 120
Cadmium	0.099	J	23.2	22.7		mg/Kg		97	84 - 116
Chromium	0.53	J	23.2	23.2		mg/Kg		98	83 - 119
Cobalt	1.2		23.2	24.3		mg/Kg		100	84 - 115
Copper	0.86	J	23.2	23.9		mg/Kg		99	84 - 119
Lead	0.97		23.2	23.8		mg/Kg		99	84 - 118
Molybdenum	0.67		23.2	24.0		mg/Kg		101	83 - 114
Nickel	0.53		23.2	23.7		mg/Kg		100	84 - 119
Selenium	3.2		23.2	23.9		mg/Kg		90	80 - 119
Silver	0.048	U	23.2	22.5		mg/Kg		97	83 - 118
Thallium	0.14	U	23.2	22.1		mg/Kg		95	83 - 118
Vanadium	1.0	J	23.2	23.7		mg/Kg		98	82 - 116
Zinc	49	J1	23.2	77.4	J1	mg/Kg		124	82 - 119

Lab Sample ID: 580-134321-3 MSD
Matrix: Solid
Analysis Batch: 445606

Client Sample ID: TDS-PRE-4
Prep Type: Total/NA
Prep Batch: 445470

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	0.19	U	23.9	21.0		mg/Kg		88	72 - 124	1	20
Arsenic	0.58		23.9	22.6		mg/Kg		92	82 - 118	2	20
Barium	40	J1	23.9	79.9	J1	mg/Kg		168	86 - 116	1	20
Beryllium	0.75		23.9	23.9		mg/Kg		97	80 - 120	3	20
Cadmium	0.099	J	23.9	23.0		mg/Kg		96	84 - 116	2	20
Chromium	0.53	J	23.9	23.5		mg/Kg		96	83 - 119	1	20
Cobalt	1.2		23.9	25.0		mg/Kg		100	84 - 115	3	20
Copper	0.86	J	23.9	24.4		mg/Kg		99	84 - 119	2	20
Lead	0.97		23.9	24.2		mg/Kg		97	84 - 118	2	20
Molybdenum	0.67		23.9	24.5		mg/Kg		100	83 - 114	2	20
Nickel	0.53		23.9	24.2		mg/Kg		99	84 - 119	2	20
Selenium	3.2		23.9	24.8		mg/Kg		90	80 - 119	3	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 580-134321-3 MSD
Matrix: Solid
Analysis Batch: 445606

Client Sample ID: TDS-PRE-4
Prep Type: Total/NA
Prep Batch: 445470

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Silver	0.048	U	23.9	22.9		mg/Kg		96	83 - 118	2	20
Thallium	0.14	U	23.9	22.6		mg/Kg		94	83 - 118	2	20
Vanadium	1.0	J	23.9	24.0		mg/Kg		96	82 - 116	1	20
Zinc	49	J1	23.9	78.4	J1	mg/Kg		125	82 - 119	1	20

Method: 7471B - Mercury (CVAA)

Lab Sample ID: MB 580-445447/8-A
Matrix: Solid
Analysis Batch: 445529

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445447

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.010	U	0.018	0.0054	mg/Kg		12/05/23 09:54	12/05/23 14:14	1

Lab Sample ID: MB 580-445447/8-A
Matrix: Solid
Analysis Batch: 445529

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445447

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.010	U	0.018	0.0054	mg/Kg		12/05/23 09:54	12/05/23 14:17	1

Lab Sample ID: LCS 580-445447/9-A
Matrix: Solid
Analysis Batch: 445529

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445447

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.100	0.114		mg/Kg		114	80 - 124

Lab Sample ID: LCSD 580-445447/10-A
Matrix: Solid
Analysis Batch: 445529

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 445447

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.100	0.113		mg/Kg		113	80 - 124	1	20

Lab Sample ID: 580-134321-1 MS
Matrix: Solid
Analysis Batch: 445529

Client Sample ID: TDS-PRE-1
Prep Type: Total/NA
Prep Batch: 445447

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.010	U	0.107	0.132		mg/Kg	☼	124	80 - 124

Lab Sample ID: 580-134321-1 MSD
Matrix: Solid
Analysis Batch: 445529

Client Sample ID: TDS-PRE-1
Prep Type: Total/NA
Prep Batch: 445447

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.010	U	0.0964	0.116		mg/Kg	☼	121	80 - 124	12	20

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Recovery - Kula, Maui

Job ID: 580-134321-1

Method: 2540G - SM 2540G

Lab Sample ID: 580-134321-1 DU
Matrix: Solid
Analysis Batch: 445384

Client Sample ID: TDS-PRE-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Solids	93.2			93.3		%				0.1	20
Percent Moisture	6.8			6.7		%				2	20

Lab Chronicle

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Recovery - Kula, Maui

Job ID: 580-134321-1

Client Sample ID: TDS-PRE-1
Date Collected: 11/28/23 15:00
Date Received: 11/30/23 09:25

Lab Sample ID: 580-134321-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	ISM Prep	Increment, prep			445202	JW	EET SEA	12/01/23 08:53
Total/NA	Prep	3546			445231	AA	EET SEA	12/01/23 11:53
Total/NA	Analysis	8015D DRO		1	445422	TL1	EET SEA	12/04/23 22:26
Total/NA	ISM Prep	Increment, prep			445202	JW	EET SEA	12/01/23 08:53
Total/NA	Prep	3050B			445470	TMH	EET SEA	12/05/23 11:56
Total/NA	Analysis	6020B		20	445606	FCW	EET SEA	12/06/23 08:26
Total/NA	ISM Prep	Increment, prep			445141	TOA	EET SEA	11/30/23 13:39
Total/NA	Analysis	2540G		1	445384	TMH	EET SEA	12/04/23 12:55

Client Sample ID: TDS-PRE-1
Date Collected: 11/28/23 15:00
Date Received: 11/30/23 09:25

Lab Sample ID: 580-134321-1
Matrix: Solid
Percent Solids: 93.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	ISM Prep	Increment, Prep			445245	TGO	EET SEA	12/01/23 12:06
Total/NA	Prep	5035			445397	TGO	EET SEA	12/01/23 12:06
Total/NA	Analysis	8260/CALUFT DOD		1	445408	JBT	EET SEA	12/05/23 09:30
Total/NA	ISM Prep	Increment, prep			445141	TOA	EET SEA	11/30/23 13:39
Total/NA	Prep	3546			445231	AA	EET SEA	12/01/23 11:53
Total/NA	Analysis	8015D DRO		1	445422	TL1	EET SEA	12/04/23 19:11
Total/NA	ISM Prep	Increment, prep			445141	TOA	EET SEA	11/30/23 13:39
Total/NA	Prep	7471B			445447	JL	EET SEA	12/05/23 09:54
Total/NA	Analysis	7471B		1	445529	JL	EET SEA	12/05/23 14:25

Client Sample ID: TDS-PRE-3
Date Collected: 11/28/23 16:15
Date Received: 11/30/23 09:25

Lab Sample ID: 580-134321-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	ISM Prep	Increment, prep			445202	JW	EET SEA	12/01/23 08:53
Total/NA	Prep	3546			445231	AA	EET SEA	12/01/23 11:59
Total/NA	Analysis	8015D DRO		1	445422	TL1	EET SEA	12/04/23 22:46
Total/NA	ISM Prep	Increment, prep			445202	JW	EET SEA	12/01/23 08:53
Total/NA	Prep	3050B			445470	TMH	EET SEA	12/05/23 11:56
Total/NA	Analysis	6020B		20	445606	FCW	EET SEA	12/06/23 08:29
Total/NA	ISM Prep	Increment, prep			445141	TOA	EET SEA	11/30/23 13:39
Total/NA	Analysis	2540G		1	445384	TMH	EET SEA	12/04/23 12:55

Client Sample ID: TDS-PRE-3
Date Collected: 11/28/23 16:15
Date Received: 11/30/23 09:25

Lab Sample ID: 580-134321-2
Matrix: Solid
Percent Solids: 99.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	ISM Prep	Increment, Prep			445245	TGO	EET SEA	12/01/23 12:08
Total/NA	Prep	5035			445397	TGO	EET SEA	12/01/23 12:10
Total/NA	Analysis	8260/CALUFT DOD		1	445408	JBT	EET SEA	12/05/23 09:51

Lab Chronicle

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Recovery - Kula, Maui

Job ID: 580-134321-1

Client Sample ID: TDS-PRE-3

Lab Sample ID: 580-134321-2
Date Collected: 11/28/23 16:15
Matrix: Solid
Date Received: 11/30/23 09:25
Percent Solids: 99.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	ISM Prep	Increment, prep			445141	TOA	EET SEA	11/30/23 13:39
Total/NA	Prep	3546			445231	AA	EET SEA	12/01/23 11:53
Total/NA	Analysis	8015D DRO		1	445422	TL1	EET SEA	12/04/23 20:10
Total/NA	ISM Prep	Increment, prep			445141	TOA	EET SEA	11/30/23 13:39
Total/NA	Prep	7471B			445447	JL	EET SEA	12/05/23 09:54
Total/NA	Analysis	7471B		1	445529	JL	EET SEA	12/05/23 14:32

Client Sample ID: TDS-PRE-4

Lab Sample ID: 580-134321-3
Date Collected: 11/28/23 13:00
Matrix: Solid
Date Received: 11/30/23 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	ISM Prep	Increment, prep			445202	JW	EET SEA	12/01/23 08:53
Total/NA	Prep	3546			445231	AA	EET SEA	12/01/23 11:59
Total/NA	Analysis	8015D DRO		1	445422	TL1	EET SEA	12/04/23 23:05
Total/NA	ISM Prep	Increment, prep			445202	JW	EET SEA	12/01/23 08:53
Total/NA	Prep	3050B			445470	TMH	EET SEA	12/05/23 11:56
Total/NA	Analysis	6020B		20	445606	FCW	EET SEA	12/06/23 07:41
Total/NA	ISM Prep	Increment, prep			445141	TOA	EET SEA	11/30/23 13:39
Total/NA	Analysis	2540G		1	445384	TMH	EET SEA	12/04/23 12:55

Client Sample ID: TDS-PRE-4

Lab Sample ID: 580-134321-3
Date Collected: 11/28/23 13:00
Matrix: Solid
Date Received: 11/30/23 09:25
Percent Solids: 99.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	ISM Prep	Increment, Prep			445245	TGO	EET SEA	12/01/23 12:08
Total/NA	Prep	5035			445397	TGO	EET SEA	12/01/23 12:10
Total/NA	Analysis	8260/CALUFT DOD		1	445408	JBT	EET SEA	12/05/23 10:12
Total/NA	ISM Prep	Increment, prep			445141	TOA	EET SEA	11/30/23 13:39
Total/NA	Prep	3546			445231	AA	EET SEA	12/01/23 11:53
Total/NA	Analysis	8015D DRO		1	445422	TL1	EET SEA	12/04/23 20:29
Total/NA	ISM Prep	Increment, prep			445141	TOA	EET SEA	11/30/23 13:39
Total/NA	Prep	7471B			445447	JL	EET SEA	12/05/23 09:54
Total/NA	Analysis	7471B		1	445529	JL	EET SEA	12/05/23 14:35

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Environmental Chemical Corp. Job ID: 580-134321-1
Project/Site: 2023 Maui Recovery - Kula, Maui

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
2540G		Solid	Percent Moisture
2540G		Solid	Percent Solids

Sample Summary

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Recovery - Kula, Maui

Job ID: 580-134321-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-134321-1	TDS-PRE-1	Solid	11/28/23 15:00	11/30/23 09:25
580-134321-2	TDS-PRE-3	Solid	11/28/23 16:15	11/30/23 09:25
580-134321-3	TDS-PRE-4	Solid	11/28/23 13:00	11/30/23 09:25

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

eurofins

Client Information	Sampler: Daniel Walsh	Lab PM: Walker, Marie E	Carrier Tracking No(s):	COC No: 580-59702-18343.1
Client Contact: Kaiulani Watson	Phone: (315) 413-9692	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: HI	Page: ~~Page 1 of 1~~ Page 1 of 3
Company: Environmental Chemical Corp.	PWSID:			Job #:
Address: 2969 Mapunapuna Place Suite 220	Due Date Requested:			
City: Honolulu	TAT Requested (days): Standard			
State, Zip: HI, 96819	Compliance Project: Δ Yes Δ No			
Phone: 508-229-2270(Tel)	PO #: Purchase Order Requested			
Email: kwatson@ecc.net	WO #:			
Project Name: 2023 Maui Fires - Kula and Olinda, Maui	Project #: 58020087			
Site: 316 Luawai St. TDS	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	TPH GRO	TPH DRO/ORO	TITLE 22 17 METALS	Total Number of containers: 16	Special Instructions/Note:
			Preservation Code:		X	F	I	I		
TDS-PRE-1	11/28/23	1500	MS	S	X	X	X	X	16	15 jars, 1 bag

580-134321 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company		Date/Time:	Company
Relinquished by: Daniel Walsh	11/28/23 1630	TetraTech	Received by: [illegible]	11/30/23 0925	EETN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: IR12 2.7/2.6 LW/Bub/Melted/EPC

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

eurofins

Client Information	Sampler: Daniel Walsh	Lab PM: Walker, Marie E	Carrier Tracking No(s):	COC No: 580-59702-18343.1
Client Contact: Kaiulani Watson	Phone: (315)413-9692	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: HI	Page: ~~Page 1 of 2~~ Page 2 of 3
Company: Environmental Chemical Corp.	PWSID:	Analysis Requested		Job #:
Address: 2969 Mapunapuna Place Suite 220	Due Date Requested:			Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
City: Honolulu	TAT Requested (days): Standard			
State, Zip: HI, 96819	Compliance Project: ∆ Yes ∆ No			
Phone: 508-229-2270(Tel)	PO #: Purchase Order Requested			
Email: kwatson@ecc.net	WO #:			
Project Name: 2023 Maui Fires - Kula and Olinda, Maui	Project #: 58020087			
Site: 316 Luawai St. TDS	SSOW#:			Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)		TPH GRO	TPH DRO/ORO	TITLE 22 17 METALS										Total Number of containers: 16	Special Instructions/Note:
			Preservation Code:				F	I	I											
TDS-PRE-3	11/28/23	1615	M15	S			X	X	X										16	15 jars, 1 bag

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Daniel Walsh	11/28/23 1630	Tetra Tech	[illegible]	11/30/23 0925	EET
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: IR17 4.2/4.1 4P/Bub/Melted/EPO

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

eurofins

Client Information	Sampler: Daniel Walsh	Lab PM: Walker, Marie E	Carrier Tracking No(s):	COC No: 580-59702-18343.1
Client Contact: Kaiulani Watson	Phone: (315)413-9692	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: HI	Page: ~~Page 1 of 1~~ Page 3 of 3
Company: Environmental Chemical Corp.	PWSID:			Job #:
Address: 2969 Mapunapuna Place Suite 220	Due Date Requested:			
City: Honolulu	TAT Requested (days): Standard			
State, Zip: HI, 96819	Compliance Project: Δ Yes Δ No			
Phone: 508-229-2270(Tel)	PO #: Purchase Order Requested			
Email: kwatson@ecc.net	WO #:			
Project Name: 2023 Maui Fires - Kula and Olinda, Maui	Project #: 58020087			
Site: 316 Luawai St TDS	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	TPH GRO	TPH DRO/ORO	TITLE22 17 METALS	Total Number of containers: 16	Special Instructions/Note:
			Preservation Code:			F	I	I		
TDS-PRE-4	11/28/23	1300	MIS	S		X	X	X	16	15 jars, 1 bag

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time	Company		Date/Time	Company
Relinquished by: Daniel Walsh	11/28/23 1630	Tetra Tech	Received by:	11/30/23 0905	ECTA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: IR12 5.7/5.6 LB/Bulk/Melted/EPD

Login Sample Receipt Checklist

Client: Environmental Chemical Corp.

Job Number: 580-134321-1
SDG Number:

Login Number: 134321
List Number: 1
Creator: Groves, Elizabeth

List Source: Eurofins Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	Water present in cooler; indicates evidence of melted ice.
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	False	Refer to Job Narrative for details.
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Jackson Kiker
Environmental Chemical Corp.
43 Broad St
Suite A301
Hudson, Massachusetts 01749

Generated 12/7/2023 1:18:45 PM

JOB DESCRIPTION

2023 Maui Recovery - Kula, Maui

JOB NUMBER

580-134359-1

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization

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Authorized for release by
Marie Walker, Senior Project Manager
M.Elaine.Walker@et.eurofinsus.com
(253)248-4972

Table of Contents

Job ID: 580-134359-1

Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE

Client: Environmental Chemical Corp.
Project: 2023 Maui Recovery - Kula, Maui
Report Number: 580-134359-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

Following DoD QSM guidelines, manual integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure, Acceptable Manual Integration Practices, SOP No.: Q-S-002. The reason(s) for manual integration have been documented on the affected chromatogram(s), which is/are provided in the raw data package. The raw data also includes the original chromatogram(s) prior to any manual integration being performed. Manual integrations are detailed in the manual integration summary forms following this narrative.

It should be noted that samples with elevated Limits of Quantitation (LOQs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the LOQs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interfererences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 12/1/2023 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.8º C and 4.4º C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

GASOLINE RANGE ORGANICS WITH INCREMENTAL PREPARATION

Samples TDS-PRE-2 (580-134359-1) and TDS-PRE-5 (580-134359-2) were analyzed for gasoline range organics with incremental preparation in accordance with EPA SW-846 Method 8260B CALUFT - GRO. The samples were leached on 12/04/2023, prepared on 12/04/2023 and analyzed on 12/05/2023.

Two sample containers were omitted from calculation due to lack of methanol preservative sufficient for sub-sampling the aliquots for sample TDS-PRE-5 (580-134359-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

DIESEL/OIL RANGE ORGANICS WITH INCREMENTAL PREPARATION

Samples TDS-PRE-2 (580-134359-1) and TDS-PRE-5 (580-134359-2) were analyzed for diesel and oil range organics with Incremental preparation in accordance with 8015D DRO. The samples were leached on 12/02/2023, prepared on 12/05/2023 and analyzed on 12/06/2023.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Job ID: 580-134359-1 (Continued)

Laboratory: Eurofins Seattle (Continued)

MERCURY WITH INCREMENTAL PREPARATION

Samples TDS-PRE-2 (580-134359-1) and TDS-PRE-5 (580-134359-2) were analyzed for mercury with incremental preparation in accordance with EPA SW-846 Method 7471B. The samples were leached on 12/02/2023, and prepared and analyzed on 12/05/2023.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICPMS) WITH INCREMENTAL PREPARATION

Samples TDS-PRE-2 (580-134359-1) and TDS-PRE-5 (580-134359-2) were analyzed for metals (ICPMS) with incremental preparation in accordance with 6020B. The samples were leached on 12/02/2023, prepared on 12/05/2023 and analyzed on 12/06/2023.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MOISTURE CONTENT WITH INCREMENTAL PREPARATION

Samples TDS-PRE-2 (580-134359-1) and TDS-PRE-5 (580-134359-2) were analyzed for moisture content with incremental preparation in accordance with Method 2540G. The samples were leached on 12/02/2023 and analyzed on 12/04/2023.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

GC Semi VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample ID: TDS-PRE-2

Date Collected: 11/29/23 09:30
Date Received: 12/01/23 09:30

Lab Sample ID: 580-134359-1

Matrix: Solid

Method: SW846 8015D DRO - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
ORO C24-C40	26	J	49	20	mg/Kg		12/05/23 09:03	12/06/23 08:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Triacontane-d62	*82*			*12/05/23 09:03*	*12/06/23 08:47*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.19	U	0.49	0.066	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Arsenic	1.5		0.49	0.097	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Barium	15		0.97	0.22	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Beryllium	0.66		0.19	0.047	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Cadmium	0.13	J	0.78	0.075	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Chromium	1.0		0.97	0.061	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Cobalt	1.4		0.19	0.0097	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Copper	4.9		0.97	0.21	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Lead	1.0		0.49	0.047	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Molybdenum	0.54		0.39	0.077	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Nickel	1.0		0.49	0.19	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Selenium	5.4		1.5	0.28	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Silver	0.021	J	0.19	0.019	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Thallium	0.15	U	0.39	0.054	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Vanadium	1.4	J	1.9	0.26	mg/Kg		12/05/23 11:56	12/06/23 08:34	20
Zinc	51		5.4	1.6	mg/Kg		12/05/23 11:56	12/06/23 08:34	20

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	85.1		0.1	0.1	%			12/04/23 12:55	1
Percent Moisture (SM22 2540G)	14.9		0.1	0.1	%			12/04/23 12:55	1

Client Sample ID: TDS-PRE-2

Date Collected: 11/29/23 09:30
Date Received: 12/01/23 09:30

Lab Sample ID: 580-134359-1

Matrix: Solid
Percent Solids: 85.1

Method: SW846 8260/CALUFT DOD - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	1.1	J	3.4	1.1	mg/Kg	☼	12/04/23 13:46	12/05/23 10:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*79 - 119*	*12/04/23 13:46*	*12/05/23 10:33*	*1*

Method: SW846 8015D DRO - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
DRO C9-C25	33	U	55	11	mg/Kg	☼	12/05/23 08:33	12/06/23 06:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*82*		*45 - 130*	*12/05/23 08:33*	*12/06/23 06:06*	*1*

Method: SW846 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.011	U	0.020	0.0059	mg/Kg	☼	12/05/23 09:54	12/05/23 14:37	1

Client Sample ID: TDS-PRE-5

Date Collected: 11/29/23 11:15
Date Received: 12/01/23 09:30

Lab Sample ID: 580-134359-2

Matrix: Solid

Method: SW846 8015D DRO - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
ORO C24-C40	30	U	49	20	mg/Kg		12/05/23 09:03	12/06/23 09:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Triacontane-d62	*79*			*12/05/23 09:03*	*12/06/23 09:07*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.19	U	0.47	0.064	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Arsenic	**0.94**		0.47	0.095	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Barium	**39**		0.95	0.22	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Beryllium	**0.66**		0.19	0.045	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Cadmium	**0.10**	**J**	0.76	0.073	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Chromium	**7.0**		0.95	0.060	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Cobalt	**3.0**		0.19	0.0095	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Copper	**4.9**		0.95	0.21	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Lead	**2.2**		0.47	0.045	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Molybdenum	**0.69**		0.38	0.075	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Nickel	**9.0**		0.47	0.18	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Selenium	**3.7**		1.4	0.27	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Silver	0.047	U	0.19	0.019	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Thallium	0.14	U	0.38	0.052	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Vanadium	**8.5**		1.9	0.26	mg/Kg		12/05/23 11:56	12/06/23 08:32	20
Zinc	**52**		5.2	1.5	mg/Kg		12/05/23 11:56	12/06/23 08:32	20

General Chemistry

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids (SM22 2540G)	**87.4**		0.1	0.1	%			12/04/23 12:55	1
Percent Moisture (SM22 2540G)	**12.6**		0.1	0.1	%			12/04/23 12:55	1

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Recovery - Kula, Maui

Job ID: 580-134359-1

Client Sample ID: TDS-PRE-5

Date Collected: 11/29/23 11:15
Date Received: 12/01/23 09:30

Lab Sample ID: 580-134359-2

Matrix: Solid
Percent Solids: 87.4

Method: SW846 8260/CALUFT DOD - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	1.5	U	2.0	0.65	mg/Kg	☼	12/04/23 13:46	12/05/23 10:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*108*		*79 - 119*	*12/04/23 13:46*	*12/05/23 10:54*	*1*

Method: SW846 8015D DRO - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
DRO C9-C25	**16**	**J**	53	10	mg/Kg	☼	12/05/23 08:33	12/06/23 07:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*85*		*45 - 130*	*12/05/23 08:33*	*12/06/23 07:06*	*1*

Method: SW846 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.011	U	0.019	0.0058	mg/Kg	☼	12/05/23 09:54	12/05/23 14:39	1

Method: 8260/CALUFT DOD - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-445397/1-A
Matrix: Solid
Analysis Batch: 445408

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445397

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	3.0	U	4.0	1.3	mg/Kg		12/04/23 14:35	12/05/23 06:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*79 - 119*	*12/04/23 14:35*	*12/05/23 06:18*	*1*

Lab Sample ID: LCS 580-445397/4-A
Matrix: Solid
Analysis Batch: 445408

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
GRO (C6-C12)	20.0	21.4		mg/Kg		107	79 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*79 - 119*

Lab Sample ID: LCSD 580-445397/5-A
Matrix: Solid
Analysis Batch: 445408

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 445397

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
GRO (C6-C12)	20.0	21.8		mg/Kg		109	79 - 122	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*79 - 119*

Method: 8015D DRO - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 580-445435/1-A
Matrix: Solid
Analysis Batch: 445457

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445435

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
ORO C24-C40	30	U	50	20	mg/Kg		12/05/23 08:33	12/06/23 05:06	1
DRO C9-C25	30	U	50	9.9	mg/Kg		12/05/23 08:33	12/06/23 05:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*84*		*45 - 130*	*12/05/23 08:33*	*12/06/23 05:06*	*1*
n-Triacontane-d62	*85*			*12/05/23 08:33*	*12/06/23 05:06*	*1*

Lab Sample ID: LCS 580-445435/2-A
Matrix: Solid
Analysis Batch: 445457

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445435

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
ORO C24-C40	500	419		mg/Kg		84	39 - 106
DRO C9-C25	500	411		mg/Kg		82	38 - 132

Method: 8015D DRO - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 580-445435/2-A
Matrix: Solid
Analysis Batch: 445457

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445435

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	74		45 - 130
n-Triacontane-d62	79	M	

Lab Sample ID: LCSD 580-445435/3-A
Matrix: Solid
Analysis Batch: 445457

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 445435

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
ORO C24-C40			500	419		mg/Kg		84	39 - 106	0	20
DRO C9-C25			500	416		mg/Kg		83	38 - 132	1	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	81		45 - 130
n-Triacontane-d62	83	M	

Lab Sample ID: 580-134359-1 MS
Matrix: Solid
Analysis Batch: 445457

Client Sample ID: TDS-PRE-2
Prep Type: Total/NA
Prep Batch: 445435

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
ORO C24-C40	33	U	569	470		mg/Kg	☼	83	39 - 106
DRO C9-C25	33	U	569	469		mg/Kg	☼	82	38 - 132

Surrogate	MS %Recovery	MS Qualifier	Limits
o-Terphenyl	75		45 - 130
n-Triacontane-d62	77		

Lab Sample ID: 580-134359-1 MSD
Matrix: Solid
Analysis Batch: 445457

Client Sample ID: TDS-PRE-2
Prep Type: Total/NA
Prep Batch: 445435

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
ORO C24-C40	33	U	552	474		mg/Kg	☼	86	39 - 106	1	20
DRO C9-C25	33	U	552	462		mg/Kg	☼	84	38 - 132	1	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
o-Terphenyl	76		45 - 130
n-Triacontane-d62	84	M	

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-445470/18-A
Matrix: Solid
Analysis Batch: 445606

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445470

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.20	U	0.50	0.068	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Arsenic	0.40	U	0.50	0.10	mg/Kg		12/05/23 11:56	12/06/23 07:06	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 580-445470/18-A
Matrix: Solid
Analysis Batch: 445606

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445470

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.40	U	1.0	0.23	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Beryllium	0.080	U	0.20	0.048	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Cadmium	0.20	U	0.80	0.077	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Chromium	0.25	U	1.0	0.063	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Cobalt	0.040	U	0.20	0.010	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Copper	0.60	U	1.0	0.22	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Lead	0.19	U	0.50	0.048	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Molybdenum	0.16	U	0.40	0.079	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Nickel	0.25	U	0.50	0.19	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Selenium	1.0	U	1.5	0.29	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Silver	0.050	U	0.20	0.020	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Thallium	0.15	U	0.40	0.055	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Vanadium	1.0	U	2.0	0.27	mg/Kg		12/05/23 11:56	12/06/23 07:06	20
Zinc	5.0	U	5.5	1.6	mg/Kg		12/05/23 11:56	12/06/23 07:06	20

Lab Sample ID: LCS 580-445470/19-A
Matrix: Solid
Analysis Batch: 445606

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445470

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	25.0	24.2		mg/Kg		97	72 - 124
Arsenic	25.0	24.4		mg/Kg		98	82 - 118
Barium	25.0	24.0		mg/Kg		96	86 - 116
Beryllium	25.0	24.0		mg/Kg		96	80 - 120
Cadmium	25.0	24.3		mg/Kg		97	84 - 116
Chromium	25.0	25.0		mg/Kg		100	83 - 119
Cobalt	25.0	24.9		mg/Kg		100	84 - 115
Copper	25.0	25.2		mg/Kg		101	84 - 119
Lead	25.0	24.1		mg/Kg		97	84 - 118
Molybdenum	25.0	24.6		mg/Kg		98	83 - 114
Nickel	25.0	25.0		mg/Kg		100	84 - 119
Selenium	25.0	23.6		mg/Kg		94	80 - 119
Silver	25.0	24.5		mg/Kg		98	83 - 118
Thallium	25.0	24.1		mg/Kg		96	83 - 118
Vanadium	25.0	24.8		mg/Kg		99	82 - 116
Zinc	25.0	25.3		mg/Kg		101	82 - 119

Lab Sample ID: LCSD 580-445470/20-A
Matrix: Solid
Analysis Batch: 445606

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 445470

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	25.0	24.1		mg/Kg		96	72 - 124	1	20
Arsenic	25.0	24.5		mg/Kg		98	82 - 118	1	20
Barium	25.0	24.0		mg/Kg		96	86 - 116	0	20
Beryllium	25.0	24.1		mg/Kg		96	80 - 120	0	20
Cadmium	25.0	24.2		mg/Kg		97	84 - 116	1	20
Chromium	25.0	25.1		mg/Kg		101	83 - 119	0	20
Cobalt	25.0	25.3		mg/Kg		101	84 - 115	2	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 580-445470/20-A
Matrix: Solid
Analysis Batch: 445606

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 445470

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper			25.0	25.5		mg/Kg		102	84 - 119	1	20
Lead			25.0	24.3		mg/Kg		97	84 - 118	1	20
Molybdenum			25.0	24.5		mg/Kg		98	83 - 114	0	20
Nickel			25.0	25.4		mg/Kg		102	84 - 119	2	20
Selenium			25.0	23.9		mg/Kg		96	80 - 119	2	20
Silver			25.0	24.2		mg/Kg		97	83 - 118	1	20
Thallium			25.0	24.1		mg/Kg		97	83 - 118	0	20
Vanadium			25.0	24.8		mg/Kg		99	82 - 116	0	20
Zinc			25.0	25.0		mg/Kg		100	82 - 119	1	20

Method: 7471B - Mercury (CVAA)

Lab Sample ID: MB 580-445447/8-A
Matrix: Solid
Analysis Batch: 445529

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445447

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.010	U	0.018	0.0054	mg/Kg		12/05/23 09:54	12/05/23 14:14	1

Lab Sample ID: MB 580-445447/8-A
Matrix: Solid
Analysis Batch: 445529

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445447

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.010	U	0.018	0.0054	mg/Kg		12/05/23 09:54	12/05/23 14:17	1

Lab Sample ID: LCS 580-445447/9-A
Matrix: Solid
Analysis Batch: 445529

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445447

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			0.100	0.114		mg/Kg		114	80 - 124		

Lab Sample ID: LCSD 580-445447/10-A
Matrix: Solid
Analysis Batch: 445529

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 445447

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury			0.100	0.113		mg/Kg		113	80 - 124	1	20

Method: 2540G - SM 2540G

Lab Sample ID: 580-134359-1 DU
Matrix: Solid
Analysis Batch: 445384

Client Sample ID: TDS-PRE-2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Solids	85.1			85.1		%				0	20
Percent Moisture	14.9			14.9		%				0.2	20

Lab Chronicle

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Recovery - Kula, Maui

Job ID: 580-134359-1

Client Sample ID: TDS-PRE-2

Lab Sample ID: 580-134359-1

Date Collected: 11/29/23 09:30
Matrix: Solid
Date Received: 12/01/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	ISM Prep	Increment, prep			445314	CLC	EET SEA	12/02/23 12:14
Total/NA	Prep	3546			445435	E1W	EET SEA	12/05/23 09:03
Total/NA	Analysis	8015D DRO		1	445457	KLW	EET SEA	12/06/23 08:47
Total/NA	ISM Prep	Increment, prep			445314	CLC	EET SEA	12/02/23 12:14
Total/NA	Prep	3050B			445470	TMH	EET SEA	12/05/23 11:56
Total/NA	Analysis	6020B		20	445606	FCW	EET SEA	12/06/23 08:34
Total/NA	ISM Prep	Increment, prep			445313	CLC	EET SEA	12/02/23 12:03
Total/NA	Analysis	2540G		1	445384	TMH	EET SEA	12/04/23 12:55

Client Sample ID: TDS-PRE-2

Lab Sample ID: 580-134359-1

Date Collected: 11/29/23 09:30
Matrix: Solid
Date Received: 12/01/23 09:30
Percent Solids: 85.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	ISM Prep	Increment, Prep			445392	TGO	EET SEA	12/04/23 13:46
Total/NA	Prep	5035			445397	TGO	EET SEA	12/04/23 13:46
Total/NA	Analysis	8260/CALUFT DOD		1	445408	JBT	EET SEA	12/05/23 10:33
Total/NA	ISM Prep	Increment, prep			445313	CLC	EET SEA	12/02/23 12:03
Total/NA	Prep	3546			445435	E1W	EET SEA	12/05/23 08:33
Total/NA	Analysis	8015D DRO		1	445457	KLW	EET SEA	12/06/23 06:06
Total/NA	ISM Prep	Increment, prep			445313	CLC	EET SEA	12/02/23 12:03
Total/NA	Prep	7471B			445447	JL	EET SEA	12/05/23 09:54
Total/NA	Analysis	7471B		1	445529	JL	EET SEA	12/05/23 14:37

Client Sample ID: TDS-PRE-5

Lab Sample ID: 580-134359-2

Date Collected: 11/29/23 11:15
Matrix: Solid
Date Received: 12/01/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	ISM Prep	Increment, prep			445314	CLC	EET SEA	12/02/23 12:14
Total/NA	Prep	3546			445435	E1W	EET SEA	12/05/23 09:03
Total/NA	Analysis	8015D DRO		1	445457	KLW	EET SEA	12/06/23 09:07
Total/NA	ISM Prep	Increment, prep			445314	CLC	EET SEA	12/02/23 12:14
Total/NA	Prep	3050B			445470	TMH	EET SEA	12/05/23 11:56
Total/NA	Analysis	6020B		20	445606	FCW	EET SEA	12/06/23 08:32
Total/NA	ISM Prep	Increment, prep			445313	CLC	EET SEA	12/02/23 12:03
Total/NA	Analysis	2540G		1	445384	TMH	EET SEA	12/04/23 12:55

Client Sample ID: TDS-PRE-5

Lab Sample ID: 580-134359-2

Date Collected: 11/29/23 11:15
Matrix: Solid
Date Received: 12/01/23 09:30
Percent Solids: 87.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	ISM Prep	Increment, Prep			445392	TGO	EET SEA	12/04/23 13:46
Total/NA	Prep	5035			445397	TGO	EET SEA	12/04/23 13:46
Total/NA	Analysis	8260/CALUFT DOD		1	445408	JBT	EET SEA	12/05/23 10:54

Lab Chronicle

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Recovery - Kula, Maui

Job ID: 580-134359-1

Client Sample ID: TDS-PRE-5

Date Collected: 11/29/23 11:15
Date Received: 12/01/23 09:30

Lab Sample ID: 580-134359-2

Matrix: Solid
Percent Solids: 87.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	ISM Prep	Increment, prep			445313	CLC	EET SEA	12/02/23 12:03
Total/NA	Prep	3546			445435	E1W	EET SEA	12/05/23 08:33
Total/NA	Analysis	8015D DRO		1	445457	KLW	EET SEA	12/06/23 07:06
Total/NA	ISM Prep	Increment, prep			445313	CLC	EET SEA	12/02/23 12:03
Total/NA	Prep	7471B			445447	JL	EET SEA	12/05/23 09:54
Total/NA	Analysis	7471B		1	445529	JL	EET SEA	12/05/23 14:39

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Environmental Chemical Corp. Job ID: 580-134359-1
Project/Site: 2023 Maui Recovery - Kula, Maui

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
2540G		Solid	Percent Moisture
2540G		Solid	Percent Solids

Sample Summary

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Recovery - Kula, Maui

Job ID: 580-134359-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-134359-1	TDS-PRE-2	Solid	11/29/23 09:30	12/01/23 09:30
580-134359-2	TDS-PRE-5	Solid	11/29/23 11:15	12/01/23 09:30

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

eurofins Environment Testing

Client Information	Sampler: Daniel Walsh	Lab PM: Walker, Marie E	Carrier Tracking No(s):	COC No: 580-59463-18343.1
Client Contact: Kaiulani Watson	Phone: (315) 413-9692	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: HI	Page: ~~Page 1 of 1~~ Page 1 of 2
Company: Environmental Chemical Corp.	PWSID:	Analysis Requested		Job #:
Address: 2969 Mapunapuna Place Suite 220	Due Date Requested:			Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA; M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify); Other:
City: Honolulu	TAT Requested (days): STANDARD			
State, Zip: HI, 96819	Compliance Project: Δ Yes Δ No			
Phone: 508-229-2270(Tel)	PO #: Purchase Order Requested			
Email: kwatson@ecc.net	WO #:			
Project Name: 2023 Maui Fires - Kula and Olinda, Maui	Project #: 58020087			
Site: 361 Luawai St. TDS	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	TPH GRO	TPH DRO/ORO	TITLE 22 17 METALS	Total Number of containers	Special Instructions/Note:
			Preservation Code:				F	I	I		
TDS-PRE-2	11/29/23	0930	MIS	S			X	X	X	16	15 jars, 1 bag

580-134359 Chain of Custody

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Daniel Walsh	11/29/23 1400	Tetra Tech	[illegible signature]	12/1/23 0930	ETTA

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1/2 A3 2.8/3.5 LB/Pub/Alilled/FPO

Ver: 06/08/2021

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

eurofins Environment Testing

Client Information	Sampler: Daniel Walsh	Lab PM: Walker, Marie E	Carrier Tracking No(s):	COC No: 580-59463-18343.1
Client Contact: Kalulani Watson	Phone: (315) 413-9692	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: HI	Page: Page 1 of 1 Page 2 of 2
Company: Environmental Chemical Corp.	PWSID:			Job #:

Address: 2969 Mapunapuna Place Suite 220	Due Date Requested:	Analysis Requested
City: Honolulu	TAT Requested (days): STANDARD	
State, Zip: HI, 96819	Compliance Project: Δ Yes Δ No	
Phone: 508-229-2270(Tel)	PO #: Purchase Order Requested	
Email: kwatson@ecc.net	WO #:	
Project Name: 2023 Maui Fires - Kula and Olinda, Maui	Project #: 58020087	
Site: 361 Luawai St. TDS	SSOW#:	

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	TPH GRO	TPH DRO/ORO	TITLE 22 17 METALS	Total Number of containers	Special Instructions/Note:
			Preservation Code:				F	I	I		
TDS-PRE-5	11/29/23	1115	MIS	S			X	X	X	16	15 jars, 1 bag

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:
Total Number of containers: 16

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Daniel Walsh	11/29/23 1400	Tetra Tech	T. Moore	12/1/23 0930	EETA

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 2/2 IR3 4.4/5.1 LB/Bub/Wet/EPO

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: Environmental Chemical Corp.

Job Number: 580-134359-1
SDG Number:

Login Number: 134359
List Number: 1
Creator: Groves, Elizabeth

List Source: Eurofins Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	False	Refer to Job Narrative for details.
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ATTACHMENT 4. NUISANCE NOISE ASSESSMENT REPORT

NUISANCE NOISE ASSESSMENT

WEST MAUI TEMPORARY DISPOSAL SITE

WILDFIRE REPSONSE DEBRIS REMOVAL SUPPORT

MAUI COUNTY

ADVANCE CONTRACTING INITIATIVE (ACI)

December 2023

Prepared for

United States Army Corps of Engineers
Region 8 - Pacific Ocean Division (POD)
Rock Island District

Contract No. W912EK-22-D-0004
Task Order No. W9128A-24-D-0001

Prepared by:

ECC Constructors LLC
1240 Bayshore Hwy Suite 317
Burlingame, CA 94010
Tel: 650.347.1555
Fax: 650.347.8789
Corporate@ecc.net

Back-up Alarm Nuisance Noise Assessment
Nighttime Liner Installation Operations
West Maui TDS Facility, Olowalu Maui

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1. Perform two tests – first test with one machine in reverse, second test with two machines in reverse.
2. Each test is to be 5 minutes in duration.
3. Measure noise level at three locations:
    a. Above the entrance to the recycling center at the approximate location of the port-o-lets. This will limit the impact road noise makes on the readings.
    b. At the North Olowalu residential area identified on the map.
    c. At the Olowalu store location. Away from the road to limit the impact road noise makes on the readings.

Test	Can backup alarm be heard at the recycling center entrance (yes or no)	Can backup alarm be heard at the N. Olowalu position (yes or no)	Can backup alarm be heard at the Olowalu General Store (yes or no)	dB reading at the recycle center entrance	dB reading at the N. Olowalu position	dB reading at the Olowalu General Store
One machine in reverse	No	No	No	46.5dB	59.3dB	32.2dB
Both machines in reverse	No	No	No	38.5dB	59.7dB	34.2dB

West Maui TDS Noise Assessment Map

JLG 1055 Telehandler. The telehandler will be fitted with a bridle system (rod hung from support beam) to allow liner installation crews to roll out the liner as the telehandler backs up. The telehandler is the primary liner installation equipment that will be used to install the liner on other than steep slopes.

Caterpillar 349f Hydraulic Excavator. This excavator will also be fitted with a bridle system (rod hung from support beam) to allow installation crews to roll out the liner material as the Excavator backs up. The tracked excavator will be used to install the liner on steeper slopes.

Heavy Equipment Specification Information

1. **JLB 1055 Telehandler**
2. **Caterpillar 349f Hydraulic Excavator**

1055
TELEHANDLER

JLG reachingout®

Performance

Rated Capacity	10,000 lb	4,536 kg
Maximum Lift Height	55 ft	16.76 m
Load at Max Height	5,000 lb	2,268 kg
Maximum Forward Reach	42 ft	12.8 m
Load at Max Reach	3,000 lb	1,361 kg
Frame Leveling	10°	
Lift Speed (boom retracted)		
Up	14 sec	
Down	11 sec	
Boom Speed		
Extended	16 sec	
Retracted	15 sec	
Top Travel Speed (4-Speed)	20 mph	32 kph
Drawbar Pull (loaded)	25,400 lb	113 kN
Outside Turning Radius	14 ft	4.3 m
Operating Weight	31,559 lb	14,315 kg

Standard Specifications

Engine

Make and Model	Cummins QSF3.8L Tier 4 F	
No. of Cylinders	4	
Displacement	231.9 cu in.	3.8 L
Gross Power Basic	130 hp	96 kW
Maximum Torque @ 1500 rpm	360 lb-ft	488 Nm
Fuel Tank Capacity	38.3 gal	145 L

Transmission

Powershift 4-speed forward and 3-speed reverse.

Axles

Trunnion mounted planetary 55° steer axles. Integral steer cylinder.
High bias limited slip differential on front axle.

Brakes

Service brakes are inboard wet disc brake on front and rear axles.
Parking brakes are wet disc spring-applied hydraulic release on front axle.

Tires

Standard	400/75-28
Optional	Foam-Filled or Solid

Cab

- Certified ROPS/FOPS structure
- Adjustable seat
- Horn
- Single joystick controls
- Tilt & declutch on joystick
- Anti-theft

Steering 4-Wheel

Hydraulic power steering with manual backup.
Operator selectable 4-wheel circle, 4-wheel crab, 2-wheel front.

Instruments

- Volt meter
- Hourmeter
- Engine oil pressure gauge
- Temperature gauge
- Fuel gauge
- DEF gauge

Hydraulic System-Implement

Capacity	48.6 gal	184 L

Load sense piston pump. Auxiliary hydraulics used for all attachments equipped with cylinders or other hydraulic components.

Accessories & Options

- Enclosed Cab
- Auxiliary Electrics
- Road Lights
- Air Conditioning
- Work Lights
- Rotating Beacon
- Hydraulic Coupler
- Fenders
- Brick Guards
- Arctic Package
- Multi-Function Display with Reversing Camera
- Ride Control
- Reverse Sensing System
- Boom Brushes
- Secondary Steering
- Wiper Package
- Positive Air Shut Off
- Non-Marking Tires

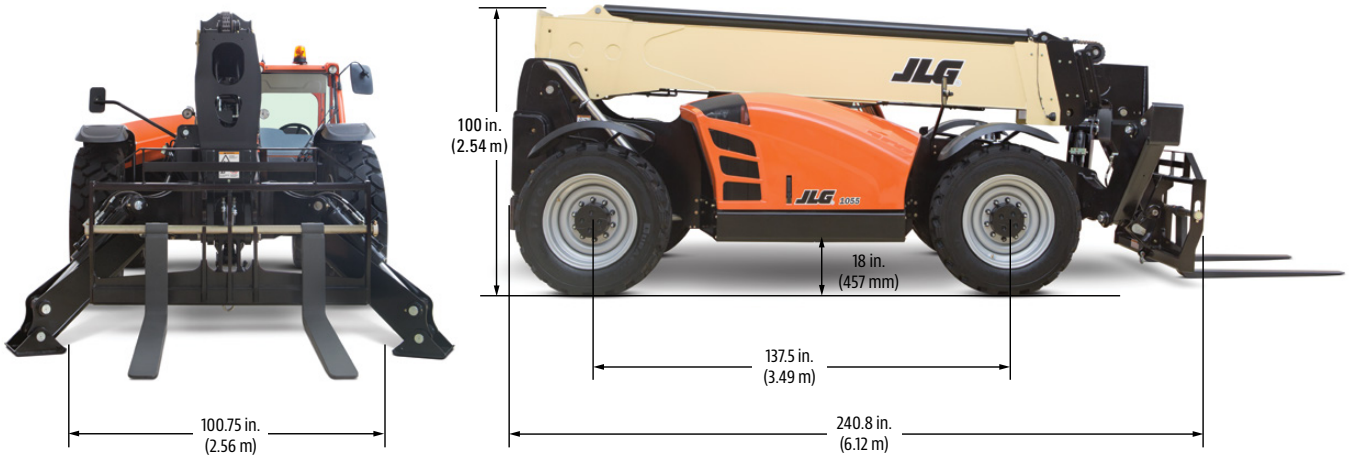
Attachments

Standard Carriage	50 in. 60 in. 72 in.	1.3 m 1.5 m 1.8 m
Side-Tilt Carriage	50 in. 60 in. 72 in.	1.3 m 1.5 m 1.8 m
Swing 90° or 180° Carriage	72 in.	1.8 m
Dual Fork Positioning Carriage	50 in.	1.3 m
Side-Shift Carriage	50 in.	1.3 m
Tower	8 ft	2.4 m
Tower with Side Tilt	8 ft	2.4 m
Pallet Forks	2.36 in. x 4 in. x 48 in. 2.36 in. x 5 in. x 48 in. 2.00 in. x 6 in. x 72 in.	60 mm x 102 mm x 1.2 m 60 mm x 127 mm x 1.2 m 51 mm x 152 mm x 1.8 m
Lumber Forks	2.00 in. x 7 in. x 60 in. 2.36 in. x 6 in. x 60 in.	51 mm x 178 mm x 1.5 m 60 mm x 152 mm x 1.5 m
Cubing Forks	2 in. x 2 in. x 48 in.	51 mm x 51 mm x 1.2 m
Fork Extensions	90 in.	2.3 m
Material Bucket	72 in., 1.0 cu yd 96 in., 1.5 cu yd 102 in., 2.0 cu yd	1.8 m, 0.76 m^3 2.4 m, 1.15 m^3 2.6 m, 1.53 m^3
Grapple Bucket	96 in., 1.75 cu yd	2.4 m, 1.34 m^3
Truss Boom	3 ft (winch), 4,000 lb Capacity	0.9 m, 1,814 kg Capacity
Truss Boom	12 ft, 2,000 lb 15 ft, 2,000 lb 12 ft with winch, 2,000 lb	3.7 m, 907 kg 4.6 m, 907 kg 3.7 m, 907 kg
Fork-Mounted Work Platform	8 ft, 6,000 lb Capacity	1.8 m, 2,722 kg Capacity
Pipe Grapple	72 in., 6,000 lb Capacity	2.4 m, 2,722 kg Capacity
Bucket-Fork Mounted	60 in., 1.3 cu yd	1.5 m, 1.0 m^3
Material Handling Arm	4,000 lb Capacity	1,814 kg Capacity
Trash Hopper	72 in., 1.9 cu yd	1.8 m, 1.5 m^3
Lifting Hook-Fork Mounted		
Lifting Hook-Coupler Mounted		
Fork-Mounted Extendable Truss		

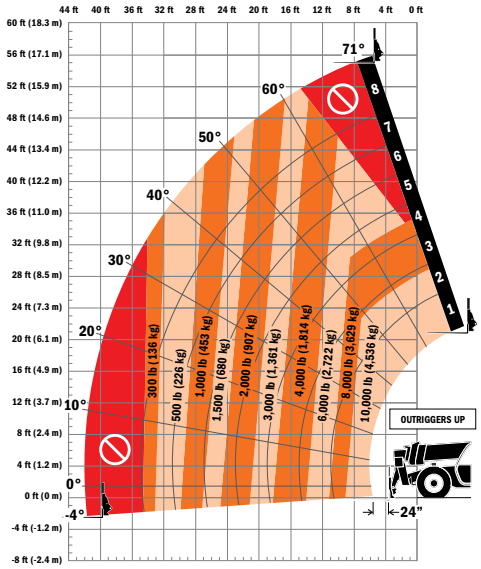
1055
TELEHANDLER

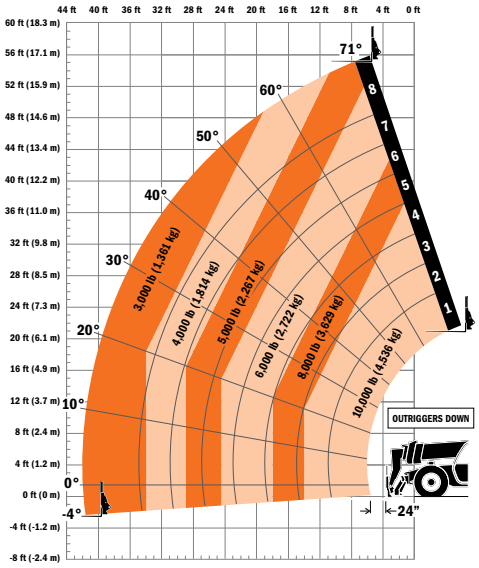
Dimensions

All dimensions are approximate.



Load Chart





The JLG "1, 2 & 5" Warranty

We provide coverage for one (1) full year on the entire machine, two (2) full years or 2,000 hours on the drivetrain and cover all specified major structural components for five (5) years. Due to continuous product improvements, we reserve the right to make specification and/or equipment changes without prior notification.

Part No.: 3132243
R111803
Printed in USA

JLG Industries, Inc.
1 JLG Drive
McConnellsburg, PA 17233-9533
Telephone 717-485-5161
Toll-free in US 877-JLG-LIFT
Fax 717-485-6417
www.jlg.com

An Oshkosh Corporation Company

PRODUCT SPECIFICATIONS FOR 349

ENGINE

Net Power - ISO 9249	424 HP
Engine Model	Cat C13
Engine Power - ISO 14396	425 HP
Bore	5 in
Stroke	6 in
Displacement	763 in³

HYDRAULIC SYSTEM

Main System - Maximum Flow	779 l/min (206 gal/min)
Maximum Pressure - Equipment	5076 psi
Maximum Pressure - Equipment - Lift Mode	5511 psi
Maximum Pressure - Travel	5076 psi
Maximum Pressure - Swing	3771 psi

SWING MECHANISM

Swing Speed	8.44 r/min
Maximum Swing Torque	138000 ft·lbf

WEIGHTS

Operating Weight	105200 lb

SERVICE REFILL CAPACITIES

Fuel Tank Capacity	188.9 gal (US)
Cooling System	13.7 gal (US)
Engine Oil	10.6 gal (US)
Swing Drive - Each	2.8 gal (US)
Final Drive - Each	4 gal (US)
Hydraulic System - Including Tank	145.3 gal (US)
Hydraulic Tank	57.3 gal (US)
DEF Tank	12.2 gal (US)

DIMENSIONS

Boom	Reach 6.9m (22'8")
Stick	R3.35m (11'0")
Bucket	GDC 3.08 m^3 (4.03 yd^3)
Shipping Height - Top of Cab	10.6 ft
Handrail Height	11.1 ft
Shipping Length	39.1 ft
Tail Swing Radius	12.3 ft
Counterweight Clearance	4.2 ft
Ground Clearance	1.6 ft
Track Length	17.6 ft

Track Length to Center of Rollers	14.3 ft
Track Gauge	9 ft
Transport Width	11.9 ft

WORKING RANGES & FORCES

Maximum Digging Depth	25.1 ft
Boom	Reach 6.9m (22'8")
Stick	R3.35m (11'0")
Bucket	GDC 3.08 m³ (4.03 yd³)
Maximum Reach at Ground Level	38.5 ft
Maximum Cutting Height	35.5 ft
Maximum Loading Height	24.4 ft
Minimum Loading Height	9 ft
Maximum Depth Cut for 2440 mm (8 ft) Level Bottom	24.7 ft
Maximum Vertical Wall Digging Depth	19.1 ft
Bucket Digging Force - ISO	60250 lbf
Stick Digging Force - ISO	44740 lbf

349 STANDARD EQUIPMENT

NOTE

Standard and optional equipment may vary. Consult your Cat dealer for details.

CAB

ROPS, sound suppression

High-resolution LCD touch screen monitor
Heated seat with air-adjustable suspension (Deluxe only)
Heated and cooled seat with auto adjustable suspension (Premium only)

ENGINE

Three selectable modes: Power, Smart, and Eco
Auto engine speed control
Up to 4500m (14,760 ft) altitude capability
52° C (126° F) high-ambient cooling capacity
-18° C (0° F) cold start capability
Double element air filter with integrated pre-cleaner
Remote disable
Biodiesel capability up to B20

HYDRAULIC SYSTEM

Boom and stick regeneration circuit
Electronic main control valve
Auto hydraulic oil warm up
Reverse swing damping valve
Auto swing parking brake
High performance hydraulic return filter
Two speed travel
Bio hydraulic oil capability
Long undercarriage

UNDERCARRIAGE AND STRUCTURES

Towing eye on base frame

ELECTRICAL SYSTEM

Maintenance-free 1000 CCA batteries (x2)
Centralized electrical disconnect switch
LED chassis light, left and right hand boom lights, cab lights

CAT TECHNOLOGY

Cat Product Link
Cat PAYLOAD
E-Fence
Lift Assist
Remote Services capability

CAT TECHNOLOGY

Cat GRADE with 2D
Cat GRADE with Assist

SERVICE AND MAINTENANCE

Grouped location of engine oil & fuel filters
Scheduled Oil Sampling (S.O.S) ports

SAFETY AND SECURITY

Caterpillar One Key security system
Lockable external tool / storage box
Lockable door, fuel, and hydraulic tank locks
Lockable fuel drain compartment
Service platform with anti-skid plate & recessed bolts
Rear and right-hand-sideview cameras

349 OPTIONAL EQUIPMENT

NOTE

Standard and optional equipment may vary. Consult your Cat dealer for details.

ENGINE

Cold start block heaters
-32° C (-25° F) cold start capability
Hydraulic reverse fan
Hydraulic reverse fan

HYDRAULIC SYSTEM

Smart Boom
Combined two-way auxiliary circuit
Medium-pressure auxiliary circuit
Quick coupler circuit

UNDERCARRIAGE AND STRUCTURES

Long undercarriage
8.6 mt (18,960 lb) counterweight
9.0 mt (19,842 lb) counterweight
600mm (24") triple grouser track shoes
600mm (24") HD double grouser track shoes
600mm (24") double grouser track shoes
750mm (30") triple grouser track shoes

BOOMS AND STICKS

7.4 m (24'2") Long Reach boom
6.9 m (22'8") Reach boom
6.55 m (21'6") Mass boom
4.3 m (14'1") stick
3.9 m (12'10") stick
3.35 m (11'0") stick
3.0 m (9'10") stick

2.9 m (9'6") stick
2.5 m (8'2") stick
2.5 m (8'2") stick

ELECTRICAL SYSTEM

Premium surround lighting package

CAT TECHNOLOGY

Cat GRADE with Advanced 2D
Cat GRADE with 3D
Cat GRADE with Advanced 2D
Cat GRADE with 3D

SERVICE AND MAINTENANCE

Electric refueling pump with auto shutoff

SAFETY AND SECURITY

Boom lowering check valve
Stick lowering check valve
360° Visibility

Noise measurement report

Date: 12/20/23, 4:11PM

Operator:

Place:

Measurement results

Measurement time (hh:mm:ss)	00:05:02	
LAeq	66.0	dB
Max. level	87.0	dB
LCpeak	111.8	dB
TWA	46.5	dB
Dose	0.0	%
Projected dose	1.3	%

Notes

Noise measurement report

Date: 12/20/23, 4:18PM

Operator:

Place:

Measurement results

Measurement time (hh:mm:ss)	00:05:06	
LAeq	58.3	dB
Max. level	85.5	dB
LCpeak	112.6	dB
TWA	38.5	dB
Dose	0.0	%
Projected dose	0.2	%

Notes

Noise measurement report

Date: 12/20/23, 4:31PM

Operator:

Place:

Measurement results

Measurement time (hh:mm:ss)	00:05:09	
LAeq	78.9	dB
Max. level	103.5	dB
LCpeak	128.1	dB
TWA	59.3	dB
Dose	0.3	%
Projected dose	25.0	%

Notes

Noise measurement report

Date: 12/20/23, 4:36PM

Operator:

Place:

Measurement results

Measurement time (hh:mm:ss)	00:05:02	
LAeq	79.5	dB
Max. level	106.4	dB
LCpeak	129.8	dB
TWA	59.7	dB
Dose	0.3	%
Projected dose	28.1	%

Notes

Noise measurement report

Date: 12/20/23, 4:50PM

Operator:

Place:

Measurement results

Measurement time (hh:mm:ss)	00:05:02	
LAeq	52.0	dB
Max. level	73.7	dB
LCpeak	101.2	dB
TWA	32.2	dB
Dose	0.0	%
Projected dose	0.0	%

Notes

Noise measurement report

Date: 12/20/23, 4:56PM

Operator:

Place:

Measurement results

Measurement time (hh:mm:ss)	00:05:02	
LAeq	54.0	dB
Max. level	76.3	dB
LCpeak	99.6	dB
TWA	34.2	dB
Dose	0.0	%
Projected dose	0.1	%

Notes

ATTACHMENT 5. NEPA AND NHPA DOCUMENTATION

Record of Environmental Consideration

See FEMA Directive 108-1 and FEMA Instruction 108-1-1.

Project Name/Number: Mission Assignment (MA) #: 4724DR-HI-COE-POD-09-00; Resource Request #: 3568-855059

Project Location: County of Maui Olowalu Landfill (closed), Honoapiilani Highway Lahaina, HI 96761

Project Description: Mission Assigned Agency: U.S. Army Corps. Of Engineers - ESF 3 USACE PPDR | CPDR

National Environmental Policy Act (NEPA) Determination

☒ Statutorily excluded from NEPA review. (**Review Concluded)**
☐ Categorical Exclusion - Category Type Single Project
- ☐ No Extraordinary Circumstances exist.
  Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
- ☐ Extraordinary Circumstances exist (See Section IV).
  - ☐ Extraordinary Circumstances mitigated. (See Section IV comments)
    Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
  - ☐ Environmental Assessment required. See FONSI for determination, conditions and approval.

☐ Environmental Assessment required. See FONSI for determination, conditions and approval.

Comments: **Scope of Work (SOW):** The Private Property Debris Removal (PPDR) referred to as the Consolidated Property Debris Removal (CPDR) program by Maui County under the Federal Emergency Management Agency's (FEMA) implemented by the United States Army Corps of Engineers (USACE) Mission Assignment, USACE contractors ECC Constructors LLC (ECC) is proposing the construction of a Temporary Debris Staging Site (TDS) site for fire related material debris removed from the burn scar resulting from the DR-4724 Lahaina wildfire. The site will be located approximately a half mile directly northwest of the existing County of Maui Olowalu Landfill (closed), Honoapiilani Highway Lahaina, HI 96761. Construction will consist of cutting and/or excavating approximately 74,000 cubic yards to a maximum depth of 32 feet in a (6) six-acre area and filling of approximately 19,000 cubic yards (to include grading of aggregate base), the installation of an 80Mil HDPE liner (with an aggregate base above the liner); with a net fill capacity of 408,500 cubic yards (gross volume minus operations soil and termination soil fill). The design also includes an 60ML HDPE geomembrane lined leachate retention pond system with a 2:1 slope, with a maximum depth of 12 feet and 24 feet across; designed to contain 1,000,000 gallons of leachate or water from precipitation on the TDS. A temporary access road will be installed, in which ties into the pre-existing road (pre-existing road will be improved) within the interior of the landfill. Additionally, a weigh station will be installed on the pre-existing road running parallel (pre-existing road will be improved) between HI-30 and the landfill. Chain link fencing will be installed with a drive gate with posts 10 feet apart with concrete footings 3 feet deep to prevent unauthorized entry into the site. Clearing and grubbing of vegetation will be done as necessary in order to construct the site, although vegetation is scarce within the cinder pit. The application of "Hydroseeding", a slurry of seed and mulch will be applied as an erosion control around the road areas, chipped aggregate bags will also be applied for erosion control above/along the debris depressional pit, staggered angled wattles will be placed on the side of the access roads within the property grounds, wet methods will be applied for dust control (to include leachate or water collected from the system to be used as mist within the TDS and mobile water trucks misting the access roads within the property grounds), rumble strip installed at the entry/departure before entering debris pit, incoming debris will be continuously covered with aggregate cinder (from excavation), and Soil Tac will be applied to the TDS debris pit nightly for additional erosional control protections as best management practice(s).

FEMA Environmental and Historic Preservation (EHP) Manager Bryon Jean-Louis and EHP Historic Preservation Specialist SOI David Herdrich in coordination with USACE Debris SME Tracey Keel conducted an initial West Maui TDS site survey on 10/13/2023. The purpose of this survey is for the review the of anticipated ground disturbance, to observe and document any cultural or archeological resources, and to observe and document vegetation presence, species presence or habitat, nearby water resources, any to document any foreseen direct or indirect impacts to listed species associated with the West Maui Landfill property site selection for the TDS. This visit also assists in documenting the before and after aspects of the terrain and infrastructure as a result of the TDS project.

FEMA Environmental and Historic Preservation (EHP) Manager Bryon Jean-Louis in coordination with USACE Debris SME Tracey Keel conducted a follow-up West Maui TDS site survey on 10/20/2023. The purpose of this site visit is for the review of the anticipated location for the proposed weigh scale locations, any anticipated ground disturbance, document the initial integrity of the road to be used, and to gain insight on initial design aspects.

At the request of Maui County Council, by amendment to Bill 120 for the approval of the ordinance to use the site as a TDS, Monitoring Wells (MW) are being included for installation to the site to monitor for any potential contamination resulting from run-off from the site's system. The County of Maui's proposed design is for four (4) monitoring wells, to be located both up-gradient (1 well) and down-gradient (3 wells); USACE is proposing the installation of two (2) wells, one (1) up-gradient and one (1) down-gradient. Each well will be installed via a drill rig, measure 2 inches in diameter and extend to depths varying from 85 to 450 feet below ground. A temporary generator will be mobilized and/or installed on each well to power sampling equipment; there will be no permanently installed utilities at any well site. Water samples will only be taken four (4) times a year. The wells will be temporary and will be abandoned when the TDS is decommissioned; well casing is anticipated to be removed. The TDS Right-of-Entry is for 18 months and will be decommissioned thereafter if not extended by amendment.

MW1: GPS (20.831329, -156.627138), up-gradient with an estimated depth of 500 feet, well 2 to 4 inches in diameter, 4x4 feet concrete well pad at surface surrounding well head; MW2: GPS (20.829615, - 156.631732), down-gradient with an estimated depth of 150 feet, well 2 to 4 inches in diameter, 4x4 feet concrete well pad at surface surrounding well head to include bollards being placed around pad to avoid damage by vehicles with a maximum 3 feet deep excavation for bollards; MW3: GPS (20.827588, - 156.632317), down-gradient with an estimated depth of 85 feet, well 2 to 4 inches in diameter, 4x4 feet concrete well pad at surface surrounding well head to include bollards being placed around pad to avoid damage by vehicles with a maximum 3 feet deep excavation for bollards; MW4 (Potential MW to be determined): GPS (20.831436, -156.631392), mid-gradient with an estimated depth of 225 feet, well 2 to 4 inches with a 4 feet square well head.

FEMA Environmental and Historic Preservation (EHP) Manager Bryon Jean-Louis and EHP Historic Preservation Specialist SOI John Lawrence in coordination with USACE Debris SME Dr. Cory Koger will conduct a TDS site survey for the anticipated ground disturbance associated with the installation of the two (2) monitoring wells on 03/14/2024. The purpose of the site visit is to document each of the proposed well sites for future consultation with the SHPD and other consulting parties.

On the 03/14/2024 TDS site survey, FEMA EHP was notified that USACE is proposing to install a secondary 60ML HDPE geomembrane lined leachate retention pond (with a 2:1 slope, with a maximum depth of 12 feet and 24 feet across) adjacent to the existing leachate system and will be connect by way of a concrete gravity fed spillway. This secondary retention pond is also designed to contain 1,000,000 gallons of leachate, in the event of spill over from the primary retention pond. The intent is to definitively confirm protection against overflow of the leachate retention pond system as indicated in Bill 120 for the approval of the ordinance to use the site as a TDS.

This Federal Emergency Management Agency (FEMA) Mission Assigned U.S. Army Corps of Engineers (USACE) Private Property Debris Removal (PPDR) referred to as the Consolidated Property Debris Removal (CPDR) by Maui County program and Temporary Debris Staging (TDS) Action is Statutorily Excluded from NEPA and the requirement to prepare an Environmental Impact Statement or an Environmental Assessment in accordance with Section 316 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5159.

Reviewer and Approvals

FEMA Environmental Reviewer
Name: Bryon Jean-Louis, (EHMG) Environmental Specialist

Signature_____. Date _____.

FEMA Historic Preservation Reviewer
Name: , Historic Preservation Specialist
Signature_____. Date _____.

FEMA Environmental Officer Reviewer or delegated approving official
Name:

Signature_____. Date _____.

I. Compliance Review for Environmental Laws (other than NEPA)

A. National Historic Preservation Act

☐ Not type of activity with potential to affect historic properties. **(Review Concluded)**
☐ Applicable executed Programmatic Agreement (insert date) Otherwise, conduct standard Section 106 review.
☐ Activity meets Programmatic Allowance # _____
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

HISTORIC BUILDINGS AND STRUCTURES

☒ No historic properties 50 years or older in project area. **(Review Concluded)**
☐ Building or structure 50 years or older in project area and activity not exempt from review.
☐ Determination of No Historic Properties Affected (FEMA finding/SHPO/THPO concurrence on file)
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
☐ Determination of Historic Properties Affected (FEMA finding/SHPO/THPO concurrence on file)
☐ Property a National Historic Landmark and National Park Service was provided early notification during the consultation process. If not, explain in comments
☐ No Adverse Effect Determination (FEMA finding/SHPO/THPO concurrence on file).
Are project conditions required? ☐ Yes (see section V) ☒ No **(Review Concluded)**
☐ Adverse Effect Determination (FEMA finding/SHPO/THPO concurrence on file)
☐ Resolution of Adverse Effect completed. (MOA on file)
Are project conditions required ☐ Yes (see section V) ☐ No **(Review Concluded)**

ARCHEOLOGICAL RESOURCES

☐ Project affects only previously disturbed ground. **(Review Concluded)**
☒ Project affects undisturbed ground.
☐ Project area has no potential for presence of archeological resources
☐ Determination of no historic properties affected (FEMA finding/SHPO/THPO concurrence or consultation on file). **(Review Concluded)**
☒ Project area has potential for presence of archeological resources
☒ Determination of no historic properties affected (FEMA finding/SHPO/THPO concurrence on file)
Are project conditions required ☐ Yes (see section V) ☐ No **(Review Concluded)**
☐ Determination of historic properties affected
☐ NR eligible resources not present (FEMA finding/SHPO/THPO concurrence on file).
Are project conditions required ☐Yes (see section V) ☐ No **(Review Concluded)**
☐ NR eligible resources present in project area. (FEMA finding/ SHPO/THPO concurrence on file)
☐ No Adverse Effect Determination. (FEMA finding/ SHPO/THPO concurrence on file)
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

☐ Adverse Effect Determination. (FEMA finding/ SHPO/THPO concurrence on file)
☐ Resolution of Adverse Effect completed. (MOA on file)
Are project conditions required? ☐ Yes (see section V) ☐ No
(Review Concluded)

Comments: For the proposed undertaking, as described, FEMA consulted with the State Historic Preservation Division (SHPD) on 11/04/2023 and made a finding of No Historic Properties affected in accordance with Stipulation II.C of the Programmatic Agreement among the Federal Emergency Management Agency (FEMA), State Historic Preservation Division (SHPD), The Office of Hawaiian Affairs, and The State of Hawaii Department of Defense signed July 12, 2016, as extended by amendment June 30, 2023. SHPD concurred with the FEMA finding by letter dated 11/08/2023.

FEMA EHP Lead Environmental and Historic Advisor, Chelsea Klein and EHP Historic Preservation Specialist SOI Nicholas Moore coordinated with Alan Downer, SHPD Administrator; Iolani Kauhane, SHPD archaeologist for Maui, Foster Ampong with the Kimokeo Ohana of Lahaina (NHO); Hinano Rodrigues, formerly with SHPD but with NHO for Olowalu; Janet Six, Maui County archeologist; Leornard Bakker, and USACE Debris Task Force on 01/18/2024. The purpose of the site visit is to confirm the location of reported "alter" and to re-confirm the finding of "No historic properties affected" in accordance with Stipulation II.C of the Programmatic Agreement as concurred by the SHPD with FEMA on the letter dated 11/08/2023.

State Historic Preservation Division (SHPD) Consultation in draft for the proposed ground monitoring well to be installed at the TDS.

State Historic Preservation Division (SHPD) Consultation draft will be in process upon receival of design and location plans for the proposed secondary leachate retention pond overflow to be installed on the existing leachate system at the TDS.

(See Attachments)
Conditions:
Correspondence/Consultation/References:

B. Endangered Species Act

☐ No listed species and/or designated critical habitat present in the action area. **(Review Concluded)**
☒ Listed species and/or designated critical habitat present in the action area.
☐ No effect to species or designated critical habitat**.** (See comments for justification) **(Review Concluded)**
☒ May affect, but not likely to adversely affect species or designated critical habitat (FEMA determination/USFWS/NMFS concurrence on file) **(Review Concluded)**
☐ Likely to adversely affect species or designated critical habitat
☐ Formal consultation concluded. (Biological Assessment and Biological Opinion on file)
Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: FEMA EHP has determined that the proposed construction of a Temporary Debris Staging (TDS) site at West Maui (Olowalu) Landfill, being considered for Lahaina wildfire PPDR|CPDR operations outlined above, is Not Likely to Adversely Affect (NLAA) the listed endangered or threatened species under the Endangered Species Act (ESA) and U.S. Fish and Wildlife Service (USFWS) Pacific Island Fish and Wildlife Office (PIFWO) jurisdiction.

FEMA EHP in coordination with USACE and USFWS, conducted a site visit to the TDS on 12/13/2023 with FWS representatives Carrie Harrington and James Yrigoyen. The service confirmed the determination of Not Likely to Adversely Affect (NLAA), provided Avoidance and Minimization Measures (AMM) recommendation of posting signage for avian listed species and angle and type of lights for avian and sea-turtle listed species regarding the proposed potential night work for liner sealing on site after being briefed on operations and by way of email on 12/15/2023 and 12/18/2023.

FEMA EHP Manager Bryon Jean-Louis and EHP Historic Preservation Specialist SOI John Lawrence in coordination with USACE Debris SME Dr. Cory Koger conducted a TDS site survey on 03/14/2024. EHP observed the posted AMM signage as recommended by the FWS service for listed avian species.

(See Attachments)

Conditions:
Correspondence/Consultation/References:

C. Coastal Barrier Resources Act

☒ Project is not located in Coastal Barriers Resource System or Otherwise Protected Area.
☐ Project does not affect a coastal barrier within the COBRA System (regardless of in or out) **(Review Concluded)**
☐ Project is located in a coastal barrier system and/or affects a coastal barrier. (FEMA determination/USFWS consultation on file)
- ☐ Proposed action an exception under Section 3505.a.6? **(Review Concluded)**
- ☐ Proposed action not excepted under Section 3505.a.6.
  Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: The TDS project is not on or connected to a CBRA Unit or Otherwise protected area as there are no Coastal Barriers in Hawaii. CBRA review is concluded and/or not applicable.

Conditions:
Correspondence/Consultation/References:

D. Clean Water Act

☒ Project site located outside of and would not affect any waters of the U.S. **(Review Concluded)**
☐ Project site located in or would affect waters, including wetlands, of the U.S.
- ☐ Project exempted as in kind replacement or other exemption. **(Review Concluded)**
- ☐ Project requires Section 404/401/10 permit, including qualification under Nationwide Permits.
  Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: There is no work in water, therefore the project will not affect any waters of the United States. CWA review is concluded.

Conditions:
Correspondence/Consultation/References:

E. Coastal Zone Management Act

☐ Project is not located in a coastal zone area – **(Review concluded)**
☒ Project is located in a coastal zone area:
- ☒ State administering agency does not require consistency review. **(Review Concluded)**.
- ☐ State administering agency requires consistency review.
  Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: The TDS is located in a coastal zone area, however, the state administering agency does not require consistency review. FEMA-funded projects are not subject to Federal consistency certification and review under the Hawaii Coastal Zone Management Program according to the program's List of Federal Permits and Financial Assistance located at: https://coast.noaa.gov/data/czm/consistency/media/hi.pdf.

(See Attachment)

Conditions:
Correspondence/Consultation/References:

F. Fish and Wildlife Coordination Act

☒ Not applicable for financial assistance**.** **(Review Concluded)**
☐ Project does not affect, control, or modify a waterway/body of water. **(Review Concluded)**

☐ Project affects, controls or modifies a waterway/body of water.
☐ Coordination with USFWS conducted
☐ No Recommendations offered by USFWS. **(Review Concluded)**
☐ Recommendations provided by USFWS.
Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: The TDS project does not affect, control, or modify a waterway or body of water and is there for Not Applicable and the FWCA review is concluded.

Conditions:
Correspondence/Consultation/References:

G. Clean Air Act

☒ Project will not result in permanent air emissions. **(Review Concluded)**
☐ Project is located in an attainment area. **(Review Concluded)**
☐ Project is located in a non-attainment area.
☐ Coordination required with applicable state administering agency.
Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: The TDS project will not result in permanent air emissions. CAA review is concluded.

Conditions:
Correspondence/Consultation/References:

H. Farmlands Protection Policy Act

☒ Project does not affect prime or unique farmland. **(Review Concluded)**
☐ Project causes unnecessary or irreversible conversion of prime or unique farmland.
☐ Coordination with Natural Resource Conservation Commission required.
☐ Farmland Conversion Impact Rating, Form AD-1006, completed.
Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: The TDS project does not affect prime or unique farmland. FPPA review is concluded.

Conditions:
Correspondence/Consultation/References:

I. Migratory Bird Treaty Act

☐ Project not located within a flyway zone. **(Review Concluded)**
☒ Project located within a flyway zone.
☒ Project does not have potential to take migratory birds. **(Review Concluded)**
☐ Project has potential to take migratory birds.
☐ Contact made with USFWS
Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: The TDS is located in the flyway zone, however, after review of the scope of work; the project does not have potential to take migratory birds. MBA review is concluded.

Conditions:
Correspondence/Consultation/References:

J. Magnuson-Stevens Fishery Conservation and Management Act

☒ Project not located in or near Essential Fish Habitat. **(Review Concluded)**
☐ Project located in or near Essential Fish Habitat.
- ☐ Project does not adversely affect Essential Fish Habitat. **(Review Concluded)**
- ☐ Project adversely affects Essential Fish Habitat (FEMA determination/USFWS/NMFS concurrence on file)
  - ☐ NOAA Fisheries provided no recommendation(s) **(Review Concluded).**
  - ☐ NOAA Fisheries provided recommendation(s)
    - ☐ Written reply to NOAA Fisheries recommendations completed.
      Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: There is no work in water, therefore the project is not located in or near an essential fish habitat. MSA review is concluded.

Conditions:
Correspondence/Consultation/References:

K. Wild and Scenic Rivers Act

☒ Project is not along and does not affect Wild or Scenic River - **(Review Concluded)**
☐ Project is along or affects Wild or Scenic River
- ☐ Project adversely affects WSR as determined by NPS/USFS. **FEMA cannot fund the action**. (NPS/USFS/USFWS/BLM consultation on file)
- ☐ Project does not adversely affect WSR. (NPS/USFS/USFWS/BLM consultation on file)
  Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: The TDS project is not along and does not affect wild and scenic rivers as there are No wild and scenic rivers in Hawaii. WSR review is concluded.

Conditions:
Correspondence/Consultation/References:

L. Other Relevant Laws and Environmental Regulations

Identify relevant law or regulations, resolution and any consultation/references

II. Compliance Review for Executive Orders

A. E.O. 11988 - Floodplains

☒ Outside Floodplain and No Effect on Floodplains/Flood levels - **(Review Concluded)**
☐ Located in Floodplain or Effects on Floodplains/Flood levels
- ☐ No adverse effect on floodplain or can be adversely affected by the floodplain. **(Review Concluded)**,
- ☐ Beneficial Effect on Floodplain Occupancy/Values **(Review Concluded).**
- ☐ Possible adverse effects associated with investment in floodplain, occupancy or modification of floodplain environment
  - ☐ 8 Step Process Complete - documentation on file **(Review Concluded)**

Comments: In regard to Executive Order (E.O.) 11988 – Per 44 CFR 9.5(c)(1) emergency debris removal within floodplain is exempt from floodplain review. Temporary debris staging site is located outside the Special Flood Hazard Area (100-year floodplain, base floodplain) and the activity does not adversely affect floodplain values per Flood Insurance Rate Map (FIRM) panel 1500030531F, dated 09/19/2012.
(See Attachment)

Conditions:
Correspondence/Consultation/References:

B. E.O. 11990 - Wetlands

☒ Outside Wetland and No Effect on Wetland(s) - **(Review Concluded)**
☐ Located in Wetland or effects Wetland(s)
- ☐ Beneficial Effect on Wetland - **(Review Concluded)**
- ☐ Possible adverse effect associated with constructing in or near wetland
  - ☐ Review completed as part of floodplain review
  - ☐ 8 Step Process Complete - documentation on file **(Review Concluded)**

Comments: In regard to Executive Order (E.O.) 11990 – Per the U.S. Fish and Wildlife Service Wetland Mapper viewed on 11/14/2023, the temporary debris staging site is located outside of wetlands and not likely to result in any potential direct impacts that will adversely affect wetlands.

Conditions:
Correspondence/Consultation/References:

C. E.O. 12898 - Environmental Justice for Low Income and Minority Populations

☐ No Low income or minority population in, near or affected by the project - **(Review Concluded)**
☒ Low income or minority population in or near project area
- ☒ No disproportionately high and adverse impact on low income or minority population- **(Review Concluded)**
- ☐ Disproportionately high or adverse effects on low income or minority population
  Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: In regard to Executive Order 12898 – Minority or low-income populations were identified through program coordination and public involvement, state EJ community lists or maps, or EJSCREEN reports for the area around West Maui (Olowalu) Landfill, Honoapiilani Highway, Lahaina, HI 96761, GPS (20.831825, -156.630658). Review of the project scope of work revealed adverse effects on these populations, but further review determined these effects did not constitute disproportionately high and adverse effects. Therefore, no additional review for potential EJ concerns is required. The maps, EJ reports, EHP TDS EJ memo, and other information are saved to the project files.
(See Attachment)

Conditions:
Correspondence/Consultation/References:

III. Other Environmental Issues

Identify other potential environmental concerns in the comment box not clearly falling under a law or executive order (see environmental concerns scoping checklist for guidance).

State Hazardous Materials & Solid Waste Laws (SHM&SWL)

Comments: In regard to State Hazardous Materials and Solid Waste Laws (SHM&SWL) – The proposed TDS at West Maui (Olowalu) Landfill, Honoapiilani Highway, Lahaina, HI 96761, GPS (20.831825, -156.630658) has been reviewed and activated by Solid and Hazardous Waste Branch of the Department of Health (DOH). Due to Governor Josh Green's issued 7th emergency proclamation (now 10th amended), that, in part, suspends, "Chapter 342H, HRS, solid waste pollution, to the extent necessary to respond to the emergency, and implementing rules including HAR section 11-58.1 to allow expedited waste management including but not limited to collection, removal, transport, recycling, and disposal activities." Based on this emergency proclamation, the Department of Health will not require temporary storage debris facilities being planned at Central Maui Landfill or in the Olowalu area to obtain solid waste management permits while the emergency proclamation is in effect. As a result, the Department of Health will not require temporary storage debris facilities being planned in the Olowalu area to obtain solid waste management permits while the emergency proclamation is in effect. Email from Glen Haee, Solid and Hazardous Waste Branch of the Department of Health was received on 09/19/2023.

On 11/03/2023, Region IX United States Environmental Protection Agency (EPA) Assistant Director Land, Chemicals and Re-development Division Adrienne Priselac provided the County of Maui Department of Environmental Management Director Shayne Agawa with EPA's position on household waste exclusion as it relates to Maui wildfire ash and debris. [Excerpt from EPA's letter dated 11/03/2023] The purpose of the letter is to clarify EPA's position on the applicability of the household waste exclusion found at 40 C.F.R. § 261.4(b), which allows for waste from households to be disposed of in traditional municipal landfills regulated under the Resource Conservation and Recovery Act (RCRA). The household waste

exclusion provides that "household waste" does not fall within RCRA's definition of "hazardous waste." The exclusion defines "household waste" as follows: "Household waste" means any material (including garbage, trash and sanitary wastes in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds and day-use recreation areas). It is EPA's interpretation and experience that the household waste exclusion applies to ash and debris generated from residential properties impacted by the tragic Maui wildfires. The household waste exclusion allows permitted municipal facilities, such as the Central Maui Landfill, to receive ash and debris. Further, it is our understanding that the site being planned in West Maui, also known as the Olowalu site, is currently being designed to meet or exceed the Subtitle D standards as well as Hawaii's approved Subtitle D regulations for municipal solid waste landfills found at Hawaii Administrative Rules § 11-58.1.
(See Attachments)

Conditions:
Correspondence/Consultation/References:

IV. Extraordinary Circumstances

Based on the review of compliance with other environmental laws and Executive Orders, and in consideration of other environmental factors, review the project for extraordinary circumstances.

***** A "Yes" under any circumstance may require an Environmental Assessment (EA). If the circumstance can be mitigated, please explain in comments. If no, leave blank.

Yes

- ☐ (i) A potentially significant effect on public health or safety;
- ☐ (ii) A potentially significant effect on species or habitats protected by the ESA, Marine Mammal Protection Act, Migratory Bird Treaty Act, Magnuson-Stevens Fishery Conservation and Management Act, or other law protecting a species or habitat;
- ☐ (iii) A potentially significant effect on historic properties (e.g., districts, sites, buildings, structures, or objects) that are listed in or eligible for listing in the National Register of Historic Places, affects traditional cultural properties or sacred sites, or leads to the loss or destruction of a significant scientific, cultural, or historical resource;
- ☐ (iv) A potentially significant effect on an environmentally sensitive area;
- ☐ (v) A potential or threatened violation of a Federal, State, or local law or requirement imposed to protect the environment. Some examples of other requirements to consider are: a local noise control ordinance; the requirement to conform to an applicable State Implementation Plan for air quality standards; Federal, Tribal, State, or local requirements to control hazardous or toxic substances; and environmental permits;
- ☐ (vi) An effect on the quality of the human environment that is likely to be highly controversial in terms of scientific validity, likely to be highly uncertain, or likely to involve unique or unknown environmental risks. This also includes effects that may result from the use of new technology or unproven technology. Controversy over, including public opposition to, a proposed action absent any demonstrable potential for significant environmental impacts does not itself constitute an extraordinary circumstance;
- ☐ (vii) Extent to which a precedent is established for future actions with significant effects;
- ☐ (viii) Significantly greater scope or size than normally experienced for this particular category of action;
- ☐ (ix) Potential for significant degradation of already existing poor environmental conditions. Also, initiation of a potentially significant environmental degrading influence, activity, or effect in areas not already significantly modified from their natural condition;
- ☐ (x) Whether the action is related to other actions with individually insignificant, but cumulatively significant impacts.

Comments:

V. Environmental Review Project Conditions

General comments:

Project Conditions:

Monitoring Requirements:

U.S. Department of Homeland Security
Region IX
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

FEMA

IN REPLY REFER TO:
DJH-MA-4724-HI-TDSR

November 4, 2023

Mr. Alan S. Downer, Ph.D.
Deputy State Historic Preservation Officer
Kakuhikewa Building
601 Kamokila Boulevard, Suite 555
Kapolei, Hawaii 96707
via: HICRIS

Mr. Colin Kippen,
Interim Ka Pouhana, Chief Executive Officer
Office of Hawaiian Affairs
560 N. Nimitz Hwy., Suite 200
Honolulu, HI 96817
via: ohacompliance@oha.org

ATTN: Susan Lebo, Archaeology Branch Chief, SHPD
Kai Markell, Compliance Enforcement Manager, OHA
State Historic Preservation Review – Section 106 – FEMA – [5 Day Review]

RE: Olowalu Temporary Debris Staging and Reduction Site and Weigh Station
County of Maui, HI
FEMA-4724-DR-HI-TDSR
Mission Assigned Agency: United States Army Corps of Engineers
Site 1: 20.832009, -156.627984 and Site 2: 20.829433, -156.636053

Dear Dr. Downer and Mr. Kippen:

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) proposes to direct Federal FEMA funding by Mission Assignment to the United States Army Corps of Engineers (USACE), authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance

Act, P.L. 93-288, as amended, in response to major Disaster Declaration, FEMA-DR-4724-HI, dated August 8, 2023, for Hawaii Wildfires. The declared disaster period was August 8, 2023 to September 30, 2023. FEMA has Mission Assigned the development of a Temporary Debris Staging and Reduction site (TDSR) and the installation of an associated weigh station (Undertaking) to the United States Army Corps of Engineers to temporarily stage and reduce debris from the wildfire that burned a large portion of Lahaina, HI in western Maui and rural portions of the Kula area in eastern Maui.

FEMA is conducting an expedited review of the Undertaking per II.B.1.b pursuant to the 2016 Programmatic Agreement, as extended in 2023, among FEMA, the Hawaii State Historic Preservation Officer (SHPO), the Office of Hawai'ian Affairs (OHA), and HI-EMA (Agreement). FEMA notified the SHPO of the extension of expedited review of emergency undertakings beyond the initial 30 day expedited review period in a notification letter dated September 29, 2023. Accordingly, FEMA is providing this information regarding the above referenced Undertaking. In reviewing the Undertaking, FEMA has made a finding of **No Historic Properties Affected** per Stipulation II.B.2.c of the Agreement.

Undertaking

The proposed Undertaking would involve the development of a TDSR at a former cinder quarry located in Olowalu, HI on Maui Island. The Scope of Work (SOW) would involve the grading and excavation of a previously disturbed cinder quarry pit along with the installation of nonpermeable mat and a perimeter access road within the TDSR, Site 1 (20.832009, -156.627984; TMK (2) 4-8-003:007), and the proposed installation of a temporary weigh station house with two scales on Frontage road, at Site 2 (20.829433, -156.636053; TMK (2) 4 - 8 - 003 : 008). Access to the TDSR would be along the existing quarry access road which would not be improved under this project. (Figure 1: Map of the overall project area, Figure 2: Map of the Project Locations).

The construction of the TDSR (Site 1) would involve the following:

- cutting/excavating of approximately 74,000 cubic yards and filling of approximately19,000 cubic yards to a maximum depth of 32 feet in a six-acre area
- construction of temporary berm 4 feet high by 2 feet wide.
- installation of a temporary liner of 80ML HDPE geomembrane between two 16 OZ/SY nonwoven geotextile cloth mats under a prepared subgrade
- installation of a 27 feet wide access road with a 6-inch crushed aggregate base surface along the northern perimeter of the TDSR site
- installation of three feet wide by one-foot-deep earthen swale on outer side of the internal TDSR access road
- installation of a chain link fence and drive gate with post 10 feet apart with concrete footings 3 feet deep
- application of "hydroseed" a slurry of seed and mulch would be applied as an erosion control best management practice
- clearing and grubbing of vegetation, as necessary

The installation of a weigh station at Site 2 would involve the installation of two scales (75 feet x 25 feet) and a trailer approximately 8.5 feet x 40 feet to serve as a temporary weigh station house. The project area next to the road would be cleared and grubbed of vegetation. It is anticipated that grading of the site to provide a level surface for the scales and weigh station house would require excavation to a depth of approximately six inches.

To avoid any potential confusion, FEMA brings to SHPD's attention that FEMA is not funding a nearby final disposition site that has been proposed by the County of Maui. FEMA is only consulting with SHPD on the proposed TDSR site and weigh station.

Area of Potential Effects

As defined in 36 CFR §800.16(d), the Area of Potential Effects (APE) is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties if any such properties exist. Based on this definition and in accordance with Stipulation II.C.2 of the Agreement, FEMA has determined that the APE is limited to the areas within which construction and ground disturbing activity will be confined and the proposed project viewshed. The horizontal APE for the TDSR and the existing access road would cover an area of approximately 6 acres. The vertical APE for the TDSR would be 32 feet deep. The APE for the weigh station is also limited to the areas within which the weigh station with scales and scale house would be installed and ground disturbing activity would be confined to an area of approximately 180 feet by 75 feet. The horizontal APE for the weigh station would cover an area of 0.31 acres. The staging area(s) for the undertaking, to be determined by the contractor, would all be within the boundaries of the horizontal APE for the TDSR site (Site 1). FEMA also determined an Indirect APE consisting of a buffer 0.5 miles from the TDSR location and for the weigh station (Site 2) to consider indirect effects (visual, auditory, or atmospheric elements) (Figures 3 – 7).

Identification and Evaluation of Historic Properties

In accordance with Stipulation II.B.2.c of the Agreement, FEMA has considered the Undertaking's potential to affect historic properties. Various sources were checked to determine if any previously recorded historic properties are located within the APE of the Undertaking and to determine the potential for the APE to contain previously unidentified historic properties. This review included the National Register of Historic Preservation Database, the SHPD HICRIS Database, the University of Hawaii Library, the Hawaii State Library in Honolulu, and the Newspapers.com database. FEMA also reviewed an Environmental Assessment entitled, *Olowalu Landfill Closure* (Parametrix, Inc.1991), a literature review of potential sites for power plants on Maui entitled, *Documentary Assessment of Archaeological Potential of Ten Prospective Power Plant Sites on Maui* (Riford and Cleghorn 1989) that included the subject property, *Geology and Ground-Water Resources of the Island of Maui, Hawaii (Stearns and MacDonald 1942),* "Geologic History of Maui" (Stinton 1979), and 1992 correspondence from the SHPD regarding the closure of the Olowalu landfill next to the subject property.

FEMA's review of the above referenced sources found that Riford and Cleghorn (1989:6) had concluded that the Olowalu cider quarry site had low potential for archaeological resources due to mining activities. Also, in a letter dated September 18, 1992, concerning the closure of the Olowalu Landfill, the then SHPD Administrator, Don Hibbard, stated that SHPD concurred with the Riford and Cleghorn's 1989 assessment, stating that "historic sites are not likely to be present."

The search in Newspapers.com found numerous public notices of land licenses for cinder quarrying activities at the Olowalu Cider Pit dating as early as 1968. It is likely, based on a review of the land licenses, that millions of cubic yards of cinder have been removed from the Olowalu cider cone over the past 50 plus years of mining.

Using HICRIS, FEMA conducted a search for cultural resources within 0.5-mile buffers from Sites 1 and Site 2. The buffers served as indirect APEs. Two sites were located within the 0.5-mile buffer for Site 1. One cultural resource was an archaeological site of C-shapes and stacked rock features (SIHP: 50-50-08-08230), it is 0.48miles Northeast of the Site 1. The second resource was a Habitation Complex (SIPH: 50-50-08-04700), it is 0.49 miles Southwest from Site 1.

Three sites were located within the 0.5-mile buffer for Site 2. One cultural resource was a modified rock deposit classified as an archaeological site (SIPH: 50-50-08-05955), it is 0.20 miles Northwest from the Site 2. The second resource was a rock wall (SIPH: 50-50-08-05954), it is 0.35 miles Northwest from Site 2. The third resource was a Habitation Complex (SIPH: 50-50-08-04700), it is 0.45 miles Southeast from Site 2.

Due to concerns expressed by Native Hawaiian Organizations, FEMA also considered the potential effects of the Undertaking on the Olowalu petroglyphs (SIPH: 50-50-08-04708), they are 1.38 miles Southeast from the Site 1, the TDSR site, and 1.62 miles Southeast from Site 2, the weigh station site.

FEMA conducted a site visit to the TDSR site, Site 1, on 10/13/2023 with a FEMA SOI Qualified Archaeologist. The cinder cone at which Site 1 is located was identified by Stearns and Macdonald (1942:23) as a "trachyte cinder cone." It is a part of the Honolua volcanics dating to the Pleistocene (2.58 million to 11,700 years ago) (Stinton 1987:83). The TDSR location was significantly disturbed by previous mining for cinder (Photos 1-3). There was no evidence of surface historic properties, and it is likely that the extent of previous excavations from previous quarrying activities would have resulted in a low potential for the presence of intact archaeological deposits at the site. The stratigraphy observed in the profiles of cinder walls showed only bedded layers of cider from an ancient series of eruptions.

A second site visit was undertaken on 10/20/2023 to the site of the proposed weigh station. The location is previously disturbed by the dirt road which will accommodate the two scales and a scale house. Upon inspection of the area on either side of the road, no surface features or surface evidence of subsurface archaeological features were observed. (Photo 4).

No historic properties listed in the National Register of Historic Places (NRHP) were identified within the direct APEs for Site 1 or Site 2. FEMA assumes, for the purposes of this consultation, that the sites listed in HICRIS in the 0.5-mile Indirect APE are considered eligible for the National Register of Historic Places. The distances from Site 1 and Site 2 to cultural resources range from 0.20 miles to

0.49 miles. In the case of the Olowalu petroglyphs, they are 1.38 miles away from Site 1 and 1.61 miles from Site 2. Therefore, it is unlikely that they would be subject to any direct effects nor any indirect effects such as auditory, atmospheric, or visual effects from the construction and temporary use of the TDSR site and its associated weigh station.

Finding of Effect

Based on the results of the above research and analysis, FEMA finds the Undertaking will result in **No Historic Properties Affected** in accordance with Stipulation II.B.2.c. of the Agreement.

Conclusion

Unless the SHPO or OHA objects to this finding within 5 days from receipt of this documentation in accordance with Stipulation I.E.2.a, the Section 106 review of the Undertaking will have concluded in accordance with Stipulation II.B.2.c of the Agreement, and FEMA may fund the Undertaking. Should you have any questions or comments, please do not hesitate to contact David Herdrich, FEMA Archaeologist, at the Pacific Area Office via email at david.herdrich@fema.dhs.gov or (808) 228-2064.

Sincerely,

CHELSEA D KLEIN

Digitally signed by CHELSEA D KLEIN
Date: 2023.11.04 10:46:16 -10'00'

Chelsea Klein
Lead Environmental Planning and Historic Preservation Advisor
FEMA-4724-HI

Enclosures:
Project Maps
Site Photos
Construction Plans

References Cited

Hibbert, Don (Sept 18, 1992) Historic Preservation Review of the Project Plans for the Closure of the Olowalu Landfill (County of Maui Job No. 92-41) Olowalu, Lahaina, Maui, TMK: 4-8-03:39 Log No.: 6331 Doc No.: 2507a

Parametrix, Inc. and Environmental Communications, Inc. (August1991) *Environmental Assessment: Olowalu Landfill Closure* For the Department of Public Works, County of Maui

Riford, Mary F. and Paul Cleghorn (1989) *Documentary Assessment of Archaeological Potential of Ten Prospective.* Public Archaeology Division, Bishop Museum, Honolulu, HI.

Stearns, H.T., and Macdonald, G.A., (1942) *Geology and Ground-Water Resources of the Island of Maui, Hawaii,* Hawaii (Terr.) Division of Hydrography, Bulletin 7, Prepared in cooperation with the Geological Survey, United States Department of the Interior.

Sinton, J. M., 1979. Chapter 1 Geologic History of Maui in *Field Trip Guide to the Hawaiian Islands*, edited by M. Garcia and J. Sinton, Hawaii Institute of Geophysics Special Publication.

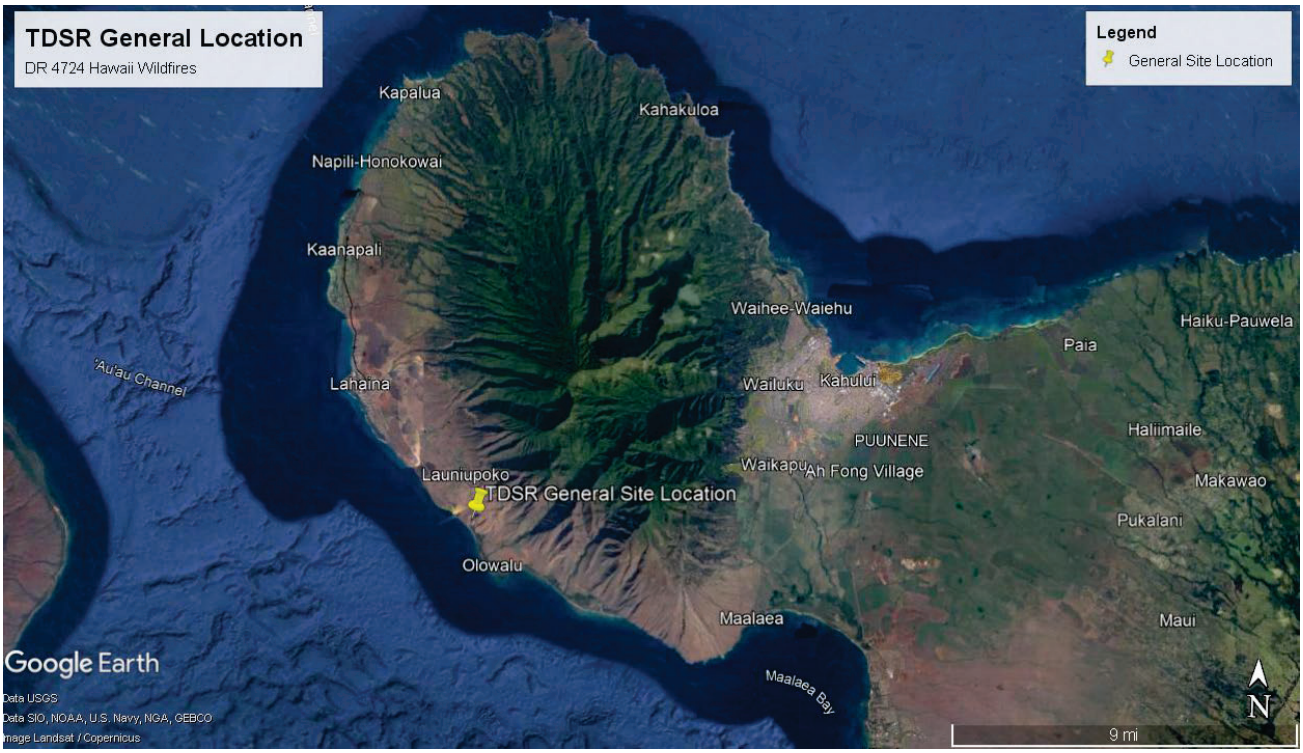


Figure 1. General Project Location

Figure 2: Project Locations: Site 1 Proposed TDSR with Existing Access Road at Cider Pit Quarry and Site 2 Weigh Station. Red lines indicate Area of Potential Effect

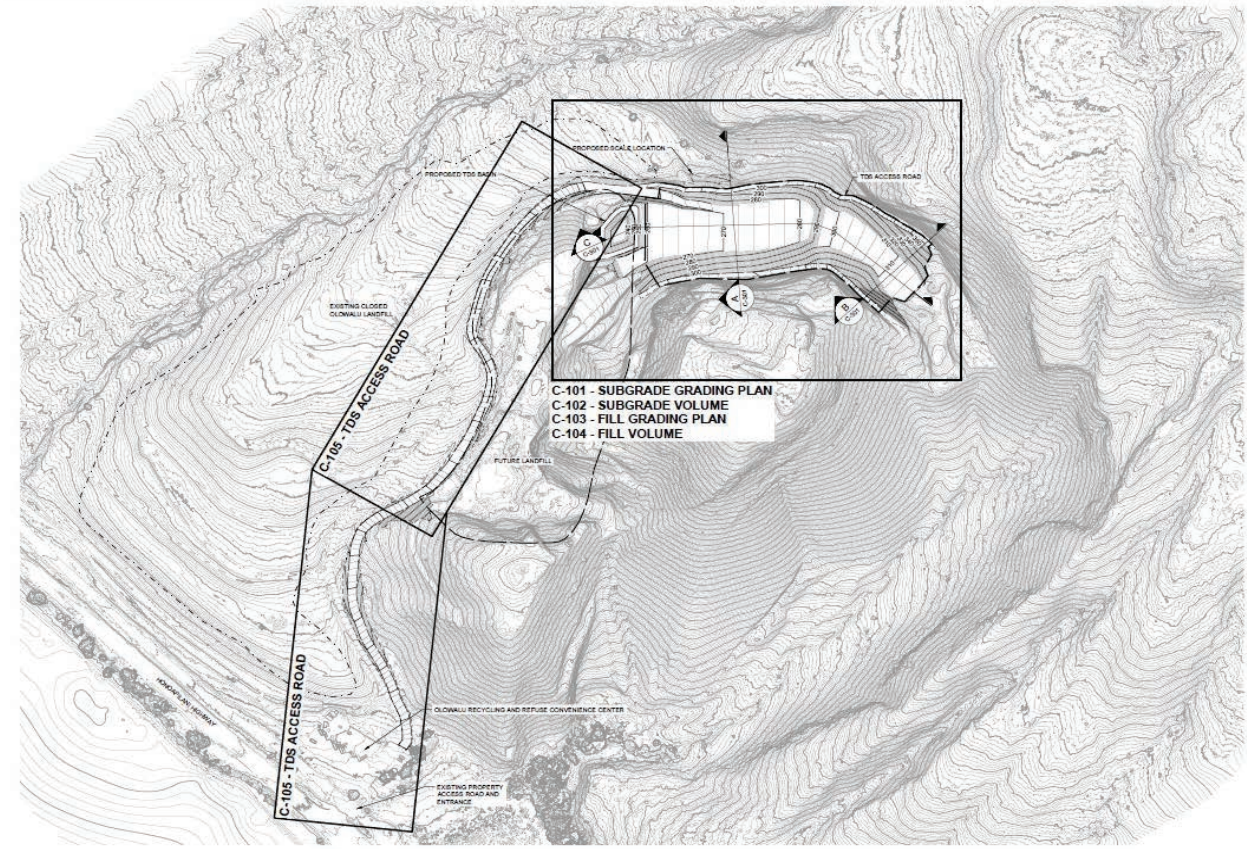


Figure 3. Plans Showing location of Site 1 TDSR and existing access road. APE corresponds to boundaries of the proposed TDSR and access road

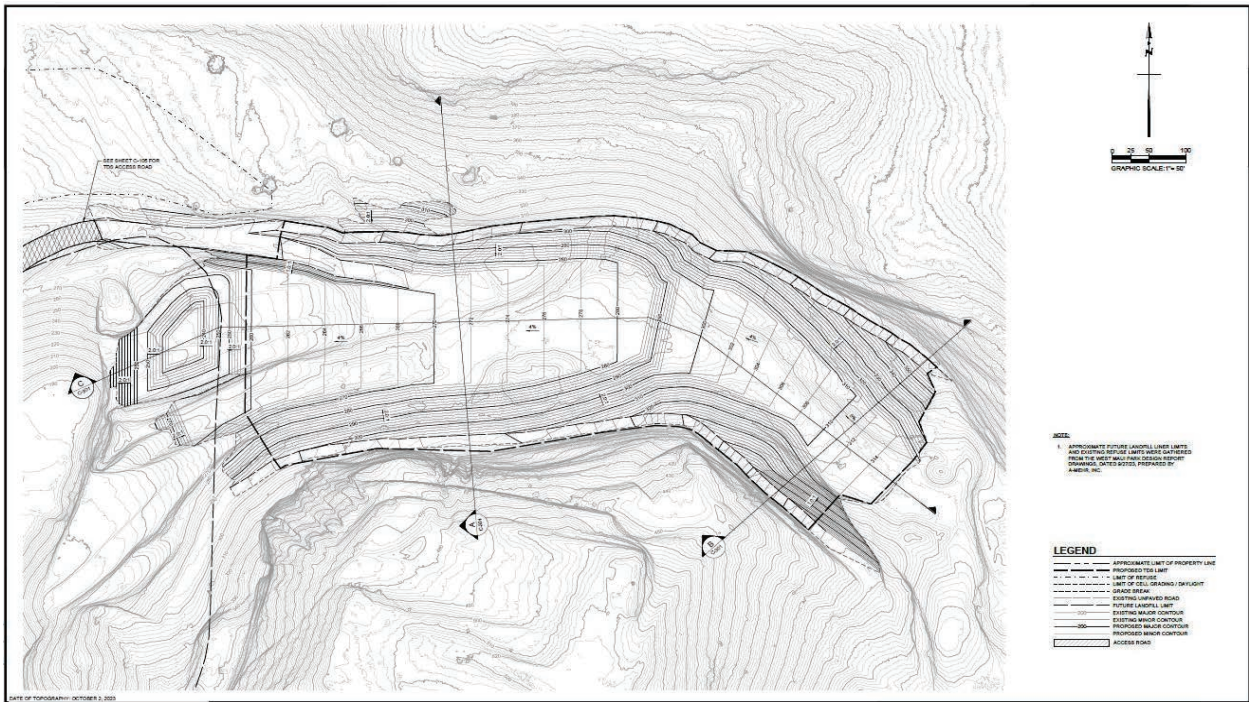


Figure 4. Close up plan view of Site 1 proposed TDSR

Figure 5. Figure shows 0.5-mile buffer that serves as Indirect APE for capture viewshed for Site 1TDSR. Site 1 is represented by black dot in the center of the circle.

Figure 5. Figure shows 0.5-mile buffer that serves as Indirect APE for capture viewshed for Site 2 Weigh Station. Site 2 is represented by black dot in the center of the circle.

Figure 6. Plan view of Site 2 APE for proposed weigh station scales and scale house.

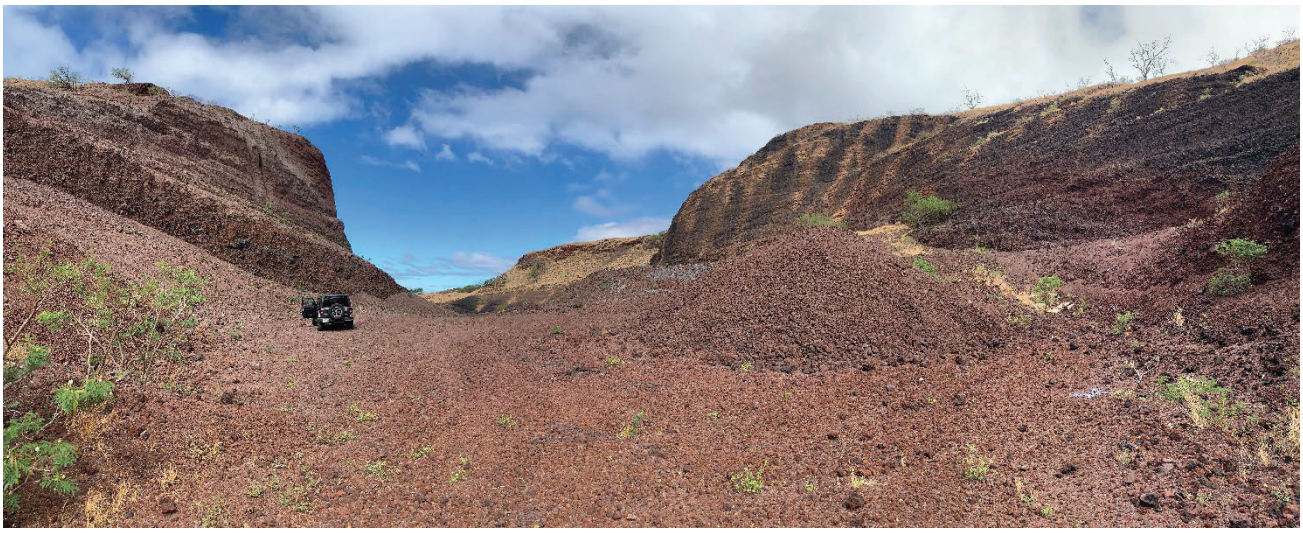


Photo 1. A panoramic photo of Site 1, the proposed TDSR site facing West.

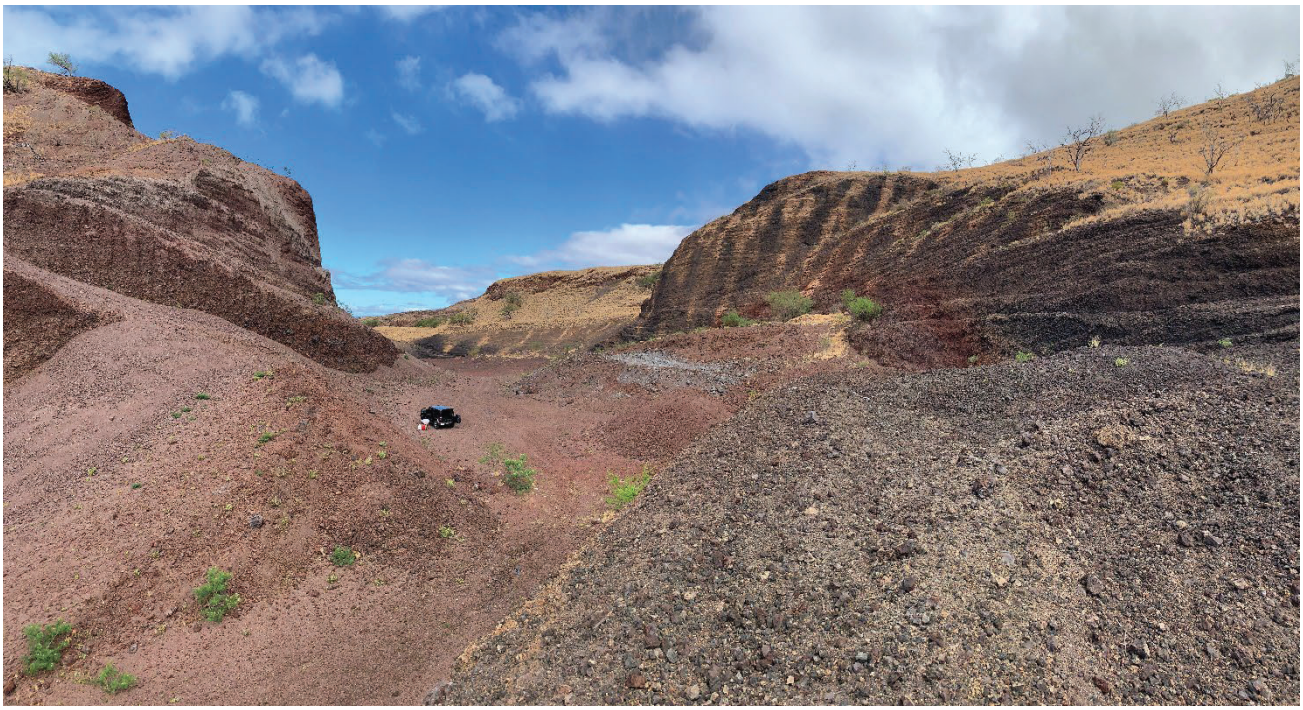


Photo 2. A wide-angle photo of Site 1 at a higher elevation at the East end of proposed TDSR facing West.

Photo 3. Photo west end of proposed TDSR at the entrance to the site facing East.

Photo 4. Photo of Frontage Road facing West toward location of Weigh Station.

STATE OF HAWAIʻI | KA MOKUʻĀINA ʻO HAWAIʻI
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA ʻOIHANA KUMUWAIWAI ʻĀINA

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

March 25, 2024

IN REPLY REFER TO:
Project No.: 2023PR00979
Doc. No.: 2403IK14
Archaeology, Architecture

Chelsea Klein
Lead Environmental Planning
and Historic Preservation Advisor
Federal Emergency Management Agency (FEMA)
U.S. Department of Homeland Security
Region 9
1111 Broadway, Suite 1200
Oakland, CA 94607-4052
Email: Chelsea.Klein@fema.gov

Dear Chelsea Klein:

SUBJECT**:** **National Historic Preservation Act (NHPA) Section 106 Consultation –**
Federal Emergency Management Agency - HI-FEMA-4724-DR-HI
Olowalu Temporary Debris Staging Site Water Monitoring Wells
Olowalu Ahupuaʻa, Lāhainā District, Island of Maui
TMK: (2) 4-8-003:007 por. and (2) 4-8-003:039 por.

This letter provides the State Historic Preservation Officer's (SHPO) review of the U.S. Department of Homeland Security's Federal Emergency Management Agency's (FEMA) proposed Olowalu Temporary Debris Staging Site Water Monitoring Wells Project. On March 20, 2024, the State Historic Preservation Division (SHPD) received via email a FEMA letter requesting the SHPO's concurrence with a FEMA finding of *no historic properties affected* pursuant to Stipulation II.C.4 of the 2016 Programmatic Agreement (PA), as extended in 2023, among the Federal Emergency Management Agency, the Hawaii State Historic Preservation Officer, the Office of Hawaiian Affairs, and the State of Hawaii Department of Defense. To comply with the County of Maui Bill 120 Section 2.3 (amended), FEMA is proposing installing temporary ground-water detection monitoring wells within the Temporary Debris Staging (TDS) site and has determined the proposed Undertaking is not covered by any Allowances under the Agreement.

FEMA proposes to provide funding by Mission Assignment to the United States Army Corps of Engineers (USACE), authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance. FEMA has Mission Assigned USACE to install three temporary water monitoring wells within the previously established Olowalu TDS site. The Olowalu TDS site temporarily stores the Lāhainā Wildfires debris until the County of Maui builds a permanent disposal site. The SHPO previously concurred with FEMA's finding of *no historic properties affected* in a letter dated November 8, 2023 (Doc. No. 2311JLP01) for the Olowalu TDS Staging and Reduction Site and Weigh Station Project.

The proposed Undertaking includes installing three temporary 4-inch-diameter monitoring wells at three discontinuous locations or areas of potential effects (APE) within the TDS property. The monitoring wells will range from approximately 500 feet in depth (MW#1) to 85 feet below ground (MW#3). Access will be through developed areas and not through undisturbed land. FEMA has determined the APE (designated direct APE) is limited to construction areas and proposed project viewshed. The three monitoring wells each measure 50 ft. in diameter and FEMA has determined visual APE (designated indirect APE) as comprising a 150-ft.-wide area surrounding each well. The Attachment provides additional information regarding the proposed Undertaking.

As part of FEMA's identification and evaluation of historic properties for the subject Undertaking, FEMA conducted background research of previous archaeological studies that included the APE and/or near vicinity. Several historic

properties have been identified by FEMA within approximately 0.2 to 1.31 miles of the APE. None were identified within the APE. The nearest historic properties are situated 0.2 miles southeast of MW #3 and include the Olowalu Habitation Complex (State Inventory of Historic Places [SIHP] Site 50-50-08-04700) and a possible Koʻa Shrine (SIHP Site 50-50-08-04701). Additionally, SHPD's records indicate that a surface scatter of human skeletal remains (SIHP Site 50-50-08-04820) was documented between MW #3 and the Olowalu Habitation Complex (SIHP Site 50-50-08-04700 and the possible Koa Shrine (SIHP Site 50-50-08-04701).

Based on community concerns and complaints, staff from the FEMA, the SHPD, and the OHA, along with the County of Maui Archaeologist, and Olowalu community members conducted a site visit to the Olowalu TDS site property on January 18, 2024. The SHPD Maui Archaeologist and FEMA Historic Preservation Specialist confirmed the presence of two platform features (possible shrines) and observed the summit area was extensively disturbed by quarrying/mining activities. FEMA determined the use of the Olowalu TDS site had a temporary visual effect to the unrecorded features. Subsequently, FEMA staff conducted a site inspection of the proposed APE on March 14, 2024. Two of the wells (MW #1 and #2) are situated within previously disturbed quarry cuts and areas. MW#3 is situated near the Honoapiʻilani Highway and adjacent to the existing TDS access road. FEMA observed push piles with broken concrete in the area with gravel covering the surface.

In accordance with Stipulation II.C of the Agreement, FEMA is concurrently consulting with the SHPD and the OHA, and Native Hawaiian Organizations (NHOs). FEMA has initiated consultation with NHOs who may have knowledge of the cultural resources in the APE or who may have other concerns about the proposed Undertaking. Due to the urgency of the project and on-going consultations, the NHO consultation record was not included in SHPD's review.

FEMA has identified no historic properties within the APE and is requesting the SHPO's concurrence with a finding of *no historic properties affected* for the proposed Undertaking. **The SHPO concurs**.

FEMA is the office of record for this Undertaking. Please maintain a copy of this letter with your environmental review record.

The SHPD anticipates receiving from the County of Maui, and any other applicable agency, initiation of the Hawaii Revised Statutes Chapter 6E historic review process to be completed prior to the start of the project.

Please contact Jessica Puff, Architecture Branch Chief, at (808) 462-3083 or at Jessica.Puff@hawaii.gov should any changes in project scope or APE are proposed, and contact Susan A. Lebo, Archaeology Branch Chief, at Susan.A.Lebo@hawaii.gov or at (808) 321-9000, for any matters involving archaeological resources or this letter.

Mahalo,

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc.
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Kaiea Mederios, Maui County, kaiea.e.medeiros@co.maui.hi.us

Attachment

FEMA's Proposed Undertaking

The proposed Undertaking would involve the installation of three temporary monitoring wells within the TDS property, at a former cinder quarry located in Olowalu, HI on Maui Island. The Scope of Work (SOW) would involve the installation of maximum 4-inch diameter monitoring wells at three locations within the TDS property (Figure 1). Wells will extend from approximately 500 feet in depth (MW#1) to 85 feet below ground (MW#3).

The installation of each well will require site access by standard drill rig (either wheeled or tracked vehicle) to the well head. No access routes through currently undisturbed land will be required and the spoils from the drilling will be disposed of at the Olowalu TDS and not taken off site. The existing graded road shoulder at MW#3 may be expanded slightly but will be prepared by adding a layer of gravel to the ground surface for the drill rig.

No utilities will be required to be installed at any well site. Water monitoring will occur quarterly and employ a portable generator to produce any electricity required for the monitoring process. The well casing may protrude one to two feet above the ground surface at each location. The wells will be abandoned once the TDS is decommissioned.

Description of proposed monitoring wells.

Well #	Location	Description	Access/Staging
MW #1	Located in base of existing cinder quarry pit, underlain by unconsolidated volcanic rock. Entire area previously disturbed by quarrying activities.	Well 2" to 4" diameter. 4x4- foot concrete well pad, 4" thick at surface surrounding well head.	Direct access via clear and level cinder yard.
MW #2	Located at floor of former cinder borrow area, no natural landforms present	Well 2" to 4" diameter. 4x4- foot concrete well pad at surface surrounding well head; bollards will be placed around pad to avoid damage by vehicles. Max 3 ft deep excavation for bollards	Direct access via clear and level cinder yard.
MW #3	On north shoulder of TDS access road, near entrance; approx. 50 ft from roadside	Design: cement well pad and bollards. Proposed well site at northern edge of cleared and leveled triangular-shaped area measuring approx. 30' by 50' along the north shoulder of access road, just uphill from entrance and parking area/scales to this facility.	Will require establishing staging area between access road and well head. Size undetermined but probably approximately the size of the current area. Will lay down new gravel for construction staging.

Federal Emergency Management Agency
U.S. Department of Homeland Security
Region IX
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

E.O. 12898 Environmental Justice Memo

FEMA-4724-DR-HI

MEMORANDUM TO: File

FEMA EHP Reps: Bryon Jean-Louis

Other Personnel: FEMA
USACE
Maui County

Date: 11/03/2023

Site Name: West Maui TDS (Olowalu), Honoapiilani Highway Lahaina, HI 96761
TMK: (2) 4 - 8 - 003 : 007 ; GPS (20.831825, -156.630658)

Purpose of Memorandum: To document the Executive Order (E.O.) 12898: Environmental Justice review – ESF 03 Mission Assignment # 4724DR-HI-COE-POD-09-00 – Resource Request # 3568-855059 – U.S. Army Corp. of Engineers (USACE) Public and Private Property (PPDR) Debris Removal

Overview:

As directed by and in coordination with FEMA, USACE will deploy the Debris PRT to coordinate and execute all necessary actions associated with debris clearance, removal, and/or disposal site management from public property and private property debris removal as directed by FEMA in the affected areas necessary to eliminate or lessen immediate threats to public health and safety in support of STT disaster operations. This support may include debris clearance and removal from critical access routes, roads, bridges, waterways (outside of federal agency's authorities), and rights of way for emergency vehicles and public access. This support may also include any or all of the following: pickup, hauling, and dumping of debris; segregating and reducing debris at a landfill or temporary debris site (TDS); hauling and/or shipping from a TDS to a final disposal site; or managing a TDS.

In response to the Presidential declared major disaster for the State of Hawai`i on August 10, 2023, as a result of Lahaina Hawai`i Wildfires, which began on August 8, 2023, the need for public and private property debris removal is necessary for emergency protective measures to mitigate actual and potential threats to public health and safety.

The Town of Lahaina in Maui County Hawai`i was significantly damaged as a result of the wildfires, with the burnscar ultimately encompassing the entire town. Lahaina is historically and archeologically significant and has been on the National Registar of Historic Places (NRHP) since October 15th, 1966. Lahaina Historic District is a National Historic Landmark District (NHLD) encompassing most of the community of Lahaina and was designated as such on December 29, 1962. Before the unification of Hawaii, Lahaina was the royal capital of Maui. In 1795, Lahaina was conquered by Kamehameha I, and established the town as the capital of the Kingdom of Hawaii. According to the Environmental Protection Agency's (EPA) Environmental Justice Screening and Mapping Tool, the Lahaina estimated population is 12, 415 in a 2.64 square mile area. Additionally, the United states Department of Agrulture (USDA) Forest Service (FS) Burned Area Emergency Response (BAER) assessment reported in the Lahaina

Burn Soil Severity, 2,336 acers were impacted within the burn scar. Presently, the town is closed to visitors and is being opened to residents intermitently by zones only as hazardous materials are removed off of parcels by the EPA. All utility services are inoperative either due to being functionally impaired or shut down in order to make repairs and/or reduce further damages to the systems. In addition to the utilities, the majority of housing dwellings are no longer there as they burned in the wildfires; those that remain are in need of repairs. As a result, the town is currently un-inhabited by the residents who presided within the community prior to the wildfire disaster.

The up-country lands of Kula in Maui County Hawai`I was also impacted by fire damage as a result of the wildfires. Located in the upcountry region of Maui, Kula is a quaint, rustic area on the slopes of Haleakalā. According to the Environmental Protection Agency's (EPA) Environmental Justice Screening and Mapping Tool, the Kula estimated population is 6,918 in a 34.54 square mile area. Additionally, the United states Department of Agrulture (USDA) Forest Service (FS) Burned Area Emergency Response (BAER) assessment reported in the Kula Burn Soil Severity, 330 acers were impacted within the burn scar. Presently, residents still preside within the Kula areas, due the terrain and some infrastructure being impacted by the wildfire event.

Olowalu, also known as Turtle Reef, is a quaint, oceanfront area on the West Side of the Island of Maui. It is located about 4 miles south of Lahaina just off the Honoapiilani Highway. Olowalu Reef is home to one of Hawaii's most unique ocean reef systems. Some features are hundreds of years old large coral heads, an abundance of tropical marine life, a rare manta ray cleaning station and a black tip reef shark nursery (Pride of Maui Olowalu Reef | Snorkeling Information | Maui Hawaii (prideofmaui.com)). According to the Environmental Protection Agency's (EPA) Environmental Justice Screening and Mapping Tool, the Olowalu estimated population is 20-60 in a 1.34 square mile area. Olowalu formerly had an operating County of Maui "Olowalu Landfill" in which closed in 1991. Currently, located just south of the closed landfill is Olowalu Residential Recycling & Refuse Center; which has been in operation since 1995/1996 on the same property per the 1991 Olowalu Closure Environmental Assessment.

Major Discussion Issues: Lahaina Town to West Maui TDS

- Potential to Generate dust (an impact to air quality): The Lahaina Town has potential to generate dust as a result of the significant impact of the wildfires to the structures, vegetation and the tragic loss of human life that may be comprised within the ash. The ash left behind, covering majority of the parcels within the town is considered to be contaminated as reported by the Hawai`i Department of Health (DOH); the prelimanary testing indicated elevated levels of arsenic, lead, and cobalt News Releases from Department of Health | Preliminary Kula ash samples show elevated levels of toxic substances (hawaii.gov). To mitigate hazards to human health and safety, wet methods will be applied which involves using water to keep the soil and ash compounds moist and/or wet to lessen potential of dust plums. Additionally, dust fences have been installed around the permimeter of Lahaina Town to assist in containing dust. The debris removal process will involve the scraping of soil and ash in 3 inch increments up to 12 inches (being tested until sampling renders favorable results) and being placed in plasitic lined trucks, the sediment/ash will be enclosed by burrito wrapping and heat sealed. The purpose of this method is to contain the hazardous material from pick up, to transit, staging, and ultimately final disposal; being contained during the entire process. In doing so will help to mitigate dust and/or air quality impacts to human health and safety.

- Potential to Produce stormwater runoff (an impact to water quality): To assist in mitagating run-off and degradation to water quality and marine resources, proven Best Managament Practices (BMPs) have been installed around Lahaina Town and the Up-country Kula areas to prevent and/or lessen contaminents in run-off from reaching oceans and streams. Straw and mesh wattles/filter socks are already installed by Maui County and being maintained by their

contractors through out Lahaina Town and its harbor and in the up-country Kula areas. There is currently a state ititiative underway that focuses on fedaral aid routes around Lahaina Town and will occur in two phases. Phase one involves installing Olowalu produced Filtrexx Environsoxx wattles/filter socks which also provides pretreatment for removing up to 99% of Bacteria, 73% of Heavy Metals, 92% of Nutrients, and 99% of Hydrocarbons before water enters the strorm system Pollutant Removal EnviroSoxx technology remove harmful pollutants (filtrexx.com). Oil and sediment catches and curb inlet guards will also be installed as part of this phase one process, although curbs inlets already have straw and mesh guards installed with the county's intial emegerency protective measures. It is anticipated that the state's phase one implementation will take place in 2-3 weeks; encompassing time for production and additives for the wattle/filter socks. Phase two deployment time is unknown as possibile sollutions are still under consideration. Potential solutions include capping storm outfalls and redirection storwater flow via the storm sewer system by way of pumping to detention basins by Hokiokio Pi and Honoapiilani Highway, geotubes, or Flocc tanks. Currently, stormater outfall pipes are being cleaned and storm systems prepared for the implementation of phase one BMPs by the state (once installed, BMPs will be monitered and maintained by the states contractors). The phase one plan is to wrap wattles/filter socks around Front Street and Honoapiilani Highway encompassing 88,000 linear feet. Interior Lahaina Town run-off plans are still under consideration as silt fences are not being recommended do to excavation taking place in conjunction with the debris removal mission. In the event of a significant rainfall event (10 year or greater), the BMPs will be removed to not cause greater degredation to the stormwater system, water quality, and marine resources. During the rain events, staff will be deployed to moniter rain intensity and levels of potential flooding and will remove BMPs as necessary.

- Potential to Create construction traffic: Lahaina Town and its infrastructure has been around for hundreds of years, the geographic layout of the streets are concise and widths small. Additionally, there are only two main highways in and out of the city, the Honoapillani Highway 30 (HI-30) and Lahaina Bypass (HI-3000). In efforts to mitigate conjestion on these highways, there is an alternate route being considered for usage to haul debris from the town to the TDS and final dispositon site located at West Maui Landfill in Olowalu. Route plans are still being finalyized, however there are plans for the installation of traffic lights at the road junction that interesects HI-30 from the alternate route connectiong to the asphalt/dirt road that is between HI-30 and the landfill (running parallel to HI-30). Utilizing the road located adjacent to the landfill for entrance to the TDS and final dispositon will mediate impedment of traffic as trucks may be waiting in line to be weighed upon entering and exiting, rather than conjesting traffic on HI-30.

- Potential to Reduce certain species (an impact to wildlife): County BMPs are installed prevent degredation to water quality and marine resouces from run-off, followed by the State's BMPs that are in process of being implemented to replace those done by the county as initial emergency protective measures. The vegetation that may have provided habitat to species was lost due to the impact of the fire, as the majority of the trees and shrubbery burned during the wildfires incident period. Emergency consultation with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (FWS) and the usage of the U.S. Fish and Wildlife Service (USFWS) Pacific Islands Fish and Wildlife Office (PIFWO) June 2021 Biological Evaluation for Standard Local Operating Procedures for ESA-Listed Species in the Hawaiian Islands and Pacific Islands provides for Best Management Practices (BMPs) and Avoidance and Minimization Measures (AMMs). Additionally, implementing the Office of Environmental Policy and Compliance of Native Hawaiian Relations Biosecurity Protocols for Hawai`i Island assists in preventing the introduction of invasive species into natural areas and areas with native habitat on Hawai`i Island, to other islands in the Hawai`ian archipelago, or to the U.S. mainland.

- Potential to Stir up contaminated soils (an impact to soil): Human health and safety exposure do to soil impacts are being mitigated through the usage of stormwater BMPs protecting water quality and marine resources, wet methods and burrito wrapping BMPs for debris removal operations protecting air quality, and species specific BMPs provided by the services and biological evaluations. Due to the soil movement and being comprised of ash and other contaminents, site workers are required to wear personal protective equipment (PPE) to mitigate exposure from soil. Residents entering the Lahaina Town are being recommended to wear PPE. Additionally, the EPA is providing Hazardous Waste Operations and Emergency Response (HAZWOPER) training to raise awareness and safety for operations in impacted area. The consideration of utilizing an alternate route for transit of debris rather than opting to use the main two highways 30 and 3000 will assist in mitigating exposure through the main corridors in and out of the Town.

- **Challenges:**
    a) Planning
    b) Timetables and Implementation
    c) Rights of Entry (ROEs) and Partcipation
    d) Accurate Messaging
    e) Rain Season

EHP Notes: Minority or low-income populations were identified through program coordination and public involvement, state EJ community lists or maps, or EJSCREEN reports for the area around Lahaina Town, Kula up-counry areas, the route corridor, and Olowalu Town. Review of the project scope of work revealed adverse effects on these populations, but further review determined these effects did not constitute disproportionately high and adverse effects. Therefore, no additional review for potential Environmental Justice concerns is Required. The maps, reports, and other information are saved to the project files.

REGION 9
SAN FRANCISCO, CA 94105

Mr. Shayne R. Agawa, P.E.
Director, County of Maui Department of Environmental Management
2145 Kaohu Street, Suite 102
Wailuku, Hawaii 96793
VIA EMAIL: Shayne.Agawa@co.maui.hi.us

RE: EPA position on household waste exclusion as it relates to Maui wildfire ash and debris

Dear Mr. Agawa:

As requested, the purpose of this letter is to clarify EPA's position on the applicability of the household waste exclusion found at 40 C.F.R. § 261.4(b), which allows for waste from households to be disposed of in traditional municipal landfills regulated under the Resource Conservation and Recovery Act (RCRA).

The household waste exclusion provides that "household waste" does not fall within RCRA's definition of "hazardous waste." The exclusion defines "household waste" as follows:

> "Household waste" means any material (including garbage, trash and sanitary wastes in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds and day-use recreation areas).

Under RCRA, hazardous waste is subject to the most robust disposal requirements. Non-hazardous or "solid waste" must be disposed of in landfills also subject to rigorous standards designed to accept a broad spectrum of waste. By providing that household waste is not hazardous waste, the exclusion indicates that such waste should be considered non-hazardous. The exclusion further provides that municipal solid waste facilities, which are regulated under Subtitle D of RCRA, may receive household waste for treatment, storage, and disposal.

It is EPA's interpretation and experience that the household waste exclusion applies to ash and debris generated from residential properties impacted by the tragic Maui wildfires. This exclusion has been used following other serious wildfire events, such as in Paradise, California, where it similarly was

necessary to prioritize the removal of ash from residential properties to reduce impacts to human health and the environment from exposed material.

The household waste exclusion allows permitted municipal facilities, such as the Central Maui Landfill, to receive ash and debris. Further, it is our understanding that the site being planned in West Maui, also known as the Olowalu site, is currently being designed to meet or exceed the Subtitle D standards as well as Hawaii's approved Subtitle D regulations for municipal solid waste landfills found at Hawaii Administrative Rules § 11-58.1

Please feel free to contact Steve Wall at (415) 972-3381 or wall.steve@epa.gov if you have any further questions or need additional clarification.

Sincerely,

ADRIENNE PRISELAC

Digitally signed by ADRIENNE PRISELAC
Date: 2023.11.03 21:28:37 -07'00'

Adrienne Priselac, Assistant Director
Land, Chemicals, and Redevelopment Division

cc (via email): Dr. Kenneth Fink, Director, HDOH

From: Haae, Glenn
To: Klein, Chelsea; Michael Kehano; Koger, Cory
Cc: Sage Kiyonaga; Ichinotsubo, Lene K
Subject: Temporary Debris Storage Site Permitting
Date: Tuesday, September 19, 2023 5:28:58 PM

To Whom It May Concern:

Governor Josh Green issued a 7th emergency proclamation dated September 8, 2023, that, in part, suspends, "Chapter 342H, HRS, solid waste pollution, to the extent necessary to respond to the emergency, and implementing rules including HAR section 11-58.1 to allow expedited waste management including but not limited to collection, removal, transport, recycling, and disposal activities." Based on this emergency proclamation, the Department of Health will not require temporary storage debris facilities being planned at Central Maui Landfill or in the Olowalu area to obtain solid waste management permits while the emergency proclamation is in effect.

Although we are not requiring permitting of the temporary debris storage facility, the DOH wishes to be informed and be allowed to provide input into the design and construction of the facility to mitigate environmental impacts. Additionally, remediation of the site after final use as a temporary debris storage facility to its prior state, including the removal of any soil contamination, is required.

Regards,

Glenn Haae
Solid & Hazardous Waste Branch
Department of Health
2827 Waimano Home Road #100 |Pearl City, Hawaii 96782
Ph: (808) 586-4226 |E-mail: glenn.haae@doh.hawaii.gov

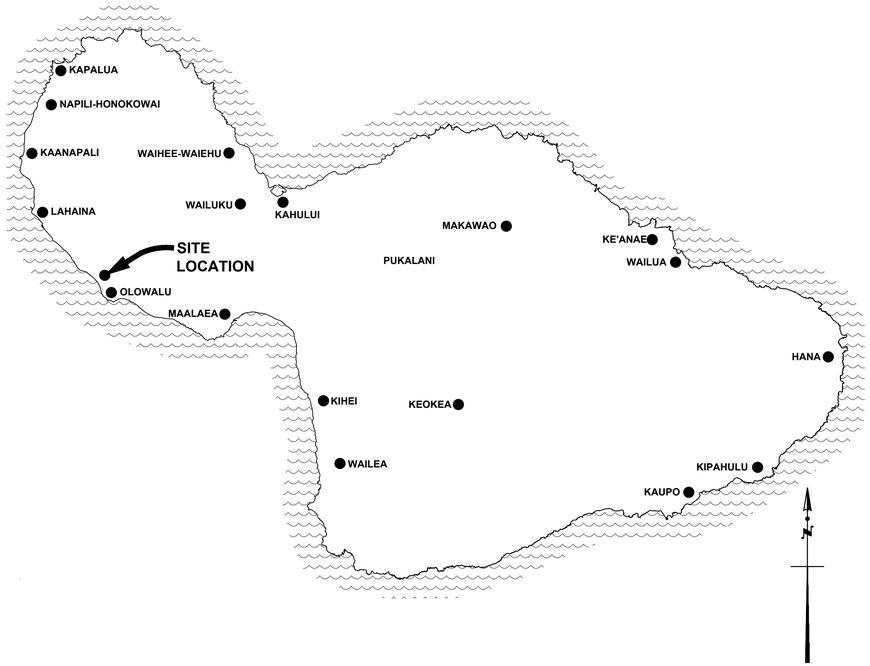
ATTACHMENT 6. WEST MAUI TDS DESIGN PLANS

UNITED STATES ARMY CORPS OF ENGINEERS

WEST MAUI - TEMPORARY DEBRIS STORAGE (TDS) FACILITY

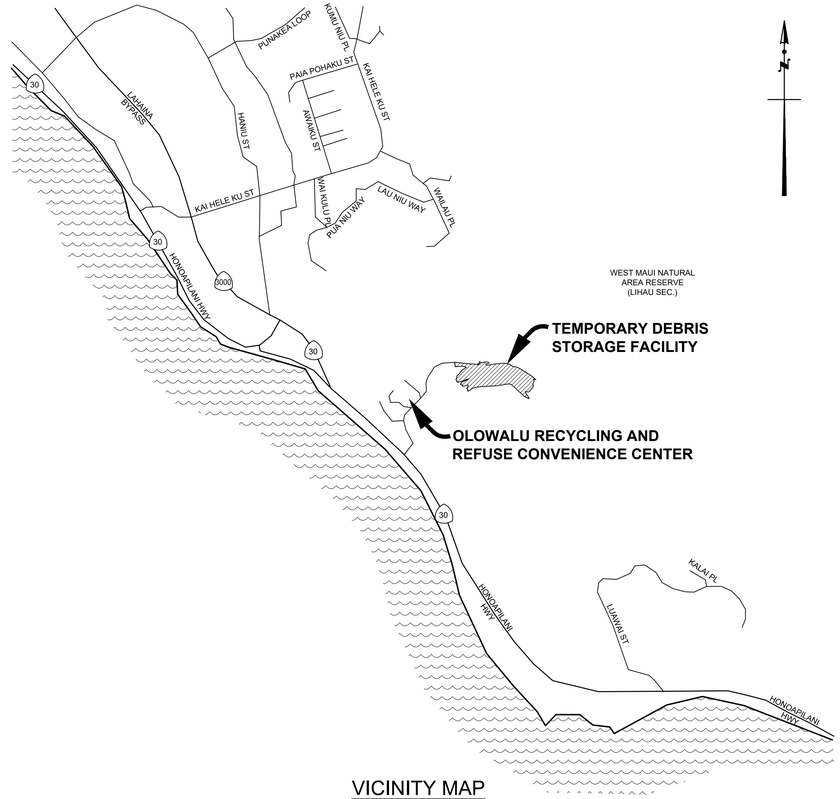
OLOWALU, MAUI, HAWAII

DECEMBER 2023



SITE LOCATION MAP
NTS

INDEX OF SHEETS



VICINITY MAP
NTS

P:\Maui County\Olowalu\TDS Site\CAD\SheetFiles\C-001 Cover Sheet.dwg 12/22/2023 5:27 PM

NO.	REVISION DESCRIPTION	DATE

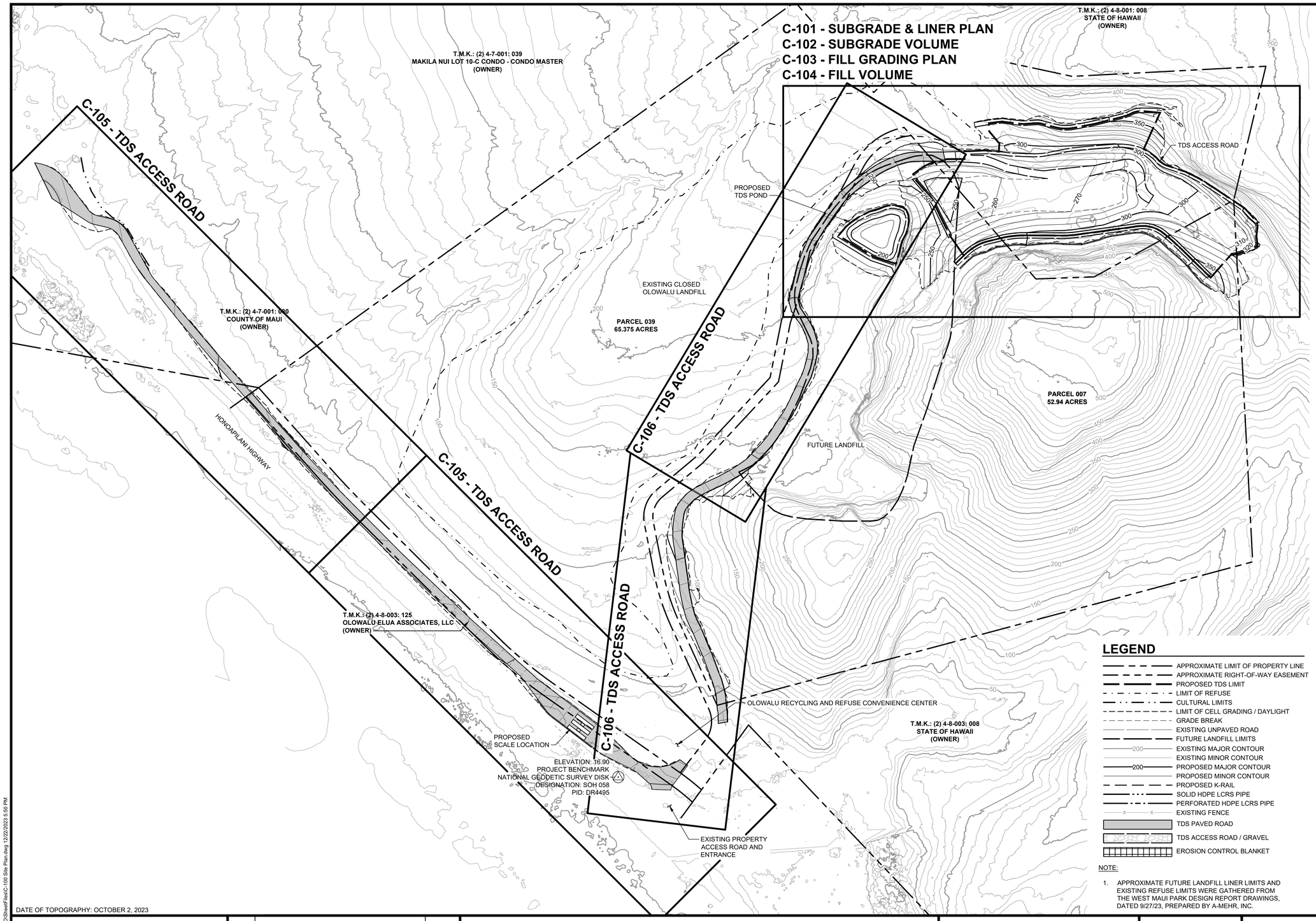
TETRA TECH
21700 Copley Drive, Suite 200
Diamond Bar, CA 91765
TEL 909.860.7777 FAX 909.860.8017

CALEB H. MOORE
LICENSED PROFESSIONAL ENGINEER
NO. 18977
HAWAII, U.S.A.

WEST MAUI - TDS

COVER SHEET

DESIGNED BY :	D.J.P.	FILE : C-001 Cover Sheet.dwg	
DRAWN BY :	D.J.P.	DATE : 12-2023	SCALE: AS SHOWN
CHECKED BY :	G.R.B.	DATE : 12-2023	C-001
APPROVED BY :	C.H.M.	DATE : 12-2023	



DATE OF TOPOGRAPHY: OCTOBER 2, 2023

CONSTRUCTION NOTES

1. CLEAR AND GRUB
2. EXCAVATE AND FILL TO PROPOSED CONTOURS
3. CONSTRUCT LINER PER 1 / C-501
4. CONSTRUCT 6" CAB PER 4 / C-501
5. CONSTRUCT LINER TERMINATION BERM PER 5 / C-501
6. CONSTRUCT POND LINER PER 5 / C-502
7. CONSTRUCT EARTHEN SWALE PER 7 / C-501
8. PLACE OPERATIONS LAYER PER 2 / C-501
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10. CONSTRUCT DEBRIS LINER TERMINATION FILL PER 1 / C-502
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17. CAP LCRS PIPE
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28. PLACE GRAVEL BAG CHECK DAM
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42. CONSTRUCT ROCK PAD DISSIPATER PER 5 / C-504

LEGEND

- APPROXIMATE LIMIT OF PROPERTY LINE
- APPROXIMATE RIGHT-OF-WAY EASEMENT
- PROPOSED TDS LIMIT
- LIMIT OF REFUSE
- CULTURAL LIMITS
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- GRADE BREAK
- EXISTING UNPAVED ROAD
- FUTURE LANDFILL LIMITS
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
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- PROPOSED MINOR CONTOUR
- PROPOSED K-RAIL
- SOLID HDPE LCRS PIPE
- PERFORATED HDPE LCRS PIPE
- EXISTING FENCE
- TDS PAVED ROAD
- TDS ACCESS ROAD / GRAVEL
- EROSION CONTROL BLANKET

NOTE:

1. APPROXIMATE FUTURE LANDFILL LINER LIMITS AND EXISTING REFUSE LIMITS WERE GATHERED FROM THE WEST MAUI PARK DESIGN REPORT DRAWINGS, DATED 9/27/23, PREPARED BY A-MEHR, INC.

NO.	REVISION DESCRIPTION	DATE

TETRA TECH
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TEL 909.860.7777 FAX 909.860.8017

CALEB H. MOORE
LICENSED PROFESSIONAL ENGINEER
NO. 19899
HAWAII, U.S.A.

WEST MAUI - TDS

SITE PLAN

DESIGNED BY :	D.J.P.	FILE : C-100 Site Plan.dwg	
DRAWN BY :	D.J.P.	DATE : 12-2023	SCALE: AS SHOWN
CHECKED BY :	G.R.B.	DATE : 12-2023	C-100
APPROVED BY :	C.H.M.	DATE : 12-2023	

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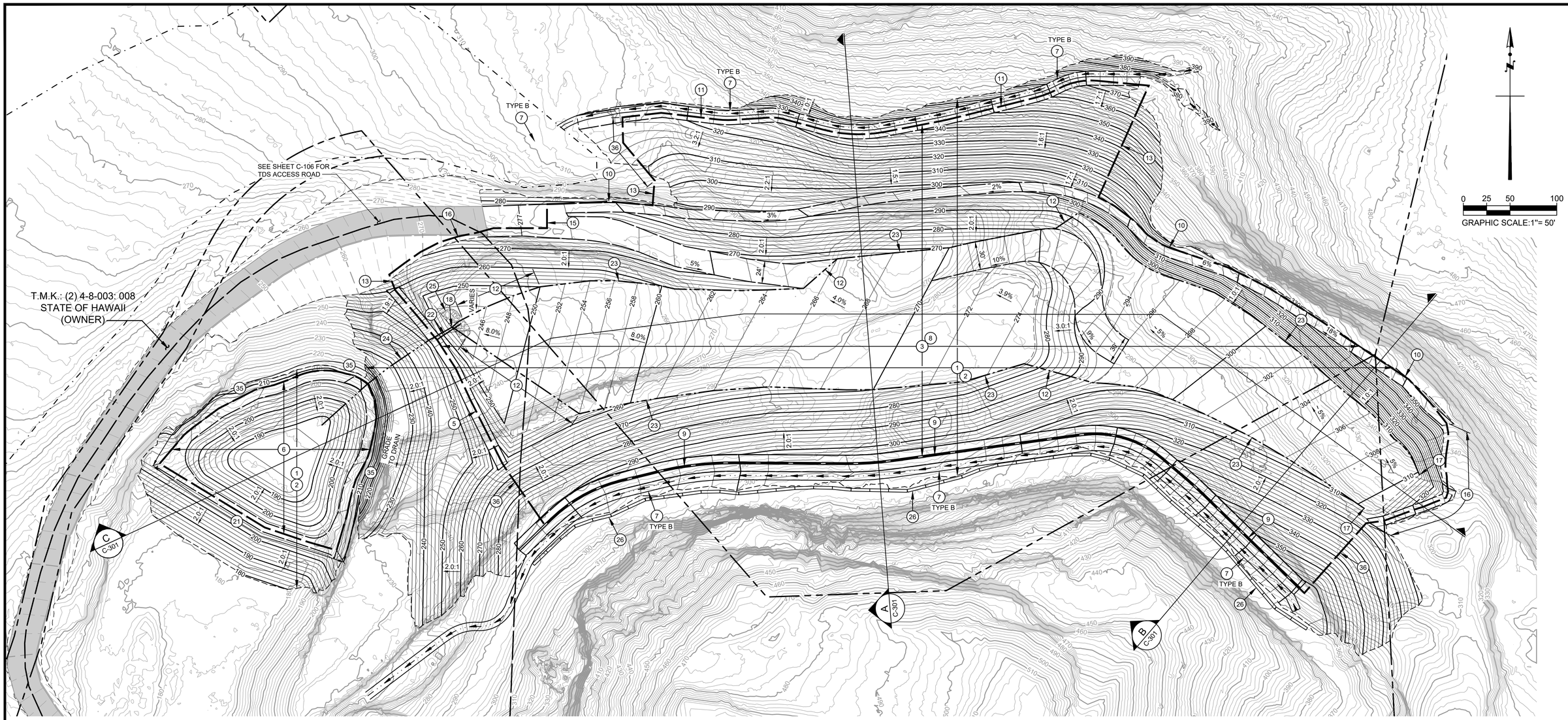

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- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED K-RAIL
- SOLID HDPE LCRS PIPE
- PERFORATED HDPE LCRS PIPE
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CONSTRUCTION NOTES

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DATE OF TOPOGRAPHY: OCTOBER 2, 2023

NO.	REVISION DESCRIPTION	DATE

TETRA TECH
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CALEB H. MOORE
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NO. 19924
HAWAII, U.S.A.

WEST MAUI - TDS

SUBGRADE & LINER PLAN

DESIGNED BY :	D.J.P.	FILE : C-101 Subgrade & Liner Plan.dwg	
DRAWN BY :	D.J.P.	DATE : 12-2023	SCALE: AS SHOWN
CHECKED BY :	G.R.B.	DATE : 12-2023	C-101
APPROVED BY :	C.H.M.	DATE : 12-2023	

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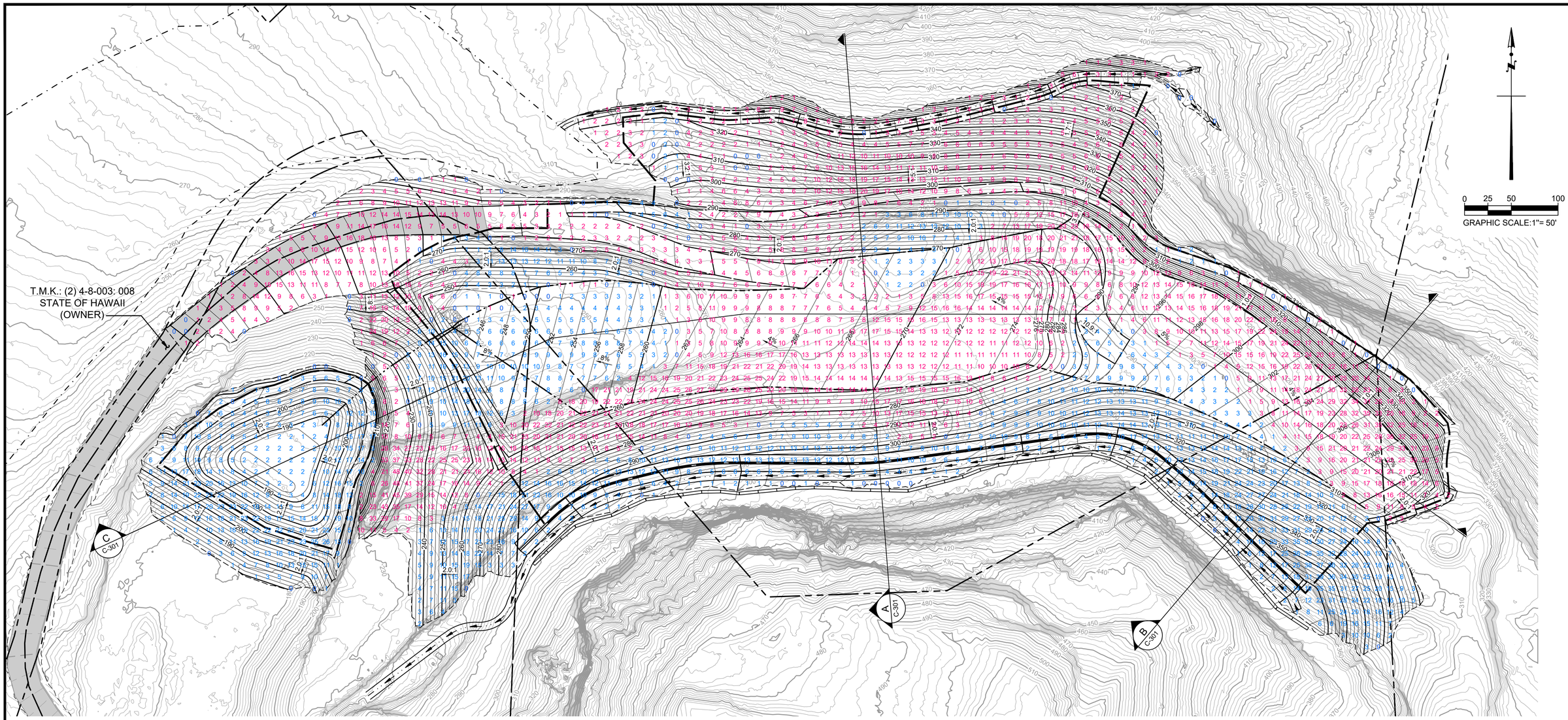

LEGEND

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- APPROXIMATE RIGHT-OF-WAY EASEMENT
- PROPOSED TDS LIMIT
- LIMIT OF REFUSE
- LIMIT OF CELL GRADING / DAYLIGHT
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- FUTURE LANDFILL LIMIT
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 4 FILL THICKNESS IN FEET
- 4 CUT THICKNESS IN FEET

VOLUME

CUT: 100,100 CY
FILL: 66,600 CY
NET: 33,500 CY (CUT)

NOTE:

1. APPROXIMATE FUTURE LANDFILL LINER LIMITS AND EXISTING REFUSE LIMITS WERE GATHERED FROM THE WEST MAUI PARK DESIGN REPORT DRAWINGS, DATED 9/27/23, PREPARED BY A-MEHR, INC.

DATE OF TOPOGRAPHY: OCTOBER 2, 2023

NO.	REVISION DESCRIPTION	DATE

TETRA TECH
21700 Copley Drive, Suite 200
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CALEB H. MOORE
LICENSED PROFESSIONAL ENGINEER
NO. 19926
HAWAII, U.S.A.

WEST MAUI - TDS

SUBGRADE VOLUME

DESIGNED BY :	D.J.P.	FILE : C-102 Subgrade Volume.dwg	
DRAWN BY :	D.J.P.	DATE : 12-2023	SCALE: AS SHOWN
CHECKED BY :	G.R.B.	DATE : 12-2023	C-102
APPROVED BY :	C.H.M.	DATE : 12-2023	

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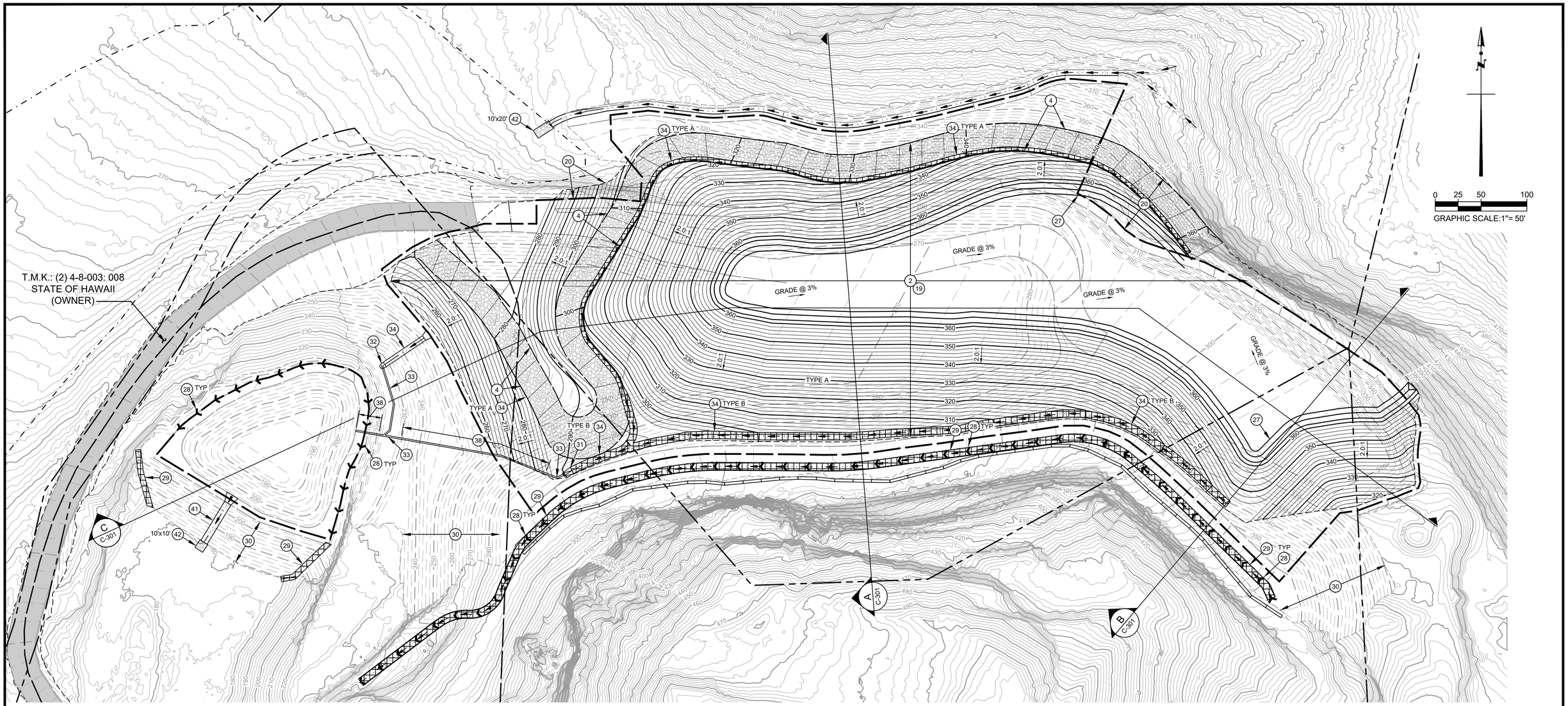

NOTE:

1. APPROXIMATE FUTURE LANDFILL LINER LIMITS AND EXISTING REFUSE LIMITS WERE GATHERED FROM THE WEST MAUI PARK DESIGN REPORT DRAWINGS, DATED 9/27/23, PREPARED BY A-MEHR, INC.

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- EXISTING UNPAVED ROAD
- FUTURE LANDFILL LIMIT
- CONSTRUCTED SUBGRADE MAJOR CONTOUR (SEE C-101)
- CONSTRUCTED SUBGRADE MINOR CONTOUR (SEE C-101)
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- TDS ACCESS ROAD / GRAVEL
- EROSION CONTROL BLANKET

CONSTRUCTION NOTES

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DATE OF TOPOGRAPHY: OCTOBER 2, 2023

NO.	REVISION DESCRIPTION	DATE

TETRA TECH
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TEL 909.860.7777 FAX 909.860.8017

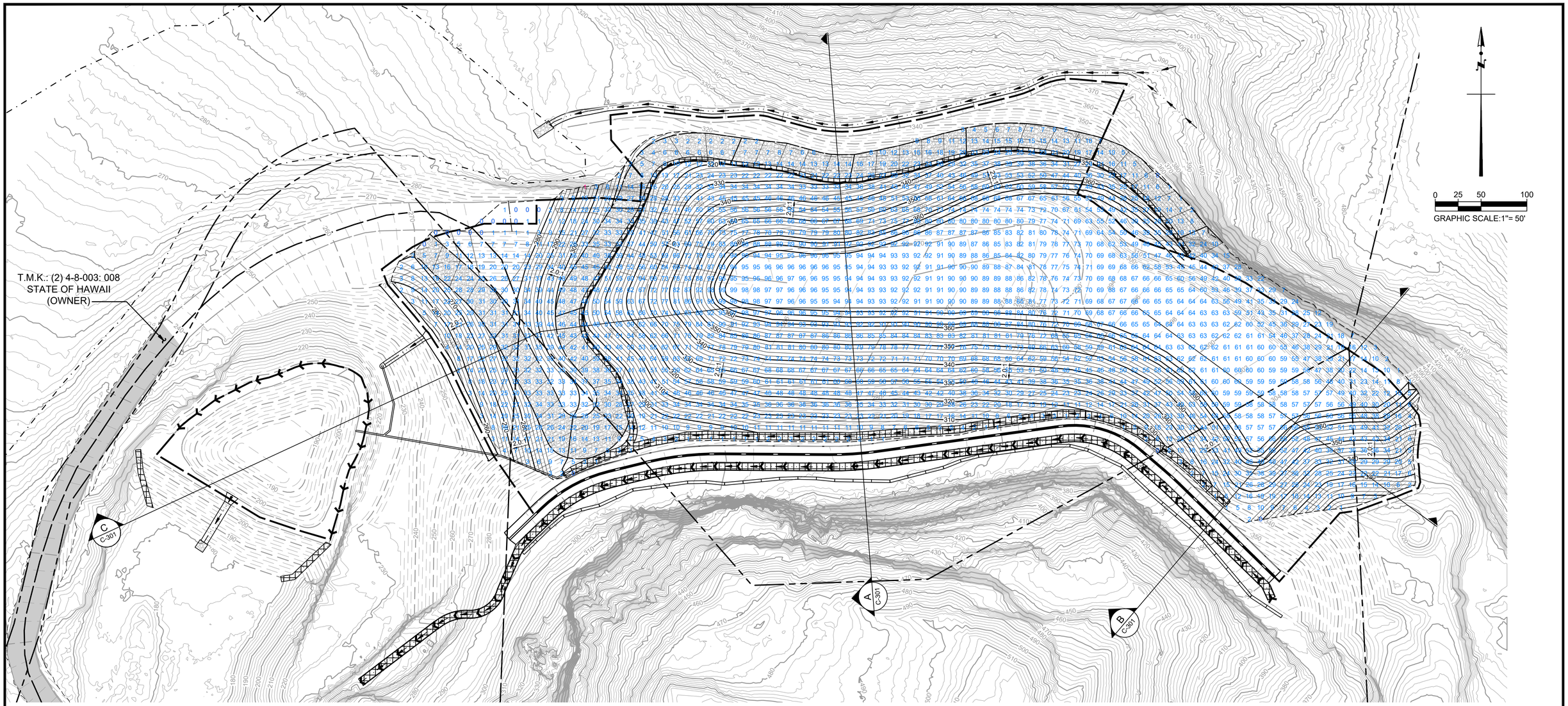
CALEB H. MOORE
LICENSED PROFESSIONAL ENGINEER
NO. 19922
HAWAII, U.S.A.

WEST MAUI - TDS

FILL GRADING PLAN

DESIGNED BY :	D.J.P.	FILE : C-103 Fill Grading Plan.dwg	
DRAWN BY :	D.J.P.	DATE : 12-2023	SCALE: AS SHOWN
CHECKED BY :	G.R.B.	DATE : 12-2023	C-103
APPROVED BY :	C.H.M.	DATE : 12-2023	

P:\Maui County\Olowalu\TDS Site\CAD\SheetFiles\C-103 Fill Grading Plan.dwg 12/22/2023 5:56 PM



LEGEND

- APPROXIMATE LIMIT OF PROPERTY LINE
- PROPOSED TDS LIMIT
- LIMIT OF REFUSE
- LIMIT OF CELL GRADING / DAYLIGHT
- GRADE BREAK
- EXISTING UNPAVED ROAD
- FUTURE LANDFILL LIMIT
- CONSTRUCTED SUBGRADE MAJOR CONTOUR (SEE C-101)
- CONSTRUCTED SUBGRADE MINOR CONTOUR (SEE C-101)
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- FILL THICKNESS IN FEET

GROSS FILL VOLUME:

528,700 CY

NOTE:

1. APPROXIMATE FUTURE LANDFILL LINER LIMITS AND EXISTING REFUSE LIMITS WERE GATHERED FROM THE WEST MAUI PARK DESIGN REPORT DRAWINGS, DATED 9/27/23, PREPARED BY A-MEHR, INC.
2. GROSS FILL VOLUME IS THE COMPARISON OF THE TOP OF FILL SURFACE AND THE TOP OF THE TDS SUBGRADE SURFACE. GROSS FILL VOLUME INCLUDES OPERATIONS LAYER VOLUME.
3. GROSS VOLUME = AIRSPACE FROM LINER TO TOP OF FILL GRADES SHOWN
   NET VOLUME = GROSS VOLUME MINUS OPERATIONS SOIL AND TERMINATION SOIL FILL.

DATE OF TOPOGRAPHY: OCTOBER 2, 2023

NO.	REVISION DESCRIPTION	DATE

TETRA TECH
21700 Copley Drive, Suite 200
Diamond Bar, CA 91765
TEL 909.860.7777 FAX 909.860.8017

CALEB H. MOORE
LICENSED PROFESSIONAL ENGINEER
NO. 19922
HAWAII, U.S.A.

WEST MAUI - TDS

FILL VOLUME

DESIGNED BY :	D.J.P.	FILE : C-104 Fill Volume.dwg	
DRAWN BY :	D.J.P.	DATE : 12-2023	SCALE: AS SHOWN
CHECKED BY :	G.R.B.	DATE : 12-2023	C-104
APPROVED BY :	C.H.M.	DATE : 12-2023	

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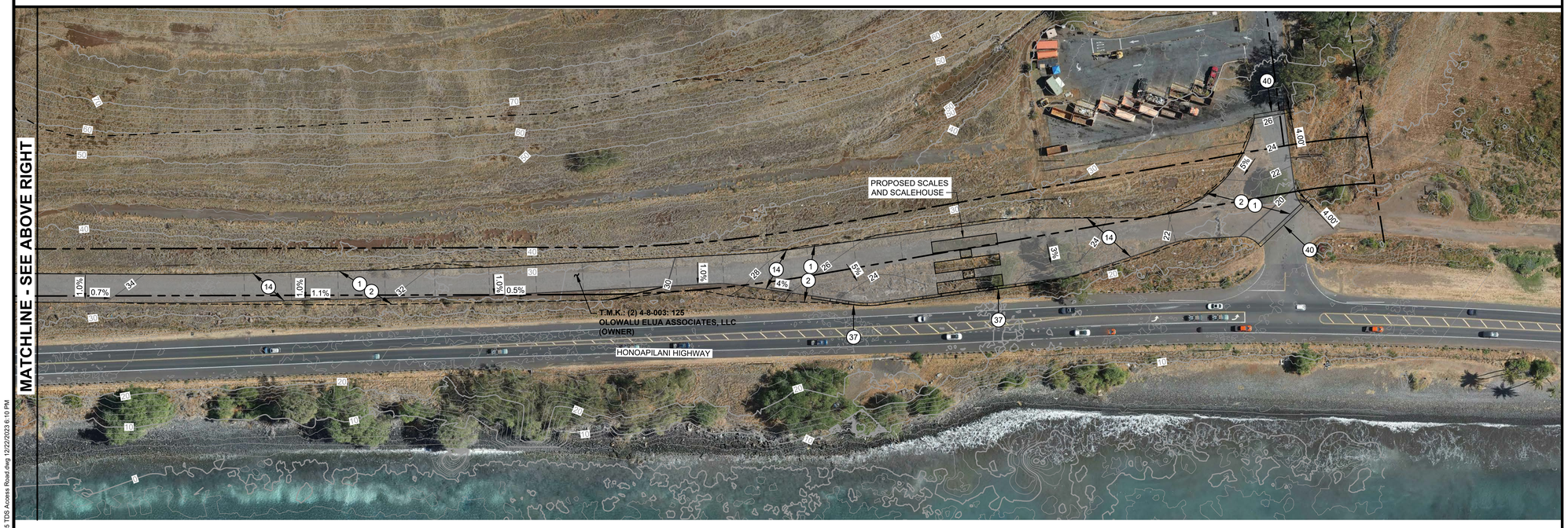

0 30 60 120

GRAPHIC SCALE:1"= 60'

CONSTRUCTION NOTES

1. CLEAR AND GRUB
2. EXCAVATE AND FILL TO PROPOSED CONTOURS
14. CONSTRUCT 5" AC OVER 6" CMB PER — 3 / C-502
37. INSTALL K-RAIL
39. PROTECT IN PLACE
40. COLD PLANE EXISTING AC 2" AND PLACE 2" AC OVERLAY TO JOIN PER — 7 / C-504

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- PROPOSED TDS LIMIT
- LIMIT OF REFUSE
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- EXISTING UNPAVED ROAD
- EXISTING LINER LIMIT
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED K-RAIL
- EXISTING FENCE

DATE OF TOPOGRAPHY: OCTOBER 2, 2023 SUPPLEMENTED WITH NOVEMBER 2, 2023

NO.	REVISION DESCRIPTION	DATE

TETRA TECH
21700 Copley Drive, Suite 200
Diamond Bar, CA 91765
TEL 909.860.7777 FAX 909.860.8017

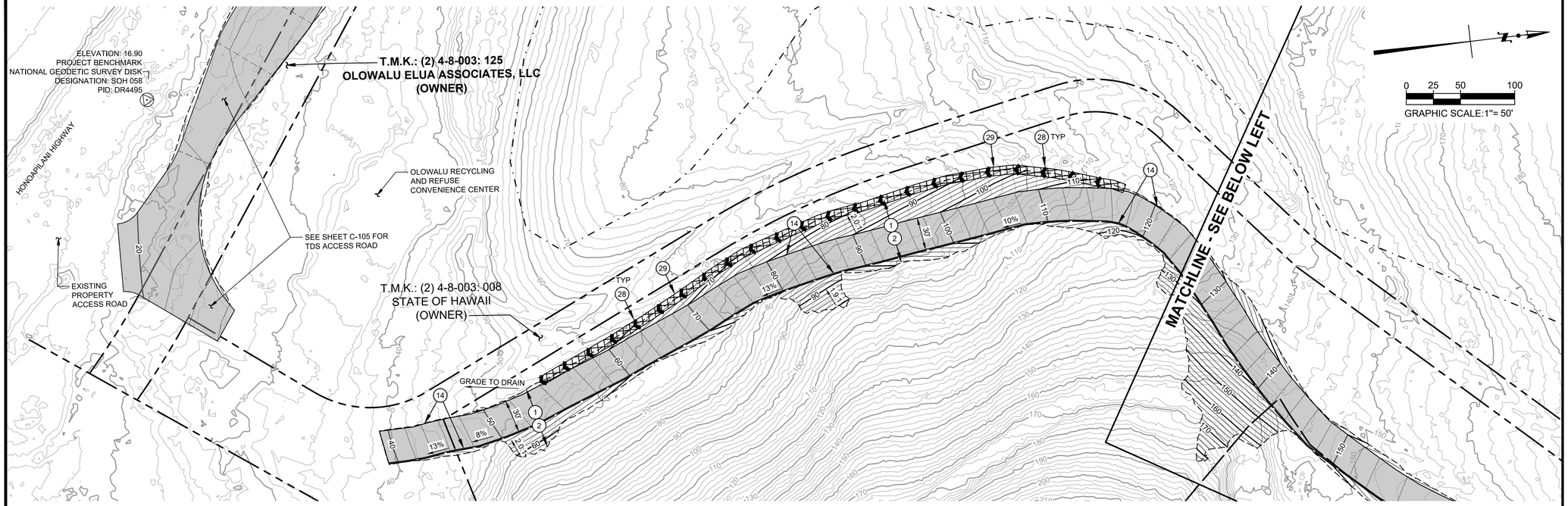
CALEB H. MOORE
LICENSED PROFESSIONAL ENGINEER
NO. 18972
HAWAII, U.S.A.

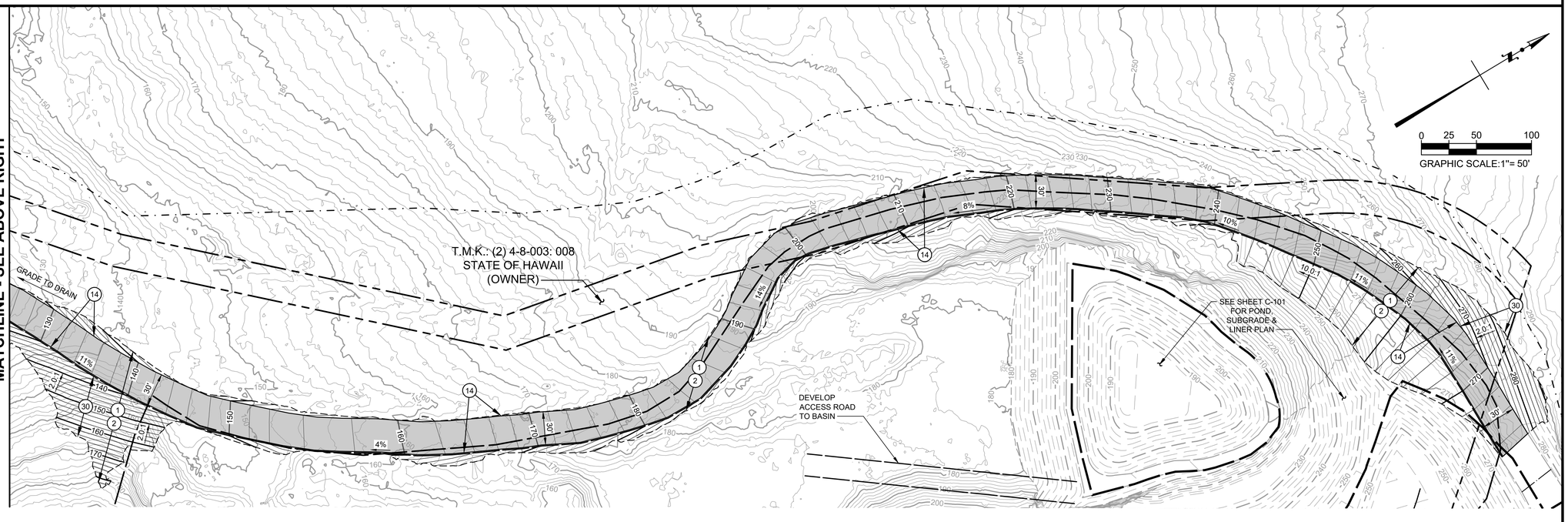
WEST MAUI - TDS

TDS ACCESS ROAD

DESIGNED BY :	D.J.P.	FILE : C-105 TDS Access Road.dwg	
DRAWN BY :	D.J.P.	DATE : 12-2023	SCALE: AS SHOWN
CHECKED BY :	G.R.B.	DATE : 12-2023	
APPROVED BY :	C.H.M.	DATE : 12-2023	C-105

P:\Maui County\Olowalu\TDS Site\CAD\SheetFiles\C-105 TDS Access Road.dwg 12/22/2023 6:10 PM





CONSTRUCTION NOTES

1. CLEAR AND GRUB
2. EXCAVATE AND FILL TO PROPOSED CONTOURS
14. CONSTRUCT 5" AC OVER 6" CMB PER — 3 / C-502
28. PLACE GRAVEL BAG CHECK DAM
29. INSTALL EROSION CONTROL BLANKET
30. INSTALL JUTE EROSION CONTROL MAT

LEGEND

- APPROXIMATE LIMIT OF PROPERTY LINE
- PROPOSED TDS LIMIT
- LIMIT OF REFUSE
- LIMIT OF CELL GRADING / DAYLIGHT
- GRADE BREAK
- EXISTING UNPAVED ROAD
- FUTURE LANDFILL LIMITS
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- TDS PAVED ROAD
- TDS ACCESS ROAD
- EROSION CONTROL BLANKET

DATE OF TOPOGRAPHY: OCTOBER 2, 2023

NO.	REVISION DESCRIPTION	DATE

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WEST MAUI - TDS

TDS ACCESS ROAD

DESIGNED BY :	D.J.P.	FILE : C-106 TDS Access Road.dwg	
DRAWN BY :	D.J.P.	DATE : 12-2023	SCALE: AS SHOWN
CHECKED BY :	G.R.B.	DATE : 12-2023	C-106
APPROVED BY :	C.H.M.	DATE : 12-2023	

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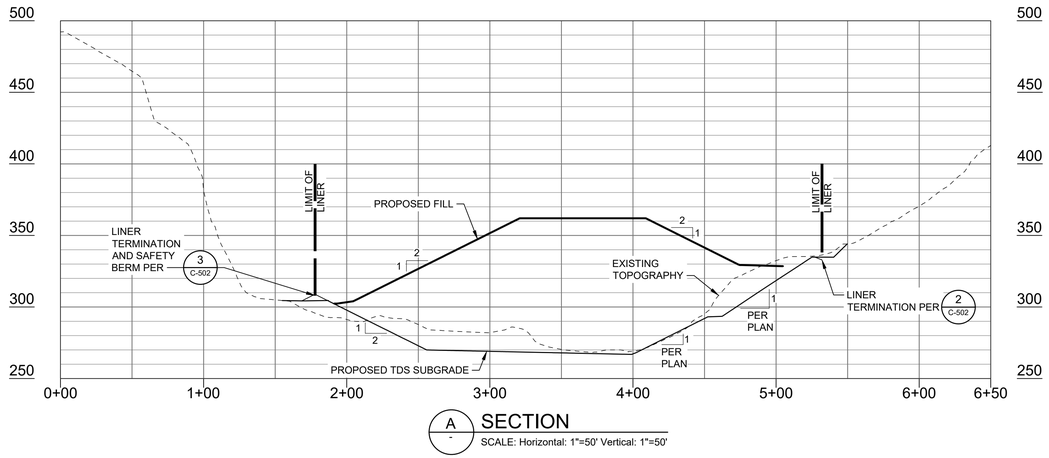

A - SECTION

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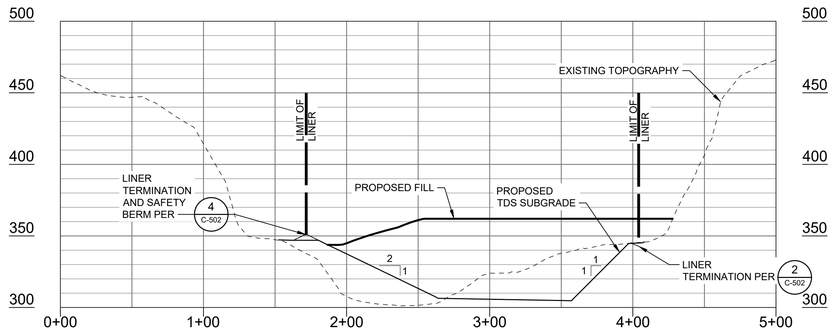

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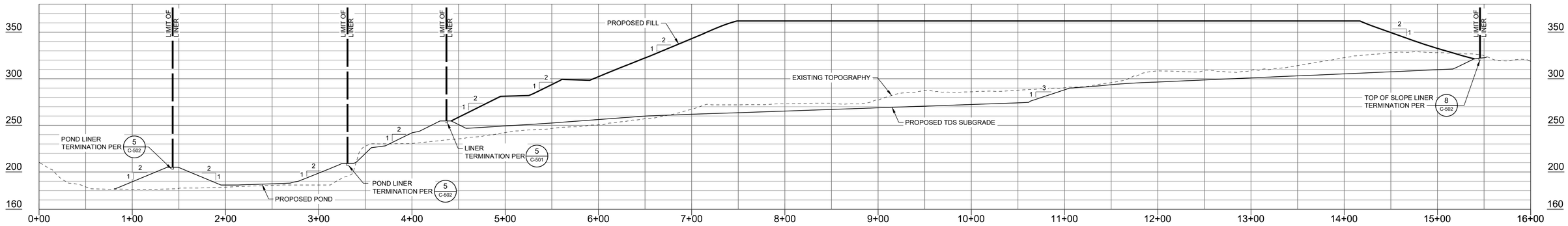

C - SECTION

SCALE: Horizontal: 1"=50' Vertical: 1"=50'

NO.	REVISION DESCRIPTION	DATE

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WEST MAUI - TDS

SECTIONS

DESIGNED BY : D.J.P.	FILE : C-301 Sections.dwg		
DRAWN BY : D.J.P.	DATE : 12-2023	SCALE: AS SHOWN	
CHECKED BY : G.R.B.	DATE : 12-2023		
APPROVED BY : C.H.M.	DATE : 12-2023		C-301

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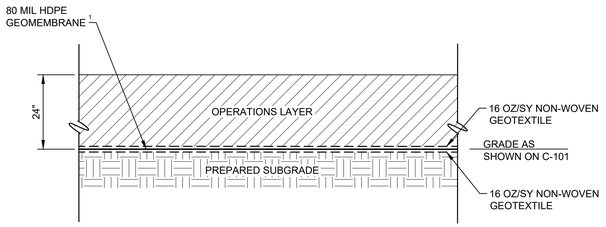
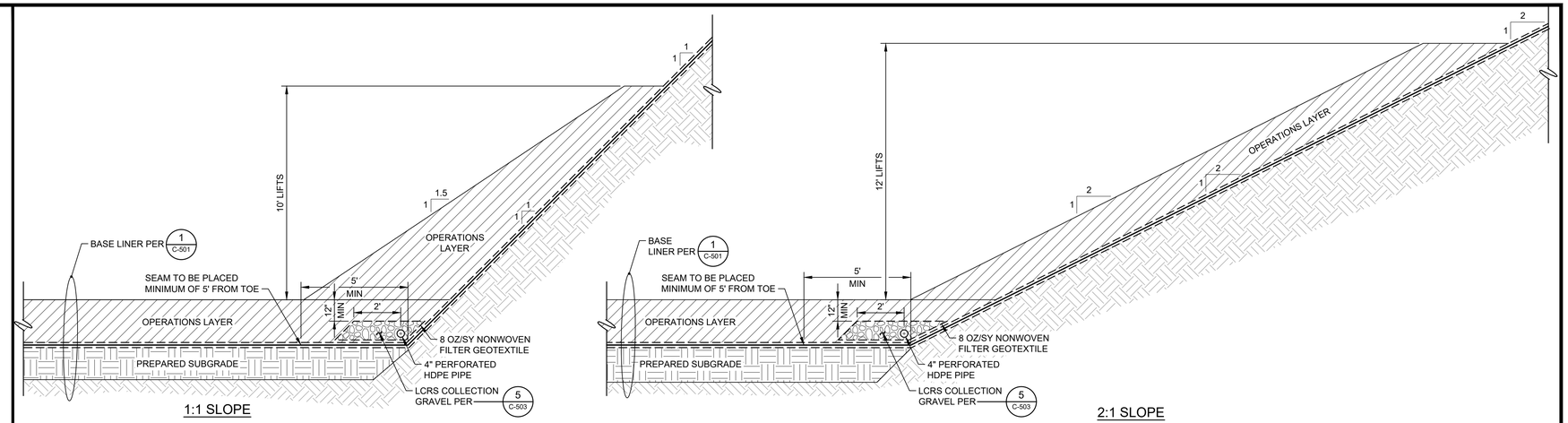
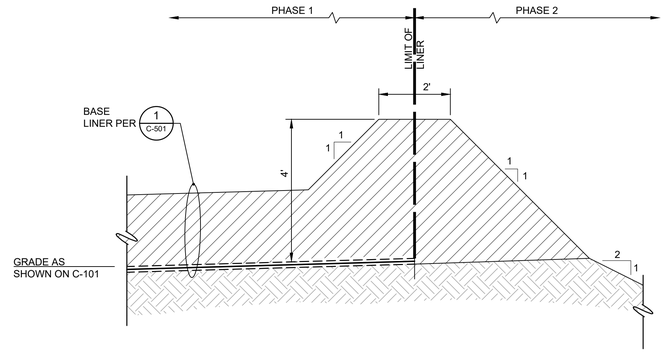


NOTE:
[1] AVAILABLE DOUBLE-SIDED TEXTURED GEOMEMBRANE TO BE USED BEFORE SINGLE SIDED TEXTURED GEOMEMBRANE. SINGLE SIDED TEXTURED GEOMEMBRANE TO BE PLACED ON EAST SECTION OF THE CELL. SINGLE SIDED TEXTURED GEOMEMBRANE TO BE PLACED TEXTURE SIDE DOWN.

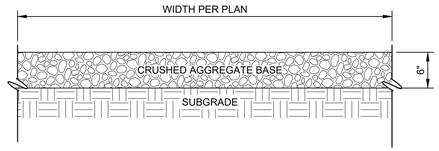
1	BASE LINER
NTS	REFERENCE SHEET:



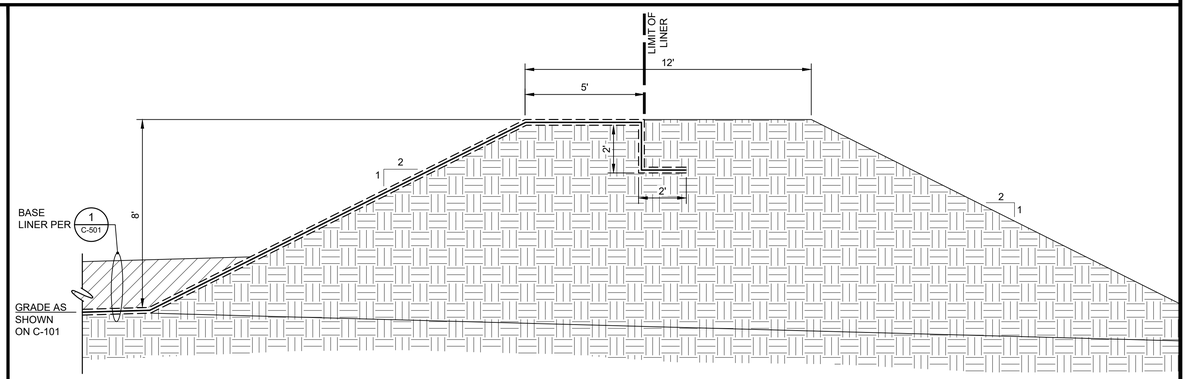
2	OPERATIONS LAYER ON SLOPE
NTS	REFERENCE SHEET:



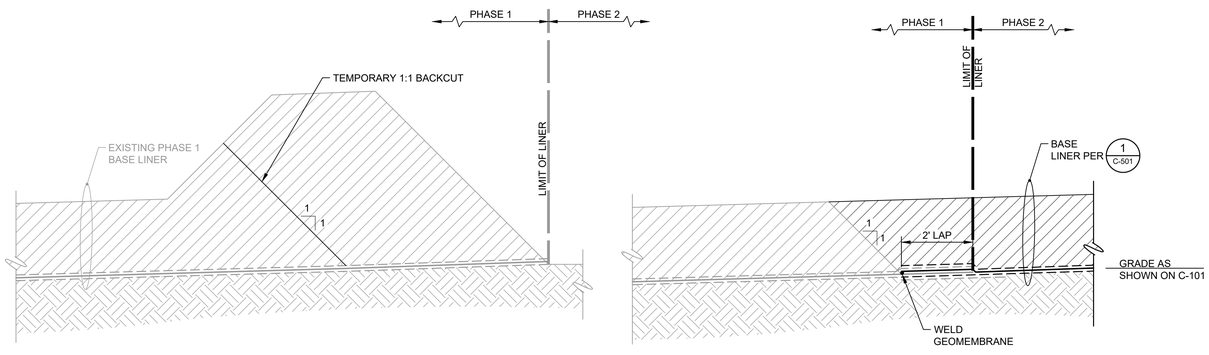
3	TEMPORARY BERM LINER TERMINATION (OPTIONAL)
NTS	REFERENCE SHEET:



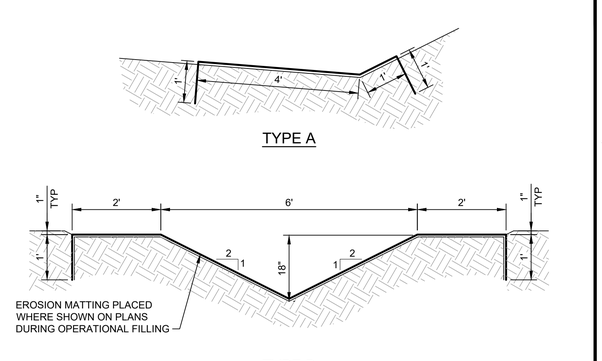
4	6-INCH CAB
NTS	REFERENCE SHEET:



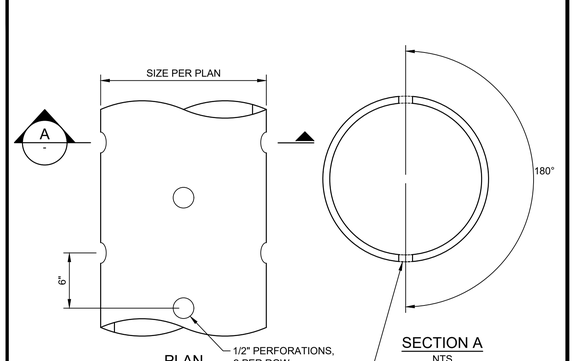
5	LINER TERMINATION BERM
NTS	REFERENCE SHEET:



6	BASE LINER JOIN TO EXISTING PHASE 1 BASE LINER (OPTIONAL)
NTS	REFERENCE SHEET:



7	EARTHEN SWALE
NTS	REFERENCE SHEET:



8	PERFORATED PIPE
NTS	REFERENCE SHEET:

NO.	REVISION DESCRIPTION	DATE

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WEST MAUI - TDS

DETAILS

DESIGNED BY :	D.J.P.	FILE : C-501 Details.dwg	
DRAWN BY :	D.J.P.	DATE : 12-2023	SCALE: AS SHOWN
CHECKED BY :	G.R.B.	DATE : 12-2023	C-501
APPROVED BY :	C.H.M.	DATE : 12-2023	

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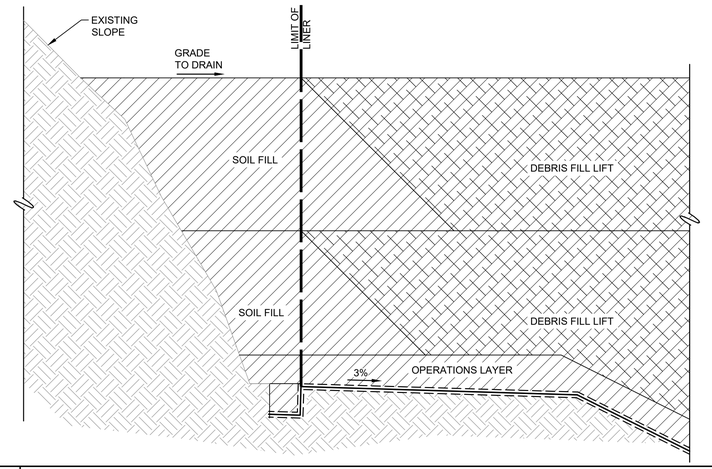
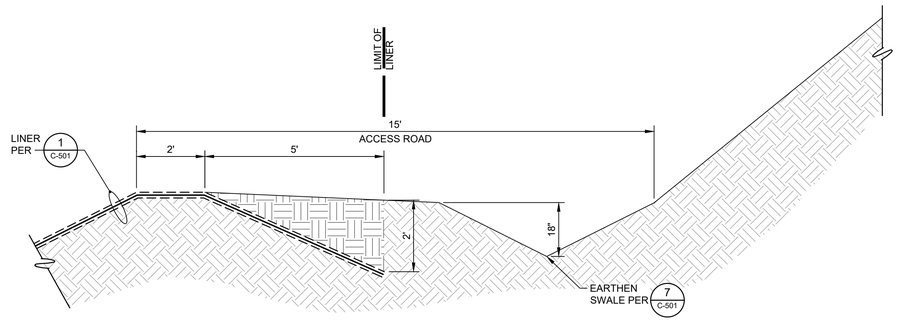


1	DEBRIS LINER TERMINATION FILL
NTS	REFERENCE SHEET:



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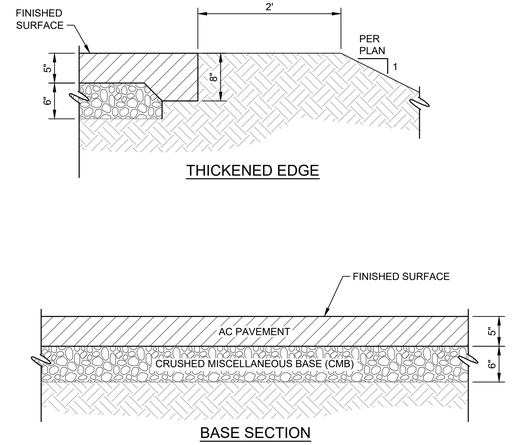
NTS	REFERENCE SHEET:



3	AC PAVEMENT
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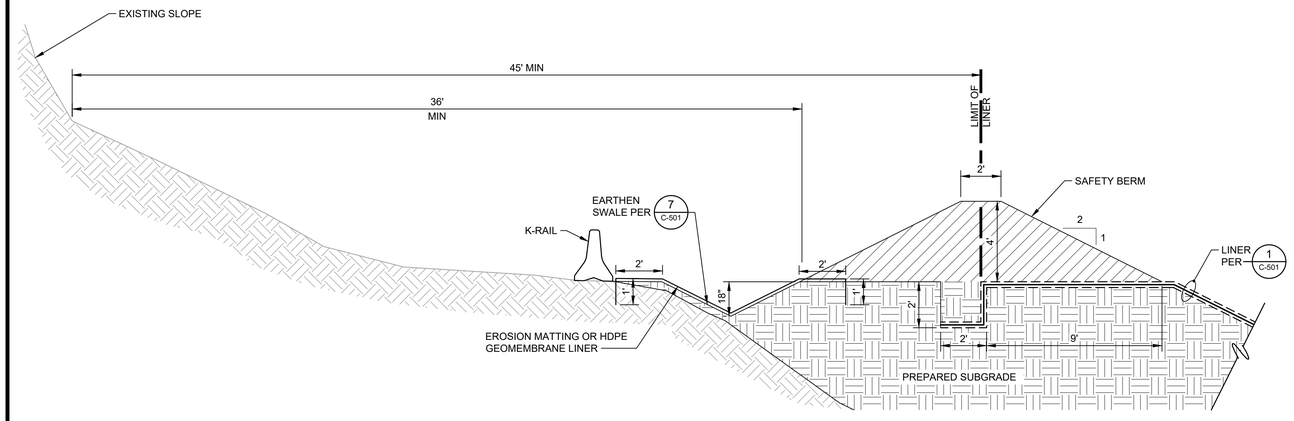
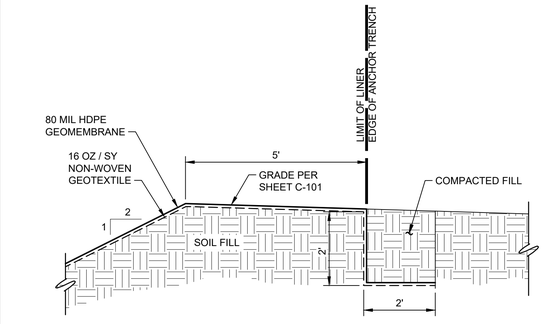
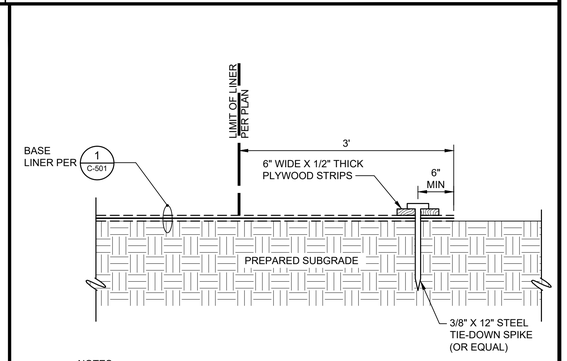


4	LINER TERMINATION AND SAFETY BERM
NTS	REFERENCE SHEET:

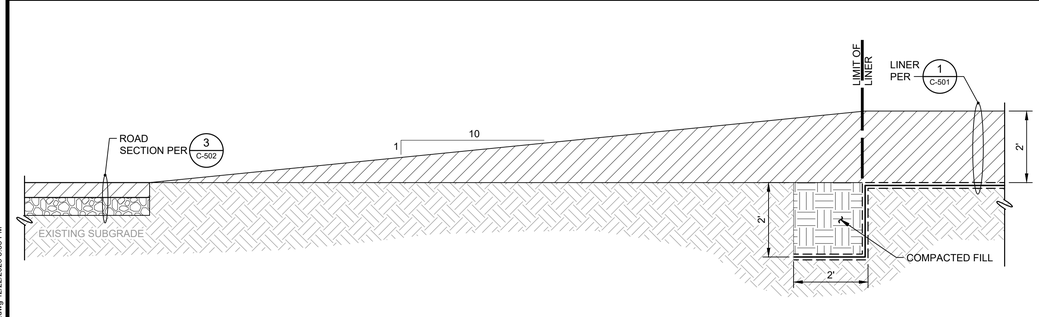


5	POND LINER TERMINATION
NTS	REFERENCE SHEET:



NOTES:
1. TIE-DOWN SPIKES TO BE PLACED AT 1' OC. PLYWOOD STRIPS TO BE PLACED CONTINUOUSLY ALONG EDGE OF HDPE GEOMEMBRANE.

6	LINER TERMINATION ON SLOPE
NTS	REFERENCE SHEET:



7	LINER TERMINATION ON BENCH
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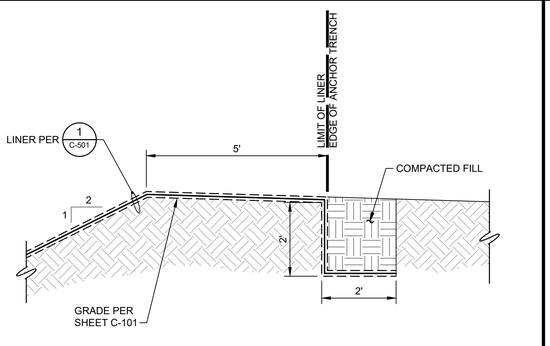

8	TOP OF SLOPE LINER TERMINATION
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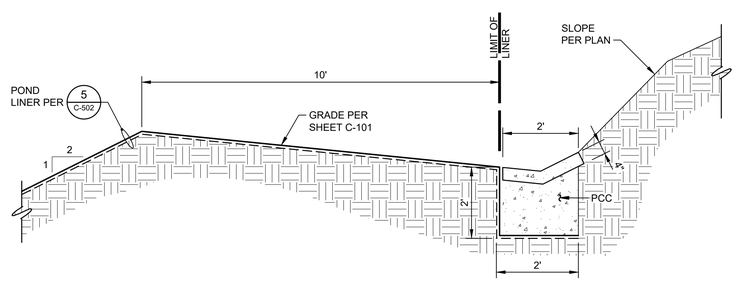

9	PERIMETER RIBBON GUTTER
NTS	REFERENCE SHEET:

NO.	REVISION DESCRIPTION	DATE

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WEST MAUI - TDS

DETAILS

DESIGNED BY :	D.J.P.	FILE : C-502 Details.dwg	
DRAWN BY :	D.J.P.	DATE : 12-2023	SCALE: AS SHOWN
CHECKED BY :	G.R.B.	DATE : 12-2023	C-502
APPROVED BY :	C.H.M.	DATE : 12-2023	

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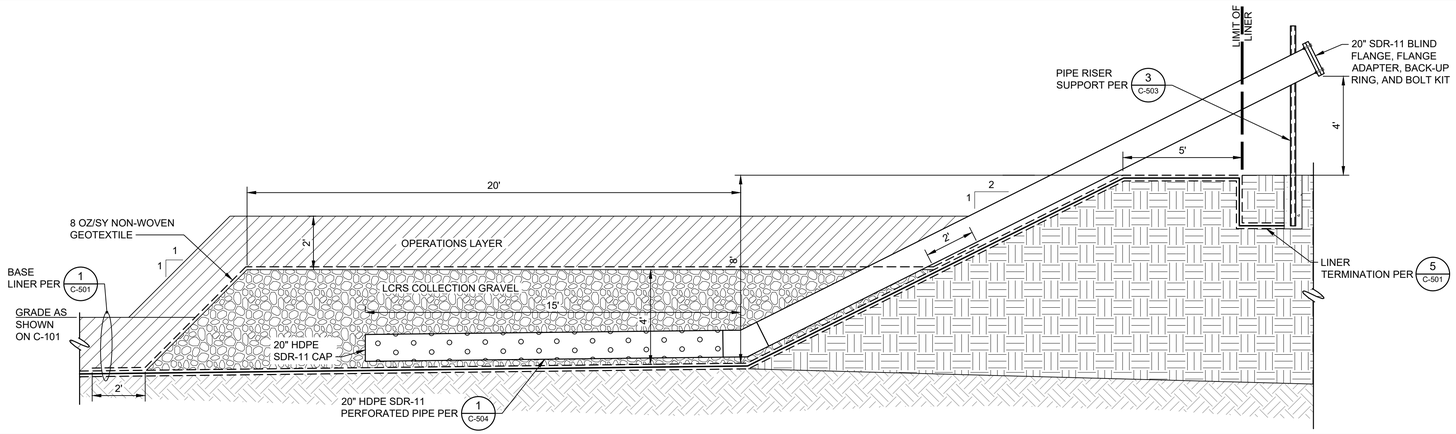
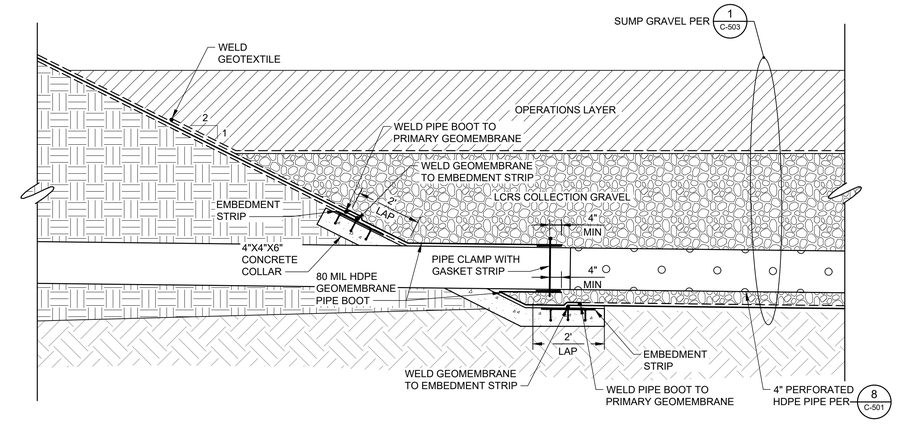


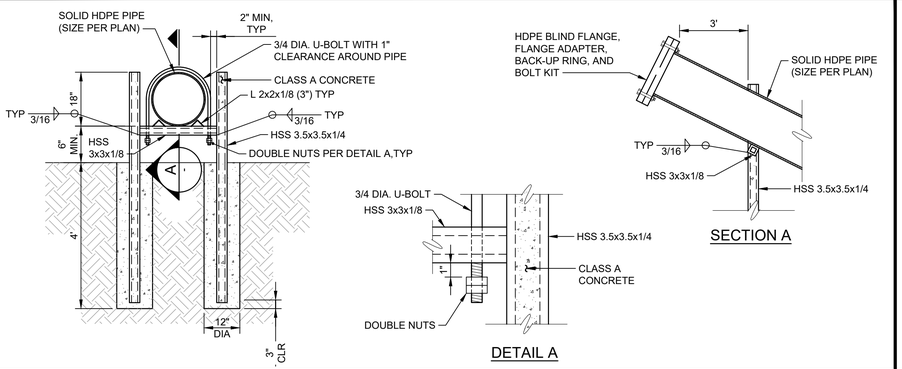
1 RISER PIPE PROFILE

NTS | REFERENCE SHEET:



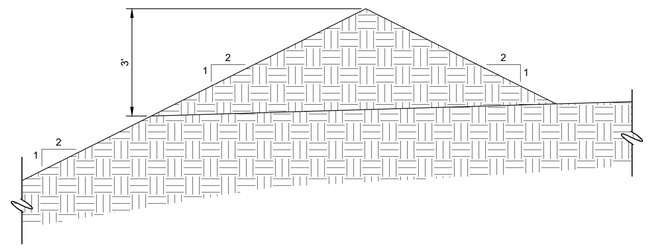
2 HDPE PIPE PENETRATION

NTS | REFERENCE SHEET:



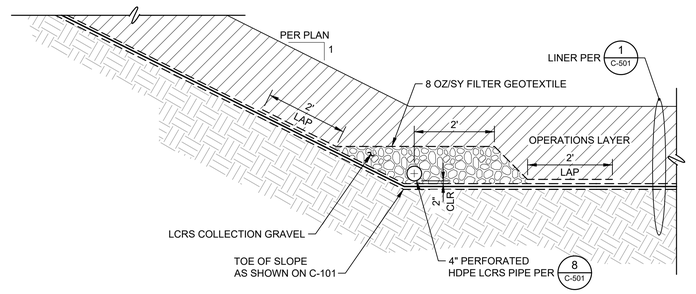
3 PIPE RISER SUPPORT

NTS | REFERENCE SHEET:



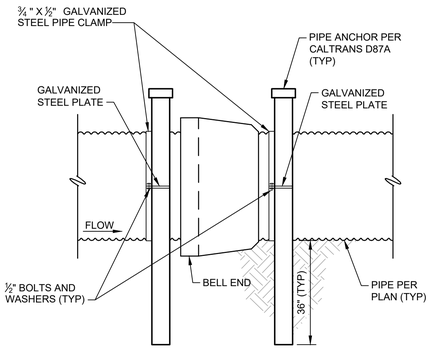
4 TOP DECK BERM

NTS | REFERENCE SHEET:



5 TOE OF SLOPE LCRS

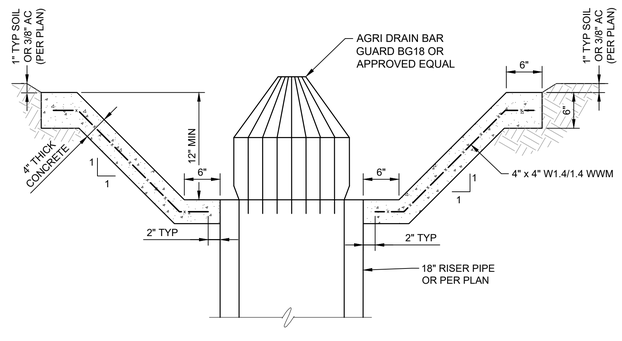
NTS | REFERENCE SHEET:



NOTES:
1. PIPE ANCHORS ARE TO BE INSTALLED AT ALL ABOVE GROUND DRAIN PIPE JOINTS AND FITTINGS.

6 ABOVE GROUND PIPE ANCHOR

NTS | REFERENCE SHEET:



7 CONCRETE DROP INLET

NTS | REFERENCE SHEET:

NOTES:
1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS," LATEST EDITION.
2. MEASURES SHALL BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: PER PROJECT SPECIFICATIONS.
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE 3/4" MINUS (SELECT NATIVE) IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED.
6. MINIMUM COVER: MINIMUM COVER IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, WHERE SHOWN, IS 12" FOR UP TO 48" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

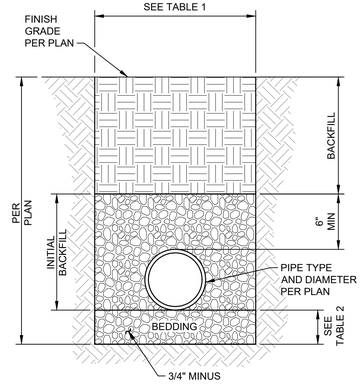
TABLE 1: TRENCH WIDTH

PIPE DIA.	MIN. WIDTH
1"-6"	18"
12"	36"
15"	39"
18"	39"
24"	48"
36"	64"
48"	72"
60"	84"

TABLE 2: BEDDING THICKNESS

PIPE DIA.	THICKNESS
2"-6"	4"
12"-24"	4"
30"-60"	6"

NOTE:
1. FOR 2"-6" PIPE, SAND MAY BE SUBSTITUTED FOR 3/4" MINUS BEDDING & BACKFILL WITHIN THE PIPE ZONE.
2. SLURRY BEDDING AND BACKFILL WHERE SHOWN ON PLANS.



8 TRENCHING AND BEDDING

NTS | REFERENCE SHEET:

NO.	REVISION DESCRIPTION	DATE

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WEST MAUI - TDS

DETAILS

DESIGNED BY :	D.J.P.	FILE : C-503 Details.dwg			
DRAWN BY :	D.J.P.	DATE :	12-2023	SCALE:	AS SHOWN
CHECKED BY :	G.R.B.	DATE :	12-2023		C-503
APPROVED BY :	C.H.M.	DATE :	12-2023		

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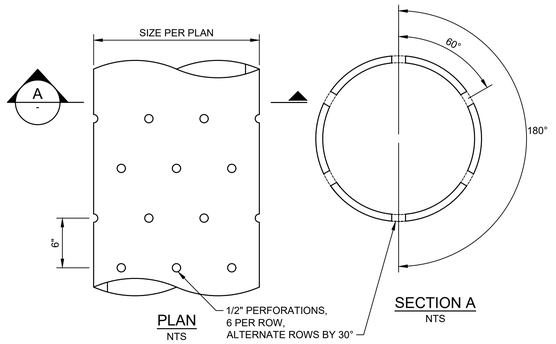
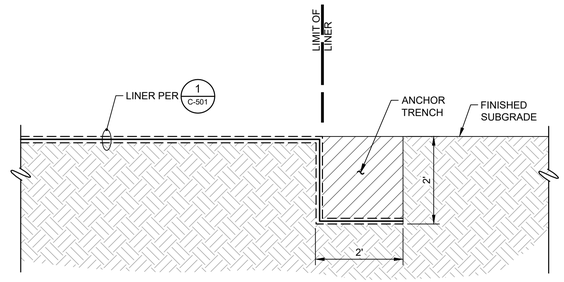
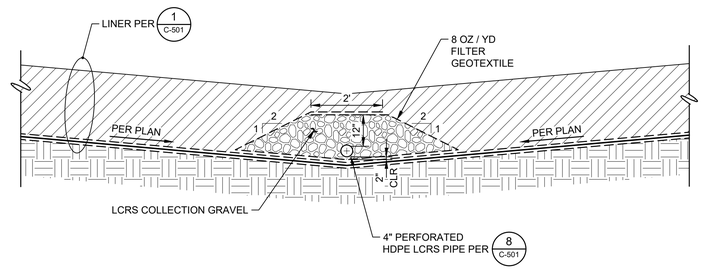


1	20-INCH PERFORATED PIPE
NTS	REFERENCE SHEET:



2	SIDE SLOPE ANCHOR TRENCH
NTS	REFERENCE SHEET:



3	LCRS COLLECTION SWALE
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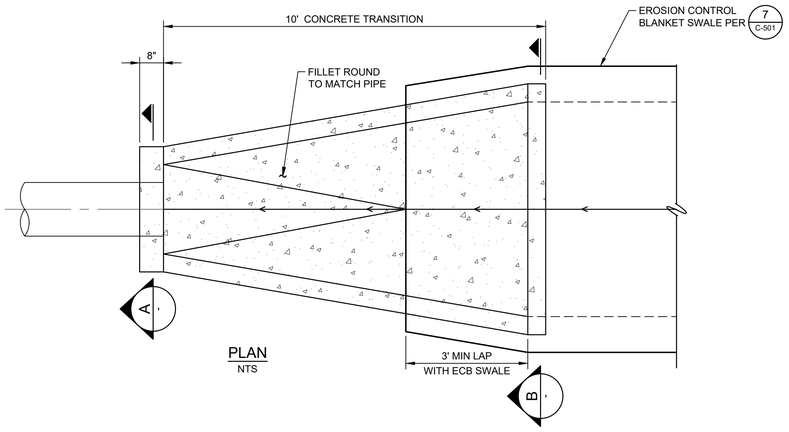
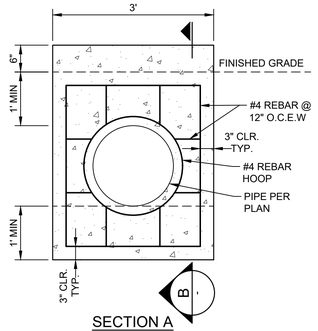
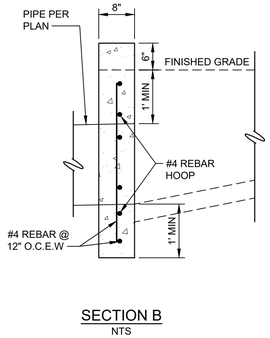
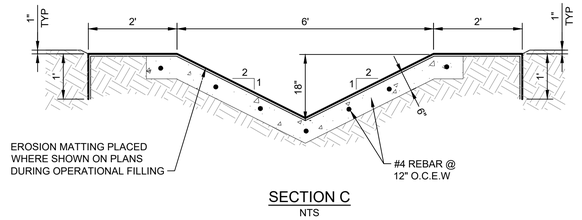
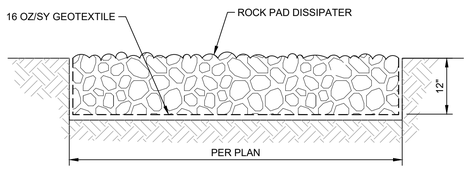




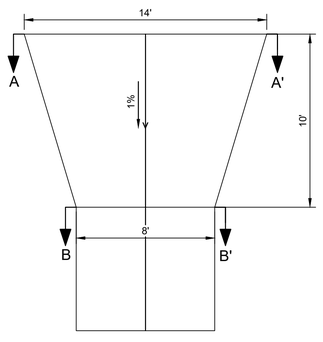


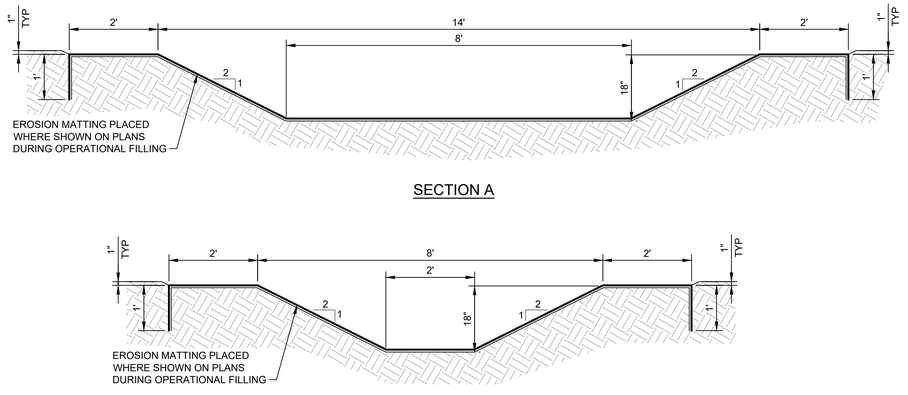


4	CHANNEL TO PIPE TRANSITION
NTS	REFERENCE SHEET:

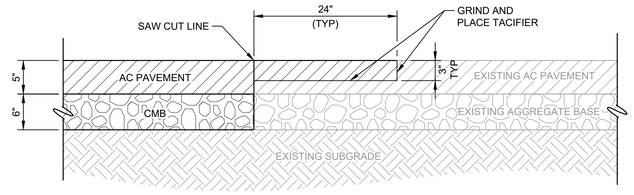


5	ROCK PAD DISSIPATER
NTS	REFERENCE SHEET:





6	SPILLWAY
NTS	REFERENCE SHEET:



NOTES:

1. SAW CUT EXISTING AC PAVEMENT.
2. GRIND PROPOSED REPAIR AREA TO 3" DEPTH AND REMOVE GRINDINGS.
2. PLACE TACIFIER.
3. PLACE 3" THICK AC PAVING LIFT TO MATCH EXISTING GRADE.

7	SAW CUT AND REPLACE AC PAVEMENT
NTS	REFERENCE SHEET:

NO.	REVISION DESCRIPTION	DATE

TETRA TECH
21700 Copley Drive, Suite 200
Diamond Bar, CA 91765
TEL 909.860.7777 FAX 909.860.8017

CALEB H. MOORE
LICENSED PROFESSIONAL ENGINEER
NO. 19515
HAWAII, U.S.A.

WEST MAUI - TDS

DETAILS

DESIGNED BY :	D.J.P.	FILE : C-504 Details.dwg	
DRAWN BY :	D.J.P.	DATE : 12-2023	SCALE: AS SHOWN
CHECKED BY :	G.R.B.	DATE : 12-2023	C-504
APPROVED BY :	C.H.M.	DATE : 12-2023	

P:\Maui County\Olowalu\TDS Site\CAD\SheetFiles\C-504 Details.dwg 12/22/2023 5:36 PM

ATTACHMENT 7. WEST MAUI OPERATIONS MANUAL: PHASE 1 (TDS SITE)

West Maui Operations Manual

PHASE 1

TEMPORARY DEBRIS STORAGE FACILITY

197-2023-0172
January 2024

Document Number: PC-019.00

PREPARED FOR

Environmental Chemical Corporation
2969 Mapunapuna Place, Suite 220
Honolulu, Hawaii 96819

PREPARED BY

Tetra Tech
21700 Copley Drive, Suite 200
Diamond Bar, California 91765
Phone: (909) 860-7777
Tetratech.com

Prepared under responsible charge of:
Caleb H. Moore, P.E.

WEST MAUI TEMPORARY DEBRIS STORAGE FACILITY
OPERATIONS MANUAL

TABLE OF CONTENTS

1.0 INTRODUCTION

The West Maui Temporary Disposal Facility (TDS) is an approximately 7.5-acre temporary ash debris storage area located approximately 5 miles southeast of Lahaina. The TDS will be used to temporarily store ash debris from residential and commercial areas in Lahaina destroyed during the recent wildfire. This operation plan describes the operations of the TDS including debris placement and personnel and operational procedures of the site. Facility operations are anticipated to begin in January 2024.

1.1 Site Description

The TDS is located directly northeast of the existing Olowalu Residential Recycling and Refuse Center located 0.8 miles southwest of the intersection of Honopiilani Highway and Highway 30. The debris hauling entrance will be located 0.5 miles northwest of the recycling center. The entrance will run along Highway 30 on an outer road to the scale location on the eastern end of the road prior to entering the TDS site area.

1.2 Operating Hours

Site operations will be conducted daily from Sunday to Saturday during the hours of 6:00 AM to 6:00 PM.

1.3 Accepted Materials

Ash/debris from Lahaina will be the only waste accepted at the TDS. The waste will be wrapped in plastic prior to receipt by the TDS facility. Other construction debris associated with the Lahaina cleanup including concrete, metals will be sent to other facilities and will not be accepted at the TDS.

1.4 Site Security

Public access to the TDS will not be permitted and access will be controlled by gating at the TDS entrance to prevent unauthorized vehicular traffic and to protect human health and the environment. The access gate will be locked during non-operating hours. Only TDS personnel and approved debris haulers will have access to the debris storage area. Ash debris haulers will be routed to the scales and scale house located directly before the TDS entrance. All visitors must proceed to the site office or scale houses prior to entering the site. Site personnel will provide security to prevent unauthorized access to the TDS.

1.5 Personal Roles and Responsibilities

Environmental Chemical Corporation (ECC) will provide trained personnel and protective equipment to safety manage and direct incoming debris as well as operate the TDS. Below is a summary of anticipated personnel onsite. The number of personnel may vary based on site needs.

Personnel Title	Number of Personnel
Site Manager	1
Site Operations Manager	1
Site Safety & Health Officers	1
Quality Control Supervisor	1
Equipment Operators	6
Laborers	3
Traffic Controllers	4
Scale Attendant	3
Total	20

The Site Manager will oversee overall planning, operations, engineering support, and coordinate any communications with local and federal agencies and the public. The Site Operations Manager will directly oversee operations personnel and daily operation of the TDS.

Equipment operators will work under direct supervision of the Site Operations Manager and are responsible for operating heavy equipment onsite. Principal duties performed consist of the following:

- Visually screening ash debris at the working face to prevent any unacceptable materials from disposal at the TDS.
- Directing debris haulers to designated unloading locations.
- Spreading and compacting debris at the working face.
- Placing cover or Soil-Tac or an approved alternative as required.
- Placing operations soil layer as filling progresses.
- Placing and compacting sideslope soil fills.
- Maintaining access roads.

Traffic controllers will provide traffic flow oversite and direction the site entrance through use of controlled traffic lights, signs, or other means.

1.6 Equipment

The equipment at the TDS is adequate to handle the daily volume of debris accepted at the site, to provide support for routine and non-routine related tasks, and to conduct the ongoing excavation and construction activity needed for cell development and generation of cover soil. The current inventory is as follows:

- One compactor used to push and compact ash debris.
- One bulldozer used to push and compact ash debris, spread and place cover and sideslope fills.
- Two rock dump trucks used to move cover and operations layer material from the soil stockpile to the fill area.
- One excavator used to load trucks with cover and operations layer material.
- Two water trucks used for dust control.
- Auxiliary equipment – pickup trucks, traffic lights, etc.

In the event of an equipment breakdown, other site equipment will be used, or rental equipment can be obtained from local equipment rentals. A preventive maintenance program is implemented to ensure the availability of adequate equipment to manage the TDS.

1.7 Project Traffic Volume

The number of debris hauling vehicles to pass through the TDS per day is anticipated to be approximately 275 to 285 vehicles at peak capacity. The estimated max traffic the site can receive based on two working faces is approximately 25 to 35 vehicles per hour.

2.0 TDS Operations

2.1 Traffic

2.1.1 Traffic Flow

Waste debris traffic will enter the TDS site from the debris hauler entrance located approximately 0.5 miles northeast down Highway 30 from the Olowalu Recycling Facility. Traffic will then travel along the entrance road to the scales and scale house located south to the Olowalu Recycling Facility. Traffic will then be directed up the site access road to the TDS cell and directed to the appropriate active face. After unloading, traffic will follow the same path as entering the site and will either stop to be weighed again on the exit scale or will use the scale bypass lane.

2.1.2 Traffic Control

Traffic control will be managed per the permit submitted under Document Control ID PC-009. The associated haul routes are provided as Figure 1. The traffic plan permit is provided as Figure 2, which depicts the signs and locations of the flagging personnel, which are manually controlling the traffic control lighting system .

The co-located recycling center at the TDS will have traffic control personnel stationed at the entry to control the inbound and out bound traffic.

2.2 Weighing Procedures

Incoming debris haulers will stop at the scales to be weighed and provide required load information to the scale house attendant. Once the weight has been recorded, the scale attendant will direct the hauler to the TDS cell for unloading. Outgoing traffic, when required will be weighed again and recorded on the outgoing scale or directed to the scale bypass lane.

2.3 Fill Sequencing

Debris filling operations will begin in the eastern floor of the TDS cell and proceed to the east. Filling operations are to follow the fill sequencing plans included in Appendix XX.

2.4 Debris Placement

Debris placement within the TDS must conform to standard procedures to provide maximum protection of the underlying geosynthetics, to ensure adequate stability of the base and debris mass, and to ensure the best performance of the leachate collection system. Detailed lift placement procedures are detailed in the following sections. The area fill method of landfilling will be used, which consists of spreading and compacting the debris in horizontal lifts, then proceeding upward until the next phase of filling begins.

2.5 Initial Protective Lift Placement

The first layer of debris must be a minimum of 5 feet thick prior to any compaction activities. Placement of a minimum 5-ft-thick debris layer must be monitored by TDS site personnel to protect geosynthetics integrity and verify only approved debris is deposited within the cell. Equipment operators are to be instructed what debris will be accepted and will notify the TDS operations manager of any unacceptable objects or materials. Equipment operators are to follow the following procedures during initial debris lift placement.

- A minimum of 5 ft of select waste is placed above the operations layer before any heavy point-load landfill equipment, such as compactors, are operated over the area.
- Only moderate compaction is applied to the top portion of the initial select lift.
- If any damage to the underlying geosynthetics is suspected, the equipment operator must notify the site operations manager immediately.

2.6 Additional Lift Placement

After debris is unloaded at the unloading area, debris placement procedures are as follows:

- A bulldozer pushes the debris to the working face and spreads it into layers up to 5 feet thick.
- Successive layers of debris form lifts advance/build up to form the debris cell.
- Following placement of each 5-to-10-foot lift, cover material is to be placed on top of the debris a minimum of 6-inches thick and then compacted.
- Debris placement and compaction proceeds until final elevations and grades are achieved.

During debris placement operations, the debris surface will be graded to promote water run-off to toward the leachate collection sump area.

2.7 Operations Layer Placement

Operations layer placement will be performed once debris lift thickness has or is close to reaching the current operations layer elevation. Operations layer placement up slopes shall need exceed 10-feet in elevation from the current top of debris on any 2:1 or less slopes. For slopes greater than 2:1, the operations layer placement will occur using the wedge method described in the next section and in accordance with the Phasing Plans included in Appendix A. Operations material shall conform the Project Specifications and Construction Quality Assurance Plan, prepared by Tetra Tech, and dated January 2024. The specifications and construction quality assurance plan is to be kept onsite for use during operations.

2.8 Sidelope Fills (Wedge Method)

Wedge fills will setback from the slopes at a minimum of 1.5V:1H slope and shall not to exceed 10-feet in elevation from the current top of debris. Placement will also conform to the Project Specifications and Construction Quality Assurance Plan.

2.9 Wet Weather Operations

Wet weather operations shall be implemented when excessive precipitation may make normal operations difficult. A wet weather pad should be constructed by covering the disposal area and access roads leading to the unloading area with crushed rock-type material or an effective alternative. This allows for safe driving and continuous unloading during rainy weather. During wet weather, and if practical, the active working face is kept relatively small, with material stockpiled nearby for daily cover. Precipitation runoff from waste material shall not be allowed to runoff outside the lined area, except to the lined basin.

2.10 Survey Requirements

As debris filling progresses, a survey shall be performed following on any operations layer placement up slopes or along the cell floor to verify adequate thickness. The area shall be surveyed on a grid of 50 by 50 foot and along grade breaks. The tolerance for the survey shall be within +0.5 feet.

2.11 Daily Cover

The active debris working area is to be covered following completion of a 10-foot lift or during high wind or rainy conditions with a minimum of 6 inches of cover material, Soil-Tac, or an approved alternative cover material. Cover material will be excavated from onsite stockpiles or brought from approved offsite sources. The volume of cover used, and location of placement should be recorded in daily operational reports.

2.12 Intermediate Cover

Intermediate cover, consisting of a minimum of 12 inches of cover material (), is required over all inactive debris areas, which are defined as areas that do not receive debris within a 30-day period. Inactive areas shall be graded to promote surface water drainage. Effective drainage minimizes ponding, infiltration, and erosion. Intermediate cover shall be inspected at least once per month, and issues shall be addressed as they are identified, such as repairs for erosion and cracking.

2.13 Dust Control

Dust control using water trucks is to be used when dust is present, and during windy conditions. This includes on gravel access roads, areas of vehicular traffic, or dry debris conditions.

3.0 Safety and Training

TDS management shall conduct weekly, monthly, and annual training sessions for all TDS personnel to establish and maintain a high level of employee knowledge of safety and emergency procedures, TDS operations, as well as environmental protection practices. Annual training for supervisors, equipment operators, traffic controllers, and other personnel involved with site operations and maintenance should familiarize them with the contents of this Operations Manual. Records of personnel attending each training and the topics covered will be maintained on site as part of the operating records.

3.1 Incident Reporting

TDS personnel shall notify the TDS operations manager and site manager immediately in the event there are incidents such as fire, explosion, or release of debris that, which could threaten human health or the environment.

A written incident report shall be prepared and included in the site operations records that includes the following:

- Date, time, and type of incident (i.e., fire, explosion, release, etc.)
- Name and quantity of material involved
- Extent of injuries, as applicable
- An assessment of the actual or potential hazards to human health or the environmental, as applicable
- Evaluation of the circumstances that led to the incident
- Steps being taken to reduce, eliminate, and prevent recurrence, including an implementation schedule

3.2 Personal Protective Equipment

Safety equipment for site personnel shall include but not limited to high visibility vests or outerwear, steel toe shoes, hard-hats, safety gloves, and eye and ear protection. In addition, heavy equipment and vehicles within the active disposal area shall be equipped with two-way radios. Additional hard-hats and

protective eyewear should be made available for visitors, inspectors, and other persons entering the disposal area.

The PPE may be downgraded to Level C following the evaluation of the air monitoring samples collected per the Air Monitoring and Surveillance Plan (AMSP). Criteria to downgrade would require sample results that are below the action limits and/or non-detect; followed by a recommendation by the projects Health and Safety Manager / Certified Industrial Hygienist.

3.3 Monitoring Program

ECC to provide air monitoring program or other requirement monitoring requirements. Please refer to the AMSP for details on the parameters and frequency required at the TDS.

4.0 Recordkeeping

The TDS shall maintain records of operational information as part of the operational records. Items to be included, but are not limited to:

- Volume/weight, and origin/source of debris disposed of
- Type & quantity of cover material used
- Intermediate cover inspections
- Number of debris hauling vehicles
- Equipment breakdowns causing interruption of operations
- Equipment repairs
- Incident reports (spills, fires, accidents, natural disasters, complaints)
- Climatic data (temperature, wind speed & direction, and rainfall
- User population
- Stop work occurrences due to high wind
- Monitoring information
- Personnel training records

References:

1. ECC, Traffic Plan Permit, Document Number PC-009 (17-Dec-2023)

Appendix A

Phasing Plans

Appendix B

Monitoring Plan

Figure 1

2023 Maui Fires
Haul Routes to TDS

Zone 1
Zone 2
Zone 3
Zone 4
Zone 5
Olowalu TDS
Crater Village
Wahikuli Reservoir
Wahikuli Rd
Honoapiilani Hwy
Ainakea Rd
Oli Rd
Kapunakea
Mala
Crater Rd
Lahainaluna
Front St
Kelawea
Komo Mai St
Lahainaluna Rd
Puunoa
Lahaina
Lunaville
Banyan Tree Park
Maiu Ulu O Lele Park
Wainee
Mill St
Lahaina Byp
Punahele Loop
Puamana Beach Park
Honoapiilani Hwy
Henui St
Awalua St
Kai Hele Ku St
Launiupoko Beach Park
Launiupoko
Awalua Beach
3000
30

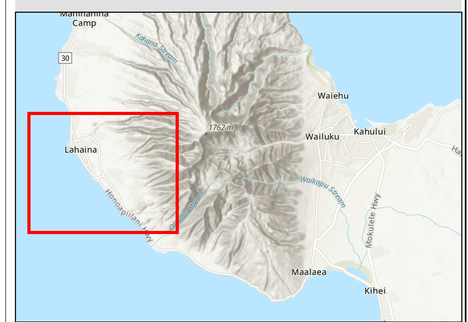
LEGEND

- ECC Work Zones
- Haul Route to TDS

Feet
0 1,500 3,000 6,000

Scale 1:18,750

NOTES
1. Coordinate System: GCS_WGS_1984
2. Map Size: D-size (34"x22")
3. Revision Date: 1/3/2024



ENVIRONMENTAL CHEMICAL CORPORATION

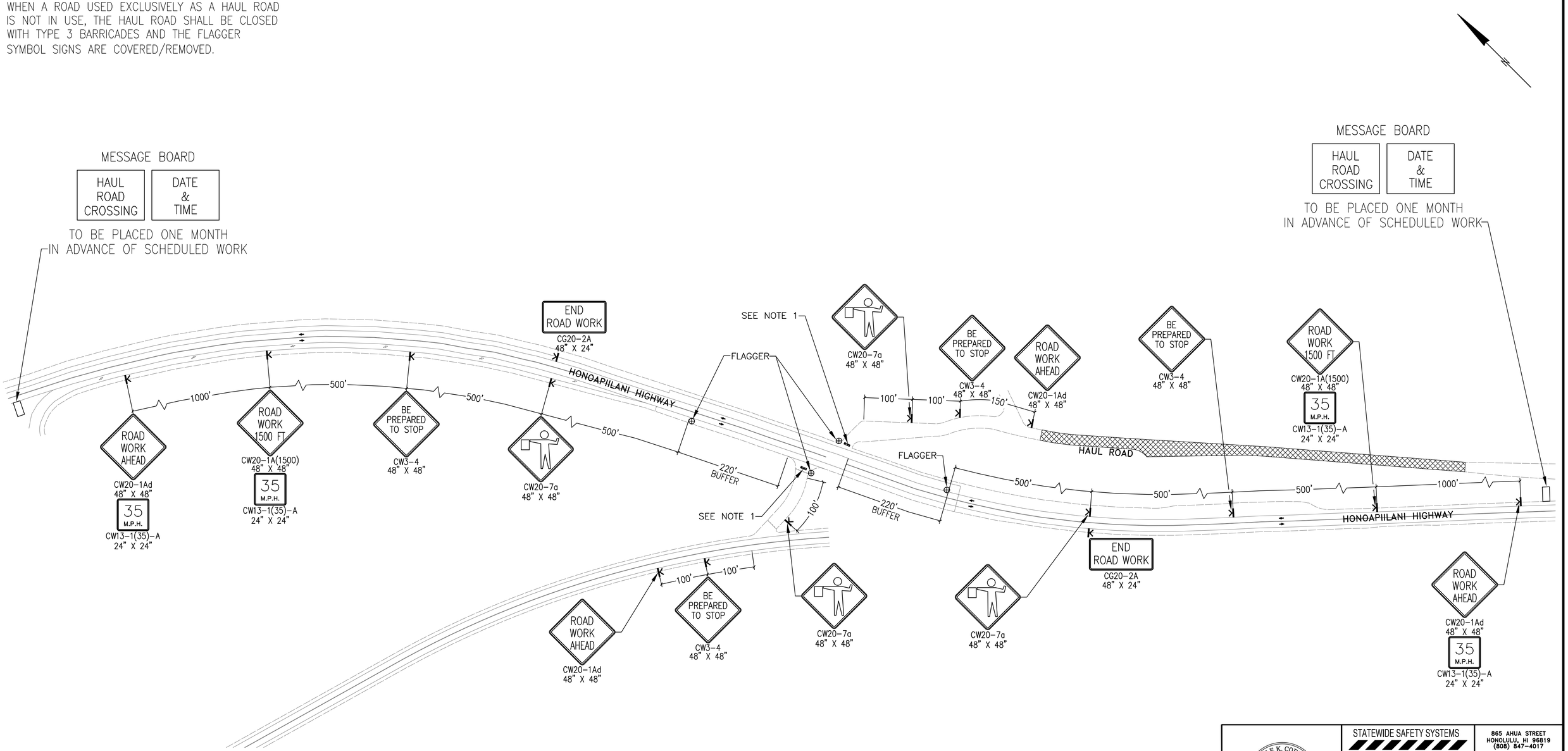
US Army Corps of Engineers

DISCLAIMER: The data represent the results of data collection/processing for a specific ECC activity and indicates the general existing conditions. As such, it is only valid for its intended use, content, time, and accuracy specifications. The user is responsible for the results of any application of the data for other than its intended purpose.

Service Layer Credits: World Topographic Map: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, USDA, Hybrid Reference Layer: Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, US Census Bureau, USDA, World Hillshade: Esri, NASA, NGA, USGS, World Imagery: Resource Mapping Hawaii, Maxar

Figure 2

NOTE:
1. WHEN A ROAD USED EXCLUSIVELY AS A HAUL ROAD IS NOT IN USE, THE HAUL ROAD SHALL BE CLOSED WITH TYPE 3 BARRICADES AND THE FLAGGER SYMBOL SIGNS ARE COVERED/REMOVED.



LEGEND
- –CONSTRUCTION SIGN
- –DELINEATOR SIGN
- –CONE
- –ARROWBOARD
- –FLAGGER
- –TYPE III BARRICADE
- –WORK AREA

This drawing is a depiction of the existing street system prepared from various sources such as government references, aerial photographs, and on-site inspections. A field survey was not performed for the preparation of this drawing and this drawing may contain scale inaccuracies which do not affect the validity of the temporary traffic control devices being identified. The information presented in this drawing shall be used solely for temporary work and control purposes and shall not be used for any other purpose.

TRAFFIC CONTROL PLAN
FOR HONOAPIILANI HWY
HAUL ROAD CROSSING
NOT TO SCALE

KAAIHAOLE K. COBB-ADAMS
LICENSED PROFESSIONAL ENGINEER
No. 10591-C
HAWAII, U.S.A.
EXPIRES APRIL 30, 2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE DONE UNDER MY OBSERVATION
BY

STATEWIDE SAFETY SYSTEMS
865 AHUA STREET
HONOLULU, HI 96819
(808) 847-4017

TRAFFIC CONTROL PLAN

PREPARED FOR: ECC

PROJECT: HONOAPIILANI HIGHWAY

APPROVED BY:

STATE DOT, HIGHWAYS DIVISION — DATE

DECEMBER 2023 — SHEET 1 OF 1

ATTACHMENT 8. TRAFFIC PLAN AND ASSOCIATED DRAWINGS AND PERMITS

TRAFFIC PLAN PERMIT

TEMPORARY DEBRIS STORAGE SITE

ADVANCE CONTRACTING INITIATIVE (ACI)

Prepared for

United States Army Corps of Engineers

Honolulu District
Bldg 230 Otake Street
Fort Shafter, HI 96858

Contract No. W912EK-22-D-0004
Task Order No. W9128A24F0001

Document Number: PC-009

December 17, 2023

ECC Constructors LLC
1240 Bayshore Hwy
Suite 317
Burlingame, CA 94010-1805
corporate@ecc.net

DOT 4-689
(HWY-CM 5/09)

APPLICATION & PERMIT FOR THE OCCUPANCY & USE OF STATE HIGHWAY RIGHT-OF-WAY

Application Date 11/27 , 20 23

POLICE CHECKLIST: ITEMS 1 THRU 5.

Pursuant to the provisions of Chapter 264, Hawaii Revised Statues as amended, application is hereby made to perform the following work activity or event upon the state highway described below and at the location(s) specified and at no other place, activity or event.

1. **Name of Highway** Honoapiilani highway - Lahaina Bypass **Route # / Section** 3000
2. **Location or limits on said highway** See attached Traffic Control Plan
   See attached Traffic Control Plan
3. **Description of work, activity or event to be performed**
   ☐ Engineering Survey ☐ Maintenance ☐ Inspection ☐ Landscaping ☑ Other
   Flagging (Traffic control) For Truck crossing Lahaina Bypass
4. **Dates between which work, activity or event to be performed:** 12/10/2023 to 12/10/2024
5. **General Conditions**
   a. No digging or disturbing of the highway will be permitted under this permit.
   b. The work, activity or event may be performed only during off-peak hours unless otherwise approved in writing. Peak hours are from 6:00 AM to 8:30 AM and from 3:00 PM to 6:00 PM, Monday through Friday excluding State Holidays.
   c. All lanes shall be open to traffic during the hours from 6:00 AM to 8:30 AM, during the hours of 3:00 PM to 6:00 PM, and when no work is being done under this permit. Only one lane of traffic may be closed at any other time unless otherwise approved in writing.
   d. Parking permitted only in designated areas for vehicles actively engaged in, or loading or unloading materials for, the specified work, activity or event. Unattended vehicles will not be permitted.
6. **Special Conditions and/or Restrictions**
7. **Submittals Required**
   a. ☑ Traffic Control Plan (whenever there are lane closures)
   b. ☐ Approved Landscaping Plan: It is agreed that upon final acceptance of the approved landscape work by the State, all improvements placed on said premises shall be and remain the property of the State and may be removed or otherwise disposed of by the State at any time.
   c. Proof of State Indemnity
      Certificate of Insurance naming State of Hawaii as an additional insured, having minimum coverages for Bodily Injury or Death Per Person; Bodily Injury or Death Per Accident: and Property Damages Per Accident of:
      ( ) $100,000, $300,000 and $500,000 respectively; or
      ( ) combined single limit of $500,000
      ( ) Certificate attached or with Permit No. _____
      ( ) Federal Non-Liability Clause (See Item 11 on the back of this permit)
      ( ) Waived
   d. ( ) Permit Fee $ _____ (make check payable to Dept. of Transportation, State of Hawaii)

The applicant hereby agrees that any agreement heretofore made or hereafter to be made, and the covenants and conditions stated on the reverse side hereof shall be binding upon him, his heirs, personal representatives, successors, contractors and assigns.

APPLICANT: ECC Constructors LLC
(Name or owner whether individual firm, partnership, corporation, governmental agency, etc.)

ADDRESS: 1240 Bayshore Highway, Suite 301

TELEPHONE NO.: 650-347-1555 or 650-465-0688

August Ochabauer Vice President, Operations
(Print Name & Title of Applicant or Authorized Rep.

August Ochabauer
(Signature)

PERMIT NO. 23-40 **DATE** December 01 , 20 23

Permission to perform the above described work, activity or event at the location(s) stated and between the dates set forth in said application is hereby granted. The applicant shall notify the issuing office in writing at least 24 hours before commencing work.

For: Joseph Krueger
Director of Transportation or his Authorized Representative

IN CONSIDERATION OF A PERMIT BEING ISSUED TO THE APPLICANT, THE APPLICANT HEREBY AGREES AS FOLLOWS:

Rules & Regulations

1. To observe and comply with and cause all his agents, servants and employees to observe and comply with all existing laws, ordinances and regulations.

2. To install, provide, and maintain all traffic control devices in accordance with the Administrative Rules Governing the Use of Traffic Control Devices at Work Sites on or Adjacent to Public Streets and Highways as adopted by the Director of Transportation, and the FHWA Manual on Uniform Traffic Control devices for Streets and Highways, Part VI, Traffic Controls for Highway Construction and Maintenance Operations.

3. To safeguard and facilitate the movement of vehicular and pedestrian traffic in accordance with the Administrative Rules Governing the Design, Construction and Maintenance of Public Streets and Highways as adopted by the Director of Transportation; to place signs or barricades informing motorists or pedestrians of work to be done in a safe manner and remove same upon completion of work.

Workmanship: Responsibility

4. To diligently prosecute the work, activity or event to completion, in a neat and workmanlike manner, within the dates and conditions set forth under said permit so as to minimize any inconvenience or interference to the public or traffic movements.

5. To remove all equipment and unused material upon completion of the work, activity or event, repair any damages and leave the surface in a clean, safe, usable and presentable condition.

6. To make, for a period of one(1) year after the expiration date of this permit, any necessary repairs to highway facilities disturbed and/or caused by work, activity or event performed under said permit; or to pay the actual cost of such repairs made by the Department of Transportation.

7. To make all repairs in such manner as may be required by Chapter 264, Hawaii Revised Statutes.

State Indemnity

8. To protect, defend, indemnify and save harmless, the state and its agents and representatives against any claim, liability, suit or action of every manner and description, for any injury to or death of persons or for property damage, whenever such injury, death or damage shall be inflicted or caused by him, his agents, contractors or representatives in connection with the work, activity or event covered by said permit.

9. To procure, at his own expense, and keep in force at all times when the work, activity or event permitted under said permit is being done, a policy or policies of public liability and property damage insurance, naming the State as additional insured, covering the work, activity or event to be done under said permit and for at least the minimum coverages set forth on the reverse side hereof. The State is to be given 30 days written notice of cancellation of said insurance.

10. To supply evidence satisfactory to the State that the required insurance has been procured and is in force prior to commencing the work, activity or event approved under said permit.

11. If the death or injury to any person, or the loss or damage to any property, is caused by the Government in the course of its use of the property, the liability, if any, of the Government therefor shall be determined in accordance with the applicable provisions of the Federal Tort Claims Act (62 Stat. 869,982;28 USC 2671-2680).

Nondiscrimination Covenants

12. No person on the grounds of race, color, religion, sex, or national origin shall be excluded from participating in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.

13. In the construction of any improvements on, over or under such land and the furnishing of services thereon, no person on the grounds of race, color, religion, sex or national origin shall be excluded from participating in, denied the benefits of, or otherwise be subjected to discrimination.

14. The applicant shall use the premises in compliance with all other requirements imposed by or pursuant to Title 49, Code of Federal Regulation, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally assisted programs of the Department of Transportation - Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulation may be amended.

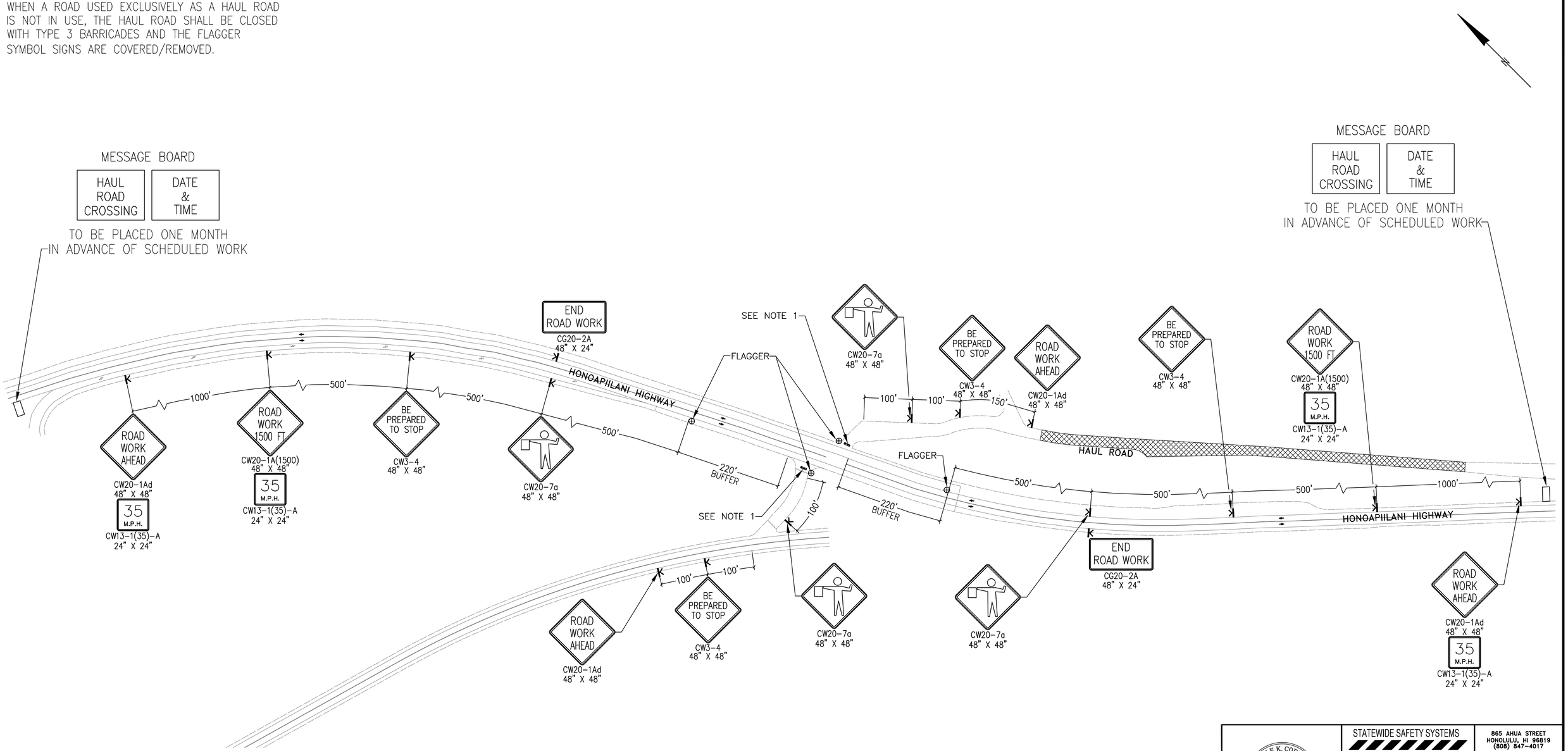
Agreements

15. Any State highway representative or police officer has the right to stop any or all of the work or activity being performed under this permit if the work or activity is being conducted in an unsafe or unauthorized manner. The work or activity will not be allowed to continue until the deficiency has been corrected.

16. To surrender the permit herein applied for and surrender all rights thereunder whenever notified to do so by the State. The State may cancel this permit at any time.

17. To keep a copy of said permit readily available for exhibit upon request of any authorized representative of the Department of Transportation or police officer.

NOTE:
1. WHEN A ROAD USED EXCLUSIVELY AS A HAUL ROAD IS NOT IN USE, THE HAUL ROAD SHALL BE CLOSED WITH TYPE 3 BARRICADES AND THE FLAGGER SYMBOL SIGNS ARE COVERED/REMOVED.



LEGEND
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- –TYPE III BARRICADE
- –WORK AREA

This drawing is a depiction of the existing street system prepared from various sources such as government references, aerial photographs, and on-site inspections. A field survey was not performed for the preparation of this drawing and this drawing may contain scale inaccuracies which do not affect the validity of the temporary traffic control devices being identified. The information presented in this drawing shall be used solely for temporary work and control purposes and shall not be used for any other purpose.

TRAFFIC CONTROL PLAN
FOR HONOAPIILANI HWY
HAUL ROAD CROSSING
NOT TO SCALE

KAAIHAOLE K. COBB-ADAMS
LICENSED PROFESSIONAL ENGINEER
No. 10591-C
HAWAII, U.S.A.
EXPIRES APRIL 30, 2024
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE DONE UNDER MY OBSERVATION
BY

STATEWIDE SAFETY SYSTEMS
865 AHUA STREET
HONOLULU, HI 96819
(808) 847-4017

TRAFFIC CONTROL PLAN

PREPARED FOR: ECC

PROJECT: HONOAPIILANI HIGHWAY

APPROVED BY:

STATE DOT, HIGHWAYS DIVISION — DATE

DECEMBER 2023 — SHEET 1 OF 1

ATTACHMENT 9. STORMWATER POLLUTION PREVENTION PLAN

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

West Maui Temporary Disposal Site
Olowalu, HI 96761
20°49'36"N 156°37'59"W

Prepared for: ECC Constructors LLC

Prepared by: Haley & Aldrich
December 2023

Table of Contents

SWPPP Attachments:

7.0 Preface

The following documents are referenced throughout this document:

1) *Hawaii Administrative Rules (HAR), Chapter 11-55*
2) *City and County of Honolulu, Storm Water Best Management Practice Manual*

The Section numbers in this SWPPP correspond to the sections describing SWPPP requirements contained in HAR Chapter 11-55, Appendix C, NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity, unless stated otherwise. For each section, the HAR requirement is provided, followed by the site-specific SWPPP information in italics. Although the project is exempt from NPDES permitting under the Governor's Emergency Proclamation related to the Lahaina Wildfires, this SWPPP follows the format and intent of the SWPPP requirements under HAR Chapter 11-55, Appendix C.

7.2.1 Storm Water Team

The contractor shall assemble and oversee a "storm water team," which is responsible for the development of the SWPPP, any later modifications to it, and for compliance with the requirements in the Notice of General Permit Coverage (NGPC) or Individual NPDES permit.

The SWPPP must identify the personnel (by name or position) that are part of the storm water team, as well as their individual responsibilities. Each member of the storm water team must have ready access to an electronic or paper copy of applicable portions of the permit, the most updated copy of this SWPPP, and other relevant documents or information that must be kept with this SWPPP.

1) Name: *Marc Mizrahi, CHMM*
Company: *ECC Constructors LLC*
Position: *Sr. Program Manager*
Contact Number: *973-202-8776*
Responsibilities: *Debris and Recycling Manager*

2) Name: *Kai Watson*
Company: *ECC Constructors LLC*
Position: *Environmental Manager*
Contact Number: *808-386-6119*
Responsibilities: *Responsible for overall project and field compliance with HAR Chapter 11-55 and permit conditions, and for updating the SWPPP as needed.*

3) Name: *Kevin McCaskill*
Company: *ECC Constructors LLC*
Position: *Site Manager*
Contact Number: *870-479-0665*
Responsibilities: *Spill response, inspections, and documentation.*

4) Name: *Luke Matzke*
Company: *ECC Constructors LLC*
Position: *Operations Manager*
Contact Number: *303-817-6970*
Responsibilities: *Construction Operations.*

7.2.2 Nature of Construction Activities

What is the function of the construction activity (Please check all applicable activity(ies))?
☐ Residential ☐ Commercial ☒ Industrial ☐ Road Construction ☐ Linear Utility
☒ Other (please specify): The function is to develop a *Temporary Disposal Site (TDS) for interim disposal of debris removed from burned properties in Lahaina by the Army Corps of Engineers and their contractors.*

What is being constructed? *This SWPPP details BMPs to be used for the construction of a TDS adjacent to the Olowalu Recycling and Refuse Center. This TDS will accept debris from the Lahaina Wildfire of August 8, 2023.*

Describe the scope of work and major construction activities covered in the SWPPP, including base yards and staging areas. Include only project areas where the locations of impervious structures are known; project areas where the final grades are known; and work areas that will be performed by one general contractor.
This site will be used for the disposal of burn debris generated by the Lahaina wildfire that occurred on August 8, 2023. The scope of work entails the following (see Attachment A for drawings):

- *Site grading per construction drawings to create the TDS.*
- *Construction of a haul road around the landfill.*
- *Construction of swales to convey stormwater over and around the TDS to a detention basin.*
- *Construction of a detention basin to capture landfill leachate and stormwater flows (2-year, 24-hour design storm) with a total capacity of 1.356 million gallons.*

- *Construction of the TDS access road adjacent to the former Olowalu Landfill and along Honoapi'ilani Highway.*
- *Installation of truck scales and scale house on the TDS access road*
- *No chemicals or fluids are planned to be disposed of onsite; however, if hazardous materials are encountered in the burn debris, the contractor has a designated area for waste storage until proper disposal can occur.*

7.2.3 Emergency Related Projects

This is an emergency project. This project is related to emergency clean-up following the Lahaina Wildfire Emergency that occurred on August 8, 2023.

7.2.4 Identification of Prime Contractor and Other Site Contractors

The following is the information for the prime contractor, ECC. There are no subcontractors planned for work at the site. If subcontractors are added during the project, the SWPPP will be updated with their information below.

General Contractor Company Name: *ECC Constructors LLC*	
General Contractor Contact Person Name: *Marc Mizrahi, CHMM*	
General Contractor Mailing Address: *1240 Bayshore Hwy, suite 301*	
General Contractor Mailing City: *Burlingame*	Mailing State and Zip Code: *California 94010*
General Contractor Telephone Number: *973-202-8776*	
General Contractor Email Address: *mmizrahi@ecc.net*	

Subcontractors to be added, as necessary, with subcontractor certification completed per Attachment B.

Sub-Contractor #1 Company Name: **Alpha Inc.**	
Sub-Contractor Contact Person Name: Greg Sado	
Sub-Contractor Mailing Address: PO Box 330449	
Sub-Contractor Mailing City: Kahului	Mailing State and Zip Code: Hawaii 96733
Sub-Contractor Telephone Number: 808-446-5067	
Sub-Contractor Email Address: Greg@alphahawaii.com	

7.2.5 Sequence and Estimated Dates of Construction Activities

Table 1 – Sequence and Estimated Dates of Construction Activities

Date when the SWPPP, including erosion control measures will be implemented:	*November 28, 2023*
Date when the general contractor will begin construction:	*November 28, 2023*
Cessation, temporarily or permanently, of construction activities on the site (following construction to specified grades, project will become debris storage operations):	*January 31, 2024*
Final or temporary stabilization of areas of exposed soil if necessary (with completion of debris storage operations):	*December 31, 2024*
Date when the general contractor will end site disturbance:	*December 31, 2024*
Date when erosion control measures will be removed:	*December 31, 2024*
Date when the Notice of Cessation form will be submitted	*N/A – NOI is not required per Governor's Emergency Declaration*

7.2.6.1 Property Boundary Maps

a. Legal boundaries of the project. *See Attachment A, Figure 2.*

b. Locations where earth-disturbing activities will occur, noting any sequencing of construction activities. *See Attachment A, Figure 3.*

c. Approximate slopes before and after major grading activities and drainage patterns with flow arrows. Note areas of steep slopes: *See Attachment A, Figure 2.*

d. Locations where sediment, soil, or other construction materials will be stockpiled *7.2.6.1c*. *See Attachment A, Figure 3.*

e. Locations of any contaminated soil or contaminated soil stockpiles *7.2.6.1d. There is no record of site contamination.*

f. Locations of any crossings of state waters *7.2.6.1e*. *There are no waters of the state crossings associated with the project.*

g. Designated points on the site where vehicles will exit onto paved roads *7.2.6.1f. See Attachment A, Figure 3.*

h. Location(s) of structures or other impervious areas after construction is completed *7.2.6.1g.*
See Attachment A, Figure 4 for the paved access road being constructed.

i. Locations of construction support activity areas covered by this permit *7.2.6.1h.* *No offsite construction support activities or staging areas are anticipated for this project. If support areas are needed, they will remain within the project boundaries identified in this SWPPP. Vehicle maintenance and refueling will be conducted in a designated area on site, and a spill kit will be available at this location. Equipment and laydown is staged mid-way along the upper haul road in a former cinder pit. It is contained with high berms and/or cinder slopes. This area is contained, and the access point is up gradient from the laydown itself. See Attachment A, Figure 3.*

7.2.6.2 to 7.2.6.8 State Waters and BMP Maps

a. Locations of all state waters, including wetlands that exist within or in the immediate vicinity of the site and indicate which waterbodies are listed as impaired *7.2.6.2.*
The Pacific Ocean is 0.35 miles from the site and is the receiving water for stormwater from the site. There are no water monitoring locations in this vicinity, nor is the receiving water listed as impaired.

b. The boundary lines of any natural buffers provided are consistent with *Section 5.1.2.1.1, 7.2.6.3.*
This section is not applicable, as no state waters are located within 50' of the site. Nonetheless, there is natural buffer between the site and the receiving waters.

c. Topography of the site, existing vegetative cover (e.g., forest, pasture, pavement, structures), and drainage pattern(s) of storm water onto, over, and from the site property before and after major grading activities *7.2.6.4.*
Site topography is steep, and the TDS will be constructed in a cinder cone, a legacy from volcanic activity on the island of Maui. The cinder cone is rocky with no topsoil and no vegetative cover. The topography of the cell location slopes down westward from approximately 350 feet above sea level to approximately 250 feet above sea level, across approximately 1,000 feet. The TDS Access Road will run from Honoapi'ilani Highway northeast to the TDS, and then encircle the TDS. The TDS Access Road will be approximately 1,250 feet in length and will be paved. There are no drain inlets on the site. . See Attachment A, Figure 3.

d. Storm water discharge locations.
See Attachment A, Figure 2.

e. Locations of all potential pollutant-generating activities identified in *Section 7.2.7, 7.2.6.6.*
The locations of potential pollutant-generating activities will remain within the permitted area and BMPs will control the runoff, as described in Table 2. See Attachment A, Figure 3.

f. Locations of storm water control measures *7.2.6.7.*
See Attachment A, Figure 3 and Figure 4. Perimeter Sediment Control Protection BMPs have been installed per the manufacturer's recommendations at the site access point. A rumble strip has been installed at the end of asphalt pavement between the gravel access road as trucks enter and exit the cell. Check dams will be installed in swales to slow the transport of stormwater and control silt discharge.

g. Location where chemicals will be used and stored *7.2.6.8.*:
The Contractor does not plan to use or store chemicals on site. Batteries and fluids have been removed prior to debris being brought to the site; however, if chemicals are encountered during debris processing, the contractor has designated a storage area for holding hazardous substances until they can be disposed of properly.

7.2.7 Construction Site Pollutants

The SWPPP must include the following: (a) A list and description of all the pollutant-generating activities on the site; and (b) For each pollutant-generating activity, an inventory of pollutants or pollutant constituents (e.g., sediment, fertilizers and/or pesticides, paints, solvents, fuels) associated with that activity, which could be exposed to rainfall and could be discharged from the construction site. The contractor shall consider where potential spills and leaks could occur that contribute pollutants to storm water discharges.
A list of potential pollutant-generating activities and the potential pollutant constituents are provided in Table 2, along with the proposed controls, in Section 7.2.10.

7.2.8 Sources of Non-Storm Water

The SWPPP must also identify all sources of non-storm water and information, including, but not limited to, the design, installation, and maintenance of the control measures to prevent its discharge.
The Contractor will apply water for dust control during dry periods, if necessary. Dust control water will be implemented at the minimum rate necessary to control dust but to prevent runoff.

7.2.9 Buffer Documentation

If required to comply with *Section 5.1.2.1*. because a state water is located within 50 feet of the project's earth disturbances, describe which compliance alternative has been selected for the site, and comply with any additional requirements to provide documentation in *Section 5.1.2.1*. Delineate, and clearly mark off, with flags, tape, or other similar marking device all natural buffer areas.

No state waters are located within 50 feet of the site. Nonetheless, natural buffer areas occur between the work site and receiving waters, and disturbance of these areas will be minimized to the extent practicable.

7.2.10 Storm Water Control Measures

Please refer to City and County of Honolulu, Storm Water Best Management Practice Manual and Attachment C for guidance on the BMPs cited below.
https://www.honolulu.gov/rep/site/dfmswq/library/BMP_manual_2011-11.pdf

Table 2 – Pollutant Generating Source and BMPs

Pollutant Source	***BMP Requirements*** ***Refer to Attachment C for further details***
Construction debris, general litter	EC-0 Employee/Subcontractor Training EC-1 Scheduling WM-3 Stockpile Management WM-4 Spill Prevention and Control WM-5 Solid Waste Management
Materials associated with the operation and maintenance of equipment, such as oil, fuel, and hydraulic fluid	EC-0 Employee/Subcontractor Training NS-8 Vehicle and Equipment Cleaning NS-9 Vehicle and Equipment Fueling NS-10 Vehicle and Equipment Maintenance WM-4 Spill Prevention and Control

Pollutant Source	***BMP Requirements*** ***Refer to Attachment C for further details***
Soil erosion from the disturbed areas	EC-0 Employee/Subcontractor Training EC-1 Scheduling EC-7 Geotextiles and Mats EC-9 Earth Dikes and Drainage Swales EC-10 Velocity Dissipation Devices EC-15 Slope Roughening/Terracing SE-4 Check Dams SE-5 Fiber Rolls SE-12 Location of Potential Sources of Sediment
Sediment from soil stockpiles	EC-0 Employee/Subcontractor Training SE-12 Location of Potential Sources of Sediment WE-1 Wind Erosion Control WM-3 Stockpile Management
Chemicals	WM-4 Spill Prevention and Control
Hazardous waste (e.g., Batteries, Solvents,, etc.)	EC-0 Employee/Subcontractor Training WM-5 Solid Waste Management WM-6 Hazardous Waste Management
Metals	EC-0 Employee/Subcontractor Training SE-5 Fiber Rolls WM-5 Solid Waste Management
Dust	EC-0 Employee/Subcontractor Training WE-1 Wind Erosion Control
Sediment Track-Out	EC-0 Employee/Subcontractor Training TR-1 Stabilized Construction Entrance/Exit TR-2 Stabilized Construction Roadway SE-12 Location of Potential Sources of Sediment WE-1 Wind Erosion Control
Sanitary/Septic Waste	EC-0 Employee/Subcontractor Training WM-4 Spill Prevention and Control WM-9 Sanitary/Septic Waste Management

7.2.10.2 – Stabilization Practices

The contractor shall initiate soil stabilization measures immediately whenever earth-disturbing activities have permanently or temporarily ceased on any portion of the site, as indicated on design plans. In limited circumstances, stabilization may not be required immediately (or, in even more limited circumstances, permanently) if the intended function of a specific area of the site necessitates that it remains disturbed. The **14-calendar day** timeframe begins counting as soon as the contractor knows that construction work on a portion of the site will betemporarily ceased.

The site is situated in cinder deposits, likely with low erosion potential. The contractor shall keep alert for situations where additional soil stabilization appears to be necessary and shall coordinate with the designer to develop stabilization measures to be applied.

7.2.10.3 – Post Construction Measures

Post-construction, the site will be a temporary landfill cell with a paved access road and drainage swales. A detention basin on the western end of the TDS cell will capture landfill leachate and stormwater runoff from the cell. The basin is sized to capture the 2-year, 24-hour storm event, as well as hold leachate generated by the cell. The basin has a total detention capacity of 1.356 million gallons. Runoff from the surrounding properties will be directed around the site. These measures will remain in place post-construction and during the operation of the temporary debris storage facility. Following final removal of debris from this temporary site when the permanent site is developed and completed by Maui County, the TDS will be restored as necessary to prevent soil erosion of finished grades, considering that the stie is situated in cinder deposits that likely have low erosion potential.

7.2.11.1 – Spill Prevention and Response Procedures

Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or position of the employee(s) responsible for detection and response of spills or leaks.

Kevin McCaskill, Site Manager, will be responsible for detection and response to spills or leaks. Mr. McCaskill or his designate will conduct daily inspections of equipment to look for fuel or oil leaks, and to check that hydraulic hoses are in good condition. Should spills or leaks occur from contractor equipment, the equipment will be immediately shut down and the spill contained with absorbent materials maintained in a readily identifiable spill kit kept on site. Site personnel will respond quickly with absorbent or booms to clean up the site. Spent absorbent materials will be promptly removed and disposed of properly. Spill Prevention and Response procedures are detailed in WM-4 Spill Prevention and Control.

Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or more than a reportable quantity consistent with section 5.3.4. and established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302, occurs during a 24-hour period. Contact information must be in locations that are readily accessible and available.

The Contractor will maintain a list of spill notification requirements with this SWPPP:

- *Small spills of oil (less than 25 gallons) will be cleaned up immediately using absorbent materials or other acceptable practices.*
- *Spills must be immediately reported per DOH and/or Federal requirements if one or more of the following conditions apply:*
  - *If the release is more than 25 gallons of petroleum product.*
  - *If the release is 25 gallons or less of petroleum product but is not contained or remedied within 72 hours.*
  - *If the release is equal to or exceeds the reportable quantity criteria for one or more chemicals listed within the DOH HEER Office Technical Guidance Manual (TGM): https://health.hawaii.gov/heer/tgm/*
  - *If the release enters a storm drain or water body.*
- *If spill is 25 gallons or less of petroleum and not contained within 72 hours, submit written notifications to DOH HEER no later than 30 days following discovery of release, with an explanation as to why the spill was not cleaned within 72 hours.*
- *If spilled material is of a reportable quantity, verbally notify HSERC/HEER (808-586-4249), LEPC (808-586-4424), and NRC (800-424-8802) and obtain a Case Number. Submit written notifications to HSERC/HEER and NRC no later than 30 days following discovery of release.*
- *If spilled material enters a storm drain or water body, verbally notify DOH CWB (808.586.4309; cleanwaterbranch@doh.hawaii.gov during non-business hours), HSERC/HEER (808-586-4249), LEPC (808-586-4424), and NRC (800-424-8802) and a obtain Case Number. Submit written notifications to DOH CWB, HSERC/HEER, LEPC, and NRC no later than 30 days following discovery of release.*

The Contractor shall also provide to DOH Clean Water Branch, within 7 calendar days of knowledge of the release, a description of the release, the circumstances leading to the release, and the date of the release. Please refer to Attachment D1 for a sample Construction Discharge Report Form.

7.2.11.2 – Waste Management Procedures

Procedures for how the contractor will manage and dispose of all wastes generated at the site. *The facility is being constructed as a TDS for burn debris removed from the fire-damaged zone of Lahaina. If the contractor generates general waste at their staging area, they will maintain a dumpster with a cover at the site and will empty the dumpster as needed so that waste does not overflow. It is anticipated that portable toilets will be used on site; the contractor shall position sanitary facilities away from vehicle routes and secure the facilities to the ground to prevent them from being knocked over.*

7.2.12 – Procedures for Inspection, Maintenance, and Corrective Action

a. Personnel responsible for conducting inspections: *Kevin McCaskill, Site Manager, Marc Mizrahi, Program Manager or Kai Watson, Environmental Manager*

Describe the inspection schedules and procedures you have developed for the site.
Construction BMPs shall be inspected weekly, and within 24 hours of any rainfall event of 0.25 inches or greater in a 24-hour period. *Contractor has developed and will utilize an online inspection form, to be completed in the field on a tablet or phone, with photos and electronic signature of the inspector (see printed template in Attachment D2). Inspection reports shall be maintained for 1 year following completion of the project.*

Maintenance requirements for specific BMPs are included in Attachment C.
The Contractor shall initiate work to fix the problem immediately after discovering the problem and complete such work by the close of the next workday, if the problem does not require significant repair or replacement, or if the problem can be corrected through routine maintenance. In this section, "immediately" means the Contractor shall take all reasonable measures to minimize or prevent discharge of pollutants until a permanent solution is installed and made operational. If a problem is identified at a time in the day in which it is too late to initiate repair, initiation of repair shall begin on the following workday. When installation of a new pollution prevention control or a significant repair is needed, the Contractor shall install the new or modified control and make it operational, or complete the repair, by no later than 7 calendar days from the time of discovery. If it is infeasible to complete the installation or repair within 7 calendar days, the Contractor shall provide notice to the Officer-in-Charge and document why it is infeasible to complete the installation or repair within the 7 calendar day timeframe and document the schedule for installing the storm water control(s) and making it

operational as soon as practicable after the 7 calendar day timeframe and as agreed to by the Officer-in-Charge. Where these actions result in changes to any of the pollution prevention controls or procedures documented in the SWPPP, the SWPPP will be modified accordingly. If ***corrective actions*** *are needed, they will be documented in a Corrective Action Report (sample provided in Attachment D3.*

7.2.13 – Staff Training

Prior to the commencement of pollutant-generating activities, the contractor shall ensure that the following personnel understand the requirements of this permit and their specific responsibilities with respect to those requirements: (a) personnel who are responsible for the installation, maintenance, and/or repair of storm water controls (including pollution prevention measures); (b) personnel who are responsible for conducting inspections; and (c) personnel who are responsible for corrective actions and spill response.

Training will be conducted by Kai Watson, Environmental Manager or other qualified Hawaii SWPPP subject matter expert, who shall ensure that site personnel with the above responsibilities are trained in the requirements of the SWPPP and shall sign the training log contained in Attachment E.

7.2.14 – Documentation of Compliance with Safe Drinking Water Act Underground Injection Control

Document any contact with the DOH Safe Drinking Water Branch if any of the following storm water controls are used at the site:

- ❑ Infiltration trenches (if storm water is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system);
- ❑ Commercially manufactured precast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate storm water flow;
- ❑ Drywells, seepage pits, or improved sinkholes (if storm water is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system).

None of these underground systems will be used at the site.

7.2.17 Certification of the CWB SWPPP

The certifying person and duly authorized representative shall meet the requirements of Hawaii Administrative Rules 11-55, Appendix A, Section 15.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: Marc Mizrahi Date: January 06, 2024

Person Name: *Marc Mizrahi, CHMM*

Person Position Title: *Sr. Program Manager*

Person Company or Agency: *ECC Constructors LLC*

Phone Number: *(973) 202-8776* Fax No.: NA

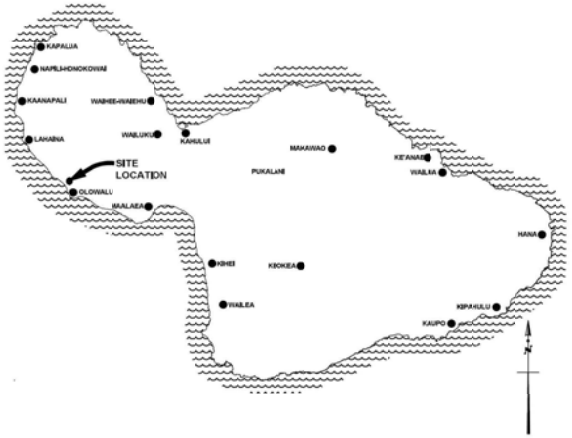
Person Email: *mmizrahi@ecc.net*

SWPPP Attachments

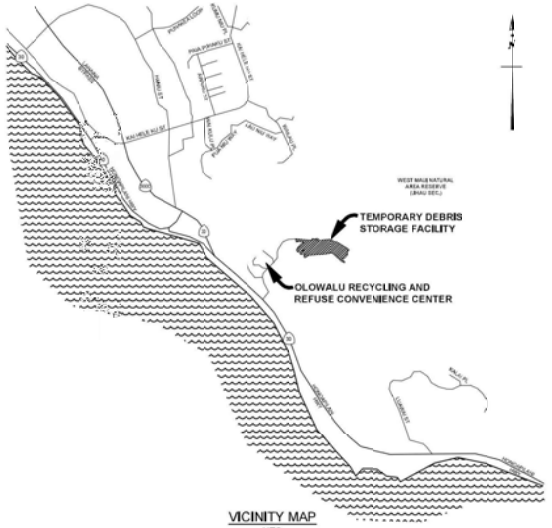
Attachment A – Figures

COUNTY OF MAUI
TEMPORARY DEBRIS STORAGE FACILITY
OCTOBER 2023

INDEX OF SHEETS



SITE LOCATION MAP
NTS



VICINITY MAP
NTS

FOR PLANNING PURPOSES ONLY - NOT FOR CONSTRUCTION

NO.	REVISION DESCRIPTION	DATE

TETRA TECH
21700 Copley Drive, Suite 200
Diamond Bar, CA 91765
TEL 909.860.7777 FAX 909.860.8017

WEST MAUI - TDS SITE

COVER SHEET

DESIGNED BY	D.J.P.	FILE	C-001 Cover Sheet.dwg
DRAWN BY	D.J.P.	DATE 10-2023	SCALE AS SHOWN
CHECKED BY	C.R.B.	DATE 10-2023	
APPROVED BY	C.H.M.	DATE 10-2023	C-001

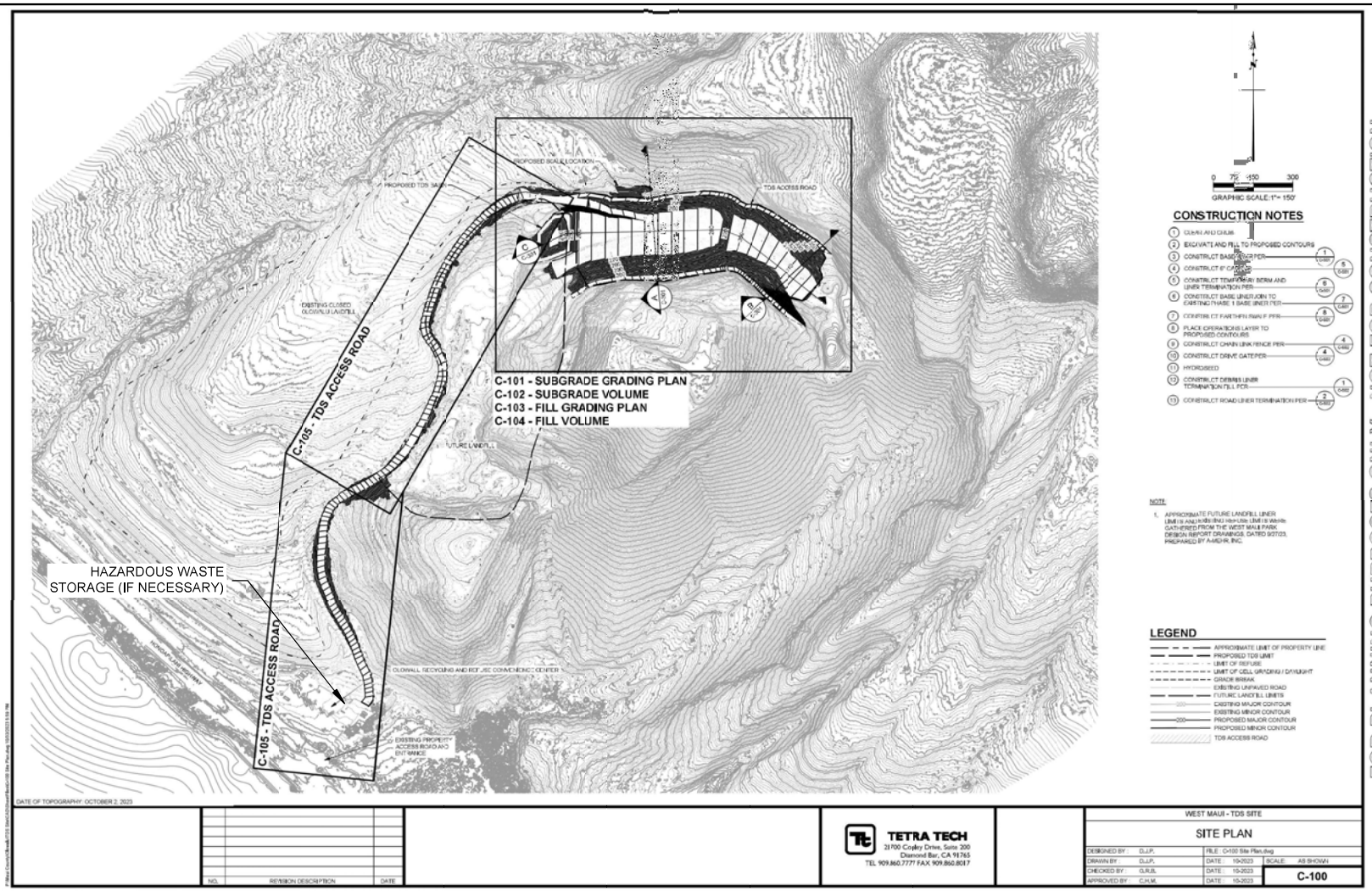
HALEY ALDRICH

LAHAINA EMERGENCY NPDES PERMITS
WEST MAUI TDS
MAUI, HAWAII

COVER SHEET

DECEMBER 2023

FIGURE 1



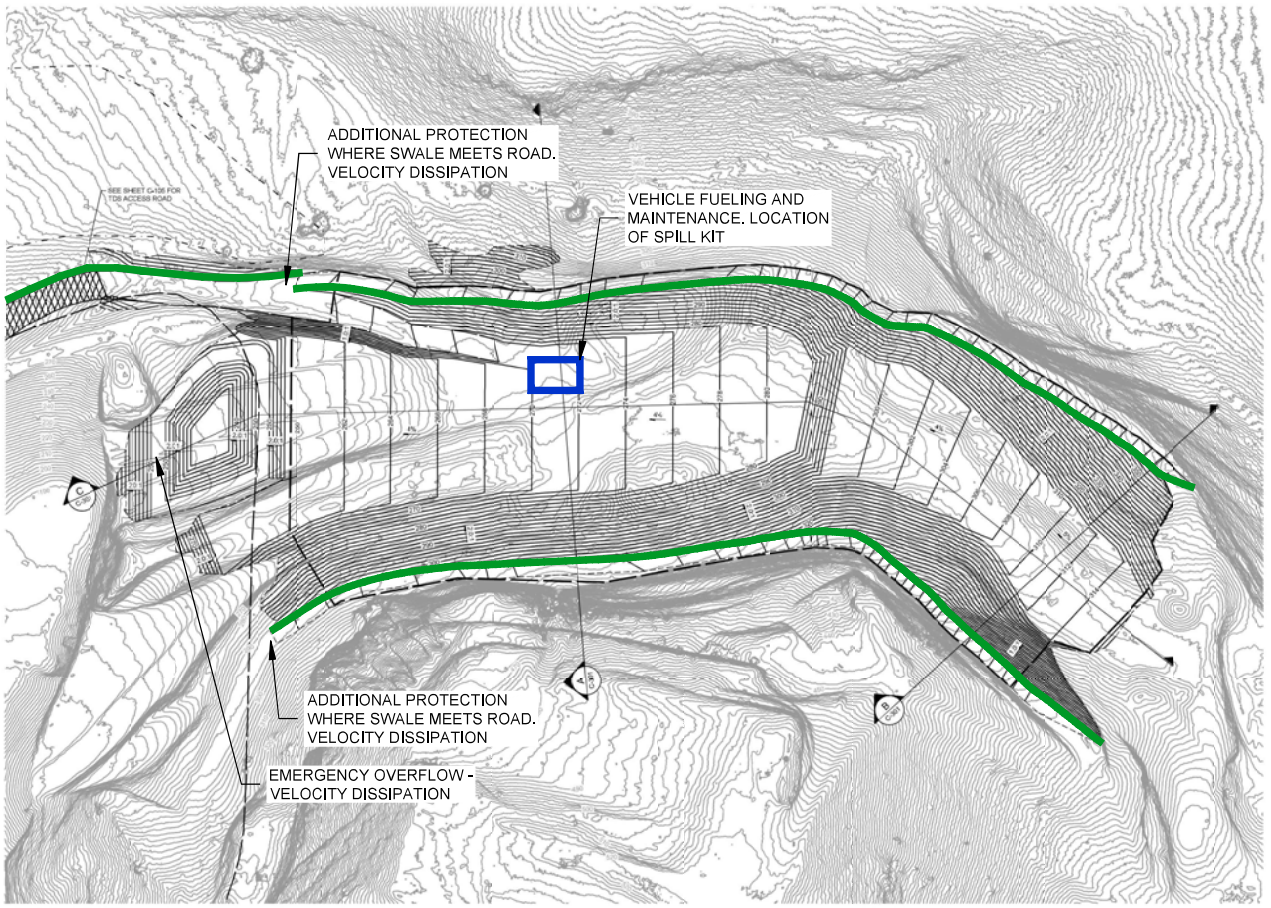
HALEY ALDRICH

LAHAINA EMERGENCY NPDES PERMITS
WEST MAUI TDS
MAUI, HAWAII

SITE PLAN

DECEMBER 2023

FIGURE 2



DATE OF TOPOGRAPHY: OCTOBER 2, 2023

NO.	REVISION DESCRIPTION	DATE

TETRA TECH
21700 Copley Drive, Suite 200
Diamond Bar, CA 91765
TEL 909.860.7777 FAX 909.860.8017

WEST MAUI - TDS SITE

SUBGRADE GRADING PLAN

DESIGNED BY: D.J.P.	FILE: C-101 Subgrade Grading Plan.dwg		
DRAWN BY: D.J.P.	DATE: 10-2023	SCALE: AS SHOWN	
CHECKED BY: G.N.B.	DATE: 10-2023	C-101	
APPROVED BY: C.H.M.	DATE: 10-2023		

FOR PLANNING PURPOSES ONLY - NOT FOR CONSTRUCTION

LEGEND

SWALE

NOTE

INSTALL CHECK DAMS EVERY 50 FEET TO REDUCE VELOCITY AND CAPTURE SEDIMENT WITHIN THE SWALES. INSTALL ADDITIONAL CHECK DAMS AS NECESSARY TO CONTROL SEDIMENT TRANSPORT. REFER TO THE BMP FACT SHEETS ATTACHMENT A FOR CHECK DAM INSTALLATION INSTRUCTIONS.

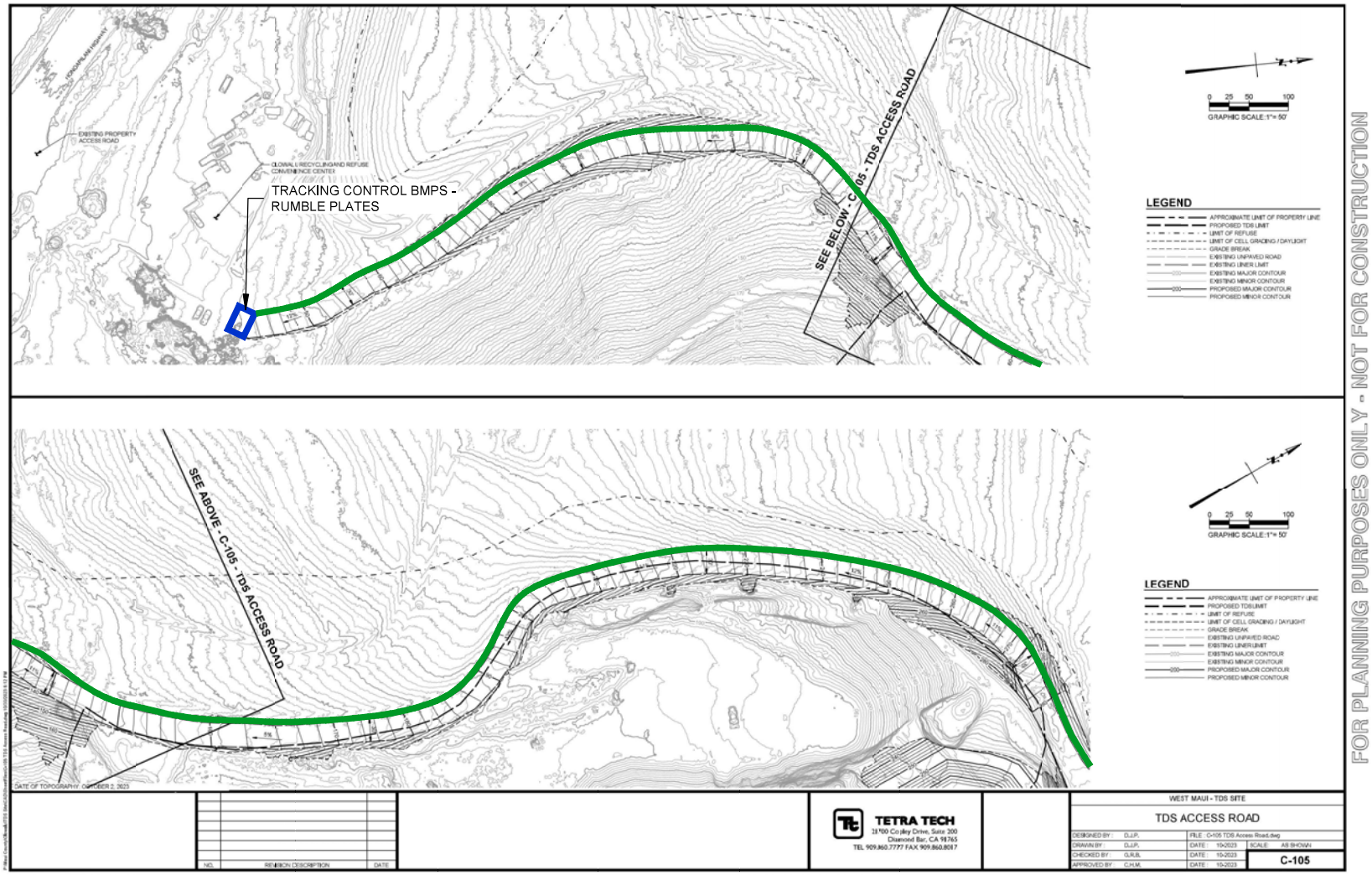
HALEY ALDRICH

LAHAINA EMERGENCY NPDES PERMITS
WEST MAUI TDS
MAUI, HAWAII

SUBGRADE GRADING PLAN

DECEMBER 2023

FIGURE 3



FOR PLANNING PURPOSES ONLY - NOT FOR CONSTRUCTION

LEGEND

SWALE

NOTE

INSTALL CHECK DAMS EVERY 50 FEET TO REDUCE VELOCITY AND CAPTURE SEDIMENT WITHIN THE SWALES. INSTALL ADDITIONAL CHECK DAMS AS NECESSARY TO CONTROL SEDIMENT TRANSPORT. REFER TO THE BMP FACT SHEETS ATTACHMENT A FOR CHECK DAM INSTALLATION INSTRUCTIONS.

HALEY ALDRICH

LAHAINA EMERGENCY NPDES PERMITS
WEST MAUI TDS
MAUI, HAWAII

TDS ACCESS ROAD

DECEMBER 2023

FIGURE 4

Attachment B – Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION

Project Title: West Maui Temporary Disposal Site
Operator(s): ECC Constructors LLC

As a subcontractor, you are required to comply with the Storm Water Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact storm water must be identified and sign the following certification statement:

I certify that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the BMPs and practices described in the SWPPP.

This certification is hereby signed in reference to the above-named project:

Company: Alpha, Inc.
Address: PO Box 330449, Kahului, HI 96733
Telephone Number: 808-446-5067
Type of construction service to be provided: Grading, earthwork

Signature: Greg Sado
Name: Greg Sado
Date: January 05, 2024

Attachment C – BMP Details

Employee/Subcontractor Training EC-0

Objectives

EC – Erosion Control

SE – Sediment Control

TR – Tracking Control

WE – Wind Erosion Control

NS – Non-Storm Water Management Control

WM – Waste Management & Materials Pollution Control

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents

Sediment

Nutrients

Trash

Metals

Bacteria

Oil and Grease

Organics

Potential Alternatives

None

Description and Purpose

Training programs ensure that all employees and subcontractors understand the requirements of the Storm Water Management Program Plan as applicable to their responsibilities. Training topics include but are not limited to storm water management, potential contamination sources, and BMPs.

Employee/subcontractor training should be based on four objectives:

- Promote a clear identification and understanding of the problem, including activities with the potential to pollute storm water;
- Identify solutions (BMPs);
- Promote employee/subcontractor ownership of the problems and the solutions; and
- Integrate employee/subcontractor feedback into training and BMP implementation.

Suitable Applications

Employees involved in the planning, design, or construction phase of construction, repair, or maintenance activities within the City and County of Honolulu or project rights-of-way.

Limitations

- Degree of employee motivation and incentive to learn about BMP implementation.
- Availability of staff time to coordinate and conduct training.

Implementation

- Integrate training regarding storm water quality management with existing training programs that may be required for your business by other regulations such as: the Safety and Health Program (Hawaii Occupational Safety and Health Standards), the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard (29 CFR 1910.120), the Spill Prevention Control and Countermeasure (SPCC) Plan (40 CFR 112), and the Hazardous Materials Management Plan (Business Plan).
- Provide storm water management training through courses, seminars, workshops, product demonstrations, employee meetings, posters, and bulletin boards.
- Provide field training programs conducted by trained personnel.
- Maintain commitment and request input from senior City and County of Honolulu or project management.
- Promote open communication between employees involved in various stages of the projects.
- Improve storm water quality management based on past experience involving water quality problems at construction sites. Implement revised practices and procedures in training.
- Increase employee awareness of requirements and procedures for BMP monitoring and reporting.
- Businesses, particularly smaller ones that may not be regulated by Federal, State, or City and County regulations, may use the information in this Manual to develop a training program to reduce their potential to pollute storm water.
- Use the quick reference on disposal alternatives (Table 1.2) to train employee/ subcontractors in proper and consistent methods for disposal.
- Consider posting the quick reference table around the job site or in the on-site office trailer to reinforce training.
- Train employee/subcontractors in standard operating procedures and spill cleanup techniques described in the fact sheets. Employee/Subcontractors trained in spill containment and cleanup should be present during the loading/unloading and handling of materials.
- Personnel who use pesticides should be trained in their use. The State Department of Agriculture, Pesticides Branch, licenses pesticide dealers, certifies pesticide applicators, and conducts on-site inspections.
- Proper education of off-site contractors is often overlooked. The conscientious efforts of well trained employee/subcontractors can be lost by unknowing off-site contractors, so make sure they are well informed about what they are expected to do on-site.

Costs

All of the above are low cost measures.

Inspection and Maintenance

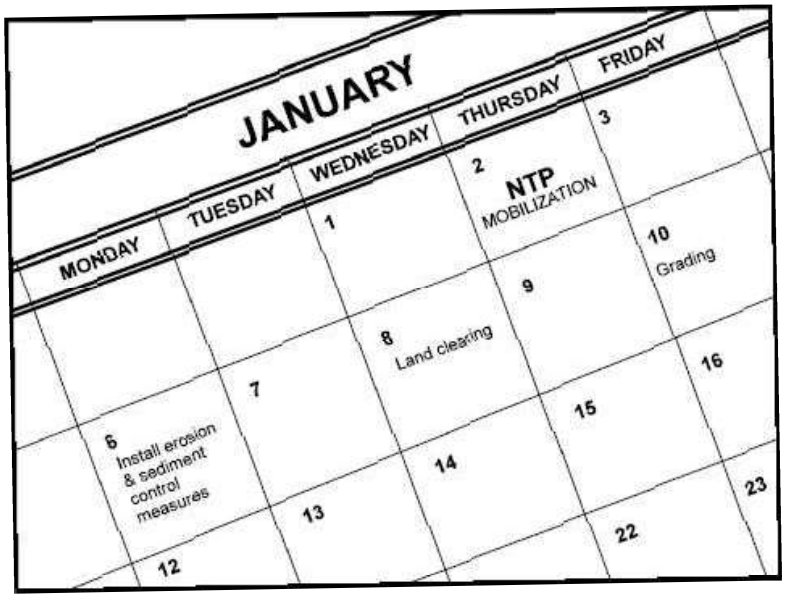
Provide annual training on construction BMP implementation for all employees involved with construction activities.

References

City & County of Honolulu, Best Management Practices Manual for Construction Sites in Honolulu, Department of Environmental Services, May 1999.

Knoxville BMP Manual, 2003

State of Hawaii DOT, Highways Division Construction BMP Field Manual, September 2006.



Objectives

EC – Erosion Control	√
SE – Sediment Control	▲
TR – Tracking Control	▲
WE – Wind Erosion Control	▲
NS – Non-Storm Water Management Control	▲
WM – Waste Management & Materials Pollution Control	▲

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents

Sediment	√
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Suitable Applications

Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project especially during rainy season. Use of other, more costly yet less effective, erosion and sediment control BMPs may often be reduced through proper construction sequencing.

City Ordinance Section 14-14.2 (c) (2), Application for a Grading Permit, requires the grading permittee to include a statement of schedules and sequence of construction operations. For projects with 1 acre or more disturbed sites, the Hawaii State Department of Health (DOH) and Clean Water Branch (CWB) requires a schedule so that construction is sequenced to minimize the exposure time of the cleared surface area.

Limitations

- Environmental constraints such as nesting season prohibitions reduce the full capabilities of this BMP.

Implementation

- Avoid rainy periods. Schedule major grading operations during dry months when practical. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means or to install sediment trapping devices.
- Plan the project and develop a schedule showing each phase of construction. Clearly show how the rainy season relates to soil disturbing and re-stabilization activities. Incorporate the construction schedule into the site-specific BMPs plan.
- Include on the schedule, details on the rainy season implementation and deployment of:
  - Erosion control BMPs,
  - Sediment control BMPs,
  - Tracking control BMPs,
  - Wind erosion control BMPs,
  - Non-storm water BMPs, and
  - Waste management and materials pollution control BMPs.
- Include dates for activities that may require non-storm water discharges such as dewatering, sawcutting, grinding, drilling, boring, crushing, blasting, painting, hydro-demolition, mortar mixing, pavement cleaning, etc.
- Work out the sequencing and timetable for the start and completion of each item such as site clearing and grubbing, grading, excavation, paving, foundation pouring utilities installation, etc., to minimize the active construction area during the rainy season:
  - Sequence trenching activities so that most open portions are closed before new trenching begins;
  - Incorporate staged seeding and re-vegetation of graded slopes as work progresses; and
  - Schedule establishment of permanent vegetation during appropriate planting time for specified vegetation.
- Non-active areas should be stabilized as soon as practical after the cessation of soil disturbing activities or one day prior to the onset of precipitation.
- Monitor the weather forecast for rainfall.
- When rainfall is predicted, adjust the construction schedule to allow the implementation of soil stabilization and sediment treatment controls on all disturbed areas prior to the onset of rain.
- Be prepared year round to deploy erosion control and sediment control BMPs. Erosion may be caused during dry seasons by un-seasonal rainfall, wind, and vehicle tracking. Keep the site stabilized year round, and retain and maintain rainy season sediment trapping devices in operational condition.
- Apply permanent erosion control to areas deemed substantially complete during the project's defined seeding window.
- For additional Scheduling information, refer to the City & County of Honolulu, Department of Planning and Permitting "Rules Relating to Soil Erosion Standards and Guidelines" (April 1999), Section 1-4.4.2 Scheduling, Time Frame, and Sequencing of Construction.

Costs

Construction scheduling to reduce erosion may increase other construction costs due to reduced economies of scale in performing site grading. The cost effectiveness of scheduling techniques should be compared with the other less effective erosion and sedimentation controls to achieve a cost effective balance.

Inspection and Maintenance

- Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.
- Amend the schedule when changes are warranted.
- Amend the schedule prior to the rainy season to show updated information on the deployment and implementation of construction site BMPs.

References

California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

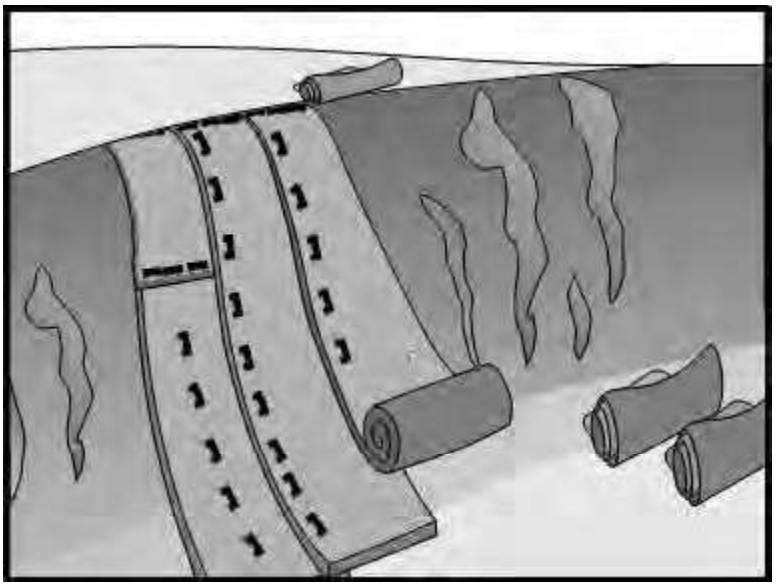
Hawaii Administrative Rules, Title 11, Chapter 55, Water Pollution Control, Appendix C, NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity, Hawaii State Department of Health (DOH) Clean Water Branch, p. 55-C-11 http://www.hawaii.gov/health/about/rules/admrules.html

Revised Ordinances of Honolulu Section 14, Article 15. Grading, Grubbing & Stockpiling, http://www.honolulu.gov/menu/government/gov_resources/refs/index.html

Stormwater Management for Construction Activities Developing Pollution Prevention Plans and Best Management Practices (EPA 832-R-92-005), U.S. Environmental Protection Agency, Office of Water, September 1992.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Geotextiles and Mats EC-7



Objectives	
EC – Erosion Control	√
SE – Sediment Control	
TR – Tracking Control	
WE – Wind Erosion Control	▲
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	

Legend:
√ Primary Objective
▲ Secondary Objective

Targeted Constituents	
Sediment	√
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-3 Hydraulic Mulch
EC-4 Hydroseeding
EC-5 Soil Binders
EC-8 Wood Mulching

Description and Purpose

Mattings of natural materials are used to cover the soil surface to reduce erosion from rainfall impact, hold soil in place, and absorb and hold moisture near the soil surface. Additionally, matting may be used to stabilize soils until vegetation is established.

Suitable Applications

Mattings are commonly applied on short, steep slopes where erosion hazard is high and vegetation will be slow to establish. Mattings are also used on stream banks where moving water at velocities between 3 ft/s and 6 ft/s are likely to wash out new vegetation and in areas where the soil surface is disturbed and where existing vegetation has been removed. Matting may also be used when seeding cannot occur (e.g., late season construction and/or the arrival of an early rain season). Erosion control matting should be considered when the soils are fine grained and potentially erosive. These measures should be considered in the following situations:

- Steep slopes, generally steeper than 3:1 (H:V);
- Slopes where the erosion potential is high;
- Slopes and disturbed soils where mulch should be anchored;
- Disturbed areas where plants are slow to develop;
- Channels with flows exceeding 3.3 ft/s;
- Channels to be vegetated;
- Stockpiles; and
- Slopes adjacent to water bodies of Environmentally Sensitive Areas.

Limitations

- Properly installed mattings provide excellent erosion control but do so at relatively high cost. This high cost typically limits the use of mattings to areas of concentrated channel flow and steep slopes.
- Mattings are more costly than other BMP practices, limiting their use to areas where other BMPs are ineffective (e.g. channels, steep slopes).
- Installation is critical and requires experienced contractors. The contractor should install the matting material in such a manner that continuous contact between the material and the soil occurs.
- Geotextiles and mats may delay seed germination, due to reduction in soil temperature.
- Blankets and mats are generally not suitable for excessively rocky sites or areas where the final vegetation will be mowed (since staples and netting can catch in mowers).
- Blankets and mats should be removed and disposed of prior to application of permanent soil stabilization measures.
- Plastic sheeting is easily vandalized, easily torn, photodegradable, and should be disposed of at a landfill.
- Plastic results in 100% runoff, which may cause serious erosion problems in the areas receiving the increased flow.
- The use of plastic should be limited to covering stockpiles or very small graded areas for short periods of time (such as through one imminent storm event) until alternative measures, such as seeding and mulching, may be installed.
- Geotextiles, mats, plastic covers, and erosion control covers have maximum flow rate limitations; consult the manufacturer for proper selection.
- Not suitable for areas that have heavy foot traffic (tripping hazard) - e.g., pad areas around buildings under construction.

Implementation

Material Selection

Organic matting materials have been found to be effective where re-vegetation will be provided by re-seeding. The choice of matting should be based on the size of area, side slopes, and surface conditions such as hardness, moisture, weed growth, and availability of materials.

The following natural and synthetic mattings are commonly used:

Plastic Covers

- Plastic sheeting should have a minimum thickness of 6 mils, and should be keyed in at the top of slope and firmly held in place with sandbags or other weights placed no more than 10 ft. apart. Seams are typically taped or weighted down their entire length, and there should be at least a 12 in. to 24 in. overlap of all seams. Edges should be embedded a minimum of 6 in. in soil.
- All sheeting should be inspected periodically after installation and after significant rainstorms to check for erosion, undermining, and anchorage failure. Any failures should be repaired immediately. If washout or breakages occur, the material should be re-installed after repairing the damage to the slope.

Geotextiles

- Material should be a woven polypropylene fabric with minimum thickness of 0.06 in., minimum width of 12 ft. and should have minimum tensile strength of 150 lbs. (warp); 80 lbs. (fill) in conformance with the requirements in ASTM Designation: D4632. The permittivity of the fabric should be approximately 0.07 sEC-0 in conformance with the requirements in ASTM Designation: D4491. The fabric should have an ultraviolet (UV) stability of 70 percent in conformance with the requirements in ASTM designation: D4355. Geotextile blankets must be secured in place with wire staples or sandbags and by keying into tops of slopes to prevent infiltration of surface waters under geotextile. Staples should be made of minimum 11 gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.
- Geotextiles may be reused if they are suitable for the use intended.

Erosion Control Blankets/Mats

- Biodegradable rolled erosion control products (RECPs) are typically composed of jute fibers, curled wood fibers, straw, coconut fiber, or a combination of these materials. In order for an RECP to be considered 100% biodegradable, the netting, sewing or adhesive system that holds the biodegradable mulch fibers together should also be biodegradable.
  - **Jute** is a natural fiber that is made into a yarn that is loosely woven into a biodegradable mesh. It is designed to be used in conjunction with vegetation and has longevity of approximately one year. The material is supplied in rolled strips, which should be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.
  - **Excelsior** (curled wood fiber) blanket material should consist of machine produced mats of curled wood excelsior with 80 percent of the fiber 6 in. or longer. The excelsior blanket should be of consistent thickness. The wood fiber should be evenly distributed over the entire area of the blanket. The top surface of the blanket should be covered with a photodegradable extruded plastic mesh. The blanket should be smolder resistant without the use of chemical additives and should be non-toxic and non-injurious to plant and animal life. Excelsior blankets should be furnished in rolled strips, a minimum of 48 in. wide, and should have an average weight of 0.8 lb/yd^2, ±10 percent, at the time of manufacture. Excelsior blankets must be secured in place with wire staples. Staples should be made of minimum 11 gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.
  - **Straw blanket** should be machine produced mats of straw with a lightweight biodegradable netting top layer. The straw should be attached to the netting with biodegradable thread or glue strips. The straw blanket should be of consistent thickness. The straw should be evenly distributed over the entire area of the blanket. Straw blanket should be furnished in rolled strips a minimum of 6.5 ft. wide, a minimum of 80 ft. long and a minimum of 0.5 lb/yd^2. Straw blankets must be secured in place with wire staples. Staples should be made of minimum 11 gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.
  - **Wood fiber blanket** is composed of biodegradable fiber mulch with extruded plastic netting held together with adhesives. The material is designed to enhance re-vegetation. The material is furnished in rolled strips, which must be secured to the

ground with U-shaped staples or stakes in accordance with manufacturers' recommendations.

- **Coconut fiber blanket** should be a machine produced mat of 100 percent coconut fiber with biodegradable netting on the top and bottom. The coconut fiber should be attached to the netting with biodegradable thread or glue strips. The coconut fiber blanket should be of consistent thickness. The coconut fiber should be evenly distributed over the entire area of the blanket. Coconut fiber blanket should be furnished in rolled strips with a minimum of 6.5 ft. wide, a minimum of 80 ft. long and a minimum of 0.5 lb/yd^2. Coconut fiber blankets must be secured in place with wire staples. Staples should be made of minimum 11 gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.
- **Coconut fiber mesh** is a thin permeable membrane made from coconut or corn fiber that is spun into a yarn and woven into a biodegradable mat. It is designed to be used in conjunction with vegetation and typically has longevity of several years. The material is supplied in rolled strips, which must be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.
- **Straw coconut fiber blanket** should be machine produced mats of 70 percent straw and 30 percent coconut fiber with a biodegradable netting top layer and a biodegradable bottom net. The straw and coconut fiber should be attached to the netting with biodegradable thread or glue strips. The straw coconut fiber blanket should be of consistent thickness. The straw and coconut fiber should be evenly distributed over the entire area of the blanket. Straw coconut fiber blanket should be furnished in rolled strips a minimum of 6.5 ft. wide, a minimum of 80 ft. long and a minimum of 0.5 lb/yd^2. Straw coconut fiber blankets must be secured in place with wire staples. Staples should be made of minimum 11 gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.

- Non-biodegradable RECPs are typically composed of polypropylene, polyethylene, nylon or other synthetic fibers. In some cases, a combination of biodegradable and synthetic fibers is used to construct the RECP. Netting used to hold these fibers together is typically non-biodegradable as well.
  - **Plastic netting** is a lightweight biaxially oriented netting designed for securing loose mulches like straw or paper to soil surfaces to establish vegetation. The netting is photodegradable. The netting is supplied in rolled strips, which must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.
  - **Plastic mesh** is an open weave geotextile that is composed of an extruded synthetic fiber woven into a mesh with an opening size of less than ¼ in. It is used with re-vegetation or may be used to secure loose fiber such as straw to the ground. The material is supplied in rolled strips, which must be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.
  - **Synthetic fiber with netting** is a mat that is composed of durable synthetic fibers treated to resist chemicals and ultraviolet light. The mat is a dense; three dimensional mesh of synthetic (typically polyolefin) fibers stitched between two polypropylene nets. The mats are designed to be re-vegetated and provide a permanent composite system of soil, roots, and geomatrix. The material is furnished in rolled strips, which

must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

- **Bonded synthetic fibers** consist of a three dimensional geomatrix nylon (or other synthetic) matting. Typically it has more than 90 percent open area, which facilitates root growth. It's tough root reinforcing system anchors vegetation and protects against hydraulic lift and shear forces created by high volume discharges. It can be installed over prepared soil, followed by seeding into the mat. Once vegetated, it becomes an invisible composite system of soil, roots, and geomatrix. The material is furnished in rolled strips that must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.
- **Combination synthetic and biodegradable RECPs** consist of biodegradable fibers, such as wood fiber or coconut fiber, with a heavy polypropylene net stitched to the top and a high strength continuous filament geomatrix or net stitched to the bottom. The material is designed to enhance re-vegetation. The material is furnished in rolled strips, which must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

Site Preparation

- Proper site preparation is essential to ensure complete contact of the blanket or matting with the soil.
- Grade and shape the area of installation.
- Remove all rocks, clods, vegetation or other obstructions so that the installed blankets or mats will have complete, direct contact with the soil.
- Prepare seedbed by loosening 2 to 3 in. of topsoil.

Seeding

Seeding after mat installation is often specified for turf reinforcement application. When seeding prior to blanket installation, all check slots and other areas disturbed during installation should be re-seeded. Where soil filling is specified, seed the matting and the entire disturbed area after installation and prior to filling the mat with soil.

Fertilize and seed in accordance with seeding specifications or other types of landscaping plans. When using jute matting on a seeded area, apply approximately half the seed before laying the mat and the remainder after laying the mat. The protective matting can be laid over areas where grass has been planted and the seedlings have emerged. Where vines or other ground covers are to be planted, lay the protective matting first and then plant through matting according to design of planting.

Check Slots

Check slots are made of glass fiber strips, excelsior matting strips or tight folded jute matting blanket or strips for use on steep, highly erodible watercourses. The check slots are placed in narrow trenches 6 to 12 in. deep across the channel and left flush with the soil surface. They are to cover the full cross section of designed flow.

Laying and Securing Matting

- Before laying the matting, all check slots should be installed and the friable seedbed made free from clods, rocks, and roots. The surface should be compacted and finished according to the requirements of the manufacturer's recommendations.
- Mechanical or manual lay down equipment should be capable of handling full rolls of fabric and laying the fabric smoothly without wrinkles or folds. The equipment should meet the fabric manufacturer's recommendations or equivalent standards.

Anchoring

- U-shaped wire staples, metal geotextile stake pins, or triangular wooden stakes can be used to anchor mats and blankets to the ground surface.
- Wire staples should be made of minimum 11 gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.
- Metal stake pins should be 0.188 in. diameter steel with a 1.5 in. steel washer at the head of the pin, and 8 in. in length.
- Wire staples and metal stakes should be driven flush to the soil surface.

Installation on Slopes

Installation should be in accordance with the manufacturer's recommendations. In general, these will be as follows:

- Begin at the top of the slope and anchor the blanket in a 6 in. deep by 6 in. wide trench. Backfill trench and tamp earth firmly;
- Unroll blanket down slope in the direction of water flow;
- Overlap the edges of adjacent parallel rolls 2 to 3 in. and staple every 3 ft.;
- When blankets should be spliced, place blankets end over end (shingle style) with 6 in. overlap. Staple through overlapped area, approximately 12 in. apart;
- Lay blankets loosely and maintain direct contact with the soil. Do not stretch; and
- Staple blankets sufficiently to anchor blanket and maintain contact with the soil. Staples should be placed down the center and staggered with the staples placed along the edges. Steep slopes, 1:1 (H:V) to 2:1 (H:V), require a minimum of 2 staples/yd^2. Moderate slopes, 2:1 (H:V) to 3:1 (H:V), require a minimum of 1 ½ staples/yd^2.

Installation in Channels

Installation should be in accordance with the manufacturer's recommendations. In general, these will be as follows:

- Dig initial anchor trench 12 in. deep and 6 in. wide across the channel at the lower end of the project area;
- Excavate intermittent check slots, 6 in. deep and 6 in. wide across the channel at 25 to 30 ft. intervals along the channels;
- Cut longitudinal channel anchor trenches 4 in. deep and 4 in. wide along each side of the installation to bury edges of matting, whenever possible extend matting 2 to 3 in. above the crest of the channel side slopes;

- Beginning at the downstream end and in the center of the channel, place the initial end of the first roll in the anchor trench and secure with fastening devices at 12 in. intervals. Note: matting will initially be upside down in anchor trench;
- In the same manner, position adjacent rolls in anchor trench, overlapping the preceding roll a minimum of 3 in;
- Secure these initial ends of mats with anchors at 12 in. intervals, backfill and compact soil;
- Unroll center strip of matting upstream. Stop at next check slot or terminal anchor trench. Unroll adjacent mats upstream in similar fashion, maintaining a 3 in. overlap;
- Fold and secure all rolls of matting snugly into all transverse check slots. Lay mat in the bottom of the slot then fold back against itself. Anchor through both layers of mat at 12 in. intervals, then backfill and compact soil. Continue rolling all mat widths upstream to the next check slot or terminal anchor trench;
- Alternate method for non-critical installations: Place two rows of anchors on 6 in. centers at 25 to 30 ft. intervals in lieu of excavated check slots;
- Staple shingled lap spliced ends a minimum of 12 in. apart on 12 in. intervals;
- Place edges of outside mats in previously excavated longitudinal slots; anchor using prescribed staple pattern, backfill, and compact soil;
- Anchor, fill, and compact upstream end of mat in a 12 in. by 6 in. terminal trench;
- Secure mat to ground surface using U-shaped wire staples, geotextile pins, or wooden stakes; and
- Seed and fill turf reinforcement matting with soil, if specified.

Soil Filling (if specified for turf reinforcement)

- Always consult the manufacturer's recommendations for installation.
- Do not drive tracked or heavy equipment over mat.
- Avoid any traffic over matting if loose or wet soil conditions exist.
- Use shovels, rakes, or brooms for fine grading and touch up.
- Smooth out soil filling just exposing top netting of mat.

Temporary Soil Stabilization Removal

- Temporary soil stabilization removed from the site of the work should be disposed of if necessary.

Costs

Relatively high compared to other BMPs. Biodegradable materials: $0.50 - $0.57/yd^2. Permanent materials: $3.00 - $4.50/yd^2. Staples: $0.04 - $0.05/staple. Approximate costs for installed materials are shown below:

Rolled Erosion Control Products		Installed Cost per Acre
Biodegradable	Jute Mesh	$6,500
	Curled Wood Fiber	$10,500
	Straw	$8,900
	Wood Fiber	$8,900
	Coconut Fiber	$13,000
	Coconut Fiber Mesh	$31,200
	Straw Coconut Fiber	$10,900
Non-Biodegradable	Plastic Netting	$2,000
	Plastic Mesh	$3,200
	Synthetic Fiber with Netting	$34,800
	Bonded Synthetic Fibers	$50,000
	Combination with Biodegradable	$32,000

Source: Caltrans Guidance for Soil Stabilization for Temporary Slopes, Nov. 1999

Note that Hawaii's unit prices are higher than California's unit prices.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season, and at two-week intervals during the non-rainy season.
- Inspect BMPs subject to non-storm water discharges daily while non-storm water discharges occur.
- Areas where erosion is evident should be repaired and BMPs reapplied as soon as possible. Care should be exercised to minimize the damage to protected areas while making repairs, as any area damaged will require reapplication of BMPs.
- If washout or breakage occurs, re-install the material after repairing the damage to the slope or channel.
- Make sure matting is uniformly in contact with the soil.
- Check that all the lap joints are secure.
- Check that staples are flush with the ground.
- Check that disturbed areas are seeded.

References

California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Guidance Document: Soil Stabilization for Temporary Slopes, State of California Department of Transportation (Caltrans), November 1999.

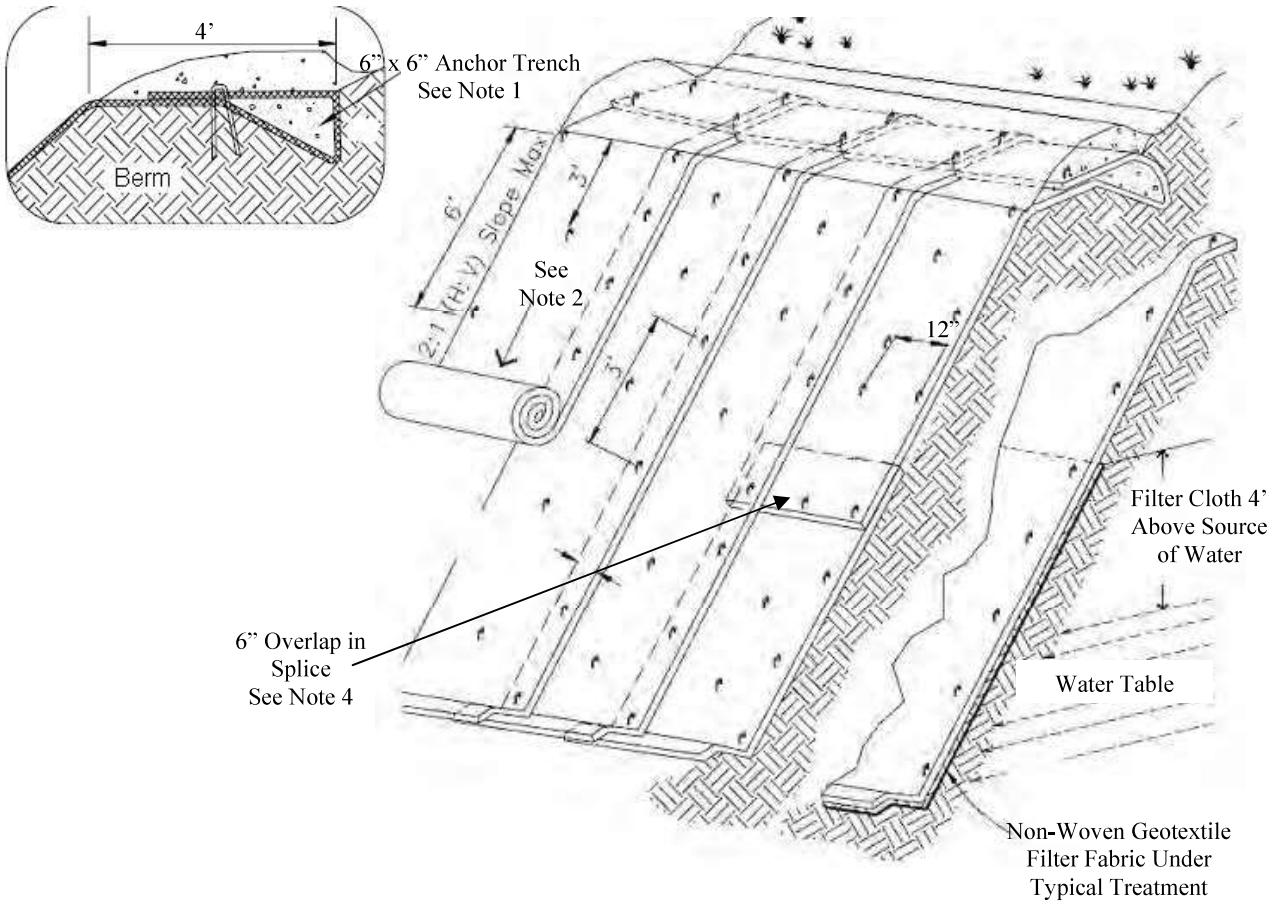
Guides for Erosion and Sediment Controls in California, USDA Soils Conservation Service, January 1991.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Water Quality Management Plan for The Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.



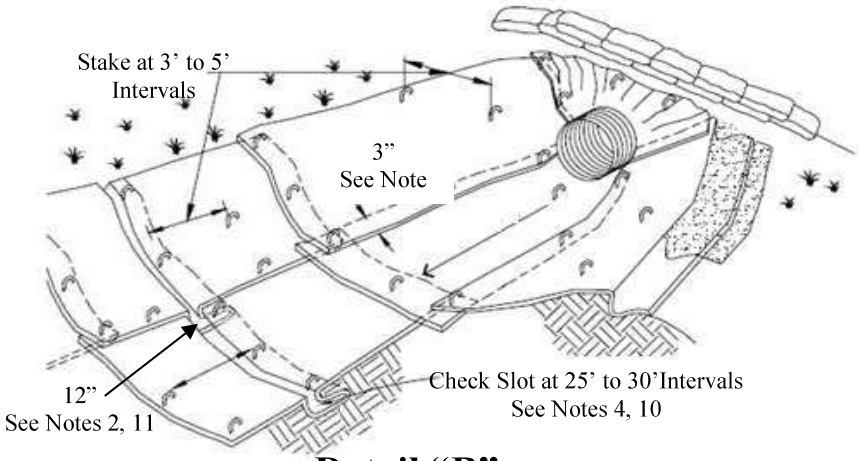
Detail "A"

Not to Scale

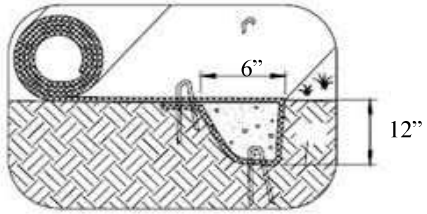
Notes:

1. Begin at the top of the slope and anchor the blanket in a 6 in. deep by 6 in. wide trench. Backfill trench and tamp earth firmly.
2. Unroll blanket down slope in the direction of water flow.
3. Overlap the edges of adjacent parallel rolls 2 to 3 in. and staple every 3 ft.
4. When blankets should be spliced, place blankets end over end (shingle style) with 6 in. overlap. Staple through overlapped area, approximately 12 in. apart.
5. Lay blankets loosely and maintain direct contact with the soil. Do not stretch.
6. Staple blankets sufficiently to anchor blanket and maintain contact with the soil. Staples should be placed down the center and staggered with the staples placed along the edges.
7. Steep slopes, 1:1 (H:V) to 2:1 (H:V), require a minimum of 2 staples/yd^2. Moderate slopes, 2:1 (H:V) to 3:1 (H:V), require a minimum of 1½ staples/yd^2.
8. Install per manufacturer's recommendations.
9. For Limitations, Geotextiles and Plastic Covers Specifications, Types of Erosion Control Blankets/Mats, and Site Preparations see EC-7.

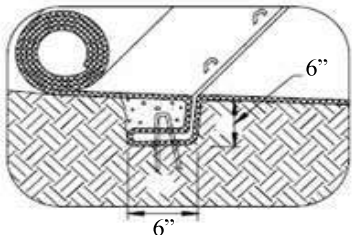
Typical Slope Soil Stabilization



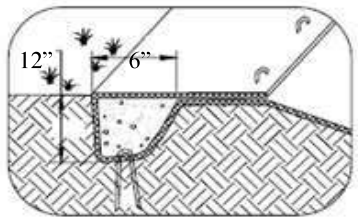
Detail "B"
Isometric View, Not to Scale



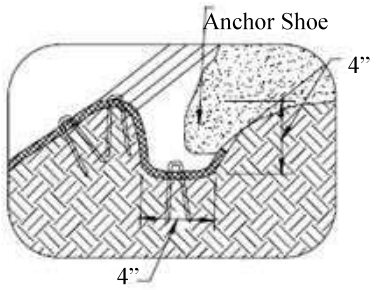
Initial Channel Anchor Trench
Not to Scale
See Note 3



Intermittent Check Slot
Not to Scale



Terminal Slope and Channel Anchor Trench
Not to Scale
See Note 3

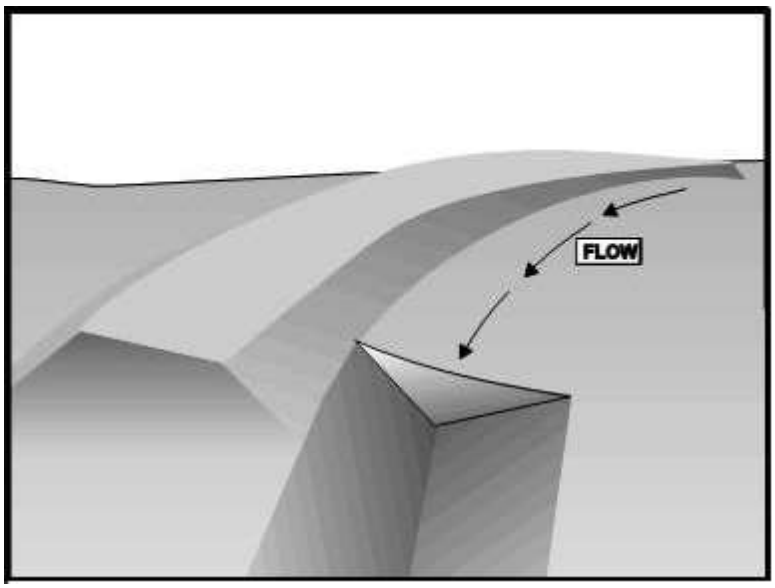


Longitudinal Anchor Trench
Not to Scale
See Note 5

Notes:
1. Install per manufacturer's recommendations.
2. Secure these initial ends of mats with anchors at 12 in. intervals, backfill and compact soil.
3. Dig initial anchor trench 12 in. deep and 6 in. wide across the channel at the lower end of the project area and at terminal slope.
4. Excavate intermittent check slots, 6 in. deep and 6 in. wide across the channel at 25 to 30 ft intervals along the channels.
5. Cut longitudinal channel anchor trenches 4 in. deep and 4 in. wide along each side of the installation to bury edges of matting, whenever possible extend matting 2 to 3 in. above the crest of the channel side slopes.
6. Beginning at the downstream end and in the center of the channel, place the initial end of the first roll in the anchor trench and secure with fastening devices at 12 in. intervals. Note: matting will initially be upside down in anchor trench.
7. In the same manner, position adjacent rolls in anchor trench, overlapping the preceding roll a minimum of 3 in.
8. Unroll center strip of matting upstream. Stop at next check slot or terminal anchor trench. Unroll adjacent mats upstream in similar fashion, maintaining a 3 in. overlap.
9. Fold and secure all rolls of matting snugly into all transverse check slots. Lay mat in the bottom of the slot then fold back against itself. Anchor through both layers of mat at 12 in. intervals, then backfill and compact soil. Continue rolling all mat widths upstream to the next check slot or terminal anchor trench.
10. Alternate method for non-critical installations: Place two rows of anchors on 6 in. centers at 25 to 30 ft. intervals in lieu of excavated check slots.
11. Staple shingled lap spliced ends a minimum of 12 in. apart on 12 in. intervals.
12. Place edges of outside mats in previously excavated longitudinal slots; anchor using prescribed staple pattern, backfill, and compact soil.
13. Anchor, fill, and compact upstream end of mat in a 12 in. by 6 in. terminal trench.
14. Secure mat to ground surface using U-shaped wire staples, geotextile pins, or wooden stakes.
15. Seed and fill turf reinforcement matting with soil, if specified.
16. For Limitations, Geotextiles and Plastic Covers Specifications, Types of Erosion Control Blankets/Mats, and Site Preparations see EC-7.

Typical Soil Stabilization in Channels

Earth Dikes and Drainage Swales EC-9



Objectives

EC – Erosion Control	√
SE – Sediment Control	
TR – Tracking Control	
WE – Wind Erosion Control	
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents

Sediment	√
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

An earth dike is a temporary berm or ridge of compacted soil used to divert runoff or channel water to a desired location. A drainage swale is a shaped and sloped depression in the soil surface used to convey runoff to a desired location. Earth dikes and drainage swales are used to divert off site runoff around the construction site, divert runoff from stabilized areas and disturbed areas, and direct runoff into sediment basins or traps.

Suitable Applications

Earth dikes and drainage swales are suitable for use, individually or together, where runoff needs to be diverted from one area and conveyed to another.

- Earth dikes and drainage swales may be used:
  - To convey surface runoff down sloping land;
  - To intercept and divert runoff to avoid sheet flow over sloped surfaces;
  - To divert and direct runoff towards a stabilized watercourse, drainage pipe or channel;
  - To intercept runoff from paved surfaces;
  - Below steep grades where runoff begins to concentrate;
  - Along roadways and facility improvements subject to flood drainage;
  - At the top of slopes to divert runon from adjacent or undisturbed slopes;

- At bottom and mid slope locations to intercept sheet flow and convey concentrated flows; and
- Divert sediment laden runoff into sediment basins or traps.

Limitations

Dikes should not be used for drainage areas greater than 10 acres or along slopes greater than 10 percent. For larger areas more permanent drainage structures should be built. All drainage structures should be built in compliance with City municipal requirements.

- Earth dikes may create more disturbed area on site and become barriers to construction equipment.
- Earth dikes should be stabilized immediately, which adds cost and maintenance concerns.
- Diverted storm water may cause downstream flood damage.
- Dikes should not be constructed of soils that may be easily eroded.
- Regrading the site to remove the dike may add additional cost.
- Temporary drains and swales or any other diversion of runoff should not adversely impact upstream or downstream properties.
- Temporary drains and swales should conform to City floodplain management requirements.
- Earth dikes/drainage swales are not suitable as sediment trapping devices.
- It may be necessary to use other soil stabilization and sediment controls such as check dams, plastics, and blankets, to prevent scour and erosion in newly graded dikes, swales, and ditches.

Implementation

The temporary earth dike is a berm or ridge of compacted soil, located in such a manner as to divert storm water to a sediment trapping device or a stabilized outlet, thereby reducing the potential for erosion and offsite sedimentation. Earth dikes can also be used to divert runoff from off site and from undisturbed areas away from disturbed areas and to divert sheet flows away from unprotected slopes.

An earth dike does not itself control erosion or remove sediment from runoff. A dike prevents erosion by directing runoff to an erosion control device such as a sediment trap or directing runoff away from an erodible area. Temporary diversion dikes should not adversely impact adjacent properties and should conform to City floodplain management regulations, and should not be used in areas with slopes steeper than 10%.

Slopes that are formed during cut and fill operations should be protected from erosion by runoff. A combination of a temporary drainage swale and an earth dike at the top of a slope can divert runoff to a location where it can be brought to the bottom of the slope (see EC-11, Slope Drains). A combination dike and swale is easily constructed by a single pass of a bulldozer or grader and compacted by a second pass of the tracks or wheels over the ridge. Diversion structures should be installed when the site is initially graded and remain in place until post construction BMPs are installed and the slopes are stabilized.

Diversion practices concentrate surface runoff, increasing its velocity and erosive force. Thus, the flow out of the drain or swale should be directed onto a stabilized area or into a grade

stabilization structure. If significant erosion will occur, a swale should be stabilized using vegetation, chemical treatment, rock rip-rap, matting, or other physical means of stabilization. Any drain or swale that conveys sediment laden runoff should be diverted into a sediment basin or trap before it is discharged from the site.

General

- Care should be applied to correctly size and locate earth dikes, drainage swales. Excessively steep unlined dikes and swales are subject to erosion and gully formation.
- Conveyances should be stabilized.
- Use a lined ditch for high flow velocities.
- Select flow velocity based on careful evaluation of the risks due to erosion of the measure, soil types, overtopping, flow backups, washout, and drainage flow patterns for each project site.
- Compact any fills to prevent unequal settlement.
- Do not divert runoff onto other property without securing written authorization from the property owner.
- When possible, install and utilize permanent dikes, swales, and ditches early in the construction process.
- Provide stabilized outlets.

Earth Dikes

Temporary earth dikes are a practical, inexpensive BMP used to divert storm water runoff. Temporary diversion dikes should be installed in the following manner:

- All dikes should be compacted by earth moving equipment;
- All dikes should have positive drainage to an outlet;
- All dikes should have 2:1 or flatter side slopes, 18 in. minimum height, and a minimum top width of 24 in. Wide top widths and flat slopes are usually needed at crossings for construction traffic;
- The outlet from the earth dike should function with a minimum of erosion. Runoff should be conveyed to a sediment trapping device such as a Sediment Trap (SE-3) or Sediment Basin (SE-2) when either the dike channel or the drainage area above the dike are not adequately stabilized;
- Temporary stabilization may be achieved using seed and mulching for slopes less than 5% and either rip-rap or sod for slopes in excess of 5%. In either case, stabilization of the earth dike should be completed immediately after construction or prior to the first rain;
- If riprap is used to stabilize the channel formed along the toe of the dike, the following typical specifications apply:

Channel Grade	Riprap Stabilization
0.5-1.0%	4 in. Rock
1.1-2.0%	6 in. Rock
2.1-4.0%	8 in. Rock
4.1-5.0%	8 in. – 12 in. Rock

- The stone riprap, recycled concrete, etc. used for stabilization should be pressed into the soil with construction equipment;
- Filter cloth may be used to cover dikes in use for long periods; and
- Construction activity on the earth dike should be kept to a minimum.

Drainage Swales

Drainage swales are only effective if they are properly installed. Swales are more effective than dikes because they tend to be more stable. The combination of a swale with a dike on the downhill side is the most cost effective diversion.

Standard engineering design criteria for small open channel and closed conveyance systems should be used (see the City drainage design manual). Unless City drainage design criteria state otherwise, drainage swales should be designed as follows:

- No more than 5 acres may drain to a temporary drainage swale;
- Place drainage swales above or below, not on, a cut or fill slope;
- Swale bottom width should be at least 2 ft.;
- Depth of the swale should be at least 18 in.;
- Side slopes should be 2:1 or flatter;
- Drainage or swales should be laid at a grade of at least 1 percent, but not more than 15 percent;
- The on-site swale should not be overtopped by the peak discharge from a 10-year storm with 1-hour duration, irrespective of the design criteria stated above;
- Offsite diversion swale should not be overtopped by the offsite peak discharge from a 10-year storm with 1-hour duration, irrespective of the design criteria stated above. Remove all trees, stumps, obstructions, and other objectionable material from the swale when it is built;
- Compact any fill material along the path of the swale;
- Stabilize all swales immediately. Seed and mulch swales at a slope of less than 5 percent, and use rip-rap or sod for swales with a slope between 5 and 15 percent. For temporary swales, geotextiles and mats (EC-7) may provide immediate stabilization;
- Irrigation may be required to establish sufficient vegetation to prevent erosion;
- Do not operate construction vehicles across a swale unless a stabilized crossing is provided;
- Permanent drainage facilities should be designed by a professional engineer (see the City drainage design criteria for proper design);
- At a minimum, the drainage swale should conform to predevelopment drainage patterns and capacities;
- Construct the drainage swale with a positive grade to a stabilized outlet; and
- Provide erosion protection or energy dissipation measures if the flow out of the drainage swale can reach an erosive velocity. Consider using protective lining such as vegetation, geotextile filter fabric, rip rap, or concrete lining.

Costs

- Cost in California ranges from $15 to $55 per ft. for both earthwork and stabilization and depends on availability of material, site location, and access.
- Small dikes: $2.50 - $6.50/linear ft. Large dikes: $2.50/yd^3.
- The cost of a drainage swale increases with drainage area and slope. Typical swales for controlling internal erosion are inexpensive, as they are quickly formed during routine earthwork. Note that Hawaii's unit prices are higher than California's unit prices.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Inspect BMPs subject to non-storm water discharges daily while non-storm water discharges occur.
- Inspect ditches and berms for washouts. Replace lost riprap, damaged linings or soil stabilizers as needed.
- Inspect channel linings, embankments, and beds of ditches and berms for erosion and accumulation of debris and sediment. Remove debris and sediment and repair linings and embankments as needed.
- Temporary conveyances should be completely removed as soon as the surrounding drainage area has been stabilized or at the completion of construction.

References

California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

National Association of Home Builders (NAHB). Stormwater Runoff & Nonpoint Source Pollution Control Guide for Builders and Developers. National Association of Home Builders, Washington, D.C., 1995.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

Rules Relating to Storm Drainage Standard, Department of Planning & Permitting, City & County of Honolulu, January 2000 (or revisions thereafter).

Southeastern Wisconsin Regional Planning Commission (SWRPC). Costs of Urban Nonpoint Source Water Pollution Control Measures. Technical Report No. 31. Southeastern Wisconsin Regional Planning Commission, Waukesha, WI, 1991.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

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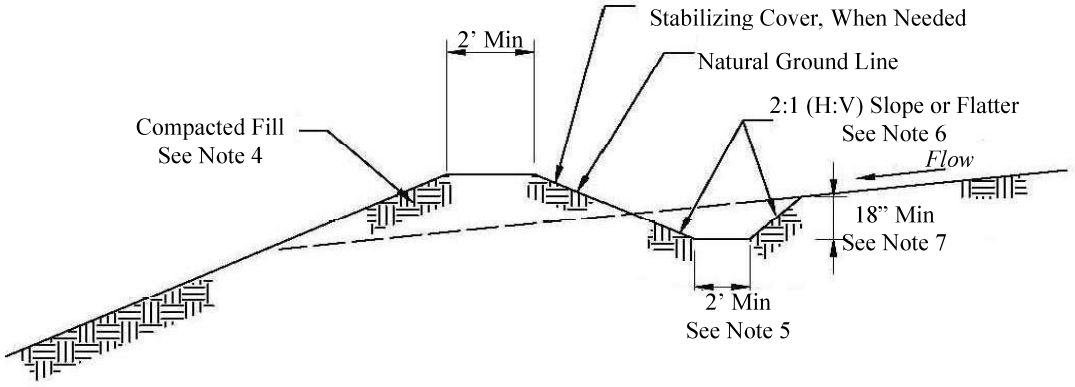
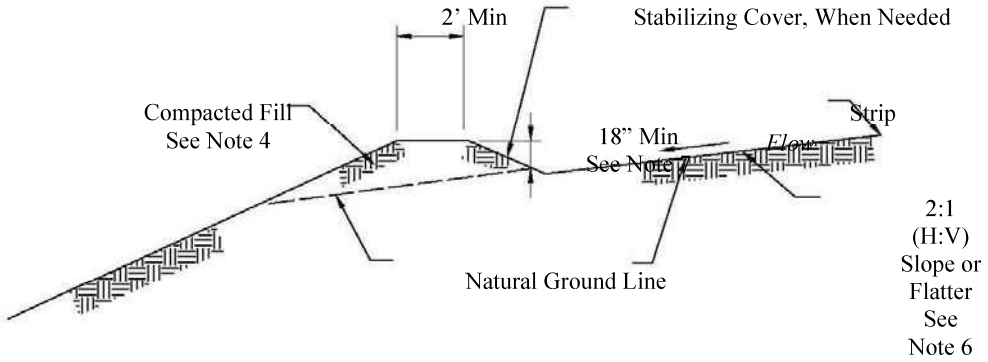
Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.



Drainage Swale Section "A"



Earth Dike Section "B"

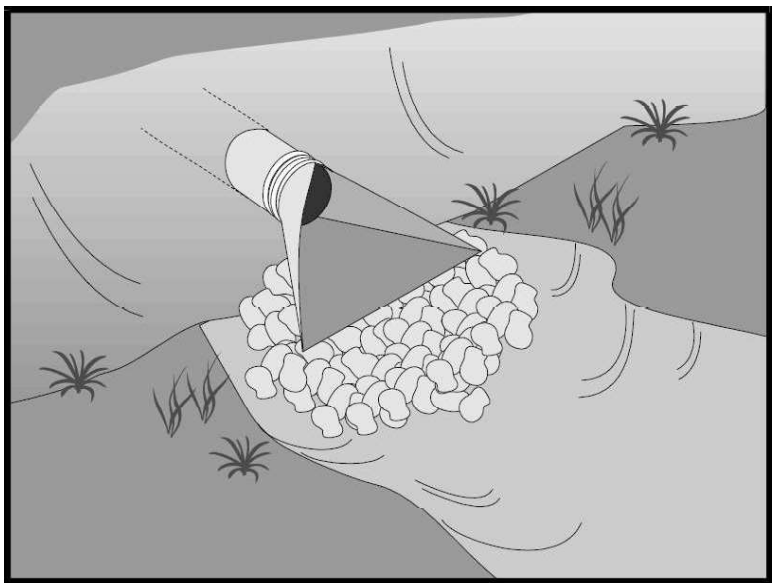
Notes:

1. Place drainage swales above or below, not on, a cut or fill slope.
2. Drainage or swales should be laid at a grade of at least 1 percent, but not more than 15 percent.
3. Remove all trees, stumps, obstructions, and other objectionable material from the swale.
4. Fill material along the path of the swale should be compacted to at least 90% compaction.
5. Swale top and bottom width should be at least 2 ft.
6. Side slopes should be 2:1 or flatter.
7. Depth of the swale should be at least 18 in.
8. Construct the drainage swale with a positive grade to a stabilized outlet.
9. Use a lined ditch for high flow velocities.
10. Temporary stabilization may be achieved using seed and mulching for slopes less than 5% and either rip-rap or sod for slopes in excess of 5%.
11. If rip-rap is used to stabilize the channel formed along the toe of the dike, the following typical specifications apply:

Channel Grade	Riprap Stabilization
0.5-1.0%	4 in. Rock
1.1-2.0%	6 in. Rock
2.1-4.0%	8 in. Rock
4.1-5.0%	8 in. – 12 in. Rock

Drainage Swale and Earth Dike

Velocity Dissipation Devices EC-10



Objectives

EC – Erosion Control	√
SE – Sediment Control	
TR – Tracking Control	
WE – Wind Erosion Control	
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents

Sediment	√
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Outlet protection is a physical device composed of rock, grouted riprap, or concrete rubble, which is placed at the outlet of a pipe or channel to prevent scour of the soil caused by concentrated, high velocity flows.

Suitable Applications

Whenever discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach. This includes temporary diversion structures to divert runon during construction.

- These devices may be used at the following locations:
  - Outlets of pipes, drains, culverts, slope drains, diversion ditches, swales, conduits, or channels;
  - Outlets located at the bottom of mild to steep slopes;
  - Discharge outlets that carry continuous flows of water;
  - Outlets subject to short, intense flows of water, such as flash floods; and
  - Points where lined conveyances discharge to unlined conveyances

Limitations

- Large storms or high flows can wash away the rock outlet protection and leave the area susceptible to erosion.
- Sediment captured by the rock outlet protection may be difficult to remove without removing the rock.

- Outlet protection may negatively impact the channel habitat.
- If there is not adequate drainage, and water builds up behind grouted riprap, it may cause the grouted riprap to break up due to the resulting hydrostatic pressure.

Implementation

General

Outlet protection is needed where discharge velocities and energies at the outlets of culverts, conduits or channels are sufficient to erode the immediate downstream reach. This practice protects the outlet from developing small eroded pools (plunge pools), and protects against gully erosion resulting from scouring at a culvert mouth.

Design and Layout

As with most channel design projects, depth of flow, roughness, gradient, side slopes, discharge rate, and velocity should be considered in the outlet design. Compliance to city and state regulations should also be considered while working in environmentally sensitive streambeds. General recommendations for rock size and length of outlet protection mat are shown in the rock outlet protection figure in this BMP and should be considered minimum. The apron length and rock size gradation are determined using a combination of the discharge pipe diameter and estimate discharge rate: Select the longest apron length and largest rock size suggested by the pipe size and discharge rate. Where flows are conveyed in open channels such as ditches and swales, use the estimated discharge rate for selecting the apron length and rock size. Flows should be same as the culvert or channel design flow but never the less than the peak 10-year, 1-hour duration peak flow for temporary structures.

- There are many types of energy dissipaters, with rock being the one that is represented in the attached figure.
- Best results are obtained when sound, durable, and angular rock is used.
- Install riprap, grouted riprap, or concrete apron at selected outlet. Riprap aprons are best suited for temporary use during construction. Grouted or wired tied rock riprap can minimize maintenance requirements.
- Rock outlet protection is usually less expensive and easier to install than concrete aprons or energy dissipaters. It also serves to trap sediment and reduce flow velocities.
- Carefully place riprap to avoid damaging the filter fabric.
    - Stone 4 in. to 6 in. may be carefully dumped onto filter fabric from a height not to exceed 12 in.
    - Stone 8 in. to 12 in. should be hand placed onto filter fabric, or the filter fabric may be covered with 4 in. of gravel and the 8 in. to 12 in. rock may be dumped from a height not to exceed 16 in.
    - Stone greater than 12 in. should only be dumped onto filter fabric protected with a layer of gravel with a thickness equal to one half the D50 rock size, and the dump height limited to twice the depth of the gravel protection layer thickness.

- For proper operation of apron: Align apron with receiving stream and keep straight throughout its length. If a curve is needed to fit site conditions, place it in upper section of apron.
- Outlets on slopes steeper than 10 percent should have additional protection.

Costs

Costs are low if material is readily available. If material is imported, costs will be higher. Average installed cost is $150 per device in California. Note that Hawaii's unit prices are higher than California's unit prices.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Inspect BMPs subjected to non-storm water discharges daily while non-storm water discharges occur.
- Inspect apron for displacement of the riprap and damage to the underlying fabric. Repair fabric and replace riprap that has washed away. If riprap continues to wash away, consider using larger material.
- Inspect for scour beneath the riprap and around the outlet. Repair damage to slopes or underlying filter fabric immediately.
- Temporary devices should be completely removed as soon as the surrounding drainage area has been stabilized or at the completion of construction.

References

California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

County of Sacramento Improvement Standards, Sacramento County, May 1989.

Erosion and Sediment Control Handbook, S.J. Goldman, K. Jackson, T.A. Bursztynsky, P.E., McGraw Hill Book Company, 1986.

Handbook of Steel Drainage & Highway Construction, American Iron and Steel Institute, 1983.

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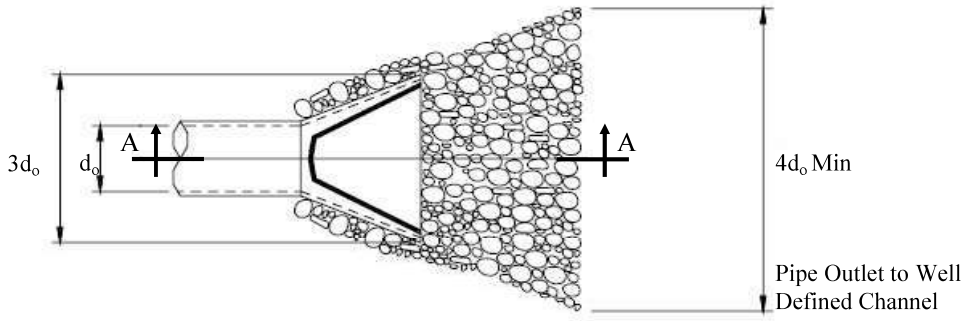
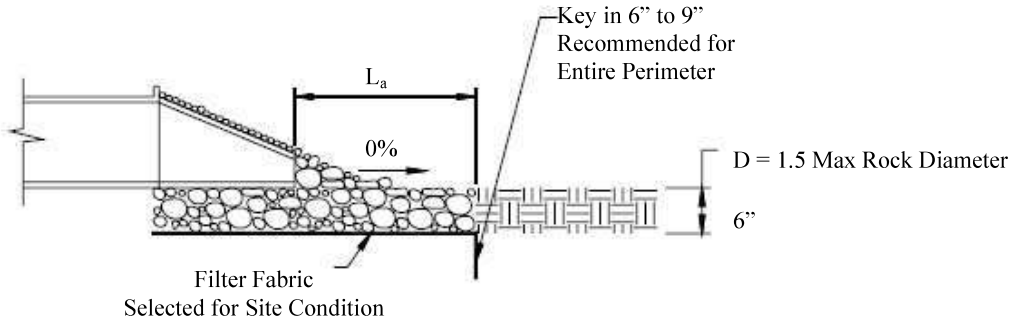
Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.



Plan"A"



Section A-A

Notes:

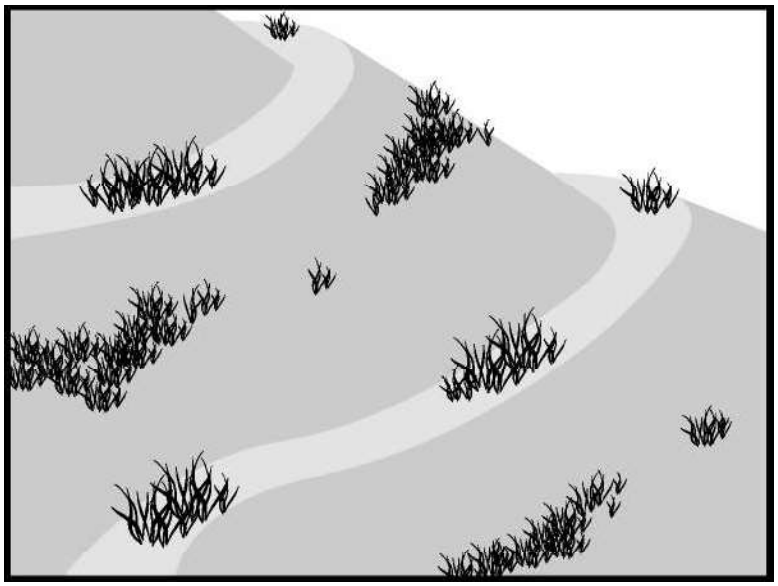
1. The apron length and rock size gradation are determined using the table above.
2. Install riprap, grouted riprap, or concrete apron at selected outlet. Riprap aprons are best suited for temporary use during construction. Grouted or wired tied rock riprap can minimize maintenance requirements.
3. Carefully place riprap to avoid damaging the filter fabric.
   a. Stone 4 in. to 6 in. may be carefully dumped onto filter fabric from a height not to exceed 12 in.
   b. Stone 8 in. to 12 in. should be hand placed onto filter fabric, or the filter fabric may be covered with 4 in. of gravel and the 8 in. to 12 in. rock may be dumped from a height not to exceed 16 in.
   c. Stone greater than 12 in. should only be dumped onto filter fabric protected with a layer of gravel with a thickness equal to one half the D50 rock size, and the dump height limited to twice the depth of the gravel protection layer thickness.
4. Outlets on slopes steeper than 10 percent should have additional protection.
5. Design should comply with city and state regulations.

Pipe Diameter, do (inches)	Discharge (ft^3/s)	Apron Length, La (ft)	Rip Rap D50 Diameter Min (inches)
12	5	10	4
	10	13	6
18	10	10	6
	20	16	8
	30	23	12
	40	26	16
24	30	16	8
	40	26	8
	50	26	12
	60	30	16

For larger or higher flows consult a Licensed Civil Engineer

Source: USDA- SCS

Slope Roughening/Terracing EC-15



Objectives

EC – Erosion Control	√
SE – Sediment Control	▲
TR – Tracking Control	
WE – Wind Erosion Control	
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents

Sediment	√
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Slope roughening/terracing creates microclimates for establishing vegetation, reduces runoff velocity, increases infiltration, and provides small depression for trapping sediment.

Surface roughening is recommended for all slopes steeper than 3:1, and greater than 5 vertical feet, providing some instate erosion protection on bare soil while vegetative cover is being established. It is an inexpensive, simple and short-term erosion control measure for roadway cut slopes.

Terracing usually is a more permanent measure used to stabilize a steep slope. Terraces should be designed by a licensed professional engineer and included in the project construction plans. City design criteria should be used.

Suitable Applications

- Any cleared area prior to seeding and planting.
- Recommended for cleared, erodible slopes steeper than 3:1 and higher than 5 feet prior to seeding and planting.

Implementation

- Slope roughening/terracing is performed in several ways:
  - Stair-step grading,
  - Grooving,
  - Furrowing,
  - Tracking,
  - Rough grading, and
  - No grading.

- Slope hazard analysis is required for cut and fill slopes greater than 15 feet in height and a grade steeper than 40% or 2.5:1 (H:V).
- City subdivision rules and regulations for lot grading specify that maximum slope cannot exceed 40% and any filling of lot cannot exceed 5 feet in depth.

Requirements

- Maintenance:
  - Inspect roughened slopes weekly and after rainfall for excessive erosion; and
  - Revegetate as quickly as possible.
- Cost (Source: EPA, 1992):
  - Surface Roughening: Performed at no (e.g., rough grading) to low (e.g., tracking) cost; and
  - Terracing: Average annual cost is $4 per linear foot (2 year useful life).

Limitations

- Roughening is of limited effectiveness on its own, but is used to speed revegetation.

Installation

Graded areas with smooth, hard surfaces give a false impression of "finished grading" and a job well done. It is difficult to establish vegetation on such surfaces due to reduced water infiltration and the potential for erosion. Rough slope surfaces with uneven soil and rocks left in place may appear unattractive or unfinished at first, but they encourage water infiltration, speed the establishment of vegetation, and decreased runoff velocity. Rough, loose soil surfaces give lime, fertilizer, and seed some natural coverage. Niches in the surface provide microclimates which generally provide a cooler and more favorable moisture level than hard flat surfaces; this aids seed germination.

There are different methods for achieving a roughened soil surface on a slope, and the selection of an appropriate method depends upon the type of slope. Roughening methods include stair-step grading, grooving, and tracking. Factors to be considered in choosing a method are slope steepness, mowing requirements, and whether the slope is formed by cutting or filling.

- Disturbed areas which will not require mowing may be stair-step graded, grooved, or left rough after filling.
- Graded areas steeper than 3:1 should be stair-stepped with benches (See Figure 1). The stair stepping will help vegetation become attached and also trap soil eroded from the slopes above. Stair-step grading is particularly appropriate in soils containing large amounts of soft rock. Each "step" catches material which sloughs from above, and provides a level site where vegetation can become established. Stairs should be wide enough to work with standard earth moving equipment.
- Graded areas with slopes greater than 3:1 but less than 2:1 should be roughened before seeding.

- It is important to avoid excessive compacting of the soil surface when scarifying. Tracking with bulldozer treads is preferable to not roughening at all, but is not as effective as other forms of roughening, as the soil surface is severely compacted and runoff is increased. Tracking can be accomplished in a variety of walls, including "track walking," or driving a crawler tractor up and down the slope, in leaving a pattern of cleat imprints parallel to slope contours.

Costs

All of the above are low cost measures.

References

Best Management Practices and Erosion Control Manual for Construction Sites, Flood Control District of Maricopa County, Arizona, September 1992.

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City & County of Honolulu, Revised Ordinances of Honolulu Section 14-14.2 Application for a Grading Permit.

Handbook of Steel, Drainage & Highway Construction, American Iron and Steel Institute, 1983.

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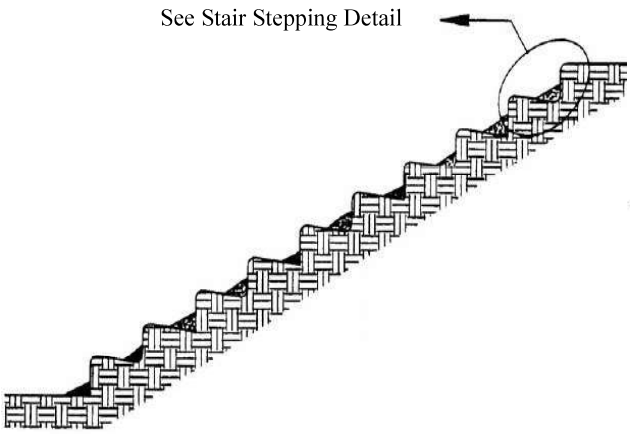
Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group Working Paper, USEPA, April, 1992.

State of Hawaii, Department of Transportation- Highway Division, Storm Water Permanent Best Management Practices Manual, March 2007.

Stormwater Management Water for the Puget Sound Basin, Washington State Department of Ecology, The Technical Manual- February 1992, Publication #91-75.



Stair Step Grading
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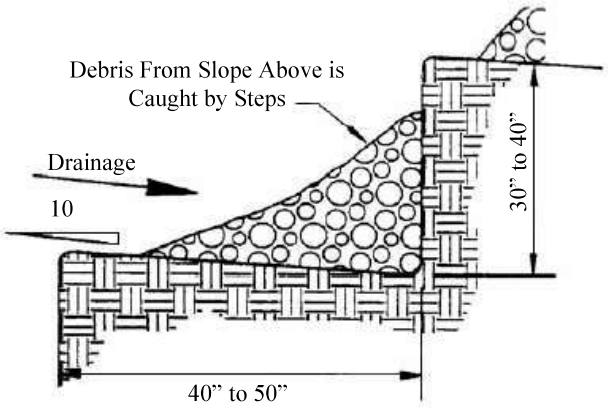

Stair Stepping Detail "A"
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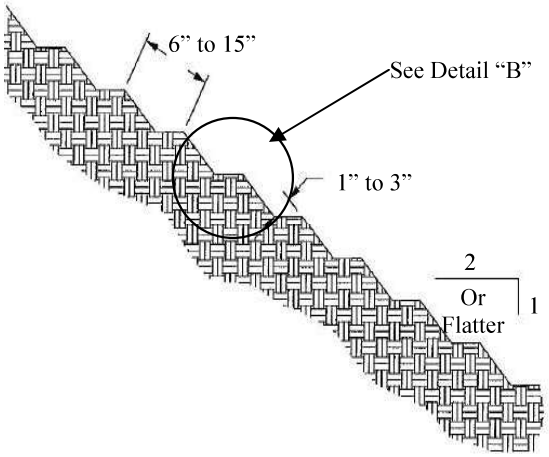

Grooving
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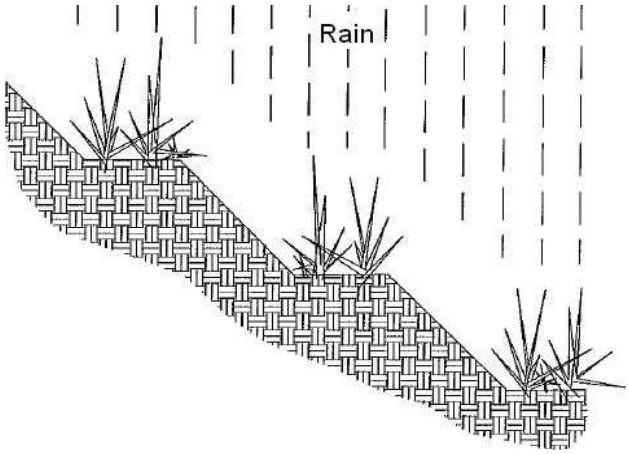

Grooving Detail "B"
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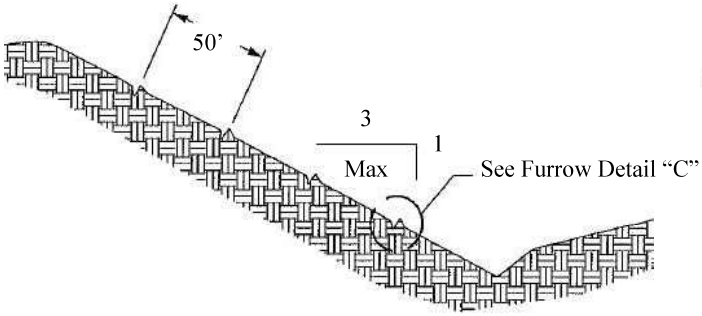
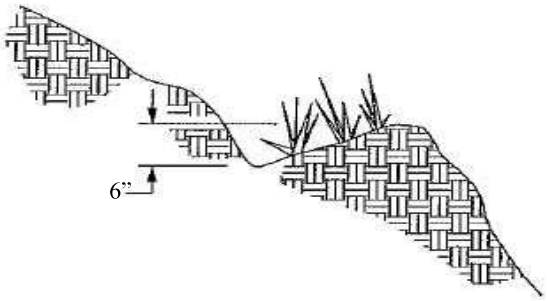


Furrowing
Not to Scale



Furrow Detail "C"
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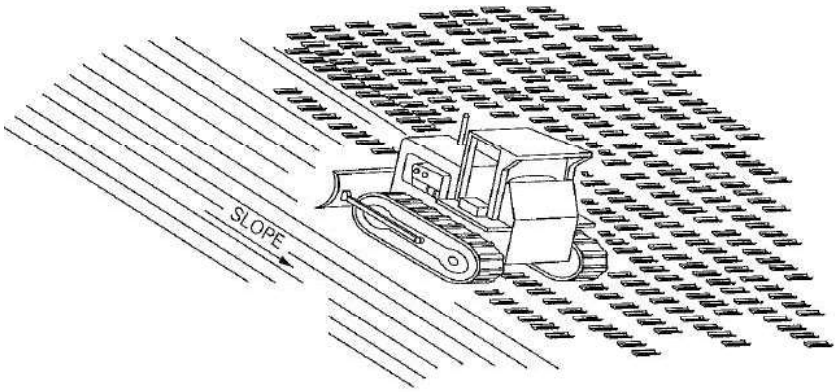
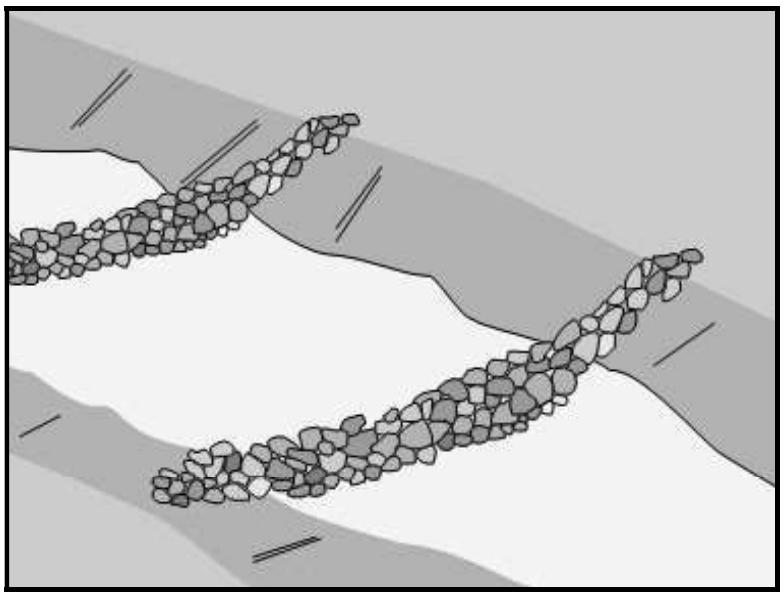


Tracking
Not to Scale

Notes:

1. Surface roughening may be applied to all slopes sleeper than 3:1, and greater than 5 vertical feet.
2. Slope hazard analysis is required for cut and fill slopes greater than 15 feet in height and a grade steeper than 40% or 2.5:1 (H:V).
3. Maximum slope cannot exceed 40% and any filling of lot cannot exceed 5 feet in depth.
4. Stairs should be wide enough to work with standard earth moving equipment.
5. Terraces should be designed by a licensed professional engineer.
6. Graded areas steeper than 3:1 should be stair-stepped with benches (Stair Step Grading).
7. Avoid excessive compacting of the soil surface when scarifying.

Check Dams SE-4



Objectives

EC – Erosion Control	▲
SE – Sediment Control	√
TR – Tracking Control	
WE – Wind Erosion Control	
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents

Sediment	√
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

Description and Purpose

A check dam is a small barrier constructed of rock, gravel bags, sandbags, fiber rolls, or reusable products, placed across a constructed swale or drainage ditch. Check dams reduce the effective slope of the channel, thereby reducing the velocity of flowing water, allowing sediment to settle and reducing erosion.

Suitable Applications

Check dams may be appropriate in the following situations:

- To promote sedimentation behind the dam;
- To prevent erosion by reducing the velocity of channel flow in small intermittent channels and temporary swales;
- In small open channels that drain 10 acres or less;
- In steep channels where storm water runoff velocities exceed 5 ft/s;
- During the establishment of grass linings in drainage ditches or channels; and
- In temporary ditches where the short length of service does not warrant establishment of erosion-resistant linings.

Limitations

- Not to be used in live streams or in channels with extended base flows.
- Not appropriate in channels that drain areas greater than 10 acres.

- Not appropriate in channels that are already grass-lined unless erosion is expected, as installation may damage vegetation.
- Require extensive maintenance following high velocity flows.
- Promotes sediment trapping which can be re-suspended during subsequent storms or removal of the check dam.

Implementation

General

Check dams reduce the effective slope and create small pools in swales and ditches that drain 10 acres or less. Reduced slopes reduce the velocity of storm water flows, thus reducing erosion of the swale or ditch and promoting sedimentation. Use of check dams for sedimentation will likely result in little net removal of sediment because of the small detention time and probable scour during longer storms. Using a series of check dams will generally increase their effectiveness. A sediment trap (SE-3) may be placed immediately upstream of the check dam to increase sediment removal efficiency.

Design and Layout

Check dams work by decreasing the effective slope in ditches and swales. An important consequence of the reduced slope is a reduction in capacity of the ditch or swale. This reduction in capacity should be considered when using this BMP, as reduced capacity can result in overtopping of the ditch or swale and resultant consequences. In some cases, such as a "permanent" ditch or swale being constructed early and used as a "temporary" conveyance for construction flows, the ditch or swale may have sufficient capacity such that the temporary reduction in capacity due to check dams is acceptable. When check dams reduce capacities beyond acceptable limits, there are several options:

- Do not use check dams. Consider alternative BMPs; or
- Increase the size of the ditch or swale to restore capacity.

Maximum slope and velocity reduction is achieved when the toe of the upstream dam is at the same elevation as the top of the downstream dam. The center section of the dam should be lower than the edge sections so that the check dam will direct flows to the center of the ditch or swale.

Check dams are usually constructed of rock, gravel bags, sandbags, and fiber rolls. A number of products manufactured specifically for use as check dams are also being used, and some of these products can be removed and reused. Check dams can also be constructed of logs or lumber, and have the advantage of a longer lifespan when compared to gravel bags, sandbags, and fiber rolls. Straw bales can also be used for check dams and can work if correctly installed; but in practice, straw bale check dams have a high failure rate. Check dams should not be constructed from straw bales or silt fences, since concentrated flows quickly wash out these materials.

Rock check dams are usually constructed of 8 to 12 in. rock. The rock is placed either by hand or mechanically, but never just dumped into the channel. The dam must completely span the ditch or swale to prevent washout. The rock used should be large enough to stay in place given the expected design flow through the channel.

Log check dams are usually constructed of 4 to 6 in. diameter logs. The logs should be embedded into the soil at least 18 in. Logs can be bolted or wired to vertical support logs that have been driven or buried into the soil.

Gravel bag and sandbag check dams are constructed by stacking bags across the ditch or swale, shaped as shown in the drawings at the end of this fact sheet.

Manufactured products should be installed in accordance with the manufacturer's instructions.

If grass is planted to stabilize the ditch or swale, the check dam should be removed when the grass has matured (unless the slope of the swales is greater than 4%).

The following guidance should be followed for the design and layout of check dams:

- Install the first check dam approximately 16 ft. from the outfall device and at regular intervals based on slope gradient and soil type;
- Check dams should be placed at a distance and height to allow small pools to form between each check dam;
- Backwater from a downstream check dam should reach the toes of the upstream check dam;
- A sediment trap provided immediately upstream of the check dam will help capture sediment. Due to the potential for this sediment to be resuspended in subsequent storms, the sediment trap must be cleaned following each storm event;
- High flows (typically a 10-year, 1-hour duration storm or larger) should safely flow over the check dam without an increase in upstream flooding or damage to the check dam;
- Where grass is used to line ditches, check dams should be removed when grass has matured sufficiently to protect the ditch or swale; and
- Gravel bags may be used as check dams with the following specifications:

Materials

Gravel bags used for check dams should conform to the requirements of SE-6, Gravel Bag Berms. Sandbags used for check dams should conform to SE-8, Sandbag Barrier.

Installation

- Rock should be placed individually by hand or by mechanical methods (no dumping of rock) to achieve complete ditch or swale coverage.
- Tightly abut bags and stack according to detail shown in the figure at the end of this section. Gravel bags and sandbags should not be stacked any higher than 3 ft.
- Fiber rolls should be trenched in and firmly staked in place.

Costs

Cost consists of only installation costs if materials are readily available. If material must be imported, costs may increase. For material costs, see SE-5, SE-6, and SE-8.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Replace missing rock, bags, etc. Replace bags that have degraded or have become damaged.
- If the check dam is used as a sediment capture device, sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- If the check dam is used as a grade control structure, sediment removal is not required as long as the system continues to control the grade.
- Remove accumulated sediment prior to permanent seeding or soil stabilization.
- Remove check dam and accumulated sediment when check dams are no longer needed.

References

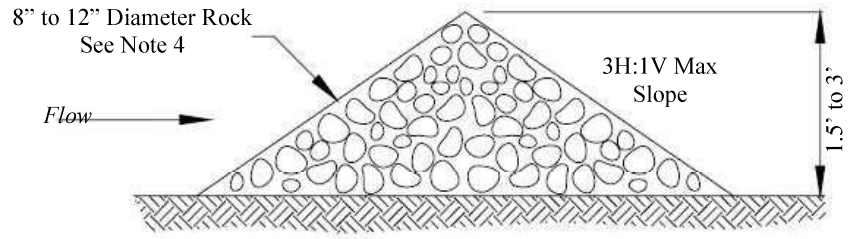
California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Draft - Sedimentation and Erosion Control, and Inventory of Current Practices, USEPA, April 1990.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.



Type "A" Rock Check Dam

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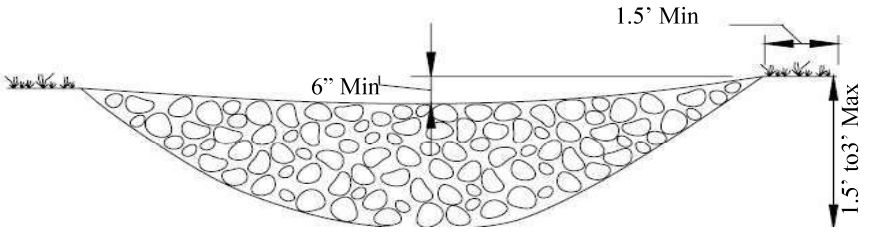

Type "B" Rock Check Dam

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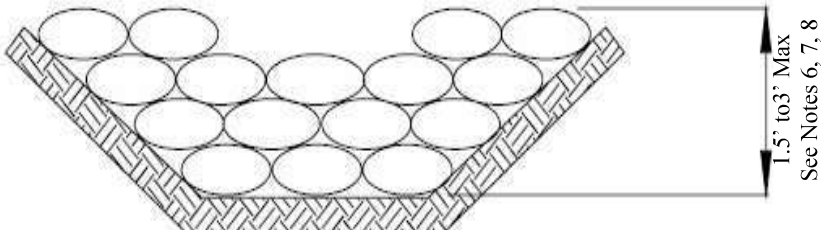


Gravel Bag Check Dam Elevation

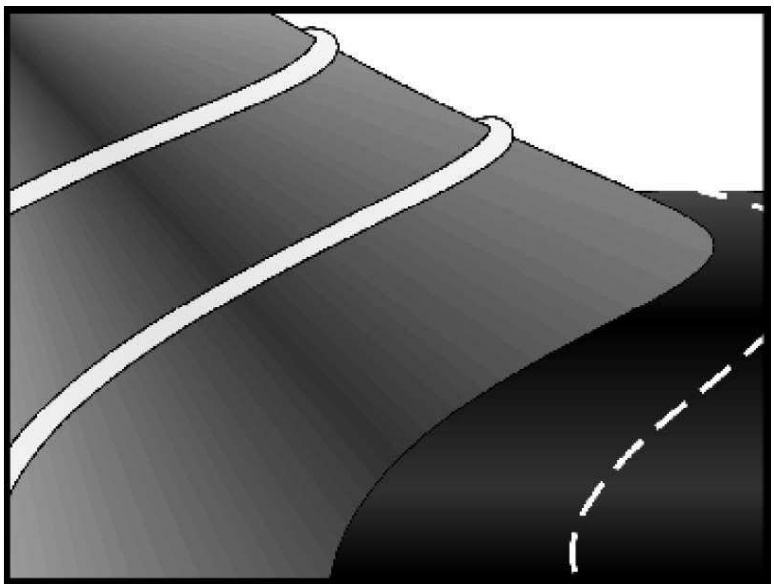
Not to Scale

Notes:

1. Install the first check dam approximately 16 ft. from the outfall device and at regular intervals based on slope gradient and soil type.
2. Check dams may be used in small open channels that drain 10 acres or less.
3. Check dams may be used in steep channels where storm water runoff velocities exceed 5 ft/s.
4. Rock check dams are usually constructed of 8 to 12 in. rock. The rock is placed either by hand or mechanically, but never just dumped into the channel.
5. Log check dams are usually constructed of 4 to 6 in. diameter logs. The logs should be embedded into the soil at least 18 in. Logs can be bolted or wired to vertical support logs that have been driven or buried into the soil.
6. Gravel bags and sandbags should not be stacked any higher than 3 ft.
7. Tightly abut bags.
8. Gravel bags used should conform to the requirements of SE-6. Sandbags used should conform to SE-8.
9. Fiber rolls should be trenched in and firmly staked in place.
10. Manufactured products should be installed in accordance with the manufacturer's instructions. For Design and Layout see SE-4 Check Dams.

Check Dams

Fiber Rolls SE-5



Objectives	
EC – Erosion Control	▲
SE – Sediment Control	√
TR – Tracking Control	
WE – Wind Erosion Control	
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents	
Sediment	√
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

Description and Purpose

A fiber roll consists of straw, flax, mulch, or other similar materials bound into a tight tubular roll. When fiber rolls are placed at the toe and on the face of slopes, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff. By interrupting the length of a slope, fiber rolls can also reduce erosion.

Suitable Applications

Fiber rolls may be suitable:

- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow;
- At the end of a downward slope where it transitions to a steeper slope;
- Along the perimeter of a project;
- As check dams in unlined ditches;
- Down-slope of exposed soil areas; and/or
- Around temporary stockpiles.

Limitations

- Fiber rolls are not effective unless trenched.
- Fiber rolls at the toe of slopes greater than 5:1 (H:V) should be a minimum of 20 in. diameter or installations achieving the same protection (i.e. stacked smaller diameter fiber rolls, etc.).
- Difficult to move once saturated.

- If not properly staked and trenched in, fiber rolls could be transported by high flows.
- Fiber rolls have a very limited sediment capture zone.
- Fiber rolls should not be used on slopes subject to creep, slumping, or landslide.

Implementation

Fiber Roll Materials

- Fiber rolls should be either prefabricated rolls or rolled tubes of erosion control blanket.

Assembly of Field Rolled Fiber Roll

- Roll length of erosion control blanket into a tube of minimum 8 in. diameter.
- Bind roll at each end and every 4 ft. along length of roll with jute-type twine.

Installation

- Locate fiber rolls on level contours spaced as follows:
  - Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.;
  - Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective); and
  - Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
- Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
- Stake fiber rolls into a 2 to 4 in. deep trench with a width equal to the diameter of the fiber roll.
  - Drive stakes at the end of each fiber roll and spaced 4 ft. maximum on center.
  - Use stakes with a minimum length of 24 in.
- If more than one fiber roll is placed in a row, the rolls should be overlapped, not abutted.

Removal

- Fiber rolls are typically left in place.
- If fiber rolls are removed, collect and dispose of sediment accumulation, and fill and compact holes, trenches, depressions or any other ground disturbance to blend with adjacent ground.

Costs

Material costs for fiber rolls range from $20 - $30 per 25 ft. roll in California. Note that Hawaii's unit prices are higher than California's unit prices.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates in the BMP must be periodically

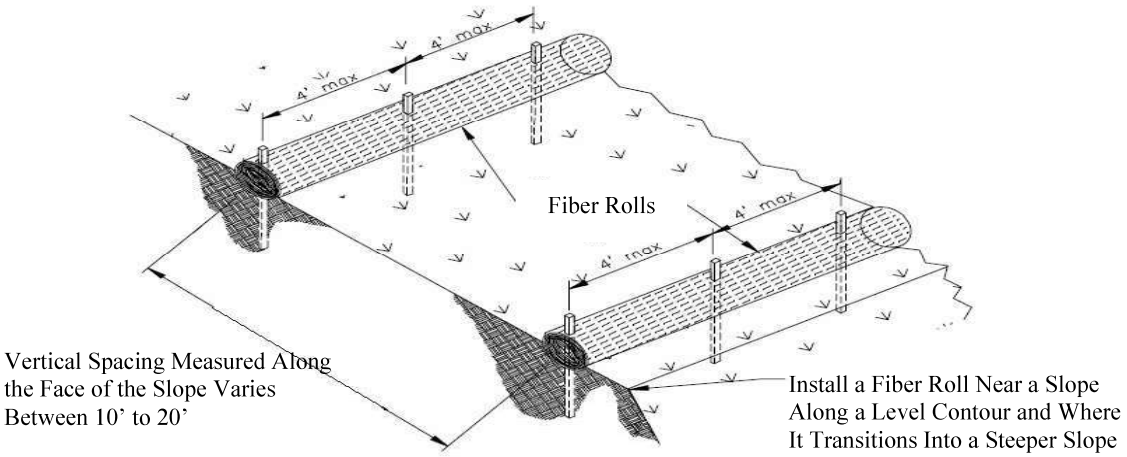
removed in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-half the designated sediment storage depth, usually one-half the distance between the top of the fiber roll and the adjacent ground surface. Sediment removed during maintenance may be incorporated into earthwork on the site of disposed at an appropriate location.

- If fiber rolls are used for erosion control, such as in a mini check dam, sediment removal should not be required as long as the system continues to control the grade. Sediment control BMPs will likely be required in conjunction with this type of application.

References

California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.



Detail "A"
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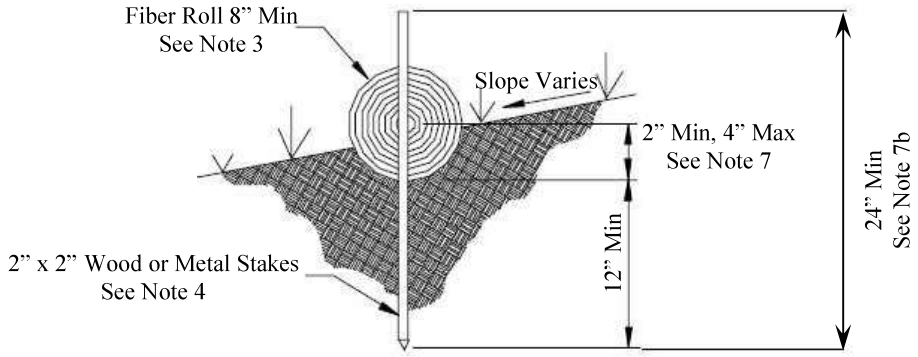
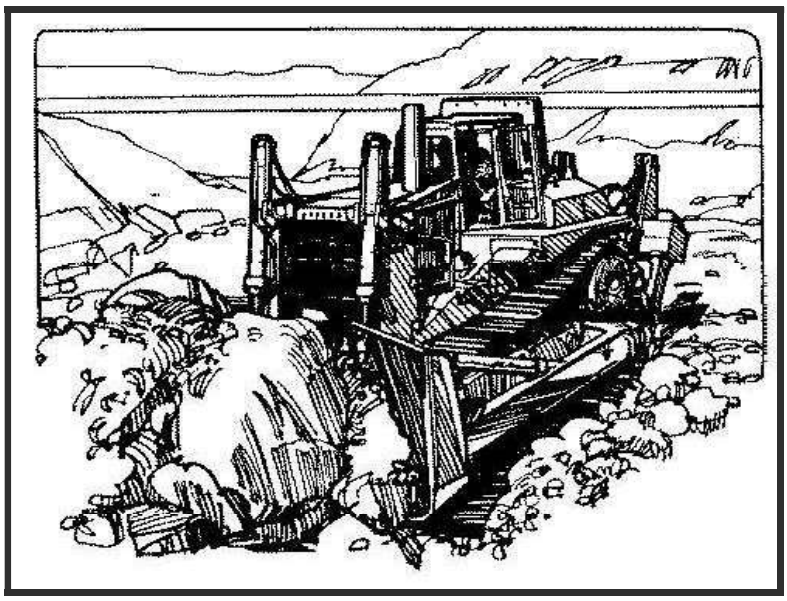


Section A-A
Not to Scale

Notes:
1. Fiber rolls at the toe of slopes greater than 5:1 (H:V) should be a minimum of 20 in. diameter or installations achieving the same protection.
2. Fiber rolls should be either prefabricated rolls or rolled tubes of erosion control blanket.
3. Roll length of erosion control blanket into a tube of minimum 8 in. diameter.
4. Bind roll at each end and every 4 ft. along length of roll with jute-type twine.
5. Locate fiber rolls on level contours spaced as follows:
   a. Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.
   b. Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
   c. Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
6. Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
7. Stake fiber rolls into a 2 to 4 in. deep trench with a width equal to the diameter of the fiber roll.
   a. Drive stakes at the end of each fiber roll and spaced 4 ft. maximum on center.
   b. Use stakes with a minimum length of 24 in.
8. If more than one fiber roll is placed in a row, the rolls should be overlapped, not abutted.

Fiber Rolls

Location of Potential Sources of Sediment SE-12



Objectives	
EC – Erosion Control	▲
SE – Sediment Control	√
TR – Tracking Control	
WE – Wind Erosion Control	
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents	
Sediment	√
Nutrients	√
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	√

Potential Alternatives

None

Description and Purpose

Proper location of potential sources of sediment can reduce the generation of erosion and sediment from construction sites.

Suitable Applications

Locating potential sources of sediment to minimize the discharge of pollutants should be considered on all projects. This is especially true where runoff goes either directly or indirectly to Class 1 or Class AA waters.

Approach

- Sequence construction so that haul roads and stockpiles are buffered with planted areas prior to discharging offsite.
- Separate/Divert offsite runoff where possible, flowing through the construction site without going over bare ground.
- Locate stockpiles away from waterways or low spots.
- Maintain swales and natural drainage ways in vegetated condition.
- Preserve trees and other existing vegetation. Vegetation along the perimeter of the site provides an effective buffer against sediment leaving the construction site.
- Use naturally level area for parking during construction.

Location of Potential Sources of Sediment SE-12

Requirements

- Maintenance:
  - Inspect regularly and after rain for damage; and
  - Provide mulching, grassing other ground cover to reduce bare areas.

Limitations

Prevention should be supplemented with mulching, planting and structural controls such as berms, silt fences, and silt basins.

References

California Storm Water Best Management Practices Handbooks, Construction Activity Best Management Practice Handbook, March 1993, Camp Dresser & McKee, et al. For the California Storm Water Quality Task Force.

City & County of Honolulu, Best Management Practices Manual for Construction Sites in Honolulu, Department of Environmental Services, May 1999.

Erosion and Sediment Control Guide for Hawaii, Marc h1981, USDA Soil Conservation Service.

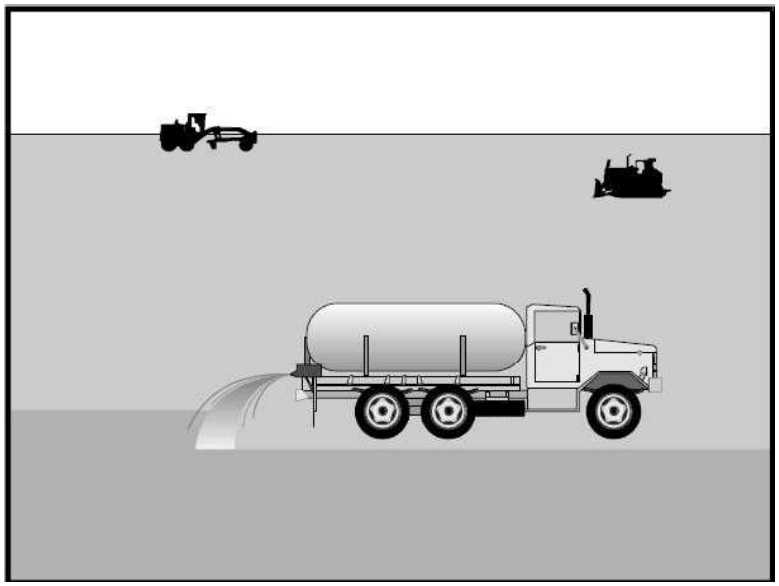
Hawaii Administrative Rules, Title 11, Chapter 54, Water Quality Standards.

Planning and Design Manual for the Control and Erosion, Sediment, and Stormwater; A Cooperative Effort by: USDA Natural Resources Conservation Service, Mississippi Department of Environmental Quality, and the Mississippi Soil & Water Conservation Commission.

Rules Relating to Soil Erosion Standards and Guidelines, April 1999, Department of Planning and Permitting, City and County of Honolulu.

Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices, September 1992, U.S. Environmental Protection Agency.

Wind Erosion Control WE-1



Objectives

EC – Erosion Control	
SE – Sediment Control	▲
TR – Tracking Control	
WE – Wind Erosion Control	√
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents

Sediment	√
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Wind erosion or dust control consists of applying water or other dust palliatives as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

Suitable Applications

Wind erosion control BMPs are suitable during the following construction activities:

- Construction vehicle traffic on unpaved roads,
- Drilling and blasting activities,
- Sediment tracking onto paved roads,
- Soils and debris storage piles,
- Batch drop from front-end loaders,
- Areas with unstabilized soil, and/or
- Final grading/site stabilization.

Limitations

- Watering prevents dust only for a short period and should be applied daily (or more often) to be effective.
- Over watering may cause erosion.
- Oil or oil-treated subgrade should not be used for dust control because the oil may migrate into drainageways and/or seep into the soil.
- Effectiveness depends on soil, temperature, humidity, and wind velocity.

- Chemically treated subgrades may make the soil water repellant, interfering with long-term infiltration and the vegetation/re-vegetation of the site.
- Asphalt, as a mulch tack or chemical mulch, requires a 24-hour curing time to avoid adherence to equipment, worker shoes, etc. Application should be limited because asphalt surfacing may eventually migrate into the drainage system.
- In compacted areas, watering and other liquid dust control measures may wash sediment or other constituents into the drainage system.

Implementation

General

During these dry seasons, construction activities are at their peak, and disturbed and exposed areas are increasingly subject to wind erosion, sediment tracking and dust generated by construction equipment.

Dust control, as a BMP, is a practice that is already in place for many construction activities.

City and County of Honolulu has enacted dust control in the grading permit that cause dust to be transported beyond the construction project property line.

The following are measures that the City may have already implemented as requirements for dust control from contractors:

- Construction and Grading Permits: Require provisions for dust control (ROH Section 14-15.1 (k), 14-15.2 (e)).
- DOH NOI-C for projects greater than 1-acre. Site-specific BMPs Plan: Integrate dust control measures into the plan.

Dust Control Practices

Dust control BMPs generally stabilize exposed surfaces and minimize activities that suspend or track dust particles. The following table shows dust control practices that can be applied to site conditions that cause dust. For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel asphalt surfacing, temporary gravel construction entrances, equipment wash-out areas, and haul truck covers can be employed as dust control applications. Permanent or temporary vegetation and mulching can be employed for areas of occasional or no construction traffic. Preventive measures would include minimizing surface areas to be disturbed, limiting onsite vehicle traffic to 15 mph, and controlling the number and activity of vehicles on a site at any given time.

Dust Control Practices

Site Condition	Permanent Vegetation	Mulching	Wet Suppression (Watering)	Chemical Dust Suppression	Gravel or Asphalt	Silt Fences	Temporary Gravel Construction Entrances/ Equipment Wash Down	Haul Truck Covers	Minimize Extent of Disturbed Area
Disturbed Areas not Subject to Traffic	x	x	x	x	x				x
Disturbed Areas Subjected to Traffic			x	x	x		x		x
Material Stock Pile Stabilization			x	x		x			x
Demolition			x				x	x	
Clearing/ Excavation			x	x		x			x
Truck Traffic on Unpaved Roads			x						
Mud/Dirt Carry Out					x		x		

Additional preventive measures include:

- Schedule construction activities to minimize exposed area (EC-2, Scheduling);
- Quickly stabilize exposed soils using vegetation, mulching, spray-on adhesives, calcium chloride, sprinkling, and stone/gravel layering;
- Identify and stabilize key access points prior to commencement of construction;
- Minimize the impact of dust by anticipating the direction of prevailing winds;
- Direct most construction traffic to stabilized roadways within the project site;
- Water should be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution;
- All distribution equipment should be equipped with a positive means of shutoff;
- Unless water is applied by means of pipelines, at least one mobile unit should be available at all times to apply water or dust palliative to the project;
- If reclaimed waste water is used, the sources and discharge must meet Hawaii Department of Health Wastewater Branch, Guidelines for the Treatment and Use of Recycled Water (2002) water reclamation criteria. Non-potable water should not be conveyed in tanks or drain pipes that will be used to convey potable water and there should be no connection between potable and non-potable supplies. Non-potable tanks, pipes, and other conveyances should be marked, “NON-POTABLE WATER - DO NOT DRINK.”;

- Materials applied as temporary soil stabilizers and soil binders also generally provide wind erosion control benefits;
- Pave or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads;
- Provide covers for haul trucks transporting materials that contribute to dust;
- Provide for wet suppression or chemical stabilization of exposed soils;
- Provide for rapid clean up of sediments deposited on paved roads. Furnish stabilized construction road entrances and vehicle wash down areas;
- Stabilize inactive construction sites using vegetation or chemical stabilization methods; and
- Limit the amount of areas disturbed by clearing and earth moving operations by scheduling these activities in phases.

For chemical stabilization, there are many products available for chemically stabilizing gravel roadways and stockpiles. If chemical stabilization is used, the chemicals should not create any adverse effects on storm water, plant life, or groundwater.

Costs

Installation costs for water and chemical dust suppression are low, but annual costs may be quite high since these measures are effective for only a few hours to a few days.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Check areas protected to ensure coverage.
- Most dust control measures require frequent, often daily, or multiple times per day attention.

References

Best Management Practices and Erosion Control Manual for Construction Sites, Flood Control District of Maricopa County, Arizona, September 1992.

California Air Pollution Control Laws, California Air Resources Board, 1992.

California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Caltrans, Standard Specifications, Sections 10, “Dust Control”; Section 17, “Watering”; and Section 18, “Dust Palliative.”

Hawaii Administrative Rules 11-60.1-33 Air Pollution Control.

Hawaii Department of Health Wastewater Branch, Guidelines for the Treatment and Use of Recycled Water, May 2002.

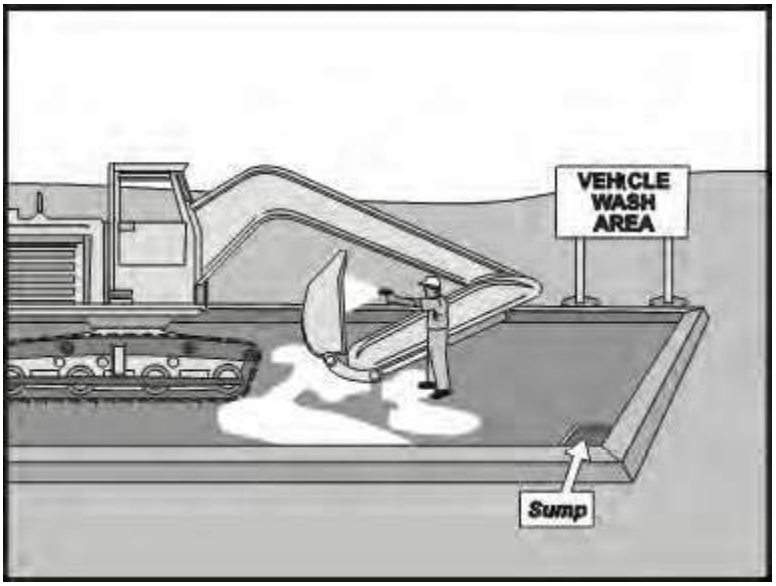
Prospects for Attaining the State Ambient Air Quality Standards for Suspended Particulate Matter (PM10), Visibility Reducing Particles, Sulfates, Lead, and Hydrogen Sulfide, California Air Resources Board, April 1991.

Revised Ordinances of Honolulu Article 15 Grading, Grubbing and Stockpiling.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Revised Ordinances of Honolulu Article 14 Permits, Bonds and Inspection for Grading, Soil Erosion and Sediment Control, 1990 as Amended.

Vehicle and Equipment Cleaning NS-8



Objectives

EC – Erosion Control

SE – Sediment Control

TR – Tracking Control

WE – Wind Erosion Control

NS – Non-Storm Water Management Control √

WM – Waste Management & Materials Pollution Control

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents

Sediment	√
Nutrients	√
Trash	
Metals	
Bacteria	
Oil and Grease	√
Organics	√

Potential Alternatives

None

Description and Purpose

Vehicle and equipment cleaning procedures and practices eliminate or reduce the discharge of pollutants to storm water from vehicle and equipment cleaning operations. Procedures and practices include but are not limited to: using offsite facilities; washing in designated, contained areas only; eliminating discharges to the storm drain by infiltrating the wash water; and training employees and subcontractors in proper cleaning procedures.

Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment cleaning is performed.

Limitations

Even phosphate-free, biodegradable soaps have been shown to be toxic to fish before the soap degrades. Sending vehicles/equipment offsite should be done in conjunction with TR-1, Stabilized Construction Entrance/Exit.

Implementation

Other options to washing equipment onsite include contracting with either an offsite or mobile commercial washing business. These businesses may be better equipped to handle and dispose of the wash waters properly. Performing this work offsite can also be economical by eliminating the need for a separate washing operation onsite.

If washing operations are to take place onsite, then:

- Use phosphate-free, biodegradable soaps;
- Educate employees and subcontractors on pollution prevention measures;
- Do not permit steam cleaning onsite. Steam cleaning can generate significant pollutant concentrates;
- Cleaning of vehicles and equipment with soap, solvents or steam should not occur on the project site unless resulting wastes are fully contained and disposed of. Resulting wastes should not be discharged or buried, and must be captured and recycled or disposed according to the requirements of WM-10, Liquid Waste Management or WM-6, Hazardous Waste Management, depending on the waste characteristics. Minimize use of solvents. Use of diesel for vehicle and equipment cleaning is prohibited;
- All vehicles and equipment that regularly enter and leave the construction site must be cleaned offsite;
- When vehicle and equipment washing and cleaning must occur onsite, and the operation cannot be located within a structure or building equipped with appropriate disposal facilities, the outside cleaning area should have the following characteristics:
  - Located away from storm drain inlets, drainage facilities, or watercourses;
  - Paved with concrete or asphalt and bermed to contain wash waters and to prevent runon and runoff;
  - Configured with a sump to allow collection and disposal of wash water;
  - No discharge of wash waters to storm drains or watercourses; and
  - Used only when necessary.
- When cleaning vehicles and equipment with water:
  - Install high-efficiency water fixtures. Use as little water as possible. High-pressure sprayers may use less water than a hose and should be considered;
  - Use positive shutoff valve to minimize water usage; and
  - Facility wash racks should discharge to a sanitary sewer, recycle system or other approved discharge system and must not discharge to the storm drainage system, watercourses, or to groundwater.

Costs

Cleaning vehicles and equipment at an offsite facility may reduce overall costs for vehicle and equipment cleaning by eliminating the need to provide similar services onsite. When onsite cleaning is needed, the cost to establish appropriate facilities is relatively low on larger, long-duration projects, and moderate to high on small, short-duration projects.

Inspection and Maintenance

Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.

- Inspect BMPs subject to non-storm water discharges daily while non-storm water discharges occur.
- Inspection and maintenance is minimal, although some berm repair may be necessary.
- Monitor employees and subcontractors throughout the duration of the construction project to ensure appropriate practices are being implemented.
- Inspect sump regularly and remove liquids and sediment as needed.
- Prohibit employees and subcontractors from washing personal vehicles and equipment on the construction site.

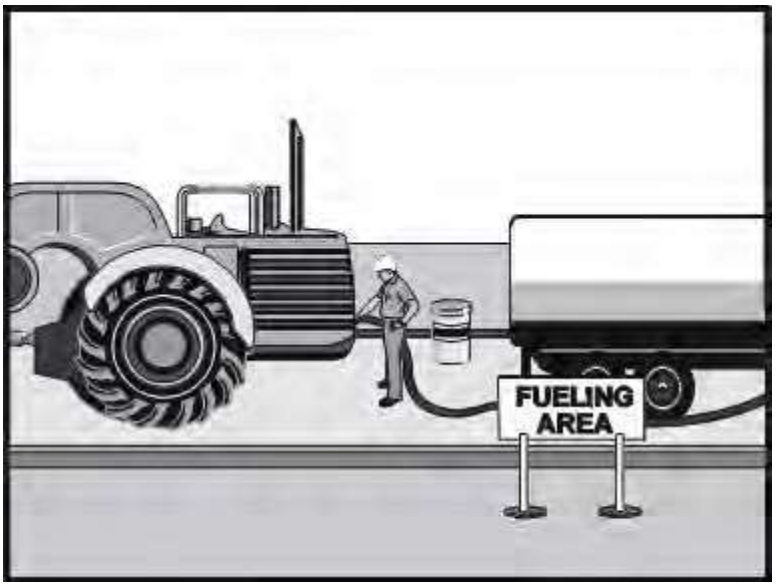
References

California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Swisher, R.D. Surfactant Biodegradation, Marcel Decker Corporation, 1987.

Vehicle and Equipment Fueling NS-9



Objectives

EC – Erosion Control

SE – Sediment Control

TR – Tracking Control

WE – Wind Erosion Control

NS – Non-Storm Water Management Control √

WM – Waste Management & Materials Pollution Control

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents

Sediment

Nutrients

Trash

Metals

Bacteria

Oil and Grease √

Organics

Potential Alternatives

None

Description and Purpose

Vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks, and reduce or eliminate contamination of storm water. This can be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures.

Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment fueling takes place.

Limitations

Onsite vehicle and equipment fueling should only be used where it is impractical to send vehicles and equipment offsite for fueling. Sending vehicles and equipment offsite should be done in conjunction with TR-1, Stabilized Construction Entrance/Exit.

Implementation

- Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.
- Discourage "topping-off" of fuel tanks.
- Absorbent spill cleanup materials and spill kits should be available in fueling areas and on fueling trucks, and should be disposed of properly after use.

- Drip pans or absorbent pads should be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the adsorbent materials promptly and dispose of properly.
- Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and large excavators, most vehicles should be able to travel to a designated area with little lost time.
- Train employees and subcontractors in proper fueling and cleanup procedures.
- When fueling must take place onsite, designate an area away from drainage courses to be used. Fueling areas should be identified in the site-specific BMPs plan.
- Dedicated fueling areas should be protected from storm water runon and runoff, and should be located at least 50 ft. away from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Protect fueling areas with berms and dikes to prevent runon, runoff, and to contain spills.
- Nozzles used in vehicle and equipment fueling should be equipped with an automatic shutoff to control drips. Fueling operations should not be left unattended.
- Use vapor recovery nozzles to help control drips as well as air pollution.
- Federal, state, and local requirements should be observed for any stationary above ground storage tanks.

Costs

- All of the above measures are low cost except for the capital costs of above ground tanks that meet all local environmental, zoning, and fire codes.

Inspection and Maintenance

- Vehicles and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately or problem vehicles or equipment should be removed from the project site.
- Keep ample supplies of spill cleanup materials onsite.
- Immediately clean up spills and properly dispose of contaminated soil and cleanup materials.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

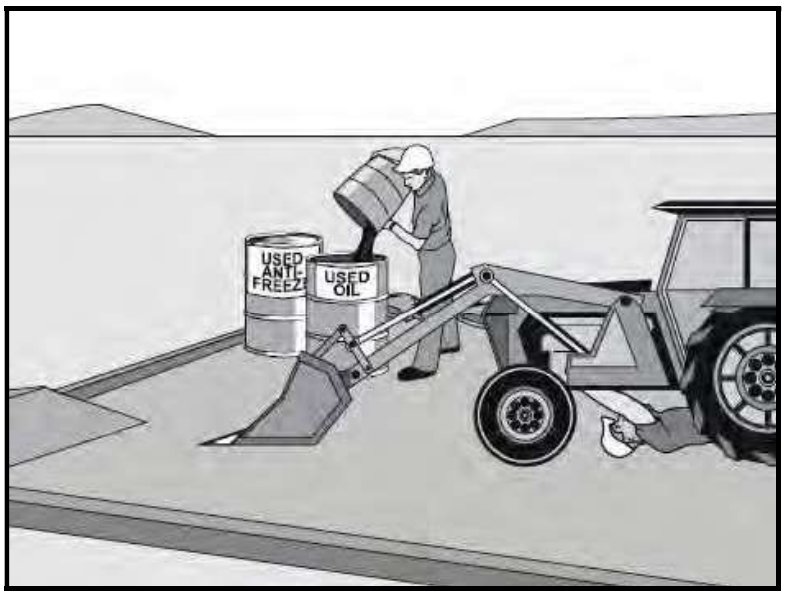
California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Vehicle and Equipment Maintenance NS-10



Objectives	
EC – Erosion Control	
SE – Sediment Control	
TR – Tracking Control	
WE – Wind Erosion Control	
NS – Non-Storm Water Management Control	√
WM – Waste Management & Materials Pollution Control	

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents	
Sediment	
Nutrients	√
Trash	√
Metals	
Bacteria	
Oil and Grease	√
Organics	√

Potential Alternatives

None

Description and Purpose

Prevent or reduce the contamination of storm water resulting from vehicle and equipment maintenance by running a "dry and clean site". The best option would be to perform maintenance activities at an offsite facility. If this option is not available then work should be performed in designated areas only, while providing cover for materials stored outside, checking for leaks and spills, and containing and cleaning up spills immediately. Employees and subcontractors must be trained in proper procedures.

Suitable Applications

These procedures are suitable on all construction projects where an onsite yard area is necessary for storage and maintenance of heavy equipment and vehicles.

Limitations

Onsite vehicle and equipment maintenance should only be used where it is impractical to send vehicles and equipment offsite for maintenance and repair. Sending vehicles/equipment offsite should be done in conjunction with TR-1, Stabilized Construction Entrance/Exit.

Outdoor vehicle or equipment maintenance is a potentially significant source of storm water pollution. Activities that can contaminate storm water include engine repair and service, changing or replacement of fluids, and outdoor equipment storage and parking (engine fluid leaks). For further information on vehicle or equipment servicing, see NS-8, Vehicle and Equipment Cleaning, and NS-9, Vehicle and Equipment Fueling.

Implementation

- Use offsite repair shops as much as possible. These businesses are better equipped to handle vehicle fluids and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate maintenance area.
- If maintenance must occur onsite, use designated areas, located away from drainage courses. Dedicated maintenance areas should be protected from storm water runon and runoff, and should be located at least 50 ft. from downstream drainage facilities and watercourses.
- Drip pans or absorbent pads should be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- All fueling trucks and fueling areas are required to have spill kits and/or use other spill protection devices.
- Use adsorbent materials on small spills. Remove the absorbent materials promptly and dispose of properly.
- Inspect onsite vehicles and equipment daily at startup for leaks, and repair immediately.
- Keep vehicles and equipment clean; do not allow excessive build-up of oil and grease.
- Segregate and recycle wastes, such as greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic and transmission fluids. Provide secondary containment and covers for these materials if stored onsite.
- Train employees and subcontractors in proper maintenance and spill cleanup procedures.
- Drip pans or plastic sheeting should be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than 1 hour.
- For long-term projects, consider using portable tents or covers over maintenance areas if maintenance cannot be performed offsite.
- Consider use of new, alternative greases and lubricants, such as adhesive greases, for chassis lubrication and fifth-wheel lubrication.
- Properly dispose of used oils, fluids, lubricants, and spill cleanup materials.
- Do not place used oil in a dumpster or pour into a storm drain or watercourse.
- Properly dispose of or recycle used batteries.
- Do not bury used tires.
- Repair leaks of fluids and oil immediately.

Listed below is further information if you must perform vehicle or equipment maintenance onsite.

Safer Alternative Products

- Consider products that are less toxic or hazardous than regular products. These products are often sold under an “environmentally friendly” label.
- Consider use of grease substitutes for lubrication of truck fifth-wheels. Follow manufacturers label for details on specific uses.

- Consider use of plastic friction plates on truck fifth-wheels in lieu of grease. Follow manufacturers label for details on specific uses.

Waste Reduction

Parts are often cleaned using solvents such as trichloroethylene, trichloroethane, or methylene chloride. Many of these cleaners are listed in HAR, Title 11, Chapter 261, Hazardous Waste Management Identification and Listing of Hazardous Waste as pollutants. These materials are harmful and must not contaminate storm water. They must be disposed of as a hazardous waste. Reducing the number of solvents makes recycling easier and reduces hazardous waste management costs. Often, one solvent can perform a job as well as two different solvents. Also, if possible, eliminate or reduce the amount of hazardous materials and waste by substituting non-hazardous or less hazardous materials. For example, replace chlorinated organic solvents with non-chlorinated solvents. Non-chlorinated solvents like kerosene or mineral spirits are less toxic and less expensive to dispose of properly. Check the list of active ingredients to see whether it contains chlorinated solvents. The "chlor" term indicates that the solvent is chlorinated. Also, try substituting a wire brush for solvents to clean parts.

Recycling and Disposal

Separating wastes allows for easier recycling and may reduce disposal costs. Keep hazardous wastes separate, do not mix used oil solvents, and keep chlorinated solvents (like,-trichloroethane) separate from non-chlorinated solvents (like kerosene and mineral spirits). Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around. Provide cover and secondary containment until these materials can be removed from the site.

Oil filters can be recycled. Ask your oil supplier or recycler about recycling oil filters.

Do not dispose of extra paints and coatings by dumping liquid onto the ground or throwing it into dumpsters. Allow coatings to dry or harden before disposal into covered dumpsters.

Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Costs

All of the above are low cost measures. Higher costs are incurred to setup and maintain onsite maintenance areas.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-storm water discharges daily while non-storm water discharges occur.
- Keep ample supplies of spill cleanup materials onsite.
- Maintain waste fluid containers in leak proof condition.

- Vehicles and equipment should be inspected on each day of use. Leaks should be repaired immediately or the problem vehicle(s) or equipment should be removed from the project site.
- Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Coastal Nonpoint Pollution Control Program; Program Development and Approval Guidance, Working Group, Working Paper; USEPA, April 1992.

Hawaii Administrative Rules, Title 11, Chapter 54, Water Quality Standards.

Hawaii Administrative Rules, Title 11, Chapter 261, Hazardous Waste management Identification and Listing of Hazardous Waste.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stockpile Management WM-3

Objectives

EC – Erosion Control	
SE – Sediment Control	
TR – Tracking Control	
WE – Wind Erosion Control	
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	√

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents

Sediment	√
Nutrients	√
Trash	√
Metals	√
Bacteria	
Oil and Grease	√
Organics	√

Potential Alternatives

None

Description and Purpose

Stockpiles can be a significant source of erosion and sediment, and measures should be taken to mitigate the potential for nonpoint source pollution. Information to be provided to the City and County of Honolulu, Department of Planning and Permitting, when applying for a stockpiling permit include "a plot plan showing the property lines, easements and setbacks, topography, and the location of the proposed stockpile, quantities, height of stockpile, life of stockpile and source of the material to be stockpiled," and other information as may be required to "control the emission of air-borne dust, drainage runoff or erosion problems."

Stockpile Management procedures and practices are designed to reduce or eliminate air and storm water pollution from stockpiles of soil, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, temporary asphalt (so called "cold mix" asphalt), and pressure treated wood.

Suitable Applications

- Stockpiles for gravel or topsoil in roadway areas.
- Stockpiles for excavated material to be moved to off-site locations.
- Stockpiles of imported material.
- Stockpiles for surcharging to stabilize or consolidate an area.

Limitations

Stockpiles are for temporary storage of materials. Provisions should be made for permanent movement of stockpiled material. Failure to contain stockpiled material may cause downstream erosion or flood damage. Stockpiles not properly stabilized may cause fugitive dust problems.

Keep maximum height of stockpiles no greater than 15 feet high. Anything greater than 15 feet requires 8-foot wide benching (ROH Article 15).

Implementation

- Provide adequate setback from waterways.
- Provide earth dikes or other diversion to keep runoff away from stockpiles.
- Provide silt fences at the toe of the stockpile to mitigate runoff during rain events.
- Cover, grass or provide other stabilization measures.
- Provide adequate setback distance from lot lines.
- Provide silt basins where required.

Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

- Locate stockpiles a minimum of 50 ft. away from concentrated flows of storm water, drainage courses, and inlets.
- Protect all stockpiles from storm water runon using a temporary perimeter sediment barrier such as berms, dikes, fiber rolls, silt fences, sandbag, gravel bags, or straw bale barriers.
- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information, see WE-1, Wind Erosion Control.
- Manage stockpiles of contaminated soil in accordance with WM-7, Contaminated Soil Management.
- Place bagged materials on pallets and under cover.

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials should be protected further as follows:

Soil stockpiles

- During the rainy season, soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- During the non-rainy season, soil stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base

- During the rainy season, the stockpiles should be covered or protected with a temporary perimeter sediment barrier at all times.
- During the non-rainy season, the stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of "cold mix"

- During the rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable material at all times.
- During the non-rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Stockpiles/Storage of pressure treated wood with chromate copper arsenate or ammoniacal copper zinc arsenate

- During the rainy season, treated wood should be covered with plastic or comparable material at all times.
- During the non-rainy season, treated wood should be covered with plastic or comparable material at all times and cold mix stockpiles should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Protection of Active Stockpiles

Active stockpiles of the identified materials should be protected further as follows:

- All stockpiles should be protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.

References

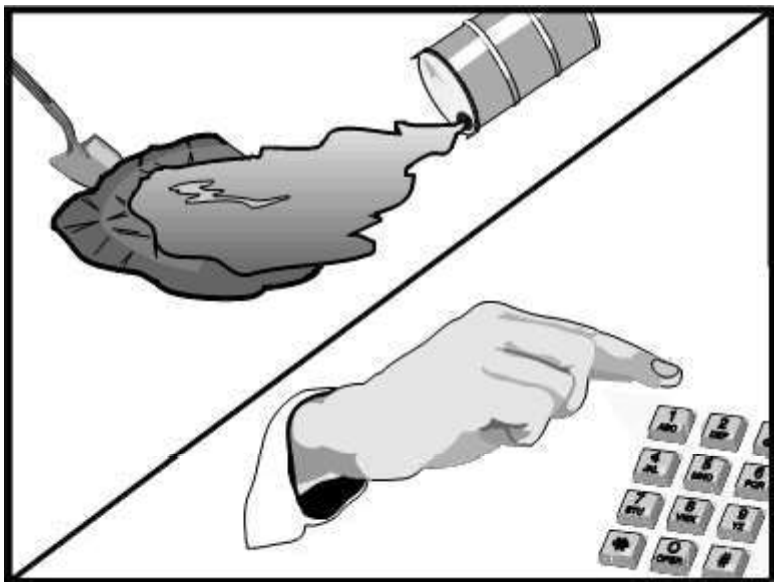
California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Revised Ordinances of Honolulu Chapter 14, Article 14 Permits, Bonds and Inspection for Grading, Soil Erosion and Sediment Control, 1990 as amended.

Revised Ordinances of Honolulu Article 15 Grading, Grubbing and Stockpiling. Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Spill Prevention and Control WM-4



Objectives	
EC – Erosion Control	
SE – Sediment Control	
TR – Tracking Control	
WE – Wind Erosion Control	
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	√

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents	
Sediment	√
Nutrients	√
Trash	√
Metals	√
Bacteria	
Oil and Grease	√
Organics	√

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

This best management practice covers only spill prevention and control. However, WM-1 Materials Delivery and Storage, and WM-2 Material Use, also contain useful information, particularly on spill prevention. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

This BMP is suitable for all construction projects. Spill control procedures are implemented anytime chemicals or hazardous substances are stored on the construction site, including the following materials:

- Soil stabilizers/binders,
- Dust palliatives,
- Herbicides,
- Growth inhibitors,
- Fertilizers,
- Deicing/anti-icing chemicals,
- Fuels,
- Lubricants, and/or
- Other petroleum distillates.

Limitations

- In some cases it may be necessary to use a private spill cleanup company.
- This BMP applies to spills caused by the contractor and subcontractors.
- Procedures and practices presented in this BMP are general. Contractor should identify appropriate practices for the specific materials used or stored onsite.

Implementation

The following steps will help reduce the storm water impacts of leaks and spills:

Education

- Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.
- Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

- Provide a spill prevention control and countermeasure (SPCC) plan when the above ground storage volume is equal to or greater than 1320 gallons (40 CFR 112.1 (d)(2)(ii)).
- To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
- Store hazardous materials and wastes in covered containers and protect from vandalism.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Train employees in spill prevention and cleanup.
- Designate responsible individuals to oversee and enforce control measures.
- Prepare and maintain a spill response plan at the project site.
- Spills should be covered and protected from storm water runon during rainfall to the extent that it doesn't compromise cleanup activities.
- Do not bury or wash spills with water.
- Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
- Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with WM-10 Liquid Waste Management.
- Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.

- Place proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
- Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

- Clean up leaks and spills immediately.
- Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to either a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

Minor Spills

- Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Absorbent materials should be promptly removed and disposed of properly.
- Follow the practice below for a minor spill:
  - Contain the spread of the spill,
  - Recover spilled materials, and
  - Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

- Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.
- Spills should be cleaned up immediately:
  - Contain spread of the spill;
  - Notify the project foreman immediately;
  - If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely;
  - If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil; and
  - If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

- For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps should be taken:
  - Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper City and County officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site;
  - For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802;
  - Notification should first be made by telephone and followed up with a written report;
  - The services of a spills contractor or a HazMat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site; and
  - Other agencies which may need to be consulted include, but are not limited to Hawaii State Department of Health Hazard Evaluation and Emergency Response Office, Honolulu Local Emergency Planning Committee, Honolulu Fire Department, the Coast Guard, Hawaii National Guard, the Department of Transportation, the City and County Police Department, Department of Health Solid Waste & Hazardous Waste Branch, Department of Health Clean Water Branch, Department of Labor & Industrial Relations Hawaii Occupational Safety and Health Administration (HIOSH), etc.

Reporting

- Report significant spills to local agencies, such as the Fire Department; they can assist in cleanup.
- Federal regulations require that any significant oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hours).

Use the following measures related to specific activities:

Vehicle and Equipment Maintenance

- If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runon of storm water and the runoff of spills.
- Regularly inspect onsite vehicles and equipment for leaks and repair immediately.
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Place drip pans or absorbent materials under paving equipment when not in use.
- Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.

- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
- Oil filters disposed of in trashcans or dumpsters can leak oil and pollute storm water. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- If fueling must occur onsite, use designate areas, located away from drainage courses, to prevent the runon of storm water and the runoff of spills.
- Discourage "topping off" of fuel tanks.
- Always use secondary containment, such as a drain pan, when fueling to catch spills/leaks.

Costs

Prevention of leaks and spills is inexpensive. Treatment and/or disposal of contaminated soil or water can be quite expensive.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-storm water discharge daily while non-storm water discharges occur.
- Keep ample supplies of spill control and cleanup materials onsite, near storage, unloading, and maintenance areas.
- Update your spill prevention and control plan and stock cleanup materials as changes occur in the types of chemicals onsite.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

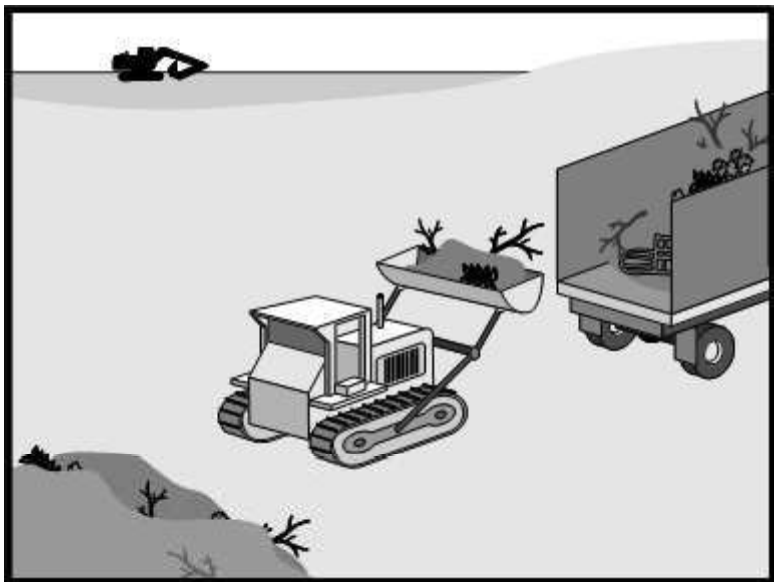
California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Hawaii Administrative Rules 11-262 Hazardous Waste Management Standards Applicable to Generators of Hazardous Waste.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Solid Waste Management WM-5



Objectives	
EC – Erosion Control	
SE – Sediment Control	
TR – Tracking Control	
WE – Wind Erosion Control	
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	√

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents	
Sediment	√
Nutrients	√
Trash	√
Metals	√
Bacteria	
Oil and Grease	√
Organics	√

Potential Alternatives

None

Description and Purpose

Prevent or reduce discharge of pollutants to the land, groundwater, in storm water from solid waste or construction and demolition (C&D) waste by providing designated waste collection areas, separate containers for recyclable waste materials, timing collection of waste and recyclable materials with each stage of the construction or demolition project, and properly training subcontractors and employees.

Table 4-3 Quick Reference – Disposal Alternatives include guidance on solid waste reuse, recycling, and disposal by select activities.

Suitable Applications

Solid waste is one of the major pollutants resulting from both construction and demolition activities that also contribute to illegal dumping.

Construction and demolition (C&D) waste is defined as solid, largely inert waste, resulting from the demolition or razing of buildings, of roads, or other structures, such as concrete, brick, bituminous concrete, wood, and masonry, composition roofing, and roofing paper, steel, plaster, and minor amount of other metals such as copper. Cleanup materials contaminated with hazardous substances, friable asbestos, waste paint, solvents, sealers, adhesives, or similar materials are not acceptable at C&D disposal sites.

One "subset" of C&D waste deserves special mention, because large volumes of these wastes are generated on construction

demolition sites. Inert fill materials should not be commingled with other C&D waste, especially if intended for reuse.

Inert fill material is defined as earth, soil, rock, rock-like material such as cured asphalt, brick, and clean concrete (with no exposed steel-reinforcing rod) less than eight inches in its greatest dimension, except as specified by a registered soils engineer. The fill material shall not contain vegetation or organic material, or other solid waste.

Inert fill materials are wastes that essentially will not decompose or produce leachate or other releases of environmental concern, nor be contaminated with items of concern like asbestos, and lead-based paint (LBP). Place qualifying as inert fill material according to both City and County and State DOH regulations have reuse potential. County and State laws prohibit other types and volumes of solid waste from job-sites from being used as fill material; instead, we must transport for disposal to a DOH-permitted landfill.

Recycling, Reuse Encouraged Over Disposal

Some C&D waste generated on-site should be recycled or reused whenever and wherever possible. These wastes include but are not limited to:

- Recycling:
  - Asphalt pavement,
  - Cardboard,
  - Concrete aggregate (no LBP, asbestos-free),
  - Electronic equipment – wiring, fluorescent light ballasts and tubes,
  - Excavated rock,
  - Excavated soil (uncontaminated),
  - Freon from appliances – air conditioners and refrigerators,
  - Glass,
  - Green waste – yard and tree trimmings, trunks, limbs,
  - Metals, ferrous – steel from appliances, concrete rebar,
  - Metals, non-ferrous – aluminum brass, copper, stainless-steel,
  - Used tires, and/or
  - Wood and lumber (untreated, no LBP, asbestos-free) – esp. pallets.
- Reuse:
  - Reusable building materials for self-help housing projects,
  - Small appliances and other used household items (e.g., fixtures), and/or
  - Used furniture.

The State DOH, Office of Solid Waste Management has developed a guide, "Minimizing Construction and Demolition Waste," especially for contractors, architects, builders, and design professionals. The DOH guide features:

- A checklist on how to start managing C&D waste,
- A list of available and DOH-permitted recycling and disposal facilities which can handle or process recyclable and reusable materials, and

- A brief regulatory overview of C&D waste and how important it is to recycle.

Free copies of the DOH guide can be obtained by calling 586-4226.

In addition, the State Department of Business and Economic Development & Tourism (DBEDT), Clean Hawaii Center has a specialized waste management guide for contractors supervising construction and demolition activities. "A Contractor's Waste Management Guide: Best management Practices and Tools for Job Site Recycling and Waste Reduction in Hawaii" features a Solid Waste Management Checklist offering practical tips on:

- How to build with used building materials,
- What recycled-content materials to consider in the design phase,
- Deciding where best to use recycled-content materials (e.g., use cold-formed steel framing with a minimum of 25 percent recycle content, and assemble with good quality connectors to prevent corrosion),
- Choosing the most helpful suppliers,
- Training subcontractors to reduce waste,
- What job-site operations most effectively reduced job-site waste volumes,
- Specific, environmentally-friendly ways on controlling termites, and
- How to reduce framing waste using advanced-framing techniques.

The DBEDT manual also offers detailed, helpful tips on managing hazardous wastes (see page 1–17) and a "General Practices Checklist" for training subcontractors and employees how to maximize opportunities for on-site waste reduction recycling. For a free copy of the guide, contact DBEDT at 587-3802.

The DBEDT emphasizes recycling and waste reduction as environmentally-responsible job-site waste management practices. And depending upon the type and scale of your project, implementing sound solid waste reduction practices may reduce your overall disposal costs. Other best management practices related to solid waste include: on-site separation of recyclable C&D materials from wastes intended for disposal; minimizing drive-by contamination of recycling bins, and shielding them from the weather; ensuring all refuse is promptly removed; ascertaining waste types generated at various stages of the project, and scheduling timed, specialized pickups for those recyclable materials. These solid waste management practices will mitigate health and safety hazards, enhance the appearance of the construction area, and help reduce waste management costs.

Limitations

Temporary stockpiling of certain construction wastes may not necessitate stringent drainage related controls during the non-rainy season or in desert areas with low rainfall.

Implementation

The following steps will help keep a clean site and reduce pollution to storm water, to the land and protect groundwater resources:

- Select designated waste collection areas onsite;
- Inform trash-hauling contractors that you will accept only watertight dumpsters for onsite use. Inspect dumpsters for leaks and repair any dumpster that is not watertight;

- Locate containers in a covered area or in a secondary containment;
- Provide an adequate number of containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it is windy;
- Plan for additional containers and more frequent pickup during the demolition phase of construction;
- Collect site trash daily, especially during rainy and windy conditions;
- Remove this solid waste promptly since erosion and sediment control devices tend to collect litter;
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris;
- Do not hose out dumpsters on the construction site. Leave dumpster cleaning to the trash hauling contractor;
- Arrange for regular waste collection before containers overflow;
- Clean up immediately if a container does spill; and
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas.

Education

- Have the contractor's superintendent or representative oversee and enforce proper solid waste management procedures and practices.
- Instruct employees and subcontractors on identification of solid waste and hazardous waste.
- Educate employees and subcontractors on solid waste storage and disposal procedures.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Require that employees and subcontractors follow solid waste handling and storage procedures.
- Prohibit littering by employees, subcontractors, and visitors.
- Minimize production of solid waste materials wherever possible.

Collection, Storage, and Disposal

- Littering on the project site should be prohibited.
- To prevent clogging of the storm drainage system, litter and debris removal from drainage grates, trash racks, and ditch lines should be a priority.
- Trash receptacles should be provided in the contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.
- Litter from work areas within the construction limits of the project site should be collected and placed in watertight dumpsters at least weekly, regardless of whether the litter was generated by the contractor, the public, or others. Collected litter and debris should not be placed in or next to drain inlets, storm water drainage systems, or watercourses.

- Dumpsters of sufficient size and number should be provided to contain the solid waste generated by the project.
- Full dumpsters should be removed from the project site and the contents should be disposed of by the trash hauling contractor.
- Construction debris and waste should be removed from the site biweekly or more frequently as needed.
- Construction material visible to the public should be stored or stacked in an orderly manner.
- Storm water runon should be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.
- Solid waste storage areas should be located at least 50 ft. from drainage facilities and watercourses and should not be located in areas prone to flooding or ponding.
- Except during fair weather, construction and highway planting waste not stored in watertight dumpsters should be securely covered from wind and rain by covering the waste with tarps or plastic.
- Segregate potentially hazardous waste from non-hazardous construction site waste.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- For disposal of hazardous waste, see WM-6, Hazardous Waste Management. Have hazardous waste hauled to an appropriate disposal and/or recycling facility.
- Salvage or recycle useful vegetation debris, packaging and surplus building materials when practical. For example, trees and shrubs from land clearing can be used as a brush barrier, or converted into wood chips, then used as mulch on graded areas. Wood pallets, cardboard boxes, and construction scraps can also be recycled.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-storm water discharge daily while non-storm water discharges occur.
- Inspect construction waste area regularly.
- Arrange for regular waste collection.
- Inspect construction waste and recycling areas regularly for signs of contamination.
- State collection of recycled materials according to each phase of the construction/demolition project.
- Also, refer to DBEDT's BMP guide outlined in this section.

References

A Contractor's Waste Management Guide: Best Management Practices and Tools for Job Site Recycling and Waste Reduction in Hawaii, DBEDT, January 1999.

Best Management Practices and Erosion Control Manual for Construction Sites; Flood Control District of Maricopa County, AZ, September 1992.

California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Minimizing Construction and Demolition Waste: A C&D Waste Management Guide, First Edition, DOH, February 1998.

Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity, 430/9-73-007, USEPA, 1973.

Residential Construction Waste Management: A Builder's Field Guide (How to Save Money and Landfill Space), NAHB Research Center, 1997.

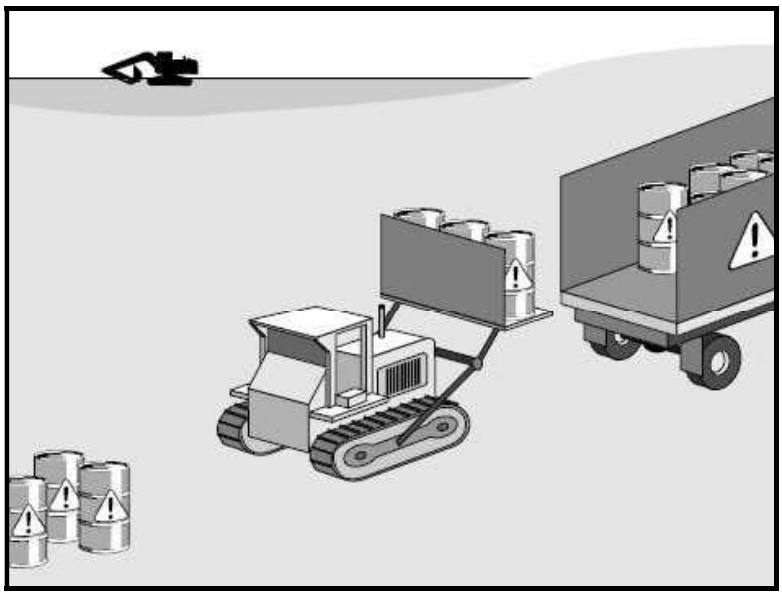
State of Hawaii Department of Business and Economic Development & Tourism http://www.hawaii.gov/dbedt.

State of Hawaii Department of Health Office of Solid Waste Management Branch http://www.hawaii.gov/health/about/environmental/waste/SW/index.html.

Storm Water Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Hazardous Waste Management WM-6



Objectives

EC – Erosion Control	
SE – Sediment Control	
TR – Tracking Control	
WE – Wind Erosion Control	
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	√

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents

Sediment	
Nutrients	√
Trash	√
Metals	√
Bacteria	√
Oil and Grease	√
Organics	√

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants to storm water from hazardous waste through proper material use, waste disposal, and training of employees and subcontractors.

Suitable Applications

This best management practice (BMP) applies to all construction projects. Hazardous waste management practices are implemented on construction projects that generate waste from the use of:

- Petroleum Products,
- Concrete Curing Compounds,
- Palliatives,
- Septic Wastes,
- Stains,
- Wood Preservatives,
- Asphalt Products,
- Pesticides,
- Acids,
- Paints,
- Solvents,
- Roofing Tar, and/or
- C&D Wastes, including clean-up materials, contaminated with hazardous substances (for more information on C&D wastes, see WM-5 Solid Waste Management).

In addition, sites with existing structures may contain wastes, which must be disposed of in accordance with Federal and State regulations. These wastes include:

- Sandblasting grit or chips contaminated with lead-, cadmium-, or chromium-based paints, as regulated under the State of Hawaii Department of Health Noise Radiation and Indoor Air Quality Branch (NRIAQ) and Federal Clean Air Act;
- Asbestos as regulated under the State of Hawaii Department of Health Noise Radiation and Indoor Air Quality Branch (NRIAQ) and Federal Clean Air Act; and
- PCBs (particularly in older transformers) as regulated under the Federal Toxic Substances Control Act (TSCA).

To determine if a material or item is potentially hazardous waste:

- Check label and shipping papers;
- Look for words such as hazardous, danger, caustic or corrosive (dissolves skin, metal or other materials); flammable or ignitable (catches fire easily); carcinogenic (causes cancer); and toxic or poisonous (harms people and animals). A list of hazardous waste and criteria are found in Hawaii Administrative Rules (HAR) Title 11, Chapter 261 Hazardous Waste Management Identification and Listing of Hazardous Waste;
- Check the material safety data sheet (MSDS) the manufacturer must prepare for the product. Ask your supplier for a copy; and/or
- For questions and additional information including fact sheets and flyers, call the DOH, Hazardous Waste Program Office at 586-4226.

Limitations

- Hazardous waste that cannot be reused or recycled must be disposed of by a professional hazardous waste hauler.
- Nothing in this BMP relieves the contractor from responsibility for compliance with federal and state laws regarding storage, handling, transportation, and disposal of hazardous wastes.
- This BMP does not cover aerially deposited lead (ADL) soils. For ADL soils refer to WM-7, Contaminated Soil Management.

Implementation

The following steps will help reduce storm water and land pollution concerns resulting from hazardous wastes:

Material Use

- Wastes should be stored in sealed containers constructed of a suitable material.
- All hazardous waste should be stored, transported, and disposed as required.
- Waste containers should be stored in temporary containment facilities that should comply with the following requirements:
    - Temporary containment facility should provide for a spill containment volume equal to 1.5 times the volume of all containers able to contain precipitation from a 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest tank within its boundary, whichever is greater;

  - Temporary containment facility should be impervious to the materials stored there for a minimum contact time of 72 hours;
  - Temporary containment facilities should be maintained free of accumulated rain water and spills. In the event of spills or leaks, accumulated rain water and spills should be placed into drums after each rainfall. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. Non-hazardous liquids should be sent to an approved disposal site;
  - Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access;
  - Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility; and
  - Throughout the rainy season, temporary containment facilities should be covered during non-working days, and prior to rain events. Covered facilities may include use of plastic tarps for small facilities or constructed roofs with overhangs.
- Drums should not be overfilled and wastes should not be mixed.
- Unless watertight, containers of dry waste should be stored on pallets.
- Do not over-apply herbicides and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over application is expensive and environmentally harmful. Apply surface dressings in several smaller applications, as opposed to one large application. Allow time for infiltration and avoid excess material being carried offsite by runoff. Do not apply these chemicals just before it rains. People applying restricted-use pesticides must be certified in accordance with federal and state (HAR 4-6-66 Pesticide, section 4-66-32 restricted use pesticides) regulations.
- Paint brushes and equipment for water and oil based paints should be cleaned within a contained area and should not be allowed to contaminate site soils, watercourses, or drainage systems. Waste paints, thinners, solvents, residues, and sludges that cannot be recycled or reused should be disposed of as hazardous waste. When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths should be disposed of as solid waste.
- Do not clean out brushes or rinse paint containers into the dirt, street, gutter, storm drain, or stream. "Paint out" brushes as much as possible. Rinse water-based paints to the sanitary sewer. Filter and reuse thinners and solvents. Dispose of excess oil-based paints and sludge as hazardous waste.
- Consult the "Hazardous Waste management Checklist" within the State Department of Business and Economic Development and Tourism (DBEDT's) "A Contractor's Waste Management Guide: Best Management Practices and Tools for Job Site Recycling and Waste Reduction in Hawaii" for additional tips and BMPs on selecting and purchasing lesser-toxic building products.

The DBEDT manual also offers detailed, helpful tips on solid waste management (see WM-5) and a "General Practices Checklist" for training subcontractors and employees how to maximize opportunities for on-site waste reduction and recycling. For a free copy of the guide, contact DBEDT at 587-3802.

- The following actions should be taken with respect to temporary contaminant:
  - Ensure that adequate hazardous waste storage volume is available;
  - Ensure that hazardous waste collection containers are conveniently located;
  - Designate hazardous waste storage areas onsite away from storm drains or watercourses and away from moving vehicles and equipment to prevent accidental spills;
  - Minimize production or generation of hazardous materials and hazardous waste on the job site;
  - Use containment berms in fueling and maintenance areas and where the potential for spills is high;
  - Segregate potentially hazardous waste from non-hazardous construction site debris;
  - Keep liquid or semi-liquid hazardous waste in appropriate containers (closed drums or similar) and under cover;
  - Clearly label all hazardous waste containers with the waste being stored and the date of accumulation;
  - Place hazardous waste containers in secondary containment;
  - Do not allow potentially hazardous waste materials to accumulate on the ground;
  - Do not mix wastes;
  - Use all of the product before disposing of the container; and
  - Do not remove the original product label; it contains important safety and disposal information.

Waste Recycling Disposal

- Select designated hazardous waste collection areas onsite.
- Hazardous materials and wastes should be stored in covered containers and protected from vandalism.
- Place hazardous waste containers in secondary containment.
- Do not mix wastes, this can cause chemical reactions, making recycling impossible and complicating disposal.
- Recycle any useful materials such as used oil or water-based paint.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Arrange for regular waste collection before containers overflow.
- Make sure that hazardous waste (e.g., excess oil-based paint and sludge) is collected, removed, and disposed of only at authorized disposal areas.
- Consult the "Hazardous Waste Management Checklist" within the State DBEDT's "A Contractor's Waste Management Guide: Best Management Practices and Tools for Job Site Recycling and Waste Reduction in Hawaii" for additional tips and BMPs on how to reduce hazardous waste volumes, and how to best determine if a material or item is a potentially hazardous waste.

Disposal Procedures

- Waste should be disposed of by a professional hazardous waste transporter at an authorized and licensed disposal facility or recycling facility utilizing properly completed Uniform Hazardous Waste Manifest forms.
- A laboratory following EPA methods and standards should sample waste to determine the appropriate disposal facility.
- Properly dispose of rainwater in secondary containment that may have mixed with hazardous waste.

Education

- Train employees and subcontractors in proper hazardous waste management. Consult the "Hazardous Waste management Checklist" within the State DBEDT's "A Contractor's Waste Management Practices and Tools for Job Site Recycling and Waste Reduction in Hawaii" for tips and other useful resources available to help you train your employees and subcontractors.
- Educate employees and subcontractors on hazardous waste storage and disposal procedures.
- Educate employees and subcontractors on potential dangers to humans and the environment from hazardous wastes.
- Instruct employees and subcontractors on safety procedures for common construction site hazardous wastes.
- Instruct employees and subcontractors in identification of hazardous and solid waste.
- Hold regular meetings to discuss and reinforce hazardous waste management procedures (incorporate into regular safety meetings).
- The contractor's superintendent or representative should oversee and enforce proper hazardous waste management procedures and practices.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.
- Warning signs should be placed in areas recently treated with chemicals.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- If a container does spill, clean up immediately.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-storm water discharge daily while non-storm water discharges occur.
- Hazardous waste should be regularly collected.

- A foreman or construction supervisor should monitor onsite hazardous waste storage and disposal procedures.
- Waste storage areas should be kept clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored.
- Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.
- Hazardous spills should be cleaned up and reported in conformance with the applicable Material Safety Data Sheet (MSDS) and the instructions posted at the project site.
- The National Response Center, at (800) 424-8802, should be notified of spills of federal reportable quantities in conformance with the requirements in 40 CFR parts 110, 117, and 302.
- A copy of the hazardous waste manifests should be provided.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Hawaii Administrative Rules, Title 4, Chapter 66, Pesticides.

Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity, 430/9-73-007, USEPA, 1973.

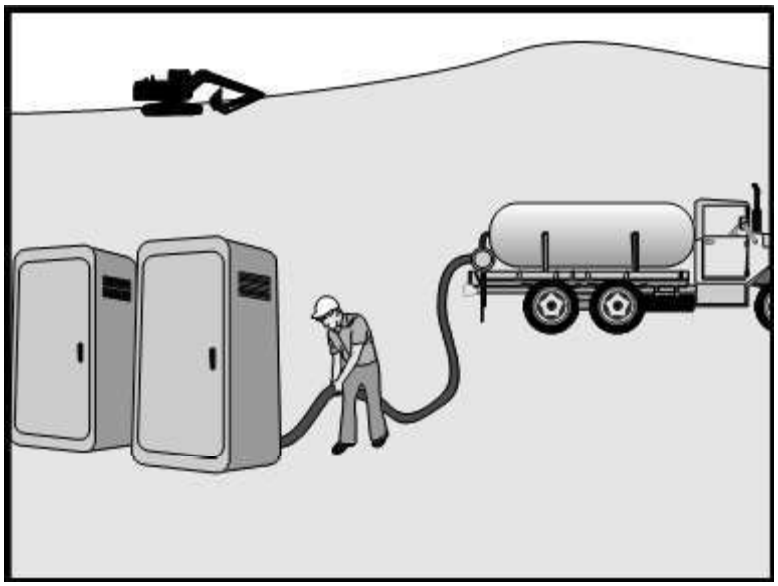
State of Hawaii Department of Business and Economic Development & Tourism http://www.hawaii.gov/dbedt.

State of Hawaii Department of Health Office of Solid Waste Management Branch http://www.hawaii.gov/health/about/environmental/waste/SW/index.html.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Sanitary/Septic Waste Management WM-9



Objectives	
EC – Erosion Control	
SE – Sediment Control	
TR – Tracking Control	
WE – Wind Erosion Control	
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	√

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents	
Sediment	
Nutrients	√
Trash	√
Metals	
Bacteria	√
Oil and Grease	
Organics	√

Potential Alternatives

None

Description and Purpose

Proper sanitary and septic waste management prevent the discharge of pollutants to storm water from sanitary and septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal.

Suitable Applications

Sanitary septic waste management practices are suitable for use at all construction sites that use temporary or portable sanitary and septic waste systems.

Limitations

None identified.

Implementation

Sanitary or septic wastes should be treated or disposed of in accordance with State and City requirements. In many cases, one contract with a local facility supplier will be all that it takes to make sure sanitary wastes are properly disposed.

Storage and Disposal Procedures

- Temporary sanitary facilities should be located away from drainage facilities, watercourses, and from traffic circulation. When subjected to high winds or risk of high winds, temporary sanitary facilities should be secured to prevent overturning.
- Wastewater should not be discharged or buried within the project site.
- Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, should comply with the State of Hawaii

Department of Health Wastewater Branch, and City and County Department of Planning & Permitting requirements.

- Only reputable, professional sanitary and septic waste haulers should be used.
- Sanitary facilities should be located in a convenient location.
- Untreated raw wastewater should never be discharged or buried.
- If using an onsite disposal system (OSDS), such as a septic system, State of Hawaii Department of Health Wastewater Branch requirements must be followed.
- Temporary septic systems should treat wastes to appropriate levels before discharging.
- Temporary sanitary facilities that discharge to the sanitary sewer system should be properly connected to avoid illicit discharges.
- Sanitary and septic facilities should be maintained in good working order by a professional service.
- Regular waste collection by a professional hauler should be arranged before facilities overflow.

Education

- Educate employees, subcontractors, and suppliers on sanitary and septic waste storage and disposal procedures.
- Educate employees, subcontractors, and suppliers of potential dangers to humans and the environment from sanitary and septic wastes.
- Instruct employees, subcontractors, and suppliers in identification of sanitary and septic waste.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Arrange for regular waste collection.
- If high winds are expected, portable sanitary facilities must be secured with spikes or weighed down to prevent over turning.

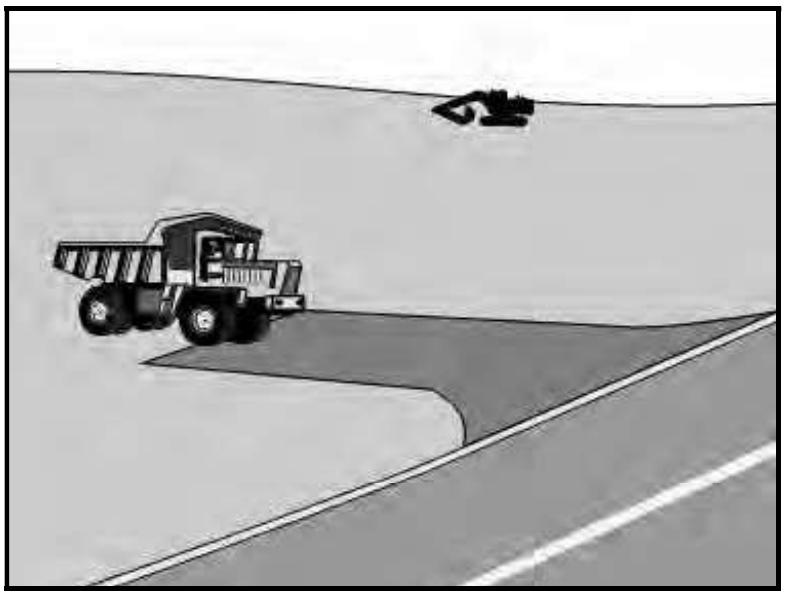
References

California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stabilized Construction Entrance/Exit TR-1



Objectives	
EC – Erosion Control	▲
SE – Sediment Control	▲
TR – Tracking Control	√
WE – Wind Erosion Control	
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents	
Sediment	√
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Suitable Applications

Use at construction sites:

- Where dirt or mud can be tracked onto public roads,
- Adjacent to water bodies,
- Where poor soils are encountered, and/or
- Where dust is a problem during dry weather conditions.

Limitations

- Entrances and exits require periodic top dressing with additional stones.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way.
- Entrances and exits should be constructed on level ground only.
- Stabilized construction entrances are rather expensive to construct and when a wash rack is included, a sediment trap of some kind must also be provided to collect wash water runoff.

Implementation

General

A stabilized construction entrance is a pad of aggregate underlain with filter cloth located at any point where traffic will be entering or leaving a construction site to or from a public right of way, street, alley, sidewalk, or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights of way or streets. Reducing tracking of sediments and other pollutants onto paved roads helps prevent deposition of sediments into local storm drains and production of airborne dust.

Where traffic will be entering or leaving the construction site, a stabilized construction entrance should be used. NPDES permits require that appropriate measures be implemented to prevent tracking of sediments onto paved roadways, where a significant source of sediments is derived from mud and dirt carried out from unpaved roads and construction sites.

Stabilized construction entrances are moderately effective in removing sediment from equipment leaving a construction site. The entrance should be built on level ground. Advantages of the Stabilized Construction Entrance/Exit are that it does remove some sediment from equipment and serves to channel construction traffic in and out of the site at specified locations. Efficiency is greatly increased when a washing rack is included as part of a stabilized construction entrance/exit.

See the City and County of Honolulu's "Rules Relating to Soil Erosion Standards and Guidelines," for additional information.

Design and Layout

- Construct on level ground where possible.
- Select 3 to 6 in. diameter stones.
- Use minimum depth of stones of 12 in. or as recommended by soils engineer.
- Construct length of 50 ft. minimum, and 30 ft. minimum width.
- Rumble racks constructed of steel panels with ridges and installed in the stabilized entrance/exit will help remove additional sediment and to keep adjacent streets clean.
- Provide ample turning radii as part of the entrance.
- Limit the points of entrance/exit to the construction site.
- Limit speed of vehicles to control dust.
- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment trapping device before discharge.
- Design stabilized entrance/exit to support heaviest vehicles and equipment that will use it.
- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. Do not use asphalt concrete (AC) grindings for stabilized construction access/roadway.

- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 3 in. but not exceeding 6 in. should be used.
- Designate combination or single purpose entrances and exits to the construction site.
- Require that all employees, subcontractors, and suppliers utilize the stabilized construction access.
- Implement SE-7, Street Sweeping and Vacuuming, as needed.
- All exit locations intended to be used for more than a two-week period should have stabilized construction entrance/exit BMPs.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMPs are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect local roads adjacent to the site daily. Sweep or vacuum to remove visible accumulated sediment.
- Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment.
- Keep all temporary roadway ditches clear.
- Check for damage and repair as needed.
- Replace gravel material when surface voids are visible.
- Remove all sediment deposited on paved roadways within 24 hours.
- Remove gravel and filter fabric at completion of construction.

Costs

In California, average annual cost for installation and maintenance may vary from $1,200 to $4,800 each, averaging $2,400 per entrance. Costs will increase with addition of washing rack, and sediment trap. With wash rack, costs range from $1,200 - $6,000 each, averaging $3,600 per entrance. Note that Hawaii's unit prices are higher than California's unit prices.

References

California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Guidance Specifying Management Measures for Nonpoint Pollution in Coastal Waters, EPA 840-B-9-002, USEPA, Office of Water, Washington, DC, 1993.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, USEPA Agency, 2002.

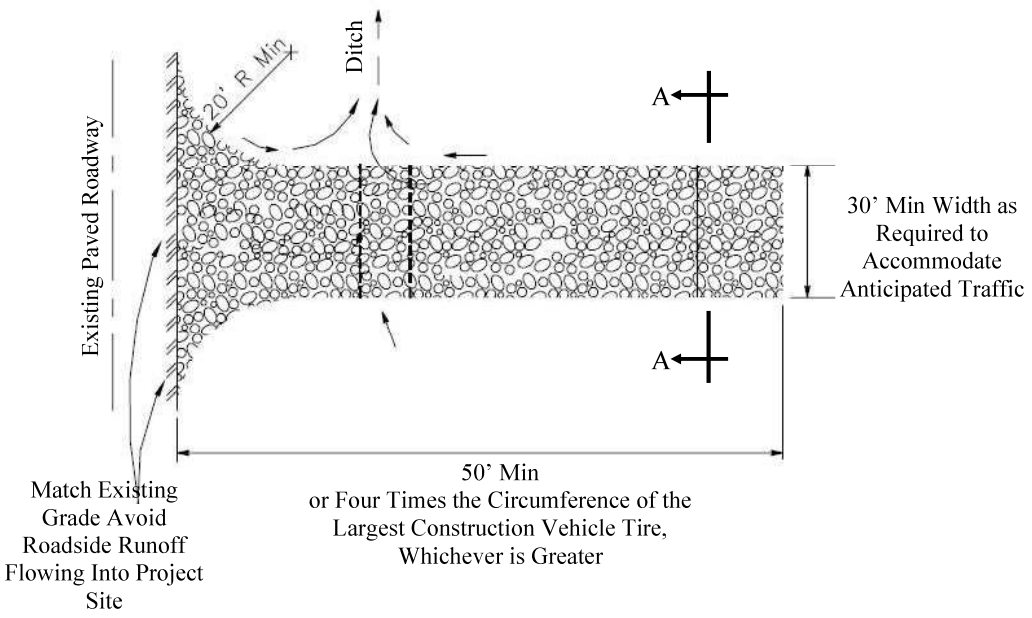
Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group Working Paper, USEPA, April 1992.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Virginia Erosion and Sedimentation Control Handbook, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1991.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.



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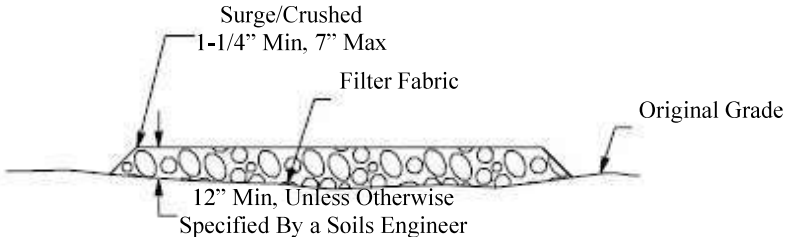

Section A-A
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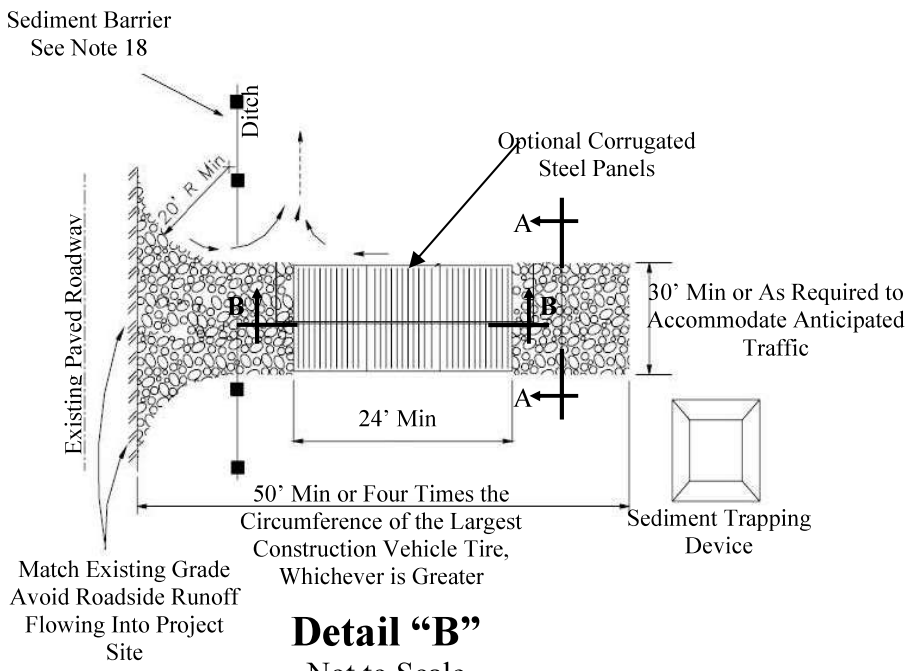
Stabilized Construction Entrance/Exit

Stabilized Construction Entrance/Exit TR-1



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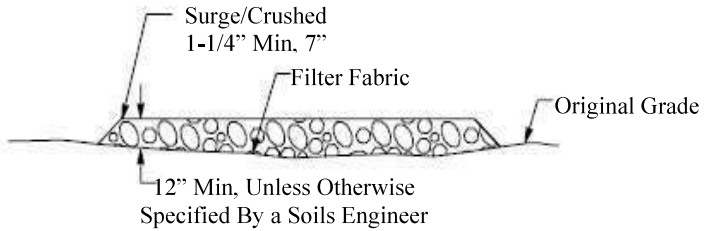
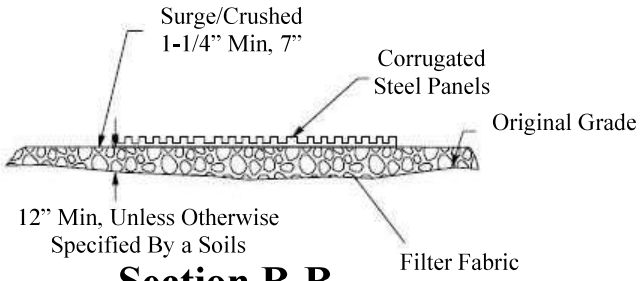


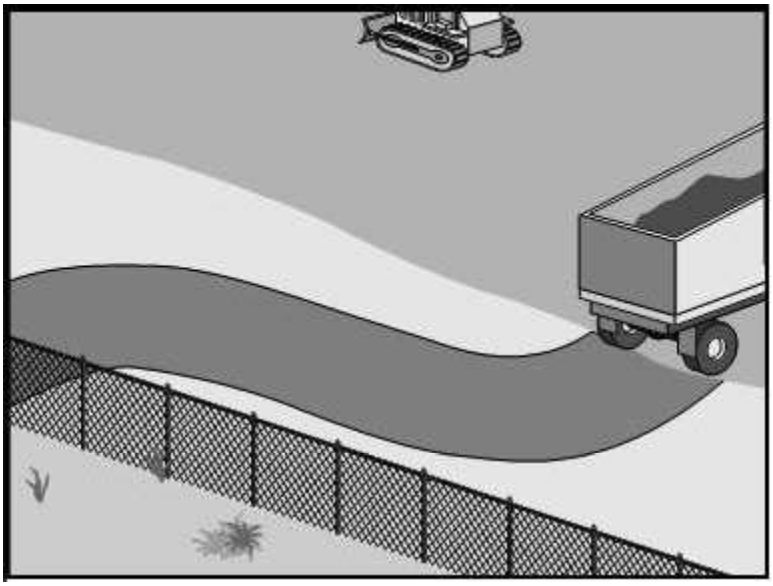
Section A-A
Not to Scale



Section B-B
Not to Scale

Notes:
1. Construct on level ground where possible.
2. Select 3 to 6 in. diameter stones.
3. Use minimum depth of stones of 12 in. or as recommended by soils engineer.
4. Construct length of 50 ft. minimum, and 30 ft. minimum width.
5. Rumble racks constructed of steel panels with ridges and installed in the stabilized entrance/exit will help remove additional sediment and to keep adjacent streets clean.
6. Provide ample turning radii as part of the entrance.
7. Limit the points of entrance/exit to the construction site.
8. Limit speed of vehicles to control dust.
9. Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
10. Route runoff from stabilized entrances/exits through a sediment trapping device before discharge.
11. Design stabilized entrance/exit to support heaviest vehicles and equipment that will use it.
12. Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. Do not use asphalt concrete (AC) grindings for stabilized construction access/roadway.
13. Place crushed aggregate over geotextile fabric to at least 12 in. depth, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 3 in. but not exceeding 6 in. should be used.
14. Designate combination or single purpose entrances and exits to the construction site.
15. Require that all employees, subcontractors, and suppliers utilize the stabilized construction access.
16. Implement SE-7, Street Sweeping and Vacuuming, as needed.
17. All exit locations intended to be used for more than a two-week period should have stabilized construction entrance/exit BMPs.
18. Construct sediment Barrier and channel runoff to sediment trapping device as appropriate.

Stabilized Construction Roadway TR-2



Objectives	
EC – Erosion Control	▲
SE – Sediment Control	▲
TR – Tracking Control	√
WE – Wind Erosion Control	
NS – Non-Storm Water Management Control	
WM – Waste Management & Materials Pollution Control	

Legend:

√ Primary Objective

▲ Secondary Objective

Targeted Constituents	
Sediment	√
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Access roads, subdivision roads, parking areas, and other onsite vehicle transportation routes should be stabilized immediately after grading, and frequently maintained to prevent erosion and control dust.

Suitable Applications

This BMP should be applied for the following conditions:

- Temporary Construction Traffic:
  - Phased construction projects and offsite road access, or
  - Construction during wet weather.
- Construction roadways and detour roads:
  - Where mud tracking is a problem during wet weather,
  - Where dust is a problem during dry weather,
  - Adjacent to water bodies, or
  - Where poor soils are encountered.

Limitations

- The roadway must be removed or paved when construction is complete.
- Certain chemical stabilization methods may cause storm water or soil pollution and should not be used. See WE-1, Wind Erosion Control.
- Management of construction traffic is subject to air quality control measures. Contact the local air quality management agency.

- Materials will likely need to be removed prior to final project grading and stabilization.
- Use of this BMP may not be applicable to very short duration projects.

Implementation

General

Areas that are graded for construction vehicle transport and parking purposes are especially susceptible to erosion and dust. The exposed soil surface is continually disturbed, leaving no opportunity for vegetative stabilization. Such areas also tend to collect and transport runoff waters along their surfaces. During wet weather, they often become muddy quagmires that generate significant quantities of sediment that may pollute nearby streams or are transported offsite on the wheels of construction vehicles. Dirt roads can become so unstable during wet weather that they are virtually unusable.

Efficient construction road stabilization not only reduces onsite erosion but also can significantly speed onsite work, avoid instances of immobilized machinery and delivery vehicles, and generally improve site efficiency and working conditions during adverse weather.

Installation/Application Criteria

Permanent roads and parking areas should be paved as soon as possible after grading. As an alternative where construction will be phased, the early application of gravel or chemical stabilization may solve potential erosion and stability problems. Temporary gravel roadway should be considered during the rainy season and on slopes greater than 5%.

Temporary roads should follow the contour of the natural terrain to the maximum extent possible. Slope should not exceed 15%. Roadways should be carefully graded to drain transversely. Provide drainage swales on each side of the roadway in the case of a crowned section or one side in the case of a super elevated section. Simple gravel berms without a trench can also be used.

Installed inlets should be protected to prevent sediment laden water from entering the storm sewer system (SE-9, Storm Drain Inlet Protection). In addition, the following criteria should be considered.

- Road should follow topographic contours to reduce erosion of the roadway.
- The roadway slope should not exceed 15%.
- Chemical stabilizers or water are usually required on gravel or dirt roads to prevent dust (WE-1, Wind Erosion Control).
- Properly grade roadway to prevent runoff from leaving the construction site.
- Design stabilized access to support heaviest vehicles and equipment that will use it.
- Stabilize roadway using aggregate, asphalt concrete, or concrete based on longevity, required performance, and site conditions. The use of cold mix asphalt or asphalt concrete (AC) grindings for stabilized construction roadway is not allowed.
- Coordinate materials with those used for stabilized construction entrance/exit points.
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth. A crushed aggregate greater than 3 in. but smaller than 6 in. should be used.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Keep all temporary roadway ditches clear.
- When no longer required, remove stabilized construction roadway and re-grade and repair slopes.
- Periodically apply additional aggregate on gravel roads.
- Active dirt construction roads are commonly watered three or more times per day during the dry season.

Costs

Gravel construction roads are moderately expensive, but cost is often balanced by reductions in construction delay. No additional costs for dust control on construction roads should be required above that needed to meet local air quality requirements.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

California Stormwater Quality Association (CASQA) Best Management Practices Handbook Construction, 2003.

Coastal Nonpoint Pollution Control Program; Program Development and Approval Guidance, Working Group, Working Paper; USEPA, April 1992.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Virginia Erosion and Sedimentation Control Handbook, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1991.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Attachment D1 – Sample Construction Discharge Report Form

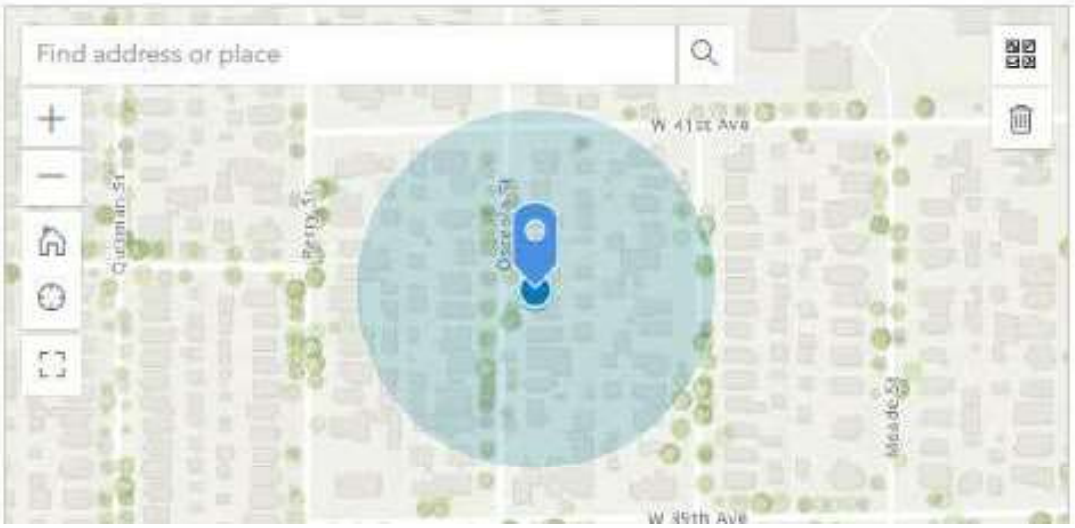
2023 Maui Fires Construction Discharge Report

This report is required when a non-stormwater or polluted stormwater discharge may have or may have potentially entered a storm drain or Receiving State Waters, if a discharge (e.g., spill) has occurred, if a polluted discharge is observed leaving the project limits, or if there is evidence of an unreported polluted discharge leaving project limits prior to inspection (such as: silty trail, eroded areas beyond site limits).

Inspector/Engineer*

Location Where Discharge Originated

Please allow access to Location Services on your device



Location Description or Address*

Date

1/3/2024

12:06 PM

Project No.

DOH File No.

Project

2023 Maui Fires Lahaina Debris Removal Operations

Weather Conditions*

Inches of Rain in Past 24 Hours*

Location of Work Activities*

Description of Work Activities*

General Information

Date of Incident

1/3/2024

Incident Identified or Reported By*

Time of Incident

12:06 PM

Duration of Incident*

In Hours

Source/Cause of Incident*

Describe the Incident*

Is the suspected reason for the discharge that a storm water control is clearly not operating as intended or is in need of maintenance?*

- [ ] BMP needs maintenance
- [ ] BMP not operating as intended
- [ ] BMP is not a factor

Specific Discharge Information

Nature of the Discharge*

- [ ] Sediment
- [ ] Concrete
- [ ] Oil/Grease
- [ ] Hazardous Material (describe below)

- [ ] Other

Hazardous Material Discharge Amount and Description

Characteristic of Immediate Area Where Discharge Occurred*

- [x] Receiving Water(s)
- [ ] Storm Drain
- [ ] Soil
- [ ] Asphalt/Concrete Surface
- [ ] Other

Receiving Water(s) Name(s)

Description of Path of Discharge

Where did the polluted discharge ultimately go?

- [ ] Entered a drainage system
- [ ] Directly entered State waters (discharged directly to stream or other water body)
- [ ] Other

Inlets, Outfalls, and Receiving Water Information

List All Inlets and Outfalls

List all inlets and corresponding receiving water outfall locations from each drainage system. If discharge went directly to receiving waters, list the point where discharge entered receiving waters. At each point check the characteristics of the water upstream (if applicable), at discharge or outfall location, and downstream of discharge or outfall location (if applicable) and describe (turbidity, color, odor, floating, settled, or suspended solids, foam, oil sheen, and other obvious indicators of storm water pollutants).
If the discharge did not enter a drainage system or receiving water (e.g., stream, ocean), skip this section.

Actions Taken

Describe Immediate Measures Taken

Include Photos at End of Survey

Describe Additional Follow-Up Measures Taken

Include Photos at End of Survey

Other Notes and Comments

Upload Photos*

1 Drop image here or select image (number of files allowed: 1 - 99)

Inspector Signature*

Please sign above the line

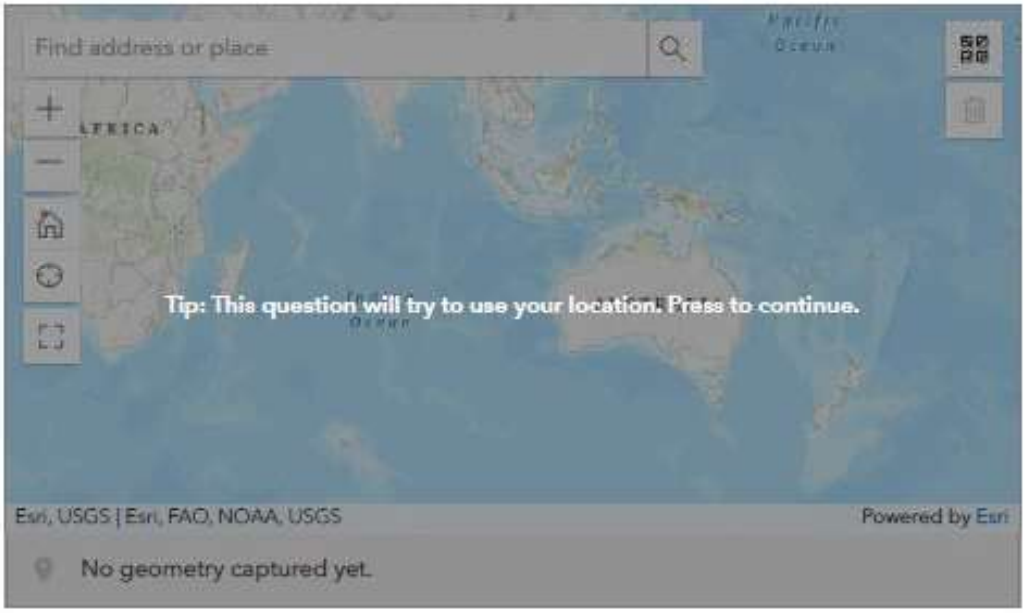
Attachment D2 – Sample BMP Inspection Report Form

2023 Maui Fires Stormwater BMP Inspection

User*

GPS Location*

Please enable Location Access on your device.



Site / Address*

Inspection Type

- ○ Weekly
- ◉ Rain Event

Inches of Rainfall in Last 24 Hours*

Weather Conditions

Site Specific Best Management Practices (BMPs) Plan

	Yes	No	N/A - Add notes or correction date below
Is a copy of the Site Specific BMPs plan available at the site? *	○	○	○
Is the Site Specific BMPs plan certified, signed, and dated?*	○	○	○
Is the Site Specific BMPs plan current and up-to-date?*	○	○	○
Are accompanying erosion and sediment control (ESC) drawings available at the site? *	○	○	○
Are the ESC drawings up-to-date? *	○	○	○
Are all NPDES permits available at the site?*	○	○	○
Are inspection records available at the site?*	○	○	○

Are all NPDES permits available at the site?*	○	○	○
Are inspection records available at the site?*	○	○	○

BMPs Plan Notes

Site Conditions

	Yes	No	N/A - add notes below
Is there evidence of polluted discharges from the site to a State water (e.g. storm drain, ditch, stream, ocean)?*	○	○	○
Is repair, maintenance, or installation of sediment control BMPs needed at the site?*	○	○	○
Is repair, maintenance, or installation of erosion control BMPs needed at the site?*	○	○	○
Are construction materials/debris/trash/soil stored or disposed of properly at the site?*	○	○	○
Is there vehicle tracking from the site to receiving streets?*	○	○	○
Do locations exist where additional or revised BMPs are needed?*	○	○	○

Do locations exist where BMPs may no longer be necessary and may be removed?*	○	○	○
Does your site evaluation indicate a need to update or revise the current Site Specific BMPs plan and/or accompanying erosion and sediment control drawings?*	○	○	○

Site Conditions Notes

Site Photos*

1 Drop image here or select image (minimum number of files required: 1)

BMPs Inspection

Description of Area

-Please select-

Inspection Photos*

Drop image here or select image

BMPs Condition*

BMPs Inspection

Description of Area

-Please select-

Inspection Photos*

Drop image here or select image

BMPs Condition*

Good (Installed Per Specifications) | Adequate | Needs Maintenance

Notes

Corrective Actions

- [ ] Repair, modify, or replace any storm water control used at the site
- [ ] Clean up and properly dispose of spills, releases, or other deposits
- [ ] Remedy a permit violation
- [ ] Other

Corrective Action Notes

Signature*

Please sign above the line

Inspection Date & Time

12/20/2023

08:30 PM

Submit

Attachment D3 – Corrective Action Reports

Section 10.1 "Corrective Actions" Defined

Corrective actions are actions taken in compliance with this section to:

a. Repair, modify, or replace any storm water control used at the site
b. Clean up and properly dispose of spills, releases, or other deposits
c. Remedy a permit violation

Section 10.2.1. Triggering Events

The following are triggers that require corrective action be taken (this triggering condition is to be documented within 24 hours of discovering the occurrence):

- ❑ *A required storm water control was never installed, was installed incorrectly, or not in accordance with the requirements in HAR Chapter 11-55, Sections 5 and/or 6.*
- ❑ *The Contractor/Officer-in-Charge becomes aware that the storm water controls installed and being maintained are not effective enough for the discharge to meet applicable water quality standards or applicable requirements in HAR Chapter 11-55, Section 6.1. The Contractor shall notify the Officer-in-Charge immediately. The Officer-in-Charge will notify the Department of Health by the end of the next work day.*

  *Date/time Officer-in-Charge notified by Contractor*_____

  *Date/time DOH notified by Officer-in-Charge*_____
- ❑ *One of the prohibited discharges below is occurring or has occurred:*
  - ❒ *Wastewater from washout of concrete*
  - ❒ *Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials*
  - ❒ *Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance*
  - ❒ *Soaps, solvents, or detergents used in vehicle and equipment washing*
  - ❒ *Toxic or hazardous substances from a spill or other release*

Section 10.2. Requirements for Taking Corrective Actions

The Contractor shall complete corrective actions in accordance with the deadlines specified below. In all circumstances, the Contractor shall immediately take all reasonable steps to minimize or prevent the discharge of pollutants until a permanent solution is installed and made operational, including cleaning up any contaminated surfaces so that the material will not discharge in subsequent storm events. Immediately means the same day the condition is discovered unless it is too late in the day on which initiation of corrective action must begin on the following workday.

Following any of the above triggering events, the Contractor shall install a new or modified control and make it operational, or complete the repair, by no later than 7 calendar days from the time of discovery. If it is infeasible to complete the installation or repair within 7 calendar days, the Contractor shall document and submit to the Officer-in-Charge, for his agreement, why

it is infeasible to complete the installation or repair within the 7 calendar day timeframe and document a schedule for installing the storm water control(s) and making it operational as soon as practicable after the 7-day timeframe.

Date installation/repair completed, or date/time prohibited discharge ceased

Reason it is infeasible to complete installation or repair within 7 calendar days and proposed schedule (if applicable) _____
_____
_____
_____

10.4.1. Initial Report (24 Hours)
Within 24 hours of discovering the occurrence of one of the triggering conditions in HAR Chapter 11-55, Section 10.2.1. at the site, the Contractor must complete the following:

- *The nature of the condition identified* _____
- *The date and time of the condition identified and how it was identified* _____

10.4.2. Final Report (7 Days)
Within 7 calendar days of discovering the occurrence of one of the triggering conditions in HAR Chapter 11-55, Section 10.2.1. at the site, the Contractor must complete a report of the following:

- *Any follow-up actions taken to review the design, installation, and maintenance of storm water controls, including the dates such actions occurred* _____
_____
- *A summary of storm water control modifications taken or to be taken, including a schedule of activities necessary to implement changes, and the date the modifications are completed or expected to be completed* _____
_____
- *Notice of whether SWPPP modifications are required as a result of the condition identified or corrective action* _____
_____
_____

Section 10.2.2. SWPPP Modification Due to Corrective Actions
Where corrective actions result in changes to any of the storm water controls or procedures documented in the SWPPP, modify the SWPPP accordingly within 7 calendar days of completing corrective action work.

❑ *Date SWPPP modified should be indicated in the Amendment Log (Attachment F)* _____

Section 10.3 Corrective Actions Required by the Department of Health (DOH)

The Contractor shall comply with any corrective actions required by the department as a result of permit violations found during an inspection by DOH or EPA.

Was the Corrective Action triggered by a DOH/EPA inspection?

- ❑ *Yes* ❑ *No*
- ❑ *Date of DOH/EPA Inspection*_____

Section 10.4.3. Certification

The certifying person and duly authorized representative shall meet the requirements of Hawaii Administrative Rules 11-55, Appendix A, Section 15.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

*Signature:*_____ *Date:*_____

*Person Name:*_____

*Person Position Title:*_____

*Person Company or Agency:*_____

Phone Number: _____ *Fax No.:*_____

Person Email: _____

Attachment E – Training Log

TRAINING LOG

Project Name: West Maui Temporary Disposal Site
Project Location: Adjacent to Olowalu Residential Recycling and Refuse Center, Lahaina, HI, 96761

Course Description:

_____

_____

Date:_____

Course Length (hours):_____

Stormwater Training Topic: (check as appropriate)

- ❑ Erosion Control BMPs
- ❑ Sediment Control BMPs
- ❑ Non-Stormwater BMPs
- ❑ Emergency Procedures
- ❑ Good Housekeeping BMPs

Specific Training Objective:_____

_____

Attendee Roster:

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Attachment F – SWPPP Amendment Log

AMENDMENT LOG

Each Amendment must be signed by the authorized representative authorizing the changes in Section 7.2.17 within 7 calendar days following the occurrence of any of the conditions listed in Section 7.4.1.

Project Name: ***West Maui Temporary Disposal Facility***
SWPPP Contact: _____

Amendment No.	***Description of the Amendment***	***Date of Amendment***	***Amendment Prepared by [Name(s) and Title]***

ATTACHMENT 10. ARCHAEOLOGICAL TREATMENT PLAN

DR-4724-Hawai‘i
Consolidated Debris Removal Program

ARCHAEOLOGICAL TREATMENT PLAN

FEMA Environmental and Historic Preservation

October 2, 2023

FEMA Region 9
1111 Broadway, suite 1200
Oakland, CA 94607

Table of Contents

1. INTRODUCTION

The 2023 Lahaina, Kula, and Olinda Hawai‘i Wildfires are the largest and most destructive fires in Hawai‘i’s history. The Lahaina fire, now 100% contained, burned 2,170 acres, the Kula fire, 96% contained burned 202 acres and the Olinda fire, 100% contained, burned 1,081 acres as of September 30, 2023.

On August 10, 2023, the President declared Presidential Disaster DR-4724-HI, making Federal assistance and funding administered by the U.S. Department of Homeland Security’s Federal Emergency Management Agency (FEMA) available for response and recovery activities related to the Hawai‘i wildfires. FEMA intends to provide funding through the Hawai‘i Emergency Management Agency (HI EMA) to the U.S. Army Corps of Engineers (USACE) for the removal of debris to eliminate or lessen immediate threats to public health and safety in Maui County (Undertaking), via a Consolidated Debris Removal Program (CDRP) operation.

While the USACE has been mission assigned for the removal of debris eligible under the CDRP, compliance with Section 106 of the National Historic Preservation Act (NHPA) for the mission assigned work rests with FEMA.

Because provision of Federal funding meets the definition of an Undertaking subject to Section 106 of the National Historic Preservation Act (NHPA), as amended, and implementing regulations at 36 Code of Federal Regulations (CFR) Part 800, FEMA is responsible for complying with Section 106 for the Undertaking.

> *Acceptance of federal funding requires compliance with all state and local laws, as applicable. Compliance with §6E, Hawai‘i Revised Statutes (HRS) regarding historic preservation review is not specifically outlined in this document, which is specific to Section 106 of the NHPA. However, it is anticipated that many components of this Treatment Plan may be used to satisfy 6E requirements.

FEMA has initiated the Expedited Review for Emergency Undertakings of the 2016 Programmatic Agreement, extended in 2023 (as amended) titled, *Programmatic Agreement Among the Federal Emergency Management Agency, the Hawai‘i State Historic Preservation Officer (SHPO or SHPD), the Office of Hawaiian Affairs (OHA), and the State of Hawaii Department of Defense (HI-EMA)* (Agreement) and determined that the most suitable Treatment Measures to resolve anticipated Adverse Effects as defined in 36 CFR 800.5 resulting from the CDRP operation will be through the development and implementation of an Archaeological Treatment Plan (ATP) (treatment Measure H of Appendix C of the Agreement). Additionally due the significant impacts to historic documents and materials within the community of Lahaina, and the need to support preservation of remaining information, data, and knowledge, FEMA in consultation with the SHPD, have identified additional Treatment Measures including Oral History Documentation related to the history of the communities impacted as a result of the fire, and Geo-References of Historic Maps and Aerial Photographs (Treatment Measures D and G of Appendix C of the Agreement).

Treatment Measure H (Archaeological Treatment Plan) has been outlined in this document.

Treatment Measures D (Oral History and Documentation), and G (Geo-References of Historic Maps and Aerial Photographs. These additional measures should be considered to be in *DRAFT* form only and will be further developed and implemented through additional consultation with consulting parties, while debris removal is being completed.

A timeline for implemenation and completion of these Treatment Meausres D and G will be developed and agreed upon as a component of ongoing consultation.

D. Oral History Documentation

FEMA, the Recipient(s) (State of Hawai‘i), and the sub-recipient (Maui County) shall work with the SHPD, OHA, and/or participating NHO(s) or other interested parties to identify oral history documentation needs and agree upon a topic and list of interview candidates and may include a traditional cultural property (TCP) study for the area of potential effect (APE) and its adjacent areas, and may also , but is not be limited to, collection of ethnographic data from Native Hawaiian and other cultural groups in Lahaina. Once the parameters of the oral history project have been agreed upon, the designated responsible party shall continue to coordinate with the SHPD, OHA, and/or participating NHO(s) through the data collection, drafting of the document, and delivery of a final product. The designated responsible party shall use staff or contractors that meet the *Professional Qualifications* for the appropriate discipline.

Should any resources be identified as potentially eligible for listing in the National Register of Historic Places through this Oral History Documentation, FEMA will review any documentation associated with a recommendation of eligibility. Submission of a National Register Nomination is the responsibility of the County of Maui and/or State of Hawai‘i.

G. Geo-References of Historic Maps and Aerial Photographs

FEMA, the Recipient(s) (State of Hawai‘i), and sub-recipient (Maui County) shall work with the SHPD, OHA, and participating NHO(s) to identity the historic maps and/or aerial photographs for scanning and geo-referencing. Once a list of maps and/or aerial photographs have been agreed upon, the designated responsible party shall continue to coordinate with the SHPD, OHA and participating NHOs through the scanning and geo-referencing process and shall submit drafts of paper maps and electronic field to the SHPD, OHA and participating NHO(s) for review. The final deliverable produced by the designated responsible party shall include a paper copy of each scanned image, a geo-referenced copy of each scanned image, and the metadata relating to both the original creation of the paper maps and the digitization process.

H. Archaeological Treatment Plan

In accordance with Stipulation II.C.6(a) of the Agreement, potential adverse effects to an archaeological property may be resolved through alternative mitigation measures to avoid or minimize adverse effects, or through data recovery to recover important information that would have been otherwise lost as a result of an undertaking. FEMA EHP staff or contractors that meet the Professional Qualifications for prehistoric or historic archaeology, appropriate to the properties being treated, shall determine applicability of an archaeological treatment plan (ATP), and the appropriate level of documentation, in consultation with the SHPO, land-managing agencies, and appropriate Native Hawaiian Organizations and other consulting parties, as appropriate.

The purpose of this ATP is to outline a process to avoid, minimize, or mitigate anticipated adverse effects of the Undertaking, while limiting unexpected and potentially extensive operational delays that may result without having an agreed upon protocol in place. This ATP provides a programmatic approach toward treatment measures on historic properteis that may be encountered during implementation of the Undertaking.

FEMA is aware that there will likely be debris removal, construction activities, and various other recovery operations taking place within the burn scar areas at the same time that the CDRP is taking place, that are not funded by FEMA or a part of this Undertaking. It is acknowledged that while this may present challenges in regard to understanidng the extent of work being completed by non-FEMA funded projects, that those projects, activities, and/or recovery operations are not subject to this ATP.

2. UNDERTAKING

In an approval letter signed by the FEMA Region 9 Administrator, Robert J. Fenton, dated September 15, 2023, CDRP (in the letter reffered to as PPDR) activities that have been identified as eligible for FEMA assistance were identified, including:

- Removal and disposal of surface ash, which may include three to six inches of incidental soil removal.
- Burned debris, which consists of burned home remains, including burned or partially burned furniture, personal belongings, household appliances (refrigerators, stoves, washers, dryers, etc.) and patio furniture. It does not include burned or partially burned stone, landscaping features, or statues.
- Hazardous materials and pollutants.
- Hazardous trees and unsupported walls that are hazardous to debris removal crews.
- Vehicles, marine vessels, and marine debris.
- Structural footings, foundations, chimneys, and basements.
- Hazardous trees that pose a risk of imminent threat of falling on the public right-of-way (ROW), or other public improved property. For any tree on private property that poses a threat to the public ROW, a subject matter expert's (i.e., certified arborist or professional licensed forester) opinion will be required to substantiate that the tree was in fact an

eligible hazardous tree (so damaged by fire that it poses an imminent threat of falling onto public ROW or other improved public property).

- Soil sampling after ash is removed from the ash footprint and excavation of contaminated soil as needed commensurate with soils sample results. Soil excavation will generally be limited to a maximum of 12 inches below the ash-soil interface. Additional soil removal beyond 12 inches for specific sites requires pre-approval from FEMA.
- Commercial structures, to include ash, burned debris, foundations, and basements.
- Demolition of "clearly destroyed" private residential and commercial structures in accordance with FEMA Policy as amended by the 2022 Public Assistance Wildfire Policy Guidance Memorandum:

    - The Applicant must notify FEMA regarding: (a) demolition of private structures is being conducted, and (b) the type of property on which the work is being conducted (i.e., privately-owned residential or commercial property).
    - The determination that a structure is destroyed and/or an immediate danger of collapse must be made by a licensed engineer or other designated official authorized by the state or Maui County.

Further, it has been determined that the following activities are ineligible for FEMA assistance:

a) Debris removal from vacant lots, unused areas, unimproved property such as forests, or agricultural lands used for crops or livestock.
b) The cutting, plugging, and marking of subsurface sewer laterals or water lines serving fire-damaged properties (cutting, plugging, and marking surface utilities are eligible; subsurface evaluations of utilities are not eligible).
c) Off-island disposal of debris with the exception of household hazardous materials generated during Phase I removal operations and bulk asbestos-containing material (ACM) generated during PPDR (now CDRP) efforts.
d) Deviations from sequenced debris removal activities as outlined in debris removal operations plans (DROPs), contract scopes of work (SOWs), or similar documents.
e) The development, construction, operation, and closing of permanent landfills for all incident-related debris.

In the event the state requests debris removal activities on behalf of public entities and eligible private nonprofits (Public Assistance Eligible Applicants), FEMA will evaluate whether each property meets Public Assistance eligibility requirements, prior to approving inclusion in the debris removal operation.

Participation in this debris removal operation is voluntary and requires that individual property owners sign Rights of Entry (ROEs) prior to any work being initiated.

3. AREA OF POTENTIAL EFFECTS

FEMA has determined that that the Area of Potential Effects (APE) for CDRP activities will be limited to the boundary for which ground disturbing activities associated with debris removal will occur throughout the burn scars within Maui County, to include access roads and staging, disposal locations, and activities incidental to debris removal operations (room for equipment to maneuver), not to exceed the limits of CDPR eligible participant real property boundaries. Currently the total number of participating properties and exact locations of project activities are unknown as additional property owners may request to participate in the program. The current number of participants is estimated at 1,600 properties.

Debris removal work and associated actions, including the protocols outlined in this ATP, will only be applicable and occur on properties where verified ROEs have been obtained.

4. IDENTIFICATION OF HISTORIC PROPERTIES

The APE of the Undertaking includes a multitude of previously identified Historic Properties as defined in 36 CFR 800.16(l), many of which may have been impacted, damaged, or destroyed as a result of the wildfires.

In consultation with the SHPD, use of the Hawai‘i Cultural Resource Information System (HICRIS), the SHPD library, feedback provided from a multitude of preservation partners during various meetings, and a records search of the National Register of Historic Places (NRHP or National Register), FEMA has developed an understanding of the Historic Properties previously identified within the APE, including the Lahaina Historic District which is a designated National Historic Landmark (NHL).

The Lahaina Historic District (NHL, National Register Number 66000302), located in the town of Lahaina on the island of Maui, was once the capital of the Hawaiian Kingdom. The town was a favorite site of Hawaiian kings and queens, whaling ships, and missionaries. The historic covers both land and sea and encompasses the entire old town of Lahaina as well as the waters approximately one mile out from the historic section of the town. The Historic Properties and the sites within the NHL, which include nine (9) contributing buildings, have been preserved and protected by multiple entities including the Lahaina Restoration Foundation, a private non-profit corporation; the Maui Historic Commission; Maui County agencies and elected and appointed county officials; State agencies and elected and appointed State officials; several Federal agencies; numerous landowners, some absentee; and the business owners and residents of the Lahaina and West Maui area. The current status of all nine (9) structures as a result of the fire has not been confirmed.

A notification was sent by FEMA to the National Park Service (NPS) on August 28, 2023, regarding damage to the NHL as a result of the wildfires, in accordance with the Agreement and 36 CFR § 800.10, Special Requirements for Protecting National Historic Landmarks.

Three additional properties listed on the National Register are recorded within the Lahaina burn scar including the Wo Hing Society Building (NR#82000173), the King Kamehameha III’s Royal

Residential Complex (NRHP #97000408), and the William K. Kaluakini House (NRHP #13000458). The Wo Hing Society Building and the William K. Kaluakini House appear to be a total loss as a result of the wildfire.

Exclusions to this ATP

It has been determined by FEMA that the nine (9) buildings contributing to the NHL prior to the wildfire, as well as archaeological components of the King Kamehameha III's Royal Residential Complex will not be included in this Ttreatmet Plan. If a property owner, or responsbile party requests that any of these properties be included in the CPDR, FEMA will consult on them individually to identify an appropriate compliance strategy for Section 106 of the NHPA and communicate that strategy to the USACE Point of Contact (POC) upon receipt of an ROE.

The following listed/contributing properties are excluded from this Treatment Plan:

- *Baldwin House – Contributing to NHL*
- *Masters Reading Room – Contributing to NHL*
- *Old Prison (Hale Paahao) – Contributing to NHL*
- *Court House – Contributing to NHL*
- *Hale Aloha - Contributing to NHL*
- *United States Marine Hospital – Contributing to NHL*
- *Maria Lanakila Catholic Church – Contributing to NHL*
- *Pioneer Inn/Hotel – Contributing to NHL*
- *Old Spring House – Contributing to NHL*
- *King Kamehameha III's Royal Residential Complex – Includes multiple properties.*

Additionally, should the establishment of new temporary debris staging locations be needed to support this Undertaking that have not been previously reviewed by SHPD, individual consultation may be necessary.

Should the APE be revised to include areas outside of the APE as defined at the time in which this ATP is signed and executed, additional consultation per Section 106 is required.

5. NATIVE HAWAIIAN CONSULTATION

FEMA is required to consult with Native Hawaiian Organizations in a manner appropriate to the scale of the Undertaking. On August 13, 2023, FEMA sent a Notice of Intent for expedited review for CDPR to the Office of Hawaiian Affairs to confirm parties that attach religious and cultural significance to historic properties in the vicinity of the APE who should be included in this consultation effort. Subsequent to that, additional parties have been added through coordination with Ms. Summer Sylva; Senior Advisor for Native Hawaiian Affairs, Office of the Secretary, U.S. Department of the Interior, and also as a result of specific requests received directly from NHOs.

- Ms. Carolyn Keala Norman: ʻOhana Keaweamahi
- Ms. Emma Emalia Keohokalole: ʻOhana Keohokālole
- Ms. Olinda Aiwohi: President, Paukukalo Hawaiian Homes Community Association
- Mr. Roy Oliveira: President, Waiehu Kou Phase 3 Association
- Mr. Dane Maxwell: Hawaiian Cultural Advisor
- Ms. Noelani Ahia: Mauna Medic Healers Hui
- Ms. Clare Apana: President, Ao Makole
- Mr. Kaniloa Kamaunu: Vice President, Malama Kananilua
- Mr. Ke'eaumoku Kapu: Maui County Cultural Resources Commission
- Ms. U'ilani Kapu: Kia'I Kauaula
- Mr. Ashford Delima: President, Ho'oponopono O Makena
- Mr. Manny Kululoio: Makuakane, Kululoi'a Lineage – I ke Kai ʻo Kululoi'a
- Mr. Daniel Kanahele: Maui Tomorrow
- Mr. Kyle Nakanelua: Aha Moku Advisory Committee, Moku O Pi'ilani
- Mr. Walter Ritte: Executive Director, ʻĀina Momona
- Dr. Trisha Kehaulani Watson-Sproat, JD, PhD: Vice President, ʻĀina Momona
- Nā ʻAikāne o Maui
- Mr. Foster Ampong, Kimokeo Ohana (Family) & Community

6. FIELD COORDINATION

Beginning at the onset of the operation, the FEMA POC will facilitate bi-weekly (every other week) calls to include representation from FEMA EHP, USACE, SHPD, OHA, and the Principal Investigator (Archaeologist) to facilitate ongoing and consistent coordination. The schedule may be modified via written agreement of the the previously described representaitves, as the operation requires.

The Principal Investigator (PI) shall abide by applicable guidelines, including the latest version, at time of award, of the Hawaiʻi Administrative Rules: Rules Governing Professional Qualifications. Field crews will be directly supervised by a professional Archaeologist who is qualified to serve as a PI and is on the list of permitted firms in Hawaiʻi (State Historic Preservation Archaeology (hawaii.gov)) for calendar year 2023, or later, and meets Secretary of the Interior (SOI) qualifications as an Archaeologist.

The PI will be based on Maui. The PI will be accompanied by a team of qualified archaeologists, based in Hawaiʻi, with appropriate regional experience. The PI will communicate with the designated USACE Archaeologist, who will coordinate with the FEMA POC regarding the status of the Undertaking, schedule, and site-specific archaeological protocols and/or requirements.

Critical Stipulations:

- Debris removal will not proceed on a parcel until the PI, or their designee, verifies that all needed cultural resources work (e.g., archaeological survey, archaeological monitor, cultural observers) has been completed and appropriate monitors have been assigned if needed.

- The NRHP eligibility of archaeological resources will be assumed, and full determinations of eligibility will generally not be completed. Archaeological testing will not be carried out to determine NRHP eligibility.
- If for any reason the USACE or the debris removal crews have questions regarding implementation of this protocol in regard to the removal of structural debris containing two or more standing walls for individual properties over 45 years in age, debris removal will not occur on that property until SOI Qualified FEMA EHP staff has had the opportunity to provide guidance.

7. PROTOCOL FOR CULTURAL RESOURCE SURVEY

Properties will require archaeological survey in advance of debris removal operations when one of more of the following criteria have been met, as determined by the PI or their designee:

1. Archaeological resources, historic properties, and/or burials have previously been documented within the parcel boundaries (to re-establish presence of the historic property). This shall/has been established by the PI, or their designee, in coordination with the USACE, by referencing the SHPD library, SHPD GIS database, the NRHP, referencing the NHL designation form, and information recorded during consultation for this Undertaking with consulting parties.
2. The property owner has identified the property as archaeologically sensitive (i.e., known historic properties including potential burials)
3. The destroyed structure was older than 45 years old and has not previously been subject to an archaeological or architectural survey with negative results.
4. Standing walls (two or more) remain from the destroyed structure where demolition/removal has been requested by the property owner.

For properties requiring archaeological survey:

- The Archaeologist(s) (as assigned by the PI or their designee) will provide a pre-field work briefing debris removal crews at the start of work on a new pacel with identified cultural or historic property sensitivity.
- The Archaeologist(s) (as assigned by the PI or their designee) will conduct pedestrian surveys at no wider than 5 meters intervals of the APE ahead of, or in conjunction with, debris removal operations. At the end of each week, the Archaeologist(s) will submit a summary of completed work for the previous week to the PI, or their designee, who will provide it to the appropriate POC at USACE and FEMA EHP, USACE will track the data and communicate the completion of the survey and any needed further historic properties follow-up (e.g., the need for archaeological monitoring during debris operations). All communications will include or be facilitated by the USACE POC.

For properties requiring architectural survey, that meet the CDPR operation's definition of two or more standing walls:

- The PI, or their designee, will have an architectural historian or historic architect, meeting the appropriate SOI Qualifications, photograph and provide a description of the remaining structural debris prior to removal.

Prior to fieldwork, the parcel boundaries, previously recorded historic property site locations (as applicable), access roads, jurisdictional boundaries, and other relevant information will be uploaded into a sufficient quantity of hand-held GPS units with sub-meter accuracy in support of all data collection requirements and plotted onto USGS 7.5-minute topographic maps with UTM coordinates added to boundary corners. Topographical features, as well as infrastructure and other constructed features, will be confirmed against the topographic maps to ensure the inventory area is covered. Survey crews shall always have back-up GPS units available to enable the crew to continue working in the event of a mechanical failure. Field crews will also carry analog compasses and hard copies of USGS maps of the APE and surrounding area showing the location(s) of previously recorded sites so survey can proceed in the event of a mechanical failure.

Non-collection pedestrian survey of the parcels identified for survey will occur in no wider than 5-meter transects, ensuring 100 percent coverage. When portions of a property identified for survey are inaccessible due to safety concerns, and/or other limiting factors, the approximate boundaries of the inaccessible area will be identified and documented within the survey coverage area along with a description of the limitation.

All historic properties encountered during pedestrian survey will be identified by either their Statewide Inventory of Historic Places (SIHP) number, if previously recorded, or assigned a temporary field number in the order that they are encountered. The location of each historic property identified during survey will be recorded using a sub-meter accurate GPS unit and hand plotted and labeled on a topographic map, aerial photographs, and described. Additionally, all identified historic properties will be recorded to meet the requirement of the Hawai‘i SHPD (HAR §13-279), as appropriate. Scale map sets illustrating the site's boundary, site datum, features, artifact concentrations, artifacts, any disturbances, landmarks or reference points, and topographic lines, will be prepared for all documented sites. All historic properties will also be documented photographically using digital formats (excluding burials). Additionally, the boundary of all sites will be flagged/marked for avoidance during the field survey to ensure no inadvertent disturbance using pin flags, flagging tape, or other similar materials. Upon return to the office, the designated archaeological POC as identified by the PI, or their designee, will request a SIHP number(s) as appropriate, for all newly recorded historic properties.

All historic properties as defined in 36 CFR §800.16(l)(1) that do not meet the archaeological site definition, as defined in National Register Bulletin No. 36, will be recorded as isolated occurrences (IOs). All IOs will be recorded with a hand-held GPS unit and shall be accurately plotted on the appropriate 7.5-minute USGS map in the same manner as described for site locations. IOs will be documented by describing the artifact type, frequency, date ranges (for diagnostic artifacts) and the area of artifact dispersal (when applicable). Diagnostic artifacts will be sketched and/or photographed. No detailed plan view maps of IOs will be produced.

Documentation of IOs will be included in the survey report in tabular format. Documentation of IOs will include at minimum scaled photographs, northing and easting of the find, depth of the find, and a written description of material type(s) and interpreted context.

8. PROTOCOL FOR ARCHAEOLOGICAL MONITORING

Properties will require archaeological monitoring during debris removal operations when one of more of the following criteria have been met, as determined by the PI or designee:

1. Archaeological resources, historic properties, and/or burials have previously been documented within the parcel boundaries. This shall/has been established by the PI, in coordination with the USACE, by referencing the SHPD library, SHPD GIS database, the NRHP, referencing the NHL designation form, and information recorded during consultation for this Undertaking with consulting parties.
2. Archaeological resources and/or historic properties were identified as a result of Cultural Resource Survey as outlined in Section 7 of this ATP.
3. The property owner has identified the property as archaeologically sensitive (i.e., known resources including potential burials).
4. The PI, or an SOI Qualified archaeologist with the concurrence of thethe PI, has determined the property to have reasonable potential to be culturally sensitive or is likely to contain cultural resources by researching the property by referencing the SHPD library, SHPD GIS database, the NRHP, referencing the NHL designation form, and information recorded during consultation for this Undertaking with consulting parties.

If an archaeological survey has been conducted at a property as outlined in Section 7 of this ATP (above), and was negative for the identification of archaeological resources, and does not meet the four criteria identified above, archaeological monitoring is not warranted, and the inadvertent discovery clause identified in Section 12 of this document shall be applicable.

For properties requiring archaeological monitoring:

- Debris removal will not proceed until the archaeological monitors have been assigned by the PI, or their desingee, and are present as needed.
- After debris removal has commenced, the intensity of and need for archaeological monitoring in a given parcel will be based on the judgment of the qualified field archaeologist, as assigned by the PI or their designee, based on observations in the field.
- If an archaeological resource is present in a given parcel, the archaeological monitor may require a temporary pause of work in the vicinity of the identified historic property and will work closely with the debris removal crew to ensure that the historic property is avoided, and minimization measures identified by the on-site archaeologist, as assigned by the PI or their designee, are implemented, if feasible.
- If archaeological resources are identified via archaeological monitoring, the Archaeologist, will delineate the identifiable boundaries of the site, features, and/or artifact concentrations using pin flags, flagging tape, or similar materials, for the awareness of the debris removal crew during subsequent debris removal efforts. The boundaries and type of finding will also be mapped as a polygon (for sites larger than a

meter wide) or a point in the GPS system. Should human remains or associated funerary objects be identified, see section below (Human Remains). Site delineation will not exceed the boundaries of the APE and will not include invasive investigation.

- At the conclusion of debris removal activities on that parcel, the archaeological monitors will complete a Daily Archaeological Monitoring Log that describes the work conducted and the outcome of the monitoring. This log will be the responsibility of the archaeological monitor to complete, and the PI or their designee will review for quality. The logs will be provided to the FEMA EHP POC by the USACE POC, and additionally included in the final report finalized by the PI.

At a minimum, Daily Archaeological Monitoring Logs will include:

1. Monitor's name.
2. Weather and light conditions during monitoring.
3. Dates Monitors worked.
4. Brief description of the activity being monitored, and machinery being used.
5. Observations of observed soils and degree of past disturbance.
6. Notes about archaeological materials, as well as any other features or artifacts that may be found.
7. A list of work stoppages other than cursory examinations, with a brief description of the reason for the stoppage and summary of the find, if any.
8. Photographic log.
9. New resources found during activities and a subsequent form filed with SHPD office

9. PROTOCOL FOR CULTURAL OBSERVING

FEMA recognizes the devastation that the communities of Lahaina and Upcountry have experienced and is committed to conducting our debris removal activities in a manner that aligns with and respects local culture. FEMA will endeavor to achieve this by ensuring all responding personnel are informed and that all field operations are conducted with the benefit of local knowledge. FEMA recognizes the magnitude of what has been lost to the fire and wants to ensure our mission causes no unnecessary additional damage. FEMA also recognizes that successful implementation of the CDRP mission requires the integration of traditional practitioners with specialized knowledge of local cultural resources, known as Cultural Observers.

FEMA has determined there will anticipated adverse effects to historic properties during CDRP Activities. FEMA thru contract with USACE under the mission assignment will work with Native Hawaiian Organizations to ensure everything feasible is done to avoid and minimize impacts of the operation on historic properties.

The following protocols will be implemented during CDRP operations, and are to be facilitated by USACE and/or the PI or thier designee:

- All USACE and contracted individuals supporting CDRP operations will participate in a training on local history, culture, and the significance of the wildfire. The USACE will work with the Native Hawaiian Organizations including, but not exclusive to the list identified

above under the "Native Hawaiian Consultation" section, and Daniel Nahoopii at the Hawai'i Tourism Authority, at daniel@gohta.net or his cell (808) 225-7317, or his designee, to provide this training. A record of the names of and date for which individuals received the training will be kept by the USACE. No persons shall participate in activities that result in ground disturbing activities without first receiving the training.

- The USACE or a contractor of the USACE, will employ Native Hawaiian Cultural Observers who can participate in CDRP operations daily, perform appropriate cultural protocols and provide relevant information and oversight to prevent damage to cultural resources as a result of debris removal operations. The goal shall be to deploy a Cultural Observer with each field team or debris removal crew.

- The USACE or a contractor of the USACE, will provide awareness level safety training for all Cultural Observers, including 40-hour HAZWOPER training and required PPE if needed to ensure Cultural Observers are able to accompany field crews and teams within the burn scar to individual properties.

- The USACE will facilitate having a traditional practitioner, as agreed upon in coordination with the Cultural Observers, to provide a final blessing ceremony (pule) upon completion of USACE's field operation.

- Cultural Advisor (to act as Liaison): The Contractor shall provide cultural advisors with District (Moku) representation, who are traditional Hawaiian practitioners with specialized knowledge of local cultural resources and practices who are on the list maintained by the Department of Interior (Native Hawaiian Organizations | U.S. Department of the Interior (doi.gov)). Cultural Advisors will provide training on local history, culture, and the significance of the wildfire, conduct blessing ceremonies (pule), interpret Native Hawaiian language (or have access to such an interpreter), act as moderator in community meetings. The cultural advisors shall work closely with the USACE, FEMA POC, and PI to advise on cultural protocol, and with cultural monitors on culturally sensitive matters.

10. NATIONAL REGISTER ELIGIBILITY

For this Undertaking, the NRHP eligibility of historic properties will be assumed, and full determinations of eligibility will generally not be completed. Archaeological testing will not be carried out to determine NRHP eligibility. In general, 36 CFR §60 defines properties eligible for the NRHP as those that meet the following:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and

A. that are associated with events that have made a significant contribution to the broad patterns of our history; or

B. *that are associated with the lives of persons significant in our past; or*
C. *that embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or*
D. *that have yielded, or may be likely to yield, information important in prehistory or history." (36 CFR § 60.4).*

It is assumed that most archaeological sites that will be encountered in the APE are primarily eligible for listing in the NRHP under Criterion D, although they may be eligible under other criteria. By treating archaeological sites as eligible under the NRHP under any of the criteria, FEMA is affording all historic properties encountered in the field the same consideration and treatment afforded to archaeological sites that are formally found eligible. Isolates will be documented to exhaust all data potential and left on site. Because eligibility of the historic properties is being assumed, archaeological test excavations and post-field analysis and research will not be conducted at this time to document historic properties in the field.

It is critical to acknowledge and differentiate the effects to the historic properties caused by the fire, versus effects to the historic property as a result of the Undertaking to remove debris from properties. Adverse effects are alterations caused by the Undertaking to the characteristics for which the historic property is listed on, or eligible for listing in, the NRHP.

If an archaeological site will potentially be affected by the Undertaking but minimization efforts can be implemented to reduce or avoid the effects to a minimal level (e.g., areas can be flagged to avoid driving and/or staging of equipment), the site will be documented in accordance with SIHP requirements.

While avoidanc is the preferred mitigation measure, if adverse effects to historic properties cannot be avoided as a result of debris removal, it is anticipated that in most cases, documentation will be the implemented mitigation measure as the removal and safe disposal of fire damaged debris must proceed to sufficiently eliminate or lessen immediate threats to public health and safety.

Once the archaeological survey/monitoring has been completed and archaeological sites have been identified and documented, this data will be provided by the PI, or their designee, to the USACE POC and FEMA EHP POC. The completed/updated SIHP forms will be included by the PI, or their designee, in the final report and will be submitted to FEMA EHP for review and comment prior to finalization and FEMA submittal to SHPD and NHOs. Upon approval by SOI Qualified FEMA EHP, PI or their designee will submit completed SIHP forms in a manner consistent with the HICRIS User Agreement.

11. CURATION/COLLECTION PLAN

Because the archaeologically sensitive areas occur on private or commercial property, artifacts and other cultural materials identified during program implementation are the property of the property owner. Artifacts and other cultural materials may be temporarily moved within the boundaries of the property to prevent damage as a result of debris removal

operations; however, all artifacts and cultural materials will be returned to the property owner, or left on site, following any on-site analyses. No cultural materials will be removed from the parcel as part of this Treatment Plan. Curation of collected information and documentation will be in compliance with Hawai‘i State standards.

It is assumed, based on the nature of the Undertaking and the implementation of the procedures described above, that neither archaeological testing for significance assessment nor data recovery excavations will be conducted, or warranted, at this time in the event of a discovery.

12. INADVERTENT DISCOVERY

For parcels that are not identified for survey or monitoring prior to debris removal activities and a historic property is inadvertently discovered as a result of the operation, work will pause within the vicinity of the discovery, and a ten (10) foot buffer will be established around the location of the inadvertent discovery. Work may continue outside that buffer. The PI, or their designee, will be notified immediately so that the inadvertent discovery can be recorded and documented according to the protocols stated above, and prior to work continuing. FEMA EHP and SHPD shall also be provided with a summary of discoveries during the regularly scheduled coordiantion calls. Remaining ground disturbing work on the parcel will be monitored.

13. HUMAN SKELETAL REMAINS

In accordance with Stipulation III.B.1.c. of the Agreement:

If suspected human remains are discovered notification of SHPD local law enforcement office, and coroner/medical examiner will be made in accordance with the Hawai‘i Administrative Rules (HAR) § 13-300-40 (inadvertent discovery of human remains. Remains will be protected from any harm by covering them with a cloth and then a tarp, or similar material. Suspected human remains will **NOT** not be photographed until after consultation occurs with known lineal or cultural descendants and appropriate Island Burial Council (IBC).

In addition, OHA will notified and in advance of the initiation of consultation efforts with known lineal or cultural descendants.

14. GEOSPATIAL DATA

The PI, or their desingee, will ensure that all data recorded and submited as a component of the final reporting requiremetns for this effort meet the GIS standards as outlined in the State of Hawai‘i DLNR Historic Preservation Division’s Geospatial Data Submission Standard (attached).

15. CULTURAL RESOURCE REPORT

At the conclusion of the first 90 days of the operation the PI, or their designee, will provide a brief Summary Report regarding the status of field work in accordance with the implementation of this Treatment Plan to FEMA EHP and SHPD, to include the status of archaeological survey, and

monitoring. The results of which may be discussed during the established meeting schedule or via a standalone meeting. Subsequent to the initial Summary Report, updates shall be provided by the PI, or their designee, quarterly.

A Cultural Resource Report (CRR) shall be prepared in consideration of the Secretary of the Interior's Standards for Archaeology and Historic Preservation and meets, at a minimum, the requirements set forth in Hawai'i administrative Rules §13-279-5 for the monitoring portion of the report, will be produced at the conclusion of the Undertaking by the PI, or their designee, including reporting of all archaeological surveys conducted, methods, and results, monitoring performed, and completed site forms or updates, following the guidelines established by the Hawai'i SHPD (HAR §13-279), referencing HICRIS project # 2023PR00979.

The "End of Fieldwork" letter will include a table that describes the site(s) they worked at; photograph(s) of the site; a brief description of the site; a list of resources/features found; and boundary /GIS data points (in accordance with HAR 13-282-3(f)(1)).

The CRR and attachments will be submitted to FEMA EHP for review and comment prior to finalization and submittal to SHPD, OHA, and the Maui County Archaeologist by FEMA EHP. Upon approval by FEMA EHP, the Archaeologist will submit the completed CRR via HICRIS in a manner consistent with the HICRIS User Agreement.

At a minimum, the report will include:

- A title page containing the HICRIS activity number, report title, author(s), principal investigator, organization, agencies involved, permit numbers, and report date.
- A table of contents listing the major report sections, figures, photographs, and tables.
- An introduction and project description conveying the purpose of the survey, project background and location.
- A definition of the survey area.
- The environmental setting of the survey area, including the natural and cultural environments.
- Pre-field literature and historic records search results.
- A cultural history of the area, incorporating the literature review, records search, and research topic.
- Field methods including the names of individuals employed in actual fieldwork and the date(s) it was conducted, the number of acres surveyed and the number of acres within the APE that were not inventoried.
- Survey results including the number of cultural resource sites and isolates identified during the inventory, detailed descriptions, and interpretations.
- Measures applied in the field to realistically mitigate/limit potential adverse effects to historic properties for the specific Undertaking.
- Summary and recommendations discussing the results of survey within the broader archaeological context.
- For historic properties documented prior to the fire, a summary of pre-fire preservation recommendations and commitments (as noted in HICRIS files), and

justification/documentation for any recommended future deviation from prior preservation recommendations.

- References cited section containing recent and relevant citations.
- Detachable appendices with references to specific site localities and other data considered sensitive.
- Photo logs for each property surveyed and/or monitored during debris removal operations.
- Completed Daily Archaeological Monitoring Logs.
- For properties with two or more standing walls: completed logs from a historic architect photograph that include description of the remaining structural debris prior to removal.
- At least five maps that meet the appropriate standards. The maps will include at a minimum:
    - A final APE map identifying all locations included in the Undertaking.
    - A general project location map at 1:24,000 scale showing the relationship of the survey area to local political or geographic features.
    - A confidential background research map at 1:24,000 scale showing NRHP- and SIHP-listed properties, previously recorded sites, prior conducted inventories, other historical resources, and all of their relationships to the survey. Appropriate labels will be used to clearly distinguish between all the features.
    - A confidential results of survey map at 1:24,000 scale, including the current completed survey, previous surveys completed within the survey area that are deemed sufficient, and the location of all identified cultural resource sites (e.g., buildings and structures and archaeological sites) and iOs.
    - Confidential individual site plan-view maps that show the site boundary, cultural features, diagnostic artifacts, topographic elevations, notable natural features, and any impacts or disturbances to the sites.

Draft and draft final versions of the CRR and SIHP forms will be subject to review by FEMA EHP prior to finalization. Participating NHOs will be given the opportunity to review and provide input on the information being shared. The draft version of the CRR will be due within 45 days of the completion of the Undertaking to FEMA EHP. FEMA EHP will provide a draft to SHPD, the Maui County Archaeologist, and the Office of Hawaiian Affairs for a 15-calendar day comment period, after which all comments will be provided by FEMA EHP back to the PI, or their designee. A draft final version of the report will be due from the PI, or their designee, within 15 days of FEMA and SHPD's submission of comments on the draft version. Upon approval by FEMA EHP the PI, or their designee, will submit the final CRR and attachments and geospatial data to HICRIS in a manner consistent with (HAR §13-279).

17. PUBLIC BENEFIT

The execution of this protocol benefits the public in expediting FEMA compliance review operations that directly support the protection of life and property through execution of a program that removes contaminated debris from the homes of affected citizens. It also benefits the public by providing an opportunity for the religious and cultural historic properties of significance to be documented and integrated in the greater scope of the Hawai‘i historical record for the education, inspiration, pleasure and enrichment of Hawai‘i's citizens.

Attachment 1:

State of Hawai‘i DLNR Historic Preservation Division Geospatial Data Submission Standard

State of Hawai‘i DLNR Historic Preservation Division
Geospatial Data Submission Standard

The purpose of this document is to define the requirments for submitting geospatial data to the State of Hawai‘i Historic Preservation Division (SHPD). These standards are based on research of State Historic Preservation Office standards used across the United States and tailored for use in Hawai‘i. The goal is to raise the level of accuracy and reliability in reporting the locations of historic properties so that SHPD, consulting parties, Native Hawaiian Organizations, and the public can make better informed decisions on how best to mitigate treatment of these properties.

This document is split into three sections: 1. the **Policy for Geospatial Data Submissions**, 2. the **SHPD GIS File Geodatabase Format**, and 3.the **Geospatial Data Transfer Report Template.**

The Geospatial Data Submission Standard was created in January of 2019 as a policy document approved by the administration of SHPD. Non-compliance with this standard may result in a final report not being accepted or SIHP request being denied.

Section 1: Policy for Geospatial Data Submissions

All GIS data submitted to SHPD must adhere to the following requirements:

a) Esri shapefiles and/or geodatabase feature classes are preferred.
b) GIS data files are required for all data exported from GPS files and data digitized in GIS, including:
    - **Site datum/centroid** (point)
    - **Site boundary** polygon (for any site, building, structure, object, district, burial)
    - Points/lines/polygons for all **features** within the site
    - Points/lines/polygons for all **isolated features**
    - Polygons for **surveyed areas**
    - Polygons for the **APE**
    - Point/line/polygons for **subsurface testing**
    - Polygons for **preservation areas**, **buffer zones**, and **preservation fencelines**
    - Points/lines/polygons for **previous disturbances** to historic properties
c) Clearly label all shapefiles so they can be easily distinguished from each other.
d) Datum must be the most current datum used in the islands at the moment: NAD83 or WGS84 (no Old Hawaiian Datum or NAD27).
e) Geographic Coordinate system must be compatible with WGS84 or NAD 83 UTM Zone 4 (or 5) North.
f) Units must use the metric system.
g) GIS files can be transferred using a file geodatabase. A blank copy of SHPD‘s file geodatabase will be made available.

h) GIS files must be transferred using compressed ZIP files that contain the name of the project and date. (ex: KAPOLEI33_16May1999)
i) GIS files larger than 20MB must be burned to a CD/DVD and sent to SHPD, smaller files can be emailed to the GIS Specialist.
j) GIS files are required to have the appropriate metadata and to be accompanied by a Geospatial Data Transfer Report (see template in Section 3 of this document).
k) **Attribute requirements**:
For Archaeology, Burial, District, Historic Building, Historic Object, and Historic Structure datasets, these fields are required to be populated:

a. SIHP #
b. Temporary #
c. TMK #
d. Name
e. Description
f. Historic Context
g. Condition
h. Integrity
i. Register Status
j. Register Criteria
k. Preservation Determination

For the Survey dataset:

l. Survey type
m. Dates of survey
n. Summary of findings

For the Preservation Area dataset:

o. Preservation status
p. SIHP # for sites within preservation area

For the APE dataset:

q. Project name
r. Project description
s. SIHP # for sites within APE

l) **Metadata Requirements**:

a) Name of project and date of data collection.
b) Name of organization with names of PI, Field Director, person(s) who collected the data, person who performed the post-processing and data transfer.
c) List the datum and coordinate system.
d) Any limitations of use.

Section 2: SHPD GIS File Geodatabase Format

The SHPD GIS Cultural Resources Geodatabase is based on the geodatabase template created by the National Park Service and has been modified to meet the needs of the Hawai‘i SHPD. The following is a list of the feature datasets, feature classes, fields, and domains within the SHPD geodatabase.

Datasets:

Name	Layer Types
Archaeology	Point, Line, Polygon
Burials	Point, Polygon
Cultural Resource Other	Point, Line, Polygon
Districts	Point, Polygon
Historic Buildings	Point, Polygon
Historic Objects	Point, Line, Polygon
Historic Structures	Point, Line, Polygon
Landscapes	Point, Polygon
Preservation Areas	Point, Polygon
Subsurface Testing	Point, Polygon
Surveyed Areas	Point, Line, Polygon
Unknown	Point, Line, Polygon

General Fields: (name, description, character limit, data type, domain name)

Name	Description	Character limit	Data Type	Domain
Resource Name	Name of the feature or site being recorded.	250	Text	N/A
SIHP ID	SIHP # assigned to property.	30	Text	N/A
CR Notes	Description of the historic property.	250	Text	N/A
Island	The island the resource is on.	50	Text	Island
Boundary Type	How the boundary was drawn in GIS.	50	Text	Bnd_Type_ArchaePt
Restricted:	Is the property restricted? (DoD land, burial, etc.)	50	Text	Restrict
Source:	Name(s) on report	250	Text	N/A
Source Date:	Date of report	N/A	Date	N/A
Source Scale:	Scale used in mapping (default: 1:24,000)	50	Text	N/A
Source Accuracy:	Horizontal accuracy of the feature being mapped.	250	Text	N/A

Source Coordinate System:	Coordinate system used to map the feature.	250	Text	N/A
Map Method:	Method used to map the feature.	50	Text	Map_Method
Map Method Description:	Comment on how feature was mapped.	250	Text	N/A
Create Date:	Date feature was created in GIS.	N/A	Date	N/A
Edit Date:	Date feature was last edited in GIS.	N/A	Date	N/A
Edit By:	Who last edited the feature in GIS.	50	Text	N/A
Originator:	Organization who completed the study.	250	Text	N/A
Constraint:	Quality of the data, any limits on its use.	25	Text	N/A
Temp Site ID:	Temporary site # given by non-SHPD agencies.	50	Text	N/A
Prior Site ID:	Previous SIHP # or Bishop Musem #.	50	Text	N/A
Historic District ID:	ID of the Historic District the property is associated with.	50	Text	N/A
Site Function:	Primary function of the site.	50	Text	Func
Secondary Function:	Secondary function of the site.	50	Text	Func
Tertiary Function:	Tertiary function of the site.	50	Text	Func
Site Type:	Primary type of site feature.	50	Text	Site_Type
Secondary Type:	Secondary type of site feature.	50	Text	Site_Type
Tertiary Type:	Tertiary type of site feature.	50	Text	Site_Type
Preservation Status:	Site treatment determined in report.	50	Text	Preservation_Status
Preservation Comments:	Explanation of preservation needs.	255	Text	N/A
Condition:	Condition of the site.	50	Text	Condition
Condition Notes:	Explanation of the condition.	255	Text	N/A
Feature Count:	How many features contribute to the site.	N/A	Long Integer	N/A
Integrity:	Site integrity acknowledgment.	50	Text	Yes_No
Register Status:	Eligible or listed to NRHP/HRHP or not.	50	Text	Status
Register Criteria:	A,B,C,D, or E	50	Text	Criteria

Historic Context:	Historic era the site is associated with.	50	Text	Historic Context
TMK:	Tax Map Key/Parcel number	255	Text	N/A
Moku:	Traditional district	50	Text	Moku
Ahupua‘a:	Traditional land use boundary	N/A	Double	Ahupuaa_Corrected
Y coordinate:	Y coordinate value for centroid of site.	N/A	Double	N/A
X coordinate:	X coordinate value for centroid of site.	N/A	Double	N/A
Burials Present:	Yes/No if burials are associated with site.	50	Text	Yes_No
Survey Level:	Describe how intensive the survey was.	50	Text	Srvy_Level
Survey Type:	Describe type of survey (Archaeology, Architecture, etc.)	50	Text	Srvy_Type

Additional Fields For Burials:

Name	**Description**	**Character limit**	**Data Type**	**Domain**
Discovery_Status	Disposition of burial when discovered.	50	Text	Discovery_Status
Date_Identified	Date burial identified.	N/A	Date	N/A
Investigation_Date	Date burial investigated by SHPD or CRM firm.	N/A	Date	N/A
Background_Notes	Notes on burial status.	255	Text	N/A
Burial_Description	Description of remains.	255	Text	N/A

Reported_By	Who reported the find.	50	Text	N/A
Remains_Exposed_By	How remains were exposed.	50	Text	Remains_Exposed_By
Estimated_MNI	Estimated minimum number of individuals at site.	50	Text	N/A
Historic_Criteria	Era burial is associated with.	50	Text	Historic_Criteria
Ethnicity	Hawaiian or non-Hawaiian.	50	Text	Ethnicity
Basis_For_Determination	How ethnicity was determined.	255	Text	N/A
SHPD_Staff_Responding	SHPD staff responding.	50	Text	N/A
Landowner_Name	Name of land owner.	50	Text	N/A
Landowner_Contact	Contact info for land owner.	255	Text	N/A
Preservation_Determination	How site will be treated.	50	Text	Preservation_Determina
Preservation_Criteria	How preservation is supported.	100	Text	Preservation_Criteria

Additional Fields for Historic Architecture:

Name	**Description**	**Character limit**	**Data Type**	**Domain**
Landowner Current	Who presently owns the land.	50	Text	N/A
Owner Status	Private, state, federal, etc.?	50	Text	Owner_Status
Present Use	How property is presently used.	50	Text	Land_Use
Historic Use	How property was used in the past.	50	Text	Land_Use
Architect Style	Architecture style.	50	Text	Architect_Style
Location Status	Has property been moved in the past, or not.	50	Text	Location_Status
Architect	Who the architect was that designed the property.	50	Text	N/A

Additional Fields for Subsurface Testing

Name	**Description**	**Character limit**	**Data Type**	**Domain**
Subsurface	Type of subsurface testing done.	50	Text	Subsurface_Type

Trench Number	Trench number	50	Text	N/A
Length	Length of trench	50	Text	N/A
Minimum Width	Min. Width of trench	50	Text	N/A
Maximum Depth	Max. Depth of trench	50	Text	N/A
Orientation	Direction of trench (N-S, E-W, etc.)	50	Text	N/A
Test Unit Number	Test unit number	50	Text	N/A
Unit Size	Size of test unit	50	Text	N/A
Unit Depth	Depth of test unit	50	Text	N/A
Finds	Description of finds	254	Text	N/A
Comment	Additional comments	254	Text	N/A

Domains:

Name	**Associated Datasets**	**Field Type**	**Domain Type**	**Values**
Ahupuaa_Corrected	ALL	Double	Coded	660 values
Architect_Style	Historic Building	Text	Coded	64 values
Bnd_Type_ArchaePt	All point layers	Text	Coded	Site datum point, Center point, Generalized point, Random point, Other point, Vicinity point
Bnd_Type_BldgPly	All polygon layers	Text	Coded	Derived polygon, Footprint polygon, Circumscribed polygon, Perimeter polygon, Buffer polygon, Other polygon
Bnd_Type_SrvyLn	All line layers	Text	Coded	Transect line, Center line, Random line, Generalized line, Edge line, Other line
Condition	Archaeology, Historic Building, Historic Object, Historic Structure, Burial	Text	Coded Values	Excellent, Good, Fair, Poor, Destroyed, Unknown
Criteria	Archaeology, Historic	Text	Coded Values	A, B, C, D, E, AB, ABC, ABCD, ABD,

	Building, Historic Object, Historic Structure, Burial			ABDE, ABE, ABCDE, AC, ACD, ACDE, ACE, AD, ADE, AE, BC, BCD, BCE, BCDE, BD, BDE, BE, CD, CDE, CE, DE
Determination	Burial	Text	Coded Values	Human, Non-human, Infant, Child, Adult, Unknown
Discovery_Status	Burial	Text	Coded Values	Newly identified, Previously known
Ethnicity	Burial	Text	Coded Values	Hawaiian, Non-Hawaiian, Unknown
Function	Archaeology, Historic Building, Historic Object, Historic Structure	Text	Coded Values	Agriculture – irrigated, Agriculture – field clearance, Agriculture – intense mechanized, Agriculture – generic, Animal pen, Art/Symbolism, Aquaculture, Bird capture, Burial, Burial – possible, Boundary – ahupuaa, Boundary – houselot or garden, Boundary – paddock/ranching, Boundary – generic, Ceremonial, Communication, Cupboard – storage, Dam, Dump – historic, Fishing grounds – ko‘a – submerged, Fishing-lookout station – shoreline, Foundation, Habitation – generic, Habitation – permanent, Habitation – temporary, Heiau – ceremonial complex, Hunting blind, Marker, Miltary – encampment, Military – gun emplacement, Military – storage, Oven, Quarry, Ranch Infrastructure, Refuse, Recreation, Resource Procurement, Shelter, Shipping – interisland,

				Shrine – ceremonial structure, Storage, Tool production, Transportation, Unknown, Wreck – ship/plane/etc., Traditional Cultural Place, Water feature, Public Education, Government Operations, Commerce/Trade
Historic_Context	Archaeology, Historic Building, Historic Object, Historic Structure, Burial	Text	Coded Values	Indeterminate, Precontact, Early precontact, Late precontact, Late precontact/early historic, 19th century, 19th/20th century, Early/middle 20th century, Continuous, Historic, Modern, Historic/Modern, Sugar Camps, WW2 era, Unknown
Historic_Criteria	Burial	Text	Coded Values	Under 50 years, Over 50 years, Undetermined
Integrity	Archaeology, Historic Building, Historic Object, Historic Structure	Text	Coded Values	Yes, No, Unknown, Altered, Unaltered
Island	ALL	Text	Coded Values	Maui, Offshore, Northwestern Islands, Hawai‘i, Kaho‘olawe, Kaua‘i, Moloka‘i, Ni‘ihau, O‘ahu, Lana‘i
Land_Use	Historic Building, Historic Object, Historic Structure	Text	Coded Values	Residential, Commercial, Industrial, Public, Recreation, Institutional, Transportation, Utility, Military, Agricultural, Unknown
Location_Status	Historic Building, Historic Object,	Text	Coded Values	Original location, Moved, Unknown

	Historic Structure			
Map_Method	ALL	Text	Coded Values	Differential GPS, Autonomous GPS, Digitized, Derived by XY event point or centroid generation, Geo-coded, Total Station, Theodolite, Other
Moku	ALL	Text	Coded Values	Hilo, Kahikinui, Kohala, Kona, Kula, Puna, Waialua, ʻEwa, Haleleʻa, Hāmākua, Hāmākualoa, Hāmākuapoko, Hāna, Kāʻanapali, Kaʻū, Kaupō, Kīpahulu, Koʻolau, Koʻolauloa, Koʻolaupoko, Lāhainā, Nāpali, Pūʻali Komohana, Waiʻanae, Honuaʻula
Owner_Status	Historic Building, Historic Object, Historic Structure	Text	Coded Values	Public, Private, State, Federal, Leased, Unknown
Preservation_Criteria	Burial	Text	Coded Values	Located in areas with a concentration of skeletal remains; Pre-contact or historical burial sites associated with important individuals and events as recommended by the council following consultation with known lineal/cultural descendants, NHOs, etc.; Located in areas within a context of historic properties; Known lineal descendants request preservation in place; Landowner agrees to preservation in place; Cultural appropriateness

				of the proposal to preserve in place or relocate; Any possible harm to the skeletal remains if the burial site is left in place; The request of known lineal/cultural descendants to relocate; Any reason presented by the applicant to relocate; Unknown
Preservation_Determination	Burial	Text	Coded Values	Preserve in place, Relocate on site, Relocate off site, Unknown
Preservation_Status	Archaeology, Historic Building, Historic Object, Historic Structure, Burial	Text	Coded Values	See feature records (more than one status); Preservation recommended in AIS, BTP, or Section 106 document; Preservation with data recovery recommended in AIS or Section 106 document; Data recovery recommended in AIS or Section 106 document; Preserved following burial registration process; Inadvertant discovery (burial and non-burial sites); Listed by SHPD staff as preservation recommended.; No further work or action recommended in AIS; Monitoring recommended; Unknown
Remains_Exposed_By	Burial	Text	Coded Values	Constructions, Nature, Other, Unknown, Archaeological Excavation
Restricted	ALL	Text	Coded Values	Unrestricted, Restricted: no third party disclosure, Restricted: affected cultural group concurrence, Restricted:

				no release, Restricted: originating agency concurrence, Unknown
Site_Type	Archaeology, Historic Building, Historic Object, Historic Structure	Text	Coded Values	Alignment, Berm, Bridge, Bunker, Cairn, Cleared Area, C-shaped wall, Cistern, Concrete/cement pad, Culvert, Ditch, Enclosure, Fence, Fishpond, Footpath, Hearth, Historic artifact scatter, Imu, Lithic scatter, Midden/artifact surface deposit, Modified blister or lava sink, Modified lava tube, Modified outcrop, Mound, Pahoehoe excavation, Papamu, Pavement, Petroglyph, Pictograph, Pier, Pit, Platform, Road, Stairway, Submerged artifacts, Submerged aircraft, Submerged structure, Submerged watercraft, Subsurface cultural layer, Tank (water), Terrace, Traditional artiface scatter, Trail – curbstone, Trail – steppingstone, Wall – free standing, Wall – retaining, Wall – submerged or partially submerged, Well, Wood structural remains, Cultural/ethnographic, Burial/Possible Burial, Military, Structure, Railroad, Public Institution, Historic Building, Historic Object, Historic Structure, ‘Auwai, Unknown
Survey_Level	Archaeology, Historic Building,	Text	Coded Values	Reconnaissance survey, Intensive survey, Archaeological

	Historic Object, Historic Structure, Burial			Assessment, Monitoring, Data Recovery, Osteological Investigation, Preservation Plan, Burial Treatment Plan, Other
Survey_Type	Archaeology, Historic Building, Historic Object, Historic Structure, Burial, Survey	Text	Coded Values	Archaeology, Architecture, Structure, Cultural Landscape, Ethnography, Multiple resource types, Compliance, Other
Status	Archaeology, Historic Building, Historic Object, Historic Structure, Burial	Text	Coded Values	Eligible individually (ES), Eligible as a contributing resource (EC), Non-contributing – not individually eligible (NC), Not eligible – out of period (NP), Undetermined (UN), Demolished (XD), Recommended Eligible (RE), Recommended Not Eligible (RNE), Listed on NRHP (NRLIST), Listed on HRHP (HRLIST), Listed on NRHP & HRHP (BOTH), Nominated to NRHP/HRHP (NOMINATED), Delisted from HRHP (HRDELISTED), Delisted from NRHP (NRDELISTED), Delisted from NRHP/HRHP (BOTH DELISTED)
Subsurface_Type	Subsurface Testing	Text	Coded Values	Stratigraphic trenching, Test Unit, Shovel Test Pit, Other
Yes_No	ALL	Text	Coded Values	Yes, No

Section 3: Geospatial Data Transfer Report Template

Name: _____

Organization: _____

Date: _____

Project Name/Number (if applicable):

_____

_____

Report Name/Date (if applicable):

_____

_____

Authors: _____

Island(s): _____

Zip File Name: _____

Data Type: (circle one)

Shapefile File Geodatabase KMZ other:_____

File size: _____

Layer names/types:

_____

_____

Datum: _____

Coordinate System: _____

Primary data source: (circle one)

GPS Georeferencing Digitization Other

Limitations on use:

_____

_____

_____

_____

_____

ATTACHMENT 11. ENVIRONMENTAL COMPLIANCE MEMORANDUM AND BIOSECURITY PROTOCOL

United States Department of the Interior
Office of the Secretary
Office of Environmental Policy and Compliance
1849 C Street, NW - MS 5538 - MIB
Washington, D.C. 20240

9040.1c

PEP-ENVIRONMENTAL COMPLIANCE MEMORANDUM NO. 20-5

To: Heads of Bureaus and Offices

From: Michaela E. Noble, Director /s/02/25/2019
Office of Environmental Policy and Compliance

Kaiini Kaloi, Director /s/02/25/2019
Office of Native Hawaiian Relations

Subject: Biosecurity Protocol for Hawai'i Island

PURPOSE

The Office of Environmental Policy and Compliance (OEPC) is issuing this Environmental Compliance Memorandum (ECM) under the authority provided in Department Manual, Series 17, Part 381, Chapter 4 (381 DM 4) to convey instructions and guidance through the Environmental Memoranda Series. This ECM is being co-issued with the Office of Native Hawaiian Relations. This ECM establishes protocols to be followed, required by statute, or deemed appropriate, to prevent the introduction of harmful invasive species into local natural areas and native habitats on Hawai'i Island and to prevent the spread of invasive species to other U.S. land interests.

BACKGROUND

The Federal Government defines an invasive species as a non-native organism, with respect to a particular ecosystem, whose introduction causes or is likely to cause economic or environmental harm, or harm to human, animal, or plant health. Biosecurity is the set of measures taken to manage the risk from invasive species to the economy, environment, and health and lifestyle of the people.

The protocols establish best management practices to mitigate and prevent the spread of invasive species to be followed by all Department of the Interior employees, contractors, concessioners and others present or performing physical work on Hawai'i Island. These protocols are to be followed and implemented whenever feasible. The protocols also include recommendations for keeping field staff safe from certain invasive species present on Hawai'i Island. The protocols were developed based on existing guidance provided by the National Park Service, the U.S. Fish and Wildlife Service, the U.S. Geological Survey, the State of Hawaii, and the Department of the Interior's Office of Native Hawaiian Relations.

If you have any questions, please contact Mr. Kaiini Kaloi with the Department of the Interior's Office of Native Hawaiian Relations by email at kaiini_kaloi@ios.doi.gov or by phone at 202-208-7462; or Mr. John Nelson with the Department of the Interior's Office of Environmental Policy and Compliance by email at john_nelson@ios.doi.gov or by phone at 202-208-6304.

Attachment

cc: Federal Emergency Management Agency, Region IX
State of Hawaii

Attachment

OFFICE of ENVIRONMENTAL POLICY and COMPLIANCE
OFFICE of NATIVE HAWAIIAN RELATIONS

Environmental Compliance Memorandum

Biosecurity Protocols for Hawai'i Island

The following biosecurity protocol (based on National Park Service, State of Hawai'i, U.S. Fish and Wildlife Service, U.S. Geological Survey, and the DOI Office of Native Hawaiian Relations guidance) are to be followed when required by statute, or deemed appropriate, and operating on Hawai'i Island. The protocol was created to prevent the introduction of invasive species including frogs, ants, weeds, and fungi into local natural areas (e.g., Hawai'i Volcanoes National Park, Hakalau Forest National Wildlife Refuge, State of Hawaii "Natural Areas") and areas with native habitat (habitat that is primarily composed of native vegetation) on Hawai'i Island, to other islands in the Hawaiian archipelago, or to the U.S. mainland. The local land manager(s) who have jurisdiction over the subject land will make the final determination as to whether the subject land meets the definition of a natural area or native habitat.

1. All work vehicles, machinery, and equipment are to be cleaned, inspected by its user, and found free of mud, dirt, debris and organisms prior to entry into the natural areas or native habitat.

a. Vehicles, machinery, and equipment must be thoroughly pressure washed in a designated cleaning area (designated by the responsible land manager) and visibly free of mud, dirt, plant debris, insects, frogs (including frog eggs) and other vertebrate species such as rats, mice and non-vegetative debris. A hot water wash is preferred. Areas of particular concern include bumpers, grills, hood compartments, areas under the battery, wheel wells, undercarriage, cabs, and truck beds (truck beds with accumulated material (intentionally placed or fallen from trees) are prime sites for accidental transport of invasive species).

b. The interior and exterior of vehicles, machinery, and equipment must be free of rubbish and food. The interiors of vehicles and the cabs of machinery must be vacuumed clean. Floor mats shall be sanitized with a solution of >70% isopropyl alcohol or a freshly mixed 10% bleach solution.

c. Any machinery, vehicles, equipment, or other supplies found to be infested with ants (or other invasive species) must not enter natural areas or native habitat. Treatment is the responsibility of the equipment or vehicle owner and operator.

2. Little Fire Ants – All work vehicles, machinery, and equipment are to be inspected for invasive ants prior to entering the natural areas or native habitat.

a. A visual inspection for little fire ants is to be conducted prior to entry into natural areas or native habitat.

b. Hygiene is paramount but even the cleanest vehicle may transport little fire ant. Place MaxForce Complete Brand Granular Insect Bait (1.0% Hydramethylnon; http://littlefireants.com/Maxforce%20Complete.pdf) into refillable tamper resistant bait stations. An example of a commercially available refillable tamper resistant bait station is the Ant Café Pro (https://www.antcafe.com/). Place a bait station (or stations) in vehicle. Note larger vehicles, such as trucks, may require multiple stations. Monitor bait stations frequently (every week at a minimum) and replace bait as needed. If the station does not have a sticker to identify the contents, apply a sticker listing contents of the station.

c. Any machinery, vehicles, equipment, or other supplies found to be infested with ants (or other invasive species) must not enter natural areas or native habitat until it is sanitized and re-tested following a resting period of at least 24 hours. Infested vehicles must be sanitized following recommendations by the Hawaii Ant Lab (http://www.littlefireants.com/) or other ant control expert and in accordance with all State and Federal laws. Treatment is the responsibility of the equipment or vehicle owner and operator.

d. Gravel, building materials, or other equipment such as portable buildings are to be baited using MaxForce Complete Brand Granular Insect Bait (1.0% Hydramethylnon; http://littlefireants.com/Maxforce%20Complete.pdf) or AmdroPro (0.73% Hydramethylnon; http://littlefireants.com/Amdro%20Pro.pdf) following label guidance.

e. Storage areas that hold field tools, especially tents, tarps, and clothing are to be baited using MaxForce Complete Brand Granular Insect Bait (1.0% Hydramethylnon; http://littlefireants.com/Maxforce%20Complete.pdf) or AmdroPro (0.73% Hydramethylnon; http://littlefireants.com/Amdro%20Pro.pdf) following label guidance.

Note: The authors' use of trade names is for descriptive purposes only and does not imply endorsement by the US Government. All pesticides must be applied in accordance with State and Federal laws.

3. Base yards and staging areas inside and outside natural areas and native habitat must be kept free of invasive species.

a. Base yards and staging areas are to be inspected at least weekly for invasive species and any invasive found is to be removed immediately. The local land manager(s) will determine what species are to be targeted in these inspections and removal procedures (please refer to contacts listed at the end of the document for current disposal/removal recommendations). The local land manager will also ensure regulatory compliance with all activities. Land managers are to pay particular attention to where vehicles are parked overnight, keeping areas within 10-meters of vehicles free of debris. Parking on pavement and not under trees, while not always practical, is best.

b. Project vehicles or equipment stored outside of a base yard or staging area, such as a private residence, are to be kept in a pest free area as defined by the onsite land or project manager.

4. All cutting tools used in natural areas and native habitat must be sanitized to prevent the spread of the Rapid ʻŌhiʻa Death (ROD) fungus.

a. Avoid wounding ʻōhiʻa trees and roots with mowers, chainsaws, weed eaters, and other tools. Cut only the minimum number of trees and branches as approved for the project.

b. All cutting tools, including machetes, chainsaws, and loppers must be sanitized to remove visible dirt and other contaminants prior to entry into natural areas or areas with native habitat, and when moving to a new project area within the native habitat area. Tools may be sanitized using a solution of >70% isopropyl alcohol or a freshly mixed 10% bleach solution. One minute after sanitizing, you may apply an oil based lubricant to chainsaw chains or other metallic parts to prevent corrosion.

c. Only dedicated tools and chainsaws are to be used to sample known or suspected ROD infected trees.

d. Vehicles, machinery, and equipment must be cleaned as described in (1) above.

5. Imported ʻōhiʻa firewood, logs, and ʻōhiʻa parts:

a. ʻŌhiʻa firewood, logs, and parts are not to be transported. For State guidance see: www.hdoa.hawaii.gov.

6. For individuals working in the field on Hawaiʻi Island:

a. **Before going into the field**, visually inspect and clean your clothes, boots, pack, radio harness, tools, and other personal gear and equipment, for seeds, soil, plant parts, insects, and other debris. A small brush is handy for cleaning boots, equipment and gear. Soles of shoes are to be sanitized using a solution of >70% isopropyl alcohol or a freshly mixed 10% bleach solution.

b. **Immediately before leaving the field,** visually inspect and clean your clothes, boots, pack, radio harness, tools, and other personal gear and equipment, for seeds, soil, plant parts, insects, and other debris. Soles of shoes are to be sanitized using a solution of >70% isopropyl alcohol or a freshly mixed 10% bleach solution.

c. **Little fire ants nest in trees.** If you are under a tree and that tree is bumped or somehow stressed, the threat response of the ants is to fall from the leaves and sting the person under the tree. If you are subject to an ant attack, do not panic. The ants are extremely small, but their stings are painful, so make sure you remove all ants from your body and clothing. The stings cause inch long welts that are itchy and painful, and can last for weeks. Treat stings as you would other insect stings. In some persons, stings can produce life threatening reactions. Stocking antihistamine in the first aid kit is a reasonable precaution.

d. **Rat Lungworm disease** is caused by a parasite that can infect humans who consume raw or undercooked infected snails or slugs or consume raw produce that contains a small infected snail

or slug. Infection is rare but can be serious. Symptoms can include severe headache, neck stiffness, low grade fever, nausea, and vomiting anywhere from 1-6 weeks after exposure. The disease is not spread person to person. Anyone who handles snails or slugs is to wear gloves and/or wash hands. Eating unwashed produce is discouraged.

For current disposal/removal recommendations please contact the following:

1. Little Fire Ants – http://www.littlefireants.com/
2. Rapid ʻōhiʻa Death - https://cms.ctahr.hawaii.edu/rod/
3. Coqui - http://www.biisc.org/
4. All taxa - http://www.biisc.org/

ATTACHMENT 12. AIR MONITORING AND SAMPLING PLAN

AIR MONITORING & SURVEILLANCE PLAN

2023 Wildfire Debris Removal
Lahaina
Maui County, Hawaii

Prepared for

Contract: W9128A-24-F-0011

January 2024

Document #: PC-004-01

Prepared by

ECC Constructors LLC
2969 Mapunapuna Place, Suite 220
Honolulu, HI 96819
Tel: 1-808-486-3707 ♦ Email: Corporate@ecc.net

Air Monitoring and Surveillance Plan

2023 Wildfire Debris Removal Services
Lahaina
Maui County, Hawaii

This Air Monitoring and Surveillance Plan will be used for the air sampling procedures to monitor the health and safety of Environmental Chemical Corporation (ECC) staff and their contractors/subcontractors during activities that may disturb surface soil for this project within the site specific boundaries.

Plan Author:

10-Jan-2024

Kane McNeill — Date
ECC –Deputy QC Manager / Air Monitoring Manager

Plan Approval

Kym Edelman — Jan 10, 2024

Name — Date
Kym Edelman, CIH, CSP
ECC - Corporate Safety Director

Accepted as a Submittal

Name — Date

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
AHA	Activity Hazard Analysis
AL	Action Level
AMSP	Air Monitoring and Surveillance Plan
BEI	Biological Exposure Indices
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CoC	Chemical/Contaminants of Concern
COC	Chain of Custody
CSP	Certified Safety Professional
DR	Debris Removal
DROP	Debris Removal Operations Plan
ECC	Environmental Chemical Corporation
EDD	Electronic Data Deliverable
EPA	U.S. Environmental Protection Agency
EZ	Exclusion Zone
NIOSH	National Institute of Occupational Safety and Health
OSHA	Occupational and Safety Health Administration
OTM	OSHA Technical Manual
PCM	Phase Contrast Microscopy
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
QA/QC	Quality Assurance/Quality Control
SR	Sensitive Receptor
SSHP	Site Safety and Health Plan
TLV	Threshold Limit Value
TWA	Time Weighted Average
USACE	United States Army Corp. of Engineers
WBZ	Workers Breathing Zone

1.0 INTRODUCTION

Environmental Chemical Corporation (ECC) has been contracted by the US Army Corp of Engineers (USACE) to perform debris removal after the 2023 wildfires on the island of Maui in Hawaii.. The fire impacted structures and the ash and debris left by the burning of structures may contain asbestos, heavy metals, and other toxic contaminants.

This Air Monitoring and Surveillance Plan (AMSP) is prepared for the Debris Removal Operations in Maui County, Hawaii on behalf of ECC. The Fire Debris Removal operations are provided in support of the Lahaina Debris Removal Operations Plan

Air sampling procedures described by this AMSP apply activities conducted by ECC and their contractors/subcontractors to verify emission control measures are adequate to control personal exposure risks. The monitoring results will assess if: the appropriate personal protective equipment (PPE) is used by site workers; the dust emission controls are adequate to eliminate hazardous concentrations of airborne particulate in the workers breathing zone (WBZ); and to mitigate the offsite migration of dust. The AMSP identifies sample collection and analytical methods and the associated Quality Assurance/Quality Control (QA/QC) procedures.

2.0 AIR MONITORING & SURVEILLANCE PROGRAM

The scope of work the AMSP covers is summarized as providing personal exposure monitoring for activities that include, but are not limited to the following:

- Removal, storage, transportation, and disposal of hazardous and non-hazardous solid waste and debris resulting from the fire.
- Restoration and rehabilitation of timberland, streams, rivers, and other waterways.
- Transportation of debris and site soils to the off-site landfill.

Personal exposure samples will be collected on various job classifications including equipment operators, laborers, and Supervisors or technical support personnel. This AMP includes reference to the Project Site Safety and Health Plan (SSHP) as appropriate that addresses worker training requirements, PPE, work zone definitions, activity hazard analysis (AHA), etc. The AMP provides guidance to verify and document occupational exposures to recognized chemicals/contaminants of concern (CoC). Air sampling results will be used to adjust emission control protocols and worker PPE to ensure exposures remain below regulatory-based exposure criteria.

The sampling will take place for the duration of the project or until such time the Operations Section Chief or environmental group determines that air monitoring may cease. Air data will be submitted to the client personnel designated by the Operations Section Chief.

The air monitoring program will be overseen by a Certified Industrial Hygienist (CIH). The air monitoring team members will be experienced in performing the air monitoring and surveillance procedures in this plan or will receive hands on training by Air Monitoring Team Supervisors. The air monitoring team will collect personal exposure samples from one out of every five debris crews. The team will rotate through different removal crews to ensure the data is representative of debris workers.

CHEMICALS OF CONCERN

The Chemicals of Concerns (CoCs) that will be assessed include:

- Asbestos
- Total and Respirable Particulates (including Silica as Quartz)
- Poly Nuclear Aromatic Hydrocarbons (PAHs)
- Heavy Metals [1]
- Other Known or identified Respirable Hazards [2]

1 – A list of heavy metals to monitor was not provided in the PWS.
2 – These CoCs will be included as they are identified by the USACE.

See Section 3.0 for details on the activities that will be monitored.

The CoCs are presented in **Table 2-1**. Table 2-1 provides the regulatory basis for the CoCs that have specific standards assigned to them. The table also presents sampling criteria including the sample and analytical method; sample method number; the prescribed flow rate or flow rate range; sampling duration (time); and appropriate air volume or range of air volume. Exposure limits will be determined based on consideration of the following:

- American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) as presented in the TLVs and Biological Exposure Indices (BEI) Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices; and

- Occupational Safety and Health Administration (OSHA), Permissible Exposure Levels (PEL).

Table 2-1: Chemicals of Concern

	Chemical of Concern	Exposure Criteria	Value ug/m^3	Reference [1, 2]	Sample and Analytical Method[1]	Sample Method Flow rate, Time Air Volume
Heavy Metals	Aluminum (respirable)	PEL TLV	5,000 1,000	OSHA Z-1 ACGIH	NIOSH 7303/ OSHA ID-125G; ICP Media: MCE UW 37mm	1 to 4 L/min Min Vol: 200 L Max. Vol: 2000 L
	Antimony	PEL/TLV	500	OSHA Z-1		
	Arsenic 3	PEL/TLV	10	OSHA Z-1 / ACGIH		
	Barium (Soluble)	PEL/TLV	500	OSHA Z-1 ACGIH		
	Beryllium	PEL TLV	0.2 0.05	OSHA Z-2 ACGIH		
	Cadmium [3]	PEL TLV	5.0 2.00	OSHA Z-1 ACGIH		
	Calcium (respirable)	PEL	5,000 (resp) 15,000 (Total)	OSHA Z-1		
	Chromium	PEL /TLV	1,000 500	OSHA Z-1 / ACGIH		
	Cobalt	PEL TLV	100 20	OSHA Z-1 ACGIH		
	Copper (Dust)	PEL/TLV	1,000	OSHA Z-1 / ACGIH		
	Iron Oxide	PEL TLV	15,000 (Total) 5,000 (resp) 5,000	OSHA Z-1 ACGIH		
	Lead [3]	PEL/TLV AL	50 30	OSHA Z-1 / ACGIH		
	Magnesium (Total particulate)	PEL / TLV	15,000	OSHA Z-1		
	Manganese	PEL TLV	5,000 20	OSHA Z-1 ACGIH		
	Nickel	PEL TLV (elemental)	1,000 1,500	OSHA Z-1 ACGIH		
	Selenium	PEL/TLV	200	OSHA Z-1, ACGIH		
	Thallium	PEL TLV	100 20	OSHA Z-1 ACGIH		
	Vanadium (pentoxide / Respirable Dust)	PEL TLV	500 50	OSHA Z-1 / ACGIH		
	Zinc (oxide) Respirable Dust	PEL TLV	5,000 2,000	OSHA Z-1 ACGIH		

Specific Metals	Chromium (hexavalent)	PEL TLV	5 0.2	OSHA Z-1 ACGIH	OSHA ID-215 (v. 2) IC/UV; Media: PVC UW 37mm	Recommended 2.0 L/min. (±5%) (1.9-2.1 L/min) 480 min. Vol: 960 L
	Silver	PEL / TLV	10	OSHA Z-1 / ACGIH	OSHA ID-121 AP 1 ICP; Media: MCE UW 37mm	Recommended 2.0 L/min. Min Vol: 480 L

Particulates	Respirable crystalline silica (RCS): Quartz	PEL TLV	50.0 25	CAL / OSHA Z-1 ACGIH	NIOSH 500/ OSHA ID-142 Media: PVC PW 37mm	Aluminum cyclone or PPI : 2.5 L/min (±5%) (2.375-2.625 L/min) Min Vol: 400 L Max. Vol: 1000 L
	Total Dust	AL	7,500	'-	NIOSH 7303	See metals
	Respirable particulate (dust)	AL PEL	2500 5000	- OSHA Z-1	NIOSH 0600; Media: PVC PW 37mm	Comply with RCS

Fibers	Asbestos	AL	: 0.1 f/cc		NIOSH 7400 "A" Rules PCM NIOSH 7402 TEM Media: MCE 25mm	1 to 4 L/min Min. Vol: 400 L @ 0.1 fiber/cc,. 0.5 L/min.
	Fiberglass	AL	0.1 f/cc		Niosh 7400 "B" Media: MCE 25mm	1 to 4 L/min Min. Vol: 400 L @ 0.1 fiber/cc,. 0.5 L/min.

Notes:

1) SGS-Galson utilizes method Niosh method 7303, which is the method that replaced Method 7300. In addition, 7302 utilizes a different digestion method, but is the same analysis.
2) NIOSH 7303 uses a digestion acid mix that cannot be used for silver – but OSHA ID21 citing alternate procedure at the end of the method uses an acid mix specifically to be used for silver – that is why SGS-Galson utilizes this method and not 7303

Notes

Polynuclear Aromatic Hydrocarbons (PAH) [4]	Acenaphthene	AL	200	OSHA Z-1	NIOSH 5506	Flow Rate: 1 to 4 L/min Volume: Min Vol: TBD Max. Vol: TBD
	Acenapthylene	AL	200	OSHA Z-1		
	Anthracene	AL	200	OSHA Z-1		
	Benzo(a)anthracene	AL	200	OSHA Z-1		
	Benzo(a)pyrene	AL	200	OSHA Z-1		
	Benzo(b)fluoranthene	AL	200	OSHA Z-1		
	Chryene	AL	200	OSHA Z-1		
	Dibenz(a,h)anthracene	AL	200	OSHA Z-1		
	Fluoranthene	AL	200	OSHA Z-1		
	Fluorene	AL	200	OSHA Z-1		
	Indeno(1,2,3-cd)pyrene	AL	200	OSHA Z-1		
	Naphthalene	AL	200	OSHA Z-1		
	1-Methylnaphthalene	AL	200	OSHA Z-1		
	Phenanthrene	AL	200	OSHA Z-1		
	Pyrene	AL	200	OSHA Z-1		
	2-Methylnaphthalene	AL	200	OSHA Z-1		

1) ACGIH: https://www.acgih.org/lead-and-inorganic-compounds-3/

2) OSHA: https://www.osha.gov/annotated-pels/table-z-1

OSHA: https://www.osha.gov/annotated-pels/table-z-2

3) HDOH: https://health.hawaii.gov/heer/about-heer/organization/hazard-evaluation/pesticide-and-heavy-metal-poisoning/

4) As Coal Tar Pitch Volatiles

METHODOLOGY

Calibrated air sampling pumps are used to collect personal exposure samples for asbestos, metals, and respirable dust/crystalline silica. The pumps are pre and post calibrated according to the appropriate Occupational Safety and Health (OSHA) or National Institute of Occupational Safety and Health (NIOSH) method prescribed flow rate following guidance provided the equipment manufacturer and as per methodology provided in the OSHA Technical Manual[2].

The sampling train is pre-calibrated prior to each use and is post-calibrated at the end of the sampling period. Pre and post flow rate calibrations are performed using a primary standard flow rate instrument. The flow rate ranges for each analyte are defined by the sampling method (see Table 2-1). The optimal flow rate has been predetermined to meet method requirements and anticipated field conditions for the project. These flow rates provide adequate air volume to meet the desired analytical limits of quantitation. The flow rates are recorded and are validated by the daily pre- and post- calibrations.

Each component of the sampling train including the pump, calibration device, airflow orifice (i.e., respirable dust cyclone) and the sampling media is labeled with a unique identifier. The sample collection “Start” and “Stop” time shall be documented. Flow rates will be documented to the nearest hundredth liter/minute during pre and post calibration. At the end of the sampling period and following the post calibration, the sample will be removed and packed with the chain-of-custody (COC). The sample(s) are sent to the laboratory in sealed container with a completed COC. For real time (direct read) monitors. They are calibrated and mainted per the manufacturers recommendations.

The sampling data form also functions as the COC. The form is in electronic format for data collection, and will be printed out and signed by the field sampler prior to submission. The field sampler will verify the information is complete and accurate.

The COC is created for each sample set to record the sampling information which includes: sample ID, date and Times, monitoring location, analyses, environmental conditions, name of individuals, pump flow rates, and observation notes. The total volume of air collected will be calculated and recorded on the form. Copies of these forms and worker exposure sampling results will be maintained for the period defined by OSHA 1910.1020(d).

AIR SAMPLING PREPARATION

This section addresses the preparation procedures required for air monitoring.

2.1.1 Sensitive Receptor / Perimeter Monitoring

Real Time Dust:

- Ensure the dust monitoring unit is fully charged and filter clean
- Support Batteries for and telemetry system are adequately charged for daily operations.

Laboratory Analyses :

- For units analyzed at the laboratory, please refer the description provided in personal air monitoring as the same units will be utilized.

Support Equipment

- Weather Station:
- Sampling Stands: Used to place filters about 4-ft off of the ground for one the three designated locations

- Sensitive receptors are defined as ingabited structures, such as homes, schools, etc. ad located within 2-city blocks of debris removal operations.

2.1.2 Personal Air Monitors

The following section outlines the required preparation for the personal air monitoring pumps.

2.1.2.1 Pump Calibration

- Ensure sampling pump batteries are fully charged. Refer to the pump manual for specific battery care guidance.
- Calibrate sampling pumps in a clean area before and after each day of sampling.
- Disconnect the pump from the charger before calibration.
- Use the same specific type of sample media in line that will be used for sampling in the field; but do not use the actual media used for calibration for field sampling.
- Each sample must be labeled with a unique sample number before use.
- Record pre-sampling calibration data (e.g. pump serial number, flow rate, sample identification information). This will also serve as the sample submission document for samples requiring analysis by the lab.
- Record post-calibration data. If the pre- and post- sampling flow rates differ by greater than 5%, note this in the air sampling worksheet to inform the laboratory.

2.1.2.2 Pump Calibration with Aluminum Cyclone (if utilized)

Note: *The silica samples will be collected via disposable media for this project that does not require the use of the aluminum cyclone apparatus. This section was retained as an optional procedure.*

- Use the aluminum cyclone calibrator, place the calibrator over the stem of the cyclone and then connect the nipple on the bottom of the calibrator to the flow rate measurement device. The pump is then turned on and the flow rate measured on the device. Change the pump flow rate until it gets to 2.5 l/min.
- A flow rate of 2.5 l/m will ensure the validity of the sample with only the respirable size fraction of the dust on the filter. Pre- or post-rates that exceed 5% of 2.5 l/m voids the sample. The flow rates of the pump and sampling train must be calibrated as a unit.
- Ensure the grit pot is attached during sampling; otherwise, there is no size selection without the grit pot.
- Check alignment of filter holder and cyclone in the sampling head to prevent leakage.
- Use caution when inserting the cyclone into the cassette, taking care not to deform the seal about the perimeter of the cyclone. It will help to moisten the seal prior to attaching the cassette filter.

2.1.2.3 Calibration Procedures for Open-Face Filters (Asbestos)

Open-face cassettes are used for asbestos.

1. Calibrate the open-face cassette using the cover section which comes with the cassette and attach the tubing directly from the electronic flow calibrator to the inlet port on the cassette cover. This set-up provides the least amount of flow resistance and represents the open-face conditions while actually sampling.
2. Perform the pump calibration at the pressure (altitude) and temperature where sampling is to be conducted.
3. Do not use the same filter cassette intended to be used for field sampling for pump calibration.
4. Be certain there are no leaks for calibration or sampling.

2.1.2.4 Cyclone Leak Test Procedures (if utilized)

Note: The silica samples will be collected via disposable media for this project that does not require the use of the aluminum cyclone apparatus. This section was retained as an optional procedure.

This summary is provided for the convenience of those who have already read and are familiar with the procedure.

Preparation and Inspection:

1. Disassemble the Cyclone assembly, clean it, and inspect it for cracks and worn or damaged O-rings. Never insert anything into the Cyclone which will scratch the inside surface of the Cyclone chamber.
2. Replace the unit or parts if they are worn, damaged, or have any cracks.

Fault Test:

1. Connect the complete Cyclone assembly to the pump in the normal sampling configuration at 2.5 liters per minute.
2. Block the Cyclone inlet with tape or your finger. If the pump bears down and goes into fault mode, the assembly passes this crude pump-fault leak test.

3.0 AIR SAMPLING STRATEGY

PERSONAL AIR MONITORING

This section presents the methodology to conduct area air monitoring and collect personal air samples. Sampling activities evaluate worker exposure and verify site conditions are adequately assessed and maintained. Personal samples will be collected from representative workers for each of the activity types described below:

- Debris Removal Crew
  - Equipment Operators
  - Laborers
- Asbestos Abatement Team
  - Supervisor
  - Laborer
- Vessel Disposal Operations Crew
  - This will be monitored for only 5-Days of Operation.
    - Fiberglass only
- Temporary Disposal Site (TDS) Operations Crew
  - 1-day per week
  - For the duration of operations
  - Rotating b/w operator and laborers
  - Full suite (*including Mercury*, Hexavalent Chrome*, & PAHs **).

**Data to be reviewed for continuation of analyses*.

Personal air monitoring will be performed for the duration of the contract on 1 out every five (5) crews. As the crew counts increase, the same sampling ratio will be applied.

Personal air monitoring samples will include:

- Asbestos
- Polynuclear Aromatic Hydrocarbons (PAHs)
- Total and Respirable Particulates (Dust) & Respirable Crystalline Silica (As Quartz)
- Metals

The complete list of compounds is provided in Table 2-1.

3.1.1 Debris Removal Operations

Standard perimeter air monitoring will consist of dust monitoring utilizing real time stationary monitors (Dust Traks or Similar) connected to telemetry stations, with up to 15 individual stations. In additions, up three of these locations, may be utilized for sensitive receptor monitoring. Sensitive receptor monitoring will include the same analyses (laboratory analyses) as the personal sampling but without Dust monitoring. Dust monitoring via laboratory analyses is not included as the dust tracks will provide live data of the conditions in associated with dust levels in the monitored area.

The monitoring locations and number of units utilized for the will vary based on the number of crews and area that the work is being performed; which will be determined based on the resource matrix planning forecast. The Air Monitoring Team is prepared to monitor active debris removal locations in the active zones, as the crew count increases the stations will increase. As some crews may be working in the same zones, the monitoring areas may overlap, in which the staton may be optimized to support multiple crews. One of the units will include a weather station.

Sensitive receptor locations to be monitored will be located within 2 residential blocks from debris removal operations. Monitoring of SRs beyond the 2 residential blocks will be at the discretion of the Air Monitoring Manager.

Samples submitted for laboratory analyses will utilize personal air pumps (Sensidyne Gilair, or similar) with the pump intake filters set on stands about 4-ft above the ground. As these sample filters require a laboratory analysis, the results will not be immediately available. These results will be reported at the same frequency of the personal exposure results.

The action levels for the perimeter analyses, which are the same as the personal exposure samples, are listed in table 2-1.

The real time sampling results (dust only), collected during the perimeter sampling will be reported to the COR or KO by 12:00 HST on the next working day.

3.1.2 Temporary Disposal Site

Perimeter monitoring at the Temporary Disposal Site will be performed once a week. Locations will include one (1) up wind (PM 10 and 2.5 only) and one (1) sensitive receptor for the full suite of analytes requiring laboratory analysis (minus dust and silica), real time dust monitoring (PM 2.5 and PM 10) via a Dustrak and 1 weather station The sensitive receptor will be placed on the TDS' property edge, between the SR and TDS.

3.1.3 Perimeter Monitoring Exceedances (Real Time - Dust only)

Real time perimeter monitoring exceedances (Dust only) will be evaluated using the real-time telemetry system, which alert the air monitoring team (AMT) of exceedances in real time via emails. The AMT will then mobilize to the location and evaluate the site conditions. The AMT will also notify the site superintendent (SS) and provide the details to them. The SS will then implement the corrective actions to implement the source the exceedance.

TECHNIQUES

The OSHA Technical Manual (OTM), Section II, Chapter 1 *"Personal Sampling for Air Contaminants"* prescribes the following techniques to ensure valid personal exposure sampling. The OTM can be accessed at this URL: https://www.osha.gov/dts/osta/otm/otm_ii/otm_ii_1.html

The air sampling team member will identify the personnel to be monitored during the Debris Removal (DR) effort at the designated location. The DR crew member to be monitored may vary from site to site to ensure a representative sample is collected for the tasks that are performed.

Air Sampling team members may not enter the exclusion zone. In cases where the personnel to be monitored have entered the exclusion zone (EZ), the air sampling team member will hand off the equipment to a debris crew member who is wearing the proper PPE and authorized to be in the work zone so the personnel can attach the sample.

When attaching the samples to workers, the worker may install the pump and filters themselves, but the air sampling team member should ensure that the filter is positioned within WBZ. The air sampling team member should also ensure that the clips secure the hose such that the hose will not kink.

If needed, review with the worker how the media functions and communicate proper operation:

- Do not turn off the pump
- Do not introduce contaminants into the media
- Do not remove the device
- Do not kink the hose
- Do not pull the sampling media off.

Ensure that the worker understands and acknowledges they are not to remove the media and media clip near their breathing zone. They may reposition the pump to improve comfort, etc. At the end of the sampling period, allow the worker to remove the pump while the air sampling team member removes the media/clip near the breathing zone. Cap the media as soon as possible. Be careful not to shake or disturb media.

A more detailed discussion of field sample responsibilities is presented below. These responsibilities are further described in the OTM.

1. Discuss the following with the workers selected for monitoring:
   a. Purpose of sampling.
   b. How the equipment is to be placed.
   c. When and where the sampling equipment will be put on and removed.
   d. Stress the importance of not removing or tampering with the sampling equipment.
   e. Ask them when and duration for their scheduled breaks, and where they take the breaks.
   f. Request worker to make note of time/duration of any notable exposures or upwind sources encountered during the day (e.g. dusty conditions).
   g. Workers are to notify their supervisors and note the time if the equipment requires temporary removal, and the time it was reattached; provide this to the sampler.

2. Place the calibrated sampling equipment on the worker:
   a. Ensure that it does not interfere with the worker's performance or safety.
   b. Attach the pump/tubing (or have the worker self-attach it) to the worker's belt, vest, or other suitable mechanism that will allow them to wear it comfortably all day.
   c. Clip the tubing to the worker's back between the shoulder blades.
   d. Remove sample media outlet plug or cap and attach the media to the tubing.
   e. Attach the sample media to the shirt collar or as close as practical to the nose and mouth in the WBZ (the WBZ is a hemisphere forward of the shoulders within a radius of approximately six to nine inches of the worker's nose and mouth).
   f. The collection device inlet should be oriented in a downward vertical position to avoid gross contamination from airborne debris falling into the collection device. Air should not pass through any tubing before entering the collection device.
   g. Orient the inlet of the cyclone so that it faces away from the worker.
   h. Instruct the worker not to cover (e.g. with a safety vest) or otherwise impede the airflow into the cyclone.

3. Open the inlet to the collection media: e.g., remove the inlet plug and/or face of the filter cassette or cap to the passive (diffusive) sampler. Turn on the pump. After starting, observe the pump operation for a short time to ensure that it is operating correctly, i.e., visually check the pump rotameter (if equipped) or digital flow readout, or touch the pump to feel for vibration.

4. Document the start time and other required information. Diffusive samplers[3] should not be opened until just before sampling because they begin to sample as soon as they are opened. To terminate sampling, properly seal the samplers with the manufacturer's packaging materials (caps) to ensure sample integrity and no loss of sample.

.

5. Sample for at least the minimum sampling time or air volume prescribed by the analytical method, or as prescribed the Sampling Team Leader.

6. Periodically monitor the worker throughout the workday to ensure that sample integrity is maintained and cyclical activities and work practices are identified. Frequent pump checks may be necessary when heavy filter loading is possible.

    a. Verify downward location and orientation of the sampler inlet

    b. If possible, check for evidence of tampering with the sample or pump. Ensure that the sampler remains properly assembled and that the tubing does not become pinched or detached from the collection device or from the pump.

    c. Check the pump flow readout to be sure the pump is still running.

    d. Turn off or remove sampling pumps immediately prior to a worker leaving a potentially contaminated area (such as when he/she goes to lunch or on a break in a clean area). If these areas also appear contaminated and are considered part of the workplace, continue sampling.

    e. If the pump is turned on and off during the course of the day and/or if the sampling media is changed, document subsequent start/stop times.

7. Before removing the pump at the end of the sampling period, check the pump flow readout to be sure it is still running.

8. Turn off the pump and document the stop time.

9. Perform Post-calibration of samples. Record data on applicable COC.

DATA COLLECTION

Observe, take photographs and/or videos (if appropriate), and document on the COC important information including, but not limited to:

1. What activities did the worker perform during the day.
2. Did the worker wear the sampling equipment properly?
3. Is the sample media located in the WBZ?
4. Sources of airborne contaminants.
5. Worker observations (e.g., dusty environment, removed the device- this will require follow-up questions).
6. Hours of work vs. stand-down.
7. Observed work practices.
8. Other nearby activities.
9. Potential interferences.

10. Engineering and administrative controls.
11. Use of PPE.
12. Other factors to assist in evaluating exposures.

The Air Sampling Team Member is responsible for the following activities:

- Air sampling equipment cleaning and maintenance.
- Air sampling equipment calibration.
- Preparation of pumps and sampling media.
- Air sampling equipment calibrations.
- Ensuring sample integrity.

CHAIN-OF-CUSTODY

Chain of Custody's will be fileld for each sampling location. The data will recorded on the COC and submitted to the laboratory along with the associated sample cassettes.

EXPOSURE CRITERIA

The exposure criteria used for this project include regulatory promulgated standards including ALs and PELs; and the governmental agency ACGIH, who provides more current exposure limit recommendations based on health effects recently recognized by medical professionals. ACGIH is not regulatory in nature, yet is often recognized in the regulatory language and regulatory criteria as acceptable sources to provide information to protect worker health.

The exposure criteria defer to the most conservative criteria presented by either the OSHA AL, PEL, or ACGIH TLV.

The s Personal air samples will be collected from the debris removal workers and will be conducted during the debris removal operation activities for the methods specified in Table 2-1 (asbestos, metals, and dust) for the duration of the project or until such time the Operations Section Chief or environmental group determines that air monitoring may cease. Sample Collection Frequency

MONITORING FREQUENCY & DURATION:

3.1.4 Metal Samples

At a minimum, monitoring shall be performed for one crew out of every five crews, or one crew if under five crews, two crews if under 10, three crews if under 15, etc. Crews shall be monitored on a rotational basis during the workweek. Crews and other impacted employees shall be notified no later than ten (10) working days following the receipt of the monitoring results. Maximum lab turnaround is three (3) days. The personnel air monitoring results shall be submitted no later than ten (10) business days of the sample event.

Hexavalent Chromium and Mercury analyses are scheduled for the first ten days of each contract. If the results for all 10-days are non-detect, the analyses will not continue, as historic data for these analyses in debris cleanup operations has shown a trend of non-detects if sampling for these compounds resumed.

3.1.5 Asbestos Samples

Monitoring shall be performed to determine airborne concentrations of asbestos to which employees may be exposed in the exclusion and support zones. Samples shall be collected from the WBZ. At a minimum, monitoring shall include one crew out of every five crews, or one crew if under five crews, two crews if under 10, three crews if under 15, etc. Crews shall be monitored on a rotational basis during the workweek. Monitored employees shall be notified no later than ten (10) working days following the receipt of the monitoring results. Maximum lab turnaround is three (3) days. The personnel air monitoring results shall be submitted to the client no later than ten (10) business days of the sampling event.

No excursion samples will be collected during asbestos abatement activities due to the work environment.

3.1.6 Dust & Silica Samples

Monitoring shall be performed for each employee who isor may reasonably be expected to be exposed to dusts (Total & Respirable) and respirable crystalline silica (as Quartz) at or above the action level. Monitored employees will be notified no later than ten (10) working days following the receipt of the monitoring results. Maximum lab turnaround is three (3) days.

3.1.7 Polynuclear Aromatic Hydrocarbons (PAHs)

Monitoring shall be performed for employees who or may reasonably be expected to be exposed to PAHS at or above the action level. Monitored employees shall be notified no later than ten (10) working days following the receipt of the monitoring results. Maximum lab turnaround is three (3) days.

PAH's are scheduled for the first ten days of each contract. If the results for all 10-days are non-detect, the analyses will not continue, as historic data for these analyses in debris cleanup operations has shown a trend of non-detects if sampling for these compounds resumed. Additional analyses may be performed in requested at the direction of the projects CIH or COR.

3.1.8 Fiberglass

Monitoring shall be performed for 20% of the employees who or may reasonably be expected to be exposed to fiberglass at or above the action level during the vessel yard operations only. Monitored employees will be notified no later than ten (10) working days following the receipt of the monitoring results. Maximum lab turnaround is three (3) days.

Fiberglass will be monitored for 5-days during this task.

3.1.9 Long Term Evaluation

The air monitoring data for mercury, hexavalent chromium, polynuclear aromatic hydrocarbons, and fiberglass data will be reviewed for the continuation of analyses following the initial sampling period.

SAMPLING AND ANALYSIS PROTOCOLS

The air sampling and laboratory analysis protocols for the Wildfire debris sites are identified in Table 2-1.

SAFE WORK PRACTICES FOR THE AIR SAMPLING TEAM

Recommended Safe Work Practices include, but are not limited to, the following:

- Remain outside the boundaries of controlled work zones.
- Wear appropriate PPE as described in the SSHP.

4.0 QUALITY ASSURANCE QUALITY CONTROL

The Quality Assurance (QA) /Quality Control (QC) program will ensure accurate data of known quality throughout the AMSP. QC activities for sampling consist of instrument calibration, and collecting and analyzing field blank samples to determine if the analytical results are within quality control limits specified by the OSHA or NIOSH analytic method. Laboratory QC includes analyses of system blanks, calibration check samples, and replicates. All field samples shall be documented in the field logbook. The QA/QC checks to be performed are described below.

SAMPLING PROCEDURES

4.1.1 Air Volume

The laboratory requires a known minimum quantity of collected analyte for reliable quantitation. The sample volume should be sufficient to collect this minimum quantity even if the average contaminant concentration is at the low end of your range of interest. See Table 2-1 for method guidance on sample volume.

4.1.2 Filter Inspection

Check the filter routinely for signs of excessive loading. Otherwise, it is possible that the filter will be plugged by heavy particulate loading. This should be done at the midday check if possible.

4.1.3 Sampler Orientation

The performance of some particulate samplers is affected greatly by orientation, and significant bias can be introduced if the devices are inclined during the sampling period.

4.1.4 Calibration of Sample Collection media (Filters)

OSHA sampling and analytical methods require that personal sampling pumps be calibrated to within ± 5% of the recommended flow rate with the collection media in-line. This ensures that the pump flow rate is determined with the sampling train assembled as it will be used in the field.

4.1.5 Field Blanks

Field blanks are clean sample media that are taken and opened in a clean area at the sampling site, but they are not used to collect samples. They are handled, stored and shipped in the same manner as other sampling media used in sampling with the exception that no air is drawn through them. Field blanks are required for each requested analysis and for each lot number of sampling media. Prepare field blanks during the sampling period for each type of sample collected. One field blank will usually suffice for up to 20 samples for any given analysis/sampling period.

Diffusive samplers shall be briefly opened in the field in an area on-site where no contamination is expected and then they should be immediately resealed with the manufacturer's materials. Seal field blank samples as described for other samples.

4.1.6 Sample Handling

Take care not to shake or unnecessarily shake or jostle the media when removing it from the worker or transporting it to the office. Do not invert the cyclone. Secure and handle the samples so that they will not rattle during shipment or be exposed to static electricity. Do not ship samples in expanded polystyrene peanuts, vermiculite, paper shreds, or excelsior. Place samples in a plastic bag so that they do not move freely. Sample cassettes are secured with bubble wrap to prevent rattling and minimize dislodging particulate from the media and then placed in a container for shipping. A printed and signed copy of the COC will accompany the site samples

CYCLONE HANDLING PROCEDURES

Note: The silica samples will be collected via disposable media for this project that does not require the use of the aluminum cyclone apparatus. This section was retained as an optional procedure.

4.1.7 Clean Cyclone Separators

Air movement within a cyclone separator must achieve the flow characteristics on which the theoretical collection efficiency curve is based. This desirable air movement can be disrupted by deposits of particulate material adhering to the internal sides of the cyclone. Such a deviation from theoretical conditions can alter the size characteristics of particles penetrating the cyclone (and subsequently collected on the filter). Periodic cleaning of cyclone separators is necessary to prevent this.

4.1.8 Cyclone Grit Pot

The grit pot must be present on a cyclone separator during both calibration of the sampling pump and collection of the sample. Air should enter a cyclone tangentially through a slit or other shaped opening on the side. An absent grit pot permits massive leakage and prevents proper collection of the desired dust size fraction.

4.1.9 Flow Rate of the Cyclone Sampler

The cyclone respirable dust sampler has a specific design flow rate that achieves a separation of respirable and non-respirable (larger) particles and passes the respirable fraction on to the filter. Cyclones are described in terms of their 50% cut-point, the size of dust removed with 50% efficiency at the design flow rate. A different flow rate will alter the collection efficiency and produce an error that cannot be corrected by a recalculation of sample volume.

4.1.10 Inverting the Cyclone Separator

The cyclone separator permits collection of smaller particles on the filter, because larger particles are removed from the airstream and collected in the grit pot. Inversion of the cyclone can cause an erroneous high concentration measurement, because the larger particles will fall from the grit pot onto the filter material.

5.0 DOCUMENTATION AND SHIPPING

This section addresses the documentation and shipping details associated with the air monitoring program.

FIELD RECORDS

Field personnel shall keep accurate records of their daily activities utilizing electronic field forms, on-line data forms, or a field notebook. All entries will be legible and contain accurate and inclusive documentation of an individual's field activities, including field data and observations, any problems encountered, and actions taken to solve the problems. Entry errors will be corrected, and other changes will be made by crossing out the original entry with a single line, and dating and initialing the correction. Entries will be dated and initialed by the individual making the entry. Make notes on work operations during the sampling interval. If one of a group of samples suggests an anomalous high exposure, the records should be able provide details. The air monitoring activities require frequent observation of conditions and operations that could affect sampling results.

LABORATORY AIR MONITORING - SAMPLE LABELING

Sample media will be given unique sample control numbers. The sample naming convention described below is summarized as: "**Site Identifier-Matrix-Date-Pump Set"** this is explained below:

- Examples:
  - H23-AS-01Jan24-PM01
  - H23-AS-01Jan24-PS01
  - H23-AS-01Jan24-SR01

- Site Identifier:
  - H23 = Hawaii 2023 WF Debris Removal

- Matrix identifier:
  - AS = Asbestos,
  - AG = Silver
  - CR = Hexavalent Chromium
  - HG = Mercury
  - MT = Metals
  - SR = Silica/Resp dust,
  - PH = Polynuclear Aromatic Hydrocarbons
  - FG= Fiberglass

- Sample Date: (DDMMMYY)
  - DD = Numbers,
  - MMM = 3 letter designation for the month (Jan, Feb, etc)
  - YY = last 2 digits of year (2024=24)
- Sample Type
  - PS = Personal Site Sample (from Breathing Zone)
  - PM = Perimeter
  - SR = Sensitive Receptor
  - B = Blank Sample

- Pump Set: (# 01, # 02, etc.) (# is correlated to unique pump ID on chain-of-custody).

FORMS FOR SAMPLING DATA SHEETS / CHAIN-OF-CUSTODY

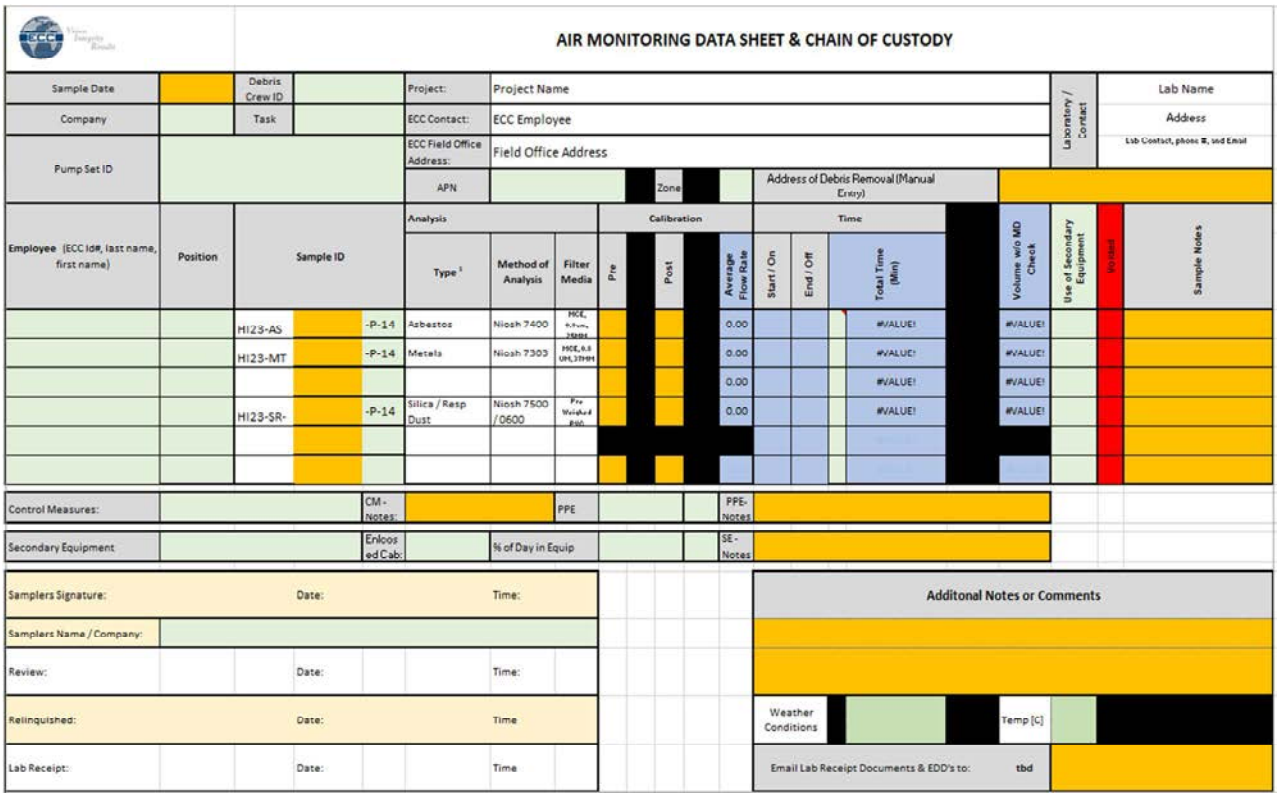
The electronic sample data sheet / COC is designed to document the sampling parameters of the sample media and field observations for the sample. The electronic data sheet includes, but is not limited to the following information:

Administrative	Site Data	Sample Data
Project	Sample Date	Pump Set ID
Laboratory and Point-of-Contact	Debris Removal Crew ID	Employee ID, name and position
Company	Task	Sample ID
ECC Contact	TMK	Type sample
ECC Field Office Address	Control Measures, CM Notes	Method of Analysis
ECC email address for reports	PPE, PPE Notes	Filter Media
Sampler signature, date, time, company	Secondary Equipment, SE notes	Calibration (Pre and Post)
Review, date, time	Enclosed Cab	Average Flow rate
Relinquished, date, time	% of day in Equipment	Time: Start, Stop & Total
Lab Receipt, date, time	Temperature	Air Volume
	Address of Debris Removal	Use of secondary equipment
	Additional Notes or Comments	Voided
		Sample Notes

The chain-of-custody portion of the form will be completed at the time the samples are prepared for shipment to the laboratory. Figure 5-1 provides a printed example of the electronic chain of custody.

For this program, the original forms will be forwarded to the QA/QC Reviewer for review and evaluation. Completed forms will be reviewed by the project CIH with the laboratory results to verify appropriate and accurate documentation.

Figure 5-1



AIR MONITORING DATA SHEET & CHAIN OF CUSTODY

Sample Date		Debris Crew ID		Project:	Project Name
Company		Task		ECC Contact:	ECC Employee
Pump Set ID				ECC Field Office Address:	Field Office Address
				APN	Zone

Laboratory / Contact: Lab Name; Address; Lab Contact, phone #, and Email

Address of Debris Removal (Manual Entry)

Employee (ECC Id#, last name, first name)	Position	Sample ID	Analysis: Type [1]	Method of Analysis	Filter Media	Calibration: Pre	Post	Average Flow Rate	Time: Start / On	End / Off	Total Time (Min)	Volume w/o MD Check	Use of Secondary Equipment	Voided	Sample Notes
		HI23-AS -P-14	Asbestos	Niosh 7400				0.00			#VALUE!	#VALUE!			
		HI23-MT -P-14	Metals	Niosh 7303				0.00			#VALUE!	#VALUE!			
								0.00			#VALUE!	#VALUE!			
		HI23-SR- -P-14	Silica / Resp Dust	Niosh 7500 /0600				0.00			#VALUE!	#VALUE!			

Control Measures:		CM - Notes:		PPE		PPE-Notes	
Secondary Equipment		Enclosed Cab:		% of Day in Equip		SE - Notes	

Samplers Signature:		Date:		Time:	
Samplers Name / Company:					
Review:		Date:		Time:	
Relinquished:		Date:		Time	
Lab Receipt:		Date:		Time	

Additonal Notes or Comments

Weather Conditions | Temp [C]

Email Lab Receipt Documents & EDD's to: tbd

QA/QC REVIEW

The Air Sampling team will perform a QA/QC review ensuring the chain-of-custody and documentation procedures for all sampling operations is complete. This will include:

- Review of the sample cartridges;
- The Chains of Custody to ensure all applicable information is present and accurate.
- Final review prior to shipment.

Copies of the electronic chain-of-custody forms and the field data forms will be stored in the project file. Each team member will be responsible for the custody of the samples until the sample has been transferred and documented on the chain-of-custody form.

SAMPLE SHIPMENT

The QA/QC reviewer will sign the chain-of-custody forms prior to shipment. Samples are shipped overnight the designated laboratory.

6.0 AIR MONITORING TEAM

The air sampling team will consist of the following personnel:

- **Program Oversight**: ECC's Corporate Health and Safety Director / Certified Industrial Hygienist
- **Project Oversight and Management**: ECC's Air Sampling Manager
- **Field Sampling Personnel**: Field sampling personnel will support the air sampling program outlined in this plan.

7.0 LABORATORY ACCREDITATION

Air samples will be analyzed by Industrial Hygiene laboratories accredited by AIHA-LAP, LLC or by the National Institute of Standards and Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP). Certificates of accreditation will be current and will be provided to ECC prior to commencement, along with the most recent performance reports from the Proficiency in Analytical Testing (PAT) programs in which the lab participates.

8.0 DATA

The data review and reporting procedures will ensure that complete documentation is maintained, errors are minimized, the quality of the data is reviewed and documented, and the results are reported properly.

Field data will be recorded on the COC and/or with electronic data collection software. The data recorded on the COC's will be loaded to the project database.

DATA REVIEW

The electronic data deliverables (EDD) data provided by the laboratory used in the generation of the reports shall be reviewed by either the Air Monitoring Manager and/or project Certified Industrial Hygienist to verify acceptable sample collection and analysis procedures, analytical results, adherence to prescribed QA procedures

Laboratory QA/QC results will be evaluated to identify analytical contamination. Field blank results will be compared to identify precision or accuracy problems. If problems have occurred, the laboratory will be consulted to determine how to resolve the problem.

Review of the monitoring data will include:

- Ensuring the appropriate analytical method was used

- Samples have unique sample identification numbers
- Units of measure and significant figures are consistent
- Reporting of all relevant data:
  - Total mass of analytes per filter
  - Total volume of air sampled
  - Correct units are utilized
- Discussion of missing data values

DATA REPORTING

8.1.1 Perimeter Data /Sensitive Receptor

The two types are air samples collected are real time dust monitors and laboratory samples collected from air pumps. This sections describes how the associated data generated will be reported.

Real Time Air Data / Dust:

This data will be recorded via Dust traks (or similar) on site and will be recorded on an ECC mobile form, which will then be available in an automated report (produced by date) generated from the field application data.

The real time sampling results collected during the perimeter sampling will be reported to the COR or KO by 12:00 HST on a daily basis, which will include the previous workday's results.

If reporting is scheduled for a day off, the results will be provided on the next scheduled work day.

Laboratory Data

This data will provided from the laboratory and reported in the same daily reports, presented by date, that the personal air monitoring data is provided.

8.1.2 Personal Air Monitoring

Personal air data will only consist of laboratory data, the COCs and laboratory results will be loaded to the project database. Data reports will be generated from the combination of the two data sets. The required reports will be signed by the Air Monitoring Team Manager Lead and/or CIH, and distributed to the client via email by the air monitoring team personnel.

ECC_AMSP-Lahaina 2024_PC-004-01

Final Audit Report 2024-01-10

Created:	2024-01-10
By:	Kane McNeill (kmcneill@ecc.net)
Status:	Signed
Transaction ID:	CBJCHBCAABAAJICC2n1eXEDIcbxtE-hNHtZ05zxm8DtP

"ECC_AMSP-Lahaina 2024_PC-004-01" History

Document created by Kane McNeill (kmcneill@ecc.net)
2024-01-10 - 10:06:33 PM GMT

Document emailed to Kym Edelman (KEdelman@ecc.net) for signature
2024-01-10 - 10:07:21 PM GMT

Email viewed by Kym Edelman (KEdelman@ecc.net)
2024-01-10 - 11:01:56 PM GMT

Document e-signed by Kym Edelman (KEdelman@ecc.net)
Signature Date: 2024-01-10 - 11:02:23 PM GMT - Time Source: server

Agreement completed.
2024-01-10 - 11:02:23 PM GMT

An example Daily Dust Monitoring Report is contained in this attachment.

All reports are available upon request.

ATTACHMENT 13. DAILY DUST MONITORING REPORTS

Daily Dust Monitoring Report: April 3, 2024
Lahaina Debris Removal Operation

Summary:

The ECC field staff and field crews continued to follow the prescribed methods of dust suppression and notification procedures.

The crews continue to use water for dust suppression all day.

No exceedances occurred.

Weather Summary

Temperature (F range): 69.7-84.5

RH (% range): 50-80

Precipitation total (in):0

Avg. Wind Speed (mph): 4.75

Wind Direction: W SW

Station Location Summary:

Station 9+ Sensitive Receptor and Station 2 were set up around **11 Kaniau Rd.** for continued debris removal air monitoring.

Station 2 and Station 11 were set up around **1645 Aa St.** for continued debris removal air monitoring.

Station 11 and Station 12 were set up around **161 Fleming Rd. and 1431 Kahoma St.** for continued debris removal air monitoring.

Station 12 and Station 3 were set up around **1381 Ainakea Rd. and 1321 Hoapili St.** for continued debris removal air monitoring.

Station 10+ Sensitive Receptor was set up around **1184 Halepaka Pl.** for continued debris removal air monitoring.

Station 15 and Station 4 were set up around **165 Komo Mai St.** for continued debris removal air monitoring.

Station 4, Station 1, and Station 15 were set up around **511 Aki St. and 440 Hauola Pl.** for continued debris removal air monitoring.

Station 4 and Station 1 were set up around **543 Pikanele St.** for continued debris removal air monitoring.

Station 5 and Station 1 were set up around **757 Pauoa St.** for continued debris removal air monitoring.

Station 6, Station 5, Station 15, and Station 1 were set up around **301 Lahainaluna Rd.** for continued debris removal air monitoring.

Station 5 and Station 7 were set up around **771 Wainee St. and 450 Ilikahi St.** for continued debris removal air monitoring.

Station 13 was set up around **137 Leoleo St.** for continued debris removal air monitoring.

Station 13 and Station 16 were set up around **343 Aulike St., 249 Front St., and 313 Keao Pl.** for continued debris removal air monitoring.

Station 8 and Station 14+ Sensitive Receptor were set up around the **Temporary Debris Storage.**

Station Data:

- Debris removal

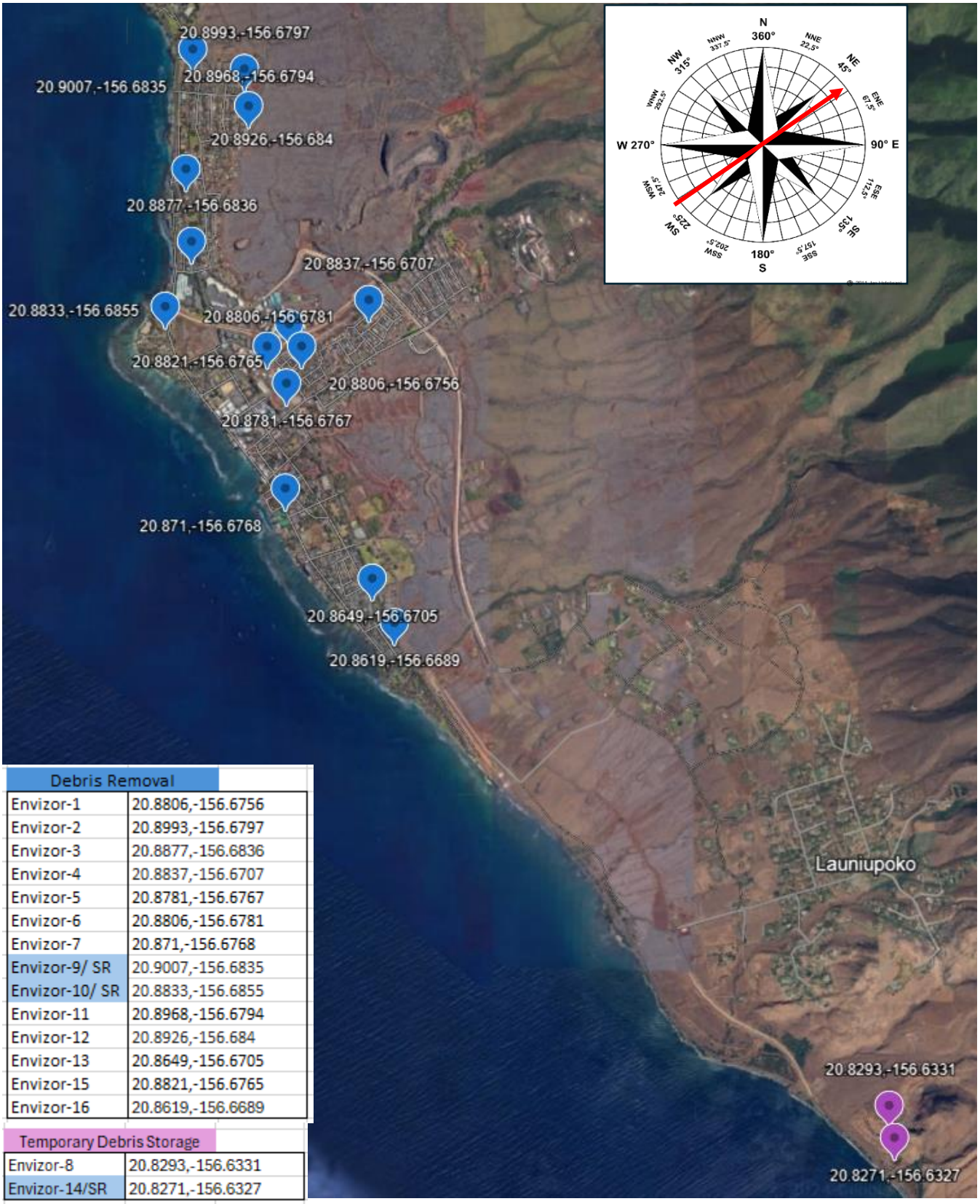
		Envizor-1	Envizor-2	Envizor-3	Envizor-4	Envizor-5	Envizor-6	Envizor-7	Envizor-9	Envizor-10	Envizor-11	Envizor-12	Envizor-13	Envizor-15	Envizor-16	Average	Exceedance Limit	Action Limit
PM 2.5	Avg. ug/M3	11.65	8.72	4.89	3.45	7.86	4.58	4.90	8.54	12.32	11.97	4.69	8.62	6.20	4.22	7.33	70	35
PM 10	Avg. ug/M3	16.05	10.34	8.23	4.72	12.68	7.26	8.33	10.15	16.33	15.78	7.71	9.65	8.14	6.81	10.16	300	150

- Temporary Debris Storage

		Envizor-8	Envizor-14	Average	Exceedence Limit	Action Limit
PM 2.5	Avg. ug/M3	3.71	2.75	3.23	70	35
PM 10	Avg. ug/M3	4.61	4.23	4.42	300	150

Fill color for the Average PM2.5 level for the Debris Removal Area represents the Air Quality Index equivalent

Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy	Very Unhealthy	Hazardous



Debris Removal	
Envizor-1	20.8806,-156.6756
Envizor-2	20.8993,-156.6797
Envizor-3	20.8877,-156.6836
Envizor-4	20.8837,-156.6707
Envizor-5	20.8781,-156.6767
Envizor-6	20.8806,-156.6781
Envizor-7	20.871,-156.6768
Envizor-9/ SR	20.9007,-156.6835
Envizor-10/ SR	20.8833,-156.6855
Envizor-11	20.8968,-156.6794
Envizor-12	20.8926,-156.684
Envizor-13	20.8649,-156.6705
Envizor-15	20.8821,-156.6765
Envizor-16	20.8619,-156.6689

Temporary Debris Storage	
Envizor-8	20.8293,-156.6331
Envizor-14/SR	20.8271,-156.6327

ATTACHMENT 14. AIR MONITORING FACT SHEET

USARMY CORPS OF ENGINEERS

What to expect during debris removal?

In conjunction with their partner agencies, USACE has air monitoring equipment placed throughout the general area of operations during debris removal. While around their active removal sites you will see monitors set up very similar to the picture above. They are running continuously during removal and remain on throughout the active process. At the end of each day these monitors are removed, then redeployed the following day around their next work site.

How is USACE using the monitors?

Air monitors are a crucial part of ensuring all dust mitigation procedures are working. By continuously monitoring the air quality, they can determine if they need to adjust how they are reducing dust through all stages of their operations.

How are the monitor locations being chosen?

As USACE and their contracted companies are moving from parcel to parcel, monitoring equipment is moved to account for wind direction. Throughout the day, they continue to monitor the wind direction to ensure that all monitors collect the most accurate data. Whenever indicated, monitoring equipment will be moved to ensure appropriate data is being collected.

AIR MONITORING WEBSITES

www.fire.airnow.gov

https://map.purpleair.com/

REFERENCES

List of Designated Reference and Equivalent Methods. EPA: Research Triangle Park, 2013. Online: http://www.epa.gov/ttn/amtic/criteria.html

https://metone.com/products/e-bam/

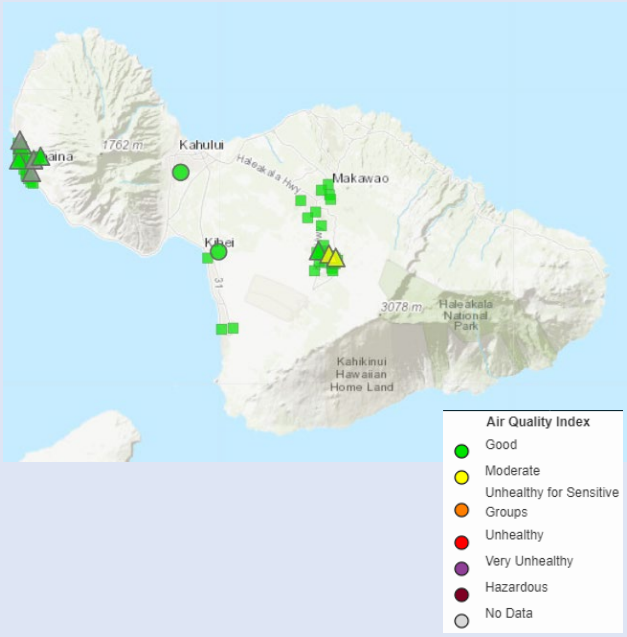
https://www2.purpleair.com/

AIR MONITORING AT A GLANCE

Hawaii Department of Health and

US Army Corps of Engineers

Air Monitoring Overview



PURPLEAIR AIR QUALITY MONITORS

What are PurpleAir Monitors?

PurpleAir's are non-regulatory air monitors that are intended to be used to increase community awareness on air quality.

How do these monitors work?

These monitors use a laser particle counter to count the number of airborne particles in the air. That count is used to calculate a mass concentration, using an algorithm created by the laser manufacturer to get an average density for the particles.

How are they being used?

Department of Health has installed PurpleAir monitors throughout Kula and Lahaina, surrounding the burn scars to help them better monitor how operations are affecting overall air quality.

ENVIRONMENTAL BETA ATTENUATION MASS MONITOR (E-BAM)

What is an E-BAM?

Portable, real-time beta gauge instruments that offer air quality data by continuously sampling and reporting concentration data. Because sampling occurs under true ambient conditions, semi-volatile organic compounds and nitrates are easily detected thereby avoiding under-measurement of particulates. These monitors are also able to share data remotely, allowing the fire.airnow.gov website to provide hourly updates on air quality.

What is a beta gauge instrument?

A beta gauge instrument is designed to provide mass concentration. The principle behind beta attenuation particulate sampling instruments (beta gauge) is that energy is absorbed from beta particles as they pass through particulate matter (PM) collected on a filter media. This is then used to determine the amount of particulate that has collected on the filter media.

How are they being used?

Department of Health has E-BAMs in both Kula and Lahaina that are continuously monitoring fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller. Due to the characteristics of the ash, monitoring particulate at this level allows the Department of Health to give guidance on when air quality becomes unhealthy. Currently the Department of Health has deployed 2.5PM EBAM monitors in both Lahaina and Kula, with additional 10PM EBAM monitors in Kula.

What can influence the Air Quality Index being shown on either website?

There are several things that can influence the Air Quality Index (AQI). This includes wind speed and direction, terrain, humidity, and other activities happening directly around the monitors. These monitors just count particulate so anything that can produce particles small enough to be registered may impact the AQI. Although there are several influences on AQI it is important to continue to follow Department of Health guidance for air quality.

An example Air Monitoring Report is contained in this attachment.

All reports are available upon request.

ATTACHMENT 15. AIR MONITORING REPORTS

Air Monitoring Report
Maui Wildfire

ADVANCE CONTRACTING INITIATIVE (ACI)

Prepared for

United States Army Corps of Engineers

Rock Island District
1500 Rock Island Drive
Rock Island, IL 61201

Contract No. W912EK-22-D-0004

Sunday

24-Mar-2024

ECC Constructors LLC
1240 Bayshore Hwy, Suite 301
Burlingame, CA 94010

EXECUTIVE SUMMARY

This executive summary covers the air monitoring data that was submitted for:

- 24-Mar-2024.

The air monitoring results are analyzed per the projects Air Monitoring Sampling Plan (AMSP). The results are evaluated against the criteria outlined in the plan which are based on the Occupational Safety and Health Administration (OSHA) Permissible Exposure Levels (PELs) and/or the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs). The samples were sent off to SGS-Galson in Galson, New York for analysis.

PERSONAL AIR MONITORING / LABORATORY ANALYSES

Summary

- 24-Mar-2024: Four personnel sample sets collected from excavator operators and laborers. ***No Exceedances***.

SENSITIVE RECEPTOR / LABORATORY ANALYSES

Summary

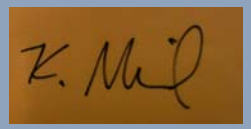
- 24-Mar-2024: Three sensitive receptor sample sets collected. ***No Exceedances***.

Maui 2023 Debris Removal

Air Monitoring Report

Area	TMK	Task	Sample Date	Sample ID	Contaminant	Concentration		Units	PEL / TLV
Lahaina	460060170000	Debris Removal	24-Mar-2024						
Lahaina	460060780000	Debris Removal	24-Mar-2024	H23-AS-24MAR24-PS02	Asbestos-PCM	<	0.006	fibers/cc	0.100
Lahaina	460060780000	Debris Removal	24-Mar-2024						
Lahaina	460060780000	Debris Removal	24-Mar-2024	H23-AG-24MAR24-PS02	Silver	<	0.55	ug/m3	10.000
Lahaina	460060780000	Debris Removal	24-Mar-2024	H23-AG-24MAR24-PS02	Silver	<	0.55	ug/m3	10.000
Lahaina	460060780000	Debris Removal	24-Mar-2024	H23-SR-24MAR24-PS02	Respirable Dust		110	ug/m3	5,000.000
Lahaina	460060780000	Debris Removal	24-Mar-2024	H23-SR-24MAR24-PS02	Silica: Quartz	<	7.4	ug/m3	25.000
Lahaina	460060780000	Debris Removal	24-Mar-2024						
Lahaina	460060780000	Debris Removal	24-Mar-2024						
Lahaina	460060780000	Debris Removal	24-Mar-2024						
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-AS-24MAR24-PS06	Asbestos-PCM		0.013	fibers/cc	0.100
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Antimony	<	1.8	ug/m3	500.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Beryllium	<	0.03	ug/m3	0.200
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Cadmium	<	0.3	ug/m3	5.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Calcium	<	60	ug/m3	5,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Arsenic	<	0.6	ug/m3	10.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Barium	<	0.6	ug/m3	500.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Aluminum		18	ug/m3	1,000.000

ECC submits this report under the direction of Kym Edelman, CIH.



Kane W. McNeill
ECC - Air Monitoring Manager
650-228-6950 / kmcneill@ecc.net

Notes: RCS = Respirable Crystalline Silica. "<" denotes non-detect / concentration less than lab's reporting limit. Concentrations are not Time Weight Adjusted (TWA). PEL = Permissable Exposure Level. TLV = Threshold Limit Value. NSFA = Sample Not Submitted For Analysis b/c Run time too short or sample collection issue making sample void. Asbestos / VOID = Filter Saturated with debris, lab was unable to perform PCM visual count analysis.

Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Chromium	<	15	ug/m3	500.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Thallium	<	3	ug/m3	20.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Vanadium	<	0.89	ug/m3	50.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Zinc Oxide	<	9.3	ug/m3	2,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Total Dust	<	400	ug/m3	7,500.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Nickel	<	0.6	ug/m3	1,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Selenium	<	4.5	ug/m3	200.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Cobalt	<	0.89	ug/m3	20.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Manganese		0.8	ug/m3	20.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Magnesium	<	15	ug/m3	15,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Lead	<	0.75	ug/m3	50.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Iron Oxide		63	ug/m3	5,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS06	Copper	<	0.6	ug/m3	1,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-AG-24MAR24-PS06	Silver	<	0.54	ug/m3	10.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-AG-24MAR24-PS06	Silver	<	0.54	ug/m3	10.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-SR-24MAR24-PS06	Respirable Dust		79	ug/m3	5,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-SR-24MAR24-PS06	Silica: Quartz	<	7.2	ug/m3	25.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-AS-24MAR24-PS01	Asbestos-PCM		0.038	fibers/cc	0.100
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Iron Oxide	<	19	ug/m3	5,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Chromium	<	13	ug/m3	500.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Selenium	<	3.9	ug/m3	200.000

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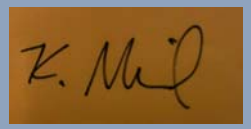

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Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Cobalt	<	0.79	ug/m3	20.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Vanadium	<	0.79	ug/m3	50.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Lead	<	0.66	ug/m3	50.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Calcium	<	53	ug/m3	5,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Copper	<	0.53	ug/m3	1,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Total Dust	<	350	ug/m3	7,500.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Barium	<	0.53	ug/m3	500.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Zinc Oxide	<	8.2	ug/m3	2,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Manganese	<	0.26	ug/m3	20.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Arsenic	<	0.53	ug/m3	10.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Magnesium	<	13	ug/m3	15,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Cadmium	<	0.26	ug/m3	5.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Nickel	<	0.53	ug/m3	1,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Thallium	<	2.6	ug/m3	20.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Antimony	<	1.6	ug/m3	500.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Aluminum	<	13	ug/m3	1,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-PS01	Beryllium	<	0.026	ug/m3	0.200
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-AG-24MAR24-PS01	Silver	<	0.52	ug/m3	10.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-AG-24MAR24-PS01	Silver	<	0.52	ug/m3	10.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-SR-24MAR24-PS01	Respirable Dust		92	ug/m3	5,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-SR-24MAR24-PS01	Silica: Quartz	<	7.1	ug/m3	25.000

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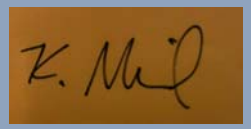

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Lahaina	460060170000	Debris Removal	24-Mar-2024						
Lahaina	460060170000	Debris Removal	24-Mar-2024						
Lahaina	460270040000	Debris Removal	24-Mar-2024						
Lahaina	460270040000	Debris Removal	24-Mar-2024						
Lahaina	460270040000	Debris Removal	24-Mar-2024						
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-AS-24MAR24-PS07	Asbestos-PCM		0.009	fibers/cc	0.100
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Total Dust	<	380	ug/m3	7,500.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Cadmium	<	0.28	ug/m3	5.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Aluminum	<	14	ug/m3	1,000.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Antimony	<	1.7	ug/m3	500.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Arsenic	<	0.57	ug/m3	10.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Zinc Oxide	<	8.8	ug/m3	2,000.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Beryllium	<	0.028	ug/m3	0.200
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Calcium	<	57	ug/m3	5,000.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Chromium	<	14	ug/m3	500.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Cobalt	<	0.85	ug/m3	20.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Copper	<	0.57	ug/m3	1,000.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Magnesium	<	14	ug/m3	15,000.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Selenium	<	4.3	ug/m3	200.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Iron Oxide	<	20	ug/m3	5,000.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Barium	<	0.57	ug/m3	500.000

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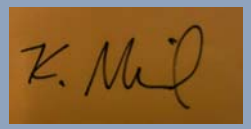

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Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Thallium	<	2.8	ug/m3	20.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Manganese	<	0.28	ug/m3	20.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Nickel	<	0.57	ug/m3	1,000.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Lead	<	0.71	ug/m3	50.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-MT-24MAR24-PS07	Vanadium	<	0.85	ug/m3	50.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-AG-24MAR24-PS07	Silver	<	0.55	ug/m3	10.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-AG-24MAR24-PS07	Silver	<	0.55	ug/m3	10.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-SR-24MAR24-PS07	Silica: Quartz	<	7.5	ug/m3	25.000
Lahaina	450380010000	Erosion Control	24-Mar-2024	H23-SR-24MAR24-PS07	Respirable Dust	<	75	ug/m3	5,000.000
Lahaina	450380010000	Erosion Control	24-Mar-2024						
Lahaina	450380010000	Erosion Control	24-Mar-2024						
Lahaina	450380010000	Erosion Control	24-Mar-2024						
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-AS-24MAR24-SR03	Asbestos-PCM	<	0.006	fibers/cc	0.100
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Beryllium	<	0.028	ug/m3	0.200
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Thallium	<	2.8	ug/m3	20.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Chromium	<	14	ug/m3	500.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Antimony	<	1.7	ug/m3	500.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Aluminum	<	14	ug/m3	1,000.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Cobalt	<	0.83	ug/m3	20.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Copper	<	0.55	ug/m3	1,000.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Iron Oxide	<	20	ug/m3	5,000.000

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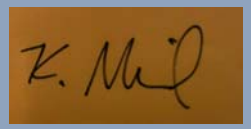

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Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Lead	<	0.69	ug/m3	50.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Magnesium	<	14	ug/m3	15,000.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Vanadium	<	0.83	ug/m3	50.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Zinc Oxide	<	8.6	ug/m3	2,000.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Total Dust	<	370	ug/m3	7,500.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Selenium	<	4.1	ug/m3	200.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Nickel	<	0.55	ug/m3	1,000.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Calcium	<	55	ug/m3	5,000.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Arsenic	<	0.55	ug/m3	10.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Cadmium	<	0.28	ug/m3	5.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Manganese	<	0.28	ug/m3	20.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR03	Barium	<	0.55	ug/m3	500.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-AG-24MAR24-SR03	Silver	<	0.55	ug/m3	10.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-AG-24MAR24-SR03	Silver	<	0.55	ug/m3	10.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-SR-24MAR24-SR03	Respirable Dust	<	75	ug/m3	5,000.000
Lahaina	450140140000	Debris Removal	24-Mar-2024	H23-SR-24MAR24-SR03	Silica: Quartz	<	7.5	ug/m3	25.000
Lahaina	450140140000	Debris Removal	24-Mar-2024						
Lahaina	450140140000	Debris Removal	24-Mar-2024						
Lahaina	450140140000	Debris Removal	24-Mar-2024						
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-AS-24MAR24-SR04	Asbestos-PCM	<	0.006	fibers/cc	0.100
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Aluminum	<	14	ug/m3	1,000.000

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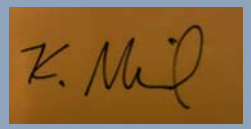

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Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Manganese	<	0.27	ug/m3	20.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Iron Oxide	<	20	ug/m3	5,000.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Magnesium	<	14	ug/m3	15,000.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Lead	<	0.68	ug/m3	50.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Nickel	<	0.55	ug/m3	1,000.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Beryllium	<	0.027	ug/m3	0.200
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Barium	<	0.55	ug/m3	500.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Arsenic	<	0.55	ug/m3	10.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Antimony	<	1.6	ug/m3	500.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Vanadium	<	0.82	ug/m3	50.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Cobalt	<	0.82	ug/m3	20.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Copper	<	0.55	ug/m3	1,000.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Cadmium	<	0.27	ug/m3	5.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Chromium	<	14	ug/m3	500.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Calcium	<	55	ug/m3	5,000.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Zinc Oxide	<	8.5	ug/m3	2,000.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Thallium	<	2.7	ug/m3	20.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Selenium	<	4.1	ug/m3	200.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR04	Total Dust	<	360	ug/m3	7,500.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-AG-24MAR24-SR04	Silver	<	0.55	ug/m3	10.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-AG-24MAR24-SR04	Silver	<	0.55	ug/m3	10.000

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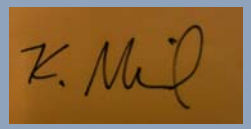

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Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-SR-24MAR24-SR04	Silica: Quartz	<	7.2	ug/m3	25.000
Lahaina	450290740000	Debris Removal	24-Mar-2024	H23-SR-24MAR24-SR04	Respirable Dust	<	72	ug/m3	5,000.000
Lahaina	450290740000	Debris Removal	24-Mar-2024						
Lahaina	450290740000	Debris Removal	24-Mar-2024						
Lahaina	450290740000	Debris Removal	24-Mar-2024						
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-AS-24MAR24-SR05	Asbestos-PCM	<	0.006	fibers/cc	0.100
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Vanadium	<	0.77	ug/m3	50.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Magnesium	<	13	ug/m3	15,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Nickel	<	0.51	ug/m3	1,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Lead	<	0.64	ug/m3	50.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Iron Oxide	<	18	ug/m3	5,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Thallium	<	2.6	ug/m3	20.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Selenium	<	3.8	ug/m3	200.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Zinc Oxide	<	8	ug/m3	2,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Manganese	<	0.26	ug/m3	20.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Cadmium	<	0.26	ug/m3	5.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Beryllium	<	0.026	ug/m3	0.200
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Copper	<	0.51	ug/m3	1,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Cobalt	<	0.77	ug/m3	20.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Chromium	<	13	ug/m3	500.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Barium	<	0.51	ug/m3	500.000

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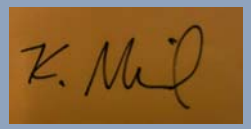

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Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Arsenic	<	0.51	ug/m3	10.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Antimony	<	1.5	ug/m3	500.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Aluminum	<	13	ug/m3	1,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Calcium	<	51	ug/m3	5,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-SR05	Total Dust	<	340	ug/m3	7,500.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-AG-24MAR24-SR05	Silver	<	0.5	ug/m3	10.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-AG-24MAR24-SR05	Silver	<	0.5	ug/m3	10.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-SR-24MAR24-SR05	Silica: Quartz	<	6.9	ug/m3	25.000
Lahaina	460060170000	Debris Removal	24-Mar-2024	H23-SR-24MAR24-SR05	Respirable Dust	<	69	ug/m3	5,000.000
Lahaina	460060170000	Debris Removal	24-Mar-2024						
Lahaina	460060170000	Debris Removal	24-Mar-2024						
Lahaina	460060170000	Debris Removal	24-Mar-2024						
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-AS-24MAR24-B01	Asbestos-PCM	NA	0	fibers/cc	0.100
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Vanadium	<	0.45	ug	50.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Magnesium	<	7.5	ug	15,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Manganese	<	0.15	ug	20.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Thallium	<	1.5	ug	20.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Zinc Oxide	<	4.7	ug	2,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Nickel	<	0.3	ug	1,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Copper	<	0.3	ug	1,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Total Dust	<	200	ug	7,500.000

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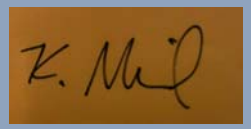

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Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Lead	<	0.38	ug	50.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Iron Oxide	<	11	ug	5,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Selenium	<	2.3	ug	200.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Antimony	<	0.9	ug	500.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Arsenic	<	0.3	ug	10.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Cadmium	<	0.15	ug	5.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Cobalt	<	0.45	ug	20.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Barium	<	0.3	ug	500.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Beryllium	<	0.015	ug	0.200
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Calcium	<	30	ug	5,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Aluminum	<	7.5	ug	1,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-MT-24MAR24-B01	Chromium	<	7.5	ug	500.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-AG-24MAR24-B01	Silver	<	0.3	ug	10.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-AG-24MAR24-B01	Silver	<	0.3	ug	10.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-SR-24MAR24-B01	Respirable Dust	<	50	ug	5,000.000
Lahaina	460270040000	Debris Removal	24-Mar-2024	H23-SR-24MAR24-B01	Silica: Quartz	<	5	ug	25.000
Lahaina	460270040000	Debris Removal	24-Mar-2024						
Lahaina	460270040000	Debris Removal	24-Mar-2024						
Lahaina	460270040000	Debris Removal	24-Mar-2024						

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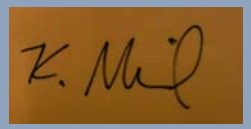

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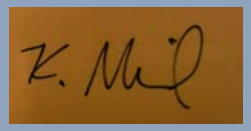

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Date:03/27/24
Shipper:FEDEX
Initials:MMM
Prep:UNKNOWN

AIR MONITORING DATA SHEET & CHAIN OF CUSTODY

Sample Date	24-Mar-2024	Task Force ID	Alpha TF104	Project:	Maui - Lahaina Wildfire (4344)	Laboratory / Contact	SGS-Galson 6601 Kirkville Road, East Syracuse, NY, 13057 PM: Katia Rosale / 315-432 5227
Company	Alpha	Task	Debris Removal	ECC Contact:	Kane McNeill / 650-228-6950 / kmcneill@ecc.net.		
Pump Set ID	Personal - 01			ECC Field Office Address:	75 Kupuohi St, #103 Lahaina, HI 96761		
				TMK	460060170000	Area: Lahaina	Address of Debris Removal: 439 WAINEE ST

Employee (ECC Id#, First Name last name)	Position	Sample ID	Analysis Type[1]	Method of Analysis	Filter Media	Calibration Pre	Calibration Post	Average Flow Rate w/o MD Check	Time Start / On	Time End / Off	Time Total Time (Min)	Volume w/o MD Check	Use of Secondary Equipment	Voided	Sample Notes
Zanier, Tomas	Laborer	H23-AS-24Mar24-PS01	Asbestos 1	Niosh 7400	MCE, 0.8 um, 25MM	1.60	1.57	1.59	7:27	12:14	287.00	454.90			
Maldonado, Joseph	Op-Exc	H23-MT-24Mar24-PS01	Metals - 21 & Total Dust 2	Niosh 7303	MCE, 0.8 um, 37MM Pre weighed	2.00	1.97	1.99	7:27	12:14	287.00	569.70			
Vierra, Sharn	Op-SS	H23-AG-24Mar24-PS01	Metals - Silver 3	OSHA ID-121	MCE, 0.8 um, 37MM	2.00	2.02	2.01	7:27	12:14	287.00	576.87			
Boutan, Anstin	Laborer	H23-SR-24Mar24-PS01	Silica / Resp Dust 4	Niosh 7500 / 0600	Pre Weighed PVC	2.50	2.41	2.46	7:27	12:14	287.00	704.59			
		~~H23-HG-24Mar24-PS01~~	~~Mercury~~	~~Niosh 6009~~	Sorbent Tube			0.00			0.00	0.00			
		~~H23-PH-24Mar24-PS01~~	~~PAHs~~	~~Niosh 5606~~	Sorbent Tube, Nylon			0.00			0.00	0.00			
		~~H23-CR-24Mar24-PS01~~	~~Hexavalent Chromium~~	~~OSHA ID-215~~	PVC, 37mm			0.00			0.00	0.00			

[redacted]

Samplers Signature:		Date: 3/24/24	Time: 16:03
Samplers Name / Company:	Katie Bogan / Tt		
Review:		Date: 3/24/24	Time: 1603
Relinquished:		Date:	Time
Lab Receipt:	Megan M. McGrath	Date: 3/27/24	Time: 9:35 A

Additonal Notes or Comments

*HG, PH, and CR not sampled for.

Analysis TAT: 48-Hr

Send EDD's and Sample Reports to:
sbarr@ecc.net, 4344-Maui_AMSP@ECC.net;
Invoices: [redacted]

A key #
(1) 25mm, pcm
(2) MWMCE
(3) UWMCE
(4) PW, PVC in ppI

coc: eCOC_Maui2023_24Mar24-PS01.xlsm

AIR MONITORING DATA SHEET & CHAIN OF CUSTODY

Sample Date	24-Mar-2024	Task Force ID	Alpha TF109	Project:	Maui - Lahaina Wildfire (4344)	Laboratory / Contact	SGS-Galson 6601 Kirkville Road, East Syracuse, NY, 13057 PM: Katia Rosale / 315-432 5227
Company	Alpha	Task	Debris Removal	ECC Contact:	Kane McNeill / 650-228-6950 / kmcneill@ecc.net.		
Pump Set ID	Personal - 02			ECC Field Office Address:	75 Kupuohi St, #103 Lahaina, HI 96761		
				TMK	460060780000	Area	Lahaina
				Address of Debris Removal	404 ALIO ST		

Employee (ECC id#, First Name last name)	Position	Sample ID	Analysis Type [1]	Method of Analysis	Filter Media	Calibration Pre	Calibration Post	Average Flow Rate w/o MD Check	Time Start / On	Time End / Off	Total Time (Min)	Volume w/o MD Check	Use of Secondary Equipment	Voided	Sample Notes
Gunderson, Ross	Op-Exc	H23-AS-24Mar24-PS02	Asbestos [2]	Niosh 7400	MCE, 0.8um, 25MM	1.60	1.60	1.60	7:17	11:55	278.00	444.80			
~~Lee, Avelino~~	~~Op-SS~~	~~H23-MT-24Mar24-PS02~~	~~Metals - 21 E. Total Dust~~	~~Niosh 7303~~	MCE, 0.8 um, 37MM Pre-Weighed	~~3.00~~	~~1.85~~	~~1.98~~	~~7:17~~	~~11:55~~	~~278.00~~	~~549.05~~			*
Stone, Richard	Laborer	H23-AG-24Mar24-PS02	Metals - Silver [3]	OSHA ID-121	MCE, 0.8um, 37MM	2.00	1.96	1.98	7:17	11:54	277.00	548.46			
Issa, Keoni	Laborer	H23-SR-24Mar24-PS02	Silica / Resp Dust [4]	Niosh 7500 / 0600	Pre Weighed PVC	2.50	2.38	2.44	7:17	11:54	277.00	675.74			
		~~H23-HG-24Mar24-PS02~~	~~Mercury~~	~~Niosh 6009~~	Sorbent Tube			0.00			0.00	0.00			
		~~H23-PH-24Mar24-PS02~~	~~PAHs~~	~~Niosh 5506~~	Sorbent Tube, Filter			0.00			0.00	0.00			
		~~H23-CR-24Mar24-PS02~~	~~Hexavalent Chromium~~	~~OSHA ID-215~~	PVC, 37mm			0.00			0.00	0.00			

[redacted]

Samplers Signature:		Date: 3/24/24	Time: 15:51
Samplers Name / Company:	Katie Bogan / Tt		
Review:		Date: 3/24/24	Time: 1553
Relinquished:		Date:	Time
Lab Receipt:	Megan M. McGrath	Date: 3/27/24	Time 9:35A

Additonal Notes or Comments

*HG, PH, and CR not sampled for. MT sample improperly attached upon collection - VOID.

Analysis TAT: 48-Hr

Send EDD's and Sample Reports to:
sbarr@ecc.net, 4344-Maui_AMSP@ECC.net;
Invoices:

[redacted]

AIR MONITORING DATA SHEET & CHAIN OF CUSTODY

Sample Date	24-Mar-2024	Task Force ID	Alpha TF107	Project:	Maui - Lahaina Wildfire (4344)	Laboratory / Contact	SGS-Galson 6601 Kirkville Road, East Syracuse, NY, 13057 PM: Katia Rosale / 315-432 5227
Company	Alpha	Task	Debris Removal	ECC Contact:	Kane McNeill / 650-228-6950 / kmcneill@ecc.net.		
Pump Set ID	Sensitive Receptor - 03			ECC Field Office Address:	75 Kupuohi St, #103 Lahaina, HI 96761		
				TMK	450140140000	Area	Lahaina
				Address of Debris Removal	1564 MALO ST		

Employee (ECC Id#, First Name last name)	Position	Sample ID	Analysis			Calibration			Time			Volume w/o MD Check	Use of Secondary Equipment	Voided	Sample Notes
			Type[1]	Method of Analysis	Filter Media	Pre	Post	Average Flow Rate w/o MD Check	Start / On	End / Off	Total Time (Min)				
		H23-AS- 24Mar24 -SR03	Asbestos 1	Niosh 7400	MCE, 0.8um, 25MM	1.60	1.57	1.59	7:21	11:53	272.00	431.12			
		H23-MT- 24Mar24 -SR03	Metals - 21 & Total Dust 2	Niosh 7303	MCE, 0.8 UM, 37MM Pre weighed	2.00	2.00	2.00	7:21	11:53	272.00	544.00			
		H23-AG- 24Mar24 -SR03	Metals - Silver 3	OSHA ID-121	MCE, 0.8um, 37MM	2.00	1.98	1.99	7:21	11:53	272.00	541.28			
		H23-SR- 24Mar24 -SR03	Silica / Resp Dust 4	Niosh 7500 / 0600	Pre Weighed PVC	2.50	2.39	2.45	7:21	11:53	272.00	665.86			
		~~H23-HG- 24Mar24 -SR03~~	~~Mercury~~	~~Niosh 6009~~	Sorbent Tube			0.00			0.00	0.00			
		~~H23-PH- 24Mar24 -SR03~~	~~PAHs~~	~~Niosh 5606~~	Sorbent Tube, Ripur			0.00			0.00	0.00			
		~~H23-CR- 24Mar24 -SR03~~	~~Hexavalent Chromium~~	~~OSHA ID-215~~	PVC, 37mm			0.00			0.00	0.00			

[redacted]

Samplers Signature:	[signature]	Date: 3/24/24	Time: 14:46
Samplers Name / Company:	Katie Bogan / Tt		
Review:	[signature]	Date: 3/24/24	Time: 1538
Relinquished:		Date:	Time
Lab Receipt:	Megan M. McGrath [signature]	3/27/24	Time 9:35

Additonal Notes or Comments

*HG, PH, and CR not sampled for. Sensitive receptor located at 1665 Alnakea Road.

Analysis TAT: 48-Hr

Send EDD's and Sample Reports to:
sbarr@ecc.net, 4344-Maui_AMSP@ECC.net;
Invoices:

[redacted]

AIR MONITORING DATA SHEET & CHAIN OF CUSTODY

Sample Date	24-Mar-2024	Task Force ID	TKH TF 202	Project:	Maui - Lahaina Wildfire (4344)	Laboratory / Contact	SGS-Galson 6601 Kirkville Road, East Syracuse, NY, 13057 PM: Katia Rosale / 315-432 5227
Company	TKH	Task	Debris Removal	ECC Contact:	Kane McNeill / 650-228-6950 / kmcneill@ecc.net.		
Pump Set ID	Sensitive Receptor - 04			ECC Field Office Address:	75 Kupuohi St, #103 Lahaina, HI 96761		
				TMK	450290740000	Area	Lahaina
				Address of Debris Removal	585 KAHAKO ST		

Employee (ECC Id#, First Name last name)	Position	Sample ID	Analysis Type [1]	Method of Analysis	Filter Media	Calibration Pre	Calibration Post	Average Flow Rate w/o MD Check	Time Start / On	Time End / Off	Time Total Time (Min)	Volume w/o MD Check	Use of Secondary Equipment	Voided	Sample Notes
		H23-AS-24Mar24-SR04	Asbestos 1	Niosh 7400	MCE, 0.8um, 25MM	1.60	1.59	1.60	7:42	12:17	275.00	438.63			
		H23-MT-24Mar24-SR04	Metals - 21 & Total Dust 2	Niosh 7303	MCE, 0.8 um, 37MM Pre weighed	2.00	2.00	2.00	7:42	12:17	275.00	550.00			
		H23-AG-24Mar24-SR04	Metals - Silver 3	OSHA ID-121	MCE, 0.8um, 37MM	2.00	2.00	2.00	7:42	12:17	275.00	550.00			
		H23-SR-24Mar24-SR04	Silica / Resp Dust 4	Niosh 7500 / 0600	Pre Wt'd PVC	2.50	2.52	2.51	7:42	12:17	275.00	690.80			
		~~H23-HG-24Mar24-SR04~~	~~Mercury~~	~~Niosh 6009~~	Sorbent Tube			0.00			0.00	0.00			
		~~H23-PH-24Mar24-SR04~~	~~PAHs~~	~~Niosh 5606~~	Sorbent Tube, Filter			0.00			0.00	0.00			
		~~H23-CR-24Mar24-SR04~~	~~Hexavalent Chromium~~	~~OSHA ID-215~~	PVC, 37mm			0.00			0.00	0.00			

[redacted]

Samplers Signature: [signature]	Date: 3/24/24	Time: 14:47	
Samplers Name / Company:	Katie Bogan / Tt		
Review: [signature]	Date: 3/24/24	Time: 1539	
Relinquished:	Date:	Time	
Lab Receipt: Megan M. McGrath [signature]	Date: 3/27/24	Time 9:35	

Additonal Notes or Comments

*HG, PH, and CR not sampled for. Sensitive receptor located at 614 Kahako Street.

Analysis TAT: 48-Hr

Send EDD's and Sample Reports to:
sbarr@ecc.net, 4344-Maui_AMSP@ECC.net;
Invoices: [redacted]

AIR MONITORING DATA SHEET & CHAIN OF CUSTODY

Sample Date	24-Mar-2024	Task Force ID	Alpha TF104	Project:	Maui - Lahaina Wildfire (4344)	Laboratory / Contact	SGS-Galson 6601 Kirkville Road, East Syracuse, NY, 13057 PM: Katia Rosale / 315-432 5227
Company	Alpha	Task	Debris Removal	ECC Contact:	Kane McNeill / 650-228-6950 / kmcneill@ecc.net.		
Pump Set ID	Sensitive Receptor - 05			ECC Field Office Address:	75 Kupuohi St, #103 Lahaina, HI 96761		
				TMK	460060170000 Area: Lahaina	Address of Debris Removal	439 WAINEE ST

Employee (ECC Id#, First Name last name)	Position	Sample ID	Analysis Type [1]	Method of Analysis	Filter Media	Calibration Pre	Calibration Post	Average Flow Rate w/o MD Check	Time Start / On	Time End / Off	Time Total Time (Min)	Volume w/o MD Check	Use of Secondary Equipment	Voided	Sample Notes
		H23-AS- 24Mar24 -SR05	Asbestos 1	Niosh 7400	MCE, 0.8 µm, 25MM	1.60	1.59	1.60	7:22	12:17	295.00	470.53			
		H23-MT- 24Mar24 -SR05	Metals - 21 & Total Dust 2	Niosh 7303	MCE, 0.8 µm, 37MM Pre weighed	2.00	1.98	1.99	7:22	12:17	295.00	587.05			
		H23-AG- 24Mar24 -SR05	Metals - Silver 3	OSHA ID-121	MCE, 0.8µm, 37MM	2.00	2.10	2.05	7:22	12:17	295.00	604.75			
		H23-SR- 24Mar24 -SR05	Silica / Resp Dust 4	Niosh 7500 / 0600	Pre Weighed PVC	2.51	2.42	2.46	7:22	12:17	295.00	726.59			
		~~H23-HG- 24Mar24 -SR05~~	~~Mercury~~	~~Niosh 6009~~	Sorbent Tube			0.00			0.00	0.00			
		~~H23-PH- 24Mar24 -SR05~~	~~PAHs~~	~~Niosh 5606~~	Sorbent Tube, Primer			0.00			0.00	0.00			
		~~H23-CR- 24Mar24 -SR05~~	~~Hexavalent Chromium~~	~~OSHA ID-215~~	PVC, 37mm			0.00			0.00	0.00			

[redacted]

Samplers Signature: KB	Date: 3/24/24	Time: 14:44	
Samplers Name / Company:	Katie Bogan / Tt		
Review: Jul Brown	Date: 3/24/24	Time: 1553	
Relinquished:	Date:	Time	
Lab Receipt: Megan M. McGrath Megan M. McGrath	Date: 3/27/24	Time 9:30A	

Additional Notes or Comments

*HG, PH, and CR not sampled for. Sensitive receptor located at 195 Shaw Street.

Analysis TAT: 48-Hr

Send EDD's and Sample Reports to:
sbarr@ecc.net, 4344-Maui_AMSP@ECC.net;
Invoices:

[redacted]

AIR MONITORING DATA SHEET & CHAIN OF CUSTODY

Sample Date	24-Mar-2024	Task Force ID	CMAC TF 401	Project:	Maui - Lahaina Wildfire (4344)	Laboratory / Contact	SGS-Galson 6601 Kirkville Road, East Syracuse, NY, 13057 PM: Katia Rosale / 315-432 5227
Company	CMAC	Task	Debris Removal	ECC Contact:	Kane McNeill / 650-228-6950 / kmcneill@ecc.net.		
Pump Set ID	Personal - 06			ECC Field Office Address:	75 Kupuohi St, #103 Lahaina, HI 96761		
				TMK	460270040000 Area: Lahaina	Address of Debris Removal	384 PAUWALA PL

Employee (ECC Id#, First Name last name)	Position	Sample ID	Analysis Type [1]	Method of Analysis	Filter Media	Calibration Pre	Calibration Post	Average Flow Rate w/o MD Check	Time Start / On	Time End / Off	Time Total Time (Min)	Volume w/o MD Check	Use of Secondary Equipment	Voided	Sample Notes
Kerbow, Forest	Op-SS	H23-AS- 24Mar24 -PS06	Asbestos 1	Niosh 7400	MCE, 0.8um, 25MM	1.60	1.55	1.58	7:26	12:05	279.00	439.43			
Webb, Michael	Laborer	H23-MT- 24Mar24 -PS06	Metals - 21 & Total Dust 2	Niosh 7303	MCE, 0.8um, 37MM Pre weighed	2.00	1.90	1.95	7:26	11:44	258.00	503.10			
Anderson, Ryan	Op-Exc	H23-AG- 24Mar24 -PS06	Metals - Silver 3	OSHA ID-121	MCE, 0.8um, 37MM	2.00	2.00	2.00	7:26	12:05	279.00	558.00			
Borges, Ethan	Laborer	H23-SR- 24Mar24 -PS06	Silica / Resp Dust 4	Niosh 7500 / 0600	Pre Weighed PVC	2.50	2.48	2.49	7:26	12:05	279.00	695.13			
		~~H23-HG- 24Mar24 -PS06~~	~~Mercury~~	~~Niosh 6009~~	Sorbent Tube			0.00			0.00	0.00			
		~~H23-PH- 24Mar24 -PS06~~	~~PAHs~~	~~Niosh 5606~~	Sorbent Tube, Filter			0.00			0.00	0.00			
		~~H23-CR- 24Mar24 -PS06~~	~~Hexavalent Chromium~~	~~OSHA ID-215~~	PVC, 37mm			0.00			0.00	0.00			

[redacted]

Samplers Signature: KMB	Date: 3/24/24	Time: 15:53	
Samplers Name / Company:	Katie Bogan / Tt		
Review: Zach Brown	Date: 3/24/24	Time:	
Relinquished:	Date:	Time	
Lab Receipt: Megan M. McGrath Megan M McGrath	Date: 3/27/24	Time 9:36	

Additonal Notes or Comments

*HG, PH, and CR not sampled for.

Analysis TAT: 48-Hr

Send EDD's and Sample Reports to:
sbarr@ecc.net, 4344-Maui_AMSP@ECC.net;
Invoices: [redacted]

AIR MONITORING DATA SHEET & CHAIN OF CUSTODY

Sample Date	24-Mar-2024	Task Force ID	Erosion Control	Project:	Maui - Lahaina Wildfire (4344)	Laboratory / Contact	SGS-Galson 6601 Kirkville Road, East Syracuse, NY, 13057 PM: Katia Rosale / 315-432 5227
Company	CMAC	Task	Erosion Control	ECC Contact:	Kane McNeill / 650-228-6950 / kmcneill@ecc.net.		
Pump Set ID	Personal - 07			ECC Field Office Address:	75 Kupuohi St, #103 Lahaina, HI 96761		
				TMK	450380010000	Area	Lahaina
				Address of Debris Removal	269 KOMO MAI ST		

Employee (ECC Id#, First Name last name)	Position	Sample ID	Analysis			Calibration			Time			Volume w/o MD Check	Use of Secondary Equipment	Voided	Sample Notes
			Type [1]	Method of Analysis	Filter Media	Pre	Post	Average Flow Rate w/o MD Check	Start / On	End / Off	Total Time (Min)				
Kearney, Jason	Op-SS	H23-AS- 24Mar24 -PS07	Asbestos 1	Niosh 7400	MCE, 0.8um, 25MM	1.60	1.60	1.60	7:40	12:11	271.00	433.60			
Kearney, Jason	Op-SS	H23-MT- 24Mar24 -PS07	Metals - 21 & Total Dust 2	Niosh 7303	MCE, 0.8 u M, 37MM Pre weighed	2.00	1.90	1.95	7:40	12:11	271.00	528.45			
Kearney, Jason	Op-SS	H23-AG- 24Mar24 -PS07	Metals - Silver 3	OSHA ID-121	MCE, 0.8um, 37MM	2.00	2.00	2.00	7:40	12:11	271.00	542.00			
Brooks, Micah	Laborer	H23-SR- 24Mar24 -PS07	Silica / Resp Dust 4	Niosh 7500 / 0600	Pre Weighed PVC	2.51	2.41	2.46	7:40	12:11	271.00	667.20			
		~~H23-HG- 24Mar24 -PS07~~	~~Mercury~~	~~Niosh 6009~~	~~Sorbent Tube~~			0.00			0.00	0.00			
		~~H23-PH- 24Mar24 -PS07~~	~~PAHs~~	~~Niosh 5506~~	~~Sorbent Tube, Filter~~			0.00			0.00	0.00			
		~~H23-CR- 24Mar24 -PS07~~	~~Hexavalent Chromium~~	~~OSHA ID-215~~	~~PVC, 37mm~~			0.00			0.00	0.00			

[redacted]

Samplers Signature: KMB	Date: 3/24/24	Time: 14:44
Samplers Name / Company: Katie Bogan / Tt		
Review: Jud Bogan	Date: 3/24/24	Time: 1533
Relinquished:	Date:	Time
Lab Receipt: Megan M. McGrath Megan M. McGrath	Date: 3/27/24	Time 9:35 A

Additonal Notes or Comments

*HG, PH, and CR not sampled for. Erosion control team moved to the following addresses while wearing pumps: 269 Komo Mai Street, 181 Komo Mai Street.

Analysis TAT: 48-Hr

Send EDD's and Sample Reports to:
sbarr@ecc.net, 4344-Maui_AMSP@ECC.net;
Invoices:

[redacted]

coc: eCOC_Maui2023_24Mar24-PS07.xlsm

AIR MONITORING DATA SHEET & CHAIN OF CUSTODY

Sample Date	24-Mar-2024	Task Force ID	CMAC TF 401	Project:	Maui - Lahaina Wildfire (4344)	Laboratory / Contact	SGS-Galson 6601 Kirkville Road, East Syracuse, NY, 13057 PM: Katia Rosale / 315-432 5227
Company	CMAC	Task	Debris Removal	ECC Contact:	Kane McNeill / 650-228-6950 / kmcneill@ecc.net.		
Pump Set ID	Blank			ECC Field Office Address:	75 Kupuohi St, #103 Lahaina, HI 96761		
				TMK	460270040000	Area: Lahaina	Address of Debris Removal: 384 PAUWALA PL

Employee (ECC Id#, First Name last name)	Position	Sample ID	Analysis Type[1]	Method of Analysis	Filter Media	Calibration Pre	Calibration Post	Average Flow Rate w/o MD Check	Time Start / On	Time End / Off	Time Total Time (Min)	Volume w/o MD check	Use of Secondary Equipment	Voided	Sample Notes
		H23-AS-24Mar24-B01	Asbestos 1	Niosh 7400	MCE, 0.8um, 25MM			0.00			0.00	0.00			
		H23-MT-24Mar24-B01	Metals - 21 & Total Dust 2	Niosh 7303	MCE, 0.8 um, 37MM Pre weighed			0.00			0.00	0.00			
		H23-AG-24Mar24-B01	Metals - Silver 3	OSHA ID-121	MCE, 0.8um, 37MM			0.00			0.00	0.00			
		H23-SR-24Mar24-B01	Silica / Resp Dust 4	Niosh 7500 / 0600	Pre Weighed PVC			0.00			0.00	0.00			
		~~H23-HG-24Mar24-B01~~	~~Mercury~~	~~Niosh 6009~~	Sorbent Tube			0.00			0.00	0.00			
		~~H23-PH-24Mar24-B01~~	~~PAHs~~	~~Niosh 5606~~	Sorbent Tube, Filter			0.00			0.00	0.00			
		~~H23-CR-24Mar24-B01~~	~~Hexavalent Chromium~~	~~OSHA ID-215~~	PVC, 37mm			0.00			0.00	0.00			

[redacted]

Samplers Signature:		Date: 3/24/24	Time: 15:54
Samplers Name / Company:	Katie Bogan / Tt		
Review:		Date: 3/24/24	Time: 1604
Relinquished:		Date:	Time
Lab Receipt:	Megan M. McGrath	Date: 3/27/24	Time 9:35

Additonal Notes or Comments

*HG, PH, and CR not sampled for.

Analysis TAT: 48-Hr

Send EDD's and Sample Reports to:
sbarr@ecc.net, 4344-Maui_AMSP@ECC.net;
Invoices:

[redacted]

ATTACHMENT 16. FACT SHEET: MAUI WILDFIRES AIR QUALITY GUIDE FOR PARTICLE POLLUTION

Maui Wildfires Air Quality Guide for Particle Pollution

Air monitoring of particle pollution is an effective way to assess general air quality. This is because potential contaminants of concern stick to pieces of ash and dust. Ash may include heavy metals, chemicals, dust, dirt, and soot. Breathing in these chemicals can be hazardous to your health. Breathing in dust or ash may cause irritation to your eyes, nose, and throat. The Hawai'i Department of Health, in conjunction with the County of Maui and other state, local, and federal partners, continues to work to minimize the risk of exposure to the ash.

The impact area has been treated with SoilTac®, an ecologically and environmentally safe dust and erosion control measure. Debris removal operations employ a variety of dust control measures. Still, strong winds or disturbance of the material may cause highly localized areas to have airborne dust or ash.

To date, the Hawai'i Department of Health and other agencies' air monitoring data consistently demonstrate no significant air quality impacts throughout the Lāhainā area.

The Air Quality Index (AQI) on the following page provides categories and colors, corresponding index values, and cautionary statements for different levels of health concern. If the real-time air monitoring data reports yellow or higher levels (meaning lower air quality) or if you are around ash that could be stirred up by wind or human disturbance, use personal protective equipment (PPE).

PROTECT YOURSELF. If you need to visit areas with ash, take safety measures by always wearing PPE including face masks when there is visible dust, yellow AQI level or higher (lower air quality), or if the ash will be disturbed. Using PPE will help protect you from exposures to airborne particles and to the harmful substances found within them. In addition, wear gloves, long sleeve shirts, pants, socks, and shoes to avoid skin contact with ash. Limit the amount of time you spend at the site. Avoid breathing in ash by wearing a tight-fitting N95 - look for the words "NIOSH Approved" printed on the mask. Be aware of heat illness symptoms and understand that PPE can increase the burden of heat load on the body by trapping the heat and not allowing the body to cool. Leave the area and remove PPE if experiencing heat illness symptoms.

You may monitor real-time air quality at www.fire.airnow.gov or by downloading the AirNow mobile app. Additional apps such as Local Haze, IQAir, and Paku use the same data sources and allow for real-time alerts.

MAUI WILDFIRES AIR QUALITY GUIDE FOR PARTICLE POLLUTION

Harmful particle pollution is one of our nation's most common air quality problems. Use the chart below to help reduce your exposure to particles and harmful substances within them. This will help protect your health. The Air Quality Index (AQI) includes AQI categories and colors, corresponding index values and cautionary statements for different levels of health concern. The AQI shows the air quality for a specific area. If you are around ash that could be stirred up by wind or human disturbance, your immediate air quality could be worse, so always use personal protective equipment (PPE). Visit AirNow.gov for your local air quality and CDC's Particle Pollution webpage to learn more about how to protect yourself.

* Note: If you don't have an air conditioner, staying inside with the windows closed may be dangerous in extremely hot weather. If you are hot, go someplace with air conditioning or check with your local government to find out if cooling centers are available in your community.

Air Quality Index		
AQI Category and Color	**Index Value**	**Description and Air Quality**
Good **Green**	**0 to 50**	**Air quality is satisfactory, and air pollution poses little or no risk**
Moderate **Yellow**	**51-100**	**Air quality is acceptable. However, there may be a risk for some people, particularly those that are unusually sensitive to air pollution**
Unhealthy for Sensitive Groups **Orange**	**101-150**	**Members of sensitive groups may experience health effects. The general public is less likely to be affected**
Unhealthy **Red**	**151-200**	**Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.**
Very Unhealthy **Purple**	**201-300**	**Health alert: The risk of health effects is increased for everyone.**
Hazardous **Maroon**	**301 to 500**	**Health warning of emergency conditions; everyone is more likely to be affected.**

ATTACHMENT 17. LEACHATE ANALYSIS SYNOPSIS AND LABORATORY DATA REPORTS

ECC
West Maui Temporary Disposal Site
Stormwater White Paper

History

ECC was awarded a task order for the construction of a Temporary Disposal Site (TDS) in support of the debris removal operations for the Lahaina Wildfires.

On 09-Jan-2024, a significant rain event (about 3" in a 24-hour period) occurred that filled the TDS effluent detention basin with approximately 500,000 gallons of stormwater, equating to about 36% of the basin's capacity. The planned use of accumulated storm water or leachate was as dust control during operation of the TDS. However, the TDS is not in operation yet and there is no other dust control requirement currently. While there is still ample capacity in the detention basin it is prudent to maximize the available capacity during the rain season to prevent uncontrolled release of water.

There is no ash/debris in the TDS at this time and the accumulated water is associated only with the on-going construction of the TDS and therefore the water is not expected to contain contaminants beyond what would normally be expected at the construction site in Maui. However, ECC did obtain a water sample on 11 January 2024 for analysis at FQ Labs in Oahu, Hawaii. Water samples were analyzed for Total Suspended Solids (TSS), Turbidity, Heavy Metals, Oil & Grease, and TPH-Oil.

Regulatory

The site is currently managed under a construction SWPPP. Haley & Aldrich, Inc, ECC's SWPPP engineer consultant located in Maui prepared the construction SWPPP. Janice Marsters, lead design engineer (Haley & Aldrich) was provided guidance by the Hawaii Department of Health (HDOH) to not apply for an NOI-C or NPDES due to the work being conducted is under the Governor's Emergency Disaster Declaration which eliminates the requirement for certain permits. Therefore, no NOI or NPDES permit were required for the construction of the West Maui TDS at the time construction began. The Emergency Disaster Declaration is still in effect currently.

Current Status of the Detention Basin and Operations -

Stormwater generated from the storm on January 09 has been collected in the detention basin (DB) and the current volume is estimated to be about 500,000 gallons. The detention basin is constructed with 80-mil welded liner and has a capacity of 1.375M gallons and is located below the TDS disposal cell. As indicated above, the operation plan for detention basin water is for use as dust suppressant on the cell waste materials and on the roads once debris removal has begun. The secondary dispersion of the water would be performed through evaporation.

Operation During TDS Construction

At this time, the detention is at 36% capacity and while there is still ample capacity available, given the potential for additional rain events, it is prudent to maximize the available capacity of the detention basin during the rain season. Therefore, since there is currently no need for the collected water to control dust, ECC proposes to release the water as described below.

Proposed Actions

Based on the analytical results from the detention basin indicating no contamination above background, ECC will pump the water from the detention basin to a percolation basin. The percolation basin is located below the detention basin within the TDS working boundaries. The pumping operation would be monitored to prevent overflow and erosion outside the percolation basin.

Analytical Results

The analytical results below represent the sampled detention basin stormwater characteristics. The stormwater which passed through volcanic cinder materials have naturally occurring background elements. The results indicate no contamination above background.

				Maui WF Background Soils Study	HDOD, Env. Action Levels, GW IS, Volume 1 (Fall 2017)	
Analysis		Results	Units			
SM 2540D	Total Suspended Solids	316	mg/L		-	-
EPA 180.1	Turbidity	650	NTU		-	-
EPA1664A	Oil and Grease	< 5.0	mg/L		-	-
EPA1664A	Total Petroleum Hydrocarbons - Oil	< 5.0	mg/L		-	-
3015/200.8	Total Metals					
	Beryllium	<0.010	mg/L	3 ppm	0.004	mg/L
	Boron	0.107	mg/L		4.000	mg/L
	Sodium	70.3	mg/L		N/A	
	Magnesium	13.1	mg/L		N/A	
	Aluminum	61.4	mg/L		N/A	
	Potassium	<5.00	mg/L		N/A	
	Calcium	13.7	mg/L		N/A	
	Vanadium	0.13	mg/L	770 ppm	0.090	mg/L
	Chromium	0.136	mg/L	1100 ppm	0.016	mg/L
	Manganese	0.991	mg/L		N/A	
	Iron	63.9	mg/L		N/A	
	Cobalt	0.026	mg/L	80 ppm	0.006	mg/L
	Nickel	0.078	mg/L	410 ppm	0.005	mg/L
	Copper	0.042	mg/L	250 ppm	0.003	mg/L
	Zinc	<0.100	mg/L	350 ppm	0.022	mg/L
	Arsenic	<0.010	mg/L		0.011	mg/L
	Selenium	<0.010	mg/L		0.020	mg/L
	Strontium	0.226	mg/L		N/A	
	Molybdenum	<0.010	mg/L		0.100	mg/L
	Silver	<0.010	mg/L		0.001	mg/L
	Cadmium	<0.010	mg/L		0.003	mg/L
	Antimony	<0.010	mg/L		0.006	mg/L

	Barium	0.251	mg/L		2.000	mg/L
	Mercury	<0.0002	mg/L		0.002	mg/L
	Thallium	<0.010	mg/L		0.002	mg/L
	Lead	<0.010	mg/L		0.015	mg/L

References:

- *Hawaii Department of Health, Table A: Groundwater IS Current OR Potential Source of Drinking Water (Fall 2017).*
- *Maui Wildfire Soil Background Study*

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ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Jackson Kiker
Environmental Chemical Corp.
43 Broad St
Suite A301
Hudson, Massachusetts 01749

Generated 3/10/2024 6:30:20 PM

JOB DESCRIPTION

2023 Maui Fires - Lahaina, Maui

JOB NUMBER

580-136206-2

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424

See page two for job notes and contact information.

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Jackson Kiker
Environmental Chemical Corp.
43 Broad St
Suite A301
Hudson, Massachusetts 01749

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JOB DESCRIPTION

2023 Maui Fires - Lahaina, Maui

JOB NUMBER

580-136507-1

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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Table of Contents

Job ID: 580-136507-1 Eurofins Seattle

Job Narrative
580-136507-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Receipt
The samples were received on 2/10/2024 9:15 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.8°C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

Receipt Exceptions
The two Trip Blank HCL VOA vials submitted for analysis were identified as 'Temp Blank' on the COC. TDS - RP - 08FEB24 (580-136507-1) and Trip Blank (580-136507-2)

Method 8260D - Volatile Organic Compounds (GC/MS)
Samples TDS - RP - 08FEB24 (580-136507-1) and Trip Blank (580-136507-2) were analyzed for Volatile Organic Compounds (GC/MS). The samples were analyzed on 2/13/2024 and 2/22/2024.

The CCVIS associated with analytical batch 580-451192 was outside control limits low for Acrylonitrile. The initial analysis contained multiple QC failures and Internal Standard outside of control limits low. No more volume remains for further re-analysis, therefore, results are reported. The following samples is affected: Trip Blank (580-136507-2) and (CCVIS 580-451192/3)

Method 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography
Sample TDS - RP - 08FEB24 (580-136507-1) was analyzed for Polychlorinated Biphenyls (PCBs) by Gas Chromatography. The sample was prepared on 2/13/2024 and analyzed on 2/15/2024.

The following samples required a TBA clean-up to reduce matrix interferences caused by sulfur TBA_00035: TDS - RP - 08FEB24 (580-136507-1), (LCS 580-451155/2-A), (LCSD 580-451155/3-A) and (MB 580-451155/1-A).

Method 8290A - Dioxins and Furans (HRGC/HRMS)
Sample TDS - RP - 08FEB24 (580-136507-1) was analyzed for Dioxins and Furans (HRGC/HRMS). The sample was prepared on 2/20/2024 and analyzed on 2/21/2024.

Method 7470A - Mercury (CVAA)
Sample TDS - RP - 08FEB24 (580-136507-1) was analyzed for Mercury (CVAA). The sample was prepared and analyzed on 2/13/2024.

Method 7470A - Mercury (CVAA) - TCLP
Sample TDS - RP - 08FEB24 (580-136507-1) was analyzed for Mercury (CVAA) - TCLP. The sample was leached, prepared and analyzed on 2/13/2024.

Definitions/Glossary

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136507-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

GC Semi VOA

Qualifier	Qualifier Description
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

Dioxin

Qualifier	Qualifier Description
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample ID: TDS - RP - 08FEB24

Date Collected: 02/08/24 10:20
Date Received: 02/10/24 09:15

Lab Sample ID: 580-136507-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.50	U	1.0	0.18	ug/L			02/13/24 20:32	1
1,1,1-Trichloroethane	0.80	U	1.0	0.39	ug/L			02/13/24 20:32	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.52	ug/L			02/13/24 20:32	1
1,1,2-Trichloroethane	0.50	U	1.0	0.24	ug/L			02/13/24 20:32	1
1,1-Dichloroethene	0.50	U	1.0	0.28	ug/L			02/13/24 20:32	1
1,2-Dichlorobenzene	0.80	U	1.0	0.46	ug/L			02/13/24 20:32	1
1,2-Dichloroethane	0.80	U	1.0	0.42	ug/L			02/13/24 20:32	1
1,2-Dichloropropane	0.50	U	1.0	0.18	ug/L			02/13/24 20:32	1
1,3-Dichlorobenzene	0.80	U	1.0	0.48	ug/L			02/13/24 20:32	1
1,3-Dichloropropane	0.80	U	1.0	0.35	ug/L			02/13/24 20:32	1
1,4-Dichlorobenzene	0.80	U M	1.0	0.46	ug/L			02/13/24 20:32	1
2,2-Dichloropropane	0.50	U	1.0	0.32	ug/L			02/13/24 20:32	1
Acrolein	12	U	15	3.5	ug/L			02/13/24 20:32	1
Benzene	0.50	U	1.0	0.24	ug/L			02/13/24 20:32	1
Carbon tetrachloride	0.80	U	1.0	0.30	ug/L			02/13/24 20:32	1
Chloroethane	0.80	U	1.0	0.35	ug/L			02/13/24 20:32	1
Chloroform	0.50	U	1.0	0.26	ug/L			02/13/24 20:32	1
Chloromethane	0.50	U M	1.0	0.28	ug/L			02/13/24 20:32	1
Ethylbenzene	0.80	U	1.0	0.50	ug/L			02/13/24 20:32	1
Hexachlorobutadiene	2.0	U	3.0	0.79	ug/L			02/13/24 20:32	1
Tetrachloroethene	0.80	U	1.0	0.41	ug/L			02/13/24 20:32	1
Toluene	0.80	U	1.0	0.39	ug/L			02/13/24 20:32	1
trans-1,2-Dichloroethene	0.80	U	1.0	0.39	ug/L			02/13/24 20:32	1
trans-1,3-Dichloropropene	0.80	U	1.0	0.41	ug/L			02/13/24 20:32	1
Trichloroethene	0.50	U	1.0	0.26	ug/L			02/13/24 20:32	1
Vinyl chloride	0.50	U	1.0	0.22	ug/L			02/13/24 20:32	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*		*02/13/24 20:32*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*81 - 118*		*02/13/24 20:32*	*1*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*		*02/13/24 20:32*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 119*		*02/13/24 20:32*	*1*
Toluene-d8 (Surr)	*97*		*89 - 112*		*02/13/24 20:32*	*1*

Method: SW846 8260D - Volatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Acrylonitrile	8.0	U	15	3.6	ug/L			02/22/24 22:10	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*		*02/22/24 22:10*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*81 - 118*		*02/22/24 22:10*	*1*
4-Bromofluorobenzene (Surr)	*94*		*85 - 114*		*02/22/24 22:10*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 119*		*02/22/24 22:10*	*1*
Toluene-d8 (Surr)	*100*		*89 - 112*		*02/22/24 22:10*	*1*

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136507-1

Client Sample ID: TDS - RP - 08FEB24

Date Collected: 02/08/24 10:20
Date Received: 02/10/24 09:15

Lab Sample ID: 580-136507-1

Matrix: Water

Method: SW846 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	0.16	U Q	0.45	0.061	ug/L		02/13/24 08:31	02/15/24 14:39	1
PCB-1221	0.16	U	0.45	0.075	ug/L		02/13/24 08:31	02/15/24 14:39	1
PCB-1232	0.16	U	0.45	0.063	ug/L		02/13/24 08:31	02/15/24 14:39	1
PCB-1242	0.16	U	0.45	0.059	ug/L		02/13/24 08:31	02/15/24 14:39	1
PCB-1248	0.16	U	0.45	0.052	ug/L		02/13/24 08:31	02/15/24 14:39	1
PCB-1254	0.16	U	0.45	0.075	ug/L		02/13/24 08:31	02/15/24 14:39	1
PCB-1260	0.16	U Q	0.45	0.061	ug/L		02/13/24 08:31	02/15/24 14:39	1
Polychlorinated biphenyls, Total	0.16	U	0.45	0.075	ug/L		02/13/24 08:31	02/15/24 14:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*58*	*Q*	*26 - 124*	*02/13/24 08:31*	*02/15/24 14:39*	*1*
DCB Decachlorobiphenyl	*75*	*Q M*	*38 - 121*	*02/13/24 08:31*	*02/15/24 14:39*	*1*

Method: SW846 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	1.9	U M	4.8	0.83	pg/L		02/20/24 00:32	02/21/24 01:54	1
Total TCDD	1.9	U	4.8	0.83	pg/L		02/20/24 00:32	02/21/24 01:54	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*74*		*40 - 135*	*02/20/24 00:32*	*02/21/24 01:54*	*1*

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020	U	0.00030	0.00015	mg/L		02/13/24 12:12	02/13/24 19:35	1

Method: SW846 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0020	U	0.0030	0.0015	mg/L		02/13/24 11:14	02/13/24 20:32	1

Client Sample ID: Trip Blank

Date Collected: 02/08/24 00:00
Date Received: 02/10/24 09:15

Lab Sample ID: 580-136507-2

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.50	U	1.0	0.18	ug/L			02/13/24 16:06	1
1,1,1-Trichloroethane	0.80	U	1.0	0.39	ug/L			02/13/24 16:06	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.52	ug/L			02/13/24 16:06	1
1,1,2-Trichloroethane	0.50	U	1.0	0.24	ug/L			02/13/24 16:06	1
1,1-Dichloroethene	0.50	U	1.0	0.28	ug/L			02/13/24 16:06	1
1,2-Dichlorobenzene	0.80	U	1.0	0.46	ug/L			02/13/24 16:06	1
1,2-Dichloroethane	0.80	U M	1.0	0.42	ug/L			02/13/24 16:06	1
1,2-Dichloropropane	0.50	U	1.0	0.18	ug/L			02/13/24 16:06	1
1,3-Dichlorobenzene	0.80	U	1.0	0.48	ug/L			02/13/24 16:06	1
1,3-Dichloropropane	0.80	U	1.0	0.35	ug/L			02/13/24 16:06	1
1,4-Dichlorobenzene	0.80	U M	1.0	0.46	ug/L			02/13/24 16:06	1
2,2-Dichloropropane	0.50	U	1.0	0.32	ug/L			02/13/24 16:06	1
Acrolein	12	U	15	3.5	ug/L			02/13/24 16:06	1
Acrylonitrile	8.0	U Q	15	3.6	ug/L			02/13/24 16:06	1
Benzene	0.50	U	1.0	0.24	ug/L			02/13/24 16:06	1
Carbon tetrachloride	0.80	U	1.0	0.30	ug/L			02/13/24 16:06	1
Chloroethane	0.80	U	1.0	0.35	ug/L			02/13/24 16:06	1
Chloroform	0.50	U	1.0	0.26	ug/L			02/13/24 16:06	1
Chloromethane	0.50	U	1.0	0.28	ug/L			02/13/24 16:06	1
Ethylbenzene	0.80	U	1.0	0.50	ug/L			02/13/24 16:06	1
Hexachlorobutadiene	2.0	U	3.0	0.79	ug/L			02/13/24 16:06	1
Tetrachloroethene	0.80	U	1.0	0.41	ug/L			02/13/24 16:06	1
Toluene	0.80	U M	1.0	0.39	ug/L			02/13/24 16:06	1
trans-1,2-Dichloroethene	0.80	U	1.0	0.39	ug/L			02/13/24 16:06	1
trans-1,3-Dichloropropene	0.80	U	1.0	0.41	ug/L			02/13/24 16:06	1
Trichloroethene	0.50	U	1.0	0.26	ug/L			02/13/24 16:06	1
Vinyl chloride	0.50	U	1.0	0.22	ug/L			02/13/24 16:06	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*		*02/13/24 16:06*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*81 - 118*		*02/13/24 16:06*	*1*
4-Bromofluorobenzene (Surr)	*96*		*85 - 114*		*02/13/24 16:06*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 119*		*02/13/24 16:06*	*1*
Toluene-d8 (Surr)	*97*		*89 - 112*		*02/13/24 16:06*	*1*

Method: 8260D - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-451192/7
Matrix: Water
Analysis Batch: 451192

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.50	U	1.0	0.18	ug/L			02/13/24 14:53	1
1,1,1-Trichloroethane	0.80	U	1.0	0.39	ug/L			02/13/24 14:53	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.52	ug/L			02/13/24 14:53	1
1,1,2-Trichloroethane	0.50	U	1.0	0.24	ug/L			02/13/24 14:53	1
1,1-Dichloroethene	0.50	U	1.0	0.28	ug/L			02/13/24 14:53	1
1,2-Dichlorobenzene	0.80	U	1.0	0.46	ug/L			02/13/24 14:53	1
1,2-Dichloroethane	0.80	U M	1.0	0.42	ug/L			02/13/24 14:53	1
1,2-Dichloropropane	0.50	U	1.0	0.18	ug/L			02/13/24 14:53	1
1,3-Dichlorobenzene	0.80	U	1.0	0.48	ug/L			02/13/24 14:53	1
1,3-Dichloropropane	0.80	U	1.0	0.35	ug/L			02/13/24 14:53	1
1,4-Dichlorobenzene	0.80	U	1.0	0.46	ug/L			02/13/24 14:53	1
2,2-Dichloropropane	0.50	U	1.0	0.32	ug/L			02/13/24 14:53	1
Acrolein	12	U	15	3.5	ug/L			02/13/24 14:53	1
Acrylonitrile	8.0	U	15	3.6	ug/L			02/13/24 14:53	1
Benzene	0.50	U	1.0	0.24	ug/L			02/13/24 14:53	1
Carbon tetrachloride	0.80	U	1.0	0.30	ug/L			02/13/24 14:53	1
Chloroethane	0.80	U	1.0	0.35	ug/L			02/13/24 14:53	1
Chloroform	0.50	U	1.0	0.26	ug/L			02/13/24 14:53	1
Chloromethane	0.50	U M	1.0	0.28	ug/L			02/13/24 14:53	1
Ethylbenzene	0.80	U	1.0	0.50	ug/L			02/13/24 14:53	1
Hexachlorobutadiene	2.0	U	3.0	0.79	ug/L			02/13/24 14:53	1
Tetrachloroethene	0.80	U	1.0	0.41	ug/L			02/13/24 14:53	1
Toluene	0.80	U M	1.0	0.39	ug/L			02/13/24 14:53	1
trans-1,2-Dichloroethene	0.80	U	1.0	0.39	ug/L			02/13/24 14:53	1
trans-1,3-Dichloropropene	0.80	U	1.0	0.41	ug/L			02/13/24 14:53	1
Trichloroethene	0.50	U	1.0	0.26	ug/L			02/13/24 14:53	1
Vinyl chloride	0.50	U	1.0	0.22	ug/L			02/13/24 14:53	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*		*02/13/24 14:53*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*		*02/13/24 14:53*	*1*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*		*02/13/24 14:53*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 119*		*02/13/24 14:53*	*1*
Toluene-d8 (Surr)	*99*		*89 - 112*		*02/13/24 14:53*	*1*

Lab Sample ID: LCS 580-451192/4
Matrix: Water
Analysis Batch: 451192

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	5.00	5.27		ug/L		105	78 - 124
1,1,1-Trichloroethane	5.00	5.36		ug/L		107	74 - 131
1,1,2,2-Tetrachloroethane	5.00	5.37		ug/L		107	71 - 121
1,1,2-Trichloroethane	5.00	5.14		ug/L		103	80 - 119
1,1-Dichloroethene	5.00	6.09		ug/L		122	71 - 131
1,2-Dichlorobenzene	5.00	5.50		ug/L		110	80 - 119

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-451192/4
Matrix: Water
Analysis Batch: 451192

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2-Dichloroethane	5.00	5.12		ug/L		102	73 - 128
1,2-Dichloropropane	5.00	5.41		ug/L		108	78 - 122
1,3-Dichlorobenzene	5.00	5.55		ug/L		111	80 - 119
1,3-Dichloropropane	5.00	5.06		ug/L		101	80 - 119
1,4-Dichlorobenzene	5.00	5.28		ug/L		106	79 - 118
2,2-Dichloropropane	5.00	5.83		ug/L		117	60 - 139
Acrolein	30.0	33.3		ug/L		111	39 - 155
Acrylonitrile	50.0	40.7		ug/L		81	63 - 135
Benzene	5.00	5.30		ug/L		106	79 - 120
Carbon tetrachloride	5.00	5.53		ug/L		111	72 - 136
Chloroethane	5.00	5.14		ug/L		103	60 - 138
Chloroform	5.00	5.22		ug/L		104	79 - 124
Chloromethane	5.00	4.44		ug/L		89	50 - 139
Ethylbenzene	5.00	5.12		ug/L		102	79 - 121
Hexachlorobutadiene	5.00	6.25		ug/L		125	66 - 134
Tetrachloroethene	5.00	5.29		ug/L		106	74 - 129
Toluene	5.00	5.00		ug/L		100	80 - 121
trans-1,2-Dichloroethene	5.00	5.27		ug/L		105	75 - 124
trans-1,3-Dichloropropene	5.00	5.37		ug/L		107	73 - 127
Trichloroethene	5.00	5.24		ug/L		105	79 - 123
Vinyl chloride	5.00	4.78		ug/L		96	58 - 137

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*81 - 118*
4-Bromofluorobenzene (Surr)	*100*		*85 - 114*
Dibromofluoromethane (Surr)	*99*		*80 - 119*
Toluene-d8 (Surr)	*99*		*89 - 112*

Lab Sample ID: LCSD 580-451192/5
Matrix: Water
Analysis Batch: 451192

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	5.00	5.14		ug/L		103	78 - 124	2	20
1,1,1-Trichloroethane	5.00	5.23		ug/L		105	74 - 131	2	20
1,1,2,2-Tetrachloroethane	5.00	5.26		ug/L		105	71 - 121	2	20
1,1,2-Trichloroethane	5.00	5.14		ug/L		103	80 - 119	0	20
1,1-Dichloroethene	5.00	5.77		ug/L		115	71 - 131	5	20
1,2-Dichlorobenzene	5.00	5.26		ug/L		105	80 - 119	4	20
1,2-Dichloroethane	5.00	5.10		ug/L		102	73 - 128	0	20
1,2-Dichloropropane	5.00	5.33		ug/L		107	78 - 122	1	20
1,3-Dichlorobenzene	5.00	5.25		ug/L		105	80 - 119	5	20
1,3-Dichloropropane	5.00	5.15		ug/L		103	80 - 119	2	20
1,4-Dichlorobenzene	5.00	5.20		ug/L		104	79 - 118	2	20
2,2-Dichloropropane	5.00	5.43		ug/L		109	60 - 139	7	20
Acrolein	30.0	33.6		ug/L		112	39 - 155	1	20
Acrylonitrile	50.0	40.0		ug/L		80	63 - 135	2	20
Benzene	5.00	5.14		ug/L		103	79 - 120	3	20

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-451192/5
Matrix: Water
Analysis Batch: 451192

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Carbon tetrachloride			5.00	5.27		ug/L		105	72 - 136	5	20
Chloroethane			5.00	5.30		ug/L		106	60 - 138	3	20
Chloroform			5.00	5.06		ug/L		101	79 - 124	3	20
Chloromethane			5.00	4.43		ug/L		89	50 - 139	0	20
Ethylbenzene			5.00	5.03		ug/L		101	79 - 121	2	20
Hexachlorobutadiene			5.00	5.96		ug/L		119	66 - 134	5	20
Tetrachloroethene			5.00	5.14		ug/L		103	74 - 129	3	20
Toluene			5.00	4.84		ug/L		97	80 - 121	3	20
trans-1,2-Dichloroethene			5.00	5.22		ug/L		104	75 - 124	1	20
trans-1,3-Dichloropropene			5.00	5.40		ug/L		108	73 - 127	1	20
Trichloroethene			5.00	5.17		ug/L		103	79 - 123	1	20
Vinyl chloride			5.00	4.60		ug/L		92	58 - 137	4	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*81 - 118*
4-Bromofluorobenzene (Surr)	*102*		*85 - 114*
Dibromofluoromethane (Surr)	*100*		*80 - 119*
Toluene-d8 (Surr)	*98*		*89 - 112*

Lab Sample ID: MB 580-452165/11
Matrix: Water
Analysis Batch: 452165

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Acrylonitrile	8.0	U	15	3.6	ug/L			02/22/24 19:15	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*		*02/22/24 19:15*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*		*02/22/24 19:15*	*1*
4-Bromofluorobenzene (Surr)	*97*		*85 - 114*		*02/22/24 19:15*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 119*		*02/22/24 19:15*	*1*
Toluene-d8 (Surr)	*100*		*89 - 112*		*02/22/24 19:15*	*1*

Lab Sample ID: LCS 580-452165/6
Matrix: Water
Analysis Batch: 452165

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Acrylonitrile			100	105		ug/L		105	63 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*
4-Bromofluorobenzene (Surr)	*93*		*85 - 114*
Dibromofluoromethane (Surr)	*100*		*80 - 119*
Toluene-d8 (Surr)	*101*		*89 - 112*

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-452165/7
Matrix: Water
Analysis Batch: 452165

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acrylonitrile			100	108		ug/L		108	63 - 135	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*81 - 118*
4-Bromofluorobenzene (Surr)	*91*		*85 - 114*
Dibromofluoromethane (Surr)	*98*		*80 - 119*
Toluene-d8 (Surr)	*102*		*89 - 112*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 580-451155/1-A
Matrix: Water
Analysis Batch: 451405

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 451155

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	0.16	U	0.45	0.061	ug/L		02/13/24 08:31	02/15/24 13:46	1
PCB-1221	0.16	U	0.45	0.075	ug/L		02/13/24 08:31	02/15/24 13:46	1
PCB-1232	0.16	U	0.45	0.063	ug/L		02/13/24 08:31	02/15/24 13:46	1
PCB-1242	0.16	U	0.45	0.059	ug/L		02/13/24 08:31	02/15/24 13:46	1
PCB-1248	0.16	U	0.45	0.052	ug/L		02/13/24 08:31	02/15/24 13:46	1
PCB-1254	0.16	U	0.45	0.075	ug/L		02/13/24 08:31	02/15/24 13:46	1
PCB-1260	0.16	U	0.45	0.061	ug/L		02/13/24 08:31	02/15/24 13:46	1
Polychlorinated biphenyls, Total	0.16	U	0.45	0.075	ug/L		02/13/24 08:31	02/15/24 13:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*58*		*26 - 124*	*02/13/24 08:31*	*02/15/24 13:46*	*1*
DCB Decachlorobiphenyl	*68*	*M*	*38 - 121*	*02/13/24 08:31*	*02/15/24 13:46*	*1*

Lab Sample ID: LCS 580-451155/2-A
Matrix: Water
Analysis Batch: 451405

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 451155

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
PCB-1016			1.00	0.733	M	ug/L		73	46 - 129
PCB-1260			1.00	0.681	M	ug/L		68	45 - 134

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*67*		*26 - 124*
DCB Decachlorobiphenyl	*75*	*M*	*38 - 121*

Lab Sample ID: LCSD 580-451155/3-A
Matrix: Water
Analysis Batch: 451405

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 451155

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
PCB-1016			1.00	0.754	M	ug/L		75	46 - 129	3	30
PCB-1260			1.00	0.759		ug/L		76	45 - 134	10	30

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: LCSD 580-451155/3-A
Matrix: Water
Analysis Batch: 451405

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 451155

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*64*		*26 - 124*
DCB Decachlorobiphenyl	*74*	*M*	*38 - 121*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 410-474877/1-A
Matrix: Water
Analysis Batch: 475187

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 474877

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	2.0	U	5.0	0.87	pg/L		02/20/24 00:32	02/21/24 05:10	1
Total TCDD	2.0	U	5.0	0.87	pg/L		02/20/24 00:32	02/21/24 05:10	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*88*		*40 - 135*	*02/20/24 00:32*	*02/21/24 05:10*	*1*

Lab Sample ID: LCS 410-474877/2-A
Matrix: Water
Analysis Batch: 475187

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 474877

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
2,3,7,8-TCDD			200	212		pg/L		106	71 - 125		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*89*		*40 - 135*

Lab Sample ID: LCSD 410-474877/3-A
Matrix: Water
Analysis Batch: 475187

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 474877

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,3,7,8-TCDD			200	202		pg/L		101	71 - 125	5	20

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*91*		*40 - 135*

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 580-451209/8-A
Matrix: Water
Analysis Batch: 451292

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 451209

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020	U	0.00030	0.00015	mg/L		02/13/24 12:12	02/13/24 19:12	1

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 580-451209/9-A
Matrix: Water
Analysis Batch: 451292

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 451209

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			0.00200	0.00196		mg/L		98	82 - 119		

Lab Sample ID: LCSD 580-451209/10-A
Matrix: Water
Analysis Batch: 451292

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 451209

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury			0.00200	0.00189		mg/L		95	82 - 119	3	20

Lab Sample ID: MB 580-451094/14-C
Matrix: Water
Analysis Batch: 451292

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 451184

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0020	U	0.0030	0.0015	mg/L		02/13/24 11:14	02/13/24 19:43	1

Lab Sample ID: MB 580-451094/15-C
Matrix: Water
Analysis Batch: 451292

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 451184

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0020	U	0.0030	0.0015	mg/L		02/13/24 11:14	02/13/24 19:46	1

Lab Sample ID: LCS 580-451094/16-C
Matrix: Water
Analysis Batch: 451292

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 451184

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			0.0200	0.0199		mg/L		100	82 - 119		

Lab Sample ID: LCSD 580-451094/17-C
Matrix: Water
Analysis Batch: 451292

Client Sample ID: Lab Control Sample Dup
Prep Type: TCLP
Prep Batch: 451184

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury			0.0200	0.0187		mg/L		94	82 - 119	6	20

Lab Chronicle

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136507-1

Client Sample ID: TDS - RP - 08FEB24

Lab Sample ID: 580-136507-1

Date Collected: 02/08/24 10:20

Matrix: Water

Date Received: 02/10/24 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D	RA	1	452165	JBT	EET SEA	02/22/24 22:10
Total/NA	Analysis	8260D		1	451192	K1K	EET SEA	02/13/24 20:32
Total/NA	Prep	3510C			451155	SL	EET SEA	02/13/24 08:31
Total/NA	Analysis	8082A		1	451405	VLF	EET SEA	02/15/24 14:39
Total/NA	Prep	8290A			474877	SJ7Z	ELLE	02/20/24 00:32
Total/NA	Analysis	8290A		1	475270	UC8F	ELLE	02/21/24 01:54
TCLP	Leach	1311			451094	JL	EET SEA	02/13/24 11:03 - 02/13/24 11:05 [1]
TCLP	Prep	7470A			451184	JL	EET SEA	02/13/24 11:14
TCLP	Analysis	7470A		1	451292	JL	EET SEA	02/13/24 20:32
Total/NA	Prep	7470A			451209	JL	EET SEA	02/13/24 12:12
Total/NA	Analysis	7470A		1	451292	JL	EET SEA	02/13/24 19:35

Client Sample ID: Trip Blank

Lab Sample ID: 580-136507-2

Date Collected: 02/08/24 00:00

Matrix: Water

Date Received: 02/10/24 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	451192	K1K	EET SEA	02/13/24 16:06

[1] This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: Environmental Chemical Corp.
Job ID: 580-136507-1
Project/Site: 2023 Maui Fires - Lahaina, Maui

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8082A	3510C	Water	Polychlorinated biphenyls, Total

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-30-24
A2LA	ISO/IEC 17025	0001.01	11-30-24
Alabama	State	43200	01-31-25
Alaska	State	PA00009	06-30-24
Alaska (UST)	State	17-027	02-28-24
Arizona	State	AZ0780	03-12-24
Arkansas DEQ	State	88-00660	08-09-24
California	State	2792	11-30-24
Colorado	State	PA00009	06-30-24
Connecticut	State	PH-0746	06-30-25
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-25
Florida	NELAP	E87997	06-30-24
Georgia (DW)	State	C048	01-31-24 *
Hawaii	State	N/A	01-31-25
Illinois	NELAP	200027	01-31-25
Iowa	State	361	03-01-24
Kansas	NELAP	E-10151	10-31-24
Kentucky (DW)	State	KY90088	12-31-24
Kentucky (UST)	State	0001.01	11-30-24
Kentucky (WW)	State	KY90088	12-31-23 *
Louisiana (All)	NELAP	02055	06-30-24
Maine	State	2019012	03-12-25
Maryland	State	100	06-30-24
Massachusetts	State	M-PA009	06-30-24
Michigan	State	9930	01-31-25
Minnesota	NELAP	042-999-487	12-31-24
Mississippi	State	023	01-31-25
Missouri	State	450	01-31-25
Montana (DW)	State	0098	01-01-25
Nebraska	State	NE-OS-32-17	01-31-25
New Hampshire	NELAP	2730	01-10-25
New Jersey	NELAP	PA011	06-30-24
New York	NELAP	10670	04-01-24
North Carolina (DW)	State	42705	07-31-24
North Carolina (WW/SW)	State	521	12-31-24
Oklahoma	NELAP	9804	08-31-24
Oregon	NELAP	PA200001	09-11-24
Pennsylvania	NELAP	36-00037	01-28-25
Quebec Ministry of Environment and Fight against Climate Change	PALA	507	09-16-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Environmental Chemical Corp. Job ID: 580-136507-1
Project/Site: 2023 Maui Fires - Lahaina, Maui

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Rhode Island	State	LAO00338	12-30-24
South Carolina	State	89002	01-31-24 *
Tennessee	State	02838	01-31-25
Texas	NELAP	T104704194-23-46	08-31-24
USDA	US Federal Programs	525-22-298-19481	10-25-25
Vermont	State	VT - 36037	10-28-24
Virginia	NELAP	460182	06-14-25
Washington	State	C457	04-11-24
West Virginia (DW)	State	9906 C	01-31-25
West Virginia DEP	State	055	07-31-24
Wyoming (UST)	A2LA	0001.01	11-30-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Sample Summary

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136507-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-136507-1	TDS - RP - 08FEB24	Water	02/08/24 10:20	02/10/24 09:15
580-136507-2	Trip Blank	Water	02/08/24 00:00	02/10/24 09:15

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

eurofins | Environment Testing

Client Information	Sampler: Mike Manhard	Lab PM: Walker, Marie E	Carrier Tracking No(s):	COC No: 580-59705-18343.1
Client Contact: Kaiulani Watson + Kane McNeill	Phone: 717-314-2863	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: HI	Page: Page 1 of 1
Company: Environmental Chemical Corp.	PWSID:	**Analysis Requested**		Job #:
Address: 2969 Mapunapuna Place Suite 220	Due Date Requested:			
City: Honolulu	TAT Requested (days): 5-Day TAT			
State, Zip: HI, 96819	Compliance Project: Δ Yes Δ No			
Phone: 508-229-2270(Tel)	PO #: Purchase Order Requested 356195			
Email: kwatson@ecc.net + kmcneill@ECC.NET	WO #:			
Project Name: 2023 Maui Fires - Lahaina TDS	Project #: Project No. 4344.411			
Site: TDS Retention Pond	SSOW#:			

Analyses: Field Filtered Sample (Yes or No); Perform MS/MSD (Yes or No); Mercury 7470A Total + TCLP; DIOXINS/FURANS 8280A; Polychlorinated Biphenyls 8082; SVOCs 8270C; Volatiles 8260B; Total Number of containers

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered	MS/MSD	Mercury 7470A Total+TCLP	Dioxins/Furans 8280A	PCBs 8082	SVOCs 8270C	Volatiles 8260B	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D				A		
TDS-RP-08FEB24	2-8-24	1020	G	W			X	X	X	X	X	23	Extra Volume Supplied
TEMP BLANK				W							X	2	

580-136507 Chain of Custody

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
[signature]	02-09-24 0630	TT	[signature]	2/10/24 0915	ETTK

Custody Seals Intact: Δ Yes Δ No | Custody Seal No: | Cooler Temperature(s) °C and Other Remarks: 1.1 / 0.8 / 0.7 IR/Tc/Bib/FPO

 Ver: 06/08/2021 3/6/2024

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Walker, Marie E	Carrier Tracking No(s):	COC No: 580-130020.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: Hawaii	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Environm		Accreditations Required (See note): Dept. of Defense ELAP - ANAB		Job #: 580-136507-1
Address: 2425 New Holland Pike, ,	Due Date Requested: 2/19/2024			
City: Lancaster	TAT Requested (days):			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #:			
Email:	WO #:			
Project Name: 2023 Maui Fires - Lahaina, Maui	Project #: 58020087			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify), Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8290A_DOD5/8290_P_Sep 17 Isomers & Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
TDS - RP - 08FEB24 (580-136507-1)	2/8/24	10:20 Hawaiian		Water			X	2	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	2/14/24 1555	EETN			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 0940	Company 46232 2/15/
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 2/15/24 0930	Company EETGT

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: R: 1.4 C: 1.3

Login Sample Receipt Checklist

Client: Environmental Chemical Corp.

Job Number: 580-136507-1

Login Number: 136507
List Number: 1
Creator: Groves, Elizabeth

List Source: Eurofins Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Environmental Chemical Corp. Job Number: 580-136507-1

Login Number: 136507 **List Source: Eurofins Lancaster Laboratories Environment Testing, LLC**
List Number: 2 **List Creation: 02/15/24 01:34 PM**
Creator: McBeth, Jessica

Question	Answer	Comment
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	

Isotope Dilution Summary

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136507-1

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	TCDD (40-135)
580-136507-1	TDS - RP - 08FEB24	74
LCS 410-474877/2-A	Lab Control Sample	89
LCSD 410-474877/3-A	Lab Control Sample Dup	91
MB 410-474877/1-A	Method Blank	88

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization

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3/10/2024 6:30:20 PM

Authorized for release by
Marie Walker, Senior Project Manager
M.Elaine.Walker@et.eurofinsus.com
(253)248-4972

Table of Contents

Job Narrative
580-136206-2

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Receipt
The sample was received on 2/1/2024 7:55 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.2°C and 5.5°C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

Method 8270E - Semivolatile Organic Compounds (GC/MS)
Sample TDS-RP-30Jan24 (580-136206-1) was analyzed for Semivolatile Organic Compounds (GC/MS). The sample was prepared on 2/5/2024 and analyzed on 3/1/2024.

Sample TDS-RP-30Jan24 (580-136206-1)[5x] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The following analytes have been identified, in the reference method and/or via historical data, to be poor and/or erratic performers: 2,4-Dinitrophenol and Hexachlorocyclopentadiene. These analytes may have a %D >60%.

The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-450401 and analytical batch 580-452875 recovered outside control limits for the following analytes: Benzidine, Hexachlorocyclopentadiene, Hexachloroethane and Pentachlorophenol. Laboratory control sample / laboratory control sample duplicate (LCS/LCSD) percent recovery is in control for affected analytes.

The following laboratory control sample and control sample duplicate (LCS/LCSD) failed to meet laboratory acceptance control criteria for analytes: Benzidine and Hexachloroethane. Since the remaining sample bottles are over two times the expired hold and he affected sample was non-detect for the failing analytes, the data has been reported. TDS-RP-30Jan24 (580-136206-1), (LCS 580-450401/2-A) and (LCSD 580-450401/3-A)

Method 8081B - Organochlorine Pesticides (GC)
Sample TDS-RP-30Jan24 (580-136206-1) was analyzed for Organochlorine Pesticides (GC). The sample was prepared on 2/29/2024 and analyzed on 3/1/2024.

CCVIS failed for multiple analytes the client sample is needing. The OCP and technical chlordane LCS LCSDs also failed low. Sample was sent back for re-extraction due to this, but the client is requesting preliminary results. Setting these results to primary. TDS-RP-30Jan24 (580-136206-1), (CCV 580-452871/17), (CCVIS 580-452871/2), (LCS 580-452786/2-A), (LCS 580-452786/8-A), (LCSD 580-452786/3-A) and (LCSD 580-452786/9-A)

The LCS/LCSD associated to preparation batch 580-450408 and analytical batch 580-452178 failed low for multiple compounds. The batch was re-extracted and re-analyzed outside of holding to with similar results. Both sets of data are reported. TDS-RP-30Jan24 (580-136206-1), (LCS 580-450408/2-A) and (LCSD 580-450408/3-A)

Definitions/Glossary

Client: Environmental Chemical Corp. Job ID: 580-136206-2
Project/Site: 2023 Maui Fires - Lahaina, Maui

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

GC/MS Semi VOA TICs

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
N	Nontarget analyte: The analyte is a tentatively identified compound (using mass spectroscopy).

GC Semi VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
TNTC	Too Numerous To Count

Client Sample ID: TDS-RP-30Jan24
Date Collected: 01/30/24 12:15
Date Received: 02/01/24 07:55

Lab Sample ID: 580-136206-1
Matrix: Water

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4,5-Tetrachlorobenzene	2.5	U	4.9	1.2	ug/L		02/05/24 08:27	03/01/24 12:45	5
2,4,6-Trichlorophenol	1.5	U	2.9	0.49	ug/L		02/05/24 08:27	03/01/24 12:45	5
2,4-Dichlorophenol	2.5	U	4.9	0.98	ug/L		02/05/24 08:27	03/01/24 12:45	5
2,4-Dimethylphenol	2.5	U	20	0.79	ug/L		02/05/24 08:27	03/01/24 12:45	5
2,4-Dinitrophenol	5.9	U Q	25	2.2	ug/L		02/05/24 08:27	03/01/24 12:45	5
2,4-Dinitrotoluene	1.5	U	4.9	0.49	ug/L		02/05/24 08:27	03/01/24 12:45	5
2,6-Dinitrotoluene	1.5	U	2.0	0.49	ug/L		02/05/24 08:27	03/01/24 12:45	5
2-Chlorophenol	0.74	U	4.9	0.25	ug/L		02/05/24 08:27	03/01/24 12:45	5
2-Methylphenol	0.74	U	2.9	0.25	ug/L		02/05/24 08:27	03/01/24 12:45	5
2-Nitrophenol	0.74	U	4.9	0.34	ug/L		02/05/24 08:27	03/01/24 12:45	5
3 & 4 Methylphenol	1.5	U M	2.9	0.49	ug/L		02/05/24 08:27	03/01/24 12:45	5
4-Nitrophenol	29	U	49	8.4	ug/L		02/05/24 08:27	03/01/24 12:45	5
Benzidine	4.9	U Q	49	1.6	ug/L		02/05/24 08:27	03/01/24 12:45	5
Bis(2-chloroethyl)ether	0.44	U	0.49	0.15	ug/L		02/05/24 08:27	03/01/24 12:45	5
Bis(2-ethylhexyl) phthalate	7.9	U	15	3.6	ug/L		02/05/24 08:27	03/01/24 12:45	5
bis(chloroisopropyl) ether	0.74	U	1.2	0.29	ug/L		02/05/24 08:27	03/01/24 12:45	5
Diethyl phthalate	1.5	U	4.9	0.74	ug/L		02/05/24 08:27	03/01/24 12:45	5
Dimethyl phthalate	0.74	U	2.9	0.29	ug/L		02/05/24 08:27	03/01/24 12:45	5
Di-n-butyl phthalate	39	U	49	15	ug/L		02/05/24 08:27	03/01/24 12:45	5
Hexachlorobenzene	1.5	U	2.9	0.39	ug/L		02/05/24 08:27	03/01/24 12:45	5
Hexachlorocyclopentadiene	1.5	U Q	4.9	0.69	ug/L		02/05/24 08:27	03/01/24 12:45	5
Hexachloroethane	0.74	U Q	4.9	0.25	ug/L		02/05/24 08:27	03/01/24 12:45	5
Isophorone	1.5	U	2.0	0.49	ug/L		02/05/24 08:27	03/01/24 12:45	5
Nitrobenzene	0.44	U	4.9	0.20	ug/L		02/05/24 08:27	03/01/24 12:45	5
N-Nitrosodimethylamine	1.5	U	9.8	0.49	ug/L		02/05/24 08:27	03/01/24 12:45	5
N-Nitrosodiphenylamine	0.74	U	4.9	0.34	ug/L		02/05/24 08:27	03/01/24 12:45	5
Pentachlorophenol	4.9	U Q	25	2.5	ug/L		02/05/24 08:27	03/01/24 12:45	5
Phenol	2.9	U	4.9	0.79	ug/L		02/05/24 08:27	03/01/24 12:45	5

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Cyclohexane	*9.2*	*N*	*ug/L*		*2.11*	*110-82-7*	*02/05/24 08:27*	*03/01/24 12:45*	*5*
Cyclotrisiloxane, hexamethyl-	*1.1*	*N*	*ug/L*		*3.32*	*541-05-9*	*02/05/24 08:27*	*03/01/24 12:45*	*5*
Phenol, 2,5-bis(1,1-dimethylethyl)-	*0.64*	*N*	*ug/L*		*7.24*	*5875-45-6*	*02/05/24 08:27*	*03/01/24 12:45*	*5*
1,4,7,10,13,16-Hexaoxacyclooctadecane	*0.68*	*N*	*ug/L*		*8.70*	*17455-13-9*	*02/05/24 08:27*	*03/01/24 12:45*	*5*
Octadecanoic acid	*3.6*	*N*	*ug/L*		*9.54*	*57-11-4*	*02/05/24 08:27*	*03/01/24 12:45*	*5*
15-Crown-5	*0.98*	*N*	*ug/L*		*9.60*	*33100-27-5*	*02/05/24 08:27*	*03/01/24 12:45*	*5*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*61*		*43 - 140*	*02/05/24 08:27*	*03/01/24 12:45*	*5*
2-Fluorobiphenyl	*56*		*44 - 119*	*02/05/24 08:27*	*03/01/24 12:45*	*5*
2-Fluorophenol (Surr)	*33*		*19 - 119*	*02/05/24 08:27*	*03/01/24 12:45*	*5*
Nitrobenzene-d5 (Surr)	*56*		*44 - 120*	*02/05/24 08:27*	*03/01/24 12:45*	*5*
Phenol-d5 (Surr)	*20*		*10 - 120*	*02/05/24 08:27*	*03/01/24 12:45*	*5*
Terphenyl-d14	*64*		*50 - 134*	*02/05/24 08:27*	*03/01/24 12:45*	*5*

Method: SW846 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.014	U Q	0.015	0.0060	ug/L		02/05/24 08:43	02/22/24 18:54	1
4,4'-DDE	0.0080	U M Q	0.010	0.0030	ug/L		02/05/24 08:43	02/22/24 18:54	1

Client Sample ID: TDS-RP-30Jan24

Date Collected: 01/30/24 12:15
Date Received: 02/01/24 07:55

Lab Sample ID: 580-136206-1

Matrix: Water

Method: SW846 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDT	0.014	U Q	0.020	0.0050	ug/L		02/05/24 08:43	02/22/24 18:54	1
Aldrin	0.014	U M Q	0.024	0.0070	ug/L		02/05/24 08:43	02/22/24 18:54	1
cis-Chlordane	0.020	U Q	0.027	0.0080	ug/L		02/05/24 08:43	02/22/24 18:54	1
Dieldrin	0.014	U Q	0.018	0.0050	ug/L		02/05/24 08:43	02/22/24 18:54	1
Endosulfan I	0.0080	U Q	0.020	0.0030	ug/L		02/05/24 08:43	02/22/24 18:54	1
Endosulfan II	0.014	U M Q	0.024	0.0050	ug/L		02/05/24 08:43	02/22/24 18:54	1
Endosulfan sulfate	0.0080	U M Q	0.020	0.0030	ug/L		02/05/24 08:43	02/22/24 18:54	1
Endrin	0.0080	U M Q	0.012	0.0030	ug/L		02/05/24 08:43	02/22/24 18:54	1
Endrin aldehyde	0.050	U M Q	0.060	0.034	ug/L		02/05/24 08:43	02/22/24 18:54	1
Endrin ketone	0.014	U M Q	0.020	0.0070	ug/L		02/05/24 08:43	02/22/24 18:54	1
Heptachlor	0.0080	U Q	0.015	0.0040	ug/L		02/05/24 08:43	02/22/24 18:54	1
Heptachlor epoxide	0.0080	U Q	0.020	0.0030	ug/L		02/05/24 08:43	02/22/24 18:54	1
Methoxychlor	0.014	U Q	0.10	0.0050	ug/L		02/05/24 08:43	02/22/24 18:54	1
Mirex	1.6	U	2.0	0.52	ug/L		02/05/24 08:43	02/22/24 18:54	1
Technical Chlordane	0.080	U	0.20	0.030	ug/L		02/05/24 08:43	02/22/24 18:54	1
Toxaphene	1.4	U	2.0	0.46	ug/L		02/05/24 08:43	02/22/24 18:54	1
trans-Chlordane	0.0080	U Q	0.020	0.0030	ug/L		02/05/24 08:43	02/22/24 18:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*60*	*M*	*53 - 122*	*02/05/24 08:43*	*02/22/24 18:54*	*1*
Tetrachloro-m-xylene	*45*	*M*	*44 - 124*	*02/05/24 08:43*	*02/22/24 18:54*	*1*

Method: SW846 8081B - Organochlorine Pesticides (GC) - RERA

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.014	U Q H M	0.015	0.0060	ug/L		02/29/24 12:08	03/01/24 02:26	1
4,4'-DDE	0.0080	U Q H	0.010	0.0030	ug/L		02/29/24 12:08	03/01/24 02:26	1
4,4'-DDT	0.014	U Q H	0.020	0.0050	ug/L		02/29/24 12:08	03/01/24 02:26	1
Aldrin	0.014	U Q H	0.024	0.0070	ug/L		02/29/24 12:08	03/01/24 02:26	1
cis-Chlordane	0.020	U Q H	0.027	0.0080	ug/L		02/29/24 12:08	03/01/24 02:26	1
Dieldrin	0.014	U Q H	0.018	0.0050	ug/L		02/29/24 12:08	03/01/24 02:26	1
Endosulfan I	0.0080	U Q H	0.020	0.0030	ug/L		02/29/24 12:08	03/01/24 02:26	1
Endosulfan II	0.014	U Q H M	0.024	0.0050	ug/L		02/29/24 12:08	03/01/24 02:26	1
Endosulfan sulfate	0.0080	U Q H M	0.020	0.0030	ug/L		02/29/24 12:08	03/01/24 02:26	1
Endrin	0.0080	U Q H M	0.012	0.0030	ug/L		02/29/24 12:08	03/01/24 02:26	1
Endrin aldehyde	0.050	U Q H M	0.060	0.034	ug/L		02/29/24 12:08	03/01/24 02:26	1
Endrin ketone	0.014	U Q H M	0.020	0.0070	ug/L		02/29/24 12:08	03/01/24 02:26	1
Heptachlor	0.0080	U Q H	0.015	0.0040	ug/L		02/29/24 12:08	03/01/24 02:26	1
Heptachlor epoxide	0.0080	U Q H	0.020	0.0030	ug/L		02/29/24 12:08	03/01/24 02:26	1
Methoxychlor	0.014	U Q H	0.10	0.0050	ug/L		02/29/24 12:08	03/01/24 02:26	1
Mirex	1.6	U Q H	2.0	0.52	ug/L		02/29/24 12:08	03/01/24 02:26	1
Technical Chlordane	0.080	U H Q	0.20	0.030	ug/L		02/29/24 12:08	03/01/24 02:26	1
trans-Chlordane	0.0080	U Q H M	0.020	0.0030	ug/L		02/29/24 12:08	03/01/24 02:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*50*	*Q*	*53 - 122*	*02/29/24 12:08*	*03/01/24 02:26*	*1*
Tetrachloro-m-xylene	*41*	*Q*	*44 - 124*	*02/29/24 12:08*	*03/01/24 02:26*	*1*

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-450401/1-A
Matrix: Water
Analysis Batch: 452875

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 450401

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4,5-Tetrachlorobenzene	0.50	U	1.0	0.25	ug/L		02/05/24 08:27	03/01/24 11:31	1
2,4,6-Trichlorophenol	0.30	U	0.60	0.10	ug/L		02/05/24 08:27	03/01/24 11:31	1
2,4-Dichlorophenol	0.50	U	1.0	0.20	ug/L		02/05/24 08:27	03/01/24 11:31	1
2,4-Dimethylphenol	0.50	U	4.0	0.16	ug/L		02/05/24 08:27	03/01/24 11:31	1
2,4-Dinitrophenol	1.2	U	5.0	0.45	ug/L		02/05/24 08:27	03/01/24 11:31	1
2,4-Dinitrotoluene	0.30	U	1.0	0.10	ug/L		02/05/24 08:27	03/01/24 11:31	1
2,6-Dinitrotoluene	0.30	U	0.40	0.10	ug/L		02/05/24 08:27	03/01/24 11:31	1
2-Chlorophenol	0.15	U	1.0	0.050	ug/L		02/05/24 08:27	03/01/24 11:31	1
2-Methylphenol	0.15	U	0.60	0.050	ug/L		02/05/24 08:27	03/01/24 11:31	1
2-Nitrophenol	0.15	U	1.0	0.070	ug/L		02/05/24 08:27	03/01/24 11:31	1
3 & 4 Methylphenol	0.30	U M	0.60	0.10	ug/L		02/05/24 08:27	03/01/24 11:31	1
4-Nitrophenol	6.0	U	10	1.7	ug/L		02/05/24 08:27	03/01/24 11:31	1
Benzidine	1.0	U M	10	0.32	ug/L		02/05/24 08:27	03/01/24 11:31	1
Bis(2-chloroethyl)ether	0.090	U M	0.10	0.030	ug/L		02/05/24 08:27	03/01/24 11:31	1
Bis(2-ethylhexyl) phthalate	1.6	U	3.0	0.74	ug/L		02/05/24 08:27	03/01/24 11:31	1
bis(chloroisopropyl) ether	0.15	U	0.25	0.060	ug/L		02/05/24 08:27	03/01/24 11:31	1
Diethyl phthalate	0.30	U M	1.0	0.15	ug/L		02/05/24 08:27	03/01/24 11:31	1
Dimethyl phthalate	0.15	U	0.60	0.060	ug/L		02/05/24 08:27	03/01/24 11:31	1
Di-n-butyl phthalate	8.0	U	10	3.0	ug/L		02/05/24 08:27	03/01/24 11:31	1
Hexachlorobenzene	0.30	U	0.60	0.080	ug/L		02/05/24 08:27	03/01/24 11:31	1
Hexachlorocyclopentadiene	0.30	U	1.0	0.14	ug/L		02/05/24 08:27	03/01/24 11:31	1
Hexachloroethane	0.15	U	1.0	0.050	ug/L		02/05/24 08:27	03/01/24 11:31	1
Isophorone	0.30	U	0.40	0.10	ug/L		02/05/24 08:27	03/01/24 11:31	1
Nitrobenzene	0.090	U	1.0	0.040	ug/L		02/05/24 08:27	03/01/24 11:31	1
N-Nitrosodimethylamine	0.30	U	2.0	0.10	ug/L		02/05/24 08:27	03/01/24 11:31	1
N-Nitrosodiphenylamine	0.15	U	1.0	0.070	ug/L		02/05/24 08:27	03/01/24 11:31	1
Pentachlorophenol	1.0	U	5.0	0.51	ug/L		02/05/24 08:27	03/01/24 11:31	1
Phenol	0.60	U	1.0	0.16	ug/L		02/05/24 08:27	03/01/24 11:31	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Benzoic acid	*1.99*	*J*	*ug/L*		*5.61*	*65-85-0*	*02/05/24 08:27*	*03/01/24 11:31*	*1*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*	*02/05/24 08:27*	*03/01/24 11:31*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*72*		*43 - 140*	*02/05/24 08:27*	*03/01/24 11:31*	*1*
2-Fluorobiphenyl	*60*		*44 - 119*	*02/05/24 08:27*	*03/01/24 11:31*	*1*
2-Fluorophenol (Surr)	*67*		*19 - 119*	*02/05/24 08:27*	*03/01/24 11:31*	*1*
Nitrobenzene-d5 (Surr)	*71*		*44 - 120*	*02/05/24 08:27*	*03/01/24 11:31*	*1*
Phenol-d5 (Surr)	*52*		*10 - 120*	*02/05/24 08:27*	*03/01/24 11:31*	*1*
Terphenyl-d14	*77*		*50 - 134*	*02/05/24 08:27*	*03/01/24 11:31*	*1*

Lab Sample ID: LCS 580-450401/2-A
Matrix: Water
Analysis Batch: 452875

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 450401

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2,4,5-Tetrachlorobenzene	6.00	2.70		ug/L		45	35 - 121
2,4,6-Trichlorophenol	6.00	5.11		ug/L		85	50 - 125

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-450401/2-A
Matrix: Water
Analysis Batch: 452875

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 450401

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4-Dichlorophenol	6.00	4.69		ug/L		78	47 - 121
2,4-Dimethylphenol	6.00	3.99	J	ug/L		67	31 - 124
2,4-Dinitrophenol	12.0	9.96		ug/L		83	23 - 143
2,4-Dinitrotoluene	6.00	4.85		ug/L		81	57 - 128
2,6-Dinitrotoluene	6.00	5.12		ug/L		85	57 - 124
2-Chlorophenol	6.00	4.42		ug/L		74	38 - 117
2-Methylphenol	6.00	4.39		ug/L		73	30 - 117
2-Nitrophenol	6.00	4.66		ug/L		78	47 - 123
3 & 4 Methylphenol	6.00	3.96		ug/L		66	29 - 110
4-Nitrophenol	12.0	4.34	J	ug/L		36	35 - 145
Benzidine	8.00	1.0	U Q	ug/L		0	20 - 125
Bis(2-chloroethyl)ether	6.00	4.28		ug/L		71	43 - 118
Bis(2-ethylhexyl) phthalate	6.00	5.46		ug/L		91	55 - 135
bis(chloroisopropyl) ether	6.00	4.39		ug/L		73	37 - 130
Diethyl phthalate	6.00	4.81		ug/L		80	56 - 125
Dimethyl phthalate	6.00	5.14		ug/L		86	45 - 127
Di-n-butyl phthalate	6.00	5.00	J	ug/L		83	59 - 127
Hexachlorobenzene	6.00	4.47		ug/L		75	53 - 125
Hexachlorocyclopentadiene	4.00	1.15		ug/L		29	20 - 125
Hexachloroethane	6.00	1.21	Q	ug/L		20	21 - 115
Isophorone	6.00	4.94		ug/L		82	42 - 124
Nitrobenzene	6.00	4.41		ug/L		73	45 - 121
N-Nitrosodimethylamine	6.00	3.45		ug/L		58	45 - 125
N-Nitrosodiphenylamine	6.00	4.75		ug/L		79	51 - 123
Pentachlorophenol	12.0	9.13		ug/L		76	35 - 138
Phenol	6.00	2.05		ug/L		34	13 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*81*		*43 - 140*
2-Fluorobiphenyl	*69*		*44 - 119*
2-Fluorophenol (Surr)	*51*		*19 - 119*
Nitrobenzene-d5 (Surr)	*75*		*44 - 120*
Phenol-d5 (Surr)	*32*		*10 - 120*
Terphenyl-d14	*76*		*50 - 134*

Lab Sample ID: LCSD 580-450401/3-A
Matrix: Water
Analysis Batch: 452875

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 450401

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2,4,5-Tetrachlorobenzene	6.00	2.34		ug/L		39	35 - 121	14	20
2,4,6-Trichlorophenol	6.00	5.05		ug/L		84	50 - 125	1	20
2,4-Dichlorophenol	6.00	4.60		ug/L		77	47 - 121	2	20
2,4-Dimethylphenol	6.00	3.97	J	ug/L		66	31 - 124	1	20
2,4-Dinitrophenol	12.0	8.88		ug/L		74	23 - 143	11	20
2,4-Dinitrotoluene	6.00	4.74		ug/L		79	57 - 128	2	20
2,6-Dinitrotoluene	6.00	4.77		ug/L		79	57 - 124	7	20
2-Chlorophenol	6.00	4.18		ug/L		70	38 - 117	6	20

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-450401/3-A
Matrix: Water
Analysis Batch: 452875

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 450401

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2-Methylphenol			6.00	4.08		ug/L		68	30 - 117	7	20
2-Nitrophenol			6.00	4.68		ug/L		78	47 - 123	0	20
3 & 4 Methylphenol			6.00	3.76		ug/L		63	29 - 110	5	20
4-Nitrophenol			12.0	4.21	J	ug/L		35	35 - 145	3	20
Benzidine			8.00	2.30	J Q	ug/L		29	20 - 125	200	20
Bis(2-chloroethyl)ether			6.00	4.19		ug/L		70	43 - 118	2	20
Bis(2-ethylhexyl) phthalate			6.00	5.20		ug/L		87	55 - 135	5	20
bis(chloroisopropyl) ether			6.00	4.21		ug/L		70	37 - 130	4	20
Diethyl phthalate			6.00	4.71		ug/L		79	56 - 125	2	20
Dimethyl phthalate			6.00	5.01		ug/L		84	45 - 127	2	20
Di-n-butyl phthalate			6.00	4.98	J	ug/L		83	59 - 127	0	20
Hexachlorobenzene			6.00	4.41		ug/L		74	53 - 125	1	20
Hexachlorocyclopentadiene			4.00	0.824	J Q	ug/L		21	20 - 125	33	20
Hexachloroethane			6.00	0.911	J Q	ug/L		15	21 - 115	29	20
Isophorone			6.00	4.85		ug/L		81	42 - 124	2	20
Nitrobenzene			6.00	4.39		ug/L		73	45 - 121	0	20
N-Nitrosodimethylamine			6.00	3.42		ug/L		57	45 - 125	1	20
N-Nitrosodiphenylamine			6.00	4.78		ug/L		80	51 - 123	1	20
Pentachlorophenol			12.0	6.56	Q	ug/L		55	35 - 138	33	20
Phenol			6.00	2.04		ug/L		34	13 - 120	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*80*		*43 - 140*
2-Fluorobiphenyl	*66*		*44 - 119*
2-Fluorophenol (Surr)	*52*		*19 - 119*
Nitrobenzene-d5 (Surr)	*76*		*44 - 120*
Phenol-d5 (Surr)	*33*		*10 - 120*
Terphenyl-d14	*76*		*50 - 134*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 580-450408/1-A
Matrix: Water
Analysis Batch: 452178

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 450408

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.014	U M	0.015	0.0060	ug/L		02/05/24 08:43	02/22/24 15:57	1
4,4'-DDE	0.0080	U M	0.010	0.0030	ug/L		02/05/24 08:43	02/22/24 15:57	1
4,4'-DDT	0.014	U M	0.020	0.0050	ug/L		02/05/24 08:43	02/22/24 15:57	1
Aldrin	0.014	U M	0.024	0.0070	ug/L		02/05/24 08:43	02/22/24 15:57	1
cis-Chlordane	0.020	U M	0.027	0.0080	ug/L		02/05/24 08:43	02/22/24 15:57	1
Dieldrin	0.014	U M	0.018	0.0050	ug/L		02/05/24 08:43	02/22/24 15:57	1
Endosulfan I	0.0080	U	0.020	0.0030	ug/L		02/05/24 08:43	02/22/24 15:57	1
Endosulfan II	0.014	U M	0.024	0.0050	ug/L		02/05/24 08:43	02/22/24 15:57	1
Endosulfan sulfate	0.0080	U M	0.020	0.0030	ug/L		02/05/24 08:43	02/22/24 15:57	1
Endrin	0.0080	U M	0.012	0.0030	ug/L		02/05/24 08:43	02/22/24 15:57	1
Endrin aldehyde	0.050	U M	0.060	0.034	ug/L		02/05/24 08:43	02/22/24 15:57	1
Endrin ketone	0.014	U M	0.020	0.0070	ug/L		02/05/24 08:43	02/22/24 15:57	1
Heptachlor	0.0080	U	0.015	0.0040	ug/L		02/05/24 08:43	02/22/24 15:57	1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 580-450408/1-A
Matrix: Water
Analysis Batch: 452178

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 450408

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlor epoxide	0.0080	U	0.020	0.0030	ug/L		02/05/24 08:43	02/22/24 15:57	1
Methoxychlor	0.014	U	0.10	0.0050	ug/L		02/05/24 08:43	02/22/24 15:57	1
Mirex	1.6	U	2.0	0.52	ug/L		02/05/24 08:43	02/22/24 15:57	1
Technical Chlordane	0.080	U	0.20	0.030	ug/L		02/05/24 08:43	02/22/24 15:57	1
Toxaphene	1.4	U	2.0	0.46	ug/L		02/05/24 08:43	02/22/24 15:57	1
trans-Chlordane	0.0080	U	0.020	0.0030	ug/L		02/05/24 08:43	02/22/24 15:57	1

Lab Sample ID: LCS 580-450408/2-A
Matrix: Water
Analysis Batch: 452178

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 450408

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
4,4'-DDD	0.200	0.0767	Q	ug/L		38	56 - 143
4,4'-DDE	0.200	0.0759	Q	ug/L		38	57 - 135
4,4'-DDT	0.200	0.0731	Q	ug/L		37	51 - 143
Aldrin	0.200	0.0609	Q	ug/L		30	45 - 134
cis-Chlordane	0.200	0.0687	Q	ug/L		34	60 - 129
Dieldrin	0.200	0.0749	Q	ug/L		37	60 - 136
Endosulfan I	0.200	0.0774	Q	ug/L		39	62 - 126
Endosulfan II	0.200	0.0757	Q	ug/L		38	52 - 135
Endosulfan sulfate	0.200	0.0756	Q	ug/L		38	62 - 133
Endrin	0.200	0.0797	Q	ug/L		40	60 - 138
Endrin aldehyde	0.200	0.0810	Q	ug/L		40	51 - 132
Endrin ketone	0.200	0.0753	Q	ug/L		38	58 - 134
Heptachlor	0.200	0.0647	Q	ug/L		32	54 - 130
Heptachlor epoxide	0.200	0.0752	Q	ug/L		38	61 - 133
Methoxychlor	0.200	0.0793	J Q	ug/L		40	54 - 145
trans-Chlordane	0.200	0.0717	Q	ug/L		36	56 - 136

Lab Sample ID: LCS 580-450408/6-A
Matrix: Water
Analysis Batch: 452178

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 450408

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Toxaphene	5.00	3.99	M	ug/L		80	33 - 134

Lab Sample ID: LCS 580-450408/8-A
Matrix: Water
Analysis Batch: 452178

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 450408

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Technical Chlordane	1.00	0.877	M	ug/L		88	62 - 140

Lab Sample ID: LCSD 580-450408/3-A
Matrix: Water
Analysis Batch: 452178

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 450408

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
4,4'-DDD	0.200	0.0782	Q	ug/L		39	56 - 143	3	30
4,4'-DDE	0.200	0.0799	Q	ug/L		40	57 - 135	5	30

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCSD 580-450408/3-A
Matrix: Water
Analysis Batch: 452178

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 450408

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
4,4'-DDT	0.200	0.0747	Q	ug/L		37	51 - 143	2	30
Aldrin	0.200	0.0610	Q	ug/L		31	45 - 134	0	30
cis-Chlordane	0.200	0.0713	Q	ug/L		36	60 - 129	4	30
Dieldrin	0.200	0.0771	Q	ug/L		39	60 - 136	5	30
Endosulfan I	0.200	0.0794	Q	ug/L		40	62 - 126	3	30
Endosulfan II	0.200	0.0795	Q	ug/L		40	52 - 135	5	30
Endosulfan sulfate	0.200	0.0802	Q	ug/L		40	62 - 133	6	30
Endrin	0.200	0.0778	Q	ug/L		39	60 - 138	2	30
Endrin aldehyde	0.200	0.0928	Q	ug/L		46	51 - 132	14	30
Endrin ketone	0.200	0.0826	Q	ug/L		41	58 - 134	9	30
Heptachlor	0.200	0.0663	Q	ug/L		33	54 - 130	3	30
Heptachlor epoxide	0.200	0.0794	Q	ug/L		40	61 - 133	5	30
Methoxychlor	0.200	0.0858	J Q	ug/L		43	54 - 145	8	30
trans-Chlordane	0.200	0.0746	Q	ug/L		37	56 - 136	4	30

Lab Sample ID: LCSD 580-450408/7-A
Matrix: Water
Analysis Batch: 452178

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 450408

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Toxaphene	5.00	3.79	M	ug/L		76	33 - 134	5	30

Lab Sample ID: LCSD 580-450408/9-A
Matrix: Water
Analysis Batch: 452178

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 450408

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Technical Chlordane	1.00	0.894	M	ug/L		89	62 - 140	2	30

Lab Sample ID: MB 580-452786/1-A
Matrix: Water
Analysis Batch: 452871

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 452786

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.014	U Q M	0.015	0.0060	ug/L		02/29/24 08:52	02/29/24 20:14	1
4,4'-DDE	0.0080	U Q M	0.010	0.0030	ug/L		02/29/24 08:52	02/29/24 20:14	1
4,4'-DDT	0.014	U Q M	0.020	0.0050	ug/L		02/29/24 08:52	02/29/24 20:14	1
Aldrin	0.014	U Q	0.024	0.0070	ug/L		02/29/24 08:52	02/29/24 20:14	1
cis-Chlordane	0.020	U Q M	0.027	0.0080	ug/L		02/29/24 08:52	02/29/24 20:14	1
Dieldrin	0.014	U Q	0.018	0.0050	ug/L		02/29/24 08:52	02/29/24 20:14	1
Endosulfan I	0.0080	U Q	0.020	0.0030	ug/L		02/29/24 08:52	02/29/24 20:14	1
Endosulfan II	0.014	U Q	0.024	0.0050	ug/L		02/29/24 08:52	02/29/24 20:14	1
Endosulfan sulfate	0.0080	U Q M	0.020	0.0030	ug/L		02/29/24 08:52	02/29/24 20:14	1
Endrin	0.0080	U Q M	0.012	0.0030	ug/L		02/29/24 08:52	02/29/24 20:14	1
Endrin aldehyde	0.050	U Q	0.060	0.034	ug/L		02/29/24 08:52	02/29/24 20:14	1
Endrin ketone	0.014	U Q M	0.020	0.0070	ug/L		02/29/24 08:52	02/29/24 20:14	1
Heptachlor	0.0080	U Q	0.015	0.0040	ug/L		02/29/24 08:52	02/29/24 20:14	1
Heptachlor epoxide	0.0080	U Q	0.020	0.0030	ug/L		02/29/24 08:52	02/29/24 20:14	1
Methoxychlor	0.014	U Q	0.10	0.0050	ug/L		02/29/24 08:52	02/29/24 20:14	1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 580-452786/1-A
Matrix: Water
Analysis Batch: 452871

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 452786

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mirex	1.6	U Q	2.0	0.52	ug/L		02/29/24 08:52	02/29/24 20:14	1
Technical Chlordane	0.080	U	0.20	0.030	ug/L		02/29/24 08:52	02/29/24 20:14	1
Toxaphene	1.4	U Q	2.0	0.46	ug/L		02/29/24 08:52	02/29/24 20:14	1
trans-Chlordane	0.0080	U Q	0.020	0.0030	ug/L		02/29/24 08:52	02/29/24 20:14	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*53*		*53 - 122*	*02/29/24 08:52*	*02/29/24 20:14*	*1*
Tetrachloro-m-xylene	*41*	*Q*	*44 - 124*	*02/29/24 08:52*	*02/29/24 20:14*	*1*

Lab Sample ID: LCS 580-452786/2-A
Matrix: Water
Analysis Batch: 452871

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 452786

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
4,4'-DDD	0.200	0.0535	Q	ug/L		27	56 - 143
4,4'-DDE	0.200	0.0551	Q	ug/L		28	57 - 135
4,4'-DDT	0.200	0.0354	Q	ug/L		18	51 - 143
Aldrin	0.200	0.0446	Q	ug/L		22	45 - 134
cis-Chlordane	0.200	0.0557	Q	ug/L		28	60 - 129
Dieldrin	0.200	0.0551	Q	ug/L		28	60 - 136
Endosulfan I	0.200	0.0566	Q	ug/L		28	62 - 126
Endosulfan II	0.200	0.0550	Q	ug/L		28	52 - 135
Endosulfan sulfate	0.200	0.0549	Q	ug/L		27	62 - 133
Endrin	0.200	0.0478	Q	ug/L		24	60 - 138
Endrin aldehyde	0.200	0.0407	J Q	ug/L		20	51 - 132
Endrin ketone	0.200	0.0455	Q	ug/L		23	58 - 134
Heptachlor	0.200	0.00892	J J1 Q	ug/L		4	54 - 130
Heptachlor epoxide	0.200	0.0565	Q	ug/L		28	61 - 133
Methoxychlor	0.200	0.0220	J J1 Q	ug/L		11	54 - 145
trans-Chlordane	0.200	0.0527	Q	ug/L		26	56 - 136

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*52*	*Q*	*53 - 122*
Tetrachloro-m-xylene	*44*		*44 - 124*

Lab Sample ID: LCS 580-452786/6-A
Matrix: Water
Analysis Batch: 452871

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 452786

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Toxaphene	5.00	2.69	M	ug/L		54	33 - 134

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*56*		*53 - 122*
Tetrachloro-m-xylene	*50*		*44 - 124*

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 580-452786/8-A
Matrix: Water
Analysis Batch: 452871

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 452786

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Technical Chlordane			1.00	0.573	Q M	ug/L		57	62 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*49*	*Q*	*53 - 122*
Tetrachloro-m-xylene	*44*		*44 - 124*

Lab Sample ID: LCSD 580-452786/3-A
Matrix: Water
Analysis Batch: 452871

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 452786

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
4,4'-DDD			0.200	0.0546	Q	ug/L		27	56 - 143	2	30
4,4'-DDE			0.200	0.0531	Q	ug/L		27	57 - 135	4	30
4,4'-DDT			0.200	0.0355	Q	ug/L		18	51 - 143	0	30
Aldrin			0.200	0.0446	Q	ug/L		22	45 - 134	0	30
cis-Chlordane			0.200	0.0540	Q	ug/L		27	60 - 129	3	30
Dieldrin			0.200	0.0531	Q	ug/L		27	60 - 136	4	30
Endosulfan I			0.200	0.0558	Q	ug/L		28	62 - 126	1	30
Endosulfan II			0.200	0.0538	Q	ug/L		27	52 - 135	2	30
Endosulfan sulfate			0.200	0.0530	Q	ug/L		27	62 - 133	3	30
Endrin			0.200	0.0491	Q	ug/L		25	60 - 138	3	30
Endrin aldehyde			0.200	0.0406	J Q	ug/L		20	51 - 132	0	30
Endrin ketone			0.200	0.0436	Q	ug/L		22	58 - 134	4	30
Heptachlor			0.200	0.00985	J J1 Q	ug/L		5	54 - 130	10	30
Heptachlor epoxide			0.200	0.0544	Q	ug/L		27	61 - 133	4	30
Methoxychlor			0.200	0.0206	J J1 Q	ug/L		10	54 - 145	7	30
trans-Chlordane			0.200	0.0514	Q	ug/L		26	56 - 136	3	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*53*		*53 - 122*
Tetrachloro-m-xylene	*49*		*44 - 124*

Lab Sample ID: LCSD 580-452786/7-A
Matrix: Water
Analysis Batch: 452871

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 452786

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Toxaphene			5.00	2.44	Q M	ug/L		49	33 - 134	10	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*48*	*Q*	*53 - 122*
Tetrachloro-m-xylene	*45*		*44 - 124*

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCSD 580-452786/9-A
Matrix: Water
Analysis Batch: 452871

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 452786

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Technical Chlordane			1.00	0.572	Q M	ug/L		57	62 - 140	0	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*46*	*Q*	*53 - 122*
Tetrachloro-m-xylene	*41*	*Q*	*44 - 124*

Lab Chronicle

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136206-2

Client Sample ID: TDS-RP-30Jan24

Date Collected: 01/30/24 12:15
Date Received: 02/01/24 07:55

Lab Sample ID: 580-136206-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			450401	SL	EET SEA	02/05/24 08:27
Total/NA	Analysis	8270E		5	452875	K1K	EET SEA	03/01/24 12:45
Total/NA	Prep	3510C			450408	SL	EET SEA	02/05/24 08:43
Total/NA	Analysis	8081B		1	452178	K1K	EET SEA	02/22/24 18:54
Total/NA	Prep	3510C	RERA		452786	TOA	EET SEA	02/29/24 12:08
Total/NA	Analysis	8081B	RERA	1	452871	CB	EET SEA	03/01/24 02:26

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Environmental Chemical Corp. Job ID: 580-136206-2
Project/Site: 2023 Maui Fires - Lahaina, Maui

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8270E	3510C	Water	Benzidine

Sample Summary

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136206-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-136206-1	TDS-RP-30Jan24	Water	01/30/24 12:15	02/01/24 07:55

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

eurofins

Client Information	Sampler: Steve MacNeill	Lab PM: Walker, Marie E	Carrier Tracking No(s):	COC No: 580-59705-18343.1
Client Contact: Kaiulani Watson	Phone: 406-431-1485	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: HI	Page: Page 1 of 1
Company: Environmental Chemical Corp.	PWSID:			Job #:
Address: 2969 Mapunapuna Place Suite 220	Due Date Requested:			
City: Honolulu	TAT Requested (days): 5-DAY TAT			
State, Zip: HI, 96819	Compliance Project: Δ Yes Δ No			
Phone: 508-229-2270(Tel)	PO #: Purchase Order Requested 356195			
Email: kwatson@ecc.net	WO #:			
Project Name: 2023 Maui Fires - ~~Kula and Olinda, Maui~~ Lahaina (IV)	Project #: ~~58020087~~ (M) 4344.411			
Site: TDS - RP	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Y - Trizma; Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Metals 6020	Mercury 7470A	Semi-Volatiles 8270	Pesticides 8081	Pesticides 8141	Semi-volatiles 8270 - SIM	Volatiles 8260	Dioxins 8290	PCBs 8082A	Organotins 8323	Total Number of containers	Special Instructions/Note:
			Preservation Code:															
TDS-RP-303m24	01/30/24	1215	G	W			X	X	X	X	X	X	X	X	X	X	19	

580-136206 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	1/31/24 0900	ET	[signature]	2/1/24 0755	FEDEX
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

ORIGIN ID:TCMA (253) 922-2310
SAMPLE RECEIVING
EUROFINS ENVIRONMENTAL TESTING NW
5755 8TH ST E

FIFE, WA 98424
UNITED STATES US

SHIP DATE: 02FEB24
ACTWGT: 1.00 LB
CAD: 989746/CAFE3755

BILL SENDER

TO **SHIPPING/RECEIVING**
EUROFINS ENVIRONMENT TESTING SOUTHW
2841 DOW AVENUE, SUITE 100

TUSTIN CA 92780
(714) 895-5494
REF: S580-60955
PO: YES

FedEx Express

TRK# 0201 **7221 1236 2290**

SATURDAY 12:00P
PRIORITY OVERNIGHT

WO DTHA

92780
CA-US **SNA**

Part # 159471-434 MTW EXP 06/24

580-136206 Waybill

Login Sample Receipt Checklist

Client: Environmental Chemical Corp.

Job Number: 580-136206-2

Login Number: 136206
List Number: 1
Creator: Groves, Elizabeth

List Source: Eurofins Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Jackson Kiker
Environmental Chemical Corp.
43 Broad St
Suite A301
Hudson, Massachusetts 01749

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JOB DESCRIPTION

2023 Maui Fires - Lahaina, Maui

JOB NUMBER

580-136507-2

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424

See page two for job notes and contact information.

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization

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Authorized for release by
Marie Walker, Senior Project Manager
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Table of Contents

Job Narrative
580-136507-2

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Receipt
The samples were received on 2/10/2024 9:15 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.8°C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

Receipt Exceptions
The two Trip Blank HCL VOA vials submitted for analysis were identified as 'Temp Blank' on the COC.

TDS - RP - 08FEB24 (580-136507-1) and Trip Blank (580-136507-2)

Method 8270E - Semivolatile Organic Compounds (GC/MS)
Sample TDS - RP - 08FEB24 (580-136507-1) was analyzed for Semivolatile Organic Compounds (GC/MS). The sample was prepared on 2/13/2024 and analyzed on 2/17/2024.

Surrogate recovery for the following sample was outside control limits: TDS - RP - 08FEB24 (580-136507-1). Evidence of matrix interference is obvious by looking at the chromatogram; therefore, re-extraction and/or re-analysis was not performed. preparation batch 580-451151 and analytical batch 580-451484

The laboratory control sample and/or the laboratory control sample duplicate (LCS/LCSD) for preparation batch 580-451151 and analytical batch 580-451484 recovered outside control limits for the following analyte(s): 4-Nitrophenol. 4-Nitrophenol has been identified as a poor performing analyte when analyzed using this method; therefore, re-extraction/re-analysis was not performed. Batch precision also exceeded control limits for these analyte(s). These results have been reported and qualified. TDS - RP - 08FEB24 (580-136507-1), (LCS 580-451151/2-A) and (LCSD 580-451151/3-A)

The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-451151 and analytical batch 580-451484 recovered outside control limits for the following analytes: Benzidine and Phenol.

The continuing calibration verification (CCV) associated with batch 580-451484 recovered above the upper control limit for multiple compounds. The samples associated with this CCV were non-detects for the affected analytes except for TDS - RP - 08FEB24 (580-136507-1), (CCV 580-451484/4), (CCV 580-451484/5) and (CCVIS 580-451484/3) that have positive hits that may be biased high. TDS - RP - 08FEB24 (580-136507-1), (CCV 580-451484/4), (CCV 580-451484/5) and (CCVIS 580-451484/3)

Definitions/Glossary

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136507-2

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

GC/MS Semi VOA TICs

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
N	Nontarget analyte: The analyte is a tentatively identified compound (using mass spectroscopy).
Q	One or more quality control criteria failed.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136507-2

Client Sample ID: TDS - RP - 08FEB24
Date Collected: 02/08/24 10:20
Date Received: 02/10/24 09:15

Lab Sample ID: 580-136507-1
Matrix: Water

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4,5-Tetrachlorobenzene	0.50	U Q	1.0	0.25	ug/L		02/13/24 08:16	02/17/24 00:37	1
2,3,5,6-Tetrachlorophenol	0.15	U	0.40	0.070	ug/L		02/13/24 08:16	02/17/24 00:37	1
2,4,6-Trichlorophenol	0.30	U Q	0.60	0.10	ug/L		02/13/24 08:16	02/17/24 00:37	1
2,4-Dichlorophenol	0.50	U Q	1.0	0.20	ug/L		02/13/24 08:16	02/17/24 00:37	1
2,4-Dimethylphenol	0.50	U Q	4.0	0.16	ug/L		02/13/24 08:16	02/17/24 00:37	1
2,4-Dinitrophenol	1.2	U Q	5.0	0.45	ug/L		02/13/24 08:16	02/17/24 00:37	1
2,4-Dinitrotoluene	0.30	U M Q	1.0	0.10	ug/L		02/13/24 08:16	02/17/24 00:37	1
2,6-Dinitrotoluene	0.30	U Q	0.40	0.10	ug/L		02/13/24 08:16	02/17/24 00:37	1
2-Chlorophenol	0.15	U Q	1.0	0.050	ug/L		02/13/24 08:16	02/17/24 00:37	1
2-Nitrophenol	0.15	U M Q	1.0	0.070	ug/L		02/13/24 08:16	02/17/24 00:37	1
3,3'-Dichlorobenzidine	0.30	U Q	1.0	0.12	ug/L		02/13/24 08:16	02/17/24 00:37	1
4,6-Dinitro-o-cresol	1.2	U M Q	2.0	0.55	ug/L		02/13/24 08:16	02/17/24 00:37	1
4-Nitrophenol	6.0	U M Q	10	1.7	ug/L		02/13/24 08:16	02/17/24 00:37	1
Benzidine	1.0	U M Q	10	0.32	ug/L		02/13/24 08:16	02/17/24 00:37	1
Bis(2-chloroethyl)ether	0.090	U Q	0.10	0.030	ug/L		02/13/24 08:16	02/17/24 00:37	1
Bis(2-ethylhexyl) phthalate	1.6	U Q	3.0	0.74	ug/L		02/13/24 08:16	02/17/24 00:37	1
bis(chloroisopropyl) ether	0.15	U M Q	0.25	0.060	ug/L		02/13/24 08:16	02/17/24 00:37	1
Diethyl phthalate	0.30	U Q	1.0	0.15	ug/L		02/13/24 08:16	02/17/24 00:37	1
Dimethyl phthalate	0.15	U Q	0.60	0.060	ug/L		02/13/24 08:16	02/17/24 00:37	1
Di-n-butyl phthalate	8.0	U M Q	10	3.0	ug/L		02/13/24 08:16	02/17/24 00:37	1
Hexachlorobenzene	0.30	U Q	0.60	0.080	ug/L		02/13/24 08:16	02/17/24 00:37	1
Hexachlorocyclopentadiene	0.30	U Q	1.0	0.14	ug/L		02/13/24 08:16	02/17/24 00:37	1
Hexachloroethane	0.15	U Q	1.0	0.050	ug/L		02/13/24 08:16	02/17/24 00:37	1
Isophorone	0.30	U M Q	0.40	0.10	ug/L		02/13/24 08:16	02/17/24 00:37	1
Nitrobenzene	0.090	U M Q	1.0	0.040	ug/L		02/13/24 08:16	02/17/24 00:37	1
N-Nitrosodimethylamine	0.30	U Q	2.0	0.10	ug/L		02/13/24 08:16	02/17/24 00:37	1
N-Nitrosodiphenylamine	0.15	U Q	1.0	0.070	ug/L		02/13/24 08:16	02/17/24 00:37	1
Pentachlorophenol	1.0	U Q	5.0	0.51	ug/L		02/13/24 08:16	02/17/24 00:37	1
Phenol	0.60	U Q	1.0	0.16	ug/L		02/13/24 08:16	02/17/24 00:37	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Amylene Hydrate	*3.9*	*N*	*ug/L*		*2.18*	*75-85-4*	*02/13/24 08:16*	*02/17/24 00:37*	*1*
Cyclohexane	*8.0*	*N*	*ug/L*		*2.29*	*110-82-7*	*02/13/24 08:16*	*02/17/24 00:37*	*1*
Benzaldehyde, 3,5-dimethyl-	*0.42*	*N*	*ug/L*		*5.99*	*5779-95-3*	*02/13/24 08:16*	*02/17/24 00:37*	*1*
Phenol, 2,4-bis(1,1-dimethylethyl)-	*0.99*	*N*	*ug/L*		*7.29*	*96-76-4*	*02/13/24 08:16*	*02/17/24 00:37*	*1*
1,4,7,10,13,16-Hexaoxacyclooctadecane	*1.1*	*N*	*ug/L*		*8.77*	*17455-13-9*	*02/13/24 08:16*	*02/17/24 00:37*	*1*
n-Hexadecanoic acid	*5.8*	*N*	*ug/L*		*8.97*	*57-10-3*	*02/13/24 08:16*	*02/17/24 00:37*	*1*
Octadecanoic acid	*5.7*	*N*	*ug/L*		*9.61*	*57-11-4*	*02/13/24 08:16*	*02/17/24 00:37*	*1*
1,4,7,10,13,16-Hexaoxacyclooctadecane	*0.96*	*N*	*ug/L*		*9.67*	*17455-13-9*	*02/13/24 08:16*	*02/17/24 00:37*	*1*
Butyl benzyl phthalate	*0.30*	*J Q*	*ug/L*		*10.20*	*85-68-7*	*02/13/24 08:16*	*02/17/24 00:37*	*1*
1,4,7,10,13,16-Hexaoxacyclooctadecane	*0.43*	*N*	*ug/L*		*10.50*	*17455-13-9*	*02/13/24 08:16*	*02/17/24 00:37*	*1*
1-Heptadecene	*0.62*	*N*	*ug/L*		*10.67*	*6765-39-5*	*02/13/24 08:16*	*02/17/24 00:37*	*1*
17-(1,5-Dimethylhexyl)-10,13-dimethyl-2,3,4,7,8,9,10,11,12,1	*0.80*	*N*	*ug/L*		*13.28*	*1000210-38-4*	*02/13/24 08:16*	*02/17/24 00:37*	*1*
N-Nitrosopyrrolidine TIC	*Err*		*ug/L*			*930-55-2*	*02/13/24 08:16*	*02/17/24 00:37*	*1*

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136507-2

Client Sample ID: TDS - RP - 08FEB24
Date Collected: 02/08/24 10:20
Date Received: 02/10/24 09:15

Lab Sample ID: 580-136507-1
Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol (Surr)	0	Q	43 - 140	02/13/24 08:16	02/17/24 00:37	1
2-Fluorobiphenyl	0	M Q	44 - 119	02/13/24 08:16	02/17/24 00:37	1
2-Fluorophenol (Surr)	0	M Q	19 - 119	02/13/24 08:16	02/17/24 00:37	1
Nitrobenzene-d5 (Surr)	0	M Q	44 - 120	02/13/24 08:16	02/17/24 00:37	1
Phenol-d5 (Surr)	0	M Q	10 - 120	02/13/24 08:16	02/17/24 00:37	1
Terphenyl-d14	0	M Q	50 - 134	02/13/24 08:16	02/17/24 00:37	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-451151/1-A
Matrix: Water
Analysis Batch: 451484

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 451151

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4,5-Tetrachlorobenzene	2.0	U	4.0	1.0	ug/L		02/13/24 08:16	02/16/24 23:25	1
2,3,5,6-Tetrachlorophenol	0.60	U	1.6	0.28	ug/L		02/13/24 08:16	02/16/24 23:25	1
2,4,6-Trichlorophenol	1.2	U	2.4	0.40	ug/L		02/13/24 08:16	02/16/24 23:25	1
2,4-Dichlorophenol	2.0	U	4.0	0.80	ug/L		02/13/24 08:16	02/16/24 23:25	1
2,4-Dimethylphenol	2.0	U	16	0.64	ug/L		02/13/24 08:16	02/16/24 23:25	1
2,4-Dinitrophenol	4.8	U	20	1.8	ug/L		02/13/24 08:16	02/16/24 23:25	1
2,4-Dinitrotoluene	1.2	U	4.0	0.40	ug/L		02/13/24 08:16	02/16/24 23:25	1
2,6-Dinitrotoluene	1.2	U	1.6	0.40	ug/L		02/13/24 08:16	02/16/24 23:25	1
2-Chlorophenol	0.60	U	4.0	0.20	ug/L		02/13/24 08:16	02/16/24 23:25	1
2-Nitrophenol	0.60	U	4.0	0.28	ug/L		02/13/24 08:16	02/16/24 23:25	1
3,3'-Dichlorobenzidine	1.2	U	4.0	0.48	ug/L		02/13/24 08:16	02/16/24 23:25	1
4,6-Dinitro-o-cresol	4.8	U	8.0	2.2	ug/L		02/13/24 08:16	02/16/24 23:25	1
4-Nitrophenol	24	U	40	6.8	ug/L		02/13/24 08:16	02/16/24 23:25	1
Benzidine	4.0	U	40	1.3	ug/L		02/13/24 08:16	02/16/24 23:25	1
Bis(2-chloroethyl)ether	0.36	U	0.40	0.12	ug/L		02/13/24 08:16	02/16/24 23:25	1
Bis(2-ethylhexyl) phthalate	6.4	U	12	3.0	ug/L		02/13/24 08:16	02/16/24 23:25	1
bis(chloroisopropyl) ether	0.60	U	1.0	0.24	ug/L		02/13/24 08:16	02/16/24 23:25	1
Diethyl phthalate	1.2	U	4.0	0.60	ug/L		02/13/24 08:16	02/16/24 23:25	1
Dimethyl phthalate	0.60	U	2.4	0.24	ug/L		02/13/24 08:16	02/16/24 23:25	1
Di-n-butyl phthalate	32	U	40	12	ug/L		02/13/24 08:16	02/16/24 23:25	1
Hexachlorobenzene	1.2	U	2.4	0.32	ug/L		02/13/24 08:16	02/16/24 23:25	1
Hexachlorocyclopentadiene	1.2	U	4.0	0.56	ug/L		02/13/24 08:16	02/16/24 23:25	1
Hexachloroethane	0.60	U	4.0	0.20	ug/L		02/13/24 08:16	02/16/24 23:25	1
Isophorone	1.2	U	1.6	0.40	ug/L		02/13/24 08:16	02/16/24 23:25	1
Nitrobenzene	0.36	U	4.0	0.16	ug/L		02/13/24 08:16	02/16/24 23:25	1
N-Nitrosodimethylamine	1.2	U	8.0	0.40	ug/L		02/13/24 08:16	02/16/24 23:25	1
N-Nitrosodiphenylamine	0.60	U	4.0	0.28	ug/L		02/13/24 08:16	02/16/24 23:25	1
Pentachlorophenol	4.0	U	20	2.0	ug/L		02/13/24 08:16	02/16/24 23:25	1
Phenol	2.4	U	4.0	0.64	ug/L		02/13/24 08:16	02/16/24 23:25	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
N-Nitrosopyrrolidine TIC	*Err*		*ug/L*			*930-55-2*	*02/13/24 08:16*	*02/16/24 23:25*	*1*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*	*02/13/24 08:16*	*02/16/24 23:25*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*59*		*43 - 140*	*02/13/24 08:16*	*02/16/24 23:25*	*1*
2-Fluorobiphenyl	*57*		*44 - 119*	*02/13/24 08:16*	*02/16/24 23:25*	*1*
2-Fluorophenol (Surr)	*52*		*19 - 119*	*02/13/24 08:16*	*02/16/24 23:25*	*1*
Nitrobenzene-d5 (Surr)	*74*		*44 - 120*	*02/13/24 08:16*	*02/16/24 23:25*	*1*
Phenol-d5 (Surr)	*31*		*10 - 120*	*02/13/24 08:16*	*02/16/24 23:25*	*1*
Terphenyl-d14	*87*		*50 - 134*	*02/13/24 08:16*	*02/16/24 23:25*	*1*

Lab Sample ID: LCS 580-451151/2-A
Matrix: Water
Analysis Batch: 451484

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 451151

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,2,4,5-Tetrachlorobenzene			24.0	13.6		ug/L		57	35 - 121		

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-451151/2-A
Matrix: Water
Analysis Batch: 451484

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 451151

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4,6-Trichlorophenol	24.0	20.3		ug/L		84	50 - 125
2,4-Dichlorophenol	24.0	19.1		ug/L		80	47 - 121
2,4-Dimethylphenol	24.0	16.0		ug/L		67	31 - 124
2,4-Dinitrophenol	48.0	54.6		ug/L		114	23 - 143
2,4-Dinitrotoluene	24.0	20.6		ug/L		86	57 - 128
2,6-Dinitrotoluene	24.0	22.5		ug/L		94	57 - 124
2-Chlorophenol	24.0	17.7		ug/L		74	38 - 117
2-Nitrophenol	24.0	20.1		ug/L		84	47 - 123
3,3'-Dichlorobenzidine	32.0	31.8		ug/L		99	27 - 129
4,6-Dinitro-o-cresol	48.0	49.8		ug/L		104	44 - 137
4-Nitrophenol	48.0	16.0	J Q	ug/L		33	35 - 145
Benzidine	32.0	10.7	J	ug/L		33	20 - 125
Bis(2-chloroethyl)ether	24.0	18.1		ug/L		75	43 - 118
Bis(2-ethylhexyl) phthalate	24.0	22.5		ug/L		94	55 - 135
bis(chloroisopropyl) ether	24.0	16.9	M	ug/L		71	37 - 130
Diethyl phthalate	24.0	21.3		ug/L		89	56 - 125
Dimethyl phthalate	24.0	21.1		ug/L		88	45 - 127
Di-n-butyl phthalate	24.0	22.5	J	ug/L		94	59 - 127
Hexachlorobenzene	24.0	16.6		ug/L		69	53 - 125
Hexachlorocyclopentadiene	16.0	9.24		ug/L		58	20 - 125
Hexachloroethane	24.0	11.0		ug/L		46	21 - 115
Isophorone	24.0	19.3		ug/L		80	42 - 124
Nitrobenzene	24.0	20.4		ug/L		85	45 - 121
N-Nitrosodimethylamine	24.0	13.5		ug/L		56	45 - 125
N-Nitrosodiphenylamine	24.0	19.5		ug/L		81	51 - 123
Pentachlorophenol	48.0	34.3		ug/L		71	35 - 138
Phenol	24.0	7.89		ug/L		33	13 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*79*		*43 - 140*
2-Fluorobiphenyl	*67*		*44 - 119*
2-Fluorophenol (Surr)	*47*		*19 - 119*
Nitrobenzene-d5 (Surr)	*79*		*44 - 120*
Phenol-d5 (Surr)	*28*		*10 - 120*
Terphenyl-d14	*81*		*50 - 134*

Lab Sample ID: LCSD 580-451151/3-A
Matrix: Water
Analysis Batch: 451484

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 451151

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2,4,5-Tetrachlorobenzene	24.0	13.2		ug/L		55	35 - 121	3	20
2,4,6-Trichlorophenol	24.0	21.4		ug/L		89	50 - 125	5	20
2,4-Dichlorophenol	24.0	20.8		ug/L		87	47 - 121	8	20
2,4-Dimethylphenol	24.0	17.8		ug/L		74	31 - 124	11	20
2,4-Dinitrophenol	48.0	59.1		ug/L		123	23 - 143	8	20
2,4-Dinitrotoluene	24.0	21.8		ug/L		91	57 - 128	6	20
2,6-Dinitrotoluene	24.0	23.6		ug/L		98	57 - 124	5	20

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-451151/3-A
Matrix: Water
Analysis Batch: 451484

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 451151

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2-Chlorophenol			24.0	19.4		ug/L		81	38 - 117	9	20
2-Nitrophenol			24.0	22.6		ug/L		94	47 - 123	12	20
3,3'-Dichlorobenzidine			32.0	33.2		ug/L		104	27 - 129	4	20
4,6-Dinitro-o-cresol			48.0	53.4		ug/L		111	44 - 137	7	20
4-Nitrophenol			48.0	19.9	J Q	ug/L		42	35 - 145	22	20
Benzidine			32.0	8.05	J Q	ug/L		25	20 - 125	28	20
Bis(2-chloroethyl)ether			24.0	18.8		ug/L		78	43 - 118	4	20
Bis(2-ethylhexyl) phthalate			24.0	24.3		ug/L		101	55 - 135	8	20
bis(chloroisopropyl) ether			24.0	17.4		ug/L		73	37 - 130	3	20
Diethyl phthalate			24.0	22.8		ug/L		95	56 - 125	7	20
Dimethyl phthalate			24.0	22.3		ug/L		93	45 - 127	6	20
Di-n-butyl phthalate			24.0	24.4	J	ug/L		102	59 - 127	8	20
Hexachlorobenzene			24.0	19.4		ug/L		81	53 - 125	15	20
Hexachlorocyclopentadiene			16.0	7.93		ug/L		50	20 - 125	15	20
Hexachloroethane			24.0	9.01		ug/L		38	21 - 115	19	20
Isophorone			24.0	20.6		ug/L		86	42 - 124	7	20
Nitrobenzene			24.0	21.3		ug/L		89	45 - 121	5	20
N-Nitrosodimethylamine			24.0	14.9		ug/L		62	45 - 125	10	20
N-Nitrosodiphenylamine			24.0	20.4		ug/L		85	51 - 123	4	20
Pentachlorophenol			48.0	36.5		ug/L		76	35 - 138	6	20
Phenol			24.0	9.70	Q	ug/L		40	13 - 120	21	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*88*		*43 - 140*
2-Fluorobiphenyl	*74*		*44 - 119*
2-Fluorophenol (Surr)	*54*		*19 - 119*
Nitrobenzene-d5 (Surr)	*84*		*44 - 120*
Phenol-d5 (Surr)	*34*		*10 - 120*
Terphenyl-d14	*87*		*50 - 134*

Lab Chronicle

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136507-2

Client Sample ID: TDS - RP - 08FEB24

Date Collected: 02/08/24 10:20
Date Received: 02/10/24 09:15

Lab Sample ID: 580-136507-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3510C			451151	SL	EET SEA	02/13/24 08:16
Total/NA	Analysis	8270E		1	451484	K1K	EET SEA	02/17/24 00:37

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Environmental Chemical Corp. Job ID: 580-136507-2
Project/Site: 2023 Maui Fires - Lahaina, Maui

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8270E	3510C	Water	2,3,5,6-Tetrachlorophenol
8270E	3510C	Water	Benzidine

Sample Summary

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136507-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-136507-1	TDS - RP - 08FEB24	Water	02/08/24 10:20	02/10/24 09:15

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

eurofins | Environment Testing

Client Information	Sampler: Mike Manhard	Lab PM: Walker, Marie E	Carrier Tracking No(s):	COC No: 580-59705-18343.1
Client Contact: Kalulani Watson + Kane McNeill	Phone: 717-314-2863	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: HI	Page: Page 1 of 1
Company: Environmental Chemical Corp.	PWSID:			Job #:

Field	Value
Address:	2969 Mapunapuna Place Suite 220
City:	Honolulu
State, Zip:	HI, 96819
Phone:	508-229-2270(Tel)
Email:	kwatson@ecc.net + kmcneill@ECC.NET
Project Name:	2023 Maui Fires - Lahaina TDS
Site:	TDS Retention Pond
Due Date Requested:	
TAT Requested (days):	5-Day TAT
Compliance Project:	Δ Yes Δ No
PO #:	Purchase Order Requested 356195
WO #:	
Project #:	Project No. 4344.411
SSOW#:	

Analysis Requested

Preservation Codes:
A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA
M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Y - Trizma; Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Mercury 7470A Total + TCLP	Dioxins/Furans 8290A	Polychlorinated Biphenyls 8082	SVOCs 8270C	Volatiles 8260B	Total Number of containers	Special Instructions/Note:
			Preservation Code:			D				A		
TDS-RP-08FEB24	2-8-24	1020	G	W		X	X	X	X	X	23	Extra Volume Supplied
TEMP BLANK				W						X	2	

580-136507 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:	
Relinquished by: [signature]	Date/Time: 02-09-24 0630	Company: TT	Received by: [signature]	Date/Time: 2/10/24 0915	Company: EETA
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 1B11 0.6 / 0.7
1B/Wet/Blue/FPO

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: Environmental Chemical Corp.

Job Number: 580-136507-2

Login Number: 136507
List Number: 1
Creator: Groves, Elizabeth

List Source: Eurofins Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Jackson Kiker
Environmental Chemical Corp.
43 Broad St
Suite A301
Hudson, Massachusetts 01749

Generated 3/5/2024 9:19:34 PM

JOB DESCRIPTION

2023 Maui Fires - Lahaina, Maui

JOB NUMBER

580-136657-1

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424

See page two for job notes and contact information.

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12

ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Jackson Kiker
Environmental Chemical Corp.
43 Broad St
Suite A301
Hudson, Massachusetts 01749

Generated 3/5/2024 9:23:03 PM

JOB DESCRIPTION

2023 Maui Fires - Lahaina,Maui/ TDS Retention Pond

JOB NUMBER

580-136919-1

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424

See page two for job notes and contact information.

my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization

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3/5/2024 9:23:03 PM

Authorized for release by
Marie Walker, Senior Project Manager
M.Elaine.Walker@et.eurofinsus.com
(253)248-4972

Table of Contents

Job Narrative
580-136919-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Receipt
The samples were received on 2/22/2024 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.8°C and 5.0°C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

Method 8260D - Volatile Organic Compounds (GC/MS)
Samples TDS-RP-20FEB24 (580-136919-1) and TRIP BLANK (580-136919-2) were analyzed for Volatile Organic Compounds (GC/MS). The samples were analyzed on 2/27/2024 and 2/28/2024.

The preservative used in the sample containers provided is not compatible with one of the Method 8260 analytes requested. The following samples were received preserved with hydrochloric acid: TDS-RP-20FEB24 (580-136919-1) and TRIP BLANK (580-136919-2). The requested target analyte list includes Acrolein and Acrylonitrile, an acid-labile compound that degrades in an acidic medium.

The response for Hexachlorobutadiene in the initial calibration verification marginally exceeds the DoD acceptance criteria referenced by analytical batch 410-477572 . Due to the marginal nature of the outlier(s), the data are reported.

Method 8270D - Semivolatile Organic Compounds (GC/MS)
Sample TDS-RP-20FEB24 (580-136919-1) was analyzed for Semivolatile Organic Compounds (GC/MS). The sample was prepared and analyzed on 2/27/2024.

Method 8151A DOD - Herbicides (GC)
Sample TDS-RP-20FEB24 (580-136919-1) was analyzed for Herbicides (GC). The sample was prepared on 2/26/2024 and analyzed on 2/27/2024.

Method 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography
Sample TDS-RP-20FEB24 (580-136919-1) was analyzed for Polychlorinated Biphenyls (PCBs) by Gas Chromatography. The sample was prepared on 2/27/2024 and analyzed on 2/29/2024.

The continuing calibration verification (CCV) associated with batch 410-478252 recovered above the upper control limit for DCB surrogate on one column. Results are reported from the passing column: TDS-RP-20FEB24 (580-136919-1).

Method 8081B - Organochlorine Pesticides (GC)
Sample TDS-RP-20FEB24 (580-136919-1) was analyzed for Organochlorine Pesticides (GC). The sample was prepared on 2/27/2024 and analyzed on 2/28/2024.

Sample TDS-RP-20FEB24 (580-136919-1)[10x] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Method 8290A - Dioxins and Furans (HRGC/HRMS)

Job ID: 580-136919-1 (Continued) Eurofins Seattle

Sample TDS-RP-20FEB24 (580-136919-1) was analyzed for Dioxins and Furans (HRGC/HRMS). The sample was prepared on 2/28/2024 and analyzed on 2/29/2024.

Method 6010D - Metals (ICP)
Sample TDS-RP-20FEB24 (580-136919-1) was analyzed for Metals (ICP). The sample was prepared on 2/28/2024 and analyzed on 2/28/2024 and 2/29/2024.

Sample TDS-RP-20FEB24 (580-136919-1)[10x] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Method 6010D - Metals (ICP) - TCLP
Sample TDS-RP-20FEB24 (580-136919-1) was analyzed for Metals (ICP) - TCLP. The sample was leached on 2/27/2024, prepared on 2/28/2024 and analyzed on 2/28/2024 and 2/29/2024.

Method 7470A - Mercury (CVAA)
Sample TDS-RP-20FEB24 (580-136919-1) was analyzed for Mercury (CVAA). The sample was prepared on 2/28/2024 and analyzed on 2/29/2024.

Method 7470A - Mercury (CVAA) - TCLP
Sample TDS-RP-20FEB24 (580-136919-1) was analyzed for Mercury (CVAA) - TCLP. The sample was leached on 2/27/2024, prepared on 2/28/2024 and analyzed on 2/29/2024.

Definitions/Glossary

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina,Maui/ TDS Retention Pond

Job ID: 580-136919-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

GC/MS Semi VOA TICs

Qualifier	Qualifier Description
N	Nontarget analyte: The analyte is a tentatively identified compound (using mass spectroscopy).

GC Semi VOA

Qualifier	Qualifier Description
D	The reported value is from a dilution.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

Dioxin

Qualifier	Qualifier Description
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample ID: TDS-RP-20FEB24

Date Collected: 02/20/24 10:00
Date Received: 02/22/24 09:30

Lab Sample ID: 580-136919-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Acrolein	6.0	U	100	3.0	ug/L			02/28/24 02:10	1
Acrylonitrile	3.2	U	20	1.6	ug/L			02/28/24 02:10	1
Benzene	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
Carbon tetrachloride	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
Chloroethane	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
Chloroform	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
Chloromethane	1.1	U	2.0	0.55	ug/L			02/28/24 02:10	1
1,2-Dichlorobenzene	0.50	U	5.0	0.20	ug/L			02/28/24 02:10	1
1,3-Dichlorobenzene	1.4	U	5.0	0.68	ug/L			02/28/24 02:10	1
1,4-Dichlorobenzene	0.60	U	5.0	0.30	ug/L			02/28/24 02:10	1
1,2-Dichloroethane	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
1,1-Dichloroethene	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
trans-1,2-Dichloroethene	1.4	U	2.0	0.70	ug/L			02/28/24 02:10	1
1,2-Dichloropropane	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
1,3-Dichloropropane	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
2,2-Dichloropropane	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
trans-1,3-Dichloropropene	0.50	U	1.0	0.20	ug/L			02/28/24 02:10	1
Ethylbenzene	0.80	U	1.0	0.40	ug/L			02/28/24 02:10	1
Hexachlorobutadiene	4.0	U Q	5.0	2.0	ug/L			02/28/24 02:10	1
1,1,1,2-Tetrachloroethane	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
1,1,2,2-Tetrachloroethane	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
Tetrachloroethene	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
Toluene	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
1,1,1-Trichloroethane	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
1,1,2-Trichloroethane	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
Trichloroethene	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
Vinyl chloride	0.60	U	1.0	0.30	ug/L			02/28/24 02:10	1
Pentachloroethane	4.1	U	5.0	2.1	ug/L			02/28/24 02:10	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*		*02/28/24 02:10*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*111*		*89 - 112*		*02/28/24 02:10*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*81 - 118*		*02/28/24 02:10*	*1*
4-Bromofluorobenzene (Surr)	*90*		*85 - 114*		*02/28/24 02:10*	*1*
Dibromofluoromethane (Surr)	*90*		*80 - 119*		*02/28/24 02:10*	*1*

Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzidine	41	U Q	61	20	ug/L		02/27/24 15:34	02/27/24 21:21	1
Bis(2-chloroethyl)ether	1.0	U	2.0	0.51	ug/L		02/27/24 15:34	02/27/24 21:21	1
Bis(2-ethylhexyl) phthalate	4.1	U	5.1	2.0	ug/L		02/27/24 15:34	02/27/24 21:21	1
2-Chlorophenol	1.0	U	2.0	0.51	ug/L		02/27/24 15:34	02/27/24 21:21	1
3,3'-Dichlorobenzidine	8.1	U	10	4.1	ug/L		02/27/24 15:34	02/27/24 21:21	1
2,4-Dichlorophenol	1.0	U	2.0	0.51	ug/L		02/27/24 15:34	02/27/24 21:21	1
Diethyl phthalate	4.1	U	5.1	2.0	ug/L		02/27/24 15:34	02/27/24 21:21	1
2,4-Dimethylphenol	9.1	U	10	3.0	ug/L		02/27/24 15:34	02/27/24 21:21	1
Dimethyl phthalate	4.1	U	5.1	2.0	ug/L		02/27/24 15:34	02/27/24 21:21	1

Client Sample ID: TDS-RP-20FEB24
Lab Sample ID: 580-136919-1

Date Collected: 02/20/24 10:00
Matrix: Water
Date Received: 02/22/24 09:30

Method: SW846 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Di-n-butyl phthalate	4.1	U	5.1	2.0	ug/L		02/27/24 15:34	02/27/24 21:21	1
2,4-Dinitrophenol	28	U	30	14	ug/L		02/27/24 15:34	02/27/24 21:21	1
2,4-Dinitrotoluene	2.0	U	5.1	1.0	ug/L		02/27/24 15:34	02/27/24 21:21	1
2,6-Dinitrotoluene	1.0	U	2.0	0.51	ug/L		02/27/24 15:34	02/27/24 21:21	1
Hexachlorobenzene	0.22	U	0.51	0.11	ug/L		02/27/24 15:34	02/27/24 21:21	1
Hexachlorocyclopentadiene	10	U	11	5.1	ug/L		02/27/24 15:34	02/27/24 21:21	1
Hexachloroethane	1.0	U	5.1	0.51	ug/L		02/27/24 15:34	02/27/24 21:21	1
Isophorone	1.0	U	2.0	0.51	ug/L		02/27/24 15:34	02/27/24 21:21	1
4,6-Dinitro-o-cresol	20	U	21	8.1	ug/L		02/27/24 15:34	02/27/24 21:21	1
Nitrobenzene	1.0	U M	2.0	0.51	ug/L		02/27/24 15:34	02/27/24 21:21	1
2-Nitrophenol	2.0	U	5.1	1.0	ug/L		02/27/24 15:34	02/27/24 21:21	1
4-Nitrophenol	20	U	30	10	ug/L		02/27/24 15:34	02/27/24 21:21	1
N-Nitrosodimethylamine	4.1	U	5.1	2.0	ug/L		02/27/24 15:34	02/27/24 21:21	1
N-Nitrosodiphenylamine	1.0	U M	2.0	0.51	ug/L		02/27/24 15:34	02/27/24 21:21	1
bis(chloroisopropyl) ether	1.0	U	2.0	0.51	ug/L		02/27/24 15:34	02/27/24 21:21	1
Pentachlorophenol	4.1	U	5.1	1.0	ug/L		02/27/24 15:34	02/27/24 21:21	1
Phenol	1.0	U	2.0	0.51	ug/L		02/27/24 15:34	02/27/24 21:21	1
1,2,4,5-Tetrachlorobenzene	1.0	U	2.0	0.51	ug/L		02/27/24 15:34	02/27/24 21:21	1
2,4,6-Trichlorophenol	1.0	U	2.0	0.51	ug/L		02/27/24 15:34	02/27/24 21:21	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*6.9*	*N*	*ug/L*		*2.11*	*N/A*	*02/27/24 15:34*	*02/27/24 21:21*	*1*
Unknown	*4.8*	*N*	*ug/L*		*5.44*	*N/A*	*02/27/24 15:34*	*02/27/24 21:21*	*1*
Unknown	*7.6*	*N*	*ug/L*		*7.50*	*N/A*	*02/27/24 15:34*	*02/27/24 21:21*	*1*
Unknown	*6.4*	*N*	*ug/L*		*8.55*	*N/A*	*02/27/24 15:34*	*02/27/24 21:21*	*1*
Unknown	*6.1*	*N*	*ug/L*		*8.73*	*N/A*	*02/27/24 15:34*	*02/27/24 21:21*	*1*
Unknown	*8.2*	*N*	*ug/L*		*9.06*	*N/A*	*02/27/24 15:34*	*02/27/24 21:21*	*1*
Unknown	*9.5*	*N*	*ug/L*		*12.83*	*N/A*	*02/27/24 15:34*	*02/27/24 21:21*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorophenol (Surr)	*53*		*19 - 119*	*02/27/24 15:34*	*02/27/24 21:21*	*1*
2,4,6-Tribromophenol (Surr)	*97*		*43 - 140*	*02/27/24 15:34*	*02/27/24 21:21*	*1*
Nitrobenzene-d5 (Surr)	*84*		*44 - 120*	*02/27/24 15:34*	*02/27/24 21:21*	*1*
Phenol-d5 (Surr)	*36*		*10 - 120*	*02/27/24 15:34*	*02/27/24 21:21*	*1*
p-Terphenyl-d14 (Surr)	*64*		*50 - 134*	*02/27/24 15:34*	*02/27/24 21:21*	*1*
2-Fluorobiphenyl (Surr)	*84*		*44 - 119*	*02/27/24 15:34*	*02/27/24 21:21*	*1*

Method: SW846 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	0.056	U	0.19	0.028	ug/L		02/27/24 15:57	02/28/24 06:30	10
gamma-BHC (Lindane)	0.038	U	0.19	0.019	ug/L		02/27/24 15:57	02/28/24 06:30	10
beta-BHC	**0.37**	**J1 D**	0.28	0.10	ug/L		02/27/24 15:57	02/28/24 06:30	10
delta-BHC	0.064	U	0.19	0.032	ug/L		02/27/24 15:57	02/28/24 06:30	10
Heptachlor	0.038	U	0.19	0.019	ug/L		02/27/24 15:57	02/28/24 06:30	10
Aldrin	0.038	U	0.19	0.019	ug/L		02/27/24 15:57	02/28/24 06:30	10
Heptachlor epoxide	0.043	U	0.19	0.022	ug/L		02/27/24 15:57	02/28/24 06:30	10
trans-Chlordane	0.13	U	0.38	0.066	ug/L		02/27/24 15:57	02/28/24 06:30	10
cis-Chlordane	0.056	U	0.19	0.028	ug/L		02/27/24 15:57	02/28/24 06:30	10
Endosulfan I	0.081	U	0.19	0.040	ug/L		02/27/24 15:57	02/28/24 06:30	10

Client Sample ID: TDS-RP-20FEB24

Date Collected: 02/20/24 10:00
Date Received: 02/22/24 09:30

Lab Sample ID: 580-136919-1

Matrix: Water

Method: SW846 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDE	0.19	U	0.28	0.047	ug/L		02/27/24 15:57	02/28/24 06:30	10
Dieldrin	0.19	U	0.28	0.050	ug/L		02/27/24 15:57	02/28/24 06:30	10
Endrin	0.19	U	0.28	0.076	ug/L		02/27/24 15:57	02/28/24 06:30	10
4,4'-DDD	0.094	U	0.28	0.047	ug/L		02/27/24 15:57	02/28/24 06:30	10
Endosulfan II	0.28	U	0.38	0.14	ug/L		02/27/24 15:57	02/28/24 06:30	10
4,4'-DDT	0.19	U	0.28	0.049	ug/L		02/27/24 15:57	02/28/24 06:30	10
Endrin aldehyde	0.38	U	0.94	0.19	ug/L		02/27/24 15:57	02/28/24 06:30	10
Endosulfan sulfate	0.19	U	0.28	0.055	ug/L		02/27/24 15:57	02/28/24 06:30	10
Methoxychlor	0.56	U	1.0	0.28	ug/L		02/27/24 15:57	02/28/24 06:30	10
Endrin ketone	0.094	U	0.28	0.047	ug/L		02/27/24 15:57	02/28/24 06:30	10
Toxaphene	5.6	U M	9.4	2.8	ug/L		02/27/24 15:57	02/28/24 06:30	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*81*		*44 - 124*	*02/27/24 15:57*	*02/28/24 06:30*	*10*
Tetrachloro-m-xylene	*118*		*44 - 124*	*02/27/24 15:57*	*02/28/24 06:30*	*10*

Method: SW846 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	0.19	U	0.47	0.094	ug/L		02/27/24 15:59	02/29/24 10:33	1
PCB-1221	0.19	U	0.47	0.094	ug/L		02/27/24 15:59	02/29/24 10:33	1
PCB-1232	0.19	U	0.47	0.094	ug/L		02/27/24 15:59	02/29/24 10:33	1
PCB-1242	0.19	U	0.47	0.094	ug/L		02/27/24 15:59	02/29/24 10:33	1
PCB-1248	0.19	U	0.47	0.094	ug/L		02/27/24 15:59	02/29/24 10:33	1
PCB-1254	0.19	U	0.47	0.073	ug/L		02/27/24 15:59	02/29/24 10:33	1
PCB-1260	0.19	U	0.47	0.073	ug/L		02/27/24 15:59	02/29/24 10:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*64*		*33 - 137*	*02/27/24 15:59*	*02/29/24 10:33*	*1*
Tetrachloro-m-xylene	*65*		*33 - 137*	*02/27/24 15:59*	*02/29/24 10:33*	*1*
DCB Decachlorobiphenyl (Surr)	*51*	*Q*	*10 - 148*	*02/27/24 15:59*	*02/29/24 10:33*	*1*
DCB Decachlorobiphenyl (Surr)	*52*		*10 - 148*	*02/27/24 15:59*	*02/29/24 10:33*	*1*

Method: SW846 8151A DOD - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	0.13	U	0.15	0.065	ug/L		02/26/24 15:15	02/27/24 16:34	1
Silvex (2,4,5-TP)	0.044	U	0.050	0.022	ug/L		02/26/24 15:15	02/27/24 16:34	1
2,4-D	0.50	U	0.60	0.25	ug/L		02/26/24 15:15	02/27/24 16:34	1
2,4-DB	1.3	U	1.5	0.63	ug/L		02/26/24 15:15	02/27/24 16:34	1
Dichlorprop	0.32	U	0.50	0.16	ug/L		02/26/24 15:15	02/27/24 16:34	1
Dalapon	11	U	12	5.7	ug/L		02/26/24 15:15	02/27/24 16:34	1
Dicamba	0.54	U	0.55	0.27	ug/L		02/26/24 15:15	02/27/24 16:34	1
MCPP	100	U	200	50	ug/L		02/26/24 15:15	02/27/24 16:34	1
MCPA	100	U	200	50	ug/L		02/26/24 15:15	02/27/24 16:34	1
Pentachlorophenol	0.060	U	0.070	0.027	ug/L		02/26/24 15:15	02/27/24 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid (Surr)	*83*		*32 - 138*	*02/26/24 15:15*	*02/27/24 16:34*	*1*
2,4-Dichlorophenylacetic acid (Surr)	*64*		*32 - 138*	*02/26/24 15:15*	*02/27/24 16:34*	*1*

Client Sample ID: TDS-RP-20FEB24

Date Collected: 02/20/24 10:00
Date Received: 02/22/24 09:30

Lab Sample ID: 580-136919-1

Matrix: Water

Method: SW846 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	2.0	U M	5.0	0.87	pg/L		02/28/24 13:50	02/29/24 14:21	1
Total TCDD	2.0	U	5.0	0.87	pg/L		02/28/24 13:50	02/29/24 14:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*64*		*40 - 135*	*02/28/24 13:50*	*02/29/24 14:21*	*1*

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.16	U	0.25	0.080	mg/L		02/28/24 08:07	02/28/24 18:31	1
Arsenic	0.16	U	0.25	0.080	mg/L		02/28/24 08:07	02/28/24 18:31	1
Barium	**2.6**		0.025	0.0050	mg/L		02/28/24 08:07	02/28/24 18:31	1
Beryllium	**0.030**		0.025	0.0050	mg/L		02/28/24 08:07	02/28/24 18:31	1
Cadmium	0.010	U	0.025	0.0050	mg/L		02/28/24 08:07	02/29/24 08:18	1
Chromium	**0.56**		0.075	0.015	mg/L		02/28/24 08:07	02/28/24 18:31	1
Cobalt	**0.40**		0.025	0.0075	mg/L		02/28/24 08:07	02/28/24 18:31	1
Copper	**0.23**		0.10	0.040	mg/L		02/28/24 08:07	02/28/24 18:31	1
Lead	0.071	U	0.075	0.036	mg/L		02/28/24 08:07	02/28/24 18:31	1
Molybdenum	0.020	U	0.050	0.010	mg/L		02/28/24 08:07	02/28/24 18:31	1
Nickel	**0.38**		0.050	0.011	mg/L		02/28/24 08:07	02/28/24 18:31	1
Selenium	0.16	U	0.25	0.080	mg/L		02/28/24 08:07	02/28/24 18:31	1
Silver	0.040	U	0.050	0.020	mg/L		02/28/24 08:07	02/28/24 18:31	1
Thallium	0.12	U	0.15	0.060	mg/L		02/28/24 08:07	02/29/24 08:18	1
Zinc	**0.49**		0.10	0.019	mg/L		02/28/24 08:07	02/28/24 18:31	1
Vanadium	**0.92**		0.050	0.0095	mg/L		02/28/24 08:07	02/28/24 18:31	1

Method: SW846 6010D - Metals (ICP) - TCLP

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.32	U	0.50	0.16	mg/L		02/28/24 08:07	02/28/24 20:16	1
Barium	**0.015**	**J**	0.050	0.010	mg/L		02/28/24 08:07	02/28/24 20:16	1
Cadmium	0.020	U	0.050	0.010	mg/L		02/28/24 08:07	02/29/24 07:51	1
Chromium	0.060	U	0.15	0.030	mg/L		02/28/24 08:07	02/28/24 20:16	1
Lead	0.14	U	0.15	0.071	mg/L		02/28/24 08:07	02/28/24 20:16	1
Selenium	0.32	U	0.50	0.16	mg/L		02/28/24 08:07	02/28/24 20:16	1
Silver	0.080	U	0.10	0.040	mg/L		02/28/24 08:07	02/28/24 20:16	1

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.085**	**J**	0.20	0.079	ug/L		02/28/24 22:40	02/29/24 10:53	1

Method: SW846 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.16	U	0.20	0.079	ug/L		02/28/24 22:40	02/29/24 09:24	1

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina,Maui/ TDS Retention Pond

Job ID: 580-136919-1

Client Sample ID: TRIP BLANK

Date Collected: 02/20/24 00:00
Date Received: 02/22/24 09:30

Lab Sample ID: 580-136919-2

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Acrolein	6.0	U	100	3.0	ug/L			02/27/24 23:35	1
Acrylonitrile	3.2	U	20	1.6	ug/L			02/27/24 23:35	1
Benzene	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
Carbon tetrachloride	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
Chloroethane	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
Chloroform	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
Chloromethane	1.1	U	2.0	0.55	ug/L			02/27/24 23:35	1
1,2-Dichlorobenzene	0.50	U	5.0	0.20	ug/L			02/27/24 23:35	1
1,3-Dichlorobenzene	1.4	U	5.0	0.68	ug/L			02/27/24 23:35	1
1,4-Dichlorobenzene	0.60	U	5.0	0.30	ug/L			02/27/24 23:35	1
1,2-Dichloroethane	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
1,1-Dichloroethene	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
trans-1,2-Dichloroethene	1.4	U	2.0	0.70	ug/L			02/27/24 23:35	1
1,2-Dichloropropane	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
1,3-Dichloropropane	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
2,2-Dichloropropane	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
trans-1,3-Dichloropropene	0.50	U	1.0	0.20	ug/L			02/27/24 23:35	1
Ethylbenzene	0.80	U	1.0	0.40	ug/L			02/27/24 23:35	1
Hexachlorobutadiene	4.0	U Q	5.0	2.0	ug/L			02/27/24 23:35	1
1,1,1,2-Tetrachloroethane	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
1,1,2,2-Tetrachloroethane	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
Tetrachloroethene	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
Toluene	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
1,1,1-Trichloroethane	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
1,1,2-Trichloroethane	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
Trichloroethene	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
Vinyl chloride	0.60	U	1.0	0.30	ug/L			02/27/24 23:35	1
Pentachloroethane	4.1	U	5.0	2.1	ug/L			02/27/24 23:35	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*		*02/27/24 23:35*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*109*		*89 - 112*		*02/27/24 23:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*		*02/27/24 23:35*	*1*
4-Bromofluorobenzene (Surr)	*90*		*85 - 114*		*02/27/24 23:35*	*1*
Dibromofluoromethane (Surr)	*95*		*80 - 119*		*02/27/24 23:35*	*1*

Method: 8260D - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 410-477572/8
Matrix: Water
Analysis Batch: 477572

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Acrolein	6.0	U	100	3.0	ug/L			02/27/24 22:29	1
Acrylonitrile	3.2	U	20	1.6	ug/L			02/27/24 22:29	1
Benzene	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
Carbon tetrachloride	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
Chloroethane	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
Chloroform	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
Chloromethane	1.1	U	2.0	0.55	ug/L			02/27/24 22:29	1
1,2-Dichlorobenzene	0.50	U	5.0	0.20	ug/L			02/27/24 22:29	1
1,3-Dichlorobenzene	1.4	U	5.0	0.68	ug/L			02/27/24 22:29	1
1,4-Dichlorobenzene	0.60	U	5.0	0.30	ug/L			02/27/24 22:29	1
1,2-Dichloroethane	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
1,1-Dichloroethene	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
trans-1,2-Dichloroethene	1.4	U	2.0	0.70	ug/L			02/27/24 22:29	1
1,2-Dichloropropane	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
1,3-Dichloropropane	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
2,2-Dichloropropane	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
trans-1,3-Dichloropropene	0.50	U	1.0	0.20	ug/L			02/27/24 22:29	1
Ethylbenzene	0.80	U	1.0	0.40	ug/L			02/27/24 22:29	1
Hexachlorobutadiene	4.0	U	5.0	2.0	ug/L			02/27/24 22:29	1
1,1,1,2-Tetrachloroethane	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
1,1,2,2-Tetrachloroethane	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
Tetrachloroethene	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
Toluene	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
1,1,1-Trichloroethane	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
1,1,2-Trichloroethane	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
Trichloroethene	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
Vinyl chloride	0.60	U	1.0	0.30	ug/L			02/27/24 22:29	1
Pentachloroethane	4.1	U	5.0	2.1	ug/L			02/27/24 22:29	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*		*02/27/24 22:29*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*108*		*89 - 112*		*02/27/24 22:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*81 - 118*		*02/27/24 22:29*	*1*
4-Bromofluorobenzene (Surr)	*89*		*85 - 114*		*02/27/24 22:29*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 119*		*02/27/24 22:29*	*1*

Lab Sample ID: LCS 410-477572/5
Matrix: Water
Analysis Batch: 477572

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acrolein	150	161		ug/L		107	39 - 155
Acrylonitrile	100	106		ug/L		106	63 - 135
Benzene	20.0	18.7		ug/L		94	79 - 120
Carbon tetrachloride	20.0	17.0		ug/L		85	72 - 136

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 410-477572/5
Matrix: Water
Analysis Batch: 477572

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloroethane	20.0	14.8		ug/L		74	60 - 138
Chloroform	20.0	19.0		ug/L		95	79 - 124
Chloromethane	20.0	12.7		ug/L		64	50 - 139
1,2-Dichlorobenzene	20.0	19.3		ug/L		97	80 - 119
1,3-Dichlorobenzene	20.0	18.6		ug/L		93	80 - 119
1,4-Dichlorobenzene	20.0	18.5		ug/L		92	79 - 118
1,2-Dichloroethane	20.0	18.6		ug/L		93	73 - 128
1,1-Dichloroethene	20.0	20.5		ug/L		102	71 - 131
trans-1,2-Dichloroethene	20.0	17.0		ug/L		85	75 - 124
1,2-Dichloropropane	20.0	21.0		ug/L		105	78 - 122
1,3-Dichloropropane	20.0	20.6		ug/L		103	80 - 119
2,2-Dichloropropane	20.0	16.9		ug/L		84	60 - 139
trans-1,3-Dichloropropene	20.0	18.8		ug/L		94	73 - 127
Ethylbenzene	20.0	18.7		ug/L		94	79 - 121
Hexachlorobutadiene	20.0	19.5		ug/L		97	66 - 134
1,1,1,2-Tetrachloroethane	20.0	17.4		ug/L		87	78 - 124
1,1,2,2-Tetrachloroethane	20.0	22.0		ug/L		110	71 - 121
Tetrachloroethene	20.0	18.8		ug/L		94	74 - 129
Toluene	20.0	19.5		ug/L		97	80 - 121
1,1,1-Trichloroethane	20.0	17.2		ug/L		86	74 - 131
1,1,2-Trichloroethane	20.0	19.6		ug/L		98	80 - 119
Trichloroethene	20.0	17.5		ug/L		88	79 - 123
Vinyl chloride	20.0	13.5		ug/L		68	58 - 137

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*108*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*99*		*81 - 118*
4-Bromofluorobenzene (Surr)	*90*		*85 - 114*
Dibromofluoromethane (Surr)	*95*		*80 - 119*

Lab Sample ID: LCS 410-477572/6
Matrix: Water
Analysis Batch: 477572

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Pentachloroethane	20.0	20.4		ug/L		102	69 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*111*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*99*		*81 - 118*
4-Bromofluorobenzene (Surr)	*88*		*85 - 114*
Dibromofluoromethane (Surr)	*94*		*80 - 119*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 410-477533/1-A
Matrix: Water
Analysis Batch: 477499

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 477533

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzidine	40	U	60	20	ug/L		02/27/24 15:34	02/27/24 18:11	1
Bis(2-chloroethyl)ether	1.0	U	2.0	0.50	ug/L		02/27/24 15:34	02/27/24 18:11	1
Bis(2-ethylhexyl) phthalate	4.0	U	5.0	2.0	ug/L		02/27/24 15:34	02/27/24 18:11	1
2-Chlorophenol	1.0	U	2.0	0.50	ug/L		02/27/24 15:34	02/27/24 18:11	1
3,3'-Dichlorobenzidine	8.0	U	10	4.0	ug/L		02/27/24 15:34	02/27/24 18:11	1
2,4-Dichlorophenol	1.0	U	2.0	0.50	ug/L		02/27/24 15:34	02/27/24 18:11	1
Diethyl phthalate	4.0	U	5.0	2.0	ug/L		02/27/24 15:34	02/27/24 18:11	1
2,4-Dimethylphenol	9.0	U	10	3.0	ug/L		02/27/24 15:34	02/27/24 18:11	1
Dimethyl phthalate	4.0	U	5.0	2.0	ug/L		02/27/24 15:34	02/27/24 18:11	1
Di-n-butyl phthalate	4.0	U	5.0	2.0	ug/L		02/27/24 15:34	02/27/24 18:11	1
2,4-Dinitrophenol	28	U	30	14	ug/L		02/27/24 15:34	02/27/24 18:11	1
2,4-Dinitrotoluene	2.0	U	5.0	1.0	ug/L		02/27/24 15:34	02/27/24 18:11	1
2,6-Dinitrotoluene	1.0	U	2.0	0.50	ug/L		02/27/24 15:34	02/27/24 18:11	1
Hexachlorobenzene	0.22	U	0.50	0.11	ug/L		02/27/24 15:34	02/27/24 18:11	1
Hexachlorocyclopentadiene	10	U	11	5.0	ug/L		02/27/24 15:34	02/27/24 18:11	1
Hexachloroethane	1.0	U	5.0	0.50	ug/L		02/27/24 15:34	02/27/24 18:11	1
Isophorone	1.0	U	2.0	0.50	ug/L		02/27/24 15:34	02/27/24 18:11	1
4,6-Dinitro-o-cresol	20	U	21	8.0	ug/L		02/27/24 15:34	02/27/24 18:11	1
Nitrobenzene	1.0	U M	2.0	0.50	ug/L		02/27/24 15:34	02/27/24 18:11	1
2-Nitrophenol	2.0	U	5.0	1.0	ug/L		02/27/24 15:34	02/27/24 18:11	1
4-Nitrophenol	20	U	30	10	ug/L		02/27/24 15:34	02/27/24 18:11	1
N-Nitrosodimethylamine	4.0	U	5.0	2.0	ug/L		02/27/24 15:34	02/27/24 18:11	1
N-Nitrosodiphenylamine	1.0	U M	2.0	0.50	ug/L		02/27/24 15:34	02/27/24 18:11	1
bis(chloroisopropyl) ether	1.0	U	2.0	0.50	ug/L		02/27/24 15:34	02/27/24 18:11	1
Pentachlorophenol	4.0	U	5.0	1.0	ug/L		02/27/24 15:34	02/27/24 18:11	1
Phenol	1.0	U	2.0	0.50	ug/L		02/27/24 15:34	02/27/24 18:11	1
1,2,4,5-Tetrachlorobenzene	1.0	U	2.0	0.50	ug/L		02/27/24 15:34	02/27/24 18:11	1
2,4,6-Trichlorophenol	1.0	U	2.0	0.50	ug/L		02/27/24 15:34	02/27/24 18:11	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*6.57*	*N*	*ug/L*		*2.12*	*N/A*	*02/27/24 15:34*	*02/27/24 18:11*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorophenol (Surr)	*53*		*19 - 119*	*02/27/24 15:34*	*02/27/24 18:11*	*1*
2,4,6-Tribromophenol (Surr)	*82*		*43 - 140*	*02/27/24 15:34*	*02/27/24 18:11*	*1*
Nitrobenzene-d5 (Surr)	*81*		*44 - 120*	*02/27/24 15:34*	*02/27/24 18:11*	*1*
Phenol-d5 (Surr)	*37*		*10 - 120*	*02/27/24 15:34*	*02/27/24 18:11*	*1*
p-Terphenyl-d14 (Surr)	*82*		*50 - 134*	*02/27/24 15:34*	*02/27/24 18:11*	*1*
2-Fluorobiphenyl (Surr)	*73*		*44 - 119*	*02/27/24 15:34*	*02/27/24 18:11*	*1*

Lab Sample ID: LCS 410-477533/2-A
Matrix: Water
Analysis Batch: 477499

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 477533

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzidine	100	33.1	J	ug/L		33	10 - 53
Bis(2-chloroethyl)ether	50.0	48.7		ug/L		97	43 - 118

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 410-477533/2-A
Matrix: Water
Analysis Batch: 477499

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 477533

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bis(2-ethylhexyl) phthalate	50.0	49.4		ug/L		99	55 - 135
2-Chlorophenol	50.0	43.9		ug/L		88	38 - 117
3,3'-Dichlorobenzidine	100	90.6		ug/L		91	27 - 129
2,4-Dichlorophenol	50.0	48.9		ug/L		98	47 - 121
Diethyl phthalate	50.0	49.2		ug/L		98	56 - 125
2,4-Dimethylphenol	50.0	46.4		ug/L		93	31 - 124
Dimethyl phthalate	50.0	46.0		ug/L		92	45 - 127
Di-n-butyl phthalate	50.0	51.2		ug/L		102	59 - 127
2,4-Dinitrophenol	100	110		ug/L		110	23 - 143
2,4-Dinitrotoluene	50.0	51.0		ug/L		102	57 - 128
2,6-Dinitrotoluene	50.0	49.8		ug/L		100	57 - 124
Hexachlorobenzene	50.0	43.5		ug/L		87	53 - 125
Hexachlorocyclopentadiene	50.0	17.4		ug/L		35	10 - 82
Hexachloroethane	50.0	33.3		ug/L		67	21 - 115
Isophorone	50.0	56.3		ug/L		113	42 - 124
4,6-Dinitro-o-cresol	100	112		ug/L		112	44 - 137
Nitrobenzene	50.0	47.7		ug/L		95	45 - 121
2-Nitrophenol	50.0	46.3		ug/L		93	47 - 123
4-Nitrophenol	100	50.4		ug/L		50	17 - 120
N-Nitrosodimethylamine	50.0	31.1		ug/L		62	34 - 77
N-Nitrosodiphenylamine	42.5	39.7		ug/L		93	51 - 123
bis(chloroisopropyl) ether	50.0	46.7		ug/L		93	37 - 130
Pentachlorophenol	100	95.3		ug/L		95	35 - 138
Phenol	50.0	24.8		ug/L		50	22 - 69
1,2,4,5-Tetrachlorobenzene	50.0	41.7		ug/L		83	35 - 121
2,4,6-Trichlorophenol	50.0	54.0		ug/L		108	50 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorophenol (Surr)	*56*		*19 - 119*
2,4,6-Tribromophenol (Surr)	*93*		*43 - 140*
Nitrobenzene-d5 (Surr)	*90*		*44 - 120*
Phenol-d5 (Surr)	*40*		*10 - 120*
p-Terphenyl-d14 (Surr)	*89*		*50 - 134*
2-Fluorobiphenyl (Surr)	*83*		*44 - 119*

Lab Sample ID: LCSD 410-477533/3-A
Matrix: Water
Analysis Batch: 477499

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 477533

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzidine	100	22.7	J Q	ug/L		23	10 - 53	37	30
Bis(2-chloroethyl)ether	50.0	47.8		ug/L		96	43 - 118	2	20
Bis(2-ethylhexyl) phthalate	50.0	43.3		ug/L		87	55 - 135	13	20
2-Chlorophenol	50.0	43.5		ug/L		87	38 - 117	1	20
3,3'-Dichlorobenzidine	100	88.8		ug/L		89	27 - 129	2	20
2,4-Dichlorophenol	50.0	51.1		ug/L		102	47 - 121	4	20
Diethyl phthalate	50.0	47.3		ug/L		95	56 - 125	4	20

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 410-477533/3-A
Matrix: Water
Analysis Batch: 477499

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 477533

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,4-Dimethylphenol			50.0	52.5		ug/L		105	31 - 124	12	20
Dimethyl phthalate			50.0	47.6		ug/L		95	45 - 127	4	20
Di-n-butyl phthalate			50.0	49.3		ug/L		99	59 - 127	4	20
2,4-Dinitrophenol			100	101		ug/L		101	23 - 143	8	20
2,4-Dinitrotoluene			50.0	49.2		ug/L		98	57 - 128	3	20
2,6-Dinitrotoluene			50.0	49.2		ug/L		98	57 - 124	1	20
Hexachlorobenzene			50.0	41.0		ug/L		82	53 - 125	6	20
Hexachlorocyclopentadiene			50.0	18.5		ug/L		37	10 - 82	6	30
Hexachloroethane			50.0	36.1		ug/L		72	21 - 115	8	20
Isophorone			50.0	54.5		ug/L		109	42 - 124	3	20
4,6-Dinitro-o-cresol			100	106		ug/L		106	44 - 137	5	20
Nitrobenzene			50.0	50.1		ug/L		100	45 - 121	5	20
2-Nitrophenol			50.0	48.6		ug/L		97	47 - 123	5	20
4-Nitrophenol			100	49.8		ug/L		50	17 - 120	1	30
N-Nitrosodimethylamine			50.0	30.3		ug/L		61	34 - 77	3	30
N-Nitrosodiphenylamine			42.5	39.8		ug/L		94	51 - 123	0	20
bis(chloroisopropyl) ether			50.0	49.4		ug/L		99	37 - 130	5	20
Pentachlorophenol			100	92.8		ug/L		93	35 - 138	3	20
Phenol			50.0	25.2		ug/L		50	22 - 69	1	30
1,2,4,5-Tetrachlorobenzene			50.0	44.3		ug/L		89	35 - 121	6	20
2,4,6-Trichlorophenol			50.0	47.7		ug/L		95	50 - 125	12	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorophenol (Surr)	*57*		*19 - 119*
2,4,6-Tribromophenol (Surr)	*93*		*43 - 140*
Nitrobenzene-d5 (Surr)	*95*		*44 - 120*
Phenol-d5 (Surr)	*42*		*10 - 120*
p-Terphenyl-d14 (Surr)	*80*		*50 - 134*
2-Fluorobiphenyl (Surr)	*80*		*44 - 119*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 410-477554/1-A
Matrix: Water
Analysis Batch: 477639

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 477554

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	0.0060	U	0.020	0.0030	ug/L		02/27/24 15:57	02/28/24 08:36	1
gamma-BHC (Lindane)	0.0040	U	0.020	0.0020	ug/L		02/27/24 15:57	02/28/24 08:36	1
beta-BHC	0.022	U	0.030	0.011	ug/L		02/27/24 15:57	02/28/24 08:36	1
delta-BHC	0.0068	U	0.020	0.0034	ug/L		02/27/24 15:57	02/28/24 08:36	1
Heptachlor	0.0040	U	0.020	0.0020	ug/L		02/27/24 15:57	02/28/24 08:36	1
Aldrin	0.0040	U	0.020	0.0020	ug/L		02/27/24 15:57	02/28/24 08:36	1
Heptachlor epoxide	0.0046	U	0.020	0.0023	ug/L		02/27/24 15:57	02/28/24 08:36	1
trans-Chlordane	0.014	U	0.040	0.0070	ug/L		02/27/24 15:57	02/28/24 08:36	1
cis-Chlordane	0.0060	U	0.020	0.0030	ug/L		02/27/24 15:57	02/28/24 08:36	1
Endosulfan I	0.0086	U	0.020	0.0043	ug/L		02/27/24 15:57	02/28/24 08:36	1
4,4'-DDE	0.020	U	0.030	0.0050	ug/L		02/27/24 15:57	02/28/24 08:36	1

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina,Maui/ TDS Retention Pond

Job ID: 580-136919-1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 410-477554/1-A
Matrix: Water
Analysis Batch: 477639

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 477554

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Dieldrin	0.020	U	0.030	0.0053	ug/L		02/27/24 15:57	02/28/24 08:36	1
Endrin	0.020	U	0.030	0.0081	ug/L		02/27/24 15:57	02/28/24 08:36	1
4,4'-DDD	0.010	U	0.030	0.0050	ug/L		02/27/24 15:57	02/28/24 08:36	1
Endosulfan II	0.030	U	0.040	0.015	ug/L		02/27/24 15:57	02/28/24 08:36	1
4,4'-DDT	0.020	U	0.030	0.0052	ug/L		02/27/24 15:57	02/28/24 08:36	1
Endrin aldehyde	0.040	U	0.10	0.020	ug/L		02/27/24 15:57	02/28/24 08:36	1
Endosulfan sulfate	0.020	U	0.030	0.0058	ug/L		02/27/24 15:57	02/28/24 08:36	1
Methoxychlor	0.060	U	0.11	0.030	ug/L		02/27/24 15:57	02/28/24 08:36	1
Endrin ketone	0.010	U	0.030	0.0050	ug/L		02/27/24 15:57	02/28/24 08:36	1
Toxaphene	0.60	U M	1.0	0.30	ug/L		02/27/24 15:57	02/28/24 08:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*80*		*44 - 124*	*02/27/24 15:57*	*02/28/24 08:36*	*1*
Tetrachloro-m-xylene	*72*		*44 - 124*	*02/27/24 15:57*	*02/28/24 08:36*	*1*

Lab Sample ID: LCS 410-477554/2-A
Matrix: Water
Analysis Batch: 477639

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 477554

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
alpha-BHC	0.100	0.0776		ug/L		78	54 - 138
gamma-BHC (Lindane)	0.100	0.0746		ug/L		75	59 - 134
beta-BHC	0.100	0.0820		ug/L		82	56 - 136
delta-BHC	0.100	0.0721		ug/L		72	52 - 142
Heptachlor	0.100	0.0681		ug/L		68	54 - 130
Aldrin	0.100	0.0592		ug/L		59	45 - 134
Heptachlor epoxide	0.100	0.0877		ug/L		88	61 - 133
trans-Chlordane	0.100	0.0832		ug/L		83	56 - 136
cis-Chlordane	0.100	0.0854		ug/L		85	60 - 129
Endosulfan I	0.100	0.0897		ug/L		90	62 - 126
4,4'-DDE	0.200	0.164		ug/L		82	57 - 135
Dieldrin	0.200	0.176		ug/L		88	60 - 136
Endrin	0.200	0.154		ug/L		77	60 - 138
4,4'-DDD	0.200	0.182		ug/L		91	56 - 143
Endosulfan II	0.200	0.184		ug/L		92	52 - 135
4,4'-DDT	0.200	0.169		ug/L		84	51 - 143
Endrin aldehyde	0.200	0.165		ug/L		83	51 - 132
Endosulfan sulfate	0.200	0.174		ug/L		87	62 - 133
Methoxychlor	1.00	0.843		ug/L		84	54 - 145
Endrin ketone	0.200	0.174		ug/L		87	58 - 134

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*66*		*44 - 124*
Tetrachloro-m-xylene	*58*		*44 - 124*

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCSD 410-477554/3-A
Matrix: Water
Analysis Batch: 477639

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 477554

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
alpha-BHC			0.100	0.0910		ug/L		91	54 - 138	16	30
gamma-BHC (Lindane)			0.100	0.0845		ug/L		84	59 - 134	12	30
beta-BHC			0.100	0.0905		ug/L		90	56 - 136	10	30
delta-BHC			0.100	0.0828		ug/L		83	52 - 142	14	30
Heptachlor			0.100	0.0810		ug/L		81	54 - 130	17	30
Aldrin			0.100	0.0705		ug/L		70	45 - 134	17	30
Heptachlor epoxide			0.100	0.0970		ug/L		97	61 - 133	10	30
trans-Chlordane			0.100	0.0964		ug/L		96	56 - 136	15	30
cis-Chlordane			0.100	0.0964		ug/L		96	60 - 129	12	30
Endosulfan I			0.100	0.102		ug/L		102	62 - 126	12	30
4,4'-DDE			0.200	0.188		ug/L		94	57 - 135	13	30
Dieldrin			0.200	0.199		ug/L		100	60 - 136	12	30
Endrin			0.200	0.207		ug/L		103	60 - 138	9	30
Endrin			0.200	0.174		ug/L		87	60 - 138	12	30
Endosulfan II			0.200	0.193		ug/L		96	52 - 135	4	30
4,4'-DDT			0.200	0.178		ug/L		89	51 - 143	6	30
Endrin aldehyde			0.200	0.178		ug/L		89	51 - 132	7	30
Endosulfan sulfate			0.200	0.178		ug/L		89	62 - 133	2	30
Methoxychlor			1.00	0.952		ug/L		95	54 - 145	12	30
Endrin ketone			0.200	0.195		ug/L		98	58 - 134	12	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*77*		*44 - 124*
Tetrachloro-m-xylene	*66*		*44 - 124*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 410-477556/1-A
Matrix: Water
Analysis Batch: 478252

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 477556

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	0.20	U M	0.50	0.10	ug/L		02/27/24 15:59	02/29/24 10:01	1
PCB-1221	0.20	U	0.50	0.10	ug/L		02/27/24 15:59	02/29/24 10:01	1
PCB-1232	0.20	U M	0.50	0.10	ug/L		02/27/24 15:59	02/29/24 10:01	1
PCB-1242	0.20	U M	0.50	0.10	ug/L		02/27/24 15:59	02/29/24 10:01	1
PCB-1248	0.20	U M	0.50	0.10	ug/L		02/27/24 15:59	02/29/24 10:01	1
PCB-1254	0.20	U	0.50	0.078	ug/L		02/27/24 15:59	02/29/24 10:01	1
PCB-1260	0.20	U	0.50	0.078	ug/L		02/27/24 15:59	02/29/24 10:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*69*		*33 - 137*	*02/27/24 15:59*	*02/29/24 10:01*	*1*
Tetrachloro-m-xylene	*71*		*33 - 137*	*02/27/24 15:59*	*02/29/24 10:01*	*1*
DCB Decachlorobiphenyl (Surr)	*104*		*10 - 148*	*02/27/24 15:59*	*02/29/24 10:01*	*1*
DCB Decachlorobiphenyl (Surr)	*104*		*10 - 148*	*02/27/24 15:59*	*02/29/24 10:01*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: LCS 410-477556/2-A
Matrix: Water
Analysis Batch: 478252

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 477556

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
PCB-1016			5.01	4.48		ug/L		89	46 - 129		
PCB-1260			5.02	4.68		ug/L		93	45 - 134		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*63*		*33 - 137*
Tetrachloro-m-xylene	*65*		*33 - 137*
DCB Decachlorobiphenyl (Surr)	*97*		*10 - 148*
DCB Decachlorobiphenyl (Surr)	*99*		*10 - 148*

Lab Sample ID: LCSD 410-477556/3-A
Matrix: Water
Analysis Batch: 478252

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 477556

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
PCB-1016			5.01	4.33		ug/L		86	46 - 129	3	30
PCB-1260			5.02	4.16		ug/L		83	45 - 134	12	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*59*		*33 - 137*
Tetrachloro-m-xylene	*62*		*33 - 137*
DCB Decachlorobiphenyl (Surr)	*92*		*10 - 148*
DCB Decachlorobiphenyl (Surr)	*90*		*10 - 148*

Method: 8151A DOD - Herbicides (GC)

Lab Sample ID: MB 410-477063/1-A
Matrix: Water
Analysis Batch: 477222

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 477063

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	0.13	U	0.15	0.065	ug/L		02/26/24 15:15	02/27/24 08:34	1
Silvex (2,4,5-TP)	0.044	U	0.050	0.022	ug/L		02/26/24 15:15	02/27/24 08:34	1
2,4-D	0.50	U	0.60	0.25	ug/L		02/26/24 15:15	02/27/24 08:34	1
2,4-DB	1.3	U	1.5	0.63	ug/L		02/26/24 15:15	02/27/24 08:34	1
Dichlorprop	0.32	U	0.50	0.16	ug/L		02/26/24 15:15	02/27/24 08:34	1
Dalapon	11	U	12	5.7	ug/L		02/26/24 15:15	02/27/24 08:34	1
Dicamba	0.54	U	0.55	0.27	ug/L		02/26/24 15:15	02/27/24 08:34	1
MCPP	100	U	200	50	ug/L		02/26/24 15:15	02/27/24 08:34	1
MCPA	100	U	200	50	ug/L		02/26/24 15:15	02/27/24 08:34	1
Pentachlorophenol	0.060	U	0.070	0.027	ug/L		02/26/24 15:15	02/27/24 08:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid (Surr)	*63*		*32 - 138*	*02/26/24 15:15*	*02/27/24 08:34*	*1*
2,4-Dichlorophenylacetic acid (Surr)	*63*		*32 - 138*	*02/26/24 15:15*	*02/27/24 08:34*	*1*

Method: 8151A DOD - Herbicides (GC) (Continued)

Lab Sample ID: LCS 410-477063/2-A
Matrix: Water
Analysis Batch: 477222

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 477063

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
2,4,5-T			0.250	0.151		ug/L		60	42 - 147		
Silvex (2,4,5-TP)			0.250	0.178		ug/L		71	51 - 134		
2,4-D			2.51	1.51		ug/L		60	45 - 152		
2,4-DB			2.51	1.72		ug/L		69	35 - 153		
Dichlorprop			2.50	1.58		ug/L		63	46 - 159		
Dalapon			6.25	11	U	ug/L		62	19 - 139		
Dicamba			0.250	0.54	U	ug/L		62	50 - 141		
MCPP			251	155	J	ug/L		62	33 - 157		
MCPA			496	267		ug/L		54	35 - 144		
Pentachlorophenol			0.199	0.137		ug/L		69	56 - 139		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid (Surr)	*60*		*32 - 138*
2,4-Dichlorophenylacetic acid (Surr)	*66*		*32 - 138*

Lab Sample ID: LCSD 410-477063/3-A
Matrix: Water
Analysis Batch: 477222

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 477063

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,4,5-T			0.250	0.180		ug/L		72	42 - 147	18	30
Silvex (2,4,5-TP)			0.250	0.219		ug/L		88	51 - 134	20	30
2,4-D			2.51	1.86		ug/L		74	45 - 152	21	30
2,4-DB			2.51	2.15		ug/L		86	35 - 153	22	30
Dichlorprop			2.50	1.87		ug/L		75	46 - 159	17	30
Dalapon			6.25	11	U	ug/L		80	19 - 139	25	30
Dicamba			0.250	0.54	U	ug/L		73	50 - 141	16	30
MCPP			251	189	J	ug/L		75	33 - 157	20	30
MCPA			496	320		ug/L		65	35 - 144	18	30
Pentachlorophenol			0.199	0.162		ug/L		81	56 - 139	17	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid (Surr)	*74*		*32 - 138*
2,4-Dichlorophenylacetic acid (Surr)	*81*		*32 - 138*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 410-477915/1-A
Matrix: Water
Analysis Batch: 477942

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 477915

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	2.0	U	5.0	0.87	pg/L		02/28/24 13:50	02/29/24 13:31	1
Total TCDD	2.0	U	5.0	0.87	pg/L		02/28/24 13:50	02/29/24 13:31	1

Method: 8290A - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	111		40 - 135	02/28/24 13:50	02/29/24 13:31	1

Lab Sample ID: LCS 410-477915/2-A
Matrix: Water
Analysis Batch: 477942

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 477915

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
2,3,7,8-TCDD			200	208		pg/L		104	71 - 125		
2,3,7,8-TCDF			200	221		pg/L		110	72 - 138		

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	87		40 - 135

Lab Sample ID: LCSD 410-477915/3-A
Matrix: Water
Analysis Batch: 477942

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 477915

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,3,7,8-TCDD			200	215		pg/L		108	71 - 125	3	20
2,3,7,8-TCDF			200	221		pg/L		111	72 - 138	0	20

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-2,3,7,8-TCDD	96		40 - 135

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 410-477710/1-A
Matrix: Water
Analysis Batch: 478086

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 477710

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.032	U	0.050	0.016	mg/L		02/28/24 08:07	02/28/24 17:53	1
Arsenic	0.032	U	0.050	0.016	mg/L		02/28/24 08:07	02/28/24 17:53	1
Barium	0.0020	U	0.0050	0.0010	mg/L		02/28/24 08:07	02/28/24 17:53	1
Beryllium	0.0020	U	0.0050	0.0010	mg/L		02/28/24 08:07	02/28/24 17:53	1
Chromium	0.0060	U	0.015	0.0030	mg/L		02/28/24 08:07	02/28/24 17:53	1
Cobalt	0.0030	U	0.0050	0.0015	mg/L		02/28/24 08:07	02/28/24 17:53	1
Copper	0.016	U	0.020	0.0080	mg/L		02/28/24 08:07	02/28/24 17:53	1
Lead	0.014	U	0.015	0.0071	mg/L		02/28/24 08:07	02/28/24 17:53	1
Molybdenum	0.0040	U	0.010	0.0020	mg/L		02/28/24 08:07	02/28/24 17:53	1
Nickel	0.0040	U	0.010	0.0021	mg/L		02/28/24 08:07	02/28/24 17:53	1
Selenium	0.032	U	0.050	0.016	mg/L		02/28/24 08:07	02/28/24 17:53	1
Silver	0.0080	U	0.010	0.0040	mg/L		02/28/24 08:07	02/28/24 17:53	1
Thallium	0.024	U	0.030	0.012	mg/L		02/28/24 08:07	02/28/24 17:53	1
Zinc	0.0074	U	0.020	0.0037	mg/L		02/28/24 08:07	02/28/24 17:53	1
Vanadium	0.0038	U	0.010	0.0019	mg/L		02/28/24 08:07	02/28/24 17:53	1

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina,Maui/ TDS Retention Pond

Job ID: 580-136919-1

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: MB 410-477710/1-A
Matrix: Water
Analysis Batch: 478261

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 477710

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.0020	U	0.0050	0.0010	mg/L		02/28/24 08:07	02/29/24 08:12	1

Lab Sample ID: LCS 410-477710/2-A
Matrix: Water
Analysis Batch: 478086

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 477710

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.100	0.109		mg/L		109	88 - 113
Arsenic	0.500	0.542		mg/L		108	87 - 113
Barium	0.500	0.518		mg/L		104	88 - 113
Beryllium	0.0500	0.0524		mg/L		105	89 - 112
Chromium	0.500	0.534		mg/L		107	90 - 113
Cobalt	0.500	0.528		mg/L		106	89 - 114
Copper	0.500	0.516		mg/L		103	86 - 114
Lead	0.0500	0.0524		mg/L		105	86 - 113
Molybdenum	0.0500	0.0529		mg/L		106	89 - 113
Nickel	0.500	0.523		mg/L		105	88 - 113
Selenium	0.100	0.107		mg/L		107	83 - 114
Silver	0.0500	0.0512		mg/L		102	84 - 115
Thallium	0.100	0.101		mg/L		101	85 - 114
Zinc	0.500	0.523		mg/L		105	87 - 115
Vanadium	0.500	0.528		mg/L		106	90 - 111

Lab Sample ID: LCS 410-477710/2-A
Matrix: Water
Analysis Batch: 478261

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 477710

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cadmium	0.0500	0.0516		mg/L		103	88 - 113

Lab Sample ID: MB 410-477437/1-A
Matrix: Water
Analysis Batch: 478086

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 477437

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.32	U	0.50	0.16	mg/L		02/28/24 08:07	02/28/24 19:27	1
Barium	0.020	U	0.050	0.010	mg/L		02/28/24 08:07	02/28/24 19:27	1
Chromium	0.060	U	0.15	0.030	mg/L		02/28/24 08:07	02/28/24 19:27	1
Lead	0.14	U	0.15	0.071	mg/L		02/28/24 08:07	02/28/24 19:27	1
Selenium	0.32	U	0.50	0.16	mg/L		02/28/24 08:07	02/28/24 19:27	1
Silver	0.080	U	0.10	0.040	mg/L		02/28/24 08:07	02/28/24 19:27	1

Lab Sample ID: MB 410-477437/1-A
Matrix: Water
Analysis Batch: 478261

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 477437

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.020	U	0.050	0.010	mg/L		02/28/24 08:07	02/29/24 07:39	1

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: LCS 410-477437/2-A
Matrix: Water
Analysis Batch: 478086

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 477437

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	5.00	5.51		mg/L		110	87 - 113
Barium	5.00	5.17		mg/L		103	88 - 113
Chromium	5.00	5.38		mg/L		108	90 - 113
Lead	0.500	0.528		mg/L		106	86 - 113
Selenium	1.00	1.06		mg/L		106	83 - 114
Silver	0.500	0.512		mg/L		102	84 - 115

Lab Sample ID: LCS 410-477437/2-A
Matrix: Water
Analysis Batch: 478261

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 477437

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cadmium	0.500	0.522		mg/L		104	88 - 113

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 410-477438/1-A
Matrix: Water
Analysis Batch: 478416

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 477438

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.16	U	0.20	0.079	ug/L		02/28/24 22:40	02/29/24 08:53	1

Lab Sample ID: LCS 410-477438/2-A
Matrix: Water
Analysis Batch: 478416

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 477438

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	1.00	0.886		ug/L		89	82 - 119

Lab Sample ID: MB 410-477804/1-A
Matrix: Water
Analysis Batch: 478416

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 477804

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.16	U	0.20	0.079	ug/L		02/28/24 22:40	02/29/24 10:47	1

Lab Sample ID: LCS 410-477804/2-A
Matrix: Water
Analysis Batch: 478416

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 477804

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	1.00	0.874		ug/L		87	82 - 119

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: 580-136919-1 MS
Matrix: Water
Analysis Batch: 478416

Client Sample ID: TDS-RP-20FEB24
Prep Type: Total/NA
Prep Batch: 477804

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury	0.085	J	1.00	1.14		ug/L		105	82 - 119		

Lab Sample ID: 580-136919-1 MSD
Matrix: Water
Analysis Batch: 478416

Client Sample ID: TDS-RP-20FEB24
Prep Type: Total/NA
Prep Batch: 477804

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.085	J	1.00	1.15		ug/L		106	82 - 119	1	20

Lab Sample ID: 580-136919-1 DU
Matrix: Water
Analysis Batch: 478416

Client Sample ID: TDS-RP-20FEB24
Prep Type: Total/NA
Prep Batch: 477804

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Mercury	0.085	J		0.16	U	ug/L				NC	20

Lab Chronicle

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina,Maui/ TDS Retention Pond

Job ID: 580-136919-1

Client Sample ID: TDS-RP-20FEB24

Date Collected: 02/20/24 10:00
Date Received: 02/22/24 09:30

Lab Sample ID: 580-136919-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	477572	K4WN	ELLE	02/28/24 02:10
Total/NA	Prep	3510C			477533	JDJ2	ELLE	02/27/24 15:34
Total/NA	Analysis	8270D		1	477499	P7EB	ELLE	02/27/24 21:21
Total/NA	Prep	3510C			477554	T9CY	ELLE	02/27/24 15:57
Total/NA	Analysis	8081B		10	477639	UAMZ	ELLE	02/28/24 06:30
Total/NA	Prep	3510C			477556	T9CY	ELLE	02/27/24 15:59
Total/NA	Analysis	8082A		1	478252	M6UH	ELLE	02/29/24 10:33
Total/NA	Prep	8151A			477063	QJZ6	ELLE	02/26/24 15:15
Total/NA	Analysis	8151A DOD		1	477222	UAMZ	ELLE	02/27/24 16:34
Total/NA	Prep	8290A			477915	HZ2S	ELLE	02/28/24 13:50
Total/NA	Analysis	8290A		1	477942	UMA9	ELLE	02/29/24 14:21
TCLP	Leach	1311			477359	UNWS	ELLE	02/27/24 09:00 - 02/27/24 09:10 [1]
TCLP	Prep	3005A			477437	NU9R	ELLE	02/28/24 08:07
TCLP	Analysis	6010D		1	478086	T8CQ	ELLE	02/28/24 20:16
TCLP	Leach	1311			477359	UNWS	ELLE	02/27/24 09:00 - 02/27/24 09:10 [1]
TCLP	Prep	3005A			477437	NU9R	ELLE	02/28/24 08:07
TCLP	Analysis	6010D		1	478261	MT26	ELLE	02/29/24 07:51
Total/NA	Prep	3005A			477710	NU9R	ELLE	02/28/24 08:07
Total/NA	Analysis	6010D		1	478086	T8CQ	ELLE	02/28/24 18:31
Total/NA	Prep	3005A			477710	NU9R	ELLE	02/28/24 08:07
Total/NA	Analysis	6010D		1	478261	MT26	ELLE	02/29/24 08:18
TCLP	Leach	1311			477359	UNWS	ELLE	02/27/24 09:00 - 02/27/24 09:10 [1]
TCLP	Prep	7470A			477438	UAMX	ELLE	02/28/24 22:40
TCLP	Analysis	7470A		1	478416	UEFS	ELLE	02/29/24 09:24
Total/NA	Prep	7470A			477804	UAMX	ELLE	02/28/24 22:40
Total/NA	Analysis	7470A		1	478416	UEFS	ELLE	02/29/24 10:53

Client Sample ID: TRIP BLANK

Date Collected: 02/20/24 00:00
Date Received: 02/22/24 09:30

Lab Sample ID: 580-136919-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	477572	K4WN	ELLE	02/27/24 23:35

[1] This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina,Maui/ TDS Retention Pond

Job ID: 580-136919-1

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-30-24
A2LA	ISO/IEC 17025	0001.01	11-30-24
Alabama	State	43200	01-31-25
Alaska	State	PA00009	06-30-24
Arizona	State	AZ0780	03-12-24
Arkansas DEQ	State	88-00660	08-09-24
California	State	2792	01-31-24 *
Colorado	State	PA00009	06-30-24
Connecticut	State	PH-0746	06-30-25
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-25
Florida	NELAP	E87997	06-30-24
Georgia (DW)	State	C048	01-31-24 *
Hawaii	State	N/A	01-31-25
Illinois	NELAP	200027	01-31-25
Iowa	State	361	03-01-24
Kansas	NELAP	E-10151	10-31-24
Kentucky (DW)	State	KY90088	12-31-24
Kentucky (UST)	State	0001.01	11-30-24
Kentucky (WW)	State	KY90088	12-31-23 *
Louisiana (All)	NELAP	02055	06-30-24
Maine	State	2019012	03-12-25
Maryland	State	100	06-30-24
Massachusetts	State	M-PA009	06-30-24
Michigan	State	9930	01-31-25
Minnesota	NELAP	042-999-487	12-31-24
Mississippi	State	023	01-31-25
Missouri	State	450	01-31-25
Montana (DW)	State	0098	01-01-25
Nebraska	State	NE-OS-32-17	01-31-25
New Hampshire	NELAP	2730	01-10-25
New Jersey	NELAP	PA011	06-30-24
New York	NELAP	10670	04-01-24
North Carolina (DW)	State	42705	07-31-24
North Carolina (WW/SW)	State	521	12-31-24
Oklahoma	NELAP	9804	08-31-24
Oregon	NELAP	PA200001	09-11-24
Pennsylvania	NELAP	36-00037	01-28-25
Quebec Ministry of Environment and Fight against Climate Change	PALA	507	09-16-24
Rhode Island	State	LAO00338	12-30-24
South Carolina	State	89002	01-31-24 *
Tennessee	State	02838	01-31-25
Texas	NELAP	T104704194-23-46	08-31-24
USDA	US Federal Programs	525-22-298-19481	10-25-25
Vermont	State	VT - 36037	10-28-24
Virginia	NELAP	460182	06-14-25
Washington	State	C457	04-11-24
West Virginia (DW)	State	9906 C	01-31-25
West Virginia DEP	State	055	07-31-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina,Maui/ TDS Retention Pond

Job ID: 580-136919-1

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wyoming (UST)	A2LA	0001.01	11-30-24

Sample Summary

Client: Environmental Chemical Corp.
Job ID: 580-136919-1
Project/Site: 2023 Maui Fires - Lahaina,Maui/ TDS Retention Pond

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-136919-1	TDS-RP-20FEB24	Water	02/20/24 10:00	02/22/24 09:30
580-136919-2	TRIP BLANK	Water	02/20/24 00:00	02/22/24 09:30

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

Client Information	Sampler: IVANA DANIELS	Lab PM: Walker, Marie E	Carrier Tracking No(s):
Client Contact: Kaiulani Watson ; Kane McNeill	Phone: 832.562.5813	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: HI
Company: Environmental Chemical Corp.	PWSID:		
Address: 2969 Mapunapuna Place Suite 220	Due Date Requested:		
City: Honolulu	TAT Requested (days): 5-Day TAT		
State, Zip: HI, 96819	Compliance Project: Δ Yes Δ No		
Phone: 508-229-2270(Tel)	PO #: Purchase Order Requested 356195		
Email: kwatson@ecc.net ; Kmcneill@ECC.NET	WO #:		
Project Name: 2023 Maui Fires - Lahaina	Project #: Project No. 4344.411		
Site: TDS RETENTION POND	SSOW#:		

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	VOLATILES	HERBICIDES	SVOCs	Organochlorine Pesticides	Polychlorinated Biphenyls	DIOXINS / FURANS	Metals (Total) + TCLP	Mercury + TCLP
			Preservation Code:											
TDS-RP-20FEB24	02/20/24	1000	G	W			X	X	X	X	X	X	X	X
TRIP BLANK	02/20/24			W			X							

580-13691

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples ar
☐ Return To Client ☐ Disposal By Lab

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by:	Date/Time: 2-21-2024 0800	Company: Tetra Tech	Received by:

ECC

Therm. ID: 43 Cor: 0.8 ° Une: 1.0 °
Cooler Dsc: LP FedEx: PO
Packing: Bulb UPS:
Cust. Seal: Yes No Lab Cour:
Blue Ice, Wet, Dry, None Other:

1/e

Therm. ID: 12 Cor: 25.0 ° Une: 4.4 °
Cooler Dsc: LP FedEx: PO
Packing: Bulb UPS:
Cust. Seal: Yes No Lab Cour:
Blue Ice, Wet, Dry, None Other:

3/e

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Walker, Marie E	Carrier Tracking No(s):	COC No: 580-130356.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: Hawaii	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Environm		Accreditations Required (See note): Dept. of Defense ELAP - ANAB		Job #: 580-136919-1
Address: 2425 New Holland Pike, ,	Due Date Requested: 2/28/2024			
City: Lancaster	TAT Requested (days):			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #:			
Email:	WO #:			
Project Name: 2023 Maui Fires - Lahaina, Maui	Project #: 58020087			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8151A_DOD5/8151A_AP Standard Herbicides	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
TDS-RP-20FEB24 (580-136919-1)	2/20/24	10:00 Hawaiian		Water			X	2	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		2/23/24 1545	EETN			
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 2/24/24 09:30	Company BCLST

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: Raw 1.7 - COR 1.6

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Walker, Marie E	Carrier Tracking No(s):	COC No: 580-130436.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: Hawaii	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Environm		Accreditations Required (See note): Dept. of Defense ELAP - ANAB		Job #: 580-136919-1
Address: 2425 New Holland Pike, ,	Due Date Requested: 2/28/2024			
City: Lancaster	TAT Requested (days):			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #:			
Email:	WO #:			
Project Name: 2023 Maui Fires - Lahaina,Maui/ TDS Retention Pond	Project #: 58020087			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260D_DOD5/5030C (MOD) VOCs - Client Custom List + TICs	8270D_DOD5/3510C_LVI SVOCs, Client Custom List + TICs	8081B_DOD5/3510C_LVI (MOD) Pesticides, standard list	8082A_DOD5/3510C_LVI (MOD) PCBs, standard list	6010D_DOD5/1311T_M TCLP Metals	7470A_DOD5/1311T_Hg Mercury	6010D_DOD5/3005A_TOT CAM 17 Title 22 List	7470A_DOD5/7470A_Prep Mercury						Total Number of containers	Special Instructions/Note:
				Preservation Code:																	
TDS-RP-20FEB24 (580-136919-1)	2/20/24	10:00 Hawaiian		Water			X	X	X	X	X	X	X	X						13	
TRIP BLANK (580-136919-2)	2/20/24	Hawaiian		Water			X													1	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	2/26/24 1400	FEDEX			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
			[signature]	2/27/24 0820	FEDEX

Custody Seals Intact: ☒ Yes ☐ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 12-0.1-0.2 C: 0.4

HA

Login Sample Receipt Checklist

Client: Environmental Chemical Corp.

Job Number: 580-136919-1

Login Number: 136919
List Number: 1
Creator: Groves, Elizabeth

List Source: Eurofins Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Environmental Chemical Corp. Job Number: 580-136919-1

Login Number: 136919 **List Source: Eurofins Lancaster Laboratories Environment Testing, LLC**
List Number: 2
Creator: Burkholder, Conrad

Question	Answer	Comment
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	

Login Sample Receipt Checklist

Client: Environmental Chemical Corp. Job Number: 580-136919-1

Login Number: 136919 **List Source: Eurofins Lancaster Laboratories Environment Testing, LLC**
List Number: 3 **List Creation: 02/27/24 08:43 AM**
Creator: Arroyo, Haley

Question	Answer	Comment
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	

Isotope Dilution Summary

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina,Maui/ TDS Retention Pond

Job ID: 580-136919-1

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (40-135)							
580-136919-1	TDS-RP-20FEB24	64							
LCS 410-477915/2-A	Lab Control Sample	87							
LCSD 410-477915/3-A	Lab Control Sample Dup	96							
MB 410-477915/1-A	Method Blank	111							

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization

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3/5/2024 9:19:34 PM

Authorized for release by
Marie Walker, Senior Project Manager
M.Elaine.Walker@et.eurofinsus.com
(253)248-4972

Table of Contents

Job Narrative
580-136657-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Receipt
The samples were received on 2/15/2024 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.2°C and 5.0°C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

Method 8260D - Volatile Organic Compounds (GC/MS)
Samples TDS-RP-13Feb24 (580-136657-1) and Trip Blank (580-136657-2) were analyzed for Volatile Organic Compounds (GC/MS). The samples were leached and prepared on 2/19/2024 and analyzed on 2/19/2024, 2/22/2024 and 2/23/2024.

The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for analytical batch 580-452285 recovered outside control limits for the following analytes: Acrolein.

Method 8151A DOD - Herbicides (GC)
Sample TDS-RP-13Feb24 (580-136657-1) was analyzed for Herbicides (GC). The sample was prepared on 2/20/2024 and analyzed on 2/21/2024.

Method 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography
Sample TDS-RP-13Feb24 (580-136657-1) was analyzed for Polychlorinated Biphenyls (PCBs) by Gas Chromatography. The sample was prepared on 2/16/2024 and analyzed on 2/22/2024.

The following samples required a TBA clean-up to reduce matrix interferences caused by sulfur TBA_00036: TDS-RP-13Feb24 (580-136657-1), (LCS 580-451505/4-A), (LCSD 580-451505/5-A) and (MB 580-451505/1-A).

Method 8290A - Dioxins and Furans (HRGC/HRMS)
Sample TDS-RP-13Feb24 (580-136657-1) was analyzed for Dioxins and Furans (HRGC/HRMS). The sample was prepared on 2/20/2024 and analyzed on 2/21/2024.

Method 6010D - Metals (ICP) - TCLP
Sample TDS-RP-13Feb24 (580-136657-1) was analyzed for Metals (ICP) - TCLP. The sample was leached and prepared on 2/19/2024 and analyzed on 2/19/2024 and 2/20/2024.

Method 6020B - Metals (ICP/MS) - Total Recoverable
Sample TDS-RP-13Feb24 (580-136657-1) was analyzed for Metals (ICP/MS) - Total Recoverable. The sample was prepared on 2/19/2024 and analyzed on 2/21/2024.

Method 7470A - Mercury (CVAA)
Sample TDS-RP-13Feb24 (580-136657-1) was analyzed for Mercury (CVAA). The sample was prepared on 2/19/2024 and analyzed on 2/20/2024.

Method 7470A - Mercury (CVAA) - TCLP

Job ID: 580-136657-1 (Continued) Eurofins Seattle

Sample TDS-RP-13Feb24 (580-136657-1) was analyzed for Mercury (CVAA) - TCLP. The sample was leached and prepared on 2/19/2024 and analyzed on 2/20/2024.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

GC/MS VOA TICs

Qualifier	Qualifier Description
N	Nontarget analyte: The analyte is a tentatively identified compound (using mass spectroscopy).

GC Semi VOA

Qualifier	Qualifier Description
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

Dioxin

Qualifier	Qualifier Description
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample ID: TDS-RP-13Feb24

Date Collected: 02/13/24 10:00
Date Received: 02/15/24 09:40

Lab Sample ID: 580-136657-1

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.50	U	1.0	0.18	ug/L			02/22/24 08:34	1
1,1,1-Trichloroethane	0.80	U	1.0	0.39	ug/L			02/22/24 08:34	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.52	ug/L			02/22/24 08:34	1
1,1,2-Trichloroethane	0.50	U	1.0	0.24	ug/L			02/22/24 08:34	1
1,1-Dichloroethene	0.50	U	1.0	0.28	ug/L			02/22/24 08:34	1
1,2-Dichlorobenzene	0.80	U	1.0	0.46	ug/L			02/22/24 08:34	1
1,2-Dichloroethane	0.80	U M	1.0	0.42	ug/L			02/22/24 08:34	1
1,2-Dichloropropane	0.50	U	1.0	0.18	ug/L			02/22/24 08:34	1
1,3-Dichlorobenzene	0.80	U	1.0	0.48	ug/L			02/22/24 08:34	1
1,3-Dichloropropane	0.80	U	1.0	0.35	ug/L			02/22/24 08:34	1
1,4-Dichlorobenzene	0.80	U	1.0	0.46	ug/L			02/22/24 08:34	1
2,2-Dichloropropane	0.50	U	1.0	0.32	ug/L			02/22/24 08:34	1
Acrylonitrile	8.0	U	15	3.6	ug/L			02/22/24 08:34	1
Benzene	0.50	U	1.0	0.24	ug/L			02/22/24 08:34	1
Carbon tetrachloride	0.80	U	1.0	0.30	ug/L			02/22/24 08:34	1
Chloroethane	0.80	U	1.0	0.35	ug/L			02/22/24 08:34	1
Chloroform	0.50	U	1.0	0.26	ug/L			02/22/24 08:34	1
Chloromethane	0.50	U	1.0	0.28	ug/L			02/22/24 08:34	1
Ethylbenzene	0.80	U	1.0	0.50	ug/L			02/22/24 08:34	1
Tetrachloroethene	0.80	U	1.0	0.41	ug/L			02/22/24 08:34	1
Toluene	0.80	U	1.0	0.39	ug/L			02/22/24 08:34	1
trans-1,2-Dichloroethene	0.80	U	1.0	0.39	ug/L			02/22/24 08:34	1
trans-1,3-Dichloropropene	0.80	U	1.0	0.41	ug/L			02/22/24 08:34	1
Trichloroethene	0.50	U	1.0	0.26	ug/L			02/22/24 08:34	1
Vinyl chloride	0.50	U	1.0	0.22	ug/L			02/22/24 08:34	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*		*02/22/24 08:34*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*81 - 118*		*02/22/24 08:34*	*1*
4-Bromofluorobenzene (Surr)	*88*		*85 - 114*		*02/22/24 08:34*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 119*		*02/22/24 08:34*	*1*
Toluene-d8 (Surr)	*104*		*89 - 112*		*02/22/24 08:34*	*1*

Method: SW846 8260D - Volatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Acrolein	12	U Q	15	3.5	ug/L			02/23/24 20:08	1
Hexachlorobutadiene	2.0	U	3.0	0.79	ug/L			02/23/24 20:08	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*19*	*N*	*ug/L*		*1.52*	*N/A*		*02/23/24 20:08*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*81 - 118*		*02/23/24 20:08*	*1*
4-Bromofluorobenzene (Surr)	*98*		*85 - 114*		*02/23/24 20:08*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 119*		*02/23/24 20:08*	*1*
Toluene-d8 (Surr)	*99*		*89 - 112*		*02/23/24 20:08*	*1*

Client Sample ID: TDS-RP-13Feb24

Date Collected: 02/13/24 10:00
Date Received: 02/15/24 09:40

Lab Sample ID: 580-136657-1

Matrix: Water

Method: SW846 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	0.16	U	0.45	0.062	ug/L		02/16/24 08:37	02/22/24 13:24	1
PCB-1221	0.16	U	0.45	0.076	ug/L		02/16/24 08:37	02/22/24 13:24	1
PCB-1232	0.16	U	0.45	0.064	ug/L		02/16/24 08:37	02/22/24 13:24	1
PCB-1242	0.16	U	0.45	0.060	ug/L		02/16/24 08:37	02/22/24 13:24	1
PCB-1248	0.16	U	0.45	0.053	ug/L		02/16/24 08:37	02/22/24 13:24	1
PCB-1254	0.16	U	0.45	0.076	ug/L		02/16/24 08:37	02/22/24 13:24	1
PCB-1260	0.16	U	0.45	0.062	ug/L		02/16/24 08:37	02/22/24 13:24	1
Polychlorinated biphenyls, Total	0.16	U	0.45	0.076	ug/L		02/16/24 08:37	02/22/24 13:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*50*		*26 - 124*	*02/16/24 08:37*	*02/22/24 13:24*	*1*
DCB Decachlorobiphenyl	*74*	*M*	*38 - 121*	*02/16/24 08:37*	*02/22/24 13:24*	*1*

Method: SW846 8151A DOD - Herbicides (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	0.12	U	0.14	0.062	ug/L		02/20/24 15:13	02/21/24 06:37	1
Silvex (2,4,5-TP)	0.042	U	0.048	0.021	ug/L		02/20/24 15:13	02/21/24 06:37	1
2,4-D	0.48	U	0.57	0.24	ug/L		02/20/24 15:13	02/21/24 06:37	1
2,4-DB	1.2	U	1.4	0.60	ug/L		02/20/24 15:13	02/21/24 06:37	1
Dichlorprop	0.30	U	0.48	0.15	ug/L		02/20/24 15:13	02/21/24 06:37	1
Dalapon	11	U	12	5.4	ug/L		02/20/24 15:13	02/21/24 06:37	1
Dicamba	0.51	U	0.52	0.26	ug/L		02/20/24 15:13	02/21/24 06:37	1
MCPP	95	U	190	48	ug/L		02/20/24 15:13	02/21/24 06:37	1
MCPA	95	U	190	48	ug/L		02/20/24 15:13	02/21/24 06:37	1
Pentachlorophenol	0.057	U	0.067	0.026	ug/L		02/20/24 15:13	02/21/24 06:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid (Surr)	*132*		*32 - 138*	*02/20/24 15:13*	*02/21/24 06:37*	*1*
2,4-Dichlorophenylacetic acid (Surr)	*104*		*32 - 138*	*02/20/24 15:13*	*02/21/24 06:37*	*1*

Method: SW846 8290A - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	1.9	U M	4.8	0.83	pg/L		02/20/24 00:32	02/21/24 02:46	1
Total TCDD	1.9	U	4.8	0.83	pg/L		02/20/24 00:32	02/21/24 02:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*68*		*40 - 135*	*02/20/24 00:32*	*02/21/24 02:46*	*1*

Method: SW846 6010D - Metals (ICP) - TCLP

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.029	U	0.060	0.0072	mg/L		02/19/24 10:31	02/20/24 20:10	1
Barium	**0.011**	**J**	0.020	0.0010	mg/L		02/19/24 10:31	02/19/24 21:52	1
Cadmium	0.0016	U	0.020	0.00090	mg/L		02/19/24 10:31	02/19/24 21:52	1
Chromium	0.0052	U	0.025	0.0027	mg/L		02/19/24 10:31	02/19/24 21:52	1
Lead	0.011	U	0.030	0.0027	mg/L		02/19/24 10:31	02/19/24 21:52	1
Selenium	0.035	U	0.10	0.0087	mg/L		02/19/24 10:31	02/19/24 21:52	1
Silver	0.034	U	0.050	0.0085	mg/L		02/19/24 10:31	02/19/24 21:52	1

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0027**	**J**	0.0050	0.0010	mg/L		02/19/24 17:08	02/21/24 16:24	5
Antimony	**0.0011**	**J**	0.0040	0.00063	mg/L		02/19/24 17:08	02/21/24 16:24	5

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136657-1

Client Sample ID: TDS-RP-13Feb24
Date Collected: 02/13/24 10:00
Date Received: 02/15/24 09:40

Lab Sample ID: 580-136657-1
Matrix: Water

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.025**		0.0060	0.0011	mg/L		02/19/24 17:08	02/21/24 16:24	5
Beryllium	0.0015	U	0.0020	0.00055	mg/L		02/19/24 17:08	02/21/24 16:24	5
Cadmium	0.00035	U	0.0020	0.00019	mg/L		02/19/24 17:08	02/21/24 16:24	5
Chromium	**0.0075**		0.0040	0.00087	mg/L		02/19/24 17:08	02/21/24 16:24	5
Cobalt	**0.0019**	**J**	0.0020	0.00020	mg/L		02/19/24 17:08	02/21/24 16:24	5
Copper	**0.0047**	**J**	0.010	0.0030	mg/L		02/19/24 17:08	02/21/24 16:24	5
Lead	**0.00042**	**J**	0.0020	0.00020	mg/L		02/19/24 17:08	02/21/24 16:24	5
Molybdenum	**0.0024**	**J**	0.0040	0.00040	mg/L		02/19/24 17:08	02/21/24 16:24	5
Nickel	**0.0063**	**J**	0.015	0.00063	mg/L		02/19/24 17:08	02/21/24 16:24	5
Selenium	0.025	U	0.040	0.010	mg/L		02/19/24 17:08	02/21/24 16:24	5
Silver	0.00080	U	0.0020	0.00013	mg/L		02/19/24 17:08	02/21/24 16:24	5
Thallium	0.00040	U	0.0050	0.00015	mg/L		02/19/24 17:08	02/21/24 16:24	5
Vanadium	**0.013**	**J**	0.020	0.0023	mg/L		02/19/24 17:08	02/21/24 16:24	5
Zinc	**0.0052**	**J**	0.035	0.0046	mg/L		02/19/24 17:08	02/21/24 16:24	5

Method: SW846 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00020	U	0.00030	0.00015	mg/L		02/19/24 11:31	02/20/24 13:36	1

Method: SW846 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0020	U	0.0030	0.0015	mg/L		02/19/24 10:34	02/20/24 14:11	1

Client Sample ID: Trip Blank

Date Collected: 02/13/24 00:00
Date Received: 02/15/24 09:40

Lab Sample ID: 580-136657-2

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.50	U	1.0	0.18	ug/L			02/22/24 07:51	1
1,1,1-Trichloroethane	0.80	U	1.0	0.39	ug/L			02/22/24 07:51	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.52	ug/L			02/22/24 07:51	1
1,1,2-Trichloroethane	0.50	U	1.0	0.24	ug/L			02/22/24 07:51	1
1,1-Dichloroethene	0.50	U	1.0	0.28	ug/L			02/22/24 07:51	1
1,2-Dichlorobenzene	0.80	U	1.0	0.46	ug/L			02/22/24 07:51	1
1,2-Dichloroethane	0.80	U M	1.0	0.42	ug/L			02/22/24 07:51	1
1,2-Dichloropropane	0.50	U	1.0	0.18	ug/L			02/22/24 07:51	1
1,3-Dichlorobenzene	0.80	U	1.0	0.48	ug/L			02/22/24 07:51	1
1,3-Dichloropropane	0.80	U	1.0	0.35	ug/L			02/22/24 07:51	1
1,4-Dichlorobenzene	0.80	U	1.0	0.46	ug/L			02/22/24 07:51	1
2,2-Dichloropropane	0.50	U	1.0	0.32	ug/L			02/22/24 07:51	1
Acrylonitrile	8.0	U	15	3.6	ug/L			02/22/24 07:51	1
Benzene	0.50	U	1.0	0.24	ug/L			02/22/24 07:51	1
Carbon tetrachloride	0.80	U	1.0	0.30	ug/L			02/22/24 07:51	1
Chloroethane	0.80	U	1.0	0.35	ug/L			02/22/24 07:51	1
Chloroform	0.50	U	1.0	0.26	ug/L			02/22/24 07:51	1
Chloromethane	0.50	U	1.0	0.28	ug/L			02/22/24 07:51	1
Ethylbenzene	0.80	U	1.0	0.50	ug/L			02/22/24 07:51	1
Tetrachloroethene	0.80	U	1.0	0.41	ug/L			02/22/24 07:51	1
Toluene	0.80	U	1.0	0.39	ug/L			02/22/24 07:51	1
trans-1,2-Dichloroethene	0.80	U	1.0	0.39	ug/L			02/22/24 07:51	1
trans-1,3-Dichloropropene	0.80	U	1.0	0.41	ug/L			02/22/24 07:51	1
Trichloroethene	0.50	U	1.0	0.26	ug/L			02/22/24 07:51	1
Vinyl chloride	0.50	U	1.0	0.22	ug/L			02/22/24 07:51	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*		*02/22/24 07:51*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*81 - 118*		*02/22/24 07:51*	*1*
4-Bromofluorobenzene (Surr)	*96*		*85 - 114*		*02/22/24 07:51*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 119*		*02/22/24 07:51*	*1*
Toluene-d8 (Surr)	*99*		*89 - 112*		*02/22/24 07:51*	*1*

Method: SW846 8260D - Volatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Acrolein	12	U M Q	15	3.5	ug/L			02/23/24 17:42	1
Hexachlorobutadiene	2.0	U	3.0	0.79	ug/L			02/23/24 17:42	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*		*02/23/24 17:42*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*81 - 118*		*02/23/24 17:42*	*1*
4-Bromofluorobenzene (Surr)	*100*		*85 - 114*		*02/23/24 17:42*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 119*		*02/23/24 17:42*	*1*
Toluene-d8 (Surr)	*97*		*89 - 112*		*02/23/24 17:42*	*1*

Method: 8260D - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-452065/11
Matrix: Water
Analysis Batch: 452065

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	0.50	U	1.0	0.18	ug/L			02/22/24 06:23	1
1,1,1-Trichloroethane	0.80	U	1.0	0.39	ug/L			02/22/24 06:23	1
1,1,2,2-Tetrachloroethane	0.80	U	1.0	0.52	ug/L			02/22/24 06:23	1
1,1,2-Trichloroethane	0.50	U	1.0	0.24	ug/L			02/22/24 06:23	1
1,1-Dichloroethene	0.50	U	1.0	0.28	ug/L			02/22/24 06:23	1
1,2-Dichlorobenzene	0.80	U M	1.0	0.46	ug/L			02/22/24 06:23	1
1,2-Dichloroethane	0.80	U	1.0	0.42	ug/L			02/22/24 06:23	1
1,2-Dichloropropane	0.50	U	1.0	0.18	ug/L			02/22/24 06:23	1
1,3-Dichlorobenzene	0.80	U	1.0	0.48	ug/L			02/22/24 06:23	1
1,3-Dichloropropane	0.80	U	1.0	0.35	ug/L			02/22/24 06:23	1
1,4-Dichlorobenzene	0.80	U M	1.0	0.46	ug/L			02/22/24 06:23	1
2,2-Dichloropropane	0.50	U	1.0	0.32	ug/L			02/22/24 06:23	1
Acrylonitrile	8.0	U	15	3.6	ug/L			02/22/24 06:23	1
Benzene	0.50	U	1.0	0.24	ug/L			02/22/24 06:23	1
Carbon tetrachloride	0.80	U	1.0	0.30	ug/L			02/22/24 06:23	1
Chloroethane	0.80	U	1.0	0.35	ug/L			02/22/24 06:23	1
Chloroform	0.50	U	1.0	0.26	ug/L			02/22/24 06:23	1
Chloromethane	0.50	U	1.0	0.28	ug/L			02/22/24 06:23	1
Ethylbenzene	0.80	U	1.0	0.50	ug/L			02/22/24 06:23	1
Tetrachloroethene	0.80	U	1.0	0.41	ug/L			02/22/24 06:23	1
Toluene	0.80	U	1.0	0.39	ug/L			02/22/24 06:23	1
trans-1,2-Dichloroethene	0.80	U	1.0	0.39	ug/L			02/22/24 06:23	1
trans-1,3-Dichloropropene	0.80	U	1.0	0.41	ug/L			02/22/24 06:23	1
Trichloroethene	0.50	U	1.0	0.26	ug/L			02/22/24 06:23	1
Vinyl chloride	0.50	U	1.0	0.22	ug/L			02/22/24 06:23	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*		*02/22/24 06:23*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*81 - 118*		*02/22/24 06:23*	*1*
4-Bromofluorobenzene (Surr)	*93*		*85 - 114*		*02/22/24 06:23*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 119*		*02/22/24 06:23*	*1*
Toluene-d8 (Surr)	*103*		*89 - 112*		*02/22/24 06:23*	*1*

Lab Sample ID: LCS 580-452065/6
Matrix: Water
Analysis Batch: 452065

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	10.0	10.4		ug/L		104	78 - 124
1,1,1-Trichloroethane	10.0	9.93		ug/L		99	74 - 131
1,1,2,2-Tetrachloroethane	10.0	11.2		ug/L		112	71 - 121
1,1,2-Trichloroethane	10.0	10.3		ug/L		103	80 - 119
1,1-Dichloroethene	10.0	10.1		ug/L		101	71 - 131
1,2-Dichlorobenzene	10.0	10.8		ug/L		108	80 - 119
1,2-Dichloroethane	10.0	10.3		ug/L		103	73 - 128
1,2-Dichloropropane	10.0	10.7		ug/L		107	78 - 122

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-452065/6
Matrix: Water
Analysis Batch: 452065

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,3-Dichlorobenzene			10.0	10.6		ug/L		106	80 - 119		
1,3-Dichloropropane			10.0	10.9		ug/L		109	80 - 119		
1,4-Dichlorobenzene			10.0	10.3		ug/L		103	79 - 118		
2,2-Dichloropropane			10.0	9.03		ug/L		90	60 - 139		
Acrylonitrile			100	105		ug/L		105	63 - 135		
Benzene			10.0	10.2		ug/L		102	79 - 120		
Carbon tetrachloride			10.0	9.72		ug/L		97	72 - 136		
Chloroethane			10.0	11.1		ug/L		111	60 - 138		
Chloroform			10.0	9.80		ug/L		98	79 - 124		
Chloromethane			10.0	8.79		ug/L		88	50 - 139		
Ethylbenzene			10.0	10.3		ug/L		103	79 - 121		
Tetrachloroethene			10.0	10.6		ug/L		106	74 - 129		
Toluene			10.0	10.5		ug/L		105	80 - 121		
trans-1,2-Dichloroethene			10.0	9.67		ug/L		97	75 - 124		
trans-1,3-Dichloropropene			10.0	9.40		ug/L		94	73 - 127		
Trichloroethene			10.0	9.32		ug/L		93	79 - 123		
Vinyl chloride			10.0	9.21		ug/L		92	58 - 137		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*81 - 118*
4-Bromofluorobenzene (Surr)	*90*		*85 - 114*
Dibromofluoromethane (Surr)	*100*		*80 - 119*
Toluene-d8 (Surr)	*105*		*89 - 112*

Lab Sample ID: LCSD 580-452065/7
Matrix: Water
Analysis Batch: 452065

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane			10.0	10.1		ug/L		101	78 - 124	3	20
1,1,1-Trichloroethane			10.0	9.78		ug/L		98	74 - 131	1	20
1,1,2,2-Tetrachloroethane			10.0	11.0		ug/L		110	71 - 121	2	20
1,1,2-Trichloroethane			10.0	9.91		ug/L		99	80 - 119	4	20
1,1-Dichloroethene			10.0	10.2		ug/L		102	71 - 131	1	20
1,2-Dichlorobenzene			10.0	10.7		ug/L		107	80 - 119	2	20
1,2-Dichloroethane			10.0	9.87		ug/L		99	73 - 128	4	20
1,2-Dichloropropane			10.0	10.8		ug/L		108	78 - 122	1	20
1,3-Dichlorobenzene			10.0	10.2		ug/L		102	80 - 119	3	20
1,3-Dichloropropane			10.0	10.9		ug/L		109	80 - 119	0	20
1,4-Dichlorobenzene			10.0	10.5		ug/L		105	79 - 118	1	20
2,2-Dichloropropane			10.0	9.11		ug/L		91	60 - 139	1	20
Acrylonitrile			100	110		ug/L		110	63 - 135	4	20
Benzene			10.0	10.2		ug/L		102	79 - 120	0	20
Carbon tetrachloride			10.0	9.78		ug/L		98	72 - 136	1	20
Chloroethane			10.0	11.5		ug/L		115	60 - 138	4	20
Chloroform			10.0	10.0		ug/L		100	79 - 124	2	20
Chloromethane			10.0	8.87		ug/L		89	50 - 139	1	20
Ethylbenzene			10.0	10.4		ug/L		104	79 - 121	1	20

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-452065/7
Matrix: Water
Analysis Batch: 452065

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Tetrachloroethene			10.0	10.3		ug/L		103	74 - 129	3	20
Toluene			10.0	10.4		ug/L		104	80 - 121	1	20
trans-1,2-Dichloroethene			10.0	10.0		ug/L		100	75 - 124	4	20
trans-1,3-Dichloropropene			10.0	9.50		ug/L		95	73 - 127	1	20
Trichloroethene			10.0	9.74		ug/L		97	79 - 123	4	20
Vinyl chloride			10.0	9.14		ug/L		91	58 - 137	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*81 - 118*
4-Bromofluorobenzene (Surr)	*90*		*85 - 114*
Dibromofluoromethane (Surr)	*102*		*80 - 119*
Toluene-d8 (Surr)	*104*		*89 - 112*

Lab Sample ID: MB 580-452285/7
Matrix: Water
Analysis Batch: 452285

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Acrolein	12	U	15	3.5	ug/L			02/23/24 17:18	1
Hexachlorobutadiene	2.0	U	3.0	0.79	ug/L			02/23/24 17:18	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/L*			*N/A*		*02/23/24 17:18*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*81 - 118*		*02/23/24 17:18*	*1*
4-Bromofluorobenzene (Surr)	*101*		*85 - 114*		*02/23/24 17:18*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 119*		*02/23/24 17:18*	*1*
Toluene-d8 (Surr)	*97*		*89 - 112*		*02/23/24 17:18*	*1*

Lab Sample ID: LCS 580-452285/4
Matrix: Water
Analysis Batch: 452285

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acrolein			60.0	75.7	M	ug/L		126	39 - 155
Hexachlorobutadiene			10.0	10.1		ug/L		101	66 - 134

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*81 - 118*
4-Bromofluorobenzene (Surr)	*103*		*85 - 114*
Dibromofluoromethane (Surr)	*103*		*80 - 119*
Toluene-d8 (Surr)	*98*		*89 - 112*

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-452285/5
Matrix: Water
Analysis Batch: 452285

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acrolein			60.0	60.7	M Q	ug/L		101	39 - 155	22	20
Hexachlorobutadiene			10.0	11.1		ug/L		111	66 - 134	9	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*81 - 118*
4-Bromofluorobenzene (Surr)	*105*		*85 - 114*
Dibromofluoromethane (Surr)	*104*		*80 - 119*
Toluene-d8 (Surr)	*99*		*89 - 112*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 580-451505/1-A
Matrix: Water
Analysis Batch: 452120

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 451505

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	0.16	U	0.45	0.061	ug/L		02/16/24 08:37	02/22/24 12:14	1
PCB-1221	0.16	U	0.45	0.075	ug/L		02/16/24 08:37	02/22/24 12:14	1
PCB-1232	0.16	U	0.45	0.063	ug/L		02/16/24 08:37	02/22/24 12:14	1
PCB-1242	0.16	U	0.45	0.059	ug/L		02/16/24 08:37	02/22/24 12:14	1
PCB-1248	0.16	U	0.45	0.052	ug/L		02/16/24 08:37	02/22/24 12:14	1
PCB-1254	0.16	U	0.45	0.075	ug/L		02/16/24 08:37	02/22/24 12:14	1
PCB-1260	0.16	U	0.45	0.061	ug/L		02/16/24 08:37	02/22/24 12:14	1
Polychlorinated biphenyls, Total	0.16	U	0.45	0.075	ug/L		02/16/24 08:37	02/22/24 12:14	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*66*		*26 - 124*	*02/16/24 08:37*	*02/22/24 12:14*	*1*
DCB Decachlorobiphenyl	*85*		*38 - 121*	*02/16/24 08:37*	*02/22/24 12:14*	*1*

Lab Sample ID: LCS 580-451505/4-A
Matrix: Water
Analysis Batch: 452120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 451505

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
PCB-1016			1.00	0.742	M	ug/L		74	46 - 129
PCB-1260			1.00	0.771	M	ug/L		77	45 - 134

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*61*		*26 - 124*
DCB Decachlorobiphenyl	*78*		*38 - 121*

Lab Sample ID: LCSD 580-451505/5-A
Matrix: Water
Analysis Batch: 452120

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 451505

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
PCB-1016			1.00	0.836	M	ug/L		84	46 - 129	12	30
PCB-1260			1.00	0.862	M	ug/L		86	45 - 134	11	30

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Tetrachloro-m-xylene	*68*		*26 - 124*
DCB Decachlorobiphenyl	*82*		*38 - 121*

Method: 8151A DOD - Herbicides (GC)

Lab Sample ID: MB 410-475194/1-A
Matrix: Water
Analysis Batch: 475322

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 475194

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	0.13	U	0.15	0.065	ug/L		02/20/24 15:13	02/21/24 05:13	1
Silvex (2,4,5-TP)	0.044	U	0.050	0.022	ug/L		02/20/24 15:13	02/21/24 05:13	1
2,4-D	0.50	U	0.60	0.25	ug/L		02/20/24 15:13	02/21/24 05:13	1
2,4-DB	1.3	U	1.5	0.63	ug/L		02/20/24 15:13	02/21/24 05:13	1
Dichlorprop	0.32	U	0.50	0.16	ug/L		02/20/24 15:13	02/21/24 05:13	1
Dalapon	11	U	12	5.7	ug/L		02/20/24 15:13	02/21/24 05:13	1
Dicamba	0.54	U	0.55	0.27	ug/L		02/20/24 15:13	02/21/24 05:13	1
MCPP	100	U	200	50	ug/L		02/20/24 15:13	02/21/24 05:13	1
MCPA	100	U	200	50	ug/L		02/20/24 15:13	02/21/24 05:13	1
Pentachlorophenol	0.060	U	0.070	0.027	ug/L		02/20/24 15:13	02/21/24 05:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid (Surr)	*61*		*32 - 138*	*02/20/24 15:13*	*02/21/24 05:13*	*1*
2,4-Dichlorophenylacetic acid (Surr)	*56*		*32 - 138*	*02/20/24 15:13*	*02/21/24 05:13*	*1*

Lab Sample ID: LCS 410-475194/2-A
Matrix: Water
Analysis Batch: 475322

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 475194

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4,5-T	0.250	0.216		ug/L		86	42 - 147
Silvex (2,4,5-TP)	0.250	0.234		ug/L		94	51 - 134
2,4-D	2.51	2.25		ug/L		90	45 - 152
2,4-DB	2.51	2.51		ug/L		100	35 - 153
Dichlorprop	2.50	2.23		ug/L		89	46 - 159
Dalapon	6.25	11	U M	ug/L		72	19 - 139
Dicamba	0.250	0.54	U	ug/L		86	50 - 141
MCPP	251	234		ug/L		93	33 - 157
MCPA	496	357		ug/L		72	35 - 144
Pentachlorophenol	0.199	0.182		ug/L		92	56 - 139

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4-Dichlorophenylacetic acid (Surr)	*91*		*32 - 138*
2,4-Dichlorophenylacetic acid (Surr)	*91*		*32 - 138*

Method: 8151A DOD - Herbicides (GC) (Continued)

Lab Sample ID: LCSD 410-475194/3-A
Matrix: Water
Analysis Batch: 475322

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 475194

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,4,5-T			0.250	0.276		ug/L		110	42 - 147	24	30
Silvex (2,4,5-TP)			0.250	0.294		ug/L		118	51 - 134	23	30
2,4-D			2.51	2.93		ug/L		117	45 - 152	26	30
2,4-DB			2.51	2.75	M	ug/L		110	35 - 153	9	30
Dichlorprop			2.50	2.86		ug/L		114	46 - 159	25	30
Dalapon			6.25	11	U M	ug/L		69	19 - 139	7	30
Dicamba			0.250	0.54	U	ug/L		105	50 - 141	20	30
MCPP			251	277		ug/L		110	33 - 157	17	30
MCPA			496	454		ug/L		91	35 - 144	24	30
Pentachlorophenol			0.199	0.231		ug/L		116	56 - 139	24	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid (Surr)	*108*		*32 - 138*
2,4-Dichlorophenylacetic acid (Surr)	*112*		*32 - 138*

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 410-474877/1-A
Matrix: Water
Analysis Batch: 475187

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 474877

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	2.0	U	5.0	0.87	pg/L		02/20/24 00:32	02/21/24 05:10	1
Total TCDD	2.0	U	5.0	0.87	pg/L		02/20/24 00:32	02/21/24 05:10	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*88*		*40 - 135*	*02/20/24 00:32*	*02/21/24 05:10*	*1*

Lab Sample ID: LCS 410-474877/2-A
Matrix: Water
Analysis Batch: 475187

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 474877

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,3,7,8-TCDD			200	212		pg/L		106	71 - 125

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*89*		*40 - 135*

Lab Sample ID: LCSD 410-474877/3-A
Matrix: Water
Analysis Batch: 475187

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 474877

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,3,7,8-TCDD			200	202		pg/L		101	71 - 125	5	20

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*91*		*40 - 135*

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 580-451643/6-B
Matrix: Water
Analysis Batch: 451877

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 451652

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.029	U	0.060	0.0072	mg/L		02/19/24 10:31	02/19/24 21:42	1
Barium	0.0040	U	0.020	0.0010	mg/L		02/19/24 10:31	02/19/24 21:42	1
Cadmium	0.0016	U	0.020	0.00090	mg/L		02/19/24 10:31	02/19/24 21:42	1
Chromium	0.0052	U	0.025	0.0027	mg/L		02/19/24 10:31	02/19/24 21:42	1
Lead	0.011	U	0.030	0.0027	mg/L		02/19/24 10:31	02/19/24 21:42	1
Selenium	0.035	U	0.10	0.0087	mg/L		02/19/24 10:31	02/19/24 21:42	1
Silver	0.034	U	0.050	0.0085	mg/L		02/19/24 10:31	02/19/24 21:42	1

Lab Sample ID: MB 580-451643/6-B
Matrix: Water
Analysis Batch: 451975

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 451652

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.029	U	0.060	0.0072	mg/L		02/19/24 10:31	02/20/24 20:01	1

Lab Sample ID: LCS 580-451643/7-B
Matrix: Water
Analysis Batch: 451877

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 451652

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Barium	1.00	0.922		mg/L		92	88 - 113
Cadmium	1.00	0.941		mg/L		94	88 - 113
Chromium	1.00	0.907		mg/L		91	90 - 113
Lead	1.00	0.885		mg/L		89	86 - 113
Selenium	1.00	0.835		mg/L		83	83 - 114
Silver	1.00	0.882		mg/L		88	84 - 115

Lab Sample ID: LCS 580-451643/7-B
Matrix: Water
Analysis Batch: 451975

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 451652

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	1.00	0.947		mg/L		95	87 - 113

Lab Sample ID: LCSD 580-451643/8-B
Matrix: Water
Analysis Batch: 451877

Client Sample ID: Lab Control Sample Dup
Prep Type: TCLP
Prep Batch: 451652

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	1.00	0.893		mg/L		89	87 - 113	6	20
Barium	1.00	0.950		mg/L		95	88 - 113	3	20
Cadmium	1.00	0.973		mg/L		97	88 - 113	3	20
Chromium	1.00	0.960		mg/L		96	90 - 113	6	20
Lead	1.00	0.917		mg/L		92	86 - 113	4	20
Selenium	1.00	0.910		mg/L		91	83 - 114	9	20
Silver	1.00	0.896		mg/L		90	84 - 115	2	20

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: LCSD 580-451643/8-B
Matrix: Water
Analysis Batch: 451975

Client Sample ID: Lab Control Sample Dup
Prep Type: TCLP
Prep Batch: 451652

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic			1.00	0.951		mg/L		95	87 - 113	0	20

Lab Sample ID: 580-136657-1 MS
Matrix: Water
Analysis Batch: 451877

Client Sample ID: TDS-RP-13Feb24
Prep Type: TCLP
Prep Batch: 451652

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.029	U Q	1.00	0.894		mg/L		89	87 - 113
Barium	0.011	J	1.00	0.937		mg/L		93	88 - 113
Cadmium	0.0016	U	1.00	0.973		mg/L		97	88 - 113
Chromium	0.0052	U	1.00	0.933		mg/L		93	90 - 113
Lead	0.011	U	1.00	0.930		mg/L		93	86 - 113
Selenium	0.035	U	1.00	0.901		mg/L		90	83 - 114
Silver	0.034	U	1.00	0.901		mg/L		90	84 - 115

Lab Sample ID: 580-136657-1 MS
Matrix: Water
Analysis Batch: 451975

Client Sample ID: TDS-RP-13Feb24
Prep Type: TCLP
Prep Batch: 451652

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.029	U	1.00	0.950		mg/L		95	87 - 113

Lab Sample ID: 580-136657-1 MSD
Matrix: Water
Analysis Batch: 451877

Client Sample ID: TDS-RP-13Feb24
Prep Type: TCLP
Prep Batch: 451652

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	0.029	U Q	1.00	0.947		mg/L		95	87 - 113	6	20
Barium	0.011	J	1.00	0.977		mg/L		97	88 - 113	4	20
Cadmium	0.0016	U	1.00	1.02		mg/L		102	88 - 113	5	20
Chromium	0.0052	U	1.00	0.984		mg/L		98	90 - 113	5	20
Lead	0.011	U	1.00	0.983		mg/L		98	86 - 113	5	20
Selenium	0.035	U	1.00	0.972		mg/L		97	83 - 114	8	20
Silver	0.034	U	1.00	0.959		mg/L		96	84 - 115	6	20

Lab Sample ID: 580-136657-1 MSD
Matrix: Water
Analysis Batch: 451975

Client Sample ID: TDS-RP-13Feb24
Prep Type: TCLP
Prep Batch: 451652

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	0.029	U	1.00	0.959		mg/L		96	87 - 113	1	20

Lab Sample ID: 580-136657-1 DU
Matrix: Water
Analysis Batch: 451877

Client Sample ID: TDS-RP-13Feb24
Prep Type: TCLP
Prep Batch: 451652

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Barium	0.011	J	0.0119	J	mg/L		4	20
Cadmium	0.0016	U	0.0016	U	mg/L		NC	20
Chromium	0.0052	U	0.0052	U	mg/L		NC	20

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: 580-136657-1 DU
Matrix: Water
Analysis Batch: 451877

Client Sample ID: TDS-RP-13Feb24
Prep Type: TCLP
Prep Batch: 451652

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Lead	0.011	U	0.011	U	mg/L		NC	20
Selenium	0.035	U	0.035	U	mg/L		NC	20
Silver	0.034	U	0.034	U	mg/L		NC	20

Lab Sample ID: 580-136657-1 DU
Matrix: Water
Analysis Batch: 451975

Client Sample ID: TDS-RP-13Feb24
Prep Type: TCLP
Prep Batch: 451652

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	0.029	U	0.029	U	mg/L		NC	20

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-451769/14-A
Matrix: Water
Analysis Batch: 452077

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 451769

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0020	U	0.0050	0.0010	mg/L		02/19/24 17:09	02/21/24 15:02	5
Antimony	0.0025	U	0.0040	0.00063	mg/L		02/19/24 17:09	02/21/24 15:02	5
Barium	0.00276	J	0.0060	0.0011	mg/L		02/19/24 17:09	02/21/24 15:02	5
Beryllium	0.0015	U	0.0020	0.00055	mg/L		02/19/24 17:09	02/21/24 15:02	5
Cadmium	0.00035	U	0.0020	0.00019	mg/L		02/19/24 17:09	02/21/24 15:02	5
Chromium	0.0025	U	0.0040	0.00087	mg/L		02/19/24 17:09	02/21/24 15:02	5
Cobalt	0.00075	U	0.0020	0.00020	mg/L		02/19/24 17:09	02/21/24 15:02	5
Copper	0.0040	U	0.010	0.0030	mg/L		02/19/24 17:09	02/21/24 15:02	5
Lead	0.00040	U	0.0020	0.00020	mg/L		02/19/24 17:09	02/21/24 15:02	5
Molybdenum	0.00050	U	0.0040	0.00040	mg/L		02/19/24 17:09	02/21/24 15:02	5
Nickel	0.0020	U	0.015	0.00063	mg/L		02/19/24 17:09	02/21/24 15:02	5
Selenium	0.025	U	0.040	0.010	mg/L		02/19/24 17:09	02/21/24 15:02	5
Silver	0.00080	U	0.0020	0.00013	mg/L		02/19/24 17:09	02/21/24 15:02	5
Thallium	0.00040	U	0.0050	0.00015	mg/L		02/19/24 17:09	02/21/24 15:02	5
Vanadium	0.0075	U	0.020	0.0023	mg/L		02/19/24 17:09	02/21/24 15:02	5
Zinc	0.0050	U	0.035	0.0046	mg/L		02/19/24 17:09	02/21/24 15:02	5

Lab Sample ID: LCS 580-451769/15-A
Matrix: Water
Analysis Batch: 452077

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 451769

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	1.00	0.962		mg/L		96	84 - 116
Antimony	1.00	0.994		mg/L		99	85 - 117
Barium	1.00	0.993		mg/L		99	86 - 114
Beryllium	1.00	0.966		mg/L		97	83 - 121
Cadmium	1.00	0.993		mg/L		99	87 - 115
Chromium	1.00	0.977		mg/L		98	85 - 116
Cobalt	1.00	1.00		mg/L		100	86 - 115
Copper	1.00	0.994		mg/L		99	85 - 118
Lead	1.00	0.944		mg/L		94	88 - 115
Molybdenum	1.00	0.980		mg/L		98	83 - 115

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 580-451769/15-A
Matrix: Water
Analysis Batch: 452077

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 451769

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nickel	1.00	1.01		mg/L		101	85 - 117
Selenium	1.00	0.982		mg/L		98	80 - 120
Silver	1.00	1.01		mg/L		101	85 - 116
Thallium	1.00	0.988		mg/L		99	82 - 116
Vanadium	1.00	0.971		mg/L		97	86 - 115
Zinc	1.00	0.980		mg/L		98	83 - 119

Lab Sample ID: LCSD 580-451769/16-A
Matrix: Water
Analysis Batch: 452077

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 451769

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	1.00	0.983		mg/L		98	84 - 116	2	20
Antimony	1.00	0.996		mg/L		100	85 - 117	0	20
Barium	1.00	1.01		mg/L		101	86 - 114	1	20
Beryllium	1.00	0.979		mg/L		98	83 - 121	1	20
Cadmium	1.00	0.986		mg/L		99	87 - 115	1	20
Chromium	1.00	0.993		mg/L		99	85 - 116	2	20
Cobalt	1.00	1.00		mg/L		100	86 - 115	0	20
Copper	1.00	0.997		mg/L		100	85 - 118	0	20
Lead	1.00	0.973		mg/L		97	88 - 115	3	20
Molybdenum	1.00	0.976		mg/L		98	83 - 115	0	20
Nickel	1.00	1.02		mg/L		102	85 - 117	0	20
Selenium	1.00	1.04		mg/L		104	80 - 120	5	20
Silver	1.00	1.01		mg/L		101	85 - 116	0	20
Thallium	1.00	1.02		mg/L		102	82 - 116	3	20
Vanadium	1.00	0.974		mg/L		97	86 - 115	0	20
Zinc	1.00	0.980		mg/L		98	83 - 119	0	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 580-451643/6-C
Matrix: Water
Analysis Batch: 451933

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 451653

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0020	U	0.0030	0.0015	mg/L		02/19/24 10:34	02/20/24 14:04	1

Lab Sample ID: LCS 580-451643/7-C
Matrix: Water
Analysis Batch: 451933

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 451653

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.0200	0.0192		mg/L		96	82 - 119

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCSD 580-451643/8-C
Matrix: Water
Analysis Batch: 451933

Client Sample ID: Lab Control Sample Dup
Prep Type: TCLP
Prep Batch: 451653

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury			0.0200	0.0187		mg/L		94	82 - 119	3	20

Lab Sample ID: 580-136657-1 MS
Matrix: Water
Analysis Batch: 451933

Client Sample ID: TDS-RP-13Feb24
Prep Type: TCLP
Prep Batch: 451653

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury	0.0020	U	0.0200	0.0193		mg/L		96	82 - 119		

Lab Sample ID: 580-136657-1 MSD
Matrix: Water
Analysis Batch: 451933

Client Sample ID: TDS-RP-13Feb24
Prep Type: TCLP
Prep Batch: 451653

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.0020	U	0.0200	0.0198		mg/L		99	82 - 119	2	20

Lab Sample ID: 580-136657-1 DU
Matrix: Water
Analysis Batch: 451933

Client Sample ID: TDS-RP-13Feb24
Prep Type: TCLP
Prep Batch: 451653

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Mercury	0.0020	U		0.0020	U	mg/L				NC	20

Lab Chronicle

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136657-1

Client Sample ID: TDS-RP-13Feb24

Date Collected: 02/13/24 10:00
Date Received: 02/15/24 09:40

Lab Sample ID: 580-136657-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	452065	JBT	EET SEA	02/22/24 08:34
Total/NA	Analysis	8260D	RA	1	452285	JBT	EET SEA	02/23/24 20:08
Total/NA	Prep	3510C			451505	SL	EET SEA	02/16/24 08:37
Total/NA	Analysis	8082A		1	452120	VLF	EET SEA	02/22/24 13:24
Total/NA	Prep	8151A			475194	QJZ6	ELLE	02/20/24 15:13
Total/NA	Analysis	8151A DOD		1	475322	UAMZ	ELLE	02/21/24 06:37
Total/NA	Prep	8290A			474877	SJ7Z	ELLE	02/20/24 00:32
Total/NA	Analysis	8290A		1	475270	UC8F	ELLE	02/21/24 02:46
TCLP	Leach	1311			451643	JL	EET SEA	02/19/24 10:14 - 02/19/24 10:20 [1]
TCLP	Prep	3010A			451652	JL	EET SEA	02/19/24 10:31
TCLP	Analysis	6010D		1	451877	TMH	EET SEA	02/19/24 21:52
TCLP	Leach	1311			451643	JL	EET SEA	02/19/24 10:14 - 02/19/24 10:20 [1]
TCLP	Prep	3010A			451652	JL	EET SEA	02/19/24 10:31
TCLP	Analysis	6010D		1	451975	JLS	EET SEA	02/20/24 20:10
Total Recoverable	Prep	3005A			451769	AUA	EET SEA	02/19/24 17:08
Total Recoverable	Analysis	6020B		5	452077	FCW	EET SEA	02/21/24 16:24
TCLP	Leach	1311			451643	JL	EET SEA	02/19/24 10:14 - 02/19/24 10:20 [1]
TCLP	Prep	7470A			451653	JL	EET SEA	02/19/24 10:34
TCLP	Analysis	7470A		1	451933	JL	EET SEA	02/20/24 14:11
Total/NA	Prep	7470A			451657	JL	EET SEA	02/19/24 11:31
Total/NA	Analysis	7470A		1	451933	JL	EET SEA	02/20/24 13:36

Client Sample ID: Trip Blank

Date Collected: 02/13/24 00:00
Date Received: 02/15/24 09:40

Lab Sample ID: 580-136657-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	452065	JBT	EET SEA	02/22/24 07:51
Total/NA	Analysis	8260D	RA	1	452285	JBT	EET SEA	02/23/24 17:42

[1] This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: Environmental Chemical Corp.
Job ID: 580-136657-1
Project/Site: 2023 Maui Fires - Lahaina, Maui

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8082A	3510C	Water	Polychlorinated biphenyls, Total

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-30-24
A2LA	ISO/IEC 17025	0001.01	11-30-24
Alabama	State	43200	01-31-25
Alaska	State	PA00009	06-30-24
Alaska (UST)	State	17-027	02-28-24
Arizona	State	AZ0780	03-12-24
Arkansas DEQ	State	88-00660	08-09-24
California	State	2792	01-31-24 *
Colorado	State	PA00009	06-30-24
Connecticut	State	PH-0746	06-30-25
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-25
Florida	NELAP	E87997	06-30-24
Georgia (DW)	State	C048	01-31-24 *
Hawaii	State	N/A	01-31-25
Illinois	NELAP	200027	01-31-25
Iowa	State	361	03-01-24
Kansas	NELAP	E-10151	10-31-24
Kentucky (DW)	State	KY90088	12-31-24
Kentucky (UST)	State	0001.01	11-30-24
Kentucky (WW)	State	KY90088	12-31-23 *
Louisiana (All)	NELAP	02055	06-30-24
Maine	State	2019012	03-12-25
Maryland	State	100	06-30-24
Massachusetts	State	M-PA009	06-30-24
Michigan	State	9930	01-31-25
Minnesota	NELAP	042-999-487	12-31-24
Mississippi	State	023	01-31-25
Missouri	State	450	01-31-25
Montana (DW)	State	0098	01-01-25
Nebraska	State	NE-OS-32-17	01-31-25
New Hampshire	NELAP	2730	01-10-25
New Jersey	NELAP	PA011	06-30-24
New York	NELAP	10670	04-01-24
North Carolina (DW)	State	42705	07-31-24
North Carolina (WW/SW)	State	521	12-31-24
Oklahoma	NELAP	9804	08-31-24
Oregon	NELAP	PA200001	09-11-24
Pennsylvania	NELAP	36-00037	01-28-25
Quebec Ministry of Environment and Fight against Climate Change	PALA	507	09-16-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Environmental Chemical Corp. Job ID: 580-136657-1
Project/Site: 2023 Maui Fires - Lahaina, Maui

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Rhode Island	State	LAO00338	12-30-24
South Carolina	State	89002	01-31-24 *
Tennessee	State	02838	01-31-25
Texas	NELAP	T104704194-23-46	08-31-24
USDA	US Federal Programs	525-22-298-19481	10-25-25
Vermont	State	VT - 36037	10-28-24
Virginia	NELAP	460182	06-14-25
Washington	State	C457	04-11-24
West Virginia (DW)	State	9906 C	01-31-25
West Virginia DEP	State	055	07-31-24
Wyoming (UST)	A2LA	0001.01	11-30-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Sample Summary

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136657-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-136657-1	TDS-RP-13Feb24	Water	02/13/24 10:00	02/15/24 09:40
580-136657-2	Trip Blank	Water	02/13/24 00:00	02/15/24 09:40

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

eurofins Environment Testing

Client Information	Sampler: Austin Welz, Ivan Daniels	Lab PM: Walker, Marie E	Carrier Tracking No(s):	COC No: 580-59705-18343.1
Client Contact: Kaiulani Watson, Kane McNeill	Phone: 650-228-6950	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: HI	Page: Page 1 of 1
Company: Environmental Chemical Corp.	PWSID:			Job #:

Address: 2969 Mapunapuna Place Suite 220	Due Date Requested:	
City: Honolulu	TAT Requested (days): 5-Day TAT	
State, Zip: HI, 96819	Compliance Project: Δ Yes Δ No	
Phone: 508-229-2270(Tel)	PO #: Purchase Order Requested 356195	
Email: kwatson@ecc.net, Kmcneill@ecc.net	WO #:	
Project Name: 2023 Maui Fires - Lahaina	Project #: Project No. 4344.411	
Site: TDS Retention Pond	SSOW#:	

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Volatiles	Herbicides	SVOCs	Organochlorine Pesticides	Polychlorinated Biphenyls	Dioxins/Furans	Metals (Total) + TCLP	Mercury + TCLP	Total Number of containers	Special Instructions/Note:
			Preservation Code:													
TDS-RP-13Feb24	2-13-24	1000	G	W			X	X	X	X	X	X	X	X		
Trip Blank	2-13-24			W			X									

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

580-136657 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Austin Welz	2-13-24 1400	Tetra Tech	[signature]	2/15/24 0940	EETA

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: IR11 5.0/4.9 LR/Bub/Wet/EPO

IR11 2.2/2.1 LBlk/Bub/Wet/EPO

Ver: 06.08.2021

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Walker, Marie E	Carrier Tracking No(s):	COC No: 580-130065.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: Hawaii	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Environm		Accreditations Required (See note): Dept. of Defense ELAP - ANAB		Job #: 580-136657-1
Address: 2425 New Holland Pike, ,	Due Date Requested: 2/21/2024			
City: Lancaster	TAT Requested (days):			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #:			
Email:	WO #:			
Project Name: 2023 Maui Fires - Lahaina, Maui	Project #: 58020087			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify), Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8151A_DOD5/8151A_AP Standard Herbicides	8290A_DOD5/8290_P_Sep 17 Isomers & Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
TDS-RP-13Feb24 (580-136657-1)	2/13/24	10:00 Hawaiian		Water			X	X	4	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[illegible]	2/16/24 1400	FEDEX			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
			[illegible]	2/17/24 1040	GLFT

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: Ra: 1.9 Cor. 1.8

Login Sample Receipt Checklist

Client: Environmental Chemical Corp.

Job Number: 580-136657-1

Login Number: 136657
List Number: 1
Creator: Groves, Elizabeth

List Source: Eurofins Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Environmental Chemical Corp. Job Number: 580-136657-1

Login Number: 136657 **List Source: Eurofins Lancaster Laboratories Environment Testing, LLC**
List Number: 2 **List Creation: 02/17/24 11:56 AM**
Creator: Foreman, Kai

Question	Answer	Comment
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	

Isotope Dilution Summary

Client: Environmental Chemical Corp.
Project/Site: 2023 Maui Fires - Lahaina, Maui

Job ID: 580-136657-1

Method: 8290A - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	TCDD (40-135)						
580-136657-1	TDS-RP-13Feb24	68						
LCS 410-474877/2-A	Lab Control Sample	89						
LCSD 410-474877/3-A	Lab Control Sample Dup	91						
MB 410-474877/1-A	Method Blank	88						

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD