REMEDIAL ACTION WORKPLAN

Old Orchard Country Club

54 Monmouth Road
Block 2701, Lots 2, 53, 60, 66 & 69
Borough of Eatontown, Monmouth County, New Jersey
Block 68, Lot 6
Borough of West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606

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EXECUTIVE SUMMARY

Dynamic Earth, LLC (Dynamic Earth) was retained by Surrey Equities, LLC to prepare a Remedial Action Workplan (RAW) for the Old Orchard Country Club property located at 54 Monmouth Road in the Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey. The Site is further identified as Block 2701 Lots 2, 53, 60, 66, and 69 and Block 68, Lot 6 and is hereinafter referred to as the "Site". This workplan supersedes the previous RAW and Fill Use Plan (FUP) included in Dynamic Earth's October 17, 2024, *Site Investigation Report/Remedial Investigation Report/Remedial Action Workplan*.

The Site consists of an irregularly-shaped parcel of approximately 133.42 acres and is currently developed with the Old Orchard Country Club including an 18-hole golf course, two-story club house, one-story equipment rental building, one-story equipment/storage building, and associated sheds. The Turtle Mill Brook bisects the Site from west to east. The remaining portions of the Site include asphalt and gravel driveway/parking areas, and landscaped areas. The Site has historically operated as a golf course from circa 1929 to 2025. Prior to golf course operations, the Site was utilized as an apple orchard.

Historically Applied Pesticide (HAP) contaminated soils associated with former golf course operations was identified in 2021 during due diligence investigations. From 2022 through 2024, remedial investigative activities were conducted at the Site. The results of the investigations are presented in Dynamic Earth's October 17, 2024, *Site Investigation Report/Remedial Investigation Report/Remedial Action Workplan*.

In January and March 2025, the NJDEP denied Dynamic Earth's request for pre-approval of consolidating alternative fill material not meeting Like-on-Like requirements, following a technical consultation in March 2025.

In April 2025, Dynamic Earth conducted additional sampling activities to delineate select sample locations exhibiting the highest contaminant concentrations in order to meet Like-on-Like requirements. Based on the sampling conducted, approximately 2,735 cubic yards of HAP impacted soils not meeting Like-on-Like requirements will be excavated and disposed off-Site. The remaining approximately 11,372 cubic yards of soil meeting Like-on-Like requirements will be consolidated on-Site at AOC-6.

Proposed redevelopment of the Site includes subdividing the Site into Lots 69.01 through 69.06. Dynamic Earth recommends remedial actions to address AOC-1 through AOC-3 located at proposed Lots 69.01 through 69.04 in the form of soil excavation, off-Site disposal, and backfill to remediate AOC-1 through AOC-3. Proposed remedial actions to address AOC-5, AOC-6, AOC-11, and AOC-12 located at proposed Lots 69.05 and 69.06 will include consolidation of Like-on-Like impacted soils with associated engineering and institutional controls. HAP impacted soils not meeting Like-on-Like standards will be transported for off-Site disposal.

1.0 INTRODUCTION

Dynamic Earth, LLC (Dynamic Earth) was retained to prepare a Remedial Action Workplan (RAW) for the Old Orchard Country Club property located at 54 Monmouth Road in the Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey. The Site is further identified as Block 2701 Lots 2, 53, 60, 66, and 69 and Block 68, Lot 6 and is hereinafter referred to as the "Site". A *Site Location Map* and *Existing Conditions and AOC Location Plan* are included as Figures 1 and 2, respectively.

1.1 Purpose and Scope of Work

This workplan provides a summary of the previous remedial activities conducted at the Site and a framework for the proposed Remedial Action (RA) activities to address the contaminated areas of concern at the Site.

All environmental work was conducted in accordance with the New Jersey Department of Environmental Protection (NJDEP) Technical Requirements for Site Remediation (N.J.A.C. 7:26E), the NJDEP *Fill Material Guidance for SRP Sites* (October 2021), the NJDEP *Historically Applied Pesticide Technical Guidance* (February 2022), and the NJDEP *Ecological Evaluation Technical Guidance* (Version 2.1, May 2023). The Site is being investigated and remediated by a New Jersey Licensed Site Remediation Professional (LSRP) pursuant to the requirements of the Site Remediation Reform Act (SRRA, N.J.S.A. 58:10C-1 et seq.) and the Administrative Requirements for the Remediation of Contaminated Sites (ARRCS) Rules (N.J.A.C. 7:26C). The LSRP of Record for the Site is Spencer Spurlock (LSRP License No. 585413).

1.2 Limitations and Exceptions of Assessment

This report does not represent or imply future Site conditions or events. Situations or activities that occur subsequent to this report that result in adverse environmental impacts are not relevant to this assessment. This assessment is not intended for reuse by third parties or execution of alternate projects.

1.3 NJDEP Remediation Standards

The analytical results for soil samples collected from the Site were compared to the NJDEP Migration to Groundwater Soil Remediation Standard (MGWSRS) and the most stringent NJDEP Residential and Nonresidential Soil Remediation Standards (RSRS and NRSRS) including Residential Ingestion-Dermal Soil Remediation Standards, Residential Inhalation Soil Remediation Standards, Non-Residential Ingestion-Dermal Soil Remediation Standards, and Non-Residential Inhalation Soil Remediation Standards.

1.4 Health and Safety Plan

The Site-Specific *Health and Safety Plan* is provided in Appendix C.

1.5 Quality Assurance Project Plan

The *Quality Assurance Project Plan* is provided in Appendix D.

1.6 Data Quality Assessment & Data Usability Evaluation

All samples were collected into pre-preserved (as applicable) laboratory-supplied sample containers, labeled, sealed, packaged on ice, and delivered under proper chain-of-custody procedures to laboratory for analysis. Sampling was conducted in accordance with the Site-specific QAPP (included as Appendix D) and the NJDEP Field Sampling Plan Manual. Samples were submitted to Pace Laboratories (NJDEP No. MA935).

Laboratory data package L2523648 was reviewed by Dynamic Earth following completion of the sample analyses. Based on the review, the data packages meet the applicable requirements for the laboratory deliverable including completeness and laboratory performance. Samples were analyzed as requested on the chain of custody, and all samples were analyzed within the specified holding times established for each analytical method. Laboratory analytical data reports are provided as Appendix B. The laboratory performed instrument tuning and system performance checks including calibration, analysis of matrix spike/matrix spike duplicates (MS/MSD), and analysis of laboratory control samples as required, and reported the calibration and quality control results in the data reports. Conformance summary forms were provided as part of the laboratory report packages. Minor non-conformances were identified by the laboratory. However, these non-conformances are not expected to impact data quality.

2.0 PHYSICAL SETTING

2.1 Site Description/Land Use

The Site consists of an irregularly-shaped parcel of approximately 133.42 acres and is currently developed with the Old Orchard Country Club including an 18-hole golf course, two-story club house, one-story equipment rental building, one-story equipment/storage building, and associated sheds. The Turtle Mill Brook bisects the Site from west to east. The remaining portions of the Site include asphalt and gravel driveway and parking areas.

The Site is bound by residential properties to the north, commercial properties to the south beyond Route 36, commercial properties to the east and residential and commercial properties to the west.

2.2 Site Topography

Topography at the Site slopes to the south-southeast from a maximum elevation of approximately 46 feet above mean sea level (msl) in the northeastern portion of the Site to a minimum elevation of approximately 23 feet above msl in the southeastern portion of the Site.

2.3 Geology

Based on information obtained from NJDEP's geographic information system (GIS) database (GeoWeb), the Site is located within the Coastal Plan Physiographic Unit of New Jersey. Bedrock geology at the Site was identified as the Vincentown Formation (Tvtt) consisting of glauconitic, near base medium-grained quartz sand, clayey; locally a calcarenite or coquina. Surficial geology at the Site consists of the Unit 2 Cape May Formation including very pale brown, yellow, reddish-yellow, white, olive-yellow, and gray sand, pebble gravel, minor silt, clay, peat, and cobble gravel with a general thickness of less than 50 feet.

Soils encountered at the Site consisted of six inches of topsoil at the surface. Underlying the surface cover, natural coastal plain deposits were encountered generally consisting of sand with variable amount of silt, clay, and gravel; and occasional layers of clay with variable amounts of silt and gravel.

2.4 Hydrogeology

Based on information obtained from NJDEP GeoWeb, the bedrock aquifer underlying the Site is the Composite confining unit aquifer. Based on recharge potential, this aquifer has a "C-B" ranking indicating the aquifer yield is between 100 to 500 gallons per minute. A review of the United States Fish and Wildlife Service (USFWS) Wetlands Interactive Map indicates that wetlands are located in the northeastern portion of the Site. The Turtle Mill Brook bisects the center of the Site. The Site is located within the Monmouth Watershed Management Area. The Site is not located within a Non-Community or Community Well Head Protection Area. The Federal Emergency Management

Agency (FEMA), National Flood Insurance Program (NFIP), Flood Plains Map was reviewed by Environmental Data Resources, Inc. (EDR). The Site is not located within a Special Flood Hazard Area (1%) or 0.2% Annual Chance Flood Hazard Area as defined by FEMA.

Based on the SI and RI conducted, HAP contaminated areas are located within wetland buffer areas for the Turtle Mill Brook. In accordance with N.J.A.C. 7:7A-7.4, Freshwater Wetlands Protection Act Rules, a Hazardous Site Investigation and Cleanup General Permit (GP-4), will be required prior to RA activities within the wetland buffer areas.

3.0 PROJECT BACKGROUND

Below is a summary of the October 17, 2024, *Site Investigation Report/Remedial Investigation Report/Remedial Action Workplan* prepared by Dynamic Earth and NJDEP correspondence. Copies of referenced documents are provided in Appendix G.

3.1 Previous Environmental Documents

October 17, 2024, Site Investigation Report/Remedial Investigation Report/Remedial Workplan prepared by Dynamic Earth, LLC

Dynamic Earth identified the following areas of concern (AOCs) requiring further during due diligence activities:

- AOC-1 through AOC-6: Golf Course Operations;
- AOC-7 through AOC-10: Historic Apple Orchard; and
- AOC-11 and AOC-12: Equipment Wash and Trench Areas.

In the August 23, 2021 *Environmental Conditions Memorandum* prepared by Geo-Technology Associates, Inc (GTA), contamination associated with historically applied pesticides (HAP) was identified at concentrations exceeding the most stringent New Jersey Department of Environmental Protection (NJDEP) Soil Remediation Standards (SRS) throughout the Site.

In December 2022, Dynamic Earth conducted a supplemental HAP investigation including horizontal and vertical delineation of HAP contaminants identified by others at the Site and an initial groundwater investigation. Based on the supplemental HAP investigation conducted by Dynamic Earth, horizontal soil delineation within the fairway and green areas had been achieved and no further investigation for groundwater was required as no exceedances of NJDEP Groundwater Quality Standards (GWQS) were identified. Further delineation of pesticides in the trench and tee areas and an Ecological Evaluation (EE) was required.

In May 2023, Dynamic Earth completed an EE in accordance with the NJDEP *Ecological Evaluation Technical Guidance* (Version 2.1, May 2023) and delineation of HAP in accordance with Section 6.1 of the NJDEP *Historically Applied Pesticide Technical Guidance* (February 2022). Based on the site investigation (SI) and remedial investigation (RI) activities conducted by Dynamic Earth and others, conversations with the golf course managers regarding pesticide application, and review of historical aerial photographs to confirm the historic configuration of the golf course, no further investigation is required for AOC-1 through AOC-12.

Dynamic Earth recommended remedial actions to address AOC-1 through AOC-3 located at proposed Lots 69.01 through 69.04 in the form of soil excavation, off-Site disposal, and backfill to remediate AOC-1 through AOC-3. Proposed remedial actions to address AOC-5, AOC-6, AOC-11, and AOC-12 located at proposed Lots 69.05 and 69.06 included the consolidation of all HAP

impacted soils with associated engineering and institutional controls. NJDEP pre-approval of the Fill Use Plan was required as alternative fill did not meet Like-on-Like requirements.

January 27, 2025, FUP Response prepared by NJDEP

On January 27, 2025, Alan Motter, Bureau of Environmental Evaluation and Risk Assessment (BEERA) Chief, issued a letter response to Dynamic Earth's October 2024 Fill Use Plan pre-approval request. The NJDEP denied the pre-approval request stating the following:

"The Like-On-Like requirement has not been met, since the donor area contains arsenic, lead, mercury, dieldrin and other contaminants and the receiving area only contains dieldrin. It is the Department's opinion that the act of placing contaminated fill material that does not meet Like-On-Like in three berms and then capping it constitutes creating three small landfills. Its re-use does not appear to be tied to the remedial action needed to address the receiving area and it is not a component of any feature associated with the redevelopment of the site. As such, the DEP does not believe that the pre-approval request meets the intent of the Fill Material Guidance for SRP Sites (October 2021 Version 4.0) or Historically Applied Pesticide Technical Guidance (February 2022 Version 3.1) and finds the request unacceptable."

March 3, 2025, NJDEP Technical Consultation Memorandum prepared by Dynamic Earth, LLC

Following the Fill Use Plan pre-approval denial, Dynamic Earth requested a technical consultation to provide further information supporting the proposed remedial actions. Specifically, Dynamic Earth stated the following:

- Why consolidation of HAP impacted soils in fairways was chosen as the appropriate remedial action (RA) remedy.

- Dynamic Earth concurs that the Like-On-Like requirements for alternative fill was not met due to differing pesticides documented in fairways and greens/tee boxes; however, we find that all the conditions for waiving this requirement have been met as stipulated in the NJDEP *Historically Applied Pesticide Technical Guidance, Fill Material Guidance for SRP Sites*, and *Technical Requirements for Site Remediation* (NJDEP N.J.A.C 7:26E). Specifically:

    - Proposed consolidation will not result in or increase contamination of ground water at the receiving AOC, as per N.J.A.C. 7:26E-5.1(d)3.

    - Proposed consolidation will not result in the mixing of incompatible contaminants or creation of a vapor intrusion pathway at the receiving AOC, as per N.J.A.C. 7:26E-5.1(d)3.

- Alternative fill being moved shall not contain any hazardous waste, as per N.J.A.C. 7:26E-5.2(f).

- Alternative fill being moved does not contain any free liquid waste, as per N.J.A.C. 7:26E-5.2(g).

- A clean area will be created per Section 5.3, NJDEP Fill Material Guidance for SRP Sites.

- The total area of contamination will be reduced at the donor AOCs per Section 5.3, NJDEP Fill Material Guidance for SRP Sites.

- "The Department views the Like-On-Like requirement as a means of ensuring a site is not made worse than its original state. Furthermore, the Department views this requirement as a safeguard to preclude alternative fill placement in uncontaminated areas." – Fill Guidance, Appendix C, Page 69

- Functional aspects of berms/How berms enhance the final RA.

March 18, 2025, Technical Consultation Memorandum Response prepared by NJDEP

On March 18, 2025, Alan Motter, NJDEP BEERA Chief, issued a letter stating that the NJDEP maintains the position that the pre-approval request did not meet the intention of the Fill Material Guidance for SRP Sites (October 2021 Version 4.0) or Historically Applied Pesticide Technical Guidance (February 2022 Version 3.1). The NJDEP suggested revising the RAW so alternative fill material would meet Like-on-Like requirements.

3.2 Soil Hotspot Delineation

Due to NJDEP denial of the FUP, Dynamic Earth calculated the Like-on-Like 75th percentile standard of dieldrin at the receiving AOC at Fairway 4, 5, and 9.

Compound (mg/kg)	NJDEP Soil Remediation Standards					75th Percentile Fairway 4	75th Percentile Fairway 5	75th Percentile Fairway 9
	RIDSRS	RISRS	NRIDSRS	NRISRS	MGWSRS			
Dieldrin	0.034	NA	0.16	NA	0.024	0.078	0.112	0.189

Additionally, Dynamic Earth calculated the Like-on-Like standard of arsenic, lead, mercury, chlordane, and heptachlor epoxide at Green 12, Green 13, and the Trench area. 75th percentile calculations are provided in Appendix A.

Compound (mg/kg)	NJDEP Soil Remediation Standards					75th Percentile Trench	75th Percentile Green 12	75th Percentile Green 13
	RIDSRS	RISRS	NRIDSRS	NRISRS	MGWSRS			
Chlordane	0.27	NA	1.4	NA	1.4	0.572	0.012	0.039
Heptachlor Epoxide	0.076	NA	0.4	NA	0.081	0.014	0.103	NA
Arsenic	19	1100	19	5200	19	NA	NA	46.65
Lead	200	NA	800	NA	90	NA	NA	37
Mercury	23	520000	390	NA	0.1	NA	NA	2.125

On April 15 and 16, 2025, Dynamic Earth returned to the Site to advance additional borings in an attempt to delineate select sample locations exhibiting the highest contaminant concentrations in Fairways 9, 10, 13 and 15 and Greens 9, 10, 11, and 15, through 19. Soil borings were advanced utilizing a stainless steel hand auger to delineate former soil sample locations exhibiting the highest contaminant concentrations. Specifically, Dynamic Earth advanced up to eight borings in two concentric rings around select soil boring locations. One sample was collected from each boring location and submitted to an NJDEP-certified laboratory for 4,4'-DDE, chlordane, dieldrin, heptachlor epoxide, arsenic, lead, and/or mercury analysis.

3.2.1 Fairway 9

Soil borings F-9-5-D1 through F-9-5-D8 were advanced to delineate former soil sample F-9-5. The first ring of soil borings were advanced ten feet from the original sample location and the second ring were advanced an additional five feet. All soil samples were submitted for dieldrin analysis.

Dieldrin was not detected at concentrations exceeding the most stringent Like-on-Like standards in any samples. Dieldrin was detected at concentrations exceeding NJDEP RSRS and/or MGWSRS in soil samples F-9-5-D1 through F-9-5-D3.

Based on the sample results, approximately 15 cubic yards of dieldrin impacted soils will be transported for off-Site disposal. The remaining HAP impacted soils located on Fairway 9 will be consolidated on-Site onto Fairway 4 located on AOC-5. Laboratory analytical results are summarized on Table 2. Soil sample locations are provided on Figure 4A. Proposed soil excavation areas are depicted on Figure 6.

3.2.2 Fairway 10

Soil borings F-10-1-D1 through F-10-1-D8, F-10-4-D1 through F-10-4-D8, and F-10-5-D1 through F-10-5-D8 were advanced to delineate former soil samples F-10-1, F-10-4, and F-10-5. The first ring of soil borings were advanced ten feet from the original sample location and the second ring were advanced an additional five feet. All soil samples were submitted for dieldrin analysis.

Dieldrin was not detected at concentrations exceeding the Like-on-Like standards in any samples. Dieldrin was detected at concentrations below NJDEP SRS in soil samples F-10-1-D2 and F-10-4-D2. Dieldrin was detected at concentrations exceeding NJDEP SRS in the remaining samples.

Soil samples F-10-1-D8, F-10-4-D8, and F-10-5-D7 were activated for dieldrin analysis in an attempt to reduce the volume of soils for consolidation to Fairway 9.

Dieldrin was detected at concentrations below NJDEP RSRS in soil samples F-10-1-D8 and F-10-4-D8. Dieldrin was detected at a concentrations exceeding NJDEP RSRS but below Like-on-Like standards in soil sample F-10-5-D7.

Based on the sample results, approximately 45 cubic yards of dieldrin impacted soils will be transported for off-Site disposal. Approximately 1,055 cubic yards of dieldrin impacted soils will be consolidated on Fairway 4. Approximately 1,525 cubic yards of dieldrin impacted soils will be consolidated on Fairway 5. Laboratory analytical results are summarized on Table 3. Soil sample locations are provided on Figure 4B. Proposed soil excavation areas are depicted on Figure 6.

3.2.3 Fairway 13

Soil borings F-13-D1 through F-13-D8 were advanced to delineate former soil sample F-13. The first ring of soil borings were advanced ten feet from the original sample location and the second ring were advanced an additional five feet. All soil samples were submitted for dieldrin analysis.

Dieldrin was detected at concentrations exceeding NJDEP SRS and Like-on-Like standards in soil samples F-13-D1 through F-13-D3. Dieldrin did not exceed the Like-on-Like standard in soil sample F-13-D4. Accordingly, Dynamic Earth activated soil samples F-13-D5 through F-13-D8 for dieldrin analysis.

Dieldrin was detected at a concentrations exceeding NJDEP SRS and Like-on-Like standards in soil sample F-13-D6. Dieldrin was detected at concentrations exceeding NJDEP SRS, but below Like-on-Like standards in soil samples F-13-D5, F-13-D7, and F-13-D8.

Based on the sampling conducted, dieldrin was delineated to Like-on-Like standards to the north by sample F-13-D5, to the south by sample F-13-D7, and to the west by sample F-13-D4. Previous soil sample F-13-2 will act as a delineation sample to the east.

Approximately 185 cubic yards of dieldrin impacted soils will be transported for off-Site disposal. Approximately 715 cubic yards of dieldrin impacted soils will be consolidated on Fairway 4. Approximately 1,240 cubic yards of dieldrin impacted soils will be consolidated on Fairway 5. Approximately 460 cubic yards of dieldrin impacted soils will be consolidated on Fairway 9. Laboratory analytical results are summarized on Table 4. Soil sample locations are provided on Figure 4C. Proposed soil excavation areas are depicted on Figure 6.

3.2.4 Fairway 15

Soil borings F-15-D1 through F-15-D8, F-15-2-D1 through F-15-2-D8, F-15-3-D1 through F-15-3-D8, F-15-5-D-1 through F-15-5-D8, and F-15-6-D1 through F-15-6-D8 were advanced to delineate former soil samples F-15-1, F-15-2, F-15-3, F-15-5, and F-15-6. The first ring of soil borings were

advanced ten feet from the original sample location and the second ring were advanced an additional five feet. All soil samples were submitted for dieldrin analysis.

Dieldrin was detected at concentrations exceeding the Like-on-Like and NJDEP SRS standards in soil samples F-15-3-D3, F-15-5-D3, and F-15-6-D3. Dieldrin was not detected above Like-on-Like standards in the remaining samples.

Due to exceedances detected in samples F-15-3-D3, F-15-5-D3, and F-15-6-D3, soil samples F-15-3-D7, F-15-5-D7, and F-15-6-D7 were activated for dieldrin analysis. Additionally, soil samples F-15-2-D6 and F-15-5-D6 were activated for dieldrin analysis to reduce the amount of soils proposed for consolidation at Fairway 9.

Dieldrin was detected at concentrations below the Like-on-Like standards in soil samples F-15-2-D6, F-15-5-D6, F-15-3-D7, F-15-5-D7, and F-15-6-D7. Dieldrin was detected at a concentration below NJDEP SRS in soil sample F-15-5-D7.

Based on the sampling conducted, dieldrin was delineated to Like-on-Like standards at the former F-15-1, F-15-2, F-15-3, F-15-5, and F-15-6 areas. Approximately 115 cubic yards of dieldrin impacted soils will be transported for off-Site disposal. Approximately 1,605 cubic yards of dieldrin impacted soils will be consolidated on Fairways 4 and 5, respectively. Laboratory analytical results are summarized on Table 5. Soil sample locations are provided on Figure 4D. Proposed soil excavation areas are depicted on Figure 6.

3.2.5 Greens

Dynamic Earth attempted to delineate elevated concentrations of HAP contaminants at Greens 9, 10, 11, and 15 through 19. Four soil borings were advanced ten feet from the original soil boring locations. Soil samples G-#-D1 through G-#-D4 were collected from 0.0 feet to 0.5 feet bgs, corresponding to the original soil sample location. All soil samples were submitted to an NJDEP-certified laboratory for 4,4-DDE, chlordane, heptachlor epoxide, arsenic, lead, and/or mercury analysis.

Based on a review of the laboratory data, 4,4-DDE, chlordane, heptachlor epoxide, arsenic, lead, and/or mercury were detected at concentrations exceeding Like-on-Like standards in all soil samples calculated for potential consolidation at Green 12, Green 13, and the Trench area located at AOC-5. Therefore, approximately 2,965 cubic yards of impacted soils located at Greens 9, 10, 11, and 15 through 19 at AOC-6 will be excavated for off-Site disposal. Laboratory analytical results are summarized on Tables 6 through 12. Soil sample locations are provided on Figure 4E through 4H. Proposed soil excavation areas are depicted on Figure 5.

4.0 REMEDIAL ACTION WORKPLAN

The proposed Site redevelopment includes subdividing the Site into Lots 69.01 through 69.06 for residential, commercial, and open space use. Proposed Lots 69.01 through 69.04 will be redeveloped for commercial purposes. Proposed Lot 69.05 will be designated for open space associated with the residential lot. Proposed Lot 69.06 will be redeveloped for residential purposes. Proposed remedial actions prior to redevelopment include excavating and transporting HAP impacted soils from the proposed commercial lots and HAP impacted soils not meeting Like-on-Like requirements in the proposed residential lot at an off-Site disposal facility. All the remaining HAP impacted soils meeting Like-on-Like requirements located in the proposed residential lot will be consolidated within the open space lot at Fairways 4, 5, and 9 and addressed with engineering and institutional controls as described below. The Proposed Redevelopment Plan is provided on Figure 3.

4.1 Interim Remedial Measures

No interim remedial measures are necessary at this time.

4.2 Proposed Remedial Action Activities

4.2.1 AOC-1, AOC-2, & AOC-3: Proposed Commercial Lots

A total of 2,370 cubic yards of HAP contaminated soil is proposed for off-Site disposal. Following soil excavation activities, excavations will be backfilled with quarry sourced and/or clean fill material approved by the LSRP of Record for the Site. Current and proposed Site elevations, depth of contaminated soil, and proposed excavation areas are depicted on Figure 5 and Figure 10.

4.2.2 AOC-6 & AOC-12: Proposed Residential Lot

A total of approximately 2,965 cubic yards of contaminated soils located at Greens 9 through 19 will be excavated and transported for off-Site disposal as Like-on-Like standards were not met.

A total of approximately 360 cubic yards of contaminated soils located at Fairways 9, 10, 13, and 15 will be excavated and transported for off-Site disposal as Like-on-Like standards were not met.

The remaining approximately 9,625 cubic yards of contaminated soils in Fairways 9, 10, 13, and 15 will be consolidated on-Site on Fairways 4, 5, and 9 as detailed below:

Approximate Volume of Impacted Soil (Cubic Yards)				
Fairway	**To F-4**	**To F-5**	**To F-9**	**Total Consolidation on-Site**
9	2,088	0	0	2,088
10	890	1,349	0	2,239
13	905	1,050	460	2,415
15	2,315	2,315	0	4,630
Total	6,198	4,417	460	11,372

Proposed excavation areas within the Fairways are depicted on Figure 6. Proposed consolidation areas are depicted on Figure 7. Cross sections are depicted on Figures 8 through 11.

4.2.3 AOC-5 & AOC-11: Proposed Open Space Lot

A total of approximately 210 cubic yards of contaminated soils located at Green 12 will be capped in place. A total of approximately 185 cubic yards of contaminated soils located at Green 13 will be capped in place. A total of approximately 105 cubic yards of contaminated soils located at Tee 14 will be capped in place. Contaminated soils located at Green 13 and the Trench Area within AOC-6 and AOC-12 will be consolidated onto the Green 13 and Trench Area within AOC-5 and AOC-11, respectively.

Approximately 11,372 cubic yards of HAP impacted material meeting Like-on-Like requirements will be consolidated to AOC-5. Approximately 6,198 cubic yards, 4,714 cubic yards, and 460 cubic yards of HAP contaminated soil is proposed for consolidation at Fairway 4, Fairway 5, and Fairway 9, respectively.

All consolidation and capped areas will receive institutional and engineering controls. Institutional controls including a Deed Notice and Remedial Action Permit for Soil and an engineering control (cap) will be established to prevent direct contact with the impacted soils. The cap will consist of one foot of certified clean fill material overlying a geotextile fabric. The geotextile fabric will provide a clear separation between the cap and the underlying impacted material. The proposed excavation areas are depicted on Figure 5. Current and proposed Site elevations, depth of contaminated soil, and dimensions of the engineering controls are depicted on Figures 8 through 10.

4.3 Sampling Proposal & Monitoring Requirements

To determine the horizontal extent of soil HAP impacts, Dynamic Earth reviewed SI/RI soil data, historic aerial photographs to confirm the historic and current horizontal limits of the greens, tees, and fairways and interviewed the golf course manager regarding pesticide application. A review of historical aerials confirmed the golf course configuration has been consistent since golf course operations began in 1929. According to interviews conducted, pesticide application was limited to the greens, tees, and fairways. Additionally, samples collected to evaluate the historic orchard areas

(AOC-2) collected outside of the greens, tees, and fairways and did not exhibit HAP contaminants above applicable NJDEP SRS.

To determine the vertical extent of soil HAP impacts, Dynamic Earth evaluated Site operations and reviewed SI/RI soil data. Based on the findings of the RI, the vertical extent of HAP contamination detected throughout the Site was a maximum depth of 2.0 feet bgs with the exception of the Green 6 area which extended to a maximum depth of 3.0 feet bgs. Samples collected to evaluate the fairways were collected at low lying areas to account for overland flow and the vertical extents of contamination are considered worst case. Golf course operations do not include the cultivation of soils which could increase the vertical extent of contamination. As such, pesticides that have been applied to the surface of the greens, tees, and fairways have been undisturbed.

The proposed excavation limits are defined by the SI/RI sampling and/or limits of the tees, fairways, and greens. In accordance with Section 8.5 of the NJDEP *Historically Applied Pesticide Technical Guidance* (February 2022), Dynamic Earth will collect post-excavation soil samples for remediation verification. Post-excavation samples will include a minimum of four base samples per acre and one post-excavation sample approximately every 200 linear feet of sidewall with a minimum of four total sidewall samples. Soil samples will be analyzed for select metals and/or pesticides based on the SI/RI sampling previously conducted. The proposed post-excavation sample locations are depicted on Figure 11.

4.4 Public Notification

Local municipal agencies including the Borough of Eatontown, West Long Branch, and Monmouth County Clerk's offices, Monmouth County Health Department, and the Monmouth County Planning Board will be notified of the proposed engineering controls. Public notification has been completed through the posting of an *Environmental Remediation in Progress Sign* per NJDEP requirements.

4.5 Applicable Remediation Standards

The applicable remediation standards for this RA are the NJDEP Soil Remediation Standards (SRS).

4.6 Effectiveness Evaluation Plan

The effectiveness evaluation for soil impacts addressed through installation of a cap for non-residential and non-commercial parcels will include annual inspections and biennial reporting to NJDEP to confirm that the engineering controls remain protective of human health and the environment. Areas where erosion is noted (if any) will be evaluated/repaired to ensure proper restoration within these zones.

4.7 Perimeter Air Monitoring & Action Plan

A Perimeter Air Monitoring & Action Plan is not anticipated as the proposed RA activities will not exceed 20 working days within a 30-day period. If proposed RA activities are anticipated to extend beyond 20 working days within a 30-day period, a Perimeter Air Monitoring & Action Plan will be implemented in accordance with Perimeter Air Monitoring Technical Guidance (December 2023).

4.8 Bench Scale/Pilot Studies

No bench scale or pilot studies have been conducted in support of the proposed RA activities.

4.9 Required Permits

A Remedial Action Permit for Soil will be obtained following proposed RA activities to document the engineering controls to be implemented to address impacted material at the Site.

4.10 Remedial Action Reporting & Project Management

The results of the remediation will be presented in the form of a Remedial Action Report (RAR) for HAP soil contamination which will detail activities conducted to achieve compliance with the N.J.A.C. 7:26E-5. The RAR will present in detail the results of the remediation activities and other pertinent items as specified in the RAR submission requirements of the NJDEP N.J.A.C. 7:26E.

4.11 Fill Use Plan

A Fill Use Plan prepared in accordance with N.J.A.C. 7:26E-5.2(h) and N.J.A.C. 7:26E-5.5(b) is provided as Appendix A.

4.12 Proposed Site Restoration

Once the proposed RA is completed and prior to Site redevelopment, all excavations will be sloped prior to Site redevelopment and/or backfilled with fill material obtained from a New Jersey licensed quarry and/or clean fill material approved by the LSRP of Record for the Site in accordance with the NJDEP *Fill Material Guidance for SRP Sites* (October 2021).

4.13 Required NJDEP Permits

The following NJDEP permits may be required prior to implementation of the remedial action and Site redevelopment:

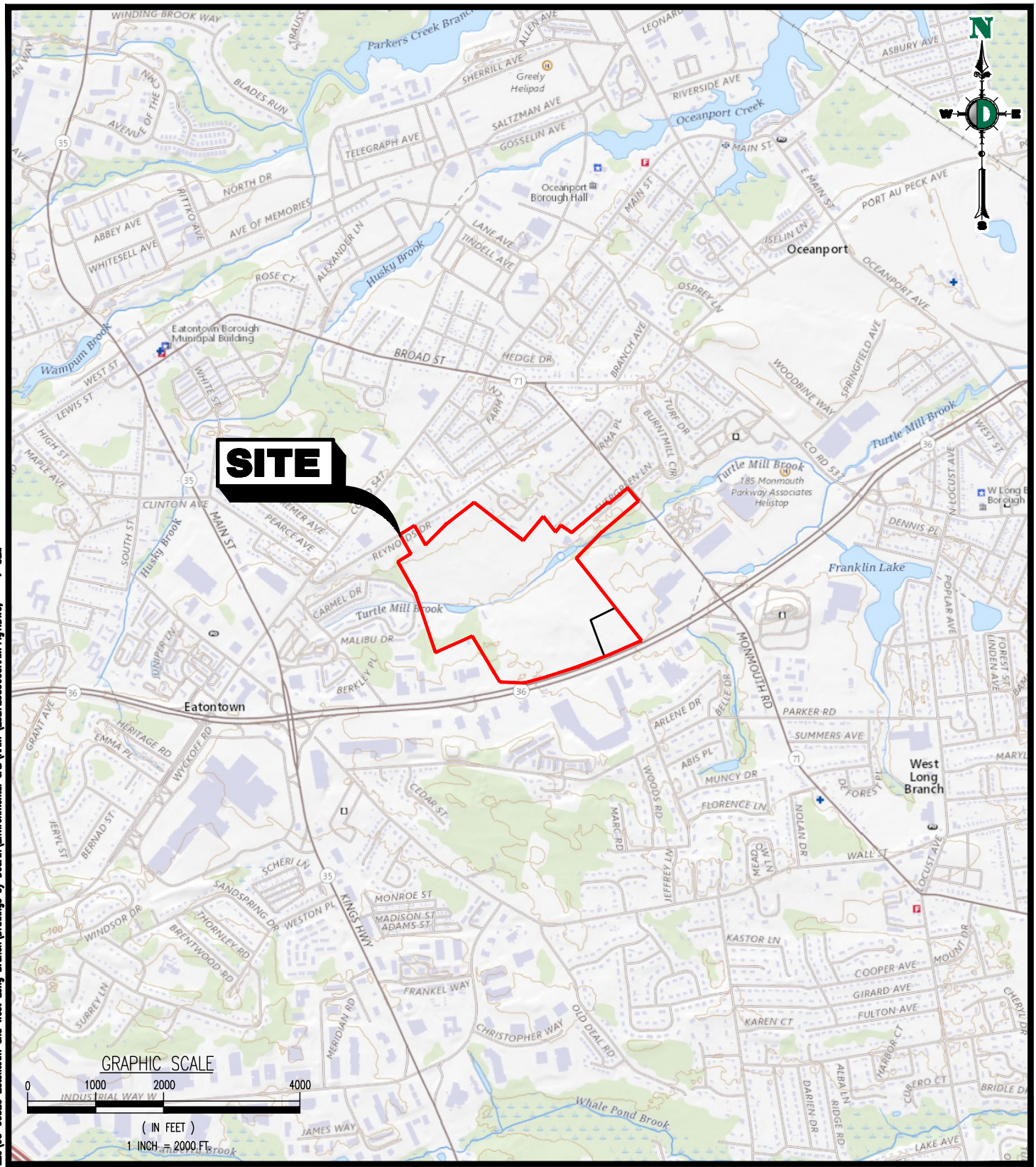
- FHA Individual Permit;
- Wetlands Letter of Interpretation;
- Wetlands Transition Area Waiver;
- FWW General Permit #11 – Outfalls and Intake Structures;

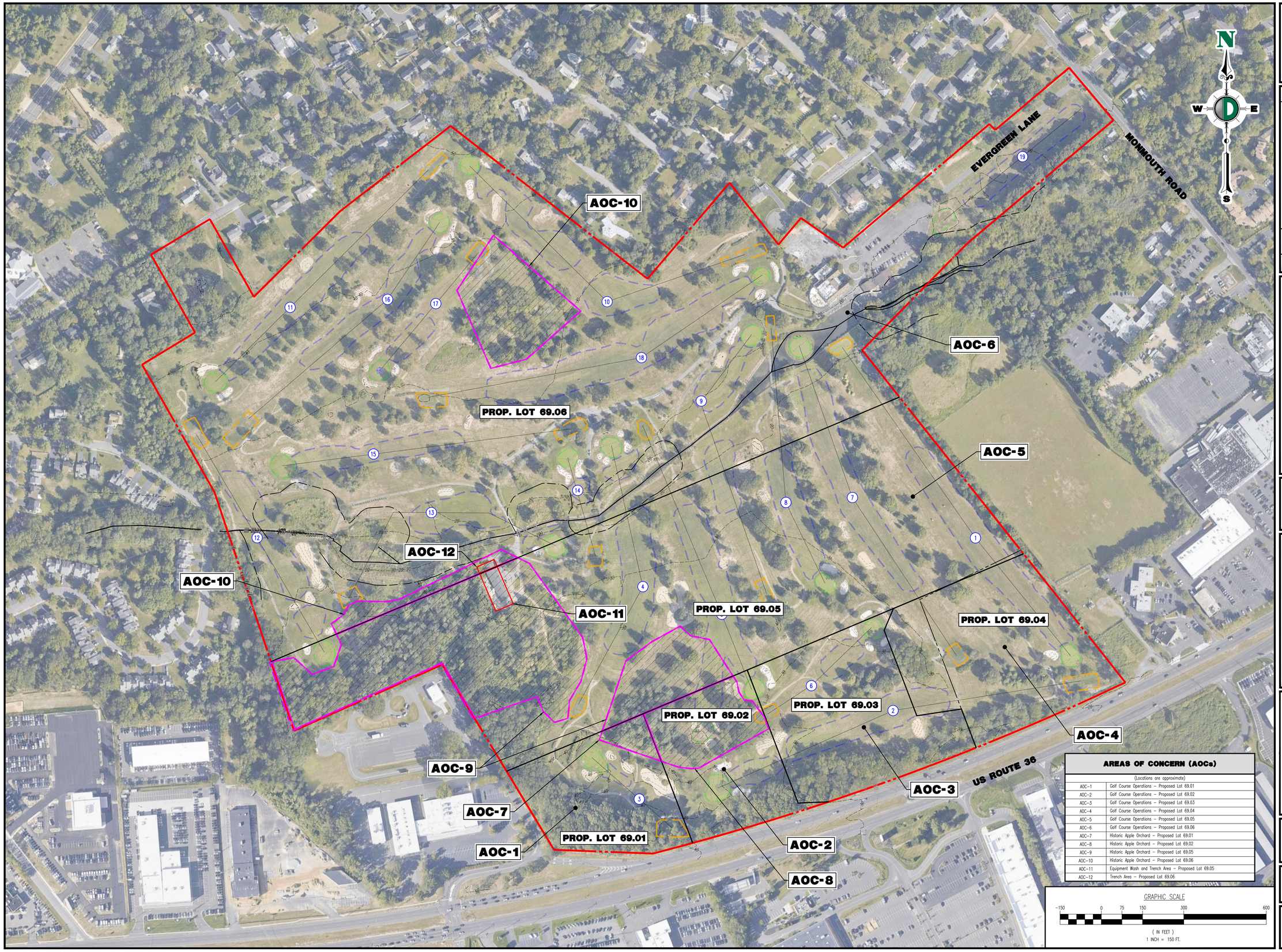
- FWW General Permit #4 – Hazardous Site Investigation and Cleanup;
- Treatment Works Approval;
- Bureau of Water System Engineering Approval; and
- NJPDES 5G3 – Construction Activity Stormwater (GP).

4.14 Proposed Remedial Action Schedule

Tasks	Anticipated Schedule
Cessation of Golf Course Operations	August 2025
Implementation of Remedial Actions in conjunction with redevelopment activities	August 2025
Completion of Remedial Action Report and Issuance of RAO	August 2028
Compliance Monitoring Program for Engineering Controls	Annual Inspections and Biennial Reports following approved Remedial Action Permit and issuance of RAO

Figures


SITE
N
W
E
S
GRAPHIC SCALE
0
1000
2000
4000
(IN FEET)
1 INCH = 2000 FT.
Eatontown
Oceanport
West Long Branch
Oceanport Borough Hall
Eatontown Borough Municipal Building
Greely Helipad
Turtle Mill Brook
Franklin Lake
Parkers Creek Branch
Oceanport Creek
Husky Brook
Wampum Brook
Whale Pond Brook
WINDING BROOK WAY
BLADES RUN
AVENUE OF THE C
NORTH DR
AVE OF MEMORIES
ABBEY AVE
WHITESELL AVE
RITTKO AVE
ALEXANDER LN
ROSE CT
SHERRILL AVE
TELEGRAPH AVE
SALTZMAN AVE
GOSSELIN AVE
ALLEN AVE
LEONARD
RIVERSIDE AVE
ASBURY AVE
MAIN ST
E MAIN ST
PORT AU PECK AVE
ISELIN LN
OCEANPORT AVE
LANE AVE
TINDELL AVE
OSPREY LN
BRANCH AVE
SPRINGFIELD AVE
WOODBINE WAY
BROAD ST
HEDGE DR
FARR LN
IRMA PL
BURNTMILL CIR
TURF DR
CO RD 537
185 Monmouth Parkway Associates Helistop
WEST ST
LEWIS ST
HIGH ST
MAPLE AVE
WHITE ST
CLINTON AVE
MAIN ST
SOUTH ST
PEARCE AVE
REMER AVE
REYNOLDS DR
CARMEL DR
MALIBU DR
BERKLEY PL
JUNIPER LN
HERITAGE RD
EMMA PL
WYCKOFF RD
GRANT AVE
JERYL ST
BERNAD ST
SCHERI LN
SANDSPRING DR
WESTON PL
WINDSOR DR
THORNLEY RD
BRENTWOOD RD
SURREY LN
MONROE ST
MADISON ST
ADAMS ST
KINGS HWY
CEDAR ST
FRANKEL WAY
CHRISTOPHER WAY
MERIDIAN RD
OLD DEAL RD
JAMES WAY
INDUSTRIAL WAY W
MONMOUTH RD
PARKER RD
SUMMERS AVE
ARLENE DR
BELLE DR
ABIS PL
MUNCY DR
FLORENCE LN
FOREST PL
WOODS RD
MARK RD
JEFFREY LN
MEADOW LN
NOLAN DR
WALL ST
OCUST AVE
KASTOR LN
COOPER AVE
GIRARD AVE
FULTON AVE
KAREN CT
MOUNT DR
CHERYL DR
HARBOR CT
CUBERO CT
BRIDLE DR
DARIEN DR
ALBA LN
RIDGE RD
LAKE AVE
DENNIS PL
POPLAR AVE
FOREST ST
LINDEN AVE
MARYL
W Long Branch Borough
N LOCUST AVE
DYNAMIC EARTH, LLC
1904 Main Street - Lake Como, NJ 07719
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www.dynamic-earth.com
TITLE: FIGURE 1: SITE LOCATION MAP
PROJECT: SURREY EQUITIES
OLD ORCHARD COUNTRY CLUB
BLOCK 2701, LOT 2, 53, 60, 66, 69; BLOCK 68, LOT 6
54 MONMOUTH ROAD
TOWNSHIP OF EATONTOWN, MONMOUTH COUNTY, NEW JERSEY
SCALE: (H) 1"=2000'
(V)
JOB No:
3272-98-005EC
Plotted: 06/25/25 - 11:30 AM, By: jdefisher, - Product Ver: 25.0
File: C:\EARTH Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\RAMP\E3272989005RAMPFig1.DWG, ---> SLM



AREAS OF CONCERN (AOCs)	
(Locations are approximate)	
AOC-1	Golf Course Operations – Proposed Lot 69.01
AOC-2	Golf Course Operations – Proposed Lot 69.02
AOC-3	Golf Course Operations – Proposed Lot 69.03
AOC-4	Golf Course Operations – Proposed Lot 69.04
AOC-5	Golf Course Operations – Proposed Lot 69.05
AOC-6	Golf Course Operations – Proposed Lot 69.06
AOC-7	Historic Apple Orchard – Proposed Lot 69.01
AOC-8	Historic Apple Orchard – Proposed Lot 69.02
AOC-9	Historic Apple Orchard – Proposed Lot 69.05
AOC-10	Historic Apple Orchard – Proposed Lot 69.06
AOC-11	Equipment Wash and Trench Area – Proposed Lot 69.05
AOC-12	Trench Area – Proposed Lot 69.06

GRAPHIC SCALE

-150 0 75 150 300 600

(IN FEET)

1 INCH = 150 FT.

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5	06/24/25	REVISED PER	MW/JB
4	02/11/25	REVISED PER CIVIL PLANS	MWK
3	10/15/24	REV. PER ADDITIONAL SAMPLE RESULTS	MW/JB
2	08/21/24	REV. PER FAIRWAY BOUNDARIES	MWK
1	06/25/24	REVISED PER CIVIL PLANS	JED

DRAWN BY: JED | DESIGNED BY: O.M. | CHECKED BY: SSS | CHECKED BY: _

PROJECT: **SURREY EQUITIES**
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- TEES BOUNDARY (APPROXIMATE)
- ORCHARD BOUNDARY (APPROXIMATE)
- AOC BOUNDARY (APPROXIMATE)

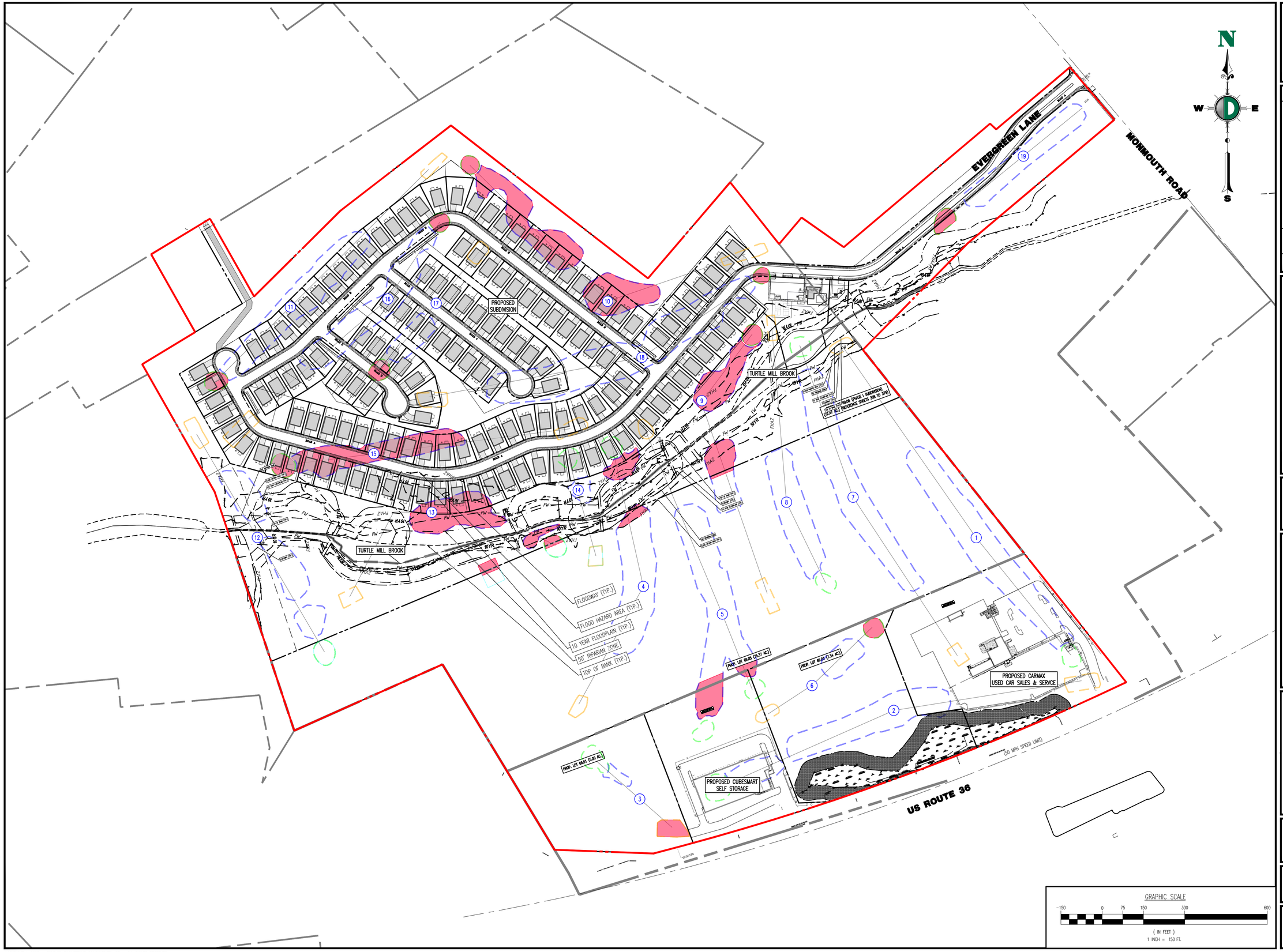
TITLE:
EXISTING CONDITIONS & AOC LOCATION PLAN

SCALE: (H) 1" = 150' (V) | DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: 2 | Rev. #: 5

Plotted: 06/25/25 – 11:30 AM By: jkelsher
File: O:\EARTH Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\RMP\E3272989005RAWPFig2.DWG, ----> EXISTING CONDITIONS & AOC LOCATION PLAN

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GRAPHIC SCALE

−150 0 75 150 300 600

(IN FEET)

1 INCH = 150 FT.

Plotted: 06/25/25 – 11:30 AM, By: jdefisher
File: O:\EARTH Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\RAMP\E3272989005RAMPFig3.DWG, ----> 03 PROPOSED REDEVELOPMENT PLAN

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1	06/25/24	REVISED PER CIVIL PLANS	JED

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TOWNSHIP OF EATONTOWN, MONMOUTH COUNTY, NJ

DRAWN BY: JED | DESIGNED BY: OM | CHECKED BY: SSS | CHECKED BY: –

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- TEE BOUNDARY (APPROXIMATE)
- PROPOSED EXCAVATION AREAS (APPROXIMATE)

TITLE:
PROPOSED REDEVELOPMENT PLAN

SCALE: (H) 1" = 150' (V) | DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: **3** | Rev. #: 5

Sample ID:	F-9-5-D1
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0264

Sample ID:	F-9-5-D2
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0372

Sample ID:	F-9-5-D4
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceednaces of NJDEP RSRS	

Sample ID:	F-9-5
Date:	7/12/2021
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0354
Sample ID:	F-9-5A
Date:	7/12/2021
Sample Depth:	1.0 to 1.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceednaces of NJDEP RSRS	

Sample ID:	F-9-5-D3
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0576

GRAPHIC SCALE

−40 0 20 40 80 160

(IN FEET)
1 INCH = 40 FT

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2	08/21/24	REV. PER FAIRWAY BOUNDARIES	MWK
1	06/25/24	REVISED PER CIVIL PLANS	JED

DRAWN BY: JED
DESIGNED BY: O.M.
CHECKED BY: SSS
CHECKED BY: _

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- TEES BOUNDARY (APPROXIMATE)
- ORCHARD BOUNDARY (APPROXIMATE)
- AOC BOUNDARY (APPROXIMATE)

TITLE:
SOIL SAMPLE LOCATION & CONTAMINANT CONC. PLAN (FAIRWAY 9)

SCALE: (H) 1"=40'
(V)
DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: 4A
Rev. #: 5

Plotted: 06/25/25 – 11:30 AM By: jlefisher
File: O:\EARTH Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\RMP\E32729890056RMPFig4.DWG, ----> 4A SOIL SAMPLE LOCATION & CONTAMINANT CONC. PLAN (FAIRWAY 9)

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Sample ID:	F-10-5-D2
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0427

Sample ID:	F-10-5-D1
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0504

Sample ID:	F-10-5
Date:	7/20/2021
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.238
Sample ID:	F-10-5A
Date:	7/20/2021
Sample Depth:	1.0 to 1.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-10-5-D4
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0866

Sample ID:	F-10-5-D3
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.163

Sample ID:	F-10-5-D7
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.116

Sample ID:	F-10-4-D3
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0245

Sample ID:	F-10-1-D2
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-10-4-D8
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0185

Sample ID:	F-10-4-D4
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.133

Sample ID:	F-10-4-D5
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0338

Sample ID:	F-10-4-D1
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.165

Sample ID:	F-10-4
Date:	7/20/2021
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.246
Sample ID:	F-10-4A
Date:	7/20/2021
Sample Depth:	1.0 to 1.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-10-1-D8
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-10-1-D4
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.148

Sample ID:	F-10-1-D3
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0339

Sample ID:	F-10-1-D1
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0265

Sample ID:	F-10-1
Date:	7/20/2021
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.281
Sample ID:	F-10-1A
Date:	7/20/2021
Sample Depth:	1.0 to 1.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-10-1-D2
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

17

10

18

GRAPHIC SCALE

−40 0 20 40 80 160

(IN FEET)
1 INCH = 40 FT

Plotted: 06/25/25 – 11:31 AM, By: jdefisher
File: O:\EARTH Projects\3272 Surrey Equities LLC\98-005EC Edgewood and West Long Branch\Drawings by Dearth\Environmental CAD\RMP\E3272989005RMPFig4.DWG, ----> 4B SOIL SAMPLE LOCATION & CONTAMINANT CONC. PLAN (FAIRWAY 10)

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4	02/11/25	REVISED PER CIVIL PLANS	MWK
3	10/15/24	REV. PER ADDITIONAL SAMPLE RESULTS	MW/JD
2	08/21/24	REV. PER FAIRWAY BOUNDARIES	MWK
1	06/25/24	REVISED PER CIVIL PLANS	JED

DRAWN BY: JED | DESIGNED BY: OM | CHECKED BY: SSS | CHECKED BY: _

PROJECT: **SURREY EQUITIES**
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- GREEN BOUNDARY (APPROXIMATE)
- FAIRWAY BOUNDARY (APPROXIMATE)
- TEES BOUNDARY (APPROXIMATE)
- ORCHARD BOUNDARY (APPROXIMATE)
- AOC BOUNDARY (APPROXIMATE)

TITLE:
SOIL SAMPLE LOCATION & CONTAMINANT CONC. PLAN (FAIRWAY 10)

SCALE: (H) 1"=40' (V) | DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: 4B | Rev. #: 5

Sample ID:	F-13-D5
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-13-D1
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.888

Sample ID:	F-13-D8
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.109

Sample ID:	F-13-D4
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.633

Sample ID:	F-13-D3
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.139

Sample ID:	F-13-D7
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0278

Sample ID:	F-13
Date:	5/19/2021
Sample Depth:	0.0 to 0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Dieldrin	0.503
Sample ID:	F-13A
Date:	7/21/2021
Sample Depth:	1.0 to 1.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0372
Sample ID:	F-13B
Date:	7/21/2021
Sample Depth:	1.0 to 1.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-13-D6
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.196

Sample ID:	F-13-D2
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.887

GRAPHIC SCALE

−40 0 20 40 80 160

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2	08/21/24	REV. PER FAIRWAY BOUNDARIES	MWK
1	06/25/24	REVISED PER CIVIL PLANS	JED

DRAWN BY: JED
DESIGNED BY: O.M.
CHECKED BY: SSS
CHECKED BY: _

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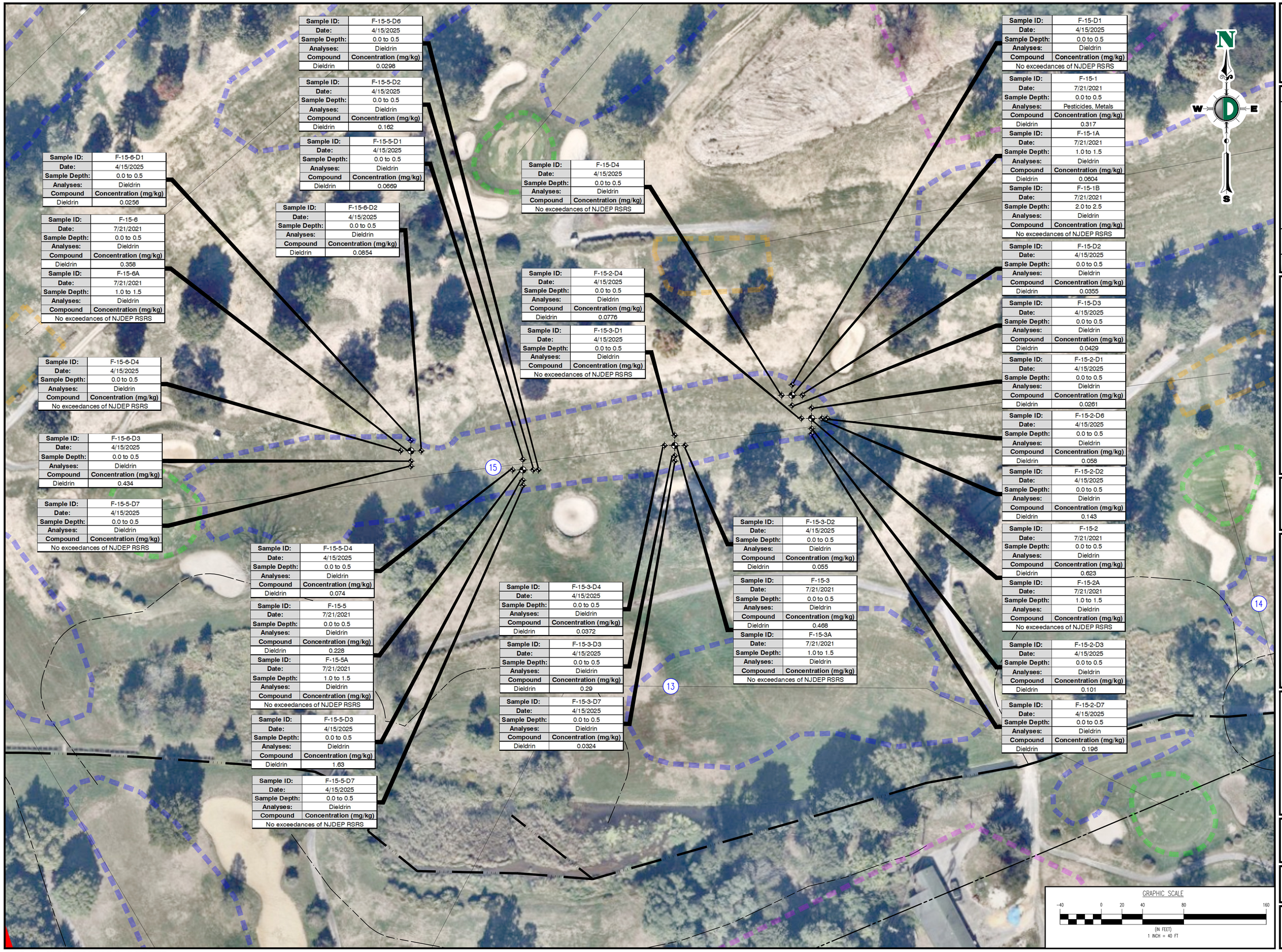
TITLE:
SOIL SAMPLE LOCATION & CONTAMINANT CONC. PLAN (FAIRWAY 13)

SCALE: (H) 1"=40' (V)
DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: 4C
Rev. #: 5

Plotted: 06/25/25 – 11:31 AM, By: jdefisher
File: O:\EARTH Projects\3272 Survey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\RMPV\E32729890058NWPFig4.DWG, ---> 4C SOIL SAMPLE

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Sample ID:	F-15-6-D1
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0256

Sample ID:	F-15-6
Date:	7/21/2021
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.358
Sample ID:	F-15-6A
Date:	7/21/2021
Sample Depth:	1.0 to 1.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-15-6-D4
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-15-6-D3
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.434

Sample ID:	F-15-5-D7
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-15-5-D6
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0298

Sample ID:	F-15-5-D2
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.162

Sample ID:	F-15-5-D1
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0669

Sample ID:	F-15-6-D2
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0854

Sample ID:	F-15-D4
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-15-2-D4
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0776

Sample ID:	F-15-3-D1
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-15-3-D2
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.055

Sample ID:	F-15-3
Date:	7/21/2021
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.468
Sample ID:	F-15-3A
Date:	7/21/2021
Sample Depth:	1.0 to 1.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-15-3-D4
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0372

Sample ID:	F-15-3-D3
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.29

Sample ID:	F-15-3-D7
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0324

Sample ID:	F-15-D1
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-15-1
Date:	7/21/2021
Sample Depth:	0.0 to 0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Dieldrin	0.317
Sample ID:	F-15-1A
Date:	7/21/2021
Sample Depth:	1.0 to 1.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0604
Sample ID:	F-15-1B
Date:	7/21/2021
Sample Depth:	2.0 to 2.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-15-D2
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0355

Sample ID:	F-15-D3
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0429

Sample ID:	F-15-2-D1
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.0261

Sample ID:	F-15-2-D6
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.058

Sample ID:	F-15-2-D2
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.143

Sample ID:	F-15-2
Date:	7/21/2021
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.623
Sample ID:	F-15-2A
Date:	7/21/2021
Sample Depth:	1.0 to 1.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-15-2-D3
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.101

Sample ID:	F-15-2-D7
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.196

Sample ID:	F-15-5-D4
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.074
Sample ID:	F-15-5
Date:	7/21/2021
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	0.228
Sample ID:	F-15-5A
Date:	7/21/2021
Sample Depth:	1.0 to 1.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

Sample ID:	F-15-5-D3
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
Dieldrin	1.63

Sample ID:	F-15-5-D7
Date:	4/15/2025
Sample Depth:	0.0 to 0.5
Analyses:	Dieldrin
Compound	Concentration (mg/kg)
No exceedances of NJDEP RSRS	

GRAPHIC SCALE
−40 0 20 40 80 160
(IN FEET)
1 INCH = 40 FT

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- TEES BOUNDARY (APPROXIMATE)
- ORCHARD BOUNDARY (APPROXIMATE)
- AOC BOUNDARY (APPROXIMATE)

REV.	DATE	COMMENTS	BY
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3	10/15/24	REV. PER ADDITIONAL SAMPLE RESULTS	MW/AB
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1	06/25/24	REVISED PER CIVIL PLANS	JED

DRAWN BY: JED | DESIGNED BY: O.M. | CHECKED BY: SSS | CHECKED BY: —

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TITLE:
SOIL SAMPLE LOCATION & CONTAMINANT CONC. PLAN (FAIRWAY 15)

SCALE: (H) 1"=40' (V) | DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: 4D | Rev. #: 5

Plotted: 08/25/25 – 11:31 AM, By: jdefisher
File: O:\EARTH Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Earth\Environmental CAD\RMPLEX27298900SRKMPFig4.DWG, ----> 4D SOIL SAMPLE LOCATION & CONTAMINANT CONC. PLAN (FAIRWAY 15)

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Sample ID:	G-18-D4
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Metals
Compound	Concentration (mg/kg)
Arsenic	115
Lead	675

Sample ID:	G-18-D1
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Metals
Compound	Concentration (mg/kg)
Arsenic	250
Lead	1520

Sample ID:	G-18
Date:	5/19/2021
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Chlordane	0.67
Arsenic	85.5
Lead	776
Mercury	33.7
Sample ID:	G-18A
Date:	7/20/2021
Sample Depth:	1.0-1.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Arsenic	590
Lead	2,200
Sample ID:	G-18B
Date:	7/20/2021
Sample Depth:	2.0-2.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
No exceedance of NJDEP SRS	

Sample ID:	G-18-D2
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Metals
Compound	Concentration (mg/kg)
Arsenic	581
Lead	3210

Sample ID:	G-18-D3
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Metals
Compound	Concentration (mg/kg)
Arsenic	69.9
Lead	586

Sample ID:	G-9-D1
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Chlordane	0.752
Arsenic	188
Lead	1310
Mercury	25.8

Sample ID:	G-9-D4
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
4,4'-DDE	0.69
Chlordane	1.23
Arsenic	344
Lead	2350
Mercury	37.2

Sample ID:	G-9
Date:	5/19/2021
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
4,4'-DDE	0.798
Chlordane	0.338
Heptachlor epoxide	0.0939
Arsenic	122
Lead	746
Mercury	27.5
Sample ID:	G-9A
Date:	7/12/2021
Sample Depth:	1.0-1.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Arsenic	150
Mercury	37
Sample ID:	G-9B
Date:	7/12/2021
Sample Depth:	2.0-2.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
No exceedance of NJDEP SRS	

Sample ID:	G-9-D2
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
4,4'-DDE	0.49
Chlordane	2.03
Arsenic	98.4
Lead	989
Mercury	24.2

Sample ID:	G-9-D3
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
4,4'-DDE	0.56
Chlordane	1.14
Arsenic	301
Lead	2130
Mercury	44

10 18 9

N W E S

GRAPHIC SCALE
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(IN FEET)
1 INCH = 40 FT

Plotted: 06/25/25 — 11:30 AM, By: jdefisher
File: O:\EARTH Projects\3272 Survey Equities LLC\98-005EC Edontown and West Long Branch\Drawings by Dearth\Environmental CAD\PWP\3272989005RAWPFig4.DWG, ----> 4E SOIL SAMPLE LOCATION & CONTAMINANT CONC. PLAN (GREEN 9 & 18)

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REV.	DATE	COMMENTS	BY
5	06/24/25	REVISED PER	MW/JB
4	02/11/25	REVISED PER CIVIL PLANS	MWK
3	10/15/24	REV. PER ADDITIONAL SAMPLE RESULTS	MW/JB
2	08/21/24	REV. PER FAIRWAY BOUNDARIES	MWK
1	06/25/24	REVISED PER CIVIL PLANS	JED

DRAWN BY: JED | DESIGNED BY: O.M. | CHECKED BY: SSS | CHECKED BY: —

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TITLE:
SOIL SAMPLE LOCATION & CONTAMINANT CONC. PLAN (GREEN 9 & 18)

SCALE: (H) 1"=40' (V) | DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: 4E | Rev. #: 5

Sample ID:	G-10
Date:	5/19/2021
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Chlordane	0.457
Arsenic	61.2
Lead	509
Mercury	21.8
Sample ID:	G-10A
Date:	7/20/2021
Sample Depth:	1.0-1.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Arsenic	330
Lead	580
Sample ID:	G-10B
Date:	7/20/2021
Sample Depth:	2.0-2.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
No exceedance of NJDEP SRS	

Sample ID:	G-10-D1
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Arsenic	183
Lead	1600
Mercury	68.9

Sample ID:	G-10-D2
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Chlordane	0.323
Lead	132
Mercury	10.3

Sample ID:	G-10-D3
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Mercury	0.768

Sample ID:	G-10-D4
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Chlordane	0.785
Arsenic	50.5
Lead	382
Mercury	19.5

Sample ID:	G-16-D4
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Lead	111
Mercury	15.5

Sample ID:	G-16
Date:	5/19/2021
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
4,4'-DDE	0.713
Chlordane	0.441
Heptachlor epoxide	0.0812
Arsenic	308
Lead	1850
Mercury	81.1
Sample ID:	G-16A
Date:	12/21/2022
Sample Depth:	1.0-1.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
No exceedance of NJDEP SRS	

Sample ID:	G-16-D1
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Arsenic	26.2
Lead	103
Mercury	3.62

Sample ID:	G-16-D2
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Chlordane	0.393
Arsenic	73.4
Lead	715
Mercury	7.32

Sample ID:	G-16-D3
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Chlordane	0.421
Arsenic	145
Lead	1070
Mercury	33.7

GRAPHIC SCALE
−40 0 20 40 80 160
(IN FEET)
1 INCH = 40 FT

REV.	DATE	COMMENTS	BY
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3	10/15/24	REV. PER ADDITIONAL SAMPLE RESULTS	MW/JB
2	08/21/24	REV. PER FAIRWAY BOUNDARIES	MWK
1	06/25/24	REVISED PER CIVIL PLANS	JED

DRAWN BY: JED
DESIGNED BY: OM
CHECKED BY: SSS
CHECKED BY: —

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- AOC BOUNDARY (APPROXIMATE)

TITLE: SOIL SAMPLE LOCATION & CONTAMINANT CONC. PLAN (GREEN 10 & 16)

SCALE: (H) 1"=40' (V)
DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: 4F
Rev. #: 5

Plotted: 06/25/25 – 11:30 AM, By: jfetcher
File: G:\DATA Projects\3272 Survey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\RMPT\3272989005DAWPT\g4.DWG, ---> 4F SOIL SAMPLE LOCATION & CONTAMINANT CONC. PLAN (GREEN 10 & 16)

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Sample ID:	G-11
Date:	5/19/2021
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Dieldrin	0.0298
Arsenic	146
Lead	966
Mercury	0.0298
Sample ID:	G-11A
Date:	7/20/2021
Sample Depth:	1.0-1.5
Analyses:	Metals
Compound	Concentration (mg/kg)
Arsenic	28
Sample ID:	G-11B
Date:	7/20/2021
Sample Depth:	2.0-2.5
Analyses:	Metals
Compound	Concentration (mg/kg)
No exceedance of NJDEP SRS	

Sample ID:	G-11-D4
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Metals
Compound	Concentration (mg/kg)
Arsenic	60.3
Lead	626
Mercury	27.4

Sample ID:	G-11-D1
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Metals
Compound	Concentration (mg/kg)
Arsenic	364
Lead	2530
Mercury	81.9

Sample ID:	G-11-D2
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Metals
Compound	Concentration (mg/kg)
Arsenic	52
Lead	620
Mercury	12.3

Sample ID:	G-11-D3
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Metals
Compound	Concentration (mg/kg)
Arsenic	54.4
Lead	476
Mercury	2.55

Sample ID:	G-15
Date:	5/19/2021
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Chlordane	0.565
Heptachlor epoxide	0.0842
Arsenic	55.5
Lead	250
Mercury	18.2
Sample ID:	G-15A
Date:	7/20/2021
Sample Depth:	1.0-1.5
Analyses:	Metals
Compound	Concentration (mg/kg)
Arsenic	29
Sample ID:	G-15B
Date:	7/20/2021
Sample Depth:	2.0-2.5
Analyses:	Metals
Compound	Concentration (mg/kg)
No exceedance of NJDEP SRS	

Sample ID:	G-15-D4
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Dieldrin	0.0322
Chlordane	1.69
Arsenic	282

Sample ID:	G-15-D1
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Dieldrin	0.0363
Chlordane	4.01
Arsenic	144

Sample ID:	G-15-D2
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Arsenic	61.9

Sample ID:	G-15-D3
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Dieldrin	0.0414
Chlordane	2.06
Arsenic	182

GRAPHIC SCALE

-40 0 20 40 80 160

(IN FEET)
1 INCH = 40 FT

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4	02/11/25	REVISED PER CIVIL PLANS	MWK
3	10/15/24	REV. PER ADDITIONAL SAMPLE RESULTS	MW/JEJ
2	08/21/24	REV. PER FAIRWAY BOUNDARIES	MWK
1	06/25/24	REVISED PER CIVIL PLANS	JED

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TITLE:
SOIL SAMPLE LOCATION & CONAMINANT CONC. PLAN (GREEN 11 & 15)

SCALE: (H) 1"=40' (V) | DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: 4G | Rev. #: 5

Plotted: 06/25/25 – 11:31 AM, By: jdefisher
File: O:\EARTH Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\PWP\3272989005RAWPFig4.DWG, ----> 4G SOIL SAMPLE LOCATION & CONAMINANT CONC. PLAN (GREEN 11 & 15)

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Sample ID:	G-17-D1
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Chlordane	2.56
Arsenic	194
Lead	1440
Mercury	38.9

Sample ID:	G-17
Date:	5/19/2021
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Chlordane	0.67
Arsenic	85.5
Lead	776
Mercury	33.7
Sample ID:	G-17A
Date:	7/20/2021
Sample Depth:	1.0-1.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Arsenic	140
Sample ID:	G-17B
Date:	7/20/2021
Sample Depth:	2.0-2.5
Analyses:	Metals
Compound	Concentration (mg/kg)
No exceedance of NJDEP SRS	

Sample ID:	G-17-D4
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Chlordane	2.38
Arsenic	209
Lead	1680
Mercury	61.4

Sample ID:	G-17-D2
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Chlordane	3.36
Arsenic	309
Lead	2080
Mercury	47.3

Sample ID:	G-17-D3
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Chlordane	1.34
Arsenic	221
Lead	1550
Mercury	44

Sample ID:	G-19-D1
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Lead	389

Sample ID:	G-19
Date:	9/27/2024
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Lead	371
Mercury	1.25
Sample ID:	G-19A
Date:	9/27/2024
Sample Depth:	1.0-1.5
Analyses:	Lead
Compound	Concentration (mg/kg)
Lead	354
Sample ID:	G-19B
Date:	9/27/2024
Sample Depth:	2.0-2.5
Analyses:	Lead
Compound	Concentration (mg/kg)
Lead	96.3

Sample ID:	G-19-D4
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Lead	240

Sample ID:	G-19-D2
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Lead	505

Sample ID:	G-19-D3
Date:	4/16/2025
Sample Depth:	0.0-0.5
Analyses:	Pesticides, Metals
Compound	Concentration (mg/kg)
Lead	314

GRAPHIC SCALE

−40 0 20 40 80 160

(IN FEET)
1 INCH = 40 FT

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3	10/15/24	REV. PER ADDITIONAL SAMPLE RESULTS	MW/AB
2	08/21/24	REV. PER FAIRWAY BOUNDARIES	MWK
1	06/25/24	REVISED PER CIVIL PLANS	JED

DRAWN BY: JED
DESIGNED BY: O.M.
CHECKED BY: SSS
CHECKED BY: —

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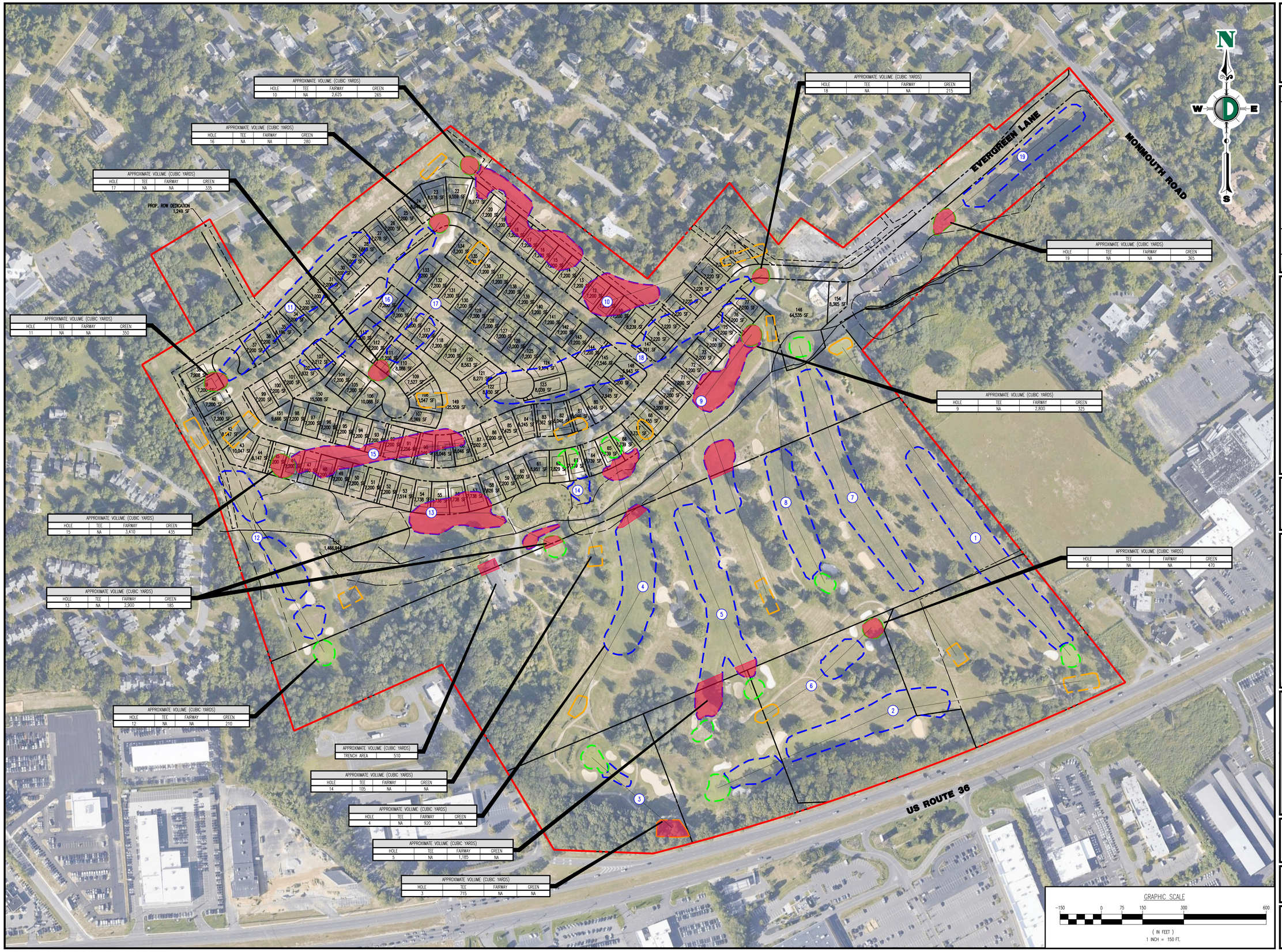
TITLE:
SOIL SAMPLE LOCATION & CONAMINANT CONC. PLAN (GREEN 17 & 19)

SCALE: (H) 1=40' (V)	DATE: 12/07/2023
PROJECT No: 3272-98-005EC	

FIGURE: 4H
Rev. #: 5

Plotted: 06/25/25 – 11:31 AM, By: jdefisher
File: O:\EARTH Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\RMPV\E3272985005RAWPFig4.DWG, ----> 4H SOIL SAMPLE

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Plotted: 06/25/25 – 11:30 AM, By: jlefisher
File: O:\EARTH Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\RMP\E32729890056RMPFig5.DWG, ----> 05 PROPOSED SOIL EXCAVATION PLAN

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1	06/25/24	REVISED PER CIVIL PLANS	JED

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DRAWN BY: JED | DESIGNED BY: O.M. | CHECKED BY: SSS | CHECKED BY: _

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- FAIRWAY BOUNDARY (APPROXIMATE)
- TEE BOUNDARY (APPROXIMATE)
- PROPOSED EXCAVATION AREAS (APPROXIMATE)

TITLE:
PROPOSED SOIL EXCAVATION PLAN

SCALE: (H) 1" = 150' (V) | DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: 5 | Rev. #: 5

GRAPHIC SCALE
-150 0 75 150 300 600
(IN FEET)
1 INCH = 150 FT.

Approximate Volume of Impacted Soil (Cubic Yards)					
Fairway	To F-9	To F-5	To F-4	Total Consolidation on-Site	Off-Site Disposal
9	0	0	2,088	2,088	15
10	0	1,349	890	2,239	45
13	460	1,050	905	2,415	185
15	0	2,315	2,315	4,630	115
Total	460	4,714	6,198	11,372	360

EXCAVATION LEGEND

- TO BE DISPOSED OF OFF-SITE
- TO BE CONSOLIDATED ON FAIRWAY 4 (F-4)
- TO BE CONSOLIDATED ON FAIRWAY 5 (F-5)
- TO BE CONSOLIDATED ON FAIRWAY 9 (F-9)

~1,350 CY
TO BE CONSOLIDATED
ON F-5

~55 CY
FOR OFF-SITE DISPOSAL

~890 CY
TO BE CONSOLIDATED
ON F-4 & F-5

~15 CY
FOR OFF-SITE DISPOSAL

~200 CY
FOR OFF-SITE DISPOSAL

REMAINING 4,630 CY
TO BE CONSOLIDATED
ON F-4 & F-5

REMAINING 1,985 CY
TO BE CONSOLIDATED
ON F-4 & F-5

~185 CY
FOR OFF-SITE DISPOSAL

~905 CY
TO BE CONSOLIDATED
ON F-4

~460 CY
TO BE CONSOLIDATED
ON F-9

~1,050 CY
TO BE CONSOLIDATED
ON F-5

GRAPHIC SCALE
−60 0 30 60 120 240
(IN FEET)
1 INCH = 60 FT

DYNAMIC EARTH, LLC
SURVEY • TRACK

REV.	DATE	COMMENTS	BY

PROJECT: SURREY EQUITIES
OLD ORCHARD COUNTRY CLUB
BLOCK 2701, LOT 2, 53, 60, 66, 69; BLOCK 68, LOT 6
54 MONMOUTH ROAD
TOWNSHIP OF EATONTOWN, MONMOUTH COUNTY, NJ

DRAWN BY: JED | DESIGNED BY: OM | CHECKED BY: SSS | CHECKED BY: _

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LEGEND:

- SITE BOUNDARY (APPROXIMATE)
- 18 GOLF COURSE HOLE DESIGNATION
- GREEN BOUNDARY (APPROXIMATE)
- FAIRWAY BOUNDARY (APPROXIMATE)
- TEES BOUNDARY (APPROXIMATE)
- ORCHARD BOUNDARY (APPROXIMATE)
- AOC BOUNDARY (APPROXIMATE)

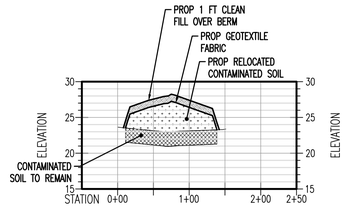
TITLE:
PROPOSED FAIRWAYEXCAVATION & CONSOLIDATION PLAN

SCALE: (H) 1"=60' (V) | DATE: 10/17/2024
PROJECT No: 3272-98-005EC

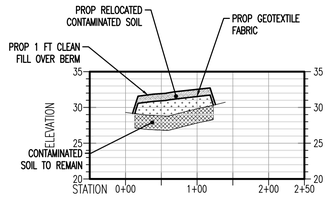
FIGURE: 6 | Rev. #: 0

Plotted: 06/25/25 – 11:31 AM, By: jfetsher
File: O:\EARTH Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Earth\Environmental CAD\MMP\E3272989005EAWMPTg6.DWG, ---> 06 PROPOSED FAIRWAYEXCAVATION & CONSOLIDATION PLAN

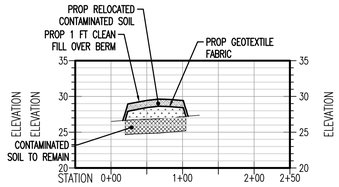
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SECTION 4TH FAIRWAY
HORIZONTAL SCALE: 1"=100'
VERTICAL SCALE: 1"=10'



SECTION 5TH FAIRWAY
HORIZONTAL SCALE: 1"=100'
VERTICAL SCALE: 1"=10'



SECTION 9TH FAIRWAY
HORIZONTAL SCALE: 1"=100'
VERTICAL SCALE: 1"=10'



Proposed Engineering Cap Dimensions (Approx.)			
Area	Capped Area (SqFt)	Subsurface Contaminated Soil (CuYd)	Consolidated Soil (CuYd)
Fairway 4	63,844	6,095	8,489
Fairway 5	77,324	4,722	6,592
Fairway 9	10,695	469	817

GRAPHIC SCALE
-150 0 75 150 300 600
(IN FEET)
1 INCH = 150 FT.

REV.	DATE	COMMENTS	BY
5	06/24/25	REVISED PER	MW/AB
4	02/11/25	REVISED PER CIVIL PLANS	MWK
3	10/15/24	REV. PER ADDITIONAL SAMPLE RESULTS	MW/AB
2	08/21/24	REV. PER FAIRWAY BOUNDARIES	MWK
1	06/25/24	REVISED PER CIVIL PLANS	JED

DRAWN BY: MK
DESIGNED BY: OM
CHECKED BY: SSS
CHECKED BY: _

PROJECT: SURREY EQUITIES
OLD ORCHARD COUNTRY CLUB
BLOCK 2701, LOT 2, 53, 60, 66, 69; BLOCK 68, LOT 6
54 MONMOUTH ROAD
TOWNSHIP OF EATONTOWN, MONMOUTH COUNTY, NJ

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Houston, Texas • T: 281.799.6400
Katy, Texas • T: 832.644.0940
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LEGEND:
- SITE BOUNDARY (APPROXIMATE)
- 18 GOLF COURSE HOLE DESIGNATION
- GREEN BOUNDARY (APPROXIMATE)
- FAIRWAY BOUNDARY (APPROXIMATE)
- TEE BOUNDARY (APPROXIMATE)
- PROPOSED SOIL CONSOLIDATION AREAS

TITLE: PROPOSED CONSOLIDATION PLAN

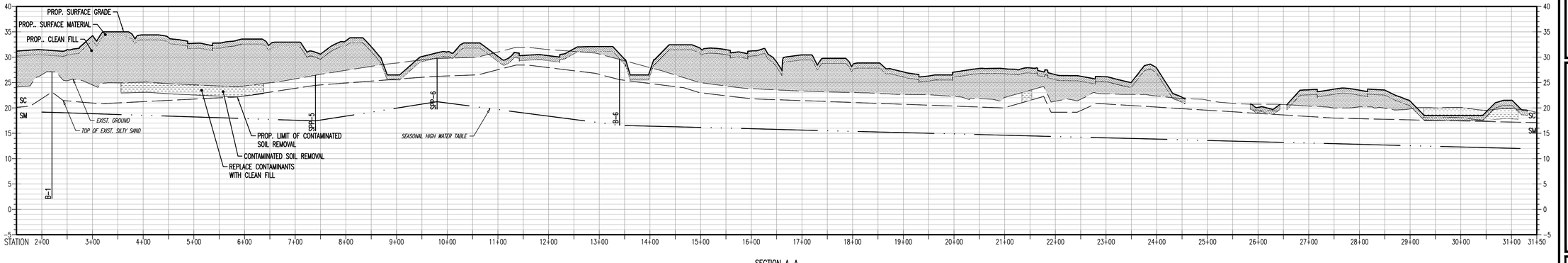
SCALE: (H) 1" = 150' (V)
DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: 7
Rev. #: 5

Plotted: 06/25/25 – 11:31 AM, By: jlefisher
File: O:\EARTH Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\RMP\E3272989005RAMPFig7.DWG, ----> 07 PROPOSED CONSOLIDATION PLAN

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SECTION A-A
HORIZONTAL SCALE: 1"=100'
VERTICAL SCALE: 1"=10'

LEGEND

- = PROPOSED IMPORTED MATERIAL (PAVEMENT, CONCRETE, TOP SOIL, ETC.)
- = PROPOSED FILL
- = EXISTING CONTAMINATED SOILS TO REMAIN
- = EXISTING CONTAMINATED SOILS TO BE REMOVED
- = PROPOSED RELOCATED CONTAMINATED SOILS

GRAPHIC SCALE
−100 0 50 100 200 400
(IN FEET)
1 INCH = 100 FT.

REV.	DATE	COMMENTS	BY
5	06/24/25	REVISED PER:	MW/JAB
4	02/11/25	REVISED PER CIVIL PLANS	MWK
3	10/15/24	REV. PER ADDITIONAL SAMPLE RESULTS	MW/JAB
2	08/21/24	REV. PER FAIRWAY BOUNDARIES	MWK
1	06/25/24	REVISED PER CIVIL PLANS	JED

PROJECT: **SURREY EQUITIES**
OLD ORCHARD COUNTRY CLUB
BLOCK 2701, LOT 2, 53, 60, 66, 69; BLOCK 68, LOT 6
54 MONMOUTH ROAD
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DRAWN BY: MK | DESIGNED BY: OM | CHECKED BY: SSS | CHECKED BY: –

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LEGEND:
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- 18 GOLF COURSE HOLE DESIGNATION
- GREENWAY BOUNDARY (APPROXIMATE)
- FAIRWAY BOUNDARY (APPROXIMATE)
- TEES BOUNDARY (APPROXIMATE)

TITLE: **PROPOSED SOIL CROSS SECTION (RESIDENTIAL AREA)**

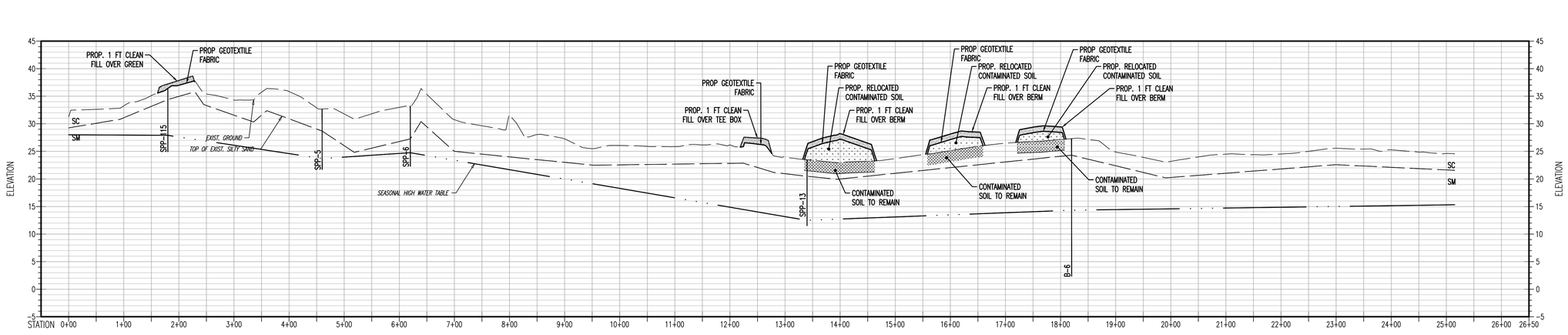
SCALE: (H) 1" = 100' (V) | DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: **8** | Rev. #: 5

Plotted: 06/25/25 – 11:31 AM, By: jstefaner
File: G:\DATA Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\RAWP\E32729890056RAWP-XS.DWG, ----> 08 PROPOSED SOIL CROSS SECTION (RESIDENTIAL AREA)

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SECTION B-B
HORIZONTAL SCALE: 1"=100'
VERTICAL SCALE: 1"=10'

LEGEND

= PROPOSED IMPORTED MATERIAL (PAVEMENT, CONCRETE, TOP SOIL, ETC.)

= PROPOSED FILL

= EXISTING CONTAMINATED SOILS TO REMAIN

= EXISTING CONTAMINATED SOILS TO BE REMOVED

= PROPOSED RELOCATED CONTAMINATED SOILS

GRAPHIC SCALE

-100 0 50 100 200 400

(IN FEET)
1 INCH = 100 FT.

DYNAMIC ENGINEERING CONSULTANTS, PC
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REV.	DATE	COMMENTS	BY
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4	02/11/25	REVISED PER CIVIL PLANS	MWK
3	10/15/24	REV. PER ADDITIONAL SAMPLE RESULTS	MW/AB
2	08/21/24	REV. PER FAIRWAY BOUNDRIES	MWK
1	06/25/24	REVISED PER CIVIL PLANS	JED

PROJECT: **SURREY EQUITIES**
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LEGEND:
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- GREENWAY BOUNDARY (APPROXIMATE)
- FAIRWAY BOUNDARY (APPROXIMATE)
- TEES BOUNDARY (APPROXIMATE)

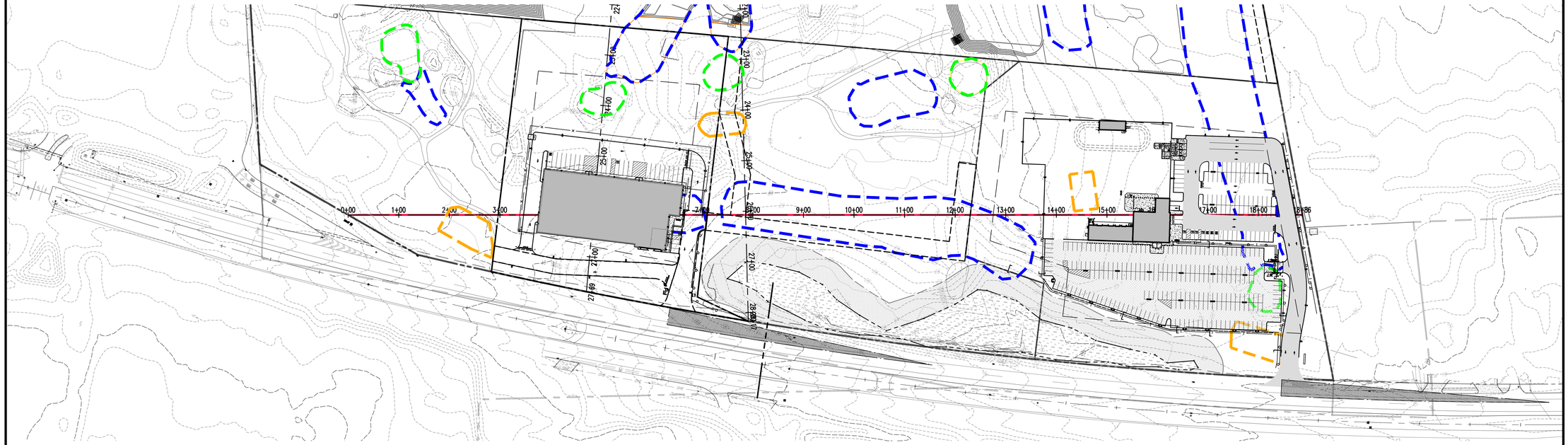
TITLE:
PROPOSED SOIL CROSS SECTION (HAP IMPACTED SOIL CONSOLIDATION)

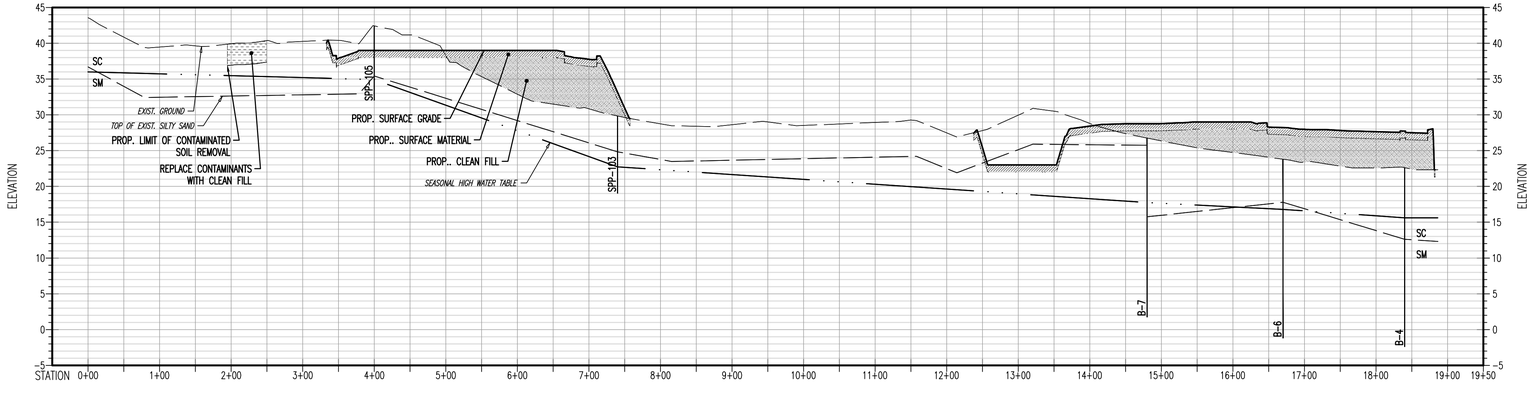
SCALE: (H) 1" = 100' (V) | DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: 9 | Rev. #: 5

Plotted: 06/25/25 - 11:31 AM, By: jdeflaher
File: G:\DATA Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\RAWP\E327298900SRAWP-XS.DWG, ----> PROPOSED SOIL CROSS SECTION (HAP IMPACTED SOIL CONSOLIDATION)

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SECTION C-C
HORIZONTAL SCALE: 1"=100'
VERTICAL SCALE: 1"=10'

LEGEND

- = PROPOSED IMPORTED MATERIAL (PAVEMENT, CONCRETE, TOP SOIL, ETC.)
- = PROPOSED FILL
- = EXISTING CONTAMINATED SOILS TO REMAIN
- = EXISTING CONTAMINATED SOILS TO BE REMOVED
- = PROPOSED RELOCATED CONTAMINATED SOILS

GRAPHIC SCALE
-100 0 50 100 200 400
(IN FEET)
1 INCH = 100 FT.

PROPOSED SOIL CROSS SECTION (COMMERCIAL AREA)

Plotted: 06/25/25 – 11:30 AM, By: jfeltaher
File: G:\DATA Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\RAMP\E3272989005RAMP-XS.DWG, ----> PROPOSED SOIL CROSS SECTION (COMMERCIAL AREA)

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4	02/11/25	REVISED PER CIVIL PLANS	MWK
3	10/15/24	REV. PER ADDITIONAL SAMPLE RESULTS	MW/JAB
2	08/21/24	REV. PER FAIRWAY BOUNDRIES	MWK
1	06/25/24	REVISED PER CIVIL PLANS	JED

DRAWN BY: MK
DESIGNED BY: OM
CHECKED BY: SSS
CHECKED BY: _

PROJECT: **SURREY EQUITIES**
OLD ORCHARD COUNTRY CLUB
BLOCK 2701, LOT 2, 53, 60, 66, 69; BLOCK 68, LOT 6
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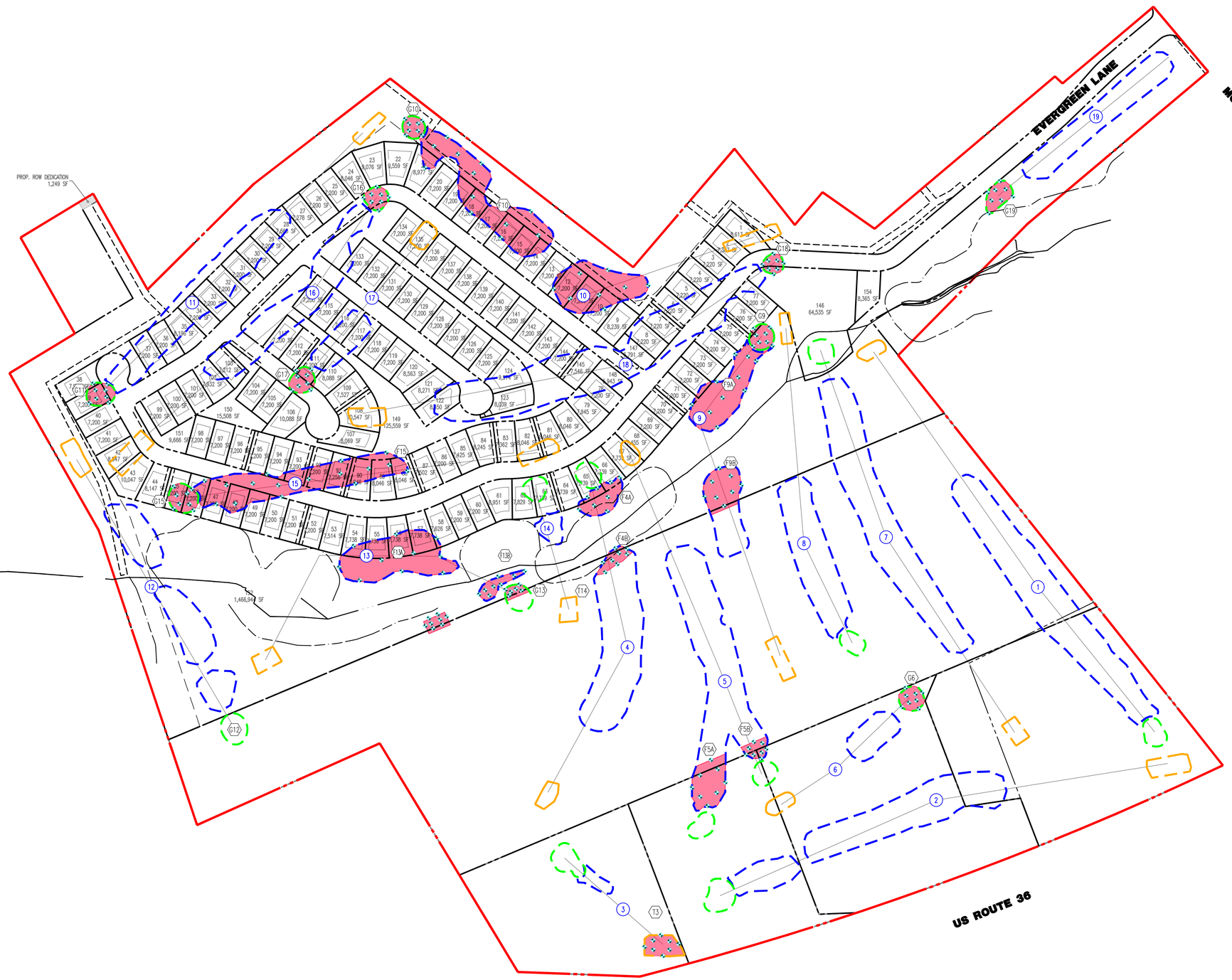
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LEGEND:
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- 18 GOLF COURSE HOLE DESIGNATION
- GREENWAY BOUNDARY (APPROXIMATE)
- FAIRWAY BOUNDARY (APPROXIMATE)
- TEES BOUNDARY (APPROXIMATE)

TITLE: **PROPOSED SOIL CROSS SECTION (COMMERCIAL AREA)**

SCALE: (H) 1" = 100' (V)
DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: 10
Rev. #: 5



PROPOSED EXCAVATION (TEES)

Location	Perimeter Length (LF)	# of Sidewall Samples	Area (Sq. Ft.)	# of Base Samples
T3	283.81	4	6,427.00	4

PROPOSED EXCAVATION (FAIRWAYS)

Location	Perimeter Length (LF)	# of Sidewall Samples	Area (Sq. Ft.)	# of Base Samples
F9A	822.00	6	23,769.00	4
F15	1385.00	8	46,002.00	8
F10	1994.00	10	70,871.00	10
F5A	461.00	4	12,678.00	4
F5B	231.00	4	3,260.00	4
F4A	394.00	4	8,652.00	4
F4B	291.00	4	3,731.00	4
F9B	441.00	4	13,338.00	4
F13A	859.00	6	34,958.00	4
F13B	346.00	4	4,114.00	4
TOTAL	7224.00	54	221,373.00	50

PROPOSED EXCAVATION (GREENS)

Location	Perimeter Length (LF)	# of Sidewall Samples	Area (Sq. Ft.)	# of Base Samples
G9	235.00	4	4,357.00	4
G18	193.00	4	2,874.00	4
G6	235.00	4	4,227.00	4
G15	274.00	4	5,856.00	4
G13	254.00	4	5,006.20	2
G11	247.00	4	4,684.00	4
G17	241.00	4	4,501.00	4
G10	212.00	4	3,559.00	4
G16	221.00	4	3,791.00	4
G19	272.00	4	4,908.00	4
TOTAL	2384.00	40	43,763.20	38

PROPOSED EXCAVATION (TRENCH)

Location	Perimeter Length (LF)	# of Sidewall Samples	Area (Sq. Ft.)	# of Base Samples
TRENCH	403.65	8	8,421.08	2

GRAPHIC SCALE

−150 0 75 150 300 600

(IN FEET)

1 INCH = 150 FT.

BY	DATE	REV.
MW/JB	06/24/25	5
MWK	02/11/25	4
MW/JB	10/15/24	3
MWK	08/21/24	2
JED	06/25/24	1

DRAWN BY: JED | DESIGNED BY: OM | CHECKED BY: SSS | CHECKED BY: _

PROJECT: **SURREY EQUITIES**
OLD ORCHARD COUNTRY CLUB
BLOCK 2701, LOT 2, 53, 60, 66, 69; BLOCK 68, LOT 6
54 MONMOUTH ROAD
TOWNSHIP OF EATONTOWN, MONMOUTH COUNTY, NJ

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LEGEND:

- SITE BOUNDARY (APPROXIMATE)
- 18 — GOLF COURSE HOLE DESIGNATION
- GREEN BOUNDARY (APPROXIMATE)
- FAIRWAY BOUNDARY (APPROXIMATE)
- TEE BOUNDARY (APPROXIMATE)
- PROPOSED EXCAVATION AREAS (APPROXIMATE)
- PROPOSED BORING/SAMPLE LOCATION (APPROXIMATE)

TITLE: **PROPOSED POST-EXCAVATION SAMPLE LOCATION PLAN**

SCALE: (H) 1" = 150' (V) | DATE: 12/07/2023
PROJECT No: 3272-98-005EC

FIGURE: **11** | Rev. #: 5

Plotted: 06/25/25 – 11:30 AM, By: jdefisher
File: O:\EARTH Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\RAWP\E3272988005RAWPFig11.dwg, ----> PROPOSED POST-EXCAVATION SAMPLE LOCATION PLAN

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DYNAMIC EARTH

Tables

Table 1: Site Sampling Summary
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

	SAMPLE #	SAMPLE DATE	SAMPLE DEPTH (ft)*	ANALYTICAL PARAMETERS
Soil - SI				
	F-13	5/19/2021	0.0-0.5	As, Pb, TCL Pesticides
	F-15	5/19/2021	0.0-0.5	As, Pb, TCL Pesticides
	G-9	5/19/2021	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-10	5/19/2021	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-11	5/19/2021	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-15	5/19/2021	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-16	5/19/2021	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-17	5/19/2021	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-18	5/19/2021	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-19	5/19/2021	0.0-0.5	As, Hg, Pb, TCL Pesticides

As - Arsenic
Hg - Mercury
Pb - Lead
TCL - Target Compound List

Table 1: Site Sampling Summary
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

	SAMPLE #	SAMPLE DATE	SAMPLE DEPTH (ft)*	ANALYTICAL PARAMETERS
Soil - RI - Fairways				
	F-9-5	7/12/2021	0.0-0.5	Dieldrin
	F-9-5A	7/12/2021	1.0-1.5	Dieldrin
	F-9-5-D1	4/15/2025	0.0-0.5	Dieldrin
	F-9-5-D2	4/15/2025	0.0-0.5	Dieldrin
	F-9-5-D3	4/15/2025	0.0-0.5	Dieldrin
	F-9-5-D4	4/15/2025	0.0-0.5	Dieldrin
	F-10-1	7/20/2021	0.0-0.5	Dieldrin
	F-10-1A	7/20/2021	1.0-1.5	Dieldrin
	F-10-1-D1	4/15/2025	0.0-0.5	Dieldrin
	F-10-1-D2	4/15/2025	0.0-0.5	Dieldrin
	F-10-1-D3	4/15/2025	0.0-0.5	Dieldrin
	F-10-1-D4	4/15/2025	0.0-0.5	Dieldrin
	F-10-1-D8	4/15/2025	0.0-0.5	Dieldrin
	F-10-4	4/15/2025	0.0-0.5	Dieldrin
	F-10-4A	4/15/2025	0.0-0.5	Dieldrin
	F-10-4-D1	4/15/2025	0.0-0.5	Dieldrin
	F-10-4-D2	4/15/2025	0.0-0.5	Dieldrin
	F-10-4-D3	4/15/2025	0.0-0.5	Dieldrin
	F-10-4-D4	4/15/2025	0.0-0.5	Dieldrin
	F-10-4-D5	4/15/2025	0.0-0.5	Dieldrin
	F-10-4-D8	4/15/2025	0.0-0.5	Dieldrin
	F-10-5	4/15/2025	0.0-0.5	Dieldrin
	F-10-5A	4/15/2025	0.0-0.5	Dieldrin
	F-10-5-D1	4/15/2025	0.0-0.5	Dieldrin
	F-10-5-D2	4/15/2025	0.0-0.5	Dieldrin
	F-10-5-D3	4/15/2025	0.0-0.5	Dieldrin
	F-10-5-D4	4/15/2025	0.0-0.5	Dieldrin
	F-10-5-D7	4/15/2025	0.0-0.5	Dieldrin
	F-13A	7/20/2021	1.0-1.5	Dieldrin
	F-13B	7/20/2021	2.0-2.5	Dieldrin
	F-13-D1	4/15/2025	0.0-0.5	Dieldrin
	F-13-D2	4/15/2025	0.0-0.5	Dieldrin
	F-13-D3	4/15/2025	0.0-0.5	Dieldrin
	F-13-D4	4/15/2025	0.0-0.5	Dieldrin
	F-13-D5	4/15/2025	0.0-0.5	Dieldrin
	F-13-D6	4/15/2025	0.0-0.5	Dieldrin
	F-13-D7	4/15/2025	0.0-0.5	Dieldrin
	F-13-D8	4/15/2025	0.0-0.5	Dieldrin
	F-15-1	7/20/2021	0.0-0.5	Dieldrin
	F-15-1A	7/20/2021	1.0-1.5	Dieldrin
	F-15-1B	7/20/2021	2.0-2.5	Dieldrin
	F-15-D1	4/15/2025	0.0-0.5	Dieldrin
	F-15-D2	4/15/2025	0.0-0.5	Dieldrin
	F-15-D3	4/15/2025	0.0-0.5	Dieldrin
	F-15-D4	4/15/2025	0.0-0.5	Dieldrin
	F-15-2	7/21/2021	0.0-0.5	Dieldrin
	F-15-2A	7/21/2021	1.0-1.5	Dieldrin
	F-15-2-D1	4/15/2025	0.0-0.5	Dieldrin
	F-15-2-D2	4/15/2025	0.0-0.5	Dieldrin
	F-15-2-D3	4/15/2025	0.0-0.5	Dieldrin
	F-15-2-D4	4/15/2025	0.0-0.5	Dieldrin
	F-15-2-D6	4/15/2025	0.0-0.5	Dieldrin
	F-15-2-D7	4/15/2025	0.0-0.5	Dieldrin
	F-15-3	7/21/2021	0.0-0.5	Dieldrin
	F-15-3A	7/21/2021	1.0-1.5	Dieldrin
	F-15-3-D1	4/15/2025	0.0-0.5	Dieldrin
	F-15-3-D2	4/15/2025	0.0-0.5	Dieldrin
	F-15-3-D3	4/15/2025	0.0-0.5	Dieldrin
	F-15-3-D4	4/15/2025	0.0-0.5	Dieldrin
	F-15-3-D7	4/15/2025	0.0-0.5	Dieldrin
	F-15-5	7/21/2021	0.0-0.5	Dieldrin
	F-15-5A	7/21/2021	1.0-1.5	Dieldrin
	F-15-5-D1	4/15/2025	0.0-0.5	Dieldrin
	F-15-5-D2	4/15/2025	0.0-0.5	Dieldrin
	F-15-5-D3	4/15/2025	0.0-0.5	Dieldrin
	F-15-5-D4	4/15/2025	0.0-0.5	Dieldrin
	F-15-5-D6	4/15/2025	0.0-0.5	Dieldrin
	F-15-5-D7	4/15/2025	0.0-0.5	Dieldrin
	F-15-6	7/21/2021	0.0-0.5	Dieldrin
	F-15-6A	7/21/2021	1.0-1.5	Dieldrin
	F-15-6-D1	4/15/2025	0.0-0.5	Dieldrin
	F-15-6-D2	4/15/2025	0.0-0.5	Dieldrin
	F-15-6-D3	4/15/2025	0.0-0.5	Dieldrin
	F-15-6-D4	4/15/2025	0.0-0.5	Dieldrin
	F-15-6-D7	4/15/2025	0.0-0.5	Dieldrin

As - Arsenic
Hg - Mercury
Pb - Lead
TCL - Target Compound List

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Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

	SAMPLE #	SAMPLE DATE	SAMPLE DEPTH (ft)*	ANALYTICAL PARAMETERS
Soil - RI - Greens				
	G-9A	7/20/2021	1.0-1.5	As, Pb, Hg, Chlordane
	G-9B	7/20/2021	2.0-2.5	As, Pb, Hg, Chlordane
	G-9-D1	4/16/2025	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-9-D2	4/16/2025	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-9-D3	4/16/2025	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-9-D4	4/16/2025	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-10A	7/20/2021	1.0-1.5	As, Pb, Chlordane
	G-10B	7/20/2021	2.0-2.5	As, Pb, Chlordane
	G-10-D1	4/16/2025	0.0-0.5	As, Pb, Chlordane
	G-10-D2	4/16/2025	0.0-0.5	As, Pb, Chlordane
	G-10-D3	4/16/2025	0.0-0.5	As, Pb, Chlordane
	G-10-D4	4/16/2025	0.0-0.5	As, Pb, Chlordane
	G-11A	7/20/2021	1.0-1.5	As, Pb, Hg
	G-11B	7/20/2021	2.0-2.5	As, Pb, Hg
	G-11-D1	4/16/2025	0.0-0.5	As, Pb, Hg
	G-11-D2	4/16/2025	0.0-0.5	As, Pb, Hg
	G-11-D3	4/16/2025	0.0-0.5	As, Pb, Hg
	G-11-D4	4/16/2025	0.0-0.5	As, Pb, Hg
	G-15A	7/21/2021	1.0-1.5	As, Chlordane
	G-15B	7/21/2021	2.0-2.5	As, Chlordane
	G-15-D1	4/16/2025	0.0-0.5	As, TCL Pesticides
	G-15-D2	4/16/2025	0.0-0.5	As, TCL Pesticides
	G-15-D3	4/16/2025	0.0-0.5	As, TCL Pesticides
	G-15-D4	4/16/2025	0.0-0.5	As, TCL Pesticides
	G-16A	7/21/2021	1.0-1.5	As, Pb, Hg, Chlordane
	G-16B	7/21/2021	2.0-2.5	As, Pb
	G-16-D1	4/16/2025	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-16-D2	4/16/2025	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-16-D3	4/16/2025	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-16-D4	4/16/2025	0.0-0.5	As, Hg, Pb, TCL Pesticides
	G-17A	7/21/2021	1.0-1.5	As, Pb, Hg, Chlordane
	G-17B	7/21/2021	2.0-2.5	As, Pb, Hg, Chlordane
	G-18A	7/21/2021	1.0-1.5	As, Pb
	G-18B	7/21/2021	2.0-2.5	As, Pb
	G-18-D1	4/16/2025	0.0-0.5	As, Pb
	G-18-D2	4/16/2025	0.0-0.5	As, Pb
	G-18-D3	4/16/2025	0.0-0.5	As, Pb
	G-18-D4	4/16/2025	0.0-0.5	As, Pb
	G-19-D1	4/16/2025	0.0-0.5	Pb
	G-19-D2	4/16/2025	0.0-0.5	Pb
	G-19-D3	4/16/2025	0.0-0.5	Pb
	G-19-D4	4/16/2025	0.0-0.5	Pb

As - Arsenic
Hg - Mercury
Pb - Lead
TCL - Target Compound List

Table 2 - Soil Sample Analyses and Data Results (Fairway 9)
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH									SAMPLE ID:	F-9-5				F-9-5A				F-9-5-D1				F-9-5-D2				F-9-5-D3				F-9-5-D4			
									LAB ID:	L2137339-82				L2137339-83				L2523648-41				L2523648-42				L2523648-43				L2523648-44			
									COLLECTION DATE:	7/12/2021				7/12/2021				4/15/2025				4/15/2025				4/15/2025				4/15/2025			
									SAMPLE DEPTH:	0.0 to 0.5				1.0 to 1.5				0.0 to 0.5				0.0 to 0.5				0.0 to 0.5				0.0 to 0.5			
									SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	FAIRWAY 4*	FAIRWAY 5*	FAIRWAY 9*	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																																
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	0.078	0.112	0.189	**0.224**	~	0.00614	~	**0.0132**	~	0.00118	~	**0.0264**	~	0.00119	0.00059	**0.0372**	~	0.00132	0.00066	**0.0576**	~	0.00118	0.00059	**0.0203**	~	0.00118	0.00059
GENERAL CHEMISTRY																																
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	NA	~	~	~	~	~	~	~	~	82.1	~	0.1	~	73.4	~	0.1	~	83.1	~	0.1	~	83.7	~	0.1	~

NOTES:
All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)
BOLD Detected in Sample
BOLD Value Exceeded One or More of the Criteria
BOLD/Underlined Value Exceeded One or More Like-on-Like standard
*Like-on-Like standard

Table 3 - Soil Sample Analyses and Data Results (Fairway 10)
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

										SAMPLE ID:	F-10-1				F-10-1A				F-10-1-D1				F-10-1-D2				F-10-1-D3				F-10-1-D4				F-10-1-D8			
										LAB ID:	L2138869-04				L2138869-05				L2523648-49				L2523648-50				L2523648-51				L2523648-52				L2523648-56			
										COLLECTION DATE:	7/20/2021				7/20/2021				4/15/2025				4/15/2025				4/15/2025				4/15/2025				4/15/2025			
										SAMPLE DEPTH:	0.0-0.5				1.0-1.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
										SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	FAIRWAY 4*	FAIRWAY 5*	FAIRWAY 9*		Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																																							
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	0.078	0.112	0.189		**0.281**	~	0.00593	~	**0.0114**	~	0.00118	~	**0.0265**	~	0.00118	0.00059	**0.00945**	~	0.00146	0.00073	**0.0339**	~	0.00133	0.00066	**0.148**	~	0.00129	0.00064	**0.0128**	~	0.00143	0.00071
GENERAL CHEMISTRY																																							
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	NA		~	~	~	~	~	~	~	~	81.3	~	0.1	~	64.8	~	0.1	~	72.6	~	0.1	~	76.5	~	0.1	~	67.6	~	0.1	~

NOTES:
All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)
BOLD Detected in Sample
BOLD Value Exceeded One or More of the Criteria
BOLD/Underline Value Exceeded One or More Like-on-Like standard
*Like-on-Like standard

Table 3 - Soil Sample Analyses and Data Results (Fairway 10)
Old Orchard Country Club
54 Monmouth Road
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Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH

CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	FAIRWAY 4*	FAIRWAY 5*	FAIRWAY 9*
PESTICIDES BY GC									
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	0.078	0.112	0.189
GENERAL CHEMISTRY									
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	NA

SAMPLE ID:		F-10-4				F-10-4A				F-10-4-D1				F-10-4-D2			
LAB ID:		L2138869-16				L2138869-17				L2523648-57				L2523648-58			
COLLECTION DATE:		7/20/2021				7/20/2021				4/15/2025				4/15/2025			
SAMPLE DEPTH:		0.0-0.5				1.0-1.5				0.0-0.5				0.0-0.5			
SAMPLE MATRIX:		SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																	
60-57-1	Dieldrin	**0.246**	~	0.00603	~	**0.00741**	~	0.00117	~	**0.165**	~	0.00116	0.00058	**0.00803**	~	0.0012	0.0006
GENERAL CHEMISTRY																	
NONE	Solids, Total	~	~	~	~	~	~	~	~	82.8	~	0.1	~	79.9	~	0.1	~

SAMPLE ID:		F-10-4-D3				F-10-4-D4				F-10-4-D5				F-10-4-D8			
LAB ID:		L2523648-59				L2523648-60				L2523648-61				L2523648-64			
COLLECTION DATE:		4/15/2025				4/15/2025				4/15/2025				4/15/2025			
SAMPLE DEPTH:		0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
SAMPLE MATRIX:		SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																	
60-57-1	Dieldrin	**0.0245**	~	0.00117	0.00058	**0.133**	~	0.00144	0.00072	**0.0338**	~	0.00115	0.00057	**0.0185**	~	0.0012	0.00059
GENERAL CHEMISTRY																	
NONE	Solids, Total	81.7	~	0.1	~	68.2	~	0.1	~	82.6	~	0.1	~	82.5	~	0.1	~

NOTES:

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NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)

BOLD	Detected in Sample
BOLD	Value Exceeded One or More of the Criteria
BOLD/Underlinec	Value Exceeded One or More Like-on-Like standard

*Like-on-Like standard

Table 3 - Soil Sample Analyses and Data Results (Fairway 10)
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
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Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH																																			
										SAMPLE ID:	F-10-5				F-10-5A				F-10-5-D1				F-10-5-D2				F-10-5-D3				F-10-5-D4				F-10-5-D7			
										LAB ID:	L2138869-20				L2138869-21				L2523648-65				L2523648-66				L2523648-67				L2523648-68				L2523648-71			
										COLLECTION DATE:	7/20/2021				7/20/2021				4/15/2025				4/15/2025				4/15/2025				4/15/2025				4/15/2025			
										SAMPLE DEPTH:	0.0-0.5				1.0-1.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
										SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	FAIRWAY 4*	FAIRWAY 5*	FAIRWAY 9*		Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																																			
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	0.078	0.112	0.189		**0.238**	~	0.00592	~	**0.0129**	~	0.00117	~	**0.0504**	~	0.0012	0.0006	**0.0427**	IP	0.00113	0.00056	**0.163**	~	0.00117	0.00058	**0.0866**	~	0.00119	0.00059	**0.116**	~	0.00117	0.00058
GENERAL CHEMISTRY																																			
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	NA		~	~	~	~	~	~	~	~	83	~	0.1	~	83.8	~	0.1	~	81.8	~	0.1	~	82.3	~	0.1	~	83.8	~	0.1	~

NOTES:
All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)
BOLD Detected in Sample
BOLD Value Exceeded One or More of the Criteria
BOLD/Underlined Value Exceeded One or More Like-on-Like standard
*Like-on-Like standard

Table 4 - Soil Sample Analyses and Data Results (Fairway 13)
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH									SAMPLE ID:	F-13				F-13A				F-13B				F-13-D1				F-13-D2				F-13-D2			
									LAB ID:	L2126518-48				L2139174-39				L2139174-40				L2523648-73				L2523648-74				L2523648-74 R1			
									COLLECTION DATE:	5/19/2021				7/21/2021				7/21/2021				4/15/2025				4/15/2025				4/15/2025			
									SAMPLE DEPTH:	0.0-0.5				1.0-1.5				2.0-2.5				0.0-0.5				0.0-0.5				0.0-0.5			
									SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	FAIRWAY 4*	FAIRWAY 5*	FAIRWAY 9*	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																																	
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	0.078	0.112	0.189	**0.503**	~	0.00731	~	**0.0372**	~	0.00112	~	**0.00158**	~	0.0012	~	**0.888**	~	0.0135	0.00676	**0.887**	E	0.0012	0.00059	**1.27**	~	0.024	0.012
GENERAL CHEMISTRY																																	
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	NA	~	~	~	~	~	~	~	~	~	~	~	~	70.7	~	0.1	~	79.6	~	0.1	~	~	~	~	~

NOTES:
All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)
BOLD Detected in Sample
BOLD Value Exceeded One or More of the Criteria
BOLD/Underlined Value Exceeded One or More Like-on-Like standard
*Like-on-Like standard

Table 4 - Soil Sample Analyses and Data Results (Fairway 13)
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH									SAMPLE ID:	F-13-D3				F-13-D4				F-13-D5				F-13-D6				F-13-D7				F-13-D8			
									LAB ID:	L2523648-75				L2523648-76				L2523648-77				L2523648-78				L2523648-79				L2523648-80			
									COLLECTION DATE:	4/15/2025				4/15/2025				4/15/2025				4/15/2025				4/15/2025				4/15/2025			
									SAMPLE DEPTH:	0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
									SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	FAIRWAY 4*	FAIRWAY 5*	FAIRWAY 9*	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																																	
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	0.078	0.112	0.189	**0.139**	~	0.0013	0.00065	**0.633**	~	0.012	0.006	0.00122	~	0.00113	0.00056	**0.196**	~	0.00114	0.00057	**0.0278**	~	0.00117	0.00058	**0.109**	~	0.00131	0.00065
GENERAL CHEMISTRY																																	
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	NA	73.4	~	0.1	~	78.6	~	0.1	~	84.6	~	0.1	~	83.2	~	0.1	~	81.6	~	0.1	~	74.6	~	0.1	~

NOTES:
All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)
BOLD Detected in Sample
BOLD Value Exceeded One or More of the Criteria
BOLD/Underlined Value Exceeded One or More Like-on-Like standard
*Like-on-Like standard

Table 5 - Soil Sample Analyses and Data Results (Fairway 15)
Old Orchard Country Club
54 Monmouth Road
Eatontown and West Long Branch, New Jersey
NJDEP PI No.: 021606, Case No. 24-11-08-1542-18

Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH									SAMPLE ID:	F-15				F-15-1				F-15-1A				F-15-1B				F-15-D1				F-15-D2				F-15-D3				F-15-D4			
									LAB ID:	L2126518-54				L2139174-74				L2139174-74				L2145224-01				L2523648-01				L2523648-02				L2523648-03				L2523648-04			
									COLLECTION DATE:	5/19/2021				7/21/2021				7/21/2021				7/21/2021				4/15/2025				4/15/2025				4/15/2025				4/15/2025			
									SAMPLE DEPTH:	0.0-0.5				1.0-1.5				1.0-1.5				2.0-2.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
									SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	FAIRWAY 4*	FAIRWAY 5*	FAIRWAY 9*	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																																									
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	0.078	0.112	0.189	**0.0632**	~	0.00115	~	**<u>0.317</u>**	~	0.00109	~	**0.0604**	~	0.00109	~	**0.00134**	~	0.00114	~	**0.0185**	~	0.00111	0.00055	**0.0355**	~	0.00114	0.00057	**0.0429**	~	0.00116	0.00058	**0.019**	~	0.00112	0.00056
GENERAL CHEMISTRY																																									
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	NA	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	88.3	~	0.1	~	85.6	~	0.1	~	84.7	~	0.1	~	84.7	~	0.1	~

NOTES:
All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)

BOLD	Detected in Sample
BOLD	Value Exceeded One or More of the Criteria
<u>BOLD/Underlined</u>	Value Exceeded One or More Like-on-Like standard

*Like-on-Like standard

Table 5 - Soil Sample Analyses and Data Results (Fairway 15)
Old Orchard Country Club
54 Monmouth Road
Eatontown and West Long Branch, New Jersey
NJDEP PI No.: 021606, Case No. 24-11-08-1542-18

Dynamic Earth Project No. 3272-98-005EC

										SAMPLE ID:				F-15-2-D1				F-15-2-D2				F-15-2-D3				F-15-2-D4				F-15-2-D6				F-15-2-D7			
										LAB ID:				L2139174-77				L2139174-78				L2523648-09				L2523648-10				L2523648-11				L2523648-12				L2523648-14				L2523648-15			
										COLLECTION DATE:				7/21/2021				7/21/2021				4/15/2025				4/15/2025				4/15/2025				4/15/2025				4/15/2025			
										SAMPLE DEPTH:				0.0-0.5				1.0-1.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
										SAMPLE MATRIX:				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	FAIRWAY 4"	FAIRWAY 5"	FAIRWAY 9"	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																																									
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	0.078	0.112	0.189	**0.623**	~	0.00585	~	**0.0206**	~	0.00113	~	**0.0261**	~	0.00112	0.00056	**0.143**	IP	0.00116	0.00058	**0.101**	~	0.00118	0.00059	**0.0776**	IP	0.00115	0.00057	**0.058**	~	0.00118	0.00059	**0.196**	~	0.00119	0.00059
GENERAL CHEMISTRY																																									
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	NA	~	~	~	~	~	~	~	~	85.4	~	0.1	~	82.8	~	0.1	~	83.2	~	0.1	~	83.8	~	0.1	~	83	~	0.1	~	83.8	~	0.1	~

NOTES:
All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
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NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (Ma
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)

BOLD	Detected in Sample
BOLD	Value Exceeded One or More of the Criteria
BOLD/Underlined	Value Exceeded One or More Like-on-Like standard

*Like-on-Like standard

Table 5 - Soil Sample Analyses and Data Results (Fairway 15)
Old Orchard Country Club
54 Monmouth Road
Eatontown and West Long Branch, New Jersey
NJDEP PI No.: 021606, Case No. 24-11-08-1542-18

Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH										SAMPLE ID:	F-15-3-D1				F-15-3-D2				F-15-3-D3				F-15-3-D4				F-15-3-D7							
										LAB ID:	L2139174-81				L2139174-82				L2523648-17				L2523648-18				L2523648-19				L2523648-20				L2523648-23			
										COLLECTION DATE:	7/21/2021				7/21/2021				4/15/2025				4/15/2025				4/15/2025				4/15/2025				4/15/2025			
										SAMPLE DEPTH:	0.0-0.5				1.0-1.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
										SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	FAIRWAY 4*	FAIRWAY 5*	FAIRWAY 9*	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																																			
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	0.078	0.112	0.189	**0.468**	~	0.0115	~	**0.00898**	~	0.00113	~	**0.0134**	~	0.0014	0.00069	**0.055**	~	0.00112	0.00056	**0.29**	~	0.00116	0.00058	**0.0372**	~	0.00115	0.00057	**0.0324**	~	0.00118	0.00058
GENERAL CHEMISTRY																																			
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	NA	~	~	~	~	~	~	~	~	68.5	~	0.1	~	84	~	0.1	~	83.8	~	0.1	~	82.9	~	0.1	~	83	~	0.1	~

NOTES:
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U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
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NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
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NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)

BOLD	Detected in Sample
BOLD	Value Exceeded One or More of the Criteria
BOLD/Underlined	Value Exceeded One or More Like-on-Like standard

*Like-on-Like standard

Table 5 - Soil Sample Analyses and Data Results (Fairway 15)
Old Orchard Country Club
54 Monmouth Road
Eatontown and West Long Branch, New Jersey
NJDEP PI No.: 021606, Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH

CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	FAIRWAY 4*	FAIRWAY 5*	FAIRWAY 9*
PESTICIDES BY GC									
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	0.078	0.112	0.189
GENERAL CHEMISTRY									
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	NA

SAMPLE ID:	F-15-5				F-15-5A				F-15-5-D1				F-15-5-D2				F-15-5-D3				F-15-5-D4				F-15-5-D6				F-15-5-D7			
LAB ID:	L2139174-89				L2139174-90				L2523648-25				L2523648-26				L2523648-27				L2523648-28				L2523648-30				L2523648-31			
COLLECTION DATE:	7/21/2021				7/21/2021				4/15/2025				4/15/2025				4/15/2025				4/15/2025				4/15/2025				4/15/2025			
SAMPLE DEPTH:	0.0-0.5				1.0-1.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
ANALYTE	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
Dieldrin	**0.228**	~	0.00233	~	**0.0218**	~	0.0011	~	**0.0669**	~	0.00146	0.00073	**0.162**	~	0.00123	0.00061	**1.63**	~	0.0179	0.00895	**0.074**	~	0.0014	0.0007	**0.0298**	~	0.00132	0.00065	**0.00382**	~	0.00117	0.00058
Solids, Total	~	~	~	~	~	~	~	~	67.9	~	0.1	~	77.8	~	0.1	~	81	~	0.1	~	69.2	~	0.1	~	73.8	~	0.1	~	83.6	~	0.1	~

NOTES:
All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
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NA - No applicable NJDEP SRS
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RL - Laboratory Reporting Limit
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NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)

BOLD	Detected in Sample
BOLD	Value Exceeded One or More of the Criteria
BOLD/Underlined	Value Exceeded One or More Like-on-Like standard

*Like-on-Like standard

Table 5 - Soil Sample Analyses and Data Results (Fairway 15)
Old Orchard Country Club
54 Monmouth Road
Eatontown and West Long Branch, New Jersey
NJDEP PI No.: 021606, Case No. 24-11-08-1542-18

Dynamic Earth Project No. 3272-98-005EC

										SAMPLE ID:	F-15-6-D1				F-15-6-D1				F-15-6-D2				F-15-6-D3				F-15-6-D3				F-15-6-D4				F-15-6-D7			
DYNAMIC EARTH										LAB ID:	L2139174-93				L2139174-94				L2523648-33				L2523648-34				L2523648-35				L2523648-35 R1				L2523648-36				L2523648-39			
										COLLECTION DATE:	7/21/2021				7/21/2021				4/15/2025				4/15/2025				4/15/2025				4/15/2025				4/15/2025				4/15/2025			
										SAMPLE DEPTH:	0.0-0.5				1.0-1.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
										SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	FAIRWAY 4*	FAIRWAY 5*	FAIRWAY 9*		Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																																									
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	0.078	0.112	0.189		**0.358**	~	0.00233	~	**0.0164**	~	0.00116	~	**0.0256**	~	0.00146	0.00073	**0.0854**	P	0.00137	0.00068	**0.357**	E	0.00114	0.00056	**0.434**	~	0.00568	0.00284	**0.016**	~	0.00135	0.00067	**0.0564**	~	0.00118	0.00059
GENERAL CHEMISTRY																																									
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	NA		~	~	~	~	~	~	~	~	66.9	~	0.1	~	69.3	~	0.1	~	83.2	~	0.1	~	-	~	-	-	71	~	0.1	~	84.2	~	0.1	~

NOTES:
All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)

BOLD	Detected in Sample
BOLD	Value Exceeded One or More of the Criteria
BOLD/Underlined	Value Exceeded One or More Like-on-Like standard

*Like-on-Like standard

Table 6 - Soil Sample Analyses and Data Results (Green 9)
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH									SAMPLE ID:		G-9				G-9A				G-9B				G-9-D1				G-9-D1				G-9-D2			
									LAB ID:		L2126518-36				L2137339-94				-				L2523648-81				L2523648-81 R1				L2523648-82			
									COLLECTION DATE:		5/19/2021				7/12/2021				7/12/2021				4/16/2025				4/16/2025				4/16/2025			
									SAMPLE DEPTH:		0.0-0.5				1.0-1.5				2.0-2.5				0.0-0.5				0.0-0.5				0.0-0.5			
									SAMPLE MATRIX:		SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	GREEN 12*	GREEN 13*	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																																		
1024-57-3	Heptachlor epoxide	0.081	NA	0.4	NA	0.076	0.103	NE	~	~	~	~	~	~	~	~	~	~	~	~	**0.0383**	P	0.00337	0.00101	~	~	~	~	**0.0605**	P	0.00378	0.00113
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	NE	NE	~	~	~	~	~	~	~	~	~	~	~	~	-	~	-	-	~	~	~	~	~	~	~	~
72-55-9	4,4'-DDE	0.47	NA	11	NA	2	NE	NE	~	~	~	~	~	~	~	~	~	~	~	~	**0.417**	PE	0.0018	0.00041	**0.449**		0.018	0.00416	**0.468**	PE	0.00202	0.00046
57-74-9	Chlordane	1.4	NA	1.4	NA	0.27	0.012	0.039	**0.338**	P	0.168	~	**0.00539**	~	0.0166	~	~	~	~	~	**0.752**	P	0.015	0.00596	~	~	~	~	**1.95**	PE	0.0168	0.00668
5103-71-9	cis-Chlordane	1.4	NA	1.4	NA	0.27	NE	NE	**0.187**	IP	0.0253	~	**0.00384**	IP	0.00249	~	~	~	~	~	**0.114**	~	0.00225	0.00062	~	~	~	~	**0.311**	~	0.00252	0.0007
5103-74-2	trans-Chlordane	1.4	NA	1.4	NA	0.27	NE	NE	**0.151**	P	0.0253	~	**0.00155**	JIP	0.00249	~	~	~	~	~	**0.128**	P	0.00225	0.00059	~	~	~	~	**0.305**	P	0.00252	0.00066
TOTAL METALS																																		
7440-38-2	Arsenic, Total	19	5200	19	1100	19	NE	46.65	**122**	~	0.507	~	**150**	~	1.2	~	8.1	~	~	~	**188**	~	0.905	0.391	~	~	~	~	**98.4**	~	1.01	0.438
7439-92-1	Lead, Total	90	NA	800	NA	200	NE	37	**746**	~	2.53	~	**380**	~	2.4	~	~	~	~	~	**1310**	~	4.52	0.215	~	~	~	~	**989**	~	5.07	0.242
7439-97-6	Mercury, Total	0.1	NA	390	520000	23	NE	2.125	**27.5**	~	1.83	~	**37**	~	0.99	~	ND	~	~	~	**25.8**	~	4.26	2.78	~	~	~	~	**24.2**	~	0.926	0.604
GENERAL CHEMISTRY																																		
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	~	~	~	~	~	~	~	~	~	~	~	~	84.5	~	0.1	~	~	~	~	~	75.8	~	0.1	~

NOTES:

All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
NE - No Exceedances
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May 2
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)

BOLD Detected in Sample
BOLD Value Exceeded One or More of the Criteria
BOLD/Underlined Value Exceeded One or More Like-on-Like standard
*Like-on-Like standard

Table 6 - Soil Sample Analyses and Data Results (Green 9)
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH																															
									SAMPLE ID:	G-9-D2				G-9-D3				G-9-D3				G-9-D4				G-9-D4			
									LAB ID:	L2523648-82 R1				L2523648-83				L2523648-83 R1				L2523648-84				L2523648-84 R1			
									COLLECTION DATE:	4/16/2025				4/16/2025				4/16/2025				4/16/2025				4/16/2025			
									SAMPLE DEPTH:	0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
									SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	GREEN 12*	GREEN 13*	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																															
1024-57-3	Heptachlor epoxide	0.081	NA	0.4	NA	0.076	0.103	NE	~	~	~	~	**0.0516**	P	0.00378	0.00113	~	~	~	~	**0.0651**	P	0.00463	0.00139	~	~	~	~
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	NE	NE	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
72-55-9	4,4'-DDE	0.47	NA	11	NA	2	NE	NE	**0.49**	~	0.0202	0.00466	**0.537**	PE	0.00201	0.00046	**0.56**	~	0.0201	0.00466	**0.618**	PE	0.00247	0.00057	**0.69**	~	0.0247	0.00571
57-74-9	Chlordane	1.4	NA	1.4	NA	0.27	0.012	0.039	**2.03**	~	0.168	0.0668	**1.03**	PE	0.0168	0.00667	**1.14**	~	0.168	0.0667	**1.23**	P	0.0206	0.00818	~	~	~	~
5103-71-9	cis-Chlordane	1.4	NA	1.4	NA	0.27	NE	NE	~	~	~	~	**0.159**	~	0.00252	0.0007	~	~	~	~	**0.183**	P	0.00309	0.00086	~	~	~	~
5103-74-2	trans-Chlordane	1.4	NA	1.4	NA	0.27	NE	NE	~	~	~	~	**0.18**	P	0.00252	0.00066	~	~	~	~	**0.222**	P	0.00309	0.00081	~	~	~	~
TOTAL METALS																															
7440-38-2	Arsenic, Total	19	5200	19	1100	19	NE	46.65	~	~	~	~	**301**	~	1.03	0.445	~	~	~	~	**344**	~	1.2	0.519	~	~	~	~
7439-92-1	Lead, Total	90	NA	800	NA	200	NE	37	~	~	~	~	**2130**	~	5.16	0.245	~	~	~	~	**2350**	~	6.01	0.286	~	~	~	~
7439-97-6	Mercury, Total	0.1	NA	390	520000	23	NE	2.125	~	~	~	~	**44**	~	4.44	2.89	~	~	~	~	**37.2**	~	1.16	0.758	~	~	~	~
GENERAL CHEMISTRY																															
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	~	~	~	~	77.4	~	0.1	~	~	~	~	~	63.2	~	0.1	~	~	~	~	~

NOTES:

All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
NE - No Exceedances
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May 2
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)

BOLD Detected in Sample
BOLD Value Exceeded One or More of the Criteria
BOLD/Underlined Value Exceeded One or More Like-on-Like standard

Table 7 - Soil Sample Analyses and Data Results (Green 10)
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH								SAMPLE ID:	G-10				G-10A				G-10B				G-10-D1				G-10-D2				G-10-D3				G-10-D4			
								LAB ID:	L2126518-39				L2138869-32				L2138869-32				L2523648-85				L2523648-86				L2523648-87				L2523648-88			
								COLLECTION DATE:	5/19/2021				7/20/2021				7/20/2021				4/16/2025				4/16/2025				4/16/2025				4/16/2025			
								SAMPLE DEPTH:	0.0-0.5				1.0-1.5				2.0-2.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
								SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	GREEN 12*	GREEN 13*	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																																				
1024-57-3	Heptachlor epoxide	0.081	NA	0.4	NA	0.076	0.103	NE	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	NE	NE	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
72-55-9	4,4'-DDE	0.47	NA	11	NA	2	NE	NE	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
57-74-9	Chlordane	1.4	NA	1.4	NA	0.27	0.012	0.039	**0.457**	~	0.0183	~	**0.00258**	~	0.0148	~	~	~	~	~	ND	~	0.0238	0.00945	**0.323**	~	0.0232	0.00924	**0.0856**	~	0.0223	0.00886	**0.785**	~	0.0225	0.00896
5103-71-9	cis-Chlordane	1.4	NA	1.4	NA	0.27	NE	NE	**0.338**	P	0.0137	~	**0.00168**	JIP	0.00221	~	~	~	~	~	**0.0101**	IP	0.00357	0.00099	**0.057**	IP	0.00349	0.00097	**0.0115**	IP	0.00334	0.00093	**0.206**		0.00338	0.00094
5103-74-2	trans-Chlordane	1.4	NA	1.4	NA	0.27	NE	NE	**0.119**	~	0.00274	~	**0.0009**	JIP	0.00221	~	~	~	~	~	**0.00591**	IP	0.00357	0.00094	**0.0287**	IP	0.00349	0.00092	**0.0123**		0.00334	0.00088	**0.0675**	IP	0.00338	0.00089
TOTAL METALS																																				
7440-38-2	Arsenic, Total	19	5200	19	1100	19	NE	46.65	**61.2**	~	0.566	~	**330**	~	2.3	~	**7.5**	~	0.23	~	**183**		1.03	0.444	**16.2**	~	0.996	0.43	**4.79**	~	0.912	0.394	**50.5**	~	0.94	0.406
7439-92-1	Lead, Total	90	NA	800	NA	200	NE	37	**509**	~	2.83	~	**580**	~	4.6	~	**4**	~	0.46	~	**1600**		5.14	0.245	**132**	~	4.98	0.237	**51.4**	~	4.56	0.217	**382**	~	4.7	0.224
7439-97-6	Mercury, Total	0.1	NA	390	520000	23	NE	2.125	~	~	~	~	~	~	~	~	~	~	~	~	**68.9**		8.94	5.83	**10.3**	~	1.01	0.658	**0.768**	~	0.096	0.063	**19.6**	~	0.936	0.61
GENERAL CHEMISTRY																																				
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	~	~	~	~	~	~	~	~	~	~	~	~	77	~	0.1	NA	79.9	~	0.1	NA	84.9	~	0.1	NA	84.5	~	0.1	NA

NOTES:

All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
NE - No Exceedances
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)

BOLD Detected in Sample
BOLD Value Exceeded One or More of the Criteria
BOLD/Underlined Value Exceeded One or More Like-on-Like standard
*Like-on-Like standard

Table 8 - Soil Sample Analyses and Data Results (Green 11)
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH								SAMPLE ID:	G-11				G-11A				G-11B				G-11-D1				G-11-D2				G-11-D3				G-11-D4			
								LAB ID:	L2126518-42				AD24855-018				AD25611-003				L2523648-89				L2523648-90				L2523648-91				L2523648-92			
								COLLECTION DATE:	5/19/2021				7/20/2021				7/20/2021				4/16/2025				4/16/2025				4/16/2025				4/16/2025			
								SAMPLE DEPTH:	0.0-0.5				1.0-1.5				2.0-2.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
								SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	GREEN 12*	GREEN 13*	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
TOTAL METALS																																				
7440-38-2	Arsenic, Total	19	5200	19	1100	19	NE	46.65	**146**	~	0.595	~	**28**	~	0.23	~	**9.5**	~	0.23	~	**364**	~	0.952	0.411	**52**	~	1.15	0.496	**54.4**	~	1.23	0.53	**60.3**	~	0.966	0.417
7439-92-1	Lead, Total	90	NA	800	NA	200	NE	37	**966**	~	2.97	~	33	~	0.47	~	**5.1**	~	0.47	~	**2530**	~	4.76	0.227	**620**	~	5.74	0.273	**476**	~	6.13	0.292	**626**	~	4.83	0.23
7439-97-6	Mercury, Total	0.1	NA	390	520000	23	NE	2.125	**63.2**	~	1.99	~	1	~	0.097	~	~	~	~	~	**81.9**	~	8.86	5.78	**12.3**	~	1.1	0.72	**2.55**	~	0.115	0.075	**27.4**	~	0.922	0.601
GENERAL CHEMISTRY																																				
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	~	~	~	~	~	~	~	~	~	~	~	~	80.4	~	0.1	~	67.8	~	0.1	~	65.1	~	0.1	~	79.3	~	0.1	~
GENERAL CHEMISTRY																																				

NOTES:
All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
NE - No Exceedances
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)

BOLD Detected in Sample
BOLD Value Exceeded One or More of the Criteria
BOLD/Underlined Value Exceeded One or More Like-on-Like standard
*Like-on-Like standard

Table 9 - Soil Sample Analyses and Data Results (Green 15)
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH								SAMPLE ID:	G-15				G-15A				G-15B				G-15-D1				G-15-D1			
								LAB ID:	L2126518-55				L2138869-51				AD25611-005				L2523648-93				L2523648-93 R1			
								COLLECTION DATE:	5/19/2021				7/20/2021				7/20/2021				4/16/2025				4/16/2025			
								SAMPLE DEPTH:	0.0-0.5				1.0-1.5				2.0-2.5				0.0-0.5				0.0-0.5			
								SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	GREEN 12*	GREEN 13*	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																												
1024-57-3	Heptachlor epoxide	0.081	NA	0.4	NA	0.076	0.103	NE	**0.0842**	~	~	~	~	~	~	~	~	~	~	~	**0.0583**	~	0.0053	0.00159	~	~	~	~
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	NE	NE	~	~	~	~	~	~	~	~	~	~	~	~	**0.0363**	~	0.00176	0.00088	~	~	~	~
72-55-9	4,4'-DDE	0.47	NA	11	NA	2	NE	NE	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
57-74-9	Chlordane	1.4	NA	1.4	NA	0.27	0.012	0.039	**0.565**	~	0.101	~	**0.038**	P	0.0148	~	~	~	~	~	**3.59**	E	0.0235	0.00936	**4.01**	~	0.235	0.0936
5103-71-9	cis-Chlordane	1.4	NA	1.4	NA	0.27	NE	NE	**0.283**	IP	0.0151	~	**0.0206**	IP	0.00223	~	~	~	~	~	**0.64**	IPE	0.00353	0.00098	**0.788**	IP	0.0353	0.00984
5103-74-2	trans-Chlordane	1.4	NA	1.4	NA	0.27	NE	NE	**0.282**	~	0.0151	~	**0.0174**	~	0.00223	~	~	~	~	~	**0.665**	E	0.00353	0.00093	**0.761**	~	0.0353	0.00932
TOTAL METALS																												
7440-38-2	Arsenic, Total	19	5200	19	1100	19	NE	46.65	**55.5**	~	0.603	~	**29**	~	0.23	~	**6.9**	~	0.23	~	**144**	~	0.979	0.423	~	~	~	~
7439-92-1	Lead, Total	90	NA	800	NA	200	NE	37	**250**	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
7439-97-6	Mercury, Total	0.1	NA	390	520000	23	NE	2.125	**18.2**	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
GENERAL CHEMISTRY																	~	~	~	~								
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	~	~	~	~	~	~	~	~	~	~	~	~	81	~	0.1	~	~	~	~	~

NOTES:
All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
NE - No Exceedances
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)

BOLD	Detected in Sample
BOLD	Value Exceeded One or More of the Criteria
BOLD/Underlined	Value Exceeded One or More Like-on-Like standard

*Like-on-Like standard

Table 9 - Soil Sample Analyses and Data Results (Green 15)
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH								SAMPLE ID:	G-15-D2				G-15-D3				G-15-D3				G-15-D4				G-15-D4			
								LAB ID:	L2523648-94				L2523648-95				L2523648-95 R1				L2523648-96				L2523648-96 R1			
								COLLECTION DATE:	4/16/2025				4/16/2025				4/16/2025				4/16/2025				4/16/2025			
								SAMPLE DEPTH:	0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
								SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	GREEN 12*	GREEN 13*	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																												
1024-57-3	Heptachlor epoxide	0.081	NA	0.4	NA	0.076	0.103	NE	**0.0254**	~	0.00533	0.0016	**0.0686**	~	0.0072	0.00216	~	~	~	~	**0.0579**	~	0.00551	0.00165	~	~	~	~
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	NE	NE	**0.0117**	~	0.00178	0.00088	**0.0414**	~	0.0024	0.0012	~	~	~	~	**0.0322**	~	0.00184	0.00091	~	~	~	~
72-55-9	4,4'-DDE	0.47	NA	11	NA	2	NE	NE	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
57-74-9	Chlordane	1.4	NA	1.4	NA	0.27	0.012	0.039	ND	~	0.0237	0.00941	**2.06**	E	0.032	0.0127	**2**	~	0.16	0.0636	**1.69**	E	0.0245	0.00973	**1.56**	~	0.122	0.0487
5103-71-9	cis-Chlordane	1.4	NA	1.4	NA	0.27	NE	NE	**0.012**	IP	0.00355	0.00099	**0.358**	IP	0.0048	0.00134	~	~	~	~	**0.303**	IP	0.00367	0.00102	~	~	~	~
5103-74-2	trans-Chlordane	1.4	NA	1.4	NA	0.27	NE	NE	**0.00937**	IP	0.00355	0.00093	**0.23**	IP	0.0048	0.00127	~	~	~	~	**0.189**	IP	0.00367	0.00097	~	~	~	~
TOTAL METALS																												
7440-38-2	Arsenic, Total	19	5200	19	1100	19	NE	46.65	**61.9**	~	0.952	0.411	**182**	~	1.31	0.567	~	~	~	~	**282**	~	1.04	0.451	~	~	~	~
7439-92-1	Lead, Total	90	NA	800	NA	200	NE	37	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
7439-97-6	Mercury, Total	0.1	NA	390	520000	23	NE	2.125	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
GENERAL CHEMISTRY																												
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	82.4	~	0.1	~	60.4	~	0.1	~	~	~	~	~	75.9	~	0.1	~	~	~	~	~

NOTES:
All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
NE - No Exceedances
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)
BOLD Detected in Sample
BOLD Value Exceeded One or More of the Criteria
BOLD/Underlined Value Exceeded One or More Like-on-Like standard
*Like-on-Like standard

Table 10 - Soil Sample Analyses and Data Results (Green 16)
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH									SAMPLE ID:	G-16				G-16A				G-16B				G-16-D1				G-16-D2				G-16-D3				G-16-D4			
									LAB ID:	L2126518-58				L2138869-70				AD25611-006				L2523648-97				L2523648-98				L2523648-99				L2523648-100			
									COLLECTION DATE:	5/19/2021				7/20/2021				7/20/2021				4/16/2025				4/16/2025				4/16/2025				4/16/2025			
									SAMPLE DEPTH:	0.0-0.5				1.0-1.5				2.0-2.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
									SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	GREEN 12*	GREEN 13*	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
PESTICIDES BY GC																																				
1024-57-3	Heptachlor epoxide	0.081	NA	0.4	NA	0.076	0.103	NE	**0.0812**	~	~	~	~	~	~	~	~	~	~	~	ND	~	0.00538	0.00161	**0.0178**	~	0.00578	0.00173	**0.00256**	JIP	0.00543	0.00163	**0.016**	IP	0.0038	0.00114
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	NE	NE	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
72-55-9	4,4'-DDE	0.47	NA	11	NA	2	NE	NE	**0.713**	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
57-74-9	Chlordane	1.4	NA	1.4	NA	0.27	0.012	0.039	**0.441**	~	0.189	~	**0.0687**	~	0.0147	~	~	~	~	~	ND	~	0.0239	0.0095	**0.392**	~	0.0257	0.0102	**0.0655**	~	0.0241	0.00959	**0.421**	IP	0.0169	0.00672
5103-71-9	cis-Chlordane	1.4	NA	1.4	NA	0.27	NE	NE	**0.243**	IP	0.0284	~	**0.0367**	IP	0.00221	~	~	~	~	~	**0.00251**	JIP	0.00358	0.00099	**0.0689**	IP	0.00385	0.00107	**0.00931**	IP	0.00362	0.00101	**0.124**	~	0.00254	0.0007
5103-74-2	trans-Chlordane	1.4	NA	1.4	NA	0.27	NE	NE	**0.198**	P	0.0284	~	**0.032**	~	0.00221	~	~	~	~	~	**0.00637**	~	0.00358	0.00094	**0.0566**	~	0.00385	0.00102	**0.00354**	JIP	0.00362	0.00095	**0.0398**	IP	0.00254	0.00067
TOTAL METALS																																				
7440-38-2	Arsenic, Total	19	5200	19	1100	19	NE	46.65	**308**	~	0.593	~	**61**	~	0.24	~	**8.9**	~	0.24	~	**26.2**	~	0.982	0.424	**73.4**	~	1	0.434	**12.8**	~	0.95	0.411	**145**	~	0.985	0.425
7439-92-1	Lead, Total	90	NA	800	NA	200	NE	37	**1850**	~	2.96	~	**41**	~	0.47	~	**12**	~	0.48	~	**103**	~	4.91	0.234	**715**	~	5.02	0.239	**111**	~	4.75	0.226	**1070**	~	4.92	0.234
7439-97-6	Mercury, Total	0.1	NA	390	520000	23	NE	2.125	**81.1**	~	2.08	~	**2.5**	~	0.098	~	~	~	~	~	**3.62**	~	0.167	0.109	**7.32**	~	0.219	0.143	**15.5**	~	0.887	0.578	**33.7**	~	0.892	0.582
GENERAL CHEMISTRY																																				
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	~	~	~	~	~	~	~	~	~	~	~	~	81.2	~	0.1	~	75.9	~	0.1	~	79.4	~	0.1	~	77.4	~	0.1	~

NOTES:
All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
NE - No Exceedances
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (Ma
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)

BOLD	Detected in Sample
BOLD	Value Exceeded One or More of the Criteria
BOLD/Underlined	Value Exceeded One or More Like-on-Like standard

*Like-on-Like standard

Table 11 - Soil Sample Analyses and Data Results (Green 18)
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

									SAMPLE ID:	G-18				G-18A				G-18B				G-18-D1				G-18-D3				G-18-D4			
									LAB ID:	L2126518-63				AD24855-093				AD25611-009				L2523648-105				L2523648-107				L2523648-108			
									COLLECTION DATE:	5/19/2021				7/20/2021				7/20/2021				4/16/2025				4/16/2025				4/16/2025			
									SAMPLE DEPTH:	0.0-0.5				1.0-1.5				2.0-2.5				0.0-0.5				0.0-0.5				0.0-0.5			
									SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	GREEN 12*	GREEN 13*		Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
TOTAL METALS																																	
7440-38-2	Arsenic, Total	19	5200	19	1100	19	NE	46.65		**63.8**	~	0.62	~	**590**	~	5.8	~	**10**	~	0.24	~	**250**	~	1	0.433	**69.9**	~	0.954	0.412	**115**	~	0.86	0.371
7439-92-1	Lead, Total	90	NA	800	NA	200	NE	37		**743**	~	3.1	~	**2200**	~	12	~	**72**	~	0.48	~	**1520**	~	5.02	0.239	**586**	~	4.77	0.227	**675**	~	4.3	0.205
GENERAL CHEMISTRY																																	
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA		~	~	~	~	~	~	~	~	~	~	~	~	79.1	~	0.1	~	80.9	~	0.1	~	91.8	~	0.1	~

NOTES:
All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
NE - No Exceedances
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation Standard (May 2021)
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (May 2021)
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)

BOLD	Detected in Sample
BOLD	Value Exceeded One or More of the Criteria
BOLD/Underlined	Value Exceeded One or More Like-on-Like standard

*Like-on-Like standard

Table 12 - Soil Sample Analyses and Data Results (Green 19)
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey
NJDEP PI No.: 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

DYNAMIC EARTH								SAMPLE ID:	G-19				G-19-D1				G-19-D2				G-19-D3				G-19-D4			
								LAB ID:	L2126518-24				L2523648-109				L2523648-110				L2523648-111				L2523648-112			
								COLLECTION DATE:	5/19/2021				4/16/2025				4/16/2025				4/16/2025				4/16/2025			
								SAMPLE DEPTH:	0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5				0.0-0.5			
								SAMPLE MATRIX:	SOIL				SOIL				SOIL				SOIL				SOIL			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	GREEN 12*	GREEN 13*	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
TOTAL METALS																												
7440-38-2	Arsenic, Total	19	5200	19	1100	19	NE	46.65	**1.18**	~	0.49	-	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
7439-92-1	Lead, Total	90	NA	800	NA	200	NE	37	**14.8**	~	0.087	~	**389**	~	4.64	0.221	**505**	~	4.57	0.218	**314**	~	4.49	0.214	**240**	~	5.72	0.272
GENERAL CHEMISTRY																												
NONE	Solids, Total	NA	NA	NA	NA	NA	NA	NA	~	~	~	~	83.8	~	0.1	~	84.6	~	0.1	~	87.6	~	0.1	~	66.8	~	0.1	~

NOTES:

All results reported in milligrams per kilogram (mg/kg) or parts per million (ppm)
NE - No Exceedances
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit
MDL - Method Detection Limit
NJDEP RIDSRS - New Jersey Department of Environmental Protection Residential Ingestion-Dermal Soil Remediation Standarc
NJDEP RISRS - New Jersey Department of Environmental Protection Residential Inhalation Soil Remediation Standard (May 20
NJDEP NRIDSRS - New Jersey Department of Environmental Protection Non-Residential Ingestion-Dermal Soil Remediation St
NJDEP NRISRS - New Jersey Department of Environmental Protection Non-Residential Inhalation Soil Remediation Standard (M
NJDEP MGW SRS - New Jersey Department of Environmental Protection Migration to Groundwater SRS (May 2021)

BOLD Detected in Sample
BOLD Value Exceeded One or More of the Criteria
BOLD/Underlined Value Exceeded One or More Like-on-Like standard
*Like-on-Like standard

Table 13 - QA/QC Sample Analyses and Data Results
Old Orchard Country Club
54 Monmouth Road
Boroughs of Eatontown and West Long Branch, New Jersey
NJDEP PI No. 021606, NJDEP Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

						SAMPLE ID:	FB-1				FB-2			
						LAB ID:	L2523648-121				L2523648-122			
						COLLECTION DATE:	4/15/2025				4/16/2025			
						SAMPLE MATRIX:	Blank				Blank			
CAS	ANALYTE	NJDEP MGWSRS	NJDEP NRISRS	NJDEP NRIDSRS	NJDEP RISRS	NJDEP RIDSRS	Conc	Q	RL	MDL	Conc	Q	RL	MDL
PESTICIDES BY GC (ug/L)														
1024-57-3	Heptachlor epoxide	0.081	NA	0.4	NA	0.076	-		-	-	ND		0.014	0.005
60-57-1	Dieldrin	0.024	NA	0.16	NA	0.034	ND		0.02	0.004	ND		0.02	0.004
72-55-9	4,4'-DDE	0.47	NA	11	NA	2	-		-	-	ND		0.029	0.01
57-74-9	Chlordane	1.4	NA	1.4	NA	0.27	-		-	-	ND		0.143	0.098
5103-71-9	cis-Chlordane	1.4	NA	1.4	NA	0.27	-		-	-	ND		0.02	0.007
5103-74-2	trans-Chlordane	1.4	NA	1.4	NA	0.27	-		-	-	ND		0.02	0.011
TOTAL METALS (ug/L)														
7440-38-2	Arsenic, Total	19	5200	19	1100	19	-		-	-	ND		5	1.9
7439-92-1	Lead, Total	90	NA	800	NA	200	-		-	-	ND		10	2.7
7439-97-6	Mercury, Total	0.1	NA	390	520000	23	-		-	-	ND		0.2	0.09

NOTES:
NE - No Exceedances
U - Indicates compound analyzed for but not detected
J - Indicates estimated value for TICs and all results when detected below the RL
D - Indicates result is based on a dilution
I - The lower value for the two columns has been reported due to obvious interference
P - The RPD between the results for the two columns exceeds the method-specified criteria
E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument
NA - No applicable NJDEP SRS
Q - Qualifier
RL - Laboratory Reporting Limit

Appendix A
Fill Use Plan

DYNAMIC
ENGINEERING EARTH SURVEY TRAFFIC

Dynamic Earth, LLC
www.dynamic-earth.com
1904 Main Street,
Lake Como, NJ 07719
T. 732-280-0830

June 25, 2025

New Jersey Department of Environmental Protection
Site Remediation & Waste Management Program
Bureau of Case Assignment and Initial Notice
Mail Code 401-05H
PO Box 420
Trenton, New Jersey 08625

Regarding: **FILL USE PLAN**
Old Orchard Country Club
54 Monmouth Road
Block 2701, Lots 2, 53, 60, 66, and 69
Borough of Eatontown, Monmouth County, New Jersey
Block 68, Lot 6
Borough of West Long Branch, Monmouth County, New Jersey
NJDEP PI No. 021606
Dynamic Earth Project No. 3272-98-005EC

To Whom it May Concern,

Dynamic Earth, LLC (Dynamic Earth) has prepared this Fill Use Plan (FUP) pursuant to N.J.A.C. 7:26E-5.2(h) and 5.5(b)9 to manage fill related activities at the above-reference property (hereinafter referred to as the "Site"). A *Site Location Map* and *Existing Conditions and AOC Location Plan* are included as Figures 1 and 2, respectively.

1.0 Alternative and Clean Fill

1.1 Site Location, Use, and Donor Sites

Old Orchard Country Club is located at 54 Monmouth Road in the Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey further identified as Block 270 Lots 2, 53, 60, 66, and 69 and Block 68, Lot 6, (hereinafter referred to as the Site).

Remedial actions for the contaminated Areas of Concern (AOC)-6, AOC-11, and AOC-12 will require the on-Site consolidation of approximately 11,372 cubic yards of Historically Applied Pesticide (HAP) impacted soil at AOC-5. The excavation areas will be sloped prior to Site redevelopment or backfilled with licensed quarry/clean sourced fill material. Any backfill material that will be imported to the Site will:

- Meet the requirements of the New Jersey Department of Environmental Protection's (NJDEP's) Fill Material Guidance for SRP Sites dated October 2021; and
- Be approved by the Licensed Site Remediation Professional (LSRP) of Record.

Material proposed for consolidation will be excavated from defined on-Site impacted areas located within AOC-6, AOC-11, and AOC-12.

1.2 Contact Information

The names, contact information, and relationship of all persons involved with the source, preparation, and transport of the fill from the donor AOCs to the receiving AOCs is included as follows:

Donor Site (AOC-6, AOC-11, & AOC-12):

Responsible Party Old Orchard Country Club Assoc., LP	54 Monmouth Road, Eatontown, New Jersey 07724	
Person Responsible for Conducting the Remediation Surrey Equities, LLC	38 Corbett Way Eatontown, New Jersey 07724	Leon Silvera 212-619-3700
Licensed Site Remediation Professional Spencer S. Spurlock	1904 Main Street, Lake Como, NJ 07719	Spencer S. Spurlock, LSRP License No. 585413 732-280-0830
Environmental Consultant Dynamic Earth, LLC	1904 Main Street, Lake Como, NJ 07719	Spencer S. Spurlock, LSRP License No. 585413 732-280-0830

Receiving Site (AOC-5):

Responsible Party Old Orchard Country Club Assoc., LP	54 Monmouth Road, Eatontown, New Jersey 07724	
Person Responsible for Conducting the Remediation Surrey Equities, LLC	38 Corbett Way Eatontown, New Jersey 07724	Leon Silvera 212-619-3700
Licensed Site Remediation Professional Spencer S. Spurlock	1904 Main Street, Lake Como, NJ 07719	Spencer S. Spurlock, LSRP License No. 585413 732-280-0830
Environmental Consultant Dynamic Earth, LLC	1904 Main Street, Lake Como, NJ 07719	Spencer S. Spurlock, LSRP License No. 585413 732-280-0830

1.3 Description of Originating or Donor Site

During Site Investigation (SI) and Remedial Investigation (RI) activities, HAP contaminants were identified in soil within AOC-6, AOC-11, and AOC-12. The locations and extent of these areas are defined on Figures 5 and 6 of Dynamic Earth's June 2025, Remedial Action Workplan (RAW). Dynamic Earth is proposing to consolidate a portion of impacted soils within AOC-6, AOC-11, and AOC-12 (proposed residential Lot 69.06) to impacted areas within AOC-5 (proposed open space Lot 69.05) including portions of Fairway 4, Fairway 5, and Fairway 9.

1.4 Volumes

Approximately 11,372 cubic yards of HAP impacted material meeting Like-on-Like and 75th percentile requirements will be consolidated to AOC-5. Approximately 6,198 cubic yards, 4,714 cubic yards, and 460

cubic yards of HAP contaminated soil is proposed for consolidation at Fairway 4, Fairway 5, and Fairway 9, respectively. No HAP impacted fill is proposed for consolidation outside these existing impacted areas or within sensitive ecological receptors.

The excavation areas will be sloped prior to redevelopment or backfilled with material sourced from an off-Site New Jersey licensed quarry and/or clean fill source approved by the LSRP of Record for the Site. No alternative fill is proposed for use within proposed Lot 69.06 at the Site.

1.5 Locations of Fill Use

By way of this Fill Use Plan, Dynamic Earth meets Like-on-Like and 75th Percentile requirements described in the *Fill Material Guidance for SRP Sites, October 2021 (Version 4.0),* Section 3.5. and N.J.A.C. 7:26E-5.2. to consolidate impacted HAP soils from donor AOC-6, AOC-11, and AOC-12 to receiving AOC-5. Specifically, alternative fill from AOC-6, AOC-11, and AOC-12 will be consolidated in the portions of Fairway 4, Fairway 5, and Fairway 9 located within AOC-5.

1.6 Depth to Groundwater at Receiving Site

Seasonal high groundwater at the Site has been encountered from 2.3 feet in areas adjacent to the Turtle Mill Brook located in the central portion of the Site and low lying areas to 18.0 feet bgs in the northern portions of the Site. Regional groundwater flow direction is north toward Shrewsbury Bay.

1.7 Description of Geotechnical Properties

Based on a review of the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey, the Site is mapped within the following areas:

- **Downer loamy sand, zero to five percent slopes, Northern Coastal Plain (DocB):** The Downer loamy sand is mapped underlying the northern and eastern portions of the Site. The parent material is reported as loamy fluviomarine deposits. The typical soil profile (as detailed in the survey) consists of loamy sand to a depth of 16 inches; sandy loam to a depth of 28 inches; loamy sand to a depth of 48 inches; underlain by sand to a depth of 80 inches below the natural ground surface (limit of report). The depth to the water table is reported to be more than 80 inches below the natural ground surface (limit of report).

- **Downer loamy sand, five to ten percent slopes, Northern Coastal Plain (DocC):** The Downer loamy sand is mapped underlying the northern and eastern portions of the Site and has a similar soil profile pit as DocB described above.

- **Evesboro sand, zero to five percent slopes (EveB):** The Evesboro sand is mapped underlying the western and central portions of the Site. The parent material is reported as sandy eolian deposits and/or sandy fluviomarine deposits. The typical soil profile (as detailed in the survey) consists of sand to a depth of 31 inches; underlain by stratified loamy sand to sand to a depth of 80 inches below the natural ground surface (limit of report). The depth to the water table is reported to be more than 80 inches below the natural ground surface (limit of report).

- **Evesboro sand, five to ten percent slopes (EveC):** The Evesboro sand is mapped underlying the western and central portions of the Site and has a similar soil profile pit as EveB described above.

- **Freehold sandy loam, two to five percent slopes (FrkB):** This soil series is mapped within the

central portion of the Site and the parent material is described as glauconite bearing loamy eolian deposits and/or glauconite bearing loamy fluviomarine deposits. The typical soil profile (as detailed in the survey) consists of sandy loam to a depth of 14 inches; sandy clay loam to a depth of 21 inches; sandy loam to a depth of 35 inches; underlain by loamy sand to a depth of 80 inches below the natural ground surface (limit of the report). The depth to the groundwater table is reported to be greater than 80 inches below the natural ground surface.

- **Freehold-Urban land complex sandy loam, zero to ten percent slopes (FrrC):** This soil series is mapped within the central portion of the Site and the parent material is described as glauconite bearing loamy eolian deposits and/or glauconite bearing loamy fluviomarine deposits. The soil profile pit of the Freehold is similar to the FrkB described above. The soil profile pit of the Urban (as detailed in the survey) consists of sandy loam to a depth of 14 inches; sandy clay loam to a depth of 21 inches; sandy loam to a depth of 35 inches; underlain by loamy sand to a depth of 80 inches below the natural ground surface (limit of the report). The depth to the groundwater table is reported to be greater than 80 inches below the natural ground surface.

- **Humaquepts, zero to three percent slopes, frequently flooded (HumAt):** This soil series is mapped within the northwestern and western portions of the Site and the parent material is described as loamy alluvium. The typical soil profile (as detailed in the survey) consists of loam to a depth of 18 inches; underlain by sand to a depth of 80 inches below the natural ground surface (limit of the report). The depth to the groundwater table is reported to be between zero inches (at the surface) and 12 inches below the natural ground surface.

The Site is located in a region of the Atlantic Ocean Coastal Plain Physiographic Province of New Jersey. Specifically, the Site is underlain by the upper Paleocene Aged, Vincentown Formation. The Vincentown Formation consists of dusky-yellow to pale-gray, medium grained, well to poorly sorted, quartz sand. This material generally weathers orange brown or red brown and typically is very glauconitic and clayey at the base.

The surficial geology mapped within the northern, central, and southeastern portions of the Site consists of the Cape May Formation (Qcm1 and Qcm2). The lithology consists of exposed sand and gravel of the Cape May peninsula. The surficial geology mapped along Turtle Mill Brook within the central portion of the overall site consists of Alluvium (Qal). The lithology consists of reddish brown, yellowish-brown, brown, and gray sand, gravel, and minor clay and peat. The surficial geology mapped within the southwestern portion of the overall site consists of the Lower Colluvium (Qcl). The lithology consists of yellow, yellowish brown, reddish yellow, and light gray sand and silt. Overburden material also includes existing fill material.

Soils encountered at the Site consisted of six inches of topsoil at the surface. Underlying surface cover, natural coastal plain deposits were encountered to a maximum depth explored of 25.0 feet below ground surface generally consisting of sand with variable amount of silt, clay, and gravel; and occasional layers of clay with variable amounts of silt and gravel.

1.8 Future Receiving and Donor Area Uses

The HAP consolidation areas at AOC-5 will be capped with a geotechnical fabric acting as a visual demarcation layer and clean fill as an engineering control. These areas will consist of undeveloped vegetated land. HAP excavation areas at AOC-6, AOC-11, and AOC-12 will be sloped prior to residential Site redevelopment or returned to grade with quarry or certified clean sourced fill material.

1.9 Performance, Effectiveness, and Reliability of Proposed Fill Use

Pursuant to the requirements of N.J.A.C. 7:26E-5.1(d), Section 1.9 provides a discussion of the performance, effectiveness, and reliability of the proposed fill use and any potential negative impacts to human health, safety or the environment as the result of the use.

All HAP impacted soils at that will remain on-Site will be placed beneath an engineering control consisting of a geotextile fabric underlying one foot of clean fill. The geotextile fabric will provide a clear separation between the cap and the underlying impacted material. The engineering controls will prevent contact with the HAP impacted soils.

Based on the ecological evaluation and SI/RI conducted at the Site, no impacts to groundwater, surface water, or sediment were identified. Accordingly, no potential negative impacts to the environment are anticipated once HAP contaminated soils are consolidated and capped.

1.10 Tracking and QC Requirements

Dynamic Earth will ensure that the excavation, transport, and consolidation of HAP impacted material at the Site are completed in accordance with the approved RAW and FUP. Dynamic Earth personnel will complete on-Site management and oversight including confirming all impacted soils are excavated, recording load counts, visual observation of the materials being delivered to the designated consolidation areas or transported off-Site, and verifying engineering controls.

Prior to any import of backfill material to the Site, the LSRP of Record for the Site will review the quarry certification and any analytical data associated with the imported material.

All documentation associated with quarry sourced or clean fill, and remedial action permitting will be compiled and included within the Remedial Action Report to demonstrate compliance with N.J.A.C. 7:26E-5.2, the NJDEP *Fill Material Guidance for SRP Sites* (October 2021), and the NJDEP *Historically Applied Pesticide Technical Guidance* (February 2022) documents. Shipping manifests/logs will be retained for each load and included in the Remedial Action Report.

1.11 Quality Assurance Project Plan

Dynamic Earth's Quality Assurance Project Plan (QAPP) will be included in the Remedial Action Report for the Site.

1.12 Additional Documentation

No additional documentation is anticipated to demonstrate compliance with NJDEP's October 2021 *Fill Material Guidance for SRP Sites*.

2.0 Alternative Fill Specific Requirements

2.1 Demonstration of Like on Like and 75th Percentile Criterion

In accordance with N.J.A.C. 7:26E-5.2(f), Dynamic Earth has conducted a Like-on-Like and 75th percentile evaluation of soils at the proposed consolidation areas.

Dynamic Earth has reviewed all soil data associated with the HAP soil contamination applicable to this Fill Use Plan. Alternative fill proposed for consolidation in the Fairway 4, Fairway 5, and Fairway 9 areas meet

Like-on-Like and 75th Percentile requirements. Dynamic Earth has provided alternative fill statistical calculations for review of this Fill Use Plan. The Site-Specific Like-on-Like calculations for the Site are described in *Table 1 – Alternative Fill Evaluation*. The highest concentration of an identified compound is included in the Like-on-Like Alternative Fill Requirement column, the 75th percentile column includes a calculated 75th Percentile for all samples collected within the fill stratum (inclusive of non-detect values). Additionally, the highest concentration of an identified compounds in the proposed donor material is included.

All HAP impacted soils not meeting Like-on-Like and 75th percentile requirements will be excavated for off-Site disposal.

2.2 Documentation of Waste Classification

Waste classification sampling will be conducted to characterize approximately 2,370 cubic yards of HAP impacted soils located within AOC-1 through AOC-3 and approximately 2,735 cubic yards HAP impacted soils not meeting Like-on-Like and 75th percentile requirements within AOC-6, AOC-11, and AOC-12.

2.3 Cut/Fill Calculations

Approximately 11,372 cubic yards of alternative fill material from donor AOC-6, AOC-11, and AOC-12 are proposed for consolidation. Approximately 6,198 cubic yards of alternative fill will be consolidated in an approximately 5.0 foot tall soil berm within the 63,844 square footprint of Fairway 4. Approximately 4,714 cubic yards of alternative fill will be consolidated in an approximately 3.5 foot tall soil berm within the 77,324 square footprint of Fairway 5. Approximately 460 cubic yards of alternative fill will be consolidated in an approximately 2.5 foot tall soil berm within the 10, 695 square footprint of Fairway 9. No alternative fill is proposed outside of existing HAP impacted areas.

The excavation areas will be sloped prior to redevelopment or backfilled with material sourced from an off-Site New Jersey licensed quarry and/or clean fill source approved by the LSRP of Record for the Site. No alternative fill is proposed for use within AOC-6, AOC-11, or AOC-12.

2.4 Documentation of the Intended Use of Alternative Fill

Alternative fill material concentrations proposed herein include immobile/less mobile compounds. Additionally, based on the ecological evaluation conducted by Dynamic Earth, no impacts to Environmentally Sensitive Natural Resources (ESNR) were identified. The proposed capping plan and type of contaminants present in the alternative fill will not increase contamination of groundwater, surface water, sediment, or result in increased ecological risks.

3.0 Clean Fill Requirements

3.1 Clean Fill Documentation

Dynamic Earth will review available laboratory analytical data reports for any material proposed for import to the Site. All clean fill material will be imported from a licensed New Jersey quarry or clean fill source approved by the LSRP of Record for the Site.

3.2 Additional Documentation

No additional documentation is anticipated to demonstrate compliance with NJDEP's October 2021 *Fill Material Guidance for SRP Sites*.

4.0 Quarry Material Requirements

4.1 Virgin Quarry Documentation

Dynamic Earth will review the certification from the New Jersey Department of Labor for all imported quarry material. The certification and all documentation will be provided in the RAR.

Please feel free to contact us at your convenience if you would like to discuss this fill use plan in greater detail.

Sincerely,

DYNAMIC EARTH, LLC





Spencer S. Spurlock, LSRP
Senior Principal

Omar Mahmoud
Environmental Scientist

DYNAMIC EARTH

Tables

Tabel 1 - Alternative Fill Evaluation - Fairway 4
Borough of Eatontown and West Long Branch, Monmouth County, New Jersey
Dynamic Earth Project No.: 3272-98-005EC

Compound	CAS#	NJDEP Soil Remediation Standards					Like-on-Like Alternative Fill Requirement	75th Percentile	95% UCL	Maxmimum Concentration in Proposed Alternative Fill
		RID SRS	RI SRS	NRID SRS	NRI SRS	MGW SRS				
Pesticides (mg/kg)										
4,4'-DDD	72-54-8	2.3	NA	11	NA	0.47	NE			NE
4,4'-DDE	72-55-9	2	NA	11	NA	0.47	NE			NE
4,4'-DDT	50-29-3	1.9	NA	9.5	NA	0.67	NE			NE
Aldrin	309-00-2	0.041	NA	0.21	NA	0.13	NE			NE
alpha-BHC	319-84-6	0.086	NA	0.41	NA	0.0023	NE			NE
beta-BHC	319-85-7	0.3	NA	1.4	NA	0.0046	NE			NE
Chlordane	57-74-9	0.27	NA	1.4	NA	1.4	0.00131			3.16
delta-BHC	319-86-8	NA	NA	NA	NA	NA	NE			NE
Dieldrin	60-57-1	0.034	NA	0.16	NA	0.024	0.077	0.078	0.116	0.503
Endosulfan I	959-98-8	470	NA	7800	NA	NA	NE			NE
Endosulfan II	33213-65-9	470	NA	7800	NA	NA	NE			NE
Endosulfan sulfate	1031-07-8	NA	NA	NA	NA	NA	NE			NE
Endrin	72-20-8	19	NA	270	NA	1.6	NE			NE
Endrin aldehyde	7421-93-4	NA	NA	NA	NA	NA	NE			NE
Endrin ketone	53494-70-5	NA	NA	NA	NA	NA	NE			NE
gamma-BHC (Lindane)	58-89-9	0.57	NA	2.8	NA	0.0035	NE			NE
Heptachlor	76-44-8	0.15	NA	0.81	NA	0.083	NE			NE
Heptachlor Epoxide	1024-57-3	0.076	NA	0.4	NA	0.081	0.00572			0.67
Methoxychlor	72-43-5	320	NA	4600	NA	NA	NE			NE
Toxaphene	8001-35-2	0.49	NA	2.3	NA	6.2	NE			NE
Total Metals (mg/kg)										
Arsenic	7440-38-2	19	1100	19	5200	19	6.1			330
Lead	7439-92-1	400	NA	800	NA	90	15			2,110
Mercury	7439-97-6	23	520000	390	NA	0.1	NE			81.1

Notes:
All concentrations in milligrams per kilogram (mg/kg)
RID/NRID SRS - Resdiential/Non-Residential Ingestion-Dermal Soil Remediation Standard
RI/NRI SRS - Residential/Non-Residential Inhalation Soil Remediation Standard
MGW SRS - Migration to Groundwater Soil Remediation Standard
NA - No Applicable NJDEP Standard
NE - No Exceedances

Tabel 1 - Alternative Fill Evaluation - Fairway 5
Borough of Eatontown and West Long Branch, Monmouth County, New Jersey
Dynamic Earth Project No.: 3272-98-005EC

Compound	CAS#	NJDEP Soil Remediation Standards					Like-on-Like Alternative Fill Requirement	75th Percentile	95% UCL	Maxmimum Concentration in Proposed Alternative Fill
		RID SRS	RI SRS	NRID SRS	NRI SRS	MGW SRS				
Pesticides (mg/kg)										
4,4'-DDD	72-54-8	2.3	NA	11	NA	0.47	NE			NE
4,4'-DDE	72-55-9	2	NA	11	NA	0.47	NE			NE
4,4'-DDT	50-29-3	1.9	NA	9.5	NA	0.67	NE			NE
Aldrin	309-00-2	0.041	NA	0.21	NA	0.13	NE			NE
alpha-BHC	319-84-6	0.086	NA	0.41	NA	0.0023	NE			NE
beta-BHC	319-85-7	0.3	NA	1.4	NA	0.0046	NE			NE
Chlordane	57-74-9	0.27	NA	1.4	NA	1.4	NE			3.16
delta-BHC	319-86-8	NA	NA	NA	NA	NA	NE			NE
Dieldrin	60-57-1	0.034	NA	0.16	NA	0.024	0.129	0.112	0.141	0.503
Endosulfan I	959-98-8	470	NA	7800	NA	NA	NE			NE
Endosulfan II	33213-65-9	470	NA	7800	NA	NA	NE			NE
Endosulfan sulfate	1031-07-8	NA	NA	NA	NA	NA	NE			NE
Endrin	72-20-8	19	NA	270	NA	1.6	NE			NE
Endrin aldehyde	7421-93-4	NA	NA	NA	NA	NA	NE			NE
Endrin ketone	53494-70-5	NA	NA	NA	NA	NA	NE			NE
gamma-BHC (Lindane)	58-89-9	0.57	NA	2.8	NA	0.0035	NE			NE
Heptachlor	76-44-8	0.15	NA	0.81	NA	0.083	NE			NE
Heptachlor Epoxide	1024-57-3	0.076	NA	0.4	NA	0.081	0.00362			0.67
Methoxychlor	72-43-5	320	NA	4600	NA	NA	NE			NE
Toxaphene	8001-35-2	0.49	NA	2.3	NA	6.2	NE			NE
Total Metals (mg/kg)										
Arsenic	7440-38-2	19	1100	19	5200	19	3.92			330
Lead	7439-92-1	400	NA	800	NA	90	11.1			2,110
Mercury	7439-97-6	23	520000	390	NA	0.1	NE			81.1

Notes:
All concentrations in milligrams per kilogram (mg/kg)
RID/NRID SRS - Resdiential/Non-Residential Ingestion-Dermal Soil Remediation Standard
RI/NRI SRS - Residential/Non-Residential Inhalation Soil Remediation Standard
MGW SRS - Migration to Groundwater Soil Remediation Standard
NA - No Applicable NJDEP Standard
NE - No Exceedances

Tabel 1 - Alternative Fill Evaluation - Fairway 9
Borough of Eatontown and West Long Branch, Monmouth County, New Jersey
Dynamic Earth Project No.: 3272-98-005EC

Compound	CAS#	NJDEP Soil Remediation Standards					Like-on-Like Alternative Fill Requirement	75th Percentile	95% UCL	Maxmimum Concentration in Proposed Alternative Fill
		RID SRS	RI SRS	NRID SRS	NRI SRS	MGW SRS				
Pesticides (mg/kg)										
4,4'-DDD	72-54-8	2.3	NA	11	NA	0.47	NE			NE
4,4'-DDE	72-55-9	2	NA	11	NA	0.47	NE			NE
4,4'-DDT	50-29-3	1.9	NA	9.5	NA	0.67	NE			NE
Aldrin	309-00-2	0.041	NA	0.21	NA	0.13	NE			NE
alpha-BHC	319-84-6	0.086	NA	0.41	NA	0.0023	NE			NE
beta-BHC	319-85-7	0.3	NA	1.4	NA	0.0046	NE			NE
Chlordane	57-74-9	0.27	NA	1.4	NA	1.4	NE			3.16
delta-BHC	319-86-8	NA	NA	NA	NA	NA	NE			NE
Dieldrin	60-57-1	0.034	NA	0.16	NA	0.024	0.245	0.072	0.126	0.503
Endosulfan I	959-98-8	470	NA	7800	NA	NA	NE			NE
Endosulfan II	33213-65-9	470	NA	7800	NA	NA	NE			NE
Endosulfan sulfate	1031-07-8	NA	NA	NA	NA	NA	NE			NE
Endrin	72-20-8	19	NA	270	NA	1.6	NE			NE
Endrin aldehyde	7421-93-4	NA	NA	NA	NA	NA	NE			NE
Endrin ketone	53494-70-5	NA	NA	NA	NA	NA	NE			NE
gamma-BHC (Lindane)	58-89-9	0.57	NA	2.8	NA	0.0035	NE			NE
Heptachlor	76-44-8	0.15	NA	0.81	NA	0.083	NE			NE
Heptachlor Epoxide	1024-57-3	0.076	NA	0.4	NA	0.081	NE			0.67
Methoxychlor	72-43-5	320	NA	4600	NA	NA	NE			NE
Toxaphene	8001-35-2	0.49	NA	2.3	NA	6.2	NE			NE
Total Metals (mg/kg)										
Arsenic	7440-38-2	19	1100	19	5200	19	5.57			330
Lead	7439-92-1	400	NA	800	NA	90	16.5			2,110
Mercury	7439-97-6	23	520000	390	NA	0.1	NE			81.1

Notes:
All concentrations in milligrams per kilogram (mg/kg)
RID/NRID SRS - Resdiential/Non-Residential Ingestion-Dermal Soil Remediation Standard
RI/NRI SRS - Residential/Non-Residential Inhalation Soil Remediation Standard
MGW SRS - Migration to Groundwater Soil Remediation Standard
NA - No Applicable NJDEP Standard
NE - No Exceedances

DYNAMIC EARTH

Attachment 1
75th Percentile Calculations

Fairway 4 - Dieldrin 75th Percentile
Old Orchard Country Club
54 Monmouth Road
Borough of Eatontown and West Long Branch, Monmouth County, New Jersey
PI No. 021606, Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

Total Percentile =	0.078
Percentile without NDs =	0.079

With NDs	
Sample ID	**Concentraton (mg/kg)**
F-4	0.077
F-4A	0.064
F-4B	0.00586
F-4-1	0.0443
F-4-1A	0.00851
F-4-2	0.0786
F-4-2A	0
F-4-3	0.374
F-4-3A	0.0019
F-4-4	0.102
F-4-4A	0.00444
F-4-5	0.0206
F-4-6	0.226
F-4-6A	0.00596

Without NDs	
Sample ID	**Concentraton (mg/kg)**
F-4	0.077
F-4A	0.064
F-4B	0.00586
F-4-1	0.0443
F-4-1A	0.00851
F-4-2	0.0786
F-4-3	0.374
F-4-3A	0.0019
F-4-4	0.102
F-4-4A	0.00444
F-4-5	0.0206
F-4-6	0.226
F-4-6A	0.00596

Fairway 5 - Dieldrin 75th Percentile
Old Orchard Country Club
54 Monmouth Road
Borough of Eatontown and West Long Branch, Monmouth County, New Jersey
PI No. 021606, Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

Total Percentile =	0.112
Percentile without NDs =	0.128

With NDs	
Sample ID	**Concentraton (mg/kg)**
F-5	0.129
F-5A	0.00177
F-5-1	0.0695
F-5-1A	0.016
F-5-2	0.49
F-5-2A	0.00452
F-5-3	0.183
F-5-3A	0.00562
F-5-4	0.126
F-5-4A	0.0488
F-5-4B	0
F-5-5	0.00314
F-5-6	0
F-5-7	0.0187

Without NDs	
Sample ID	**Concentraton (mg/kg)**
F-5	0.129
F-5-1	0.0695
F-5-1A	0.016
F-5-2	0.49
F-5-2A	0.00452
F-5-3	0.183
F-5-3A	0.00562
F-5-4	0.126
F-5-4A	0.0488
F-5-5	0.00314
F-5-7	0.0187

Fairway 9 - Dieldrin 75th Percentile
Old Orchard Country Club
54 Monmouth Road
Borough of Eatontown and West Long Branch, Monmouth County, New Jersey
PI No. 021606, Case No. 24-11-08-1542-18
Dynamic Earth Project No. 3272-98-005EC

Total Percentile =	0.189
Percentile without NDs =	0.189

With NDs	
Sample ID	**Concentraton (mg/kg)**
F-9-1	0.245
F-9-2	0.0196

Without NDs	
Sample ID	**Concentraton (mg/kg)**
F-9-1	0.245
F-9-2	0.0196

Appendix B
Laboratory Analytical Report and EDDs

ANALYTICAL REPORT

Lab Number:	L2523648
Client:	Dynamic Earth, LLC 1904 Main St. Lake Como, NJ 07719
ATTN:	Spencer Spurlock
Phone:	(908) 879-7095
Project Name:	OLD ORCHARD
Project Number:	3272-98-00SEC
Report Date:	05/16/25

The original project report/data package is held by Pace Analytical Services. This report/data package is paginated and should be reproduced only in its entirety. Pace Analytical Services holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930A1).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2523648-01	F-15-D1	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:05	04/17/25
L2523648-02	F-15-D2	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:12	04/17/25
L2523648-03	F-15-D3	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:19	04/17/25
L2523648-04	F-15-D4	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:11	04/17/25
L2523648-05	F-15-D5	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:09	04/17/25
L2523648-06	F-15-D6	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:15	04/17/25
L2523648-07	F-15-D7	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:06	04/17/25
L2523648-08	F-15-D8	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:14	04/17/25
L2523648-09	F-15-2-D1	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:22	04/17/25
L2523648-10	F-15-2-D2	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:30	04/17/25
L2523648-11	F-15-2-D3	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:36	04/17/25
L2523648-12	F-15-2-D4	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:25	04/17/25
L2523648-13	F-15-2-D5	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:27	04/17/25
L2523648-14	F-15-2-D6	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:33	04/17/25
L2523648-15	F-15-2-D7	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:39	04/17/25
L2523648-16	F-15-2-D8	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:27	04/17/25
L2523648-17	F-15-3-D1	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:11	04/17/25
L2523648-18	F-15-3-D2	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:16	04/17/25
L2523648-19	F-15-3-D3	SOIL	EATONTOWN, NEW JERSEY	04/15/25 14:22	04/17/25
L2523648-20	F-15-3-D4	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:28	04/17/25
L2523648-21	F-15-3-D5	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:14	04/17/25
L2523648-22	F-15-3-D6	SOIL	EATONTOWN, NEW JERSEY	04/15/25 14:19	04/17/25
L2523648-23	F-15-3-D7	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:25	04/17/25
L2523648-24	F-15-3-D8	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:26	04/17/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2523648-25	F-15-5-D1	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:33	04/17/25
L2523648-26	F-15-5-D2	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:38	04/17/25
L2523648-27	F-15-5-D3	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:44	04/17/25
L2523648-28	F-15-5-D4	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:49	04/17/25
L2523648-29	F-15-5-D5	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:36	04/17/25
L2523648-30	F-15-5-D6	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:41	04/17/25
L2523648-31	F-15-5-D7	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:47	04/17/25
L2523648-32	F-15-5-D8	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:47	04/17/25
L2523648-33	F-15-6-D1	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:54	04/17/25
L2523648-34	F-15-6-D2	SOIL	EATONTOWN, NEW JERSEY	04/15/25 14:01	04/17/25
L2523648-35	F-15-6-D3	SOIL	EATONTOWN, NEW JERSEY	04/15/25 14:06	04/17/25
L2523648-36	F-15-6-D4	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:54	04/17/25
L2523648-37	F-15-6-D5	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:58	04/17/25
L2523648-38	F-15-6-D6	SOIL	EATONTOWN, NEW JERSEY	04/15/25 14:03	04/17/25
L2523648-39	F-15-6-D7	SOIL	EATONTOWN, NEW JERSEY	04/15/25 13:57	04/17/25
L2523648-40	F-15-6-D8	SOIL	EATONTOWN, NEW JERSEY	04/15/25 14:03	04/17/25
L2523648-41	F-9-5-D1	SOIL	EATONTOWN, NEW JERSEY	04/15/25 09:03	04/17/25
L2523648-42	F-9-5-D2	SOIL	EATONTOWN, NEW JERSEY	04/15/25 09:18	04/17/25
L2523648-43	F-9-5-D3	SOIL	EATONTOWN, NEW JERSEY	04/15/25 09:24	04/17/25
L2523648-44	F-9-5-D4	SOIL	EATONTOWN, NEW JERSEY	04/15/25 09:29	04/17/25
L2523648-45	F-9-5-D5	SOIL	EATONTOWN, NEW JERSEY	04/15/25 09:15	04/17/25
L2523648-46	F-9-5-D6	SOIL	EATONTOWN, NEW JERSEY	04/15/25 09:21	04/17/25
L2523648-47	F-9-5-D7	SOIL	EATONTOWN, NEW JERSEY	04/15/25 09:26	04/17/25
L2523648-48	F-9-5-D8	SOIL	EATONTOWN, NEW JERSEY	04/15/25 09:31	04/17/25
L2523648-49	F-10-1-D1	SOIL	EATONTOWN, NEW JERSEY	04/15/25 09:40	04/17/25
L2523648-50	F-10-1-D2	SOIL	EATONTOWN, NEW JERSEY	04/15/25 09:47	04/17/25
L2523648-51	F-10-1-D3	SOIL	EATONTOWN, NEW JERSEY	04/15/25 09:54	04/17/25
L2523648-52	F-10-1-D4	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:00	04/17/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2523648-53	F-10-1-D5	SOIL	EATONTOWN, NEW JERSEY	04/15/25 09:43	04/17/25
L2523648-54	F-10-1-D6	SOIL	EATONTOWN, NEW JERSEY	04/15/25 09:50	04/17/25
L2523648-55	F-10-1-D7	SOIL	EATONTOWN, NEW JERSEY	04/15/25 09:57	04/17/25
L2523648-56	F-10-1-D8	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:03	04/17/25
L2523648-57	F-10-4-D1	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:12	04/17/25
L2523648-58	F-10-4-D2	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:19	04/17/25
L2523648-59	F-10-4-D3	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:25	04/17/25
L2523648-60	F-10-4-D4	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:31	04/17/25
L2523648-61	F-10-4-D5	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:16	04/17/25
L2523648-62	F-10-4-D6	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:22	04/17/25
L2523648-63	F-10-4-D7	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:28	04/17/25
L2523648-64	F-10-4-D8	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:34	04/17/25
L2523648-65	F-10-5-D1	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:46	04/17/25
L2523648-66	F-10-5-D2	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:52	04/17/25
L2523648-67	F-10-5-D3	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:57	04/17/25
L2523648-68	F-10-5-D4	SOIL	EATONTOWN, NEW JERSEY	04/15/25 11:03	04/17/25
L2523648-69	F-10-5-D5	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:49	04/17/25
L2523648-70	F-10-5-D6	SOIL	EATONTOWN, NEW JERSEY	04/15/25 10:55	04/17/25
L2523648-71	F-10-5-D7	SOIL	EATONTOWN, NEW JERSEY	04/15/25 11:01	04/17/25
L2523648-72	F-10-5-D8	SOIL	EATONTOWN, NEW JERSEY	04/15/25 11:06	04/17/25
L2523648-73	F-13-D1	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:45	04/17/25
L2523648-74	F-13-D2	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:50	04/17/25
L2523648-75	F-13-D3	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:45	04/17/25
L2523648-76	F-13-D4	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:50	04/17/25
L2523648-77	F-13-D5	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:48	04/17/25
L2523648-78	F-13-D6	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:56	04/17/25
L2523648-79	F-13-D7	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:55	04/17/25
L2523648-80	F-13-D8	SOIL	EATONTOWN, NEW JERSEY	04/15/25 12:40	04/17/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2523648-81	G-9-D1	SOIL	EATONTOWN, NEW JERSEY	04/16/25 08:34	04/17/25
L2523648-82	G-9-D2	SOIL	EATONTOWN, NEW JERSEY	04/16/25 08:38	04/17/25
L2523648-83	G-9-D3	SOIL	EATONTOWN, NEW JERSEY	04/16/25 08:43	04/17/25
L2523648-84	G-9-D4	SOIL	EATONTOWN, NEW JERSEY	04/16/25 08:49	04/17/25
L2523648-85	G-10-D1	SOIL	EATONTOWN, NEW JERSEY	04/16/25 10:12	04/17/25
L2523648-86	G-10-D2	SOIL	EATONTOWN, NEW JERSEY	04/16/25 10:17	04/17/25
L2523648-87	G-10-D3	SOIL	EATONTOWN, NEW JERSEY	04/16/25 10:22	04/17/25
L2523648-88	G-10-D4	SOIL	EATONTOWN, NEW JERSEY	04/16/25 10:27	04/17/25
L2523648-89	G-11-D1	SOIL	EATONTOWN, NEW JERSEY	04/16/25 09:34	04/17/25
L2523648-90	G-11-D2	SOIL	EATONTOWN, NEW JERSEY	04/16/25 09:40	04/17/25
L2523648-91	G-11-D3	SOIL	EATONTOWN, NEW JERSEY	04/16/25 09:44	04/17/25
L2523648-92	G-11-D4	SOIL	EATONTOWN, NEW JERSEY	04/16/25 09:49	04/17/25
L2523648-93	G-15-D1	SOIL	EATONTOWN, NEW JERSEY	04/16/25 09:06	04/17/25
L2523648-94	G-15-D2	SOIL	EATONTOWN, NEW JERSEY	04/16/25 09:11	04/17/25
L2523648-95	G-15-D3	SOIL	EATONTOWN, NEW JERSEY	04/16/25 09:14	04/17/25
L2523648-96	G-15-D4	SOIL	EATONTOWN, NEW JERSEY	04/16/25 09:20	04/17/25
L2523648-97	G-16-D1	SOIL	EATONTOWN, NEW JERSEY	04/16/25 10:41	04/17/25
L2523648-98	G-16-D2	SOIL	EATONTOWN, NEW JERSEY	04/16/25 10:45	04/17/25
L2523648-99	G-16-D3	SOIL	EATONTOWN, NEW JERSEY	04/16/25 10:49	04/17/25
L2523648-100	G-16-D4	SOIL	EATONTOWN, NEW JERSEY	04/16/25 10:54	04/17/25
L2523648-101	G-17-D1	SOIL	EATONTOWN, NEW JERSEY	04/16/25 14:28	04/17/25
L2523648-102	G-17-D2	SOIL	EATONTOWN, NEW JERSEY	04/16/25 14:31	04/17/25
L2523648-103	G-17-D3	SOIL	EATONTOWN, NEW JERSEY	04/16/25 14:35	04/17/25
L2523648-104	G-17-D4	SOIL	EATONTOWN, NEW JERSEY	04/16/25 14:39	04/17/25
L2523648-105	G-18-D1	SOIL	EATONTOWN, NEW JERSEY	04/16/25 14:53	04/17/25
L2523648-106	G-18-D2	SOIL	EATONTOWN, NEW JERSEY	04/16/25 14:54	04/17/25
L2523648-107	G-18-D3	SOIL	EATONTOWN, NEW JERSEY	04/16/25 14:48	04/17/25
L2523648-108	G-18-D4	SOIL	EATONTOWN, NEW JERSEY	04/16/25 14:50	04/17/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2523648-109	G-19-D1	SOIL	EATONTOWN, NEW JERSEY	04/16/25 08:07	04/17/25
L2523648-110	G-19-D2	SOIL	EATONTOWN, NEW JERSEY	04/16/25 08:09	04/17/25
L2523648-111	G-19-D3	SOIL	EATONTOWN, NEW JERSEY	04/16/25 08:13	04/17/25
L2523648-112	G-19-D4	SOIL	EATONTOWN, NEW JERSEY	04/16/25 08:16	04/17/25
L2523648-113	G-12-D1	SOIL	EATONTOWN, NEW JERSEY	04/16/25 11:17	04/17/25
L2523648-114	G-12-D2	SOIL	EATONTOWN, NEW JERSEY	04/16/25 11:22	04/17/25
L2523648-115	G-12-D3	SOIL	EATONTOWN, NEW JERSEY	04/16/25 11:27	04/17/25
L2523648-116	G-12-D4	SOIL	EATONTOWN, NEW JERSEY	04/16/25 11:32	04/17/25
L2523648-117	G-13-D1	SOIL	EATONTOWN, NEW JERSEY	04/16/25 11:45	04/17/25
L2523648-118	G-13-D2	SOIL	EATONTOWN, NEW JERSEY	04/16/25 11:49	04/17/25
L2523648-119	G-13-D3	SOIL	EATONTOWN, NEW JERSEY	04/16/25 11:53	04/17/25
L2523648-120	G-13-D4	SOIL	EATONTOWN, NEW JERSEY	04/16/25 11:57	04/17/25
L2523648-121	FB-1	WATER	EATONTOWN, NEW JERSEY	04/15/25 14:32	04/17/25
L2523648-122	FB-2	WATER	EATONTOWN, NEW JERSEY	04/16/25 13:05	04/17/25

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

NJ DEP Data of Known Quality Protocols
Conformance/Non-Conformance
Summary Questionnaire

1	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the NJDEP Data of Known Quality performance standards?	YES
1a	Were the method specified handling, preservation, and holding time requirements met?	YES
1b	EPH Method: Was the EPH Method conducted without significant modifications (see Section 11.3 of respective DKQ methods)?	N/A
2	Were all samples received by the laboratory in a condition consistent with that described on the associated chain-of-custody document(s)?	YES
3	Were all samples received at an appropriate temperature (4 ± 2° C)?	YES
4	Were all QA/QC performance criteria specified in the NJDEP DKQP standards achieved?	NO
5a	Were reporting limits specified or referenced on the chain-of-custody or communicated to the laboratory prior to sample receipt?	YES
5b	Were these reporting limits met?	YES
6	For each analytical method referenced in this laboratory report package, were results reported for all constituents identified in the method-specific analyte lists presented in the DKQP documents and/or site-specific QAPP?	YES
7	Are project-specific matrix spikes and/or laboratory duplicates included in this data set?	YES

Note: For all questions to which the response was "No" (with the exception of question #7), additional information must be provided in an attached narrative. If the answer to question #1, #1a or #1b is "No", the data package does not meet the requirements for "Data of Known Quality".

Project Name:	OLD ORCHARD	**Lab Number:**	L2523648
Project Number:	3272-98-00SEC	**Report Date:**	05/16/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Pace Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Pace's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Pace Project Manager and made arrangements for Pace to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: OLD ORCHARD **Lab Number:** L2523648
Project Number: 3272-98-00SEC **Report Date:** 05/16/25

Case Narrative (continued)

Report Submission
May 16, 2025: This final report includes the results of the following analyses:
L2523648-14, -15, -30, -56, -61, -64, and -71: Pesticides
Additional requests will be reported separately.
May 12, 2025: This preliminary report includes the results of the following analyses:
L2523648-80: Pesticides
May 07, 2025: This preliminary report includes the results of the following analyses:
L2523648-23, -31, -39, -77, -78, and -79: Pesticides
April 28, 2025: This is a preliminary report. Please note that your project has contingency samples on hold. Contact your project manager to request additional analyses within 3 business days of receiving this report. Requests made after this time frame will be reported separately.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

DKQP Related Narratives
Sample Receipt
The analyses performed were specified by the client.
L2523648-40: The collection date and time on the chain of custody was 15-APR-25 14:08; however, the collection date/time on the container label was 15-APR-25 14:03. At the client's request, the collection date/time is reported as 15-APR-25 14:03.
L2523648-61: The collection date and time on the chain of custody was 15-APR-25 10:49; however, the collection date/time on the container label was 15-APR-25 10:16. At the client's request, the collection date/time is reported as 15-APR-25 10:16.
L2523648-62: The collection date and time on the chain of custody was 15-APR-25 10:55; however, the collection date/time on the container label was 15-APR-25 10:22. At the client's request, the collection date/time is reported as 15-APR-25 10:22.

Project Name: OLD ORCHARD **Lab Number:** L2523648
Project Number: 3272-98-00SEC **Report Date:** 05/16/25

Case Narrative (continued)

L2523648-69: The collection date and time on the chain of custody was 15-APR-25 10:16; however, the collection date/time on the container label was 15-APR-25 10:49. At the client's request, the collection date/time is reported as 15-APR-25 10:49.
L2523648-70: The collection date and time on the chain of custody was 15-APR-25 10:22; however, the collection date/time on the container label was 15-APR-25 10:55. At the client's request, the collection date/time is reported as 15-APR-25 10:55.
L2523648-87: The collection date and time on the chain of custody was 16-APR-25 10:27; however, the collection date/time on the container label was 16-APR-25 10:22. At the client's request, the collection date/time is reported as 16-APR-25 10:22.
L2523648-88: The collection date and time on the chain of custody was 16-APR-25 10:22; however, the collection date/time on the container label was 16-APR-25 10:27. At the client's request, the collection date/time is reported as 16-APR-25 10:27.

Pesticides
L2523648-27D, -73D, -74D, -76D, -81D, -82D, -83D, -84D, -93D, -95D, -96D, -101D, -102D, -103D, and -104D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.
L2523648-121 and -122: The volume of sample received for the analysis deviates from the laboratory's current volume requirements. An aliquot was taken from the original sample container, extracted, analyzed, and reported accordingly.
In reference to question 4:
L2523648-10, -12, -34, -66, -81, -82, -83, -84, -85, -86, -87, -88, -93, -93D, -94, -95, -96, -97, -98, -99, -100, -101, -101D, -102, -102D, -103, -104D, and -104: One or more dual column RPDs are above the acceptance criteria. For results above the reporting limit that yield RPDs greater than 100%, re-analysis on dilution will also be reported. For any target hits greater than 100% that have co-eluting analytes on one column, a further dilution is not required and the lower value is reported. Please refer to the sample results and/or QC section of the report for specific details.

Project Name: OLD ORCHARD **Lab Number:** L2523648
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Case Narrative (continued)

L2523648-34: The internal standard (IS) response for 1-bromo-2-nitrobenzene (253%) was above the acceptance criteria on column A; however, the sample was not re-analyzed due to obvious interferences. Since the IS response was above method criteria, all associated compounds reported from this column are considered to have a potentially low bias.
L2523648-81: The internal standard (IS) response for 1-bromo-2-nitrobenzene (270%) was above the acceptance criteria on column A; however, the sample was not re-analyzed due to obvious interferences. Since the IS response was above method criteria, all associated compounds reported from this column are considered to have a potentially low bias.
L2523648-82: The internal standard (IS) response for 1-bromo-2-nitrobenzene (261%) was above the acceptance criteria on column A; however, the sample was not re-analyzed due to obvious interferences. Since the IS response was above method criteria, all associated compounds reported from this column are considered to have a potentially low bias.
L2523648-83: The internal standard (IS) response for 1-bromo-2-nitrobenzene (201%) was above the acceptance criteria on column A; however, the sample was not re-analyzed due to obvious interferences. Since the IS response was above method criteria, all associated compounds reported from this column are considered to have a potentially low bias.
L2523648-84: The internal standard (IS) response for 1-bromo-2-nitrobenzene (313%) was above the acceptance criteria on column A; however, the sample was not re-analyzed due to obvious interferences. Since the IS response was above method criteria, all associated compounds reported from this column are considered to have a potentially low bias. The surrogate recovery is outside the method acceptance criteria for 2,4,5,6-tetrachloro-m-xylene (27%) due to interference with the Internal Standard.
L2523648-101: The internal standard (IS) response for 1-bromo-2-nitrobenzene (360%) was above the acceptance criteria on column A; however, the sample was not re-analyzed due to obvious interferences. Since the IS response was above method criteria, all associated compounds reported from this column are considered to have a potentially low bias. The surrogate recoveries are outside the method acceptance criteria for 2,4,5,6-tetrachloro-m-xylene (16%) and decachlorobiphenyl (26%) due to interference with the Internal Standard.

Project Name: OLD ORCHARD **Lab Number:** L2523648
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Case Narrative (continued)

L2523648-102: The internal standard (IS) response for 1-bromo-2-nitrobenzene (1202%) was above the acceptance criteria on column A; however, the sample was not re-analyzed due to obvious interferences. Since the IS response was above method criteria, all associated compounds reported from this column are considered to have a potentially low bias. The surrogate recoveries are outside the method acceptance criteria for 2,4,5,6-tetrachloro-m-xylene (6%) and decachlorobiphenyl (9%) due to interference with the Internal Standard.
L2523648-104: The internal standard (IS) response for 1-bromo-2-nitrobenzene (919%) was above the acceptance criteria on column A; however, the sample was not re-analyzed due to obvious interferences. Since the IS response was above method criteria, all associated compounds reported from this column are considered to have a potentially low bias. The surrogate recoveries are outside the method acceptance criteria for 2,4,5,6-tetrachloro-m-xylene (11%) and decachlorobiphenyl (12%) due to interference with the Internal Standard.
WG2056897-4: One or more compounds failed to meet the DKQP recovery and/or RPD limits. Please refer to the QC section of the report for specific details.

Total Metals
L2523648-81 through -92 and -97 through -104: The sample has elevated detection limits for all elements, with the exception of mercury, due to the dilution required by the sample matrix.
L2523648-93 through -96 and -105 through -112: The sample has elevated detection limits for all elements due to the dilution required by the sample matrix.
In reference to question 4:
The WG2058213-3 MS recovery performed on L2523648-81 does not apply for lead (0%) because the sample concentration is greater than four times the spike amount added.
The WG2058275-3 MS recoveries performed on L2523648-101 do not apply for arsenic (2110%) and lead (1750%) because the sample concentrations are greater than four times the spike amounts added.
The WG2058214-3 MS recovery performed on L2523648-81 does not apply for mercury (845%) because the sample concentration is greater than four times the spike amount added.

Project Name: OLD ORCHARD
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Case Narrative (continued)

The WG2058275-4 Laboratory Duplicate RPD performed on L2523648-101 is outside the acceptance criteria for arsenic (26%) due to the non-homogeneous nature of the native sample.
The WG2058214-4 Laboratory Duplicate RPD performed on L2523648-81 is outside the acceptance criteria for mercury (43%) due to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kelly O'Neill

Title: Technical Director/Representative Date: 05/16/25

ORGANICS

PESTICIDES

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-01
Client ID: F-15-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:05
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 09:29
Analyst: JAG
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 18:39
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0185		mg/kg	0.00111	0.00055	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	81		30-150	A
Decachlorobiphenyl	67		30-150	A
2,4,5,6-Tetrachloro-m-xylene	85		30-150	B
Decachlorobiphenyl	96		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
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SAMPLE RESULTS

Lab ID: L2523648-02
Client ID: F-15-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:12
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 13:25
Analyst: JAG
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 18:39
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0355		mg/kg	0.00114	0.00057	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	81		30-150	A
Decachlorobiphenyl	69		30-150	A
2,4,5,6-Tetrachloro-m-xylene	89		30-150	B
Decachlorobiphenyl	98		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
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SAMPLE RESULTS

Lab ID: L2523648-03
Client ID: F-15-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:19
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 13:37
Analyst: JAG
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 18:39
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0429		mg/kg	0.00116	0.00058	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	81		30-150	A
Decachlorobiphenyl	69		30-150	A
2,4,5,6-Tetrachloro-m-xylene	85		30-150	B
Decachlorobiphenyl	93		30-150	B

Project Name: OLD ORCHARD
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Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-04
Client ID: F-15-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:11
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 13:50
Analyst: JAG
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 18:39
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0190		mg/kg	0.00112	0.00056	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	82		30-150	A
Decachlorobiphenyl	65		30-150	A
2,4,5,6-Tetrachloro-m-xylene	85		30-150	B
Decachlorobiphenyl	92		30-150	B

Project Name: OLD ORCHARD
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SAMPLE RESULTS

Lab ID: L2523648-09
Client ID: F-15-2-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:22
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/22/25 22:48
Analyst: EMR
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 00:19
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0261		mg/kg	0.00112	0.00056	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	A
Decachlorobiphenyl	69		30-150	A
2,4,5,6-Tetrachloro-m-xylene	78		30-150	B
Decachlorobiphenyl	69		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-10
Client ID: F-15-2-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:30
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 14:02
Analyst: JAG
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 18:39
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.143	IP	mg/kg	0.00116	0.00058	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	58		30-150	A
Decachlorobiphenyl	43		30-150	A
2,4,5,6-Tetrachloro-m-xylene	85		30-150	B
Decachlorobiphenyl	89		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
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SAMPLE RESULTS

Lab ID: L2523648-11
Client ID: F-15-2-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:36
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 14:15
Analyst: JAG
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 18:39
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.101		mg/kg	0.00118	0.00059	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78		30-150	A
Decachlorobiphenyl	63		30-150	A
2,4,5,6-Tetrachloro-m-xylene	89		30-150	B
Decachlorobiphenyl	92		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
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SAMPLE RESULTS

Lab ID: L2523648-12
Client ID: F-15-2-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:25
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 11:45
Analyst: PEG
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:53
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0776	IP	mg/kg	0.00115	0.00057	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	56		30-150	A
Decachlorobiphenyl	56		30-150	A
2,4,5,6-Tetrachloro-m-xylene	89		30-150	B
Decachlorobiphenyl	82		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
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SAMPLE RESULTS

Lab ID: L2523648-14
Client ID: F-15-2-D6
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:33
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 05/16/25 00:23
Analyst: RMP
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/25/25 16:47
Cleanup Method: EPA 3620B
Cleanup Date: 04/27/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/27/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0580		mg/kg	0.00118	0.00059	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	70		30-150	A
Decachlorobiphenyl	63		30-150	A
2,4,5,6-Tetrachloro-m-xylene	85		30-150	B
Decachlorobiphenyl	76		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
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SAMPLE RESULTS

Lab ID: L2523648-15
Client ID: F-15-2-D7
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:39
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 05/16/25 00:11
Analyst: RMP
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 04/25/25 16:47
Cleanup Method: EPA 3620B
Cleanup Date: 04/27/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/27/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.196		mg/kg	0.00119	0.00059	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78		30-150	A
Decachlorobiphenyl	71		30-150	A
2,4,5,6-Tetrachloro-m-xylene	83		30-150	B
Decachlorobiphenyl	73		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-17
Client ID: F-15-3-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:11
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 14:27
Analyst: JAG
Percent Solids: 69%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 18:39
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0134		mg/kg	0.00140	0.00069	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	81		30-150	A
Decachlorobiphenyl	71		30-150	A
2,4,5,6-Tetrachloro-m-xylene	82		30-150	B
Decachlorobiphenyl	86		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-18
Client ID: F-15-3-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:16
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 14:40
Analyst: JAG
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 18:39
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0550		mg/kg	0.00112	0.00056	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	79		30-150	A
Decachlorobiphenyl	62		30-150	A
2,4,5,6-Tetrachloro-m-xylene	84		30-150	B
Decachlorobiphenyl	91		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-19
Client ID: F-15-3-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 14:22
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 14:52
Analyst: JAG
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 18:39
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.290		mg/kg	0.00116	0.00058	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	89		30-150	A
Decachlorobiphenyl	73		30-150	A
2,4,5,6-Tetrachloro-m-xylene	92		30-150	B
Decachlorobiphenyl	97		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-20
Client ID: F-15-3-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:28
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 15:04
Analyst: JAG
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 18:39
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0372		mg/kg	0.00115	0.00057	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	79		30-150	A
Decachlorobiphenyl	61		30-150	A
2,4,5,6-Tetrachloro-m-xylene	84		30-150	B
Decachlorobiphenyl	89		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-23
Client ID: F-15-3-D7
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:25
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 05/02/25 18:13
Analyst: AKM
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/25/25 17:32
Cleanup Method: EPA 3620B
Cleanup Date: 04/27/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/27/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0324		mg/kg	0.00118	0.00058	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	85		30-150	A
Decachlorobiphenyl	73		30-150	A
2,4,5,6-Tetrachloro-m-xylene	84		30-150	B
Decachlorobiphenyl	86		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-25
Client ID: F-15-5-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:33
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 11:56
Analyst: PEG
Percent Solids: 68%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:53
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0669		mg/kg	0.00146	0.00073	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	37		30-150	A
Decachlorobiphenyl	37		30-150	A
2,4,5,6-Tetrachloro-m-xylene	35		30-150	B
Decachlorobiphenyl	32		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-26
Client ID: F-15-5-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:38
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 15:17
Analyst: JAG
Percent Solids: 78%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 20:32
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.162		mg/kg	0.00123	0.00061	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	87		30-150	A
Decachlorobiphenyl	76		30-150	A
2,4,5,6-Tetrachloro-m-xylene	88		30-150	B
Decachlorobiphenyl	95		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-27 D
Client ID: F-15-5-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:44
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 13:16
Analyst: PEG
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	1.63		mg/kg	0.0179	0.00895	10	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	92		30-150	A
Decachlorobiphenyl	105		30-150	A
2,4,5,6-Tetrachloro-m-xylene	82		30-150	B
Decachlorobiphenyl	105		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-28
Client ID: F-15-5-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:49
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 15:29
Analyst: JAG
Percent Solids: 69%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 20:32
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0740		mg/kg	0.00140	0.00070	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		30-150	A
Decachlorobiphenyl	54		30-150	A
2,4,5,6-Tetrachloro-m-xylene	91		30-150	B
Decachlorobiphenyl	92		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-30
Client ID: F-15-5-D6
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:41
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 05/16/25 00:00
Analyst: RMP
Percent Solids: 74%

Extraction Method: EPA 3546
Extraction Date: 04/26/25 00:09
Cleanup Method: EPA 3620B
Cleanup Date: 04/27/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/27/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0298		mg/kg	0.00132	0.00065	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	74		30-150	A
Decachlorobiphenyl	66		30-150	A
2,4,5,6-Tetrachloro-m-xylene	80		30-150	B
Decachlorobiphenyl	68		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-31
Client ID: F-15-5-D7
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:47
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 05/01/25 23:15
Analyst: AKM
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 04/26/25 00:09
Cleanup Method: EPA 3620B
Cleanup Date: 04/27/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/27/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.00382		mg/kg	0.00117	0.00058	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	65		30-150	A
Decachlorobiphenyl	56		30-150	A
2,4,5,6-Tetrachloro-m-xylene	80		30-150	B
Decachlorobiphenyl	69		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-33
Client ID: F-15-6-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:54
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 15:42
Analyst: JAG
Percent Solids: 67%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 20:32
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0256		mg/kg	0.00146	0.00073	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	91		30-150	A
Decachlorobiphenyl	70		30-150	A
2,4,5,6-Tetrachloro-m-xylene	88		30-150	B
Decachlorobiphenyl	88		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-34
Client ID: F-15-6-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 14:01
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 15:54
Analyst: JAG
Percent Solids: 69%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 20:32
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0854	P	mg/kg	0.00137	0.00068	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	42		30-150	A
Decachlorobiphenyl	35		30-150	A
2,4,5,6-Tetrachloro-m-xylene	89		30-150	B
Decachlorobiphenyl	93		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-35
Client ID: F-15-6-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 14:06
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 16:07
Analyst: JAG
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 20:32
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.357	E	mg/kg	0.00114	0.00056	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	82		30-150	A
Decachlorobiphenyl	61		30-150	A
2,4,5,6-Tetrachloro-m-xylene	82		30-150	B
Decachlorobiphenyl	85		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-35 D
Client ID: F-15-6-D3
Sample Location: EATONTOWN, NEW JERSEY

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 12:19
Analyst: PEG
Percent Solids: 83%

Date Collected: 04/15/25 14:06
Date Received: 04/17/25
Field Prep: Not Specified

Extraction Method: EPA 3546
Extraction Date: 04/21/25 20:32
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.434		mg/kg	0.00568	0.00284	5	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-36
Client ID: F-15-6-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:54
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 16:19
Analyst: JAG
Percent Solids: 71%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 20:32
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0160		mg/kg	0.00135	0.00067	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	90		30-150	A
Decachlorobiphenyl	73		30-150	A
2,4,5,6-Tetrachloro-m-xylene	87		30-150	B
Decachlorobiphenyl	92		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-39
Client ID: F-15-6-D7
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:57
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 05/01/25 23:27
Analyst: AKM
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 04/26/25 00:09
Cleanup Method: EPA 3620B
Cleanup Date: 04/27/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/27/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0564		mg/kg	0.00118	0.00059	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	63		30-150	A
Decachlorobiphenyl	65		30-150	A
2,4,5,6-Tetrachloro-m-xylene	80		30-150	B
Decachlorobiphenyl	80		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-41
Client ID: F-9-5-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 09:03
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 16:32
Analyst: JAG
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 20:32
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0264		mg/kg	0.00119	0.00059	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	83		30-150	A
Decachlorobiphenyl	76		30-150	A
2,4,5,6-Tetrachloro-m-xylene	84		30-150	B
Decachlorobiphenyl	89		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-42
Client ID: F-9-5-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 09:18
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 12:08
Analyst: PEG
Percent Solids: 73%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:53
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0372		mg/kg	0.00132	0.00066	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	98		30-150	A
Decachlorobiphenyl	95		30-150	A
2,4,5,6-Tetrachloro-m-xylene	98		30-150	B
Decachlorobiphenyl	94		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-43
Client ID: F-9-5-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 09:24
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 16:44
Analyst: JAG
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 20:32
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0576		mg/kg	0.00118	0.00059	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	84		30-150	A
Decachlorobiphenyl	61		30-150	A
2,4,5,6-Tetrachloro-m-xylene	81		30-150	B
Decachlorobiphenyl	86		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-44
Client ID: F-9-5-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 09:29
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 16:57
Analyst: JAG
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 20:32
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0203		mg/kg	0.00118	0.00059	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	87		30-150	A
Decachlorobiphenyl	72		30-150	A
2,4,5,6-Tetrachloro-m-xylene	81		30-150	B
Decachlorobiphenyl	84		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-49
Client ID: F-10-1-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 09:40
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/22/25 23:23
Analyst: EMR
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 00:19
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0265		mg/kg	0.00118	0.00059	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78		30-150	A
Decachlorobiphenyl	74		30-150	A
2,4,5,6-Tetrachloro-m-xylene	90		30-150	B
Decachlorobiphenyl	81		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-50
Client ID: F-10-1-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 09:47
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/22/25 23:34
Analyst: EMR
Percent Solids: 65%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 00:19
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.00945		mg/kg	0.00146	0.00073	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	84		30-150	A
Decachlorobiphenyl	76		30-150	A
2,4,5,6-Tetrachloro-m-xylene	85		30-150	B
Decachlorobiphenyl	72		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-51
Client ID: F-10-1-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 09:54
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/22/25 23:46
Analyst: EMR
Percent Solids: 73%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 00:19
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0339		mg/kg	0.00133	0.00066	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	89		30-150	A
Decachlorobiphenyl	82		30-150	A
2,4,5,6-Tetrachloro-m-xylene	95		30-150	B
Decachlorobiphenyl	84		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-52
Client ID: F-10-1-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:00
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 17:22
Analyst: AKM
Percent Solids: 77%

Extraction Method: EPA 3546
Extraction Date: 04/21/25 20:32
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.148		mg/kg	0.00129	0.00064	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	89		30-150	A
Decachlorobiphenyl	81		30-150	A
2,4,5,6-Tetrachloro-m-xylene	89		30-150	B
Decachlorobiphenyl	92		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-56
Client ID: F-10-1-D8
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:03
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 05/15/25 23:49
Analyst: RMP
Percent Solids: 68%

Extraction Method: EPA 3546
Extraction Date: 04/26/25 00:09
Cleanup Method: EPA 3620B
Cleanup Date: 04/27/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/27/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0128		mg/kg	0.00143	0.00071	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	108		30-150	A
Decachlorobiphenyl	81		30-150	A
2,4,5,6-Tetrachloro-m-xylene	117		30-150	B
Decachlorobiphenyl	93		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-57
Client ID: F-10-4-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:12
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/22/25 23:57
Analyst: EMR
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 00:19
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.165		mg/kg	0.00116	0.00058	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	79		30-150	A
Decachlorobiphenyl	73		30-150	A
2,4,5,6-Tetrachloro-m-xylene	87		30-150	B
Decachlorobiphenyl	73		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-58
Client ID: F-10-4-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:19
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 00:08
Analyst: EMR
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 00:19
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.00803		mg/kg	0.00120	0.00060	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	100		30-150	A
Decachlorobiphenyl	89		30-150	A
2,4,5,6-Tetrachloro-m-xylene	100		30-150	B
Decachlorobiphenyl	87		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-59
Client ID: F-10-4-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:25
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 00:20
Analyst: EMR
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 00:19
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0245		mg/kg	0.00117	0.00058	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	83		30-150	A
Decachlorobiphenyl	79		30-150	A
2,4,5,6-Tetrachloro-m-xylene	85		30-150	B
Decachlorobiphenyl	77		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-60
Client ID: F-10-4-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:31
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 00:31
Analyst: EMR
Percent Solids: 68%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 00:19
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.133		mg/kg	0.00144	0.00072	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	82		30-150	A
Decachlorobiphenyl	83		30-150	A
2,4,5,6-Tetrachloro-m-xylene	87		30-150	B
Decachlorobiphenyl	85		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-61
Client ID: F-10-4-D5
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:16
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 05/15/25 23:37
Analyst: RMP
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/27/25 14:10
Cleanup Method: EPA 3620B
Cleanup Date: 04/29/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/29/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0338		mg/kg	0.00115	0.00057	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	63		30-150	A
Decachlorobiphenyl	51		30-150	A
2,4,5,6-Tetrachloro-m-xylene	66		30-150	B
Decachlorobiphenyl	56		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-64
Client ID: F-10-4-D8
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:34
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 05/15/25 23:26
Analyst: RMP
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/26/25 01:30
Cleanup Method: EPA 3620B
Cleanup Date: 04/27/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/27/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0185		mg/kg	0.00120	0.00059	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	68		30-150	A
Decachlorobiphenyl	64		30-150	A
2,4,5,6-Tetrachloro-m-xylene	68		30-150	B
Decachlorobiphenyl	57		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-65
Client ID: F-10-5-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:46
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 00:43
Analyst: EMR
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 00:19
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0504		mg/kg	0.00120	0.00060	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	81		30-150	A
Decachlorobiphenyl	80		30-150	A
2,4,5,6-Tetrachloro-m-xylene	86		30-150	B
Decachlorobiphenyl	82		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-66
Client ID: F-10-5-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:52
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 00:54
Analyst: EMR
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 00:19
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0427	IP	mg/kg	0.00113	0.00056	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	47		30-150	A
Decachlorobiphenyl	49		30-150	A
2,4,5,6-Tetrachloro-m-xylene	75		30-150	B
Decachlorobiphenyl	72		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-67
Client ID: F-10-5-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:57
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 01:06
Analyst: EMR
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.163		mg/kg	0.00117	0.00058	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	106		30-150	A
Decachlorobiphenyl	103		30-150	A
2,4,5,6-Tetrachloro-m-xylene	112		30-150	B
Decachlorobiphenyl	100		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-68
Client ID: F-10-5-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 11:03
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 01:17
Analyst: EMR
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0866		mg/kg	0.00119	0.00059	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	114		30-150	A
Decachlorobiphenyl	106		30-150	A
2,4,5,6-Tetrachloro-m-xylene	117		30-150	B
Decachlorobiphenyl	106		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-71
Client ID: F-10-5-D7
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 11:01
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 05/15/25 23:14
Analyst: RMP
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 04/26/25 01:30
Cleanup Method: EPA 3620B
Cleanup Date: 04/27/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/27/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.116		mg/kg	0.00117	0.00058	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	77		30-150	A
Decachlorobiphenyl	64		30-150	A
2,4,5,6-Tetrachloro-m-xylene	81		30-150	B
Decachlorobiphenyl	66		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-73 D
Client ID: F-13-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:45
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 13:52
Analyst: EMR
Percent Solids: 71%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.888		mg/kg	0.0135	0.00676	10	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	92		30-150	A
Decachlorobiphenyl	104		30-150	A
2,4,5,6-Tetrachloro-m-xylene	81		30-150	B
Decachlorobiphenyl	88		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-74
Client ID: F-13-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:50
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 01:40
Analyst: EMR
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.887	E	mg/kg	0.00120	0.00059	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	87		30-150	A
Decachlorobiphenyl	80		30-150	A
2,4,5,6-Tetrachloro-m-xylene	108		30-150	B
Decachlorobiphenyl	99		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-74 D
Client ID: F-13-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:50
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 14:15
Analyst: EMR
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	1.27		mg/kg	0.0240	0.0120	20	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-75
Client ID: F-13-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:45
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 01:51
Analyst: EMR
Percent Solids: 73%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.139		mg/kg	0.00130	0.00065	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	112		30-150	A
Decachlorobiphenyl	107		30-150	A
2,4,5,6-Tetrachloro-m-xylene	114		30-150	B
Decachlorobiphenyl	104		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-76 D
Client ID: F-13-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:50
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 14:38
Analyst: EMR
Percent Solids: 79%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.633		mg/kg	0.0120	0.00600	10	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	128		30-150	A
Decachlorobiphenyl	143		30-150	A
2,4,5,6-Tetrachloro-m-xylene	116		30-150	B
Decachlorobiphenyl	124		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-77
Client ID: F-13-D5
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:48
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 05/01/25 23:39
Analyst: AKM
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 04/26/25 00:09
Cleanup Method: EPA 3620B
Cleanup Date: 04/27/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/27/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.00122		mg/kg	0.00113	0.00056	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	101		30-150	A
Decachlorobiphenyl	94		30-150	A
2,4,5,6-Tetrachloro-m-xylene	113		30-150	B
Decachlorobiphenyl	114		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-78
Client ID: F-13-D6
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:56
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 05/01/25 23:50
Analyst: AKM
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/26/25 00:09
Cleanup Method: EPA 3620B
Cleanup Date: 04/27/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/27/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.196		mg/kg	0.00114	0.00057	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	86		30-150	A
Decachlorobiphenyl	74		30-150	A
2,4,5,6-Tetrachloro-m-xylene	103		30-150	B
Decachlorobiphenyl	98		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-79
Client ID: F-13-D7
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:55
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 05/02/25 00:02
Analyst: AKM
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 04/26/25 00:09
Cleanup Method: EPA 3620B
Cleanup Date: 04/27/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/27/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.0278		mg/kg	0.00117	0.00058	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	100		30-150	A
Decachlorobiphenyl	90		30-150	A
2,4,5,6-Tetrachloro-m-xylene	113		30-150	B
Decachlorobiphenyl	112		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-80
Client ID: F-13-D8
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:40
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 05/11/25 13:41
Analyst: EJL
Percent Solids: 75%

Extraction Method: EPA 3546
Extraction Date: 04/27/25 14:10
Cleanup Method: EPA 3620B
Cleanup Date: 04/29/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/29/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	0.109		mg/kg	0.00131	0.00065	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	52		30-150	A
Decachlorobiphenyl	65		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	82		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-81
Client ID: G-9-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:34
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 13:39
Analyst: JAG
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Heptachlor epoxide	0.0383	P	mg/kg	0.00337	0.00101	1	B
4,4'-DDE	0.417	PE	mg/kg	0.00180	0.00041	1	B
Chlordane	0.752	P	mg/kg	0.0150	0.00596	1	B
cis-Chlordane	0.114		mg/kg	0.00225	0.00062	1	B
trans-Chlordane	0.128	P	mg/kg	0.00225	0.00059	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	32		30-150	A
Decachlorobiphenyl	53		30-150	A
2,4,5,6-Tetrachloro-m-xylene	114		30-150	B
Decachlorobiphenyl	150		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-81 D
Client ID: G-9-D1
Sample Location: EATONTOWN, NEW JERSEY

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 14:56
Analyst: JAG
Percent Solids: 85%

Date Collected: 04/16/25 08:34
Date Received: 04/17/25
Field Prep: Not Specified

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
4,4'-DDE	0.449		mg/kg	0.0180	0.00416	10	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-82
Client ID: G-9-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:38
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 15:07
Analyst: JAG
Percent Solids: 76%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Heptachlor epoxide	0.0605	P	mg/kg	0.00378	0.00113	1	B
4,4'-DDE	0.468	PE	mg/kg	0.00202	0.00046	1	B
Chlordane	1.95	PE	mg/kg	0.0168	0.00668	1	B
cis-Chlordane	0.311		mg/kg	0.00252	0.00070	1	B
trans-Chlordane	0.305	P	mg/kg	0.00252	0.00066	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	30		30-150	A
Decachlorobiphenyl	58		30-150	A
2,4,5,6-Tetrachloro-m-xylene	98		30-150	B
Decachlorobiphenyl	148		30-150	B

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-82 D
Client ID: G-9-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:38
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 15:18
Analyst: JAG
Percent Solids: 76%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
4,4'-DDE	0.490		mg/kg	0.0202	0.00466	10	B
Chlordane	2.03		mg/kg	0.168	0.0668	10	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-83
Client ID: G-9-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:43
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 15:29
Analyst: JAG
Percent Solids: 77%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Heptachlor epoxide	0.0516	P	mg/kg	0.00378	0.00113	1	B
4,4'-DDE	0.537	PE	mg/kg	0.00201	0.00046	1	B
Chlordane	1.03	PE	mg/kg	0.0168	0.00667	1	B
cis-Chlordane	0.159		mg/kg	0.00252	0.00070	1	B
trans-Chlordane	0.180	P	mg/kg	0.00252	0.00066	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	34		30-150	A
Decachlorobiphenyl	52		30-150	A
2,4,5,6-Tetrachloro-m-xylene	87		30-150	B
Decachlorobiphenyl	122		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-83 D
Client ID: G-9-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:43
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 15:40
Analyst: JAG
Percent Solids: 77%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
4,4'-DDE	0.560		mg/kg	0.0201	0.00466	10	B
Chlordane	1.14		mg/kg	0.168	0.0667	10	A

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-84
Client ID: G-9-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:49
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 15:51
Analyst: JAG
Percent Solids: 63%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Heptachlor epoxide	0.0651	P	mg/kg	0.00463	0.00139	1	B
4,4'-DDE	0.618	PE	mg/kg	0.00247	0.00057	1	B
Chlordane	1.23	P	mg/kg	0.0206	0.00818	1	B
cis-Chlordane	0.183	P	mg/kg	0.00309	0.00086	1	B
trans-Chlordane	0.222	P	mg/kg	0.00309	0.00081	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**27**	Q	30-150	A
Decachlorobiphenyl	42		30-150	A
2,4,5,6-Tetrachloro-m-xylene	115		30-150	B
Decachlorobiphenyl	150		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-84 D
Client ID: G-9-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:49
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 16:02
Analyst: JAG
Percent Solids: 63%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:13
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
4,4'-DDE	0.690		mg/kg	0.0247	0.00571	10	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-85
Client ID: G-10-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:12
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 10:20
Analyst: EMR
Percent Solids: 77%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	ND		mg/kg	0.0238	0.00945	1	A
cis-Chlordane	0.0101	IP	mg/kg	0.00357	0.00099	1	B
trans-Chlordane	0.00591	IP	mg/kg	0.00357	0.00094	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	65		30-150	A
Decachlorobiphenyl	67		30-150	A
2,4,5,6-Tetrachloro-m-xylene	86		30-150	B
Decachlorobiphenyl	103		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-86
Client ID: G-10-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:17
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 10:32
Analyst: EMR
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	0.323		mg/kg	0.0232	0.00924	1	B
cis-Chlordane	0.0570	IP	mg/kg	0.00349	0.00097	1	B
trans-Chlordane	0.0287	IP	mg/kg	0.00349	0.00092	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	54		30-150	A
Decachlorobiphenyl	55		30-150	A
2,4,5,6-Tetrachloro-m-xylene	85		30-150	B
Decachlorobiphenyl	115		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-87
Client ID: G-10-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:22
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 10:43
Analyst: EMR
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	0.0856		mg/kg	0.0223	0.00886	1	B
cis-Chlordane	0.0115	IP	mg/kg	0.00334	0.00093	1	B
trans-Chlordane	0.0123		mg/kg	0.00334	0.00088	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	70		30-150	A
Decachlorobiphenyl	63		30-150	A
2,4,5,6-Tetrachloro-m-xylene	83		30-150	B
Decachlorobiphenyl	97		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-88
Client ID: G-10-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:27
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 10:55
Analyst: EMR
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	0.785		mg/kg	0.0225	0.00896	1	B
cis-Chlordane	0.206		mg/kg	0.00338	0.00094	1	A
trans-Chlordane	0.0675	IP	mg/kg	0.00338	0.00089	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	45		30-150	A
Decachlorobiphenyl	53		30-150	A
2,4,5,6-Tetrachloro-m-xylene	78		30-150	B
Decachlorobiphenyl	109		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-93
Client ID: G-15-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:06
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 11:07
Analyst: EMR
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Heptachlor epoxide	0.0583		mg/kg	0.00530	0.00159	1	A
Dieldrin	0.0363		mg/kg	0.00176	0.00088	1	B
Chlordane	3.59	E	mg/kg	0.0235	0.00936	1	B
cis-Chlordane	0.640	IPE	mg/kg	0.00353	0.00098	1	B
trans-Chlordane	0.665	E	mg/kg	0.00353	0.00093	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	55		30-150	A
Decachlorobiphenyl	61		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	111		30-150	B

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-93 D
Client ID: G-15-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:06
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 15:57
Analyst: EJL
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	4.01		mg/kg	0.235	0.0936	10	A
cis-Chlordane	0.788	IP	mg/kg	0.0353	0.00984	10	B
trans-Chlordane	0.781		mg/kg	0.0353	0.00932	10	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-94
Client ID: G-15-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:11
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 11:19
Analyst: EMR
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Heptachlor epoxide	0.0254		mg/kg	0.00533	0.00160	1	A
Dieldrin	0.0117		mg/kg	0.00178	0.00088	1	B
Chlordane	ND		mg/kg	0.0237	0.00941	1	A
cis-Chlordane	0.0120	IP	mg/kg	0.00355	0.00099	1	B
trans-Chlordane	0.00937	IP	mg/kg	0.00355	0.00093	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	63		30-150	A
Decachlorobiphenyl	72		30-150	A
2,4,5,6-Tetrachloro-m-xylene	71		30-150	B
Decachlorobiphenyl	82		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-95
Client ID: G-15-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:14
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 11:31
Analyst: EMR
Percent Solids: 60%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Heptachlor epoxide	0.0686		mg/kg	0.00720	0.00216	1	B
Dieldrin	0.0414		mg/kg	0.00240	0.00120	1	B
Chlordane	2.06	E	mg/kg	0.0320	0.0127	1	B
cis-Chlordane	0.358	IP	mg/kg	0.00480	0.00134	1	B
trans-Chlordane	0.230	IP	mg/kg	0.00480	0.00127	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	63		30-150	A
Decachlorobiphenyl	54		30-150	A
2,4,5,6-Tetrachloro-m-xylene	82		30-150	B
Decachlorobiphenyl	103		30-150	B

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-95 D
Client ID: G-15-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:14
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 15:35
Analyst: EJL
Percent Solids: 60%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	2.00		mg/kg	0.160	0.0636	5	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-96
Client ID: G-15-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:20
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 11:42
Analyst: EMR
Percent Solids: 76%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Heptachlor epoxide	0.0579		mg/kg	0.00551	0.00165	1	B
Dieldrin	0.0322		mg/kg	0.00184	0.00091	1	B
Chlordane	1.69	E	mg/kg	0.0245	0.00973	1	B
cis-Chlordane	0.303	IP	mg/kg	0.00367	0.00102	1	B
trans-Chlordane	0.189	IP	mg/kg	0.00367	0.00097	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	59		30-150	A
Decachlorobiphenyl	65		30-150	A
2,4,5,6-Tetrachloro-m-xylene	80		30-150	B
Decachlorobiphenyl	111		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-96 D
Client ID: G-15-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:20
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 15:46
Analyst: EJL
Percent Solids: 76%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	1.56		mg/kg	0.122	0.0487	5	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-97
Client ID: G-16-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:41
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 11:54
Analyst: EMR
Percent Solids: 81%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Heptachlor epoxide	ND		mg/kg	0.00538	0.00161	1	A
Chlordane	ND		mg/kg	0.0239	0.00950	1	A
cis-Chlordane	0.00251	JIP	mg/kg	0.00358	0.00099	1	B
trans-Chlordane	0.00637		mg/kg	0.00358	0.00094	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	67		30-150	A
Decachlorobiphenyl	61		30-150	A
2,4,5,6-Tetrachloro-m-xylene	77		30-150	B
Decachlorobiphenyl	91		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-98
Client ID: G-16-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:45
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 12:06
Analyst: EMR
Percent Solids: 76%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Heptachlor epoxide	0.0178		mg/kg	0.00578	0.00173	1	B
Chlordane	0.392		mg/kg	0.0257	0.0102	1	B
cis-Chlordane	0.0689	IP	mg/kg	0.00385	0.00107	1	B
trans-Chlordane	0.0566		mg/kg	0.00385	0.00102	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	64		30-150	A
Decachlorobiphenyl	60		30-150	A
2,4,5,6-Tetrachloro-m-xylene	84		30-150	B
Decachlorobiphenyl	103		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-99
Client ID: G-16-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:49
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 12:18
Analyst: EMR
Percent Solids: 79%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Heptachlor epoxide	0.00256	JIP	mg/kg	0.00543	0.00163	1	A
Chlordane	0.0655		mg/kg	0.0241	0.00959	1	B
cis-Chlordane	0.00931	IP	mg/kg	0.00362	0.00101	1	B
trans-Chlordane	0.00354	JIP	mg/kg	0.00362	0.00095	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	A
Decachlorobiphenyl	59		30-150	A
2,4,5,6-Tetrachloro-m-xylene	79		30-150	B
Decachlorobiphenyl	92		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-100
Client ID: G-16-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:54
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 11:57
Analyst: JAG
Percent Solids: 77%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:53
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Heptachlor epoxide	0.0160	IP	mg/kg	0.00380	0.00114	1	A
Chlordane	0.421	IP	mg/kg	0.0169	0.00672	1	A
cis-Chlordane	0.124		mg/kg	0.00254	0.00070	1	A
trans-Chlordane	0.0398	IP	mg/kg	0.00254	0.00067	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	35		30-150	A
Decachlorobiphenyl	48		30-150	A
2,4,5,6-Tetrachloro-m-xylene	94		30-150	B
Decachlorobiphenyl	121		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-101
Client ID: G-17-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:28
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 16:13
Analyst: JAG
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:53
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	2.36	PE	mg/kg	0.0158	0.00627	1	B
cis-Chlordane	0.374	PE	mg/kg	0.00237	0.00066	1	B
trans-Chlordane	0.405	PE	mg/kg	0.00237	0.00062	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**16**	Q	30-150	A
Decachlorobiphenyl	**26**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	76		30-150	B
Decachlorobiphenyl	123		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-101 D
Client ID: G-17-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:28
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 16:24
Analyst: JAG
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:53
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	2.56		mg/kg	0.158	0.0627	10	B
cis-Chlordane	0.410	IP	mg/kg	0.0237	0.00660	10	B
trans-Chlordane	0.440		mg/kg	0.0237	0.00625	10	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-102
Client ID: G-17-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:31
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 16:35
Analyst: JAG
Percent Solids: 78%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:53
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	2.97	PE	mg/kg	0.0163	0.00648	1	B
cis-Chlordane	0.503	PE	mg/kg	0.00244	0.00068	1	B
trans-Chlordane	0.439	PE	mg/kg	0.00244	0.00064	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**6**	Q	30-150	A
Decachlorobiphenyl	**9**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	83		30-150	B
Decachlorobiphenyl	148		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-102 D
Client ID: G-17-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:31
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 16:46
Analyst: JAG
Percent Solids: 78%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:53
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	3.36		mg/kg	0.326	0.130	20	B
cis-Chlordane	0.578		mg/kg	0.0489	0.0136	20	B
trans-Chlordane	0.282	IP	mg/kg	0.0489	0.0129	20	A

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-103
Client ID: G-17-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:35
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 23:24
Analyst: DLP
Percent Solids: 79%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:53
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	1.16	E	mg/kg	0.0166	0.00662	1	B
cis-Chlordane	0.231	IP	mg/kg	0.00250	0.00069	1	B
trans-Chlordane	0.222		mg/kg	0.00250	0.00065	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	70		30-150	A
Decachlorobiphenyl	72		30-150	A
2,4,5,6-Tetrachloro-m-xylene	79		30-150	B
Decachlorobiphenyl	102		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-103 D
Client ID: G-17-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:35
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 23:36
Analyst: DLP
Percent Solids: 79%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:53
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	1.34		mg/kg	0.166	0.0662	10	A

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-104
Client ID: G-17-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:39
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/23/25 23:49
Analyst: DLP
Percent Solids: 78%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:53
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	2.30	PE	mg/kg	0.0168	0.00666	1	B
cis-Chlordane	0.444	PE	mg/kg	0.00251	0.00070	1	B
trans-Chlordane	0.452	PE	mg/kg	0.00251	0.00066	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**11**	Q	30-150	A
Decachlorobiphenyl	**12**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	81		30-150	B
Decachlorobiphenyl	107		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-104 D
Client ID: G-17-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:39
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 04/24/25 00:01
Analyst: DLP
Percent Solids: 78%

Extraction Method: EPA 3546
Extraction Date: 04/22/25 01:53
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Chlordane	2.38		mg/kg	0.335	0.133	20	B
cis-Chlordane	0.452	IP	mg/kg	0.0503	0.0140	20	B
trans-Chlordane	0.271	IP	mg/kg	0.0503	0.0133	20	A

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-121
Client ID: FB-1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 14:32
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 04/22/25 11:33
Analyst: EMR

Extraction Method: EPA 3510C
Extraction Date: 04/21/25 23:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Dieldrin	ND		ug/l	0.020	0.004	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	63		30-150	A
Decachlorobiphenyl	65		30-150	A
2,4,5,6-Tetrachloro-m-xylene	78		30-150	B
Decachlorobiphenyl	75		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-122
Client ID: FB-2
Sample Location: EATONTOWN, NEW JERSEY
Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 04/22/25 11:44
Analyst: EMR

Date Collected: 04/16/25 13:05
Date Received: 04/17/25
Field Prep: Not Specified

Extraction Method: EPA 3510C
Extraction Date: 04/21/25 23:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Pesticides by GC - Westborough Lab							
Heptachlor epoxide	ND		ug/l	0.014	0.005	1	A
Dieldrin	ND		ug/l	0.020	0.004	1	A
4,4'-DDE	ND		ug/l	0.029	0.010	1	A
Chlordane	ND		ug/l	0.143	0.098	1	A
cis-Chlordane	ND		ug/l	0.020	0.007	1	A
trans-Chlordane	ND		ug/l	0.020	0.011	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	58		30-150	A
Decachlorobiphenyl	70		30-150	A
2,4,5,6-Tetrachloro-m-xylene	76		30-150	B
Decachlorobiphenyl	83		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 04/22/25 08:30
Analyst: AKM

Extraction Method: EPA 3510C
Extraction Date: 04/21/25 11:55

Parameter	Result	Qualifier	Units	RL	MDL	Column
Pesticides by GC - Westborough Lab for sample(s): 121-122 Batch: WG2056610-1						
Heptachlor epoxide	ND		ug/l	0.014	0.005	A
Dieldrin	ND		ug/l	0.020	0.004	A
4,4'-DDE	ND		ug/l	0.029	0.010	A
Chlordane	ND		ug/l	0.143	0.098	A
cis-Chlordane	ND		ug/l	0.020	0.007	A
trans-Chlordane	ND		ug/l	0.020	0.011	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	43		30-150	A
Decachlorobiphenyl	73		30-150	A
2,4,5,6-Tetrachloro-m-xylene	52		30-150	B
Decachlorobiphenyl	79		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 04/23/25 08:45
Analyst: AKM

Extraction Method: EPA 3546
Extraction Date: 04/21/25 18:39
Cleanup Method: EPA 3620B
Cleanup Date: 04/23/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/23/25

Parameter	Result	Qualifier	Units	RL	MDL	Column
Pesticides by GC - Westborough Lab for sample(s): 01-04,10-11,17-20,26,28,33-36,41,43-44,52 Batch: WG2056757-1						
Dieldrin	ND		mg/kg	0.00098	0.00049	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	89		30-150	A
Decachlorobiphenyl	70		30-150	A
2,4,5,6-Tetrachloro-m-xylene	88		30-150	B
Decachlorobiphenyl	101		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 04/22/25 11:44
Analyst: DLP

Extraction Method: EPA 3546
Extraction Date: 04/21/25 23:45
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Column
Pesticides by GC - Westborough Lab for sample(s): 12,25,42,100-104 Batch: WG2056792-1						
Heptachlor epoxide	ND		mg/kg	0.00286	0.00085	A
Dieldrin	ND		mg/kg	0.00095	0.00047	A
Chlordane	ND		mg/kg	0.0127	0.00505	A
cis-Chlordane	ND		mg/kg	0.00190	0.00053	A
trans-Chlordane	ND		mg/kg	0.00190	0.00050	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	59		30-150	A
Decachlorobiphenyl	34		30-150	A
2,4,5,6-Tetrachloro-m-xylene	78		30-150	B
Decachlorobiphenyl	63		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 04/22/25 22:14
Analyst: DLP

Extraction Method: EPA 3546
Extraction Date: 04/22/25 00:19
Cleanup Method: EPA 3620B
Cleanup Date: 04/22/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/22/25

Parameter	Result	Qualifier	Units	RL	MDL	Column
Pesticides by GC - Westborough Lab for sample(s): 09,49-51,57-60,65-68,73-76,81-84 Batch: WG2056804-1						
Heptachlor epoxide	ND		mg/kg	0.00296	0.00088	A
Dieldrin	ND		mg/kg	0.00098	0.00049	A
4,4'-DDE	ND		mg/kg	0.00158	0.00036	A
Chlordane	ND		mg/kg	0.0132	0.00523	A
cis-Chlordane	ND		mg/kg	0.00197	0.00055	A
trans-Chlordane	ND	I	mg/kg	0.00197	0.00052	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	97		30-150	A
Decachlorobiphenyl	92		30-150	A
2,4,5,6-Tetrachloro-m-xylene	99		30-150	B
Decachlorobiphenyl	90		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 04/24/25 09:09
Analyst: AKM

Extraction Method: EPA 3546
Extraction Date: 04/22/25 07:00
Cleanup Method: EPA 3620B
Cleanup Date: 04/24/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/24/25

Parameter	Result	Qualifier	Units	RL	MDL	Column
Pesticides by GC - Westborough Lab for sample(s): 27,85-88,93-99 Batch: WG2056897-1						
Heptachlor epoxide	ND		mg/kg	0.00425	0.00127	A
Dieldrin	ND		mg/kg	0.00142	0.00070	A
Chlordane	ND		mg/kg	0.0189	0.00751	A
cis-Chlordane	ND		mg/kg	0.00283	0.00078	A
trans-Chlordane	ND		mg/kg	0.00283	0.00074	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	67		30-150	A
Decachlorobiphenyl	48		30-150	A
2,4,5,6-Tetrachloro-m-xylene	75		30-150	B
Decachlorobiphenyl	73		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 05/02/25 17:35
Analyst: AKM

Extraction Method: EPA 3546
Extraction Date: 04/25/25 16:47
Cleanup Method: EPA 3620B
Cleanup Date: 04/27/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/27/25

Parameter	Result	Qualifier	Units	RL	MDL	Column
Pesticides by GC - Westborough Lab for sample(s): 23 Batch: WG2061130-1						
Dieldrin	ND		mg/kg	0.00098	0.00049	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	82		30-150	A
Decachlorobiphenyl	79		30-150	A
2,4,5,6-Tetrachloro-m-xylene	82		30-150	B
Decachlorobiphenyl	89		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 05/01/25 22:39
Analyst: AKM

Extraction Method: EPA 3546
Extraction Date: 04/26/25 00:09
Cleanup Method: EPA 3620B
Cleanup Date: 04/27/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/27/25

Parameter	Result	Qualifier	Units	RL	MDL	Column
Pesticides by GC - Westborough Lab for sample(s): 14-15,30-31,39,56,61,64,71,77-79 Batch: WG2061138-1						
Dieldrin	ND		mg/kg	0.00098	0.00049	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		30-150	A
Decachlorobiphenyl	61		30-150	A
2,4,5,6-Tetrachloro-m-xylene	81		30-150	B
Decachlorobiphenyl	70		30-150	B

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 05/11/25 13:08
Analyst: EJL

Extraction Method: EPA 3546
Extraction Date: 04/27/25 14:10
Cleanup Method: EPA 3620B
Cleanup Date: 04/29/25
Cleanup Method: EPA 3660B
Cleanup Date: 04/29/25

Parameter	Result	Qualifier	Units	RL	MDL	Column
Pesticides by GC - Westborough Lab for sample(s): 80 Batch: WG2064184-1						
Dieldrin	ND		mg/kg	0.00095	0.00047	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	47		30-150	A
Decachlorobiphenyl	66		30-150	A
2,4,5,6-Tetrachloro-m-xylene	66		30-150	B
Decachlorobiphenyl	79		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Pesticides by GC - Westborough Lab Associated sample(s): 121-122 Batch: WG2056610-2 WG2056610-3									
Heptachlor epoxide	76		79		40-140	4		20	A
Dieldrin	89		95		40-140	6		20	A
4,4'-DDE	73		79		40-140	7		20	A
cis-Chlordane	69		75		40-140	8		20	A
trans-Chlordane	86		93		40-140	8		20	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	56		62		30-150	A
Decachlorobiphenyl	69		62		30-150	A
2,4,5,6-Tetrachloro-m-xylene	69		80		30-150	B
Decachlorobiphenyl	76		72		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Pesticides by GC - Westborough Lab Associated sample(s): 01-04,10-11,17-20,26,28,33-36,41,43-44,52 Batch: WG2056757-2 WG2056757-3									
Dieldrin	83		84		40-140	1		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	83		82		30-150	A
Decachlorobiphenyl	66		65		30-150	A
2,4,5,6-Tetrachloro-m-xylene	83		81		30-150	B
Decachlorobiphenyl	95		91		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Pesticides by GC - Westborough Lab Associated sample(s): 12,25,42,100-104 Batch: WG2056792-2 WG2056792-3									
Heptachlor epoxide	50		53		40-140	6		30	A
Dieldrin	64		71		40-140	10		30	A
cis-Chlordane	57		63		40-140	10		30	A
trans-Chlordane	69		76		40-140	10		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	70		71		30-150	A
Decachlorobiphenyl	31		33		30-150	A
2,4,5,6-Tetrachloro-m-xylene	77		82		30-150	B
Decachlorobiphenyl	52		53		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Pesticides by GC - Westborough Lab Associated sample(s): 09,49-51,57-60,65-68,73-76,81-84 Batch: WG2056804-2 WG2056804-3									
Heptachlor epoxide	91		81		40-140	12		30	A
Dieldrin	98		87		40-140	12		30	A
4,4'-DDE	94		84		40-140	11		30	A
cis-Chlordane	89		78		40-140	13		30	A
trans-Chlordane	104		92		40-140	12		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	90		78		30-150	A
Decachlorobiphenyl	88		77		30-150	A
2,4,5,6-Tetrachloro-m-xylene	96		82		30-150	B
Decachlorobiphenyl	87		75		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Pesticides by GC - Westborough Lab Associated sample(s): 27,85-88,93-99 Batch: WG2056897-2 WG2056897-3									
Heptachlor epoxide	52		54		40-140	4		30	A
Dieldrin	78		82		40-140	5		30	A
cis-Chlordane	68		72		40-140	6		30	A
trans-Chlordane	80		85		40-140	6		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		71		30-150	A
Decachlorobiphenyl	66		61		30-150	A
2,4,5,6-Tetrachloro-m-xylene	81		81		30-150	B
Decachlorobiphenyl	87		85		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Pesticides by GC - Westborough Lab Associated sample(s): 23 Batch: WG2061130-2 WG2061130-3									
Dieldrin	98		91		40-140	7		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	86		88		30-150	A
Decachlorobiphenyl	78		81		30-150	A
2,4,5,6-Tetrachloro-m-xylene	87		86		30-150	B
Decachlorobiphenyl	92		90		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Pesticides by GC - Westborough Lab Associated sample(s): 14-15,30-31,39,56,61,64,71,77-79 Batch: WG2061138-2 WG2061138-3									
Dieldrin	96		94		40-140	2		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	68		69		30-150	A
Decachlorobiphenyl	59		57		30-150	A
2,4,5,6-Tetrachloro-m-xylene	82		83		30-150	B
Decachlorobiphenyl	70		70		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Pesticides by GC - Westborough Lab Associated sample(s): 80 Batch: WG2064184-2 WG2064184-3									
Dieldrin	84		84		40-140	0		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	49		49		30-150	A
Decachlorobiphenyl	69		68		30-150	A
2,4,5,6-Tetrachloro-m-xylene	68		72		30-150	B
Decachlorobiphenyl	83		83		30-150	B

Matrix Spike Analysis
Batch Quality Control

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Pesticides by GC - Westborough Lab Associated sample(s): 27,85-88,93-99 QC Batch ID: WG2056897-4 QC Sample: L2523648-27 Client ID: F-15-5-D3													
Dieldrin	1.63	0.0604	1.76	**215**	Q	-	-		30-150	-		30	B

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	88				30-150	A
Decachlorobiphenyl	103				30-150	A
2,4,5,6-Tetrachloro-m-xylene	80				30-150	B
Decachlorobiphenyl	91				30-150	B

Lab Duplicate Analysis
Batch Quality Control

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits	
Pesticides by GC - Westborough Lab Associated sample(s): 27,85-88,93-99 QC Batch ID: WG2056897-5 QC Sample: L2523648-27 Client ID: F-15-5-D3							
Dieldrin	1.63	1.59	mg/kg	2		30	B

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	92		87		30-150	A
Decachlorobiphenyl	105		107		30-150	A
2,4,5,6-Tetrachloro-m-xylene	82		78		30-150	B
Decachlorobiphenyl	105		90		30-150	B

METALS

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-81
Client ID: G-9-D1
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 08:34
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	188		mg/kg	0.905	0.391	2	04/24/25 15:45	04/25/25 18:22	EPA 3050B	1,6010D	CEY
Lead, Total	1310		mg/kg	4.52	0.215	2	04/24/25 15:45	04/25/25 18:22	EPA 3050B	1,6010D	CEY
Mercury, Total	25.8		mg/kg	4.26	2.78	50	04/24/25 16:15	04/28/25 14:56	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-82
Client ID: G-9-D2
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 08:38
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	98.4		mg/kg	1.01	0.438	2	04/24/25 15:45	04/25/25 17:16	EPA 3050B	1,6010D	CEY
Lead, Total	989		mg/kg	5.07	0.242	2	04/24/25 15:45	04/25/25 17:16	EPA 3050B	1,6010D	CEY
Mercury, Total	24.2		mg/kg	0.926	0.604	10	04/24/25 16:15	04/28/25 12:47	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-83
Client ID: G-9-D3
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 08:43
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	301		mg/kg	1.03	0.445	2	04/24/25 15:45	04/25/25 17:23	EPA 3050B	1,6010D	CEY
Lead, Total	2130		mg/kg	5.16	0.245	2	04/24/25 15:45	04/25/25 17:23	EPA 3050B	1,6010D	CEY
Mercury, Total	44.0		mg/kg	4.44	2.89	50	04/24/25 16:15	04/28/25 15:06	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-84
Client ID: G-9-D4
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 08:49
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 63%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	344		mg/kg	1.20	0.519	2	04/24/25 15:45	04/25/25 17:30	EPA 3050B	1,6010D	CEY
Lead, Total	2350		mg/kg	6.01	0.286	2	04/24/25 15:45	04/25/25 17:30	EPA 3050B	1,6010D	CEY
Mercury, Total	37.2		mg/kg	1.16	0.758	10	04/24/25 16:15	04/28/25 13:00	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-85
Client ID: G-10-D1
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 10:12
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	183		mg/kg	1.03	0.444	2	04/24/25 15:45	04/25/25 18:03	EPA 3050B	1,6010D	CEY
Lead, Total	1600		mg/kg	5.14	0.245	2	04/24/25 15:45	04/25/25 18:03	EPA 3050B	1,6010D	CEY
Mercury, Total	68.9		mg/kg	8.94	5.83	100	04/24/25 16:15	04/28/25 15:09	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-86
Client ID: G-10-D2
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 10:17
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	16.2		mg/kg	0.996	0.430	2	04/24/25 15:45	04/25/25 18:09	EPA 3050B	1,6010D	CEY
Lead, Total	132		mg/kg	4.98	0.237	2	04/24/25 15:45	04/25/25 18:09	EPA 3050B	1,6010D	CEY
Mercury, Total	10.3		mg/kg	1.01	0.658	10	04/24/25 16:15	04/28/25 13:10	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-87
Client ID: G-10-D3
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 10:22
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	4.79		mg/kg	0.912	0.394	2	04/24/25 15:45	04/25/25 18:16	EPA 3050B	1,6010D	CEY
Lead, Total	51.4		mg/kg	4.56	0.217	2	04/24/25 15:45	04/25/25 18:16	EPA 3050B	1,6010D	CEY
Mercury, Total	0.768		mg/kg	0.096	0.063	1	04/24/25 16:15	04/28/25 11:10	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-88
Client ID: G-10-D4
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 10:27
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	50.5		mg/kg	0.940	0.406	2	04/24/25 15:45	04/25/25 19:08	EPA 3050B	1,6010D	CEY
Lead, Total	382		mg/kg	4.70	0.224	2	04/24/25 15:45	04/25/25 19:08	EPA 3050B	1,6010D	CEY
Mercury, Total	19.5		mg/kg	0.936	0.610	10	04/24/25 16:15	04/28/25 13:13	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-89
Client ID: G-11-D1
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 09:34
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	364		mg/kg	0.952	0.411	2	04/24/25 15:45	04/25/25 19:15	EPA 3050B	1,6010D	CEY
Lead, Total	2530		mg/kg	4.76	0.227	2	04/24/25 15:45	04/25/25 19:15	EPA 3050B	1,6010D	CEY
Mercury, Total	81.9		mg/kg	8.86	5.78	100	04/24/25 16:15	04/28/25 15:12	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-90
Client ID: G-11-D2
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 09:40
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	52.0		mg/kg	1.15	0.496	2	04/24/25 15:45	04/25/25 19:22	EPA 3050B	1,6010D	CEY
Lead, Total	620		mg/kg	5.74	0.273	2	04/24/25 15:45	04/25/25 19:22	EPA 3050B	1,6010D	CEY
Mercury, Total	12.3		mg/kg	1.10	0.720	10	04/24/25 16:15	04/28/25 13:23	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-91
Client ID: G-11-D3
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 09:44
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 65%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	54.4		mg/kg	1.23	0.530	2	04/24/25 15:45	04/25/25 19:28	EPA 3050B	1,6010D	CEY
Lead, Total	476		mg/kg	6.13	0.292	2	04/24/25 15:45	04/25/25 19:28	EPA 3050B	1,6010D	CEY
Mercury, Total	2.55		mg/kg	0.115	0.075	1	04/24/25 16:15	04/28/25 11:32	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-92
Client ID: G-11-D4
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 09:49
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	60.3		mg/kg	0.966	0.417	2	04/24/25 15:45	04/25/25 19:35	EPA 3050B	1,6010D	CEY
Lead, Total	626		mg/kg	4.83	0.230	2	04/24/25 15:45	04/25/25 19:35	EPA 3050B	1,6010D	CEY
Mercury, Total	27.4		mg/kg	0.922	0.601	10	04/24/25 16:15	04/28/25 13:26	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-93
Client ID: G-15-D1
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 09:06
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	144		mg/kg	0.979	0.423	2	04/24/25 15:45	04/25/25 19:41	EPA 3050B	1,6010D	CEY

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-94
Client ID: G-15-D2
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 09:11
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	61.9		mg/kg	0.952	0.411	2	04/24/25 15:45	04/25/25 19:48	EPA 3050B	1,6010D	CEY

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-95
Client ID: G-15-D3
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 09:14
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 60%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	182		mg/kg	1.31	0.567	2	04/24/25 15:45	04/25/25 19:54	EPA 3050B	1,6010D	CEY

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-96
Client ID: G-15-D4
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 09:20
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	282		mg/kg	1.04	0.451	2	04/24/25 15:45	04/25/25 20:01	EPA 3050B	1,6010D	CEY

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-97
Client ID: G-16-D1
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 10:41
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	26.2		mg/kg	0.982	0.424	2	04/24/25 15:45	04/25/25 20:07	EPA 3050B	1,6010D	CEY
Lead, Total	103		mg/kg	4.91	0.234	2	04/24/25 15:45	04/25/25 20:07	EPA 3050B	1,6010D	CEY
Mercury, Total	3.62		mg/kg	0.167	0.109	2	04/24/25 16:15	04/28/25 13:29	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-98
Client ID: G-16-D2
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 10:45
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	73.4		mg/kg	1.00	0.434	2	04/24/25 15:45	04/25/25 20:27	EPA 3050B	1,6010D	CEY
Lead, Total	715		mg/kg	5.02	0.239	2	04/24/25 15:45	04/25/25 20:27	EPA 3050B	1,6010D	CEY
Mercury, Total	7.32		mg/kg	0.219	0.143	2	04/24/25 16:15	04/28/25 13:33	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-99
Client ID: G-16-D3
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 10:49
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	12.8		mg/kg	0.950	0.411	2	04/24/25 15:45	04/25/25 20:34	EPA 3050B	1,6010D	CEY
Lead, Total	111		mg/kg	4.75	0.226	2	04/24/25 15:45	04/25/25 20:34	EPA 3050B	1,6010D	CEY
Mercury, Total	15.5		mg/kg	0.887	0.578	10	04/24/25 16:15	04/28/25 13:36	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-100
Client ID: G-16-D4
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 10:54
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	145		mg/kg	0.985	0.425	2	04/24/25 15:45	04/25/25 17:10	EPA 3050B	1,6010D	CEY
Lead, Total	1070		mg/kg	4.92	0.234	2	04/24/25 15:45	04/25/25 17:10	EPA 3050B	1,6010D	CEY
Mercury, Total	33.7		mg/kg	0.892	0.582	10	04/24/25 16:15	04/28/25 12:44	EPA 7471B	1,7471B	JWN

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-101
Client ID: G-17-D1
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 14:28
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	194		mg/kg	0.963	0.416	2	04/25/25 09:57	04/25/25 12:12	EPA 3050B	1,6010D	DHL
Lead, Total	1440		mg/kg	4.81	0.229	2	04/25/25 09:57	04/25/25 12:12	EPA 3050B	1,6010D	DHL
Mercury, Total	38.9		mg/kg	1.88	1.22	20	04/24/25 16:53	04/25/25 18:37	EPA 7471B	1,7471B	CME

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-102
Client ID: G-17-D2
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 14:31
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	309		mg/kg	0.979	0.423	2	04/25/25 09:57	04/25/25 18:25	EPA 3050B	1,6010D	DHL
Lead, Total	2080		mg/kg	4.89	0.233	2	04/25/25 09:57	04/25/25 18:25	EPA 3050B	1,6010D	DHL
Mercury, Total	47.3		mg/kg	1.96	1.28	20	04/24/25 16:53	04/25/25 18:40	EPA 7471B	1,7471B	CME

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-103
Client ID: G-17-D3
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 14:35
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	221		mg/kg	0.968	0.418	2	04/25/25 09:57	04/25/25 18:29	EPA 3050B	1,6010D	DHL
Lead, Total	1550		mg/kg	4.84	0.230	2	04/25/25 09:57	04/25/25 18:29	EPA 3050B	1,6010D	DHL
Mercury, Total	44.0		mg/kg	1.83	1.19	20	04/24/25 16:53	04/25/25 18:44	EPA 7471B	1,7471B	CME

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-104
Client ID: G-17-D4
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 14:39
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	209		mg/kg	0.979	0.423	2	04/25/25 09:57	04/25/25 18:34	EPA 3050B	1,6010D	DHL
Lead, Total	1680		mg/kg	4.89	0.233	2	04/25/25 09:57	04/25/25 18:34	EPA 3050B	1,6010D	DHL
Mercury, Total	61.4		mg/kg	9.15	5.97	100	04/24/25 16:53	04/25/25 18:54	EPA 7471B	1,7471B	CME

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-105
Client ID: G-18-D1
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 14:53
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	250		mg/kg	1.00	0.433	2	04/25/25 09:57	04/25/25 18:38	EPA 3050B	1,6010D	DHL
Lead, Total	1520		mg/kg	5.02	0.239	2	04/25/25 09:57	04/25/25 18:38	EPA 3050B	1,6010D	DHL

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-106
Client ID: G-18-D2
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 14:54
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	581		mg/kg	0.954	0.412	2	04/25/25 09:57	04/25/25 18:43	EPA 3050B	1,6010D	DHL
Lead, Total	3210		mg/kg	4.77	0.227	2	04/25/25 09:57	04/25/25 18:43	EPA 3050B	1,6010D	DHL

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-107
Client ID: G-18-D3
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 14:48
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	69.9		mg/kg	0.954	0.412	2	04/25/25 09:57	04/25/25 19:11	EPA 3050B	1,6010D	DHL
Lead, Total	586		mg/kg	4.77	0.227	2	04/25/25 09:57	04/25/25 19:11	EPA 3050B	1,6010D	DHL

Project Name: OLD ORCHARD
Lab Number: L2523648
Project Number: 3272-98-00SEC
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-108
Client ID: G-18-D4
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 14:50
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	115		mg/kg	0.860	0.371	2	04/25/25 09:57	04/25/25 19:16	EPA 3050B	1,6010D	DHL
Lead, Total	675		mg/kg	4.30	0.205	2	04/25/25 09:57	04/25/25 19:16	EPA 3050B	1,6010D	DHL

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-109
Client ID: G-19-D1
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 08:07
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	389		mg/kg	4.64	0.221	2	04/25/25 09:57	04/25/25 19:20	EPA 3050B	1,6010D	DHL

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-110
Client ID: G-19-D2
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 08:09
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	505		mg/kg	4.57	0.218	2	04/25/25 09:57	04/25/25 19:25	EPA 3050B	1,6010D	DHL

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-111
Client ID: G-19-D3
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 08:13
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	314		mg/kg	4.49	0.214	2	04/25/25 09:57	04/25/25 19:29	EPA 3050B	1,6010D	DHL

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-112
Client ID: G-19-D4
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 08:16
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 67%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	240		mg/kg	5.72	0.272	2	04/25/25 09:57	04/25/25 19:34	EPA 3050B	1,6010D	DHL

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-122
Client ID: FB-2
Sample Location: EATONTOWN, NEW JERSEY
Date Collected: 04/16/25 13:05
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	ND		mg/l	0.0050	0.0019	1	04/23/25 08:11	04/25/25 16:18	EPA 3005A	1,6010D	EFM
Lead, Total	ND		mg/l	0.0100	0.0027	1	04/23/25 08:11	04/25/25 16:18	EPA 3005A	1,6010D	EFM
Mercury, Total	ND		mg/l	0.00020	0.00009	1	04/23/25 09:00	04/24/25 10:38	EPA 7470A	1,7470A	JWN

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 122 Batch: WG2057422-1										
Arsenic, Total	ND		mg/l	0.0050	0.0019	1	04/23/25 08:11	04/23/25 11:54	1,6010D	DHL
Lead, Total	ND		mg/l	0.0100	0.0027	1	04/23/25 08:11	04/23/25 11:54	1,6010D	DHL

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 122 Batch: WG2057423-1										
Mercury, Total	ND		mg/l	0.00020	0.00009	1	04/23/25 09:00	04/23/25 11:41	1,7470A	JWN

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 81-100 Batch: WG2058213-1										
Arsenic, Total	ND		mg/kg	0.400	0.173	1	04/24/25 15:45	04/25/25 17:49	1,6010D	CEY
Lead, Total	ND		mg/kg	2.00	0.095	1	04/24/25 15:45	04/25/25 17:49	1,6010D	CEY

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 81-92,97-100 Batch: WG2058214-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	04/24/25 16:15	04/28/25 10:00	1,7471B	JWN

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC
Lab Number: L2523648
Report Date: 05/16/25

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 7471B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 101-112 Batch: WG2058275-1										
Arsenic, Total	ND		mg/kg	0.400	0.173	1	04/25/25 09:57	04/25/25 11:47	1,6010D	DHL
Lead, Total	ND		mg/kg	2.00	0.095	1	04/25/25 09:57	04/25/25 11:47	1,6010D	DHL

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 101-104 Batch: WG2058277-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	04/24/25 16:53	04/25/25 16:06	1,7471B	CME

Prep Information

Digestion Method: EPA 7471B

Lab Control Sample Analysis
Batch Quality Control

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 122 Batch: WG2057422-2								
Arsenic, Total	101		-		80-120	-		
Lead, Total	102		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 122 Batch: WG2057423-2								
Mercury, Total	95		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 81-100 Batch: WG2058213-2								
Arsenic, Total	104		-		80-120	-		
Lead, Total	108		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 81-92,97-100 Batch: WG2058214-2								
Mercury, Total	97		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 101-112 Batch: WG2058275-2								
Arsenic, Total	98		-		80-120	-		
Lead, Total	98		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 101-104 Batch: WG2058277-2								
Mercury, Total	100		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 81-100 QC Batch ID: WG2058213-3 QC Sample: L2523648-81 Client ID: G-9-D1												
Arsenic, Total	188	11	199	100		-	-		75-125	-		20
Lead, Total	1310	48.4	1230	**0**	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 81-92,97-100 QC Batch ID: WG2058214-3 QC Sample: L2523648-81 Client ID: G-9-D1												
Mercury, Total	25.8	1.8	41.0	**845**	Q	-	-		80-120	-		20
Total Metals - Mansfield Lab Associated sample(s): 101-112 QC Batch ID: WG2058275-3 QC Sample: L2523648-101 Client ID: G-17-D1												
Arsenic, Total	194	11	426	**2110**	Q	-	-		75-125	-		20
Lead, Total	1440	48.6	2290	**1750**	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 81-100 QC Batch ID: WG2058213-4 QC Sample: L2523648-81 Client ID: G-9-D1						
Arsenic, Total	188	203	mg/kg	8		20
Lead, Total	1310	1280	mg/kg	2		20
Total Metals - Mansfield Lab Associated sample(s): 81-92,97-100 QC Batch ID: WG2058214-4 QC Sample: L2523648-81 Client ID: G-9-D1						
Mercury, Total	25.8	40.1	mg/kg	**43**	Q	20
Total Metals - Mansfield Lab Associated sample(s): 101-112 QC Batch ID: WG2058275-4 QC Sample: L2523648-101 Client ID: G-17-D1						
Arsenic, Total	194	251	mg/kg	**26**	Q	20
Lead, Total	1440	1750	mg/kg	19		20

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Serial Dilution Analysis
Batch Quality Control

Lab Number: L2523648
Report Date: 05/16/25

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 81-100 QC Batch ID: WG2058213-6 QC Sample: L2523648-81 Client ID: G-9-D1						
Arsenic, Total	188	185	mg/kg	2		20
Lead, Total	1310	1150	mg/kg	12		20
Total Metals - Mansfield Lab Associated sample(s): 101-112 QC Batch ID: WG2058275-6 QC Sample: L2523648-101 Client ID: G-17-D1						
Arsenic, Total	194	184	mg/kg	5		20
Lead, Total	1440	1410	mg/kg	2		20

INORGANICS
&
MISCELLANEOUS

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-01
Client ID: F-15-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:05
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.3		%	0.100	NA	1	-	04/22/25 10:52	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-02
Client ID: F-15-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:12
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.6		%	0.100	NA	1	-	04/22/25 10:52	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-03
Client ID: F-15-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:19
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.7		%	0.100	NA	1	-	04/22/25 10:52	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-04
Client ID: F-15-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:11
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.7		%	0.100	NA	1	-	04/22/25 10:52	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-09
Client ID: F-15-2-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:22
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.4		%	0.100	NA	1	-	04/22/25 10:52	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-10
Client ID: F-15-2-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:30
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.8		%	0.100	NA	1	-	04/22/25 10:52	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-11
Client ID: F-15-2-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:36
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.2		%	0.100	NA	1	-	04/22/25 10:52	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-12
Client ID: F-15-2-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:25
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.8		%	0.100	NA	1	-	04/22/25 10:52	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-14
Client ID: F-15-2-D6
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:33
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.0		%	0.100	NA	1	-	05/14/25 18:30	121,2540G	SJB

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-15
Client ID: F-15-2-D7
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:39
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.8		%	0.100	NA	1	-	05/14/25 18:30	121,2540G	SJB

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-17
Client ID: F-15-3-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:11
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	68.5		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-18
Client ID: F-15-3-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:16
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-19
Client ID: F-15-3-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 14:22
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.8		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-20
Client ID: F-15-3-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:28
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.9		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-23
Client ID: F-15-3-D7
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:25
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.0		%	0.100	NA	1	-	04/30/25 18:08	121,2540G	SJB

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-25
Client ID: F-15-5-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:33
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	67.9		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-26
Client ID: F-15-5-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:38
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.8		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-27
Client ID: F-15-5-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:44
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.0		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-28
Client ID: F-15-5-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:49
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.2		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-30
Client ID: F-15-5-D6
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:41
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	73.8		%	0.100	NA	1	-	05/14/25 18:30	121,2540G	SJB

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-31
Client ID: F-15-5-D7
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:47
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.6		%	0.100	NA	1	-	04/30/25 18:08	121,2540G	SJB

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-33
Client ID: F-15-6-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:54
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	66.9		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-34
Client ID: F-15-6-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 14:01
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.3		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-35
Client ID: F-15-6-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 14:06
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.2		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-36
Client ID: F-15-6-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:54
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	71.0		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-39
Client ID: F-15-6-D7
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 13:57
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.2		%	0.100	NA	1	-	04/30/25 18:08	121,2540G	SJB

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-41
Client ID: F-9-5-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 09:03
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.1		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-42
Client ID: F-9-5-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 09:18
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	73.4		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-43
Client ID: F-9-5-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 09:24
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.1		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-44
Client ID: F-9-5-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 09:29
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.7		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-49
Client ID: F-10-1-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 09:40
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.3		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-50
Client ID: F-10-1-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 09:47
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	64.8		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-51
Client ID: F-10-1-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 09:54
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	72.6		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-52
Client ID: F-10-1-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:00
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	76.5		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-56
Client ID: F-10-1-D8
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:03
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	67.6		%	0.100	NA	1	-	05/14/25 18:30	121,2540G	SJB

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-57
Client ID: F-10-4-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:12
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.8		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-58
Client ID: F-10-4-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:19
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.9		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-59
Client ID: F-10-4-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:25
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.7		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-60
Client ID: F-10-4-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:31
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	68.2		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-61
Client ID: F-10-4-D5
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:16
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	05/14/25 18:30	121,2540G	SJB

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-64
Client ID: F-10-4-D8
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:34
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.5		%	0.100	NA	1	-	05/14/25 18:30	121,2540G	SJB

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-65
Client ID: F-10-5-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:46
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.0		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-66
Client ID: F-10-5-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:52
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.8		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-67
Client ID: F-10-5-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 10:57
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.8		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-68
Client ID: F-10-5-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 11:03
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.3		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-71
Client ID: F-10-5-D7
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 11:01
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.8		%	0.100	NA	1	-	05/14/25 18:30	121,2540G	SJB

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-73
Client ID: F-13-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:45
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	70.7		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-74
Client ID: F-13-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:50
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.6		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-75
Client ID: F-13-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:45
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	73.4		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-76
Client ID: F-13-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:50
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.6		%	0.100	NA	1	-	04/22/25 11:12	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-77
Client ID: F-13-D5
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:48
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.6		%	0.100	NA	1	-	05/01/25 12:24	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-78
Client ID: F-13-D6
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:56
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.2		%	0.100	NA	1	-	04/30/25 18:08	121,2540G	SJB

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-79
Client ID: F-13-D7
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:55
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.6		%	0.100	NA	1	-	04/30/25 18:08	121,2540G	SJB

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-80
Client ID: F-13-D8
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/15/25 12:40
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	74.6		%	0.100	NA	1	-	05/09/25 17:24	121,2540G	SJB

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-81
Client ID: G-9-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:34
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.5		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-82
Client ID: G-9-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:38
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	75.8		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-83
Client ID: G-9-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:43
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.4		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-84
Client ID: G-9-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:49
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	63.2		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-85
Client ID: G-10-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:12
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.0		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-86
Client ID: G-10-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:17
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.9		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-87
Client ID: G-10-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:22
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.9		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-88
Client ID: G-10-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:27
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.5		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-89
Client ID: G-11-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:34
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.4		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-90
Client ID: G-11-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:40
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	67.8		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-91
Client ID: G-11-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:44
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	65.1		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-92
Client ID: G-11-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:49
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.3		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-93
Client ID: G-15-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:06
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.0		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-94
Client ID: G-15-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:11
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.4		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-95
Client ID: G-15-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:14
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	60.4		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-96
Client ID: G-15-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 09:20
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	75.9		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-97
Client ID: G-16-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:41
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.2		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-98
Client ID: G-16-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:45
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	75.9		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-99
Client ID: G-16-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:49
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.4		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-100
Client ID: G-16-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 10:54
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.4		%	0.100	NA	1	-	04/22/25 10:52	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-101
Client ID: G-17-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:28
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.5		%	0.100	NA	1	-	04/22/25 10:52	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-102
Client ID: G-17-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:31
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.8		%	0.100	NA	1	-	04/22/25 10:52	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-103
Client ID: G-17-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:35
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.6		%	0.100	NA	1	-	04/22/25 10:52	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-104
Client ID: G-17-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:39
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.8		%	0.100	NA	1	-	04/22/25 10:52	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-105
Client ID: G-18-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:53
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.1		%	0.100	NA	1	-	04/22/25 10:52	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-106
Client ID: G-18-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:54
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.5		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-107
Client ID: G-18-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:48
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.9		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-108
Client ID: G-18-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 14:50
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.8		%	0.100	NA	1	-	04/22/25 11:50	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-109
Client ID: G-19-D1
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:07
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.8		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-110
Client ID: G-19-D2
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:09
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.6		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-111
Client ID: G-19-D3
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:13
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.6		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

SAMPLE RESULTS

Lab ID: L2523648-112
Client ID: G-19-D4
Sample Location: EATONTOWN, NEW JERSEY

Date Collected: 04/16/25 08:16
Date Received: 04/17/25
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	66.8		%	0.100	NA	1	-	04/22/25 11:29	121,2540G	ROI

Lab Duplicate Analysis

Batch Quality Control

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 41-44,49-52,57-60,65-68,73-76 QC Batch ID: WG2056965-1 QC Sample: L2523648-41 Client ID: F-9-5-D1						
Solids, Total	82.1	81.0	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 17-20,25-28,33-36,81-84,109-112 QC Batch ID: WG2056966-1 QC Sample: L2523648-109 Client ID: G-19-D1						
Solids, Total	83.8	84.1	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 85-99,106-108 QC Batch ID: WG2056967-1 QC Sample: L2523648-107 Client ID: G-18-D3						
Solids, Total	80.9	69.7	%	15		20
General Chemistry - Westborough Lab Associated sample(s): 23,31,39,78-79 QC Batch ID: WG2060817-1 QC Sample: L2523648-23 Client ID: F-15-3-D7						
Solids, Total	83.0	83.2	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 77 QC Batch ID: WG2061081-1 QC Sample: L2523648-77 Client ID: F-13-D5						
Solids, Total	84.6	84.8	%	0		20

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent
D	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2523648-01A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-02A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-03A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-04A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-05A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-06A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-07A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-08A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-09A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-100A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-100B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7),NJ-8081(14)
L2523648-101A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-101B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7),NJ-8081(14)
L2523648-102A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-102B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7),NJ-8081(14)
L2523648-103A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-103B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7),NJ-8081(14)
L2523648-104A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)

*Values in parentheses indicate holding time in days

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2523648-104B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7),NJ-8081(14)
L2523648-105A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		AS-TI(180),PB-TI(180)
L2523648-105B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7)
L2523648-106A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		AS-TI(180),PB-TI(180)
L2523648-106B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7)
L2523648-107A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		AS-TI(180),PB-TI(180)
L2523648-107B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7)
L2523648-108A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		AS-TI(180),PB-TI(180)
L2523648-108B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7)
L2523648-109A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		PB-TI(180)
L2523648-109B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7)
L2523648-10A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-110A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		PB-TI(180)
L2523648-110B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7)
L2523648-111A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		PB-TI(180)
L2523648-111B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7)
L2523648-112A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		PB-TI(180)
L2523648-112B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7)
L2523648-113A	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-113B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		HOLD-WETCHEM(),HOLD-8081(14)
L2523648-114A	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-114B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		HOLD-WETCHEM(),HOLD-8081(14)
L2523648-115A	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-115B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		HOLD-WETCHEM(),HOLD-8081(14)
L2523648-116A	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-116B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		HOLD-WETCHEM(),HOLD-8081(14)

*Values in parentheses indicate holding time in days

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2523648-117A	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-117B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		HOLD-WETCHEM(),HOLD-8081(14)
L2523648-118A	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-118B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		HOLD-WETCHEM(),HOLD-8081(14)
L2523648-119A	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-119B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		HOLD-WETCHEM(),HOLD-8081(14)
L2523648-11A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-120A	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-120B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		HOLD-WETCHEM(),HOLD-8081(14)
L2523648-121A	Amber 1L unpreserved	D	7	7	2.8	Y	Absent		NJ-8081-RVT(7)
L2523648-121B	Amber 1L unpreserved	D	7	7	2.8	Y	Absent		NJ-8081-RVT(7)
L2523648-122A	Plastic 250ml HNO3 preserved	D	<2	<2	2.8	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-122B	Plastic 250ml HNO3 preserved	D	<2	<2	2.8	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-122C	Amber 1L unpreserved	D	7	7	2.8	Y	Absent		NJ-8081-RVT(7)
L2523648-122D	Amber 1L unpreserved	D	7	7	2.8	Y	Absent		NJ-8081-RVT(7)
L2523648-12A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-13A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-14A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),TS(7),HOLD-8081(14),NJ-8081(14)
L2523648-15A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),TS(7),NJ-8081(14),HOLD-8081(14)
L2523648-16A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-17A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-18A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-19A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-20A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)

*Values in parentheses indicate holding time in days

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2523648-21A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-22A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-23A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),TS(7),NJ-8081(14)
L2523648-24A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-25A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-26A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-27A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-28A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-29A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-30A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),TS(7),HOLD-8081(14),NJ-8081(14)
L2523648-31A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),TS(7),NJ-8081(14)
L2523648-32A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-33A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-34A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-35A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-36A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-37A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-38A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-39A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),TS(7),NJ-8081(14)
L2523648-40A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-41A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-42A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-43A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)

*Values in parentheses indicate holding time in days

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2523648-44A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-45A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-46A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-47A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-48A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-49A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-50A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-51A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-52A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-53A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-54A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-55A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-56A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),TS(7),HOLD-8081(14),NJ-8081(14)
L2523648-57A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-58A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-59A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-60A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-61A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),TS(7),NJ-8081(14),HOLD-8081(14)
L2523648-62A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-63A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-64A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),TS(7),NJ-8081(14),HOLD-8081(14)

*Values in parentheses indicate holding time in days

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2523648-65A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-66A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-67A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-68A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-69A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-70A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-71A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),TS(7),HOLD-8081(14),NJ-8081(14)
L2523648-72A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),HOLD-WETCHEM(),HOLD-8081(14)
L2523648-73A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-74A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-75A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-76A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		TS(7),NJ-8081(14)
L2523648-77A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),TS(7),NJ-8081(14)
L2523648-78A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),TS(7),NJ-8081(14)
L2523648-79A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),TS(7),NJ-8081(14)
L2523648-80A	Glass 60mL/2oz unpreserved	C	NA		2.3	Y	Absent		S-EXT-8081(14),TS(7),NJ-8081(14)
L2523648-81A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-81B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7),NJ-8081(14)
L2523648-82A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-82B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7),NJ-8081(14)
L2523648-83A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-83B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7),NJ-8081(14)
L2523648-84A	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-84B	Glass 60mL/2oz unpreserved	D	NA		2.8	Y	Absent		TS(7),NJ-8081(14)
L2523648-85A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-85B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7),NJ-8081(14)

*Values in parentheses indicate holding time in days

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2523648-86A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-86B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7),NJ-8081(14)
L2523648-87A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-87B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7),NJ-8081(14)
L2523648-88A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-88B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7),NJ-8081(14)
L2523648-89A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-89B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2523648-90A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-90B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2523648-91A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-91B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2523648-92A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-92B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2523648-93A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180)
L2523648-93B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7),NJ-8081(14)
L2523648-94A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180)
L2523648-94B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7),NJ-8081(14)
L2523648-95A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180)
L2523648-95B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7),NJ-8081(14)
L2523648-96A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180)
L2523648-96B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7),NJ-8081(14)
L2523648-97A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-97B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7),NJ-8081(14)
L2523648-98A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-98B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7),NJ-8081(14)
L2523648-99A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		AS-TI(180),PB-TI(180),HG-T(28)
L2523648-99B	Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		TS(7),NJ-8081(14)

*Values in parentheses indicate holding time in days

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)

Container Comments

L2523648-121A	Amber-A1
L2523648-121B	Amber-A1
L2523648-122C	Amber-A1
L2523648-122D	Amber-A1

*Values in parentheses indicate holding time in days

Project Name:	OLD ORCHARD	**Lab Number:**	L2523648
Project Number:	3272-98-00SEC	**Report Date:**	05/16/25

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	OLD ORCHARD	**Lab Number:**	L2523648
Project Number:	3272-98-00SEC	**Report Date:**	05/16/25

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	OLD ORCHARD	**Lab Number:**	L2523648
Project Number:	3272-98-00SEC	**Report Date:**	05/16/25

Data Qualifiers

Identified Compounds (TICs). For calculated parameters, this represents that one or more values used in the calculation were estimated.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: OLD ORCHARD
Project Number: 3272-98-00SEC

Lab Number: L2523648
Report Date: 05/16/25

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Pace Analytical Services performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Pace Analytical Services shall be to re-perform the work at it's own expense. In no event shall Pace Analytical Services be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Pace Analytical Services.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581
EPA 624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625.1: alpha-Terpineol
EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
MADEP-APH.
Nonpotable Water: EPA RSK-175 Dissolved Gases
Biological Tissue Matrix: EPA 3050B

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Nonpotable Water: EPA RSK-175 Dissolved Gases

The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048
Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables).
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

Certification IDs:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581
CT PH-0826, IL 200077, IN C-MA-03, KY JY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048
CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 3090, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048
ANAB/DoD L2474, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.

Pace ANALYTICAL SERVICES

NEW JERSEY CHAIN OF CUSTODY

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193

Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Woodcliff Lake, NJ 07677: 123 Tice Blvd, Suite 101
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 13

Date Rec'd in Lab: 4/17/25

L2523648
DYNAMIC

Client Information

Client: DYNAMIC EARTH
Address: 1901 MAIN ST
LAKE COMO NJ
Phone: 732-280-0830
Fax:
Email: OMAJMOUD@DYNAMIC-EARTH.US

Project Information

Project Name: OLD ORCHARD
Project Location: EATONTOWN, NJ
Project #: 3272-98-005EL
(Use Project name as Project #) ☐
Project Manager: SSPANDOLE
PACE Quote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☒ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information

☒ Same as Client Info
PO # 3272-98-005EL

Regulatory Requirement

☒ SRS Residential/Non Residential
☒ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Site Information

Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

These samples have been previously analyzed by Pace ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
H = HOLD
Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

PACE Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	DIELDRIN	Total Bottles	Sample Specific Comments
23648-01	F-15-D1	4/15/25	12:05	S	AC	X		
-02	F-15-D2		12:12			X		
-03	F-15-D3		12:19			X		
-04	F-15-D4		12:11			X		
-05	F-15-D5		12:09			H		
-06	F-15-D6		12:15			H		
-07	F-15-D7		12:06			H		
-08	F-15-D8		12:14			H		
-09	F-15-2-D1		12:22			X		
-10	F-15-2-D2		12:30			X		

Container Type: G
Preservative: A

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	4/17/25		4/17/25 930
	4/17/25 1440	JSC	4/17/25 1440
NJSC	4/17/25		4/17/25 16:58
	4/17 2310		4/17/25 2030 2310

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY PACE'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 29-Jan-2025)

Pace ANALYTICAL SERVICES

NEW JERSEY CHAIN OF CUSTODY

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193
Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Woodcliff Lake, NJ 07677: 123 Tice Blvd, Suite 101
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 2 of 3

Date Rec'd in Lab: 4/17/25

PACE Job #: L2523648

Client Information
Client: DYNAMIC EARTH
Address: SAME
Phone:
Fax:
Email: OMOHMOUD@DYNAMIC-EARTH.COM

Project Information
Project Name: OLD ORCHARD
Project Location: EATONTOWN, NJ
Project #: 3272-98-005EC
(Use Project name as Project #): ☐
Project Manager: S SPANAKIS
PACE Quote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

These samples have been previously analyzed by Pace ☐

Deliverables
☒ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☒ SRS Residential/Non Residential
☒ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Billing Information
☒ Same as Client Info
PO #

Site Information
Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
H = H2O

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Total Bottle

PACE Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	DIESEL/GRO	Sample Specific Comments
23648-11	F-15-2-D3	4/15/25	12:36	S	AC	X	
-12	F-15-2-D4		12:25			X	
-13	F-15-2-D5		12:27			H	
-14	F-15-2-D6		12:33			H	
-15	F-15-2-D7		12:39			H	
-16	F-15-2-D8		12:27			H	
-17	F-15-3-D1		13:11			X	
-18	F-15-3-D2		13:16			X	
-19	F-15-3-D3		14:22			X	
-20	F-15-3-D4		13:28			X	

Container Type: G
Preservative: A

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	4/17/25		4/17/25 95
	4/17/25 1440	NTSC	4/17/25 1440
NTSC	4/17/25		4/17/25 16:58
	4/17 2300		4/17 2030
	4/17 2310		4/17/25 2310

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY PACE'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 29-Jan-2025)

Pace ANALYTICAL SERVICES

NEW JERSEY CHAIN OF CUSTODY

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193

Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

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Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 3 of 13

Date Rec'd in Lab: 4/17/25

PACE Job #: L2523648

Project Information
Project Name: OLD ORCHARD
Project Location:
Project # 3272-98-005EC
(Use Project name as Project #) ☐
Project Manager:
PACE Quote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Client Information
Client: DYNAMIC EARTH
Address: Shrg
Phone:
Fax:
Email:

Deliverables
☒ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information
☒ Same as Client Info
PO #

Regulatory Requirement
☒ SRS Residential/Non Residential
☒ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Site Information
Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

These samples have been previously analyzed by Pace ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
H = HOLD
Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Sample Specific Comments

Total Bottle

PACE Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	DAFE DIVEN								Sample Specific Comments
23648-21	F-15-3-D5	4/15/25	13:14	S	DC	H								
-22	F-15-3-D6		14:19			H								
-23	F-15-3-D7		13:25			H								
-24	F-15-3-D8		13:26			H								
-25	F-15-5-D1		13:33			X								
-26	F-15-5-D2		13:38			X								
-27	F-15-5-D3		13:44			X								
-28	F-15-5-D4		13:49			X								
-29	F-15-5-D5		13:36			H								
-30	F-15-5-D6		13:41			H								

Container Type: G
Preservative: A

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	4/17/25		4/17/25 0730
	4/17/25 1440		4/17/25 1440
	4/17/25		4/17/25 1654
	4/17/25		4/17 2030
	4/17 2310		4/17/25 2310

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY PACE'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 29-Jan-2025)

NEW JERSEY CHAIN OF CUSTODY

ALPHA

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 4 of 13

Date Rec'd in Lab: 4/17/25

ALPHA Job #: L0533648

Client Information
Client: DYNAMIC EARTH
Address: SAME
Phone:
Fax:
Email:

Project Information
Project Name: OLD ORCHARD
Project Location:
Project # 3272-98-005&C
(Use Project name as Project #) ☐
Project Manager:
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☒ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information
☒ Same as Client Info
PO #

Regulatory Requirement
☒ SRS Residential/Non Residential
☒ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Site Information
Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
H = HOLD
Please specify Metals or TAL.

ANALYSIS
DIELDRIN

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Total Bottle

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	DIELDRIN	Sample Specific Comments
23648-31	F-15-5-D7	4/15/25	13:47	S	AC	H	
-32	F-15-5-D8		13:47			H	
-33	F-15-6-D1		13:54			X	
-34	F-15-6-D2		14:01			X	
-35	F-15-6-D3		14:06			X	
-36	F-15-6-D4		13:54			X	
-37	F-15-6-D5		13:58			H	
-38	F-15-6-D6		14:03			H	
-39	F-15-6-D7		13:57			H	
-40	F-15-6-D8		14:08			H	

Container Type: G
Preservative: D

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	4/17/25		4/17/25 935
	4/17/25	HSC	4/17/25 1658
	4/17/25 1410		4/17/25 1658
HSC	4/17/25		4/17 2035
		AHE 2310	4/17/25 2310

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

NEW JERSEY CHAIN OF CUSTODY

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 5 of 13

Date Rec'd in Lab: 4/17/25

ALPHA Job #: L2536648

Client Information
Client: DYNAMIC EARTH
Address: SAME
Phone:
Fax:
Email:

Project Information
Project Name: OLD ORCHARD
Project Location:
Project # 3272-98-005EC
(Use Project name as Project #) ☐
Project Manager:
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☒ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☒ SRS Residential/Non Residential
☒ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Billing Information
☒ Same as Client Info
PO #

Site Information
Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
H = HOLD

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	DIELDRIN	Total Bottle	Sample Specific Comments
23648-41	F-9-5-D1	4/15/25	9:03	S	AC	X		
-42	F-9-5-D2		9:18			X		
-43	F-9-5-D3		9:24			X		
-44	F-9-5-D4		9:29			X		
-45	F-9-5-D5		9:15			H		
-46	F-9-5-D6		9:21			H		
-47	F-9-5-D7		9:26			H		
-48	F-9-5-D8		9:31			H		
-49	F-10-1-D1		9:40			X		
-50	F-10-1-D2		9:47			X		

Container Type: G
Preservative: A

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	4/17/25		4/17
	4/17	UPS	4/17 1658
UPS	4/17		

4/17 2030 — 4/17 2310 — 4/17/25 2310

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

NEW JERSEY CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193

Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 10 of 13

Date Rec'd in Lab: 4/17/25

ALPHA Job #: L2523648

Client Information
Client: DYNAMIC EARTH
Address: SAME
Phone:
Fax:
Email:

Project Information
Project Name: OLD ORCHARD
Project Location:
Project # 3272-98-00 SEC
(Use Project name as Project #) ☐
Project Manager:
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☒ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information
☒ Same as Client Info
PO #

Regulatory Requirement
☒ SRS Residential/Non Residential
☒ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Site Information
Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
H = HOLD
Please specify Metals or TAL.

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS: FIELD DUP	Sample Specific Comments	Total # Bottles
23648 61	F-10-1-D3	4/15/25	9:54	S	DC	X		
-62	F-10-1-D4		10:00			X		
-63	F-10-1-D5		9:43			N		
-64	F-10-1-D6		9:50			H		
-65	F-10-1-D7		9:57			H		
-66	F-10-1-D8		10:03			H		
-67	F-10-4-D1		10:12			X		
-68	F-10-4-D2		10:19			X		
-69	F-10-4-D3		10:25			X		
-60	F-10-4-D4		10:31			X		

Container Type
Preservative

Preservative Code: A = None; B = HCl; C = HNO_3; D = H_2SO_4; E = NaOH; F = MeOH; G = $NaHSO_4$; H = $Na_2S_2O_3$; K/E = Zn Ac/NaOH; O = Other

Container Code: P = Plastic; A = Amber Glass; V = Vial; G = Glass; B = Bacteria Cup; C = Cube; O = Other; E = Encore; D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	4/17/25		4/17/25 930
	4/17/25 1440		4/17/25 1442
	4/17		4/17/25 1658
	4/17 2310		4/17 2030
			4/17/25 2310

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

ALPHA ANALYTICAL

NEW JERSEY CHAIN OF CUSTODY

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Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 7 of 13

Date Rec'd in Lab: 4/17/25

ALPHA Job #: L2583648

Client Information
Client: DYNAMIC EARTH
Address: SAME
Phone:
Fax:
Email:

Project Information
Project Name: OLD ORCHARD
Project Location:
Project # 3272-98-005EC
(Use Project name as Project #) ☐
Project Manager:
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☒ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☒ SRS Residential/Non Residential
☒ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Billing Information
☒ Same as Client Info
PO #

Site Information
Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
H = HOLD
Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Total # Bottles

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	DELDRIN	Sample Specific Comments
23648-01	F-10-4-D5	4/15/25	10:49	S	AC	H	
-02	F-10-4-D6		10:55			H	
-03	F-10-4-D7		10:28			H	
-04	F-10-4-D8		10:34			H	
-05	F-10-5-D1		10:46			X	
-06	F-10-5-D2		10:52			X	
-07	F-10-5-D3		10:57			X	
-08	F-10-5-D4		11:03			X	
-09	F-10-5-D5		10:16			H	
-10	F-10-5-D6		10:22			H	

Container Type: G
Preservative: A

Preservative Code: A = None; B = HCl; C = HNO_3; D = H_2SO_4; E = NaOH; F = MeOH; G = $NaHSO_4$; H = $Na_2S_2O_3$; K/E = Zn Ac/NaOH; O = Other

Container Code: P = Plastic; A = Amber Glass; V = Vial; G = Glass; B = Bacteria Cup; C = Cube; O = Other; E = Encore; D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	4/17/25		4/17/25 930
	4/17/25 1440		4/17/25 1440
	4/17/25		4/17/25 1658
	4/17 2310		4/17/25 2310

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

NEW JERSEY CHAIN OF CUSTODY

ALPHA

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

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Date Rec'd in Lab: 4/17/25

ALPHA Job #: L0523648

Client Information
Client: DYNAMIC EARTH
Address: SAME
Phone:
Fax:
Email:

Project Information
Project Name: OLD ORCHARD
Project Location:
Project # 3272-98-005EC
(Use Project name as Project #) ☐
Project Manager:
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☒ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☒ SRS Residential/Non Residential
☒ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Billing Information
☒ Same as Client Info
PO #

Site Information
Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
H = HOLD
Please specify Metals or TAL.

ANALYSIS
DIELDRIN

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Total Bottle

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	DIELDRIN	Sample Specific Comments
23648-71	F-10-5-D7	4/15/25	11:01	S	DC	H	
-72	F-10-5-D8		11:06			H	
-73	F-13-D1		12:45			X	
-74	F-13-D2		12:50			X	
-75	F-13-D3		12:45			X	
-76	F-13-D4		12:50			X	
-77	F-13-D5		12:48			H	
-78	F-13-D6		12:56			H	
-79	F-13-D7		12:55			H	
-80	F-13-D8		12:40			H	

Container Type: G
Preservative: A

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	4/17/25		4/17/25
	4/17/25 1440	NTSC	4/17/25 1440
NTSC	4/17/25		4/17/25 1658
	4/17 2310		4/17 2030
			4/17/25 2310

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

NEW JERSEY CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193

Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 9 of 13

Date Rec'd in Lab: 4/17/25

ALPHA Job #: L2523648

Project Information
- Project Name: AD ORCHARD
- Project Location:
- Project #: 3272-98-005EC
- (Use Project name as Project #): ☐
- Project Manager:
- ALPHAQuote #:

Turn-Around Time
- Standard: ☒ — Due Date:
- Rush (only if pre approved): ☐ — # of Days:

Client Information
- Client: DYNAMIC EARTH
- Address: [illegible]
- Phone:
- Fax:
- Email:

These samples have been previously analyzed by Alpha ☐

Deliverables
- ☒ NJ Full / Reduced
- ☐ EQuIS (1 File) ☐ EQuIS (4 File)
- ☐ Other

Regulatory Requirement
- ☒ SRS Residential/Non Residential
- ☒ SRS Impact to Groundwater
- ☐ NJ Ground Water Quality Standards
- ☐ NJ IGW SPLP Leachate Criteria
- ☐ Other

Billing Information
- ☒ Same as Client Info
- PO #

Site Information
Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
Please specify Metals or TAL.

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ARSENIC	MERCURY	LEAD	DICHLOROPROPANE EPOXIDE	CHLORDANE	4,4'-DDE			Total Bottle	Sample Specific Comments
23648-81	G-9-D1	4/16/25	8:34	S	AC	X	X	X	X	X	X				
-82	G-9-D2		8:38			X	X	X	X	X	X				
-83	G-9-D3		8:43			X	X	X	X	X	X				
-84	G-9-D4		8:49			X	X	X	X	X	X				
-85	G-10-D1		10:12			X	X	X		X					
-86	G-10-D2		10:17			X	X	X		X					
-87	G-10-D3		10:27			X	X	X		X					
-88	G-10-D4		10:22			X	X	X		X					
-89	G-11-D1		9:34			X	X	X							
-90	G-11-D2		9:40			X	X	X							
	Container Type					G	G	G	G	G	G				
	Preservative					A	A	A	A	A	A				

Preservative Code: A = None; B = HCl; C = HNO_3; D = H_2SO_4; E = NaOH; F = MeOH; G = $NaHSO_4$; H = $Na_2S_2O_3$; K/E = Zn Ac/NaOH; O = Other

Container Code: P = Plastic; A = Amber Glass; V = Vial; G = Glass; B = Bacteria Cup; C = Cube; O = Other; E = Encore; D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	4/17/25	[signature]	4/17/25
[signature]	4/17/25 1440	NFSC	4/17/25 1440
NFSC	4/17/25	[signature]	4/17/25 1657
[signature]	4/17 2300	[signature]	4/17 2030
		[signature]	4/17/25 2310

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

NEW JERSEY CHAIN OF CUSTODY

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 10 of 13

Date Rec'd in Lab: 4/17/25

ALPHA Job #: L2023648

Client Information
Client: DYNAMIC EARTH
Address:
Phone:
Fax:
Email:

Project Information
Project Name: OLD ORCHARD
Project Location:
Project # 3272-98-005EC
(Use Project name as Project #) ☐
Project Manager:
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☒ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information
☒ Same as Client Info
PO #

Regulatory Requirement
☒ SRS Residential/Non Residential
☒ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Site Information
Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ARSENIC	MERCURY	LEAD	HEPTACHLOR EPOXIDE	CHLORDANE	DIELDRIN	Total Bottle	Sample Specific Comments
23648-91	G-11-D3	4/16/25	9:44	S	AC	X	X	X					
-92	G-11-D4		9:49			X	X	X					
-93	G-15-D1		9:06			X			X	X	X		
-94	G-15-D2		9:11			X			X	X	X		
-95	G-15-D3		9:24			X			X	X	X		
-96	G-15-D4		9:20			X			X	X	X		
-97	G-16-D1		10:41			X	X	X	X	X			
-98	G-16-D2		10:45			X	X	X	X	X			
-99	G-16-D3		10:49			X	X	X	X	X			
-100	G-16-D4		10:54			X	X	X	X	X			

Container Type: G
Preservative: A

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	4/17/25		4/17/25
	4/17/25 1440		4/17/25 1440
	4/17/25		4/17/25 1625
	4/17 2310		4/17 2030 4/17/25 2310

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

NEW JERSEY CHAIN OF CUSTODY

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 11 of 13

Date Rec'd in Lab: 4/17/25

ALPHA Job #: L2683648

Client Information
Client: DYNAMIC EARTH
Address:
Phone:
Fax:
Email:

Project Information
Project Name: OLD ORCHARD
Project Location:
Project # 3272-98-005EC
(Use Project name as Project #)
Project Manager:
ALPHAQuote #:

Turn-Around Time
Standard: X
Rush (only if pre approved): ☐
Due Date:
of Days:

Deliverables
X NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information
X Same as Client Info
PO #

Regulatory Requirement
X SRS Residential/Non Residential
X SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Site Information
Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
Please specify Metals or TAL.

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS: PHENOLICS	MERCURY	LEAD	CHLORDANE	Total # Bottles	Sample Specific Comments
2683648-101	G-17-D1	4/16/25	14:28	S	DC	X	X	X	X		
-102	G-17-D2		14:31			X	X	X	X		
-103	G-17-D3		14:35			X	X	X	X		
-104	G-17-D4		14:39			X	X	X	X		
-105	G-18-D1		14:53			X		X			
-106	G-18-D2		14:54			X		X			
-107	G-18-D3		14:48			X		X			
-108	G-18-D4		14:50			X		X			
-109	~~G-19-D~~ G-19-D1	4/16/25	8:07					X			
-110	G-19-D2	4/16/25	8:09					X			

Container Type: G
Preservative: A

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	4/17/25		4/17/25
	4/17/25 1400		4/17/25 1400
	4/17/25		4/17/25 1608
	4/17 2310		4/17/25 2030

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

NEW JERSEY CHAIN OF CUSTODY

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 12 of 13

Date Rec'd in Lab: 4/17/25

ALPHA Job #: L8520648

Client Information
Client: DYNAMIC EARTH
Address:
Phone:
Fax:
Email:

Project Information
Project Name: OLD ORCHARD
Project Location:
Project # 3272-98-005EC
(Use Project name as Project #) ☐
Project Manager:
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☒ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☒ SRS Residential/Non Residential
☒ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Billing Information
☒ Same as Client Info
PO #

Site Information
Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
Please specify Metals or TAL.

ANALYSIS
LEAD

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Total Bottle

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	LEAD	Sample Specific Comments
23648-111	G-19-D3	4/16/25	8:13	S	AC	X	
-112	G-19-D4		8:16			X	
-113	G-12-D1		11:17				
-114	G-12-D2		11:22				
-115	G-12-D3		11:27				
-116	G-12-D4		11:32				
-117	G-13-D1		11:45				
-118	G-13-D2		11:49				
-119	G-13-D3		11:53				
-120	G-13-D4		11:57				

Container Type: G
Preservative: A

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	4/17/25		4/17/25 930
	4/17/25 1440		4/17/25 1440
	4/17/25		4/17/25 1615
	4/17 2310		4/17 2030
			4/17/25 2310

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Form No: 01-14 HC (rev. 30-Sept-2013)

NEW JERSEY CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193
Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 13 of 13

Date Rec'd in Lab: 4/17/25

ALPHA Job #: L2503648

Project Information
Project Name: OLDCASTLE
Project Location:
Project # 3272-98-00SEC
(Use Project name as Project #) ☐
Project Manager:
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Client Information
Client: DYNAMIC EDUCATION
Address: SAME
Phone:
Fax:
Email:

Deliverables
☒ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information
☒ Same as Client Info
PO #

Regulatory Requirement
☒ SRS Residential/Non Residential
☒ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Site Information
Is this site impacted by Petroleum? Yes ☐
Petroleum Product:

These samples have been previously analyzed by Alpha ☐

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Arsenic, Lead Mercury	Chromium, Hexavalent	Chromium, Total	Hydrocarbons Diesel Range Organics	Chromium, Hydroxide	Diesel Oil				Total Bottle
23648-121	FB-1	4/15/25	14:52	DW	AC						X				
-122	FB-2	4/16/25	13:05	DW	AC	X				X	X				
Container Type						P			S	S					
Preservative						C			D	A					

Sample Specific Comments

Preservative Code: A = None; B = HCl; C = HNO_3; D = H_2SO_4; E = NaOH; F = MeOH; G = $NaHSO_4$; H = $Na_2S_2O_3$; K/E = Zn Ac/NaOH; O = Other

Container Code: P = Plastic; A = Amber Glass; V = Vial; G = Glass; B = Bacteria Cup; C = Cube; O = Other; E = Encore; D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By	Date/Time
	4/17/25		4/17/25 930
	4/17/25 1440		4/17/25 1440
	4/17		4/17 1616
	4/17 2310		4/17/25 2310

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Form No: 01-14 HC (rev. 30-Sept-2013)

DYNAMIC EARTH

Appendix C
Health and Safety Plan

SITE-SPECIFIC
HEALTH AND SAFETY PLAN

Old Orchard Country Club
54 Monmouth Road
Block 2701, Lots 2, 53, 60, 66 & 69
Borough of Eatontown, Monmouth County, New Jersey
Block 68, Lot 6
Borough of West Long Branch, Monmouth County, New Jersey

Prepared for:
Surrey Equities, LLC
38 Corbett Way
Eatontown, New Jersey 07724

Prepared By:

DYNAMIC EARTH
1904 Main Street
Lake Como, New Jersey 07719

Project #: 3272-98-005EC

June 24, 2024

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1.0 HEALTH AND SAFETY PROGRAM

This plan will be used to administer health and safety measures for activities performed by Dynamic Earth, LLC (Dynamic Earth at the Old Orchard Country Club located at 54 Monmouth Road, in the borough of Eatontown and West Long Branch, Monmouth County, New Jersey. (hereinafter referred to as the "Site"). A copy of this plan will be on-Site and will be available for inspection and review during field activities.

The Health and Safety Plan (HASP) establishes policies and procedures to protect workers and the public from potential hazards posed by field work. All project activities will be conducted in a manner that minimizes the probability of injury or accident.

This HASP is based on the information available at the time of preparation. Unexpected conditions that may arise during the project will require a reassessment of the procedures. It is important that the need for personal protective measures be thoroughly assessed by the Project Manager and/or Health and Safety Officer prior to and during the planned field activities. Unplanned activities or changes in the hazard status in the field will initiate a review of and, when appropriate, alterations to this plan.

Any amendments to this plan must be approved in writing by the Project Manager or the Health and Safety Officer prior to implementation.

Dynamic Earth cannot guarantee the health and/or safety of all personnel entering the Site. It is not possible to evaluate and provide protection for all possible hazards that may be encountered. Adherence to the HASP will reduce, but cannot totally eliminate, the possibility for worker injuries and illness to occur.

Field personnel working at the Site will be briefed on the contents of the HASP and the potential hazards of the job before work begins and daily throughout the duration of field activities. In addition, field personnel are required to read the HASP before work begins.

2.0 SITE CHARACTERIZATION AND ANALYSIS

Site characterization provides the information needed to identify hazards and to select the procedures and equipment required to perform the work safely and protect the workers.

A Site-Specific Contingency Plan is prepared for field activities, and is part of the HASP, which will be on-Site and available for review.

2.1 SITE DESCRIPTION

Project Name:	Old Orchard Country Club
Project Number	3272-98-005EC
Site Location:	54 Monmouth Road Block 2701, Lots 2, 53, 60, 66 & 69 Borough of Eatontown, Monmouth County, New Jersey Block 68, Lot 6, Borough of West Long Branch, Monmouth County, New Jersey
Site Access:	Contact Robert, Site Manager, for access to the Site. (732-542-7666)
Site Description:	The Site is currently developed with the Old Orchard Country Club including an 18-hole golf course, two-story club house, one-story equipment rental building, one-story equipment/storage building, and associated sheds. The Turtle Mill Brook bisects the Site from west to east. The remaining portions of the Site include asphalt and gravel driveway and parking areas.

A Site Location Map and Existing Conditions and AOC Location Plan included as Figures 1 and 2.

2.2 DESCRIPTION OF TASKS/WORK PLAN

Dynamic Earth personnel may perform the following tasks during this project:

- Contractor Oversight
- Hand Auger Soil Boring Installation
- Soil Sample Collection
- Temporary Well Installation
- Groundwater Sampling
- Sediment/Surface Water Sampling
- Soil Excavation
- Post Excavation Soil Sampling
- Soil Stockpiling
- Cap Construction

2.3 DESCRIPTION OF CONTRACTORS AND RESPONSIBILITIES

The contractor(s) shall be responsible for the health and safety of their employees, subcontractors, suppliers and other parties that are performing work under the direction of the contractor. This HASP cannot be used by the contractor(s) unless authorized by the Project Manager.

The contractor shall have programs, policies and procedures in-place that satisfy the requirements of all current federal, state, and local statutes, regulations and ordinances regarding health and safety. Contractors shall supply all the necessary safety equipment for their crews. Dynamic Earth reserves the right to audit its contractors for federal, state and local regulatory compliance.

The following contractors will provide services at the Site during the project:

Service	Contractor Information
Driller	High Rock Environmental 1 Spring Hill Lane Great Meadows, NJ 07838 Mike Varina 908-799-3317 info@highrockenviro.com
Subconsultant	AWT 32 Birch Street Old Bridge, NJ 08875 732-613-1660 jpostorino@awtenv.com

2.4 PROJECT ORGANIZATION/KEY PERSONNEL

Project Manager:	Spencer Spurlock, LSRP Senior Principal 732-280-0830 sspurlock@dynamic-earth.com
Health and Safety Officer:	Spencer Spurlock, LSRP Senior Principal 732-280-0830 sspurlock@dynamic-earth.com
Senior Technical Manager:	Omar Mahmoud Environmental Scientist 732-280-0830 omahmoud@dynamic-earth.com
Field/Site Manager:	Omar Mahmoud Environmental Scientist 732-280-0830 omahmoud@dynamic-earth.com

The responsibility for health and safety is shared by all members of the team. Each team member is responsible to safely complete the tasks required to fulfill the planned work activities, comply with the HASP and notify the Project Manager or Health and Safety Officer of any unsafe acts or conditions at the Site.

2.5 HAZARD EVALUATION

In general, potential hazards for a project can be classified into physical, chemical, biological and radiological hazards.

Based upon information collected during characterization and analysis of Site conditions, the following classes of hazards may be present during certain phases of the project. Detailed job hazard analyses (JHA) will be created, as appropriate, and updated to accommodate Site-specific hazards. Common hazards and control measures are shown below.

All work practices at the Site must comply with and conform to OSHA Safety and Health Procedures included in 29 CFR 1910, 29 CFR 1926 and pertinent state and local regulations.

2.5.1 Physical/Safety Hazards and Controls

PHYSICAL (SAFETY) HAZARDS AND CONTROLS		
Present	**Hazard**	**Control Measure(s)***
N	Flying debris/objects	Provide shielding and PPE
Y	Sustained loud noise	Noise protection and monitoring required
N	Steep terrain/unstable surface	Brace and shore equipment
N	Buildup of flammable /explosive gases	Provide fire extinguisher and ventilation. No spark sources within 50 ft of an excavation, heavy equipment or UST removal. Ground as appropriate.
N	Poisonous Plants (poison ivy, poison oak, poison sumac).	Avoid contact with these plants. Wear long pants and long sleeves
N	Gas cylinders	Make sure gas cylinders are properly anchored and chained. Keep cylinders away from ignition sources.
N	High pressure hose rupture	Check to see that fitting and pressure lines are in good condition/repair before using.
N	Electrical shock	Make sure third wire is properly grounded. Do not tamper with electrical wiring unless qualified to do so.
N	Vehicle Traffic	Work in busy areas during off-peak hours; wear traffic safety vest with reflector stripe; use cones and flags to mark work areas; and contact police department if interrupting flow of traffic
Y	Moving heavy vehicles or equipment	Back up alarm required for heavy equipment. Observer remains in contact with operator and signals safe back up. Personnel to remain outside of turning radius.
N	Overhead electrical wires	Heavy equipment to remain at least 15 ft from overhead power line for power lines of 50 kV or less. For each kV > 50 increase distance 1/2 foot.
Y	Buried utilities, drums, and tanks**	To be identified and controlled by others.
Y	Slip/trip/fall hazards due to muddy work areas	Use wood pallets or similar devices in muddy work areas.
Y	Back injuries	Use proper lifting techniques, or provide mechanical lifting aids.
N	Oxygen deficiency (confined space)	Dynamic personnel are not to enter confined spaces for any reason unless in compliance with confined space entry regulations.
Y	Trenches/excavations	Dynamic personnel are not to enter excavation greater than 4-foot depth at any time, for any reason unless in compliance with trenching regulations.
N	Protruding objects	Flag visible objects.
Y	Holes/ditches	Restrict access by tape or other visible means.

OTHER:

* For more detailed descriptions of the appropriate controls, consult OSHA Standards.
** For Underground Utilities: Follow state/local utility mark out requirements. If necessary, use a contractor to mark out work areas (e.g., ground penetrating radar and line tracing).

2.5.2 Chemical Hazards

Based on information gathered during the characterization of the Site, the following substances are suspected to be present on-Site. Refer to the representative Safety Data Sheets (SDS) for additional information regarding exposure to typical contaminants (Appendix A).

POTENTIAL CHEMICALS OF CONCERN				
CHEMICAL	**OSHA PEL[1]**	**ACGIH TLV[2]**	**IDLH[3]**	**EXPOSURE ROUTE**
Chlordane	200 ppm	200 ppm	200 ppm	Inh, Ing
Dieldrin	0.25 ppm	0.25 ppm	0.1 ppm	Ing, Abs, Con
Heptachlor epoxide	NA[4]	NA[4]	NA[4]	Inh, Ing, Abs, Con
Arsenic	10,000 ppm	0.01 ppm	5 ppm	Inh, Ing, Abs, Con
Mercury	0.1 ppm	0.025 ppm	10 ppm	Inh, Ing, Abs, Con
Lead	0.05 ppm	0.05 ppm	100 ppm	Inh, Ing, Abs, Con

1. OSHA personal exposure limit based on an eight-hour time weighted average.
2. American Conference of Governmental Industrial Hygienists threshold limit value based on an eight hour-time weighted average.
3. Immediately Dangerous to Life or Health concentration based on the maximum concentration one could escape within 30 minutes without experiencing permanent or irreversible health effects.
4. NA- Information not available.

2.5.3 Toxicity

Potential hazards, proper handling precautions, signs and symptoms of over-exposure and recommended personal protective equipment (PPE) are described in the SDS. Available SDSs for potential chemicals of concern are included in Appendix A. These SDSs should be reviewed prior to conducting work at the Site.

2.5.4 Heat Stress

The Health and Safety Officer or designee shall evaluate the potential effect of heat stress on all workers at the Site prior to the start of the work day. Overexposure to temperature extremes can represent risks to personnel if simple precautions are not observed. Control measures designed to prevent heat stress include dressing properly (light weight, light colored clothing), blocking out sun or other direct heat sources and drinking plenty of water. Workers should be familiar with the following serious effects of overexposure to hot environments:

- Heat stress
- Heat exhaustion
- Heat stroke

2.5.5 Cold Stress

The Health and Safety Officer or designee shall evaluate the potential effects of cold stress on all workers at the Site prior to the start of the work day. Overexposure to temperature extremes can represent risks to personnel if simple precautions are not observed. Control measures designed to prevent cold stress include dressing properly (dry, layered clothing), the protection of feet, hands and

head, taking frequent breaks in warm areas and drinking plenty of water. Workers should be familiar with the following serious effects of overexposure to cold environments:

- Hypothermia
- Frost bite

Field staff must coordinate with the Project Manager and monitor changing weather patterns to limit and control exposure in extreme winter conditions. As appropriate, the Project Manager will evaluate necessary changes to outer wear, PPE and Site maintenance (such as snow removal and treatment of icy conditions) on a project-by-project basis, and document any changes.

3.0 SITE CONTROL

3.1 SAFE WORK PRACTICES

1. Eating, drinking, chewing gum or tobacco, smoking or any practices that increases the probability of hand-to-mouth transfer and ingestion of material are forbidden at the Site.

2. Hands and face must be thoroughly washed upon leaving the work area. Individuals will shower as soon as possible after leaving the Site at the end of the day.

3. Contact with contaminated surfaces or surfaces suspected of being contaminated should be avoided while the worker is unprotected. Avoid walking through puddles, pools, mud, etc. Whenever possible, avoid kneeling, leaning or sitting on the ground. In the event that protective clothing is ripped or torn, work is to stop and the protective clothing removed and replaced. In the event of direct skin contact, the affected area is to be washed immediately with soap and water.

4. If respirators are deemed necessary, facial hair that interferes with the fit of a respirator will not be permitted. Respirators are only to be worn by authorized staff.

5. Medicine and alcohol can intensify the effects from exposure to many chemicals. Use of medications must be reported to the Project Manager or the Health and Safety Officer. Intake of alcoholic beverages during scheduled work periods is prohibited.

6. All personnel must be familiar with relevant task-specific standard operating procedures, as well as all instructions and information contained in the HASP.

7. Use of contact lenses is prohibited at the Site unless chemical goggles are worn during any operations involving potential eye contact with chemicals.

8. Personnel will receive training covering the contents of SDSs for all Site-specific contaminants, with particular emphasis on the signs and symptoms of exposure.

9. The buddy system should be employed at all times.

10. All personal protective equipment must be inspected for worn or deteriorated parts prior to use.

11. Site work will be performed during daylight hours whenever possible. Any work conducted during hours of darkness will comply with 29 CFR 1310.120(m).

3.2 COMMUNICATIONS SYSTEM

Communication between the Project Manager, Health and Safety Officer and field personnel will be through the use of mobile telephones. Mobile telephone numbers are included in Section 2.4.

4.0 EMPLOYEE EDUCATION AND TRAINING

All personnel working at the Site must have received Health and Safety Training for Hazardous Waste Operations (HAZWOPER) or have the equivalent training and experience as required under OSHA 29 CFR 1910.120(e).

It is the responsibility of each contractor to determine the level of training required for their employees to satisfy the requirements of HAZWOPER. If necessary, Dynamic Earth will review training records for contractors and will maintain copies of these records with the HASP.

In the event unanticipated special hazards are encountered or if there are client specific requirements, additional training will be provided to employees on an as-needed basis.

At the start of the project and weekly thereafter, the Site Manager will hold a safety briefing to include the following:

- Discuss the project status.
- Review conditions at the Site including potential hazards.
- Identify safety concerns and review corrective action measures.
- Reiterate HASP requirements and PPE levels for the Site.
- Review evacuation routes and assembly areas.

The Site Manager will document the safety briefing in the field log. Notes should include the time of the briefing, list of attendees and key information that was reviewed.

5.0 MEDICAL SURVEILLANCE PROGRAM

If deemed necessary, Dynamic Earth will implement a medical surveillance program. The need for such a program will continue to be evaluated based on the nature of the work performed by Dynamic Earth employees.

A medical surveillance program shall be instituted for the following conditions as required by 29 CFR Part 1910.120:

- Employees are or may be exposed to hazardous substances or health hazards at or above the permissible exposure limits or above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more a year.
- Employees who wear a respirator for 30 days or more a year.
- Employees who are injured, become ill or develop signs or symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation.
- Members of HAZMAT teams.

If a medical surveillance program is deemed necessary, medical examinations and consultations shall be made available to each covered employee on the following schedule:

- Prior to assignment and once every twelve months hereafter.
- At termination of employment or reassignment (if the employee has not had an examination within the last six months).
- Upon notification that the employee developed signs or symptoms indicating possible overexposure to hazardous substances or health hazards, or the employee has been injured or exposed above the permissible exposure limits or published exposure levels.
- If a physician determines that an increased frequency of examination is medically necessary.

In the event Site-specific contaminants of concern are encountered, they will be added to the surveillance program on a case-by-case basis.

The following special requirements are needed for this Site:

- No special monitoring needed.

6.0 PERSONAL PROTECTIVE EQUIPMENT

The purpose of PPE is to protect employees against potential chemical, physical, and biological hazards. Careful selection and use of PPE will reduce and maintain employee chemical exposures at or below Permissible Exposure Limits and protect against physical and biological hazards.

The PPE required for this Site is LEVEL D.

LEVEL D PROTECTION	
Required	**Description**
Y	Hard Hat
Y	Safety Vest (Class II or III)
N	Safety Glasses
N	Chemical Goggles
Y	Steel-Toed/Shank/Chemical Resistant Boots
N	Chemical Resistant Outer Boots
Y	Hearing Protection
Y	Vinyl or Nitrile Gloves
N	Leather Gloves (where potential for cuts and scrapes)
N	Coveralls

The Health and Safety Officer and/or Project Manager must be notified immediately if any action levels identified in Section 2.5.2 are exceeded.

The protective equipment used and protection level assigned will be reevaluated periodically by the Health and Safety Officer and/or Project Manager as more information about the Site conditions becomes available, and as field personnel are required to perform different tasks.

Personnel will upgrade or downgrade their level of protection only with concurrence of the Health and Safety Officer and/or Project Manager.

7.0 DECONTAMINATION PROCEDURES

The procedures for decontamination of equipment and personnel are essential to:

- Reduce personnel exposure to chemical hazards by removing or neutralizing contaminants.
- Prevent cross-contamination of areas at the Site.
- Prevent accidental transport of contaminated materials off site.

The following decontamination procedures shall be followed:

- Reusable field equipment and PPE will be decontaminated in accordance with standard operating procedures using a brush to remove any loose material. The equipment will be cleaned using a detergent (Alconox™ or equivalent) with a final rinse of analyte-free water. Wastes generated by decontamination activities will be disposed of properly.
- Disposable protective equipment such as nitrile gloves will be placed in heavy duty trash bags and disposed of properly.
- Heavy equipment decontamination is the responsibility of the contractor. The location of the decontamination station, as well as the decontamination procedures, will be designated by the Project Manager based on the chemical hazards and type of equipment to be cleaned.

8.0 EMERGENCY CONTINGENCY PLAN

An emergency contingency plan sets forth policies and procedures for responding to emergencies at the Site. Common causes of emergencies may be worker related or material/Site related.

Should an emergency occur, the Project Manager has overall responsibility for implementation of, and control over, the emergency response.

The following planning should be carried out prior to starting field activities:

- Identify, locate and ensure proper operation of on-Site communications (e.g., mobile telephone, two-way portable radios, etc.).
- Review any changes in conditions or on-Site operation.
- Ensure that a copy of the HASP is available on-Site.
- Check emergency equipment and supplies.
- Verify local emergency contacts, hospital routes, evacuation routes and assembly points.

8.1 NOTIFICATION/REPORTING PROCEDURES

DIAL 9-1-1 IN THE EVENT OF A MEDICAL OR OTHER EMERGENCY

Injured workers will not attempt to drive themselves to an emergency facility.

As soon as possible, the Project Manager shall be notified as to the nature of the incident (spill, injury, details of event, etc.). The Project Manager is responsible for notifying Dynamic Earth's senior management and the client (if required).

The Project Manager and/or the client is responsible for making any required notifications to the applicable regulatory agencies.

Field personnel will be responsible for documenting the incident. The Project Manager will be responsible for evaluating the root cause of the incident and will identify/implement the appropriate corrective actions.

8.2 SPILL CONTAINMENT PROCEDURES

While a spill or leak of a hazardous material is unlikely to occur based on the nature of the work, it is necessary to implement a containment procedure.

In the event of a spill or leak, the area will be cordoned off by field staff. Containment and cleanup should only be performed by properly trained personnel or contractors. All wastes generated from cleanup activities will be disposed of in a proper manner.

8.3 UNDERGROUND UTILITIES

In the event that an underground utility is damaged, notifications must be made in the appropriate order. Emergency responders will provide additional instructions. All equipment should be shut down and all personnel must evacuate to the assembly area.

Natural Gas (IN ORDER)

- 9 1 1
- NJ One-Call (8 1 1 or 800-727-1000)
- Project Manager and/or Health and Safety Officer

Electric, Communications, Water and Sewer (IN ORDER)

- The operator of the applicable utility (as noted on the mark-out tickets)
- NJ One-Call (8 1 1 or 800-727-1000)
- Project Manager and/or Health and Safety Officer

8.4 SAFETY EQUIPMENT LIST

The following safety equipment shall be radially available during field work. Field staff are responsible for inspecting and maintaining the safety equipment.

SAFETY EQUIPMENT	
Required	**Description**
Y	First Aid Kit
N	TYPE ABC Fire Extinguisher
N	Spill Kit (absorbent pads, socks, etc.)
Y	Reflective Safety Cones
Y	Photoionization Detector (PID)

8.5 EMERGENCY CONTACTS

EMERGENCY CONTACTS		
Agency/Personnel	**Phone Number**	**Contact**
Fire Department	9 1 1 732-389-7620 (non-emergency)	Eatontown Fire Department
Local Police Department	9 1 1 732-542-0100 (non-emergency)	Eatontown Police Department
State Police Department	9 1 1 609-777-4949 (non-emergency)	New Jersey State Police Department
Hospital	732-222-5200 (non-emergency)	RWJ Barnabas Health Monmouth Medical Center
State Environmental Agency	1-877-927-6337 (emergency hot line)	NJDEP
National Response Center	1-800-424-8802	USEPA
Project Manager	732-280-0830	Spencer Spurlock
Health and Safety Officer	732-280-0830	Spencer Spurlock
Field Supervisor	732-280-0830	Omar Mahmoud

8.6 HOSPITAL ROUTE

The route to the nearby hospital for non-emergencies is included in Appendix B.

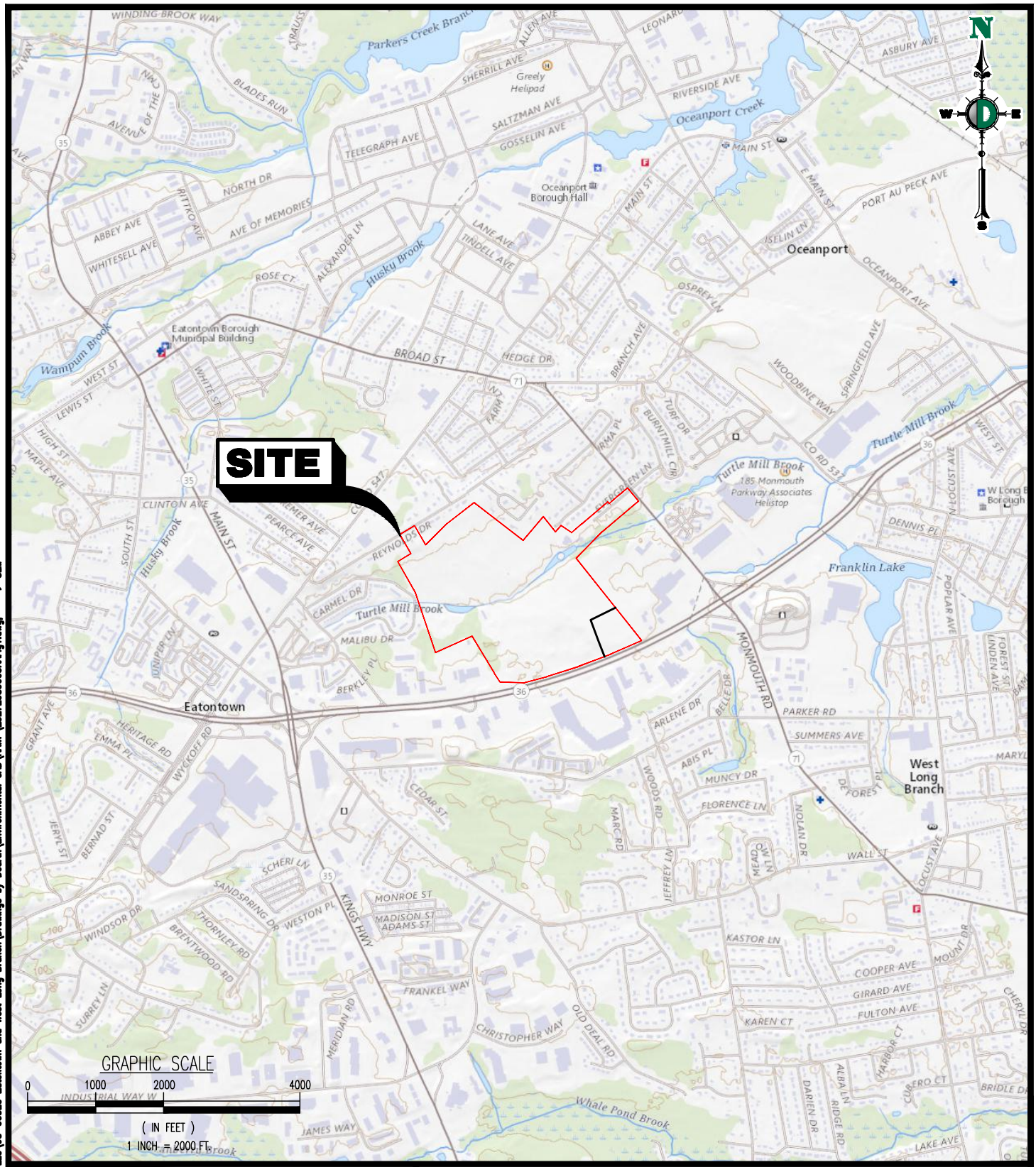
9.0 AUTHORIZATION

This Site-Specific Health and Safety Plan has been completed, reviewed and approved by the following Dynamic Earth staff.

Omar Mahmoud	June 24, 2024
Preparer	Date
Spencer Spurlock	June 24, 2024
Project Manager	Date
Spencer Spurlock	June 24, 2024
Health and Safety Officer	Date

All staff are required to review the HASP prior to the commencement of field work. After reviewing the plan, staff must sign the acknowledgement form included in Appendix C.

FIGURES



DYNAMIC EARTH, LLC
1904 Main Street - Lake Como, NJ 07719
T: 732.280.0830 - F: 732.974.3521
www.dynamic-earth.com

TITLE: # FIGURE 1: SITE LOCATION MAP

PROJECT: **SURREY EQUITIES**
OLD ORCHARD COUNTRY CLUB
BLOCK 2701, LOT 2, 53, 60, 66, 69; BLOCK 68, LOT 6
54 MONMOUTH ROAD
TOWNSHIP OF EATONTOWN, MONMOUTH COUNTY, NEW JERSEY

SCALE: (H) 1"=2000'
(V)

JOB No:
3272-98-005EC

Plotted: 09/11/23 - 11:40 AM, By: jdefisher, - Product Ver: 24.2a (LMS Tech)
File: C:\EARTH Projects\3272 Surrey Equities LLC\98-005EC Eatontown and West Long Branch\Drawings by Dearth\Environmental CAD\RAMP\E3272989005RAFig1.dwg, ---> SLM

APPENDIX A

Safety Data Sheets

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006
Version 5.0 Revision Date 29.10.2012
Print Date 19.04.2017
GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers

Product name : Arsenic

Product Number : 267961
Brand : Aldrich
Index-No. : 033-001-00-X
CAS-No. : 7440-38-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Israel Ltd.
3 PARK RABIN, PLAUT
7670603 REHOVOT
ISRAEL

Telephone : +972 8948-4222
Fax : +972 8948-4200

1.4 Emergency telephone number

Emergency Phone # : +972 (8) 948-4222

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Acute aquatic toxicity (Category 1)
Chronic aquatic toxicity (Category 1)
Acute toxicity, Inhalation (Category 3)
Acute toxicity, Oral (Category 3)

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Toxic by inhalation and if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008 [CLP]
Pictogram



Signal word Danger

Hazard statement(s)
H301 Toxic if swallowed.
H331 Toxic if inhaled.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P273 Avoid release to the environment.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/

physician.

P311	Call a POISON CENTER or doctor/ physician.
P501	Dispose of contents/ container to an approved waste disposal plant.
Supplemental Hazard Statements	none

According to European Directive 67/548/EEC as amended.

Hazard symbol(s)



R-phrase(s)

R23/25	Toxic by inhalation and if swallowed.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrase(s)

S20/21	When using do not eat, drink or smoke.
S28	After contact with skin, wash immediately with plenty of soap and water.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S60	This material and its container must be disposed of as hazardous waste.
S61	Avoid release to the environment. Refer to special instructions/ Safety data sheets.

2.3 Other hazards - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula : As
Molecular Weight : 74,92 g/mol

Component		Concentration
Arsenic		
CAS-No.	7440-38-2	-
EC-No.	231-148-6	
Index-No.	033-001-00-X	

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

4.3 Indication of any immediate medical attention and special treatment needed

no data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Arsenic oxides

5.3 Advice for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information
no data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end uses
no data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Immersion protection
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: > 480 min
Material tested:Dermatril® (Aldrich Z677272, Size M)

Splash protection
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: > 30 min
Material tested:Dermatril® (Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: powder Colour: grey
b)	Odour	no data available
c)	Odour Threshold	no data available
d)	pH	no data available
e)	Melting point/freezing point	Melting point/range: 817 °C - lit.
f)	Initial boiling point and boiling range	613 °C - lit.
g)	Flash point	not applicable
h)	Evaporation rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	no data available
k)	Vapour pressure	no data available
l)	Vapour density	no data available
m)	Relative density	5,727 g/mL at 25 °C
n)	Water solubility	no data available
o)	Partition coefficient: n-octanol/water	no data available

p)	Autoignition temperature	no data available
q)	Decomposition temperature	no data available
r)	Viscosity	no data available
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

9.2 Other safety information
no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
no data available

10.2 Chemical stability
no data available

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
Heat. Exposure to air may affect product quality.

10.5 Incompatible materials
Oxidizing agents, Halogens, Palladium undergoes a violent reaction with arsenic, Zinc, Platinum oxide, Nitrogen trichloride, Bromine azide

10.6 Hazardous decomposition products
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - rat - 763 mg/kg
Remarks: Behavioral:Ataxia. Diarrhoea

LD50 Oral - mouse - 145 mg/kg
Remarks: Behavioral:Ataxia. Diarrhoea

Inhalation: no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

IARC: 1 - Group 1: Carcinogenic to humans (Arsenic)

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure
no data available

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	Toxic if inhaled. May cause respiratory tract irritation.
Ingestion	Harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure
Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

Additional Information
RTECS: CG0525000

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 9,9 mg/l - 96,0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 3,8 mg/l - 48 h

12.2 Persistence and degradability
no data available

12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment
no data available

12.6 Other adverse effects
Very toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

14.1 UN number
ADR/RID: 1558 IMDG: 1558 IATA: 1558

14.2 UN proper shipping name
ADR/RID: ARSENIC
IMDG: ARSENIC
IATA: Arsenic

14.3 Transport hazard class(es)

ADR/RID: 6.1	IMDG: 6.1	IATA: 6.1

14.4 Packaging group

ADR/RID: II	IMDG: II	IATA: II

14.5 Environmental hazards

ADR/RID: yes	IMDG Marine pollutant: yes	IATA: no

14.6 Special precautions for user

no data available

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

no data available

15.2 Chemical Safety Assessment

no data available

16. OTHER INFORMATION

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME	:	Chlordane
NAME OF MANUFACTURER	:	GL Sciences Inc.
ADDRESS	:	22-1 Nishishinjuku 6-chome Shinjuku-ku Tokyo 163-1130, Japan
CHARGE SECTION	:	International Sales Section
TELEPHONE No.	:	+81-3-5323-6620
FACSIMILE No.	:	+81-3-5323-6621
PRODUCT No.	:	1021-34060
SDS No.	:	1021-34060

Research use only.

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION :

Acute toxicity - oral	: Category 4
Acute toxicity – dermal	: Category 3
Skin corrosion/irritation	: Category 2
Serious eye damage/eye irritation	: Category 2
Germ cell mutagenicity	: Category 2
Carcinogenicity	: Category 2
Reproductive toxicity-effects on or via lactation	: Category 2
Reproductive toxicity-effects on or via lactation	: effects on or via lactation
Specific target organ toxicity (single exposure)	: Category 1 <nervous system>
Specific target organ toxicity (repeated exposure)	: Category 1 <nervous system, liver, blood>
Hazardous to the aquatic environment –acute hazard	: Category 1
Hazardous to the aquatic environment –chronic hazard	: Category 1

HAZARDS SYMBOL :



SIGNAL WORD : Danger

HAZARD STATEMENT :

H302	Harmful if swallowed
H311	Toxic in contact with skin
H315	Causes skin irritation
H319	Causes serious eye irritation
H341	Suspected of causing genetic defects
H351	Suspected of causing cancer
H361	Suspected of damaging fertility or the unborn child
H362	May cause harm to breast-fed children
H370	Causes damage to organs<nervous system>
H372	Causes damage to organs throug h prolonged or repeated exposure < nervous system, liver, blood>
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENTS :

P202	Do not handle until all safety precautions have been read and understood.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.

P280	Wear protective gloves/eye protection.
P260	Do not breathing gas/mist/vapours.
P263	Avoid contact during pregnancy and while nursing.
P273	Avoid release to the environment.
P301+P312	IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
P330	Rinse mouth.
P302+P352	IF ON SKIN: Wash with plenty of water.
P312	Call a POISON CENTER or doctor if you feel unwell.
P361+P364	Take off immediately all contaminated clothing and wash it before reuse.
P332+P313	IF skin irritation occurs: Get medical advice/attention.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	IF eye irritation persists: Get medical advice/attention.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P314	Get medical attention if you feel unwell.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/container in accordance with all applicable regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL IDENTITY	:	Chlordane
SYNONYMS	:	1,2,4,5,6,7,8,8-Octachlor-2,3,3a,4,7,7a-hexahydro-4,7-metha-1H-indene
CHEMICAL FOMULA	:	$C_{10}H_6Cl_8$
CONTENT	:	> 98 %
CAS No.	:	57-74-9
TSCA INVENTRY	:	Listed
EINECS No.	:	200-349-0
EC INDEX No.	:	602-047-00-8

4. FIRST AID MEASURES

GENERAL ADVICE	:	Wash off immediately with soap and plenty of water. In the case of respirable dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit. Use personal protective equipment.
INHALATION	:	Move victim to fresh air. If breathing is difficult, give oxygen. If irritation persists, consult a physician.
SKIN CONTACT	:	Remove contaminated clothes and shoes, rinse skin with plenty of water or shower. Use soap to help assure removal. If irritation persists, consult a physician.
EYE CONTACT	:	Remove any contact lenses at once. Flush eyes well with flooding large amounts of running water for at least 15 minutes. Assure adequate flushing by separating the eyelids with sterile fingers. If irritation persists, consult a physician.
INGESTION	:	Rinse mouth. Never give anything by mouth to an unconscious person. Consult a physician immediately.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA	:	Carbon dioxide, dry chemical powder, foam, water spray
FIRE & EXPLOSION HAZARDS	:	Toxic, irritating dust, fumes or smoke may be emitted.
SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS		
	:	Fireman should wear normal protective equipment(full bunker gear) and positive-pressure self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS	:	Remove ignition sources and ventilate the area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid raising dust and avoid contact with skin and eyes.
ENVIROMENTAL PRECATIONS	:	Prevent spills from entering sewers, watercourses or low areas.
METHODS FOR CLEAN UP	:	Do not touch spilled material without suitable protection. After material is completely picked up, wash the spill site with soap and water and ventilate the area. Pull all wastes in a plastic bag for disposal and seal it tightly. Remove, clean, or dispose contaminated clothing.

7. HANDLING AND STORAGE

HANDLING	:	Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Handle material with suitable protection. After this product, dispose of contents/container in accordance with all applicable regulations and appropriate ways.
STORAGE	:	Store away from sunlight in well-ventilated place at 2 – 10℃. Keep container tightly closed.
INCOMOPATIBLE PRODUCTS	:	Bases

8. EXPOSURE CONTROL/PERSONAL PROTECTION

ENGINEERING MEASURES	:	Use exhaust ventilation to keep airborne concentrations below exposure limits. Use only with adequate ventilation.
VENTILATION	:	Local Exhaust ; Necessary, Mechanical(General) ; Recommended
PERSONAL PROTECTION		
RESPIRATORY PROTECTION	:	Use respirators approved under appropriate government standards and follow all regulations.
HAND PROTECTION	:	Chemical resistant gloves
EYE PROTECTION	:	Safety glasses(goggles)
SKIN PROTECTION	:	Protective clothing
CONTROL PARAMETERS		
OSHA	:	0.5mg/m3(skin)
NIOSH REL	:	0.5mg/m3(skin)
ACGIH	:	0.5mg/m3(skin)

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	:	White
SHAPE	:	Solid
ODOR	:	Irritating odor
pH	:	No data available
BOILING POINT	:	175℃(1mmHg)
MELTING POINT	:	106℃
FLASH POINT	:	56℃(CC)
FLAMMABILITY	:	lower:0.7% upper:5%
AUTOIGNITION TEMPERATURE	:	No data available
VAPOR PRESSURE	:	No data available
VAPOR DENCITY	:	14(Air=1)
DENCITY	:	1.60g/cm3(25℃)
SOLUBILITY IN		
WATER	:	slightly insoluble
Organic solvent	:	very soluble
DECOMPOSITION TEMPERATURE		
	:	No data available

10. STABILITY AND REACTIVITY

REACTIVITY	:	Stable under recommended storage conditions.
CHEMICAL STABILITY	:	Very toxic and corrosive gases are emitted by heating. Reacts with oxidizers, acids, bases.
CONDITION TO AVOID	:	Heat, contact with incompatible materials.
INCOMPATIBILE MATERIALS	:	Bases
HAZARDOUS DECOMPOSITION PRODUCTS		
	:	CO, CO_2, Hydrogen chloride, Chlorine, Phosgene

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY (oral)	:	Rat LD50= 83 ～ 590 mg/kg (ATSDR(1994),EHC 34(1984),IARC vol.79 (2001),JMPR 180(1970),ACGIH(2001))
ACUTE TOXICITY (dermal)	:	Rat LD50= 205～590-840mg/kg Rabbit LD50= 205～1100-1200 mg/kg (EHC 34(1984), ACGIH(2001))
SKIN CORROSION/IRRITATION	:	Human: contact with skin may cause skin irritation.(ASTDR(1994), EHC 34(1984))
EYE DAMAGE/EYE IRRITATION	:	Human: Industry worker, eye, skin, mucosa irritation.(ATSDR(1994), EHC 34(1984))

GERM CELL MUTAGENICITY	:	Mouse: Positive (EHC 34(1984),IARC 79(2001),ATSDR(1994))
CARCINOGENICITY	:	Classified at, IARC: 2B(2001), ACGIH: A3(1996)
REPRODUCTIVE TOXICITY	:	Rat: increasing the loss rate of baby, neurobehavioral consequences.(EHC 34(1984),ATSDR (1994)),IRIS(2002))
SPECIFIC TARGET ORGAN TOXICITY-single exposure		
	:	Human: appear nervous symptoms after inhalation.(IARC79(2001), EHC 34 (1984),PIMs(2000))
SPECIFIC TARGET ORGAN TOXICITY-repeated exposure		
	:	Rat, mouse, human: appear nervous symptoms, liver damage, hematological damage. (IARC 79(2001),EHC 34(1984)),IRIS(1997))
ASPIRATION TOXICITY	:	No data available

12. ECOLOGICAL INFORMATION

ECOTOXICITY	:	Crustacea (shrimp pink): LC50=0.4μg/L/96hr (EHC 34,1984)
BIODEGRADABILITY	:	BOD: 0%, BCF=13,900-27,900(3μg/L), 13,000-26,100(0.3μg/L)
BIOACCUMULATION POTENTIAL	:	log Pow=6.16
MOBILITY IN SOIL	:	No data available
OTHER ADVERSE EFFECTS	:	Not listed in Montreal Protocol list.

13. DISPOSAL INFORMATION

Dispose in a hazardous-waste site in accordance with all applicable regulations. Any disposal practice must be in compliance with country, local, state, and federal laws and regulations (contact country, local or state environment agency for specific rules).

14. TRANSPORT INFORMATION

IATA

UN NUMBER	:	UN 2761
UN PROPER SHIPPING NAME	:	Organochlorine pesticides, solid, toxic. (Chlordane)
CLASS or DIVISION	:	Toxic (Class 6.1)
PACKING GROUP	:	Ⅲ

DOT

IDENTIFICATION NUMBER	:	UN 2761
PROPER SHIPPING NAME	:	Organochlorine pesticides, solid, toxic. (Chlordane)
HAZARD CLASS	:	Toxic (Class 6.1)
MARINE POLLUTANT	:	Yes

15. REGULATORY INFORMATION

US REGULATIONS	:	Labeling according to US regulations; See section 2
EU REGURATIONS	:	Labeling according to EC Directives; See section 2

16. OTHER INFORMATION

NOTICE:

The information contained in the SDS description is applicable exclusively to the chemical substance identified herein and for its intended use as an analytical reference standard or reagent and to the unit quantity intended for that purpose. The information does not relate to, and may not be appropriate for, any application or larger quantity of the substance described. Our products are intended for the use by individuals possessing sufficient technical skill and qualification on use the material potential hazardous chemical. Accordingly, no representation or warranty, express or implied, with respect to merchantability and fitness for a particular purpose is made with respect to the information contained herein.

Attention:

This product in terms of chemical identity and the unit amount provide is intended for use in chemical analysis and not for human consumption, nor any other purpose.

SAFETY DATA SHEET

Version 6.3
Revision Date 09/14/2021
Print Date 10/03/2022

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Dieldrin

Product Number : 291218
Brand : Aldrich
Index-No. : 602-049-00-9
CAS-No. : 60-57-1

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 2), H300
Acute toxicity, Dermal (Category 1), H310
Carcinogenicity (Category 2), H351
Specific target organ toxicity - repeated exposure, Oral (Category 1), H372
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



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Signal word	Danger
Hazard statement(s)	
H300 + H310	Fatal if swallowed or in contact with skin.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure if swallowed.
H410	Very toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P262	Do not get in eyes, on skin, or on clothing.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P302 + P350 + P310	IF ON SKIN: Gently wash with plenty of soap and water. Immediately call a POISON CENTER or doctor/ physician.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	1,2,3,4,10,10-Hexachloro-1,4,4a,5,6,7,8,8a-octahydro-6,7-epoxy-1,4:5,8-dimethanonaphthalene
Formula	:	$C_{12}H_8Cl_6O$
Molecular weight	:	380.91 g/mol
CAS-No.	:	60-57-1
EC-No.	:	200-484-5
Index-No.	:	602-049-00-9

Component	Classification	Concentration
Dieldrin		
	Acute Tox. 2; Acute Tox. 1; Carc. 2; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1; H300, H310, H351, H372, H400, H410 M-Factor - Aquatic Acute: 100	<= 100 %

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	M-Factor - Aquatic Chronic: 100	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Consult a physician. Show this material safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Carbon oxides
Hydrogen chloride gas

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

No data available

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.**Advice on safe handling**

Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Advice on protection against fire and explosion

Provide appropriate exhaust ventilation at places where dust is formed.

Hygiene measures

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place.

Storage class

Storage class (TRGS 510): 6.1B: Non-combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

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Component	CAS-No.	Value	Control parameters	Basis
Dieldrin	60-57-1	TWA	0.1 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Confirmed animal carcinogen with unknown relevance to humans Danger of cutaneous absorption		
		TWA	0.25 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen Potential for dermal absorption		
		TWA	0.25 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		Skin designation		
		TWA	0.25 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		Skin notation		
		PEL	0.25 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

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If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 143 - 144 °C (289 - 291 °F)
f)	Initial boiling point and boiling range	No data available
g)	Flash point	()No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Density	No data available
	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available

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p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 38.3 mg/kg
Inhalation: No data available
Dermal: No data available
LD50 Dermal - 5 mg/kg
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

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This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.
Limited evidence of carcinogenicity in animal studies

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
Ingestion - Causes damage to organs through prolonged or repeated exposure.**Aspiration hazard**
No data available

11.2 Additional Information

RTECS: IO1750000
Discomfort, Headache, Nausea, Vomiting, Dizziness, Tremors, tonic convulsions, clonic spasms, Coma., respiratory failure, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Blood - Irregularities - Based on Human Evidence

Blood - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	mortality LC50 - Carassius auratus (goldfish) - 1.6 µg/l - 96.0 h
Toxicity to daphnia and other aquatic invertebrates	Immobilization EC50 - Daphnia magna (Water flea) - 79.5 µg/l - 48 h

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

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12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
UN number: 2811 Class: 6.1 Packing group: I
Proper shipping name: Toxic solids, organic, n.o.s. (Dieldrin)
Reportable Quantity (RQ): 1 lbs
1) Marine pollutant: yesPoison Inhalation Hazard: No

IMDG
UN number: 2811 Class: 6.1 Packing group: I EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (Dieldrin)
Marine pollutant : yes

IATA
UN number: 2811 Class: 6.1 Packing group: I
Proper shipping name: Toxic solid, organic, n.o.s. (Dieldrin)
IATA Passenger: Not permitted for transport

SECTION 15: Regulatory information

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

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SECTION 16: Other information

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 6.3 Revision Date: 09/14/2021 Print Date: 10/03/2022

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SAFETY DATA SHEET

Creation Date 20-Aug-2014 **Revision Date** 17-Jan-2018 **Revision Number** 3

1. Identification

Product Name **Mercury (Certified ACS)**

Cat No. : **M141-1LB; M141-6LB**

Synonyms Colloidal mercury; Hydrargyrum; Metallic mercury

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Corrosive to metals	Category 1
Acute Inhalation Toxicity - Vapors	Category 2
Reproductive Toxicity	Category 1B
Specific target organ toxicity - (repeated exposure)	Category 1
Target Organs - Central nervous system (CNS), Kidney.	

Label Elements

Signal Word
Danger

Hazard Statements
May be corrosive to metals
Fatal if inhaled
May damage the unborn child
Causes damage to organs through prolonged or repeated exposure



Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Do not get in eyes, on skin, or on clothing
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
Skin
Immediately call a POISON CENTER or doctor/physician
IF ON SKIN: Gently wash with plenty of soap and water
Remove/Take off immediately all contaminated clothing
Wash contaminated clothing before reuse
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Reproductive Harm - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Mercury	7439-97-6	100

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Immediate medical attention is required.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion Do not induce vomiting. Call a physician or Poison Control Center immediately.

Most important symptoms and effects No information available.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature No information available

Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Very toxic. Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Mercury oxide Highly toxic fumes
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
4	0	0	N/A

6. Accidental release measures

Personal Precautions Wear self-contained breathing apparatus and protective suit. Evacuate personnel to safe areas. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing.

Environmental Precautions Should not be released into the environment. See Section 12 for additional ecological information.

Methods for Containment and Clean Up Wear self-contained breathing apparatus and protective suit. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Use only under a chemical fume hood. Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. Do not ingest.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Mercury	TWA: 0.025 mg/m³ Skin	(Vacated) TWA: 0.05 mg/m³ Ceiling: 0.1 mg/m³ (Vacated) STEL: 0.03 mg/m³ Skin (Vacated) Ceiling: 0.1 mg/m³	IDLH: 10 mg/m³ TWA: 0.05 mg/m³ Ceiling: 0.1 mg/m³	TWA: 0.05 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Silver
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-38.87 °C / -38 °F
Boiling Point/Range	356.72 °C / 674.1 °F
Flash Point	No information available
Evaporation Rate	No information available
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	0.002 mmHg @ 25 °C
Vapor Density	7.0
Specific Gravity	13.59 (H2O=1)
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	Hg
Molecular Weight	200.59

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat.

Incompatible Materials Strong oxidizing agents, Ammonia, Metals, Halogens

Hazardous Decomposition Products Mercury oxide, Highly toxic fumes

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Mercury	7439-97-6	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects May cause harm to the unborn child.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure Central nervous system (CNS) Kidney

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

This product contains the following substance(s) which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Mercury	Not listed	0.9 mg/L LC50 96h 0.18 mg/L LC50 96h 0.16 mg/L LC50 96h 0.5 mg/L LC50 96h	Not listed	EC50: = 5.0 µg/L, 96h (water flea)

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Mercury - 7439-97-6	U151	-

14. Transport information

DOT

UN-No	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

TDG

UN-No	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IATA

UN-No	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IMDG/IMO

UN-No	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Mercury	X	X	-	231-106-7	-		X	-	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b)

Component	TSCA 12(b)
Mercury	Section 5

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Mercury	7439-97-6	100	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Mercury	-	-	X	X

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Mercury	X		-

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Mercury	1 lb	-

California Proposition 65 This product contains the following proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Mercury	7439-97-6	Developmental	-	Developmental

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Mercury	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 20-Aug-2014
Revision Date 17-Jan-2018
Print Date 17-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

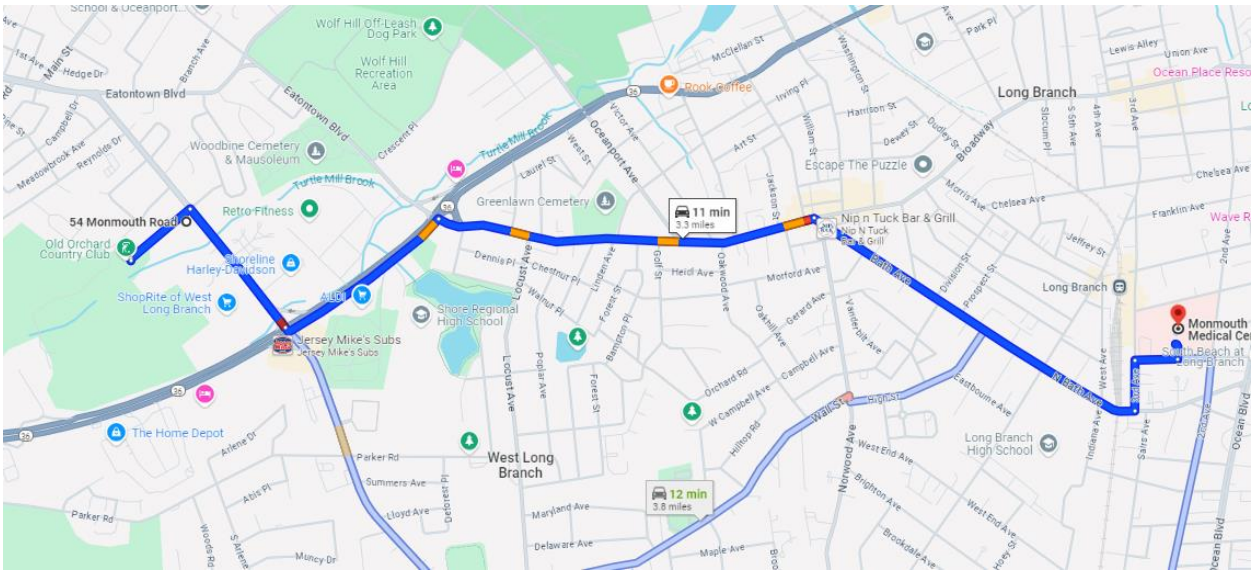
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

APPENDIX B
Hospital Route

Direction to Hospital from Site:

1.	Turn right on to Monmouth Road	0.4 mi
2.	Turn left onto NJ-36E	0.5 mi
3.	Turn right onto Broadway	1.0 mi
4.	Turn right onto Bath Avenue	1.0 mi
5.	Turn left onto 3rd Avenue	1.0 mi
6.	Turn right onto Lowden Court	0.1 mi
7.	Turn left	223 ft
8.	Destination will be on the right	



APPENDIX C

HASP Acknowledgement Form

Health & Safety Plan Acknowledgement Form

I have been informed and understand the procedures set forth in the Health & Safety Plan

Name	Signature	Company Name	Date
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
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_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Appendix D
Quality Assurance Project Plan

Quality Assurance Project Plan

Old Orchard Country Club
54 Monmouth Road
Block 2701, Lots 2, 53, 60, 66 & 69
Borough of Eatontown, Monmouth County, New Jersey
Block 68, Lot 6
Borough of West Long Branch, Monmouth County, New Jersey

Prepared for:
Surrey Equities, LLC
38 Corbett Way
Eatontown, New Jersey 07724

Prepared By:

DYNAMIC EARTH
1904 Main Street
Lake Como, New Jersey 07719

Project #: 3272-98-005EC

October 2024

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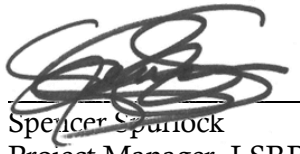
TABLE 1 Sampling and Analyses Summary

ATTACHMENTS

APPENDIX A Resumes
APPENDIX B Laboratory Certification
APPENDIX C Sample Forms
APPENDIX D Field Equipment Operation and Maintenance Manual

SIGNATURE SHEET

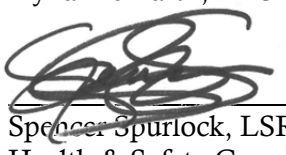
This Quality Assurance Project Plan (QAPP) has been reviewed and approved by the following Project Manager, Technical Advisor/QA Officer, and Health & Safety Coordinator:



Spencer Spurlock — October 2024
Project Manager, LSRP — Date
Dynamic Earth, LLC



Omar Mahmoud — October 2024
Technical Advisor/QA Officer — Date
Dynamic Earth, LLC



Spencer Spurlock, LSRP — October 2024
Health & Safety Coordinator — Date
Dynamic Earth, LLC

INTRODUCTION AND BACKGROUND

The following Quality Assurance Project Plan (QAPP) has been prepared by Dynamic Earth, LLC (Dynamic Earth) for the proposed Remedial Investigation (RI) and Remedial Action (RA) activities scheduled for the Old Orchard Country Club located at 54 Monmouth Road in the Boroughs of Eatontown and West Long Branch, Monmouth County, New Jersey (hereafter referred to as "the Site"). The Site is also identified as Block 2701, Lots 2, 53, 60, 66 and 69 and Block 68, Lot 6.

The RI activities will be conducted to evaluate soil impacts from golf course operations at the Site. Specifically, Dynamic Earth will evaluate pesticides in soil, groundwater, sediments and surface waters at the Site. The RA activities will excavate all areas with identified contamination and a cap will be installed on specific areas of the Site. Post excavation samples will be collected to confirm the contamination soils have been fully removed.

The purpose of this QAPP is to define Site-specific project and data quality objectives, sample design and rationale, names and contact information for project-specific personnel, a sample summary table, sampling methodologies, standard operation procedures, sample handling and transport procedures, analytical methods, measurement of performance criteria, laboratory data deliverable formats, procedures for reviewing data, implementing corrective action procedures, QA/QC procedures, and data and records management. This QAPP has been prepared in general accordance with Section 7:26E-2.2 of New Jersey Department of Environmental Protection's (NJDEP's) *Technical Requirements for Site Remediation*.

1.0 SITE DESCRIPTION

The specific tasks covered by this QAPP include:

- Collection of soil samples using pneumatic tools and hand sampling techniques;
- Logging, screening, and sampling of soils;
- Collection of sediment samples;
- Collection of surface water samples;
- Collection of post excavation soil samples.

2.0 SITE SPECIFIC PROJECT & DATA QUALITY OBJECTIVES

Samples to be collected for analyses are identified in Table 1. Sample data will be used to evaluate soil contaminant conditions relative to New Jersey Department of Environmental Protection's Soil Remediation Standards (SRS).

Data quality objectives are provided as follows:

Sample Matrix	Objective
Soil	NJDEP SRS
Sediment	NJDEP ESC
Surface Water	NJDEP ESC

3.0 SAMPLE DESIGN & RATIONALE

All sampling activities conducted during Dynamic Earth's RI activities will be collected in accordance with the techniques outlined in NJDEP's *Field Sampling Procedures Manual* (FSPM) dated August 2005 including preparation of field and trip blanks.

All sample analyses will be conducted in accordance with USEPA's *Test Methods for Evaluating Solid Waste* (SW-846), USEPA's *Handbook for Analytical Quality Control in Water and Wastewater Laboratories* (EPA 600/4-79-019) and applicable New Jersey protocols. The soil samples collected during the RI activities will be analyzed for lead, and arsenic by USEPA Method 6010; mercury by USEPA Method 7471; and pesticides by USEPA Method 8081. The sediment samples collected during RI properties will be analyzed for lead, and arsenic by USEPA Method 6010; mercury by USEPA Method 7471; pesticides by USEPA Method 8081; total organic carbon (TOC) by Lloyd Kahn analysis; oxidation reduction potential (ORP) by USEPA Method; and particle grain size by sieve analyses. The surface water samples will be analyzed for lead, and arsenic by USEPA Method 200.7; mercury by USEPA Method 245.1; pesticides by USEPA Method 608; pH by USEPA Method SM 4500-H B-00; and hardness by USEPA Method 200.7.

4.0 PROJECT SPECIFIC PERSONNEL

The following project specific personnel will be associated with the Site:

- **Project Manager:** Spencer Spurlock, LSRP
- **Technical Advisor/QA Officer:** Omar Mahmoud
- **Health & Safety Coordinator:** Spencer Spurlock, LSRP

Resumes for project specific personnel are provided in Appendix A.
The Quality Assurance Officer (QAO) is responsible for:

- Assuring senior management that the facilities, equipment, personnel, methods, records, and controls utilized by Dynamic Earth for sample collection and analysis are consistent with the project objectives;
- Ensuring that all QA/QC policies and procedures are available to and understood by project personnel;
- Approving, enforcing and overseeing field implementation of the QA/QC and Sampling Plans;
- Appointing, training, and supervising field sampling technicians;
- Enforcing sampling equipment calibration and maintenance procedures;
- Requesting corrective action by way of reports to senior management;
- Taking corrective action for any QA-related problems and communicating action in writing to senior management and/or Owner/Engineer/Government representatives;
- Sample and sample data traceability;
- Conducting or supervising system audits of laboratory and field sampling activities;
- Examining data books, calibration of field records, forms, and other hard copy data;
- Documenting any deviation from established sampling protocol
- Interfacing with the analytical laboratory to make requests and resolve problems;
- Interfacing with the data validator and developing project-specific data usability reports;
- Reporting audit findings to senior management and the Department's representative; and
- Final data review.

The QAO will be assisted, as necessary, by qualified field sampling technicians.

4.1 Analytical Laboratories

Samples will be sent to the following laboratories for analyses:

Pace Analytical
1275 Bloomfield Avenue, Suite 37D
Fairfield, NJ 07004

Contact: Paul Maide
Phone: 973-227-0422
e-Mail: Paul.Maide @pacelabs.com

The identified laboratories are New Jersey-certified and copies of the laboratory certifications are provided in Appendix B. The Laboratory's QA/QC Plan is on file at Dynamic Earth's and the Laboratory's offices and is available for review upon request.

5.0 SAMPLING SUMMARY PROTOCOL

A sample summary table is provided as Table 1. The location and description of all sampling activities will be recorded prior to laboratory submission. Samples will be individually tagged with unique identifiers including a sample identification number, date, time, and location of the sample; designation of the sample as a grab or composite; and the type of sample for preservation.

Samples will be individually labeled with regard to sample matrix and number as follows:

1. **Sample Matrix.** A letter will be used to denote the sample matrix. The sample matrix codes to be used for this project are as follows.

Sample Type	Codes
Soil Sample	S-#
Sediment Sample	SED-#
Surface Water Sample	SW-#

2. **Sample Number Identification.** Samples will be numbered sequentially according to the soil boring identification number.

6.0 SAMPLING METHODOLIGIES & STANDARD OPERATING PROCEDURES

6.1 Sample Collection/Equipment – Soil Samples

Equipment required for the collection of soil samples consists of:

- Disposable nitrile gloves,
- Appropriate sampling device (see Table 1),
- Appropriate sample containers, labels, and seals,
- Chains-of-custody, and
- Appropriate personal safety equipment.

Soil samples will be collected as follows.

- Record area to be sampled for reference.
- Use a new pair of disposable nitrile gloves.
- Collect sample as described in Table 1.
- Transfer soil samples that will be analyzed for VOCs directly from the sampler to approved containers. As necessary, homogenize soil samples for all other analyses in a stainless steel bowl prior to placement in approved sample containers.
- Cap the sample container, attach the label and custody seal, record all pertinent data in the field log book, and complete the sampling analysis request form and chain-of-custody record

before taking the next sample.
- Preserve and/or place on ice as required.
- Deliver sample to the Laboratory for analysis within 24 hours of the day of collection.

The sampling device must be decontaminated between sampling events (see Section 6.7).

6.2 Sample Collection/Equipment – Sediment Samples

Equipment required for the collection of sediment samples consists of:
- Disposable nitrile gloves,
- Appropriate sampling device (see Table 1),
- Appropriate sample containers, labels, and seals,
- Chains-of-custody, and
- Appropriate personal safety equipment.

Sediment samples will be collected as follows.
- Record area to be sampled for reference.
- Use a new pair of disposable nitrile gloves.
- Collect sample as described in Table 1.
- Transfer sediment samples that will be analyzed for VOCs directly from the sampler to approved containers. As necessary, homogenize soil samples for all other analyses in a stainless steel bowl prior to placement in approved sample containers.
- Cap the sample container, attach the label and custody seal, record all pertinent data in the field log book, and complete the sampling analysis request form and chain-of-custody record before taking the next sample.
- Preserve and/or place on ice as required.
- Deliver sample to the Laboratory for analysis within 24 hours of the day of collection.

The sampling device must be decontaminated between sampling events (see Section 6.7).

6.2 Sample Collection/Equipment – Aqueous Samples

Equipment required for the collection of surface water samples consists of:
- Disposable nitrile gloves,
- Appropriate sampling device (see Table 1),
- Appropriate sample containers, labels, and seals,
- Chains-of-custody, and
- Appropriate personal safety equipment.

Surface water samples will be collected as follows.
- Record area to be sampled for reference.
- Use a new pair of disposable nitrile gloves.

- Collect sample as described in Table 1.
- Transfer surface water samples directly from the sampler to approved containers.
- Cap the sample container, attach the label and custody seal, record all pertinent data in the field log book, and complete the sampling analysis request form and chain-of-custody record before taking the next sample.
- Preserve and/or place on ice as required.
- Deliver sample to the Laboratory for analysis within 24 hours of the day of collection.

The sampling device must be decontaminated between sampling events (see Section 6.7).

6.3 Sample Handling

Protocol for container preparation and cleaning; containerization; preservation; handling; and sampling equipment decontamination is presented below:

6.4 Container Preparation & Cleaning Procedures

All sample bottles and containers will be supplied and precleaned by the Subcontract Laboratory in accordance with USEPA and applicable NJDEP requirements. Samples bottles will be shipped from the Subcontract Laboratory to the field under custody procedures.

6.5 Containerization

Individual samples will be transferred from the field collection equipment/containers to the appropriate precleaned bottles and containers (see Table 1) for shipment to the laboratory. Filled sample containers will be marked with a permanent marker to indicate the level of material in the container. After collection, all sample containers will be placed in shipping containers.

6.6 Preservation & Holding Times

Sample preservation techniques and holding times will be as stated in Table 1.

6.7 Sampling Equipment Decontamination

All non-disposable tools which come into contact with the sample material will be decontaminated after each sampling event and before demobilization from the project site. All sampling equipment will be steam cleaned or decontaminated in the following manner:

- Wash and scrub with low phosphate detergent (Alconox or equivalent).
- Tap water rinse.
- Repeat.
- Air Dry.

Wastewater runoff will be collected and stored pending proper off-site disposal. Any major equipment (e.g., drill rigs) used in support of sampling efforts will be decontaminated between sampling events.

7.0 FIELD DOCUMENTATION PROCEDURES

After collection and identification, the samples will be maintained under the chain-of-custody procedures outlined below.
Each person involved with the samples must understand these procedures. Samples in one's possession must be traceable from the time of collection through ultimate disposition. To maintain and document sample possession, these chain-of-custody procedures must be followed.

A sample is under custody if:

- It is in your actual possession;
- It is in your view after being in your physical possession;
- It was in your physical possession and you locked it up to prevent tampering; or
- It is in your designated and secure area.

The QA Officer (or his designated representative) will be responsible for monitoring all chain-of-custody activities and for collecting legally admissible copies of chain-of-custody documentation for the permanent project file. The QA Officer (or his designated representative) will:

- Conduct an initial review of sample labels or tags, closure tapes, and chain-of-custody record and sample split forms provided by the laboratory. The QA Officer (or his designated representative) will document this review for the project file.
- Review methodologies to be used for accomplishing chain-of-custody and ensure all chain-of-custody forms and record documents are properly completed.
- Monitor implementation of chain-of-custody procedures.

7.1 Preparation

The laboratory, with guidance or direction from the QA Officer (or his designated representative), will prepare labels or tags for pre-cleaned sample containers (i.e., jars, bottles, vials) prior to the transfer of these containers to the field. Labels will be made of materials which will adhere to glass containers even when wet. Tags will be designed to attach to vials or any other small container to which a label

cannot easily be attached. Labels and tags (hereinafter referred to as labels) should provide space for the following information:

- Collector's name or initials,
- Sample number,
- Sampling location,
- Sampling depth (if applicable),
- Date of sampling, and
- Time of sampling.

Labels also should provide space for remarks regarding sample preservation and analyses to be performed, should samples be separated into portions in the field for different chemical analyses. Under certain circumstances, some of the information listed above may be omitted from sample labels for purposes of confidentiality. Omitted information must nevertheless be recorded in field sampler's logbooks.

The QA Officer (or his designated representative) will fill out all portions of sample labels when or if possible, prior to the time samples are taken. At the time of sampling, the QA Officer (or his designated representative) will record sample information in the logbooks and on the chain-of-custody form, noting on each any difficulties encountered during sampling. All label, logbook, and chain-of-custody form entries will be made in waterproof ink. The sample information recorded in the logbooks should be at least as detailed as that recorded on labels, and should indicate sample matrix (i.e., soil, water), preservation techniques, and sampling location in sufficient detail to allow resampling at the same location.

After containers are filled, the QA Officer (or his designated representative) will place the sample labels on the containers, and will put the filled containers in cartons or ice chests. The QA Officer (or his designated representative) will maintain custody of all samples until they can be transferred to the off-site laboratory.

Prior to the transfer of samples from the field to the laboratory, the QA Officer (or his designated representative) will check samples and forms for correspondence, documenting any discrepancies in the custody logbook. The QA Officer (or his designated representative) also will prepare the samples for transport by ensuring that the potential damage to sample containers via leakage or breakage and closure tapes is minimized.

7.2 Records

Sampling logbooks, the custody logbook, all chain-of-custody records, all sample split receipts, all laboratory project specific logbooks, and any other notes or records prepared by the field custodian, transporters, or laboratory personnel will become part of the project file.

8.0 FIELD INSTRUMENTATION

Dynamic Earth will utilize a MiniRae photoionization detector (PID) during the RI activities. The manufacturer proper use, calibration instructions, and data recording instructions for this unit is included as Attachment D (*Field Equipment Operation and Maintenance Manuals*).

9.0 FIELD INSTRUMENT OPERATING PROCEDURES

Where appropriate, sampling equipment will be calibrated in the manner and at the intervals specified by the manufacturer and/or NJDEP (or more frequently as field conditions dictate). A record of the instrument calibration will be maintained by the QA Officer (or his designated representative). These records will be subject to audit by management.

The manufacturer proper use, calibration instructions, and data recording instructions for this unit is included as Appendix D.

9.1 Preventative Maintenance

Preventative maintenance procedures for field equipment and laboratory instruments are discussed in the following subsections.

9.2 Field Equipment

Equipment, instruments, tools, gauges, and other items requiring preventative maintenance will be serviced in accordance with manufacturer's specified recommendations and written procedures developed by the operators.

Preventative maintenance for all equipment includes inspection before use, necessary cleaning during use, and thorough cleaning and inspection after use. Rechargeable batteries will be checked before use and recharged after use. Equipment using disposable batteries will have replacement batteries stocked at all times. Equipment failures will be repaired in the field, if possible, or returned to the manufacturer.

9.3 Schedule

Manufacturer's procedures identify the schedule for servicing critical items in order to minimize downtime of the measurement system. It will be the responsibility of the operator to adhere to this maintenance schedule and to arrange any necessary and prompt services as required. Service to the equipment, instruments, tools, gauges, etc. will be performed by qualified personnel.

In the absence of any manufacturer's recommended maintenance criteria, a maintenance procedure will be developed by the operator based upon experience and previous use of the equipment.

9.4 Records

Logs will be established to record maintenance and service procedures and schedules. Preventative maintenance procedures and service logs will be filed in the Dynamic Earth's field office. These records will be included in the final evidence file. All maintenance records will be documented and traceable to the specific equipment, instruments, tools, and gauges.

Records produced for laboratory instruments will be reviewed, maintained, and filed by the operators at the laboratories and by field personnel for equipment, instruments, tools, and gauges which are used at the site. The QA Officer (or his designated representative) will audit these records to verify complete adherence to these procedures.

9.5 Spare Parts

A list of critical spare parts will be requested from the manufacturer and identified by the operator. These spare parts will be stored for availability and use in order to reduce equipment downtime.

9.6 Laboratory Instruments

Laboratory instrument maintenance will be conducted as discussed in the Subcontract Laboratory's QA/QC Manual.

9.7 Calibration Procedures and Frequencies

Instruments and equipment used to gather, generate, or measure environmental data will be calibrated with sufficient frequency and in such a manner that accuracy and reproducibility of results are consistent with the manufacturer's specifications.

10.0 SAMPLE HANDLING & CHAIN OF CUSTODY PROCEDURES

The collected sample and its container represent a potential pathway of personnel and environmental exposure. Precautions will be taken to ensure that all the samples removed from the site are within the sample container and that no residue is on the outside of the container.

The procedure for handling samples will be as follows:

- Identify and document sample collection points.
- Complete logbook entries, sample labels, and any field record sheets with sample identification point, date, time, and names or initials of all persons handling the sample in the field.
- Place identification labels on sample containers.
- Avoid contact with the lid of the jar when filling.
- Provide sample preservation when required.
- Secure the lid on each sample.
- Carry sealed sample containers to the packaging area.
- Clean the outer surface of glass as necessary.
- Securely close the lid to the sample container; and attach properly designated label.
- Carefully pack samples for off-site analyses in coolers/packages. Custody-seal the shipping package.
- Ship to the laboratory as appropriate.

A designated laboratory custodian will receive the samples at the laboratory. Both the laboratory custodian and the transporter will sign and date the chain-of-custody forms. It will be the responsibility of the QC Supervisor (or his designated representative) to collect all chain-of-custody forms (or photocopies or microfilms of the forms) retained by transporters for inclusion in the permanent project file. The laboratory will destroy copies of the chain-of-custody forms only with the written permission of Dynamic Earth's project manager.

Upon receipt, the laboratory custodian will examine sample containers for breakage and/or broken closure tapes. The custodian will document any findings in a project-specific logbook and on the relevant chain-of-custody forms. The laboratory custodian also will verify that the information on the sample labels matches that on the forms. Again, any discrepancies will be noted on the chain-of-custody form and verbally reported to Dynamic Earth's QA Officer (or his/her designated representative) as soon as possible within the next 24 hours.

10.1 Chain of Custody Form

A sample chain-of custody form is provided in Appendix C.

11.0 FIELD STORAGE & TRANSPORT PROCEDURES

The QA Officer (or his designated representative) or other designated individual will arrange transport of the samples to the laboratory following applicable regulatory procedures and regulations within the time frame specified in the Subcontract Laboratory's QA/QC Plan. Samples will be packaged in approved shipping containers (coolers) capable of maintaining the 4° C preservation and will be shipped from the site to the laboratory. Samples will be received by the laboratory within 24 hours of collection.

12.0 SAMPLE CONTAINER/PRESERVATION/HOLDING TIME TABLE

Sample container/preservation/holding time requirements are provided in Table 1.

13.0 ANALYTICAL METHODS

Analytical method requirements are provided in Table 1.

All sample analyses will be conducted in accordance with USEPA's *Test Methods for Evaluating Solid Waste* (SW-846), USEPA's *Handbook for Analytical Quality Control in Water and Wastewater Laboratories* (EPA 600/4-79-019) and applicable New Jersey protocols. The soil samples collected during the RI activities will be analyzed for lead, and arsenic by USEPA Method 6010; mercury by USEPA Method 7471; and pesticides by USEPA Method 8081. The sediment samples collected during RI properties will be analyzed for lead, and arsenic by USEPA Method 6010; mercury by USEPA Method 7471; pesticides by USEPA Method 8081; total organic carbon (TOC) by Lloyd Kahn analysis; oxidation reduction potential (ORP) by USEPA Method; and particle grain size by sieve analyses. The surface water samples will be analyzed for lead, and arsenic by USEPA Method 200.7; mercury by USEPA Method 245.1; pesticides by USEPA Method 608; pH by USEPA Method SM 4500-H B-00; and hardness by USEPA Method 200.7.

14.0 PROJECT COMPOUNDS SUMMARY

A project compounds summary is provided in Table 1.

15.0 MEASUREMENT PERFORMANCE CRITERIA & QUALITY CONTROL SAMPLES

Quantitative (accuracy, precision, completeness, detection limits) and qualitative (representativeness and comparability) QA objectives will be as specified in USEPA SW-846, Current Edition.

The case narrative accompanying each laboratory report will summarize any QA/QC indicators outside the acceptance windows specified for the particular matrix. These summaries will be reviewed by the QA Officer to determine final disposition of the samples.

If all QC criteria are met, the corresponding results will be used as reported. Laboratory results which are not within acceptable QC ranges may be resampled and reanalyzed depending on the specific deficiency.

16.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS FOR ANALYSES

QA/QC samples will be collected by matrix at the frequency required by NJDEP's *Technical Requirements for Site Remediation*.

All analytical data will be reviewed to assess the quality of the analytical data. Where all criteria are met, data are deemed acceptable without qualification. Where precision and accuracy goals are not met, the sample set shall be analyzed or reported with qualification in the case narrative. Some of the factors affecting this final sample disposition include:

- Project-specific QA/QC requirements,
- Availability of sufficient sample for re-analysis,
- Holding time considerations, and
- Regulatory action limits.

Laboratory Responsibilities. The Subcontract Laboratory will validate analytical data in accordance with its QA/QC Plan.

Dynamic Earth Responsibilities. The QA Officer or approved designee will review the laboratory data upon receipt, and indicate the meaning, extent, and effect of any laboratory-applied qualifiers, dilutions, reporting limits in excess of cleanup goals, or previously established limits; and any other issues affecting the usability of the data for its intended purpose. This review will be conducted in "real time", that is, this will be performed prior to or concurrently with Dynamic Earth's submission of laboratory data to the Owner's Representative and/or involved regulatory agencies.

16.1 Analytical Data Reporting

The laboratory will supply a hard copy of the analytical results, including applicable QA/QC results within the holding (turn-around) time of the sample (see Table 1). The holding time of the sample will be based on the number of days (or hours) from the verified time of sample receipt.

17.0 LABORATORY DATA DELIVERABLE FORMATS TO BE USED

Data reduction is performed by individual analysts within the Subcontract Laboratory and consists of calculating concentrations in samples from the raw data obtained from the measuring instruments. The complexity of the data reduction will be dependent on the specific analytical method used and the number of discrete operations (extractions, dilutions, and concentrations) involved in obtaining a sample that can be measured.

For those methods utilizing a calibration curve, sample response will be applied to the linear regression line to obtain an initial raw result which then is factored into equations to obtain the estimate of the concentration in the original sample. Rounding will not be performed until after the final result is obtained to minimize rounding errors. Results normally will not be expressed in more than two significant figures.

Copies of all raw data and calculations used to generate the final results will be retained on file to allow reconstruction of the data reduction process at a later date.

18.0 VERIFICATION & USABILITY PROCEDURES

The objectives for data usability are:

- To demonstrate traceability of standards to USEPA sources;
- To use standard methodology;
- To report results from similar matrices in consistent units; and
- To apply appropriate levels of quality control within the context of Subcontract Laboratory's QA/QC Manual.

19.0 CORRECTIVE ACTIONS

When a significant condition adverse to quality is noted at the project site or the laboratory, the cause of the condition will be determined and corrective action taken to preclude repetition. Condition identification, cause, reference documents, and corrective action planned to be taken will be documented and reported to the project manager, QAO, and involved subcontractor management. Implementation of corrective action will be verified by documented follow-up action. All project personnel have the responsibility, as part of their normal work duties, to promptly identify, solicit approved correction, and report conditions adverse to quality.
Corrective actions shall be initiated as a minimum:

- When predetermined acceptance standards are not attained (objectives for precision, accuracy, and completeness);

- When procedures or data compiled are determined to be faulty;
- When equipment or instrumentation is found faulty;
- When samples and test results cannot be traced with certainty;
- When QA requirements have been violated;
- When designated approvals have been circumvented;
- As a result of system and performance audits;
- As a result of a management assessment; or
- As a result of laboratory/inter-laboratory comparison studies.

Proposed corrective actions will be provided to project management and the Owner/Engineer/Department.

19.1 Field Corrective Action Procedures

Project management and staff including the QAO, field sampling technicians, safety personnel, and document control personnel will monitor ongoing work performance in the normal course of daily responsibilities.

Project Management will audit work at the site. Items, activities, or documents ascertained to be in noncompliance with Contract requirements will be documented and corrective actions mandated through the audit report. Corrective actions will be logged, maintained, and controlled by the Project Manager.

Following identification of an adverse condition or QA problem, notification of the deficiency will be made to the Owner/Engineer/Department and the senior individual in charge of the activity found to be deficient along with recommendations for correction. A record of this notification will be attached to the audit report. Following implementation of corrective action, the senior individual in charge will report actions taken and results to the Project Manager. The Project Manager will notify the Owner/Engineer/Department when conditions adverse to quality have been corrected. A record of action taken and results also will be attached to the audit report. The original corrective action/response and audit findings/response will be maintained in the Project Final Evidence File. Copies also will be submitted to the Owner/Engineer/Department to insure timely notification.

20.0 LABORATORY QA/QC PROCEDURES

QA non-compliance situations and QC indicators will be handled as detailed in the Subcontract Laboratory's QA/QC Manual. The case narrative accompanying each laboratory report shall summarize any QA/QC indicators outside the acceptance windows specified for the particular matrix. These summaries will be reviewed by the QAO to determine final disposition of the samples. If all QC criteria are met, the corresponding results will be used as reported. Laboratory results that are not within acceptable QC ranges will be resampled and reanalyzed.

TABLE 1
Sampling, Analyses, Container, Preservation, Hold Time Summary

Matrix Type	Location, # of samples, frequency	Analytical Parameters	Analytical Method	Container Requirements	Sample Preservation	Holding Times	Turn Around Time
Soil	To Be Determined	Lead, Arsenic, Mercury, Pesticides	6020, 7471A, 8081	8oz. Jars	None	6 Months, 14 Days	7 Days
Sediments	To Be Determined	Lead, Arsenic, Mercury, Pesticides, TOC, ORP, Particle Grain Size	6020, 7471A, 8081, SM531B, Sieve Analyses	16 oz. Jars	None	6 Months, 14 Days	7 Days
Surface Water	To Be Determined	Arsenic, Lead, Mercury, Pesticides, pH, Hardness	200.7, 245.1, 608, SM4500-H B-00,	100ml plastic bottle, 1 liter glass bottle, 25 ml plastic bottle, 200ml glass bottle	HNO_3	6 Months, 15 Minutes	7 Days

APPENDIX A
Resumes

Omar Mahmoud

Environmental Scientist



Mr. Mahmoud has three years of experience in environmental investigation, research, and document compilation, and is well versed in the historical and regulatory requirements of the ASTM E1527 and ASTM E1528 Standards for real estate transactions.

Omar is experienced in the coordination and performance of environmental due diligence investigations including Phase I Environmental Site Assessments (ESAs); Phase II Site Investigations; Preliminary Assessments; wetlands investigation, delineation, and permitting.

Mr. Mahmoud has coordinated and performed hundreds of environmental due diligence projects for industrial and manufacturing companies, engineers, realtors, attorneys, and public agencies.

Education:

- B.S., Environmental Sustainability, William Patterson University, 2018

Certificates/Special Training:

- 40-Hour OSHA Hazardous Waste Operations Training
- 10-Hour OSHA Construction Certification
- Transportation Worker Identification Credential (TWIC)

Areas of Expertise:

- Environmental Regulatory Compliance
- NJDEP Regulatory Programs and Reporting
- Preliminary Assessments and Remedial Investigations
- Phase I Environmental Site Assessments
- Phase II Site Investigations
- UST Removal / Closure
- Remedial Action Design and Implementation
- Environmental Document Reviews
- Data Collection and Assessment
- Permitting
- Report Generation and Proposal Compilation

Employment History:

Performing due diligence investigations (Phase I ESAs, Phase II Site Investigations, and Remedial Investigations for retail, commercial, industrial, and municipal properties throughout New Jersey.

Conducting PA/SI, RI and RA activities at properties throughout New Jersey Site Characterization Reports, and Final Remedial Investigation and Remedial Action Completion Reports.

Consulting with clients throughout the due diligence/remediation processes to effectively and efficiently reach their redevelopment/cleanup goals.

Supervising Geoprobe sampling programs to facilitate soil and groundwater sampling and analyses at commercial, industrial, municipal, and proposed residential sites.

Successfully managed numerous projects in New Jersey in support of regulatory closure under the Statewide Health Standard.

Successfully managed multiple industrial site programs in Carteret, Perth Amboy, and Bayonne, New Jersey including the installation of total fluids pumping systems and LNAPL skimming systems which yielded over twenty-thousand gallons of product removed from groundwater.

Oversaw and managed removal and regulatory closure of multiple USTs at a proposed commercial property in New Jersey. Remedial activities included removal of impacted soil and confirmatory soil sampling, following by completion of a Final Report for the project.

- 2021 – Present – Dynamic Earth, LLC – Environmental Scientist
- 2021 – 2021 – Groundwater and Environmental Services, Inc. – Environmental Scientist
- 2020 – 2021 – New Jersey Department of Labor – Environmental Specialist
- 2020 – 2020 – Greenstart Environmental Solutions LLC – Project Geologist
- 2018 – 2019 – Whitestone Associates, Inc. – Environmental Scientist

Spencer Spurlock

Principal
Environmental Specialist



Spencer Spurlock is a Licensed Site Remediation Professional (#585413) with over 17 years of consulting experience in environmental site assessments, site evaluations, remedial design, remediation services, regulatory compliance, environmental funding, waste management, surveys, and environmental management. Mr. Spurlock joined Dynamic Earth in October 2013.

Experience Summary:

Mr. Spurlock is a Licensed Site Remediation Professional (LSRP) in the State of New Jersey. He has applied his expertise to projects ranging from industrial and manufacturing companies, banks, engineering and environmental consulting firms, realtors, attorneys, major oil companies, national retail and restaurant chains, developers, emergency response contractors, residential consultation and environmental groups in addition Mr. Spurlock has consulted with a variety of public entities including local municipalities, County Freeholders, and State emergency response and management groups.

Education:

- B.A., Franklin & Marshall College, 2003

Certificates/Licenses:

- New Jersey Licensed Site Remediation Professional (LSRP #585413)
- 40-Hour OSHA Hazardous Waste Operations Training
- NJDEP Certified: Subsurface Evaluator
- NJDEP Unregulated Heating Oil Tank Certified

Professional Affiliations:

- Geological Society of America
- New Jersey Licensed Site Remediation Professional Association

Employment History:

Designated as Field Manager for remediation activities associated with the redevelopment of a portion of the city of East Orange into Cicely Tyson School for the Performing Arts. Tasks included underground storage tank closures, monitoring well installations, and soil and groundwater delineation and remediation. Prepared all reports associated with the fieldwork submitted to the NJDEP.

Served as Project Manager and LSRP of Record for a Preliminary Assessment (PA) of an ISRA applicable industrial establishment due to anticipated ISRA trigger of cessation of operations. Designed and implemented a Site Investigation of the property based on the findings of the PA. Identified the presence of petroleum impacts on property line likely due to off-site source.

Completed a Preliminary Assessment (PA) of a former farmstead property and redevelopment into a national chain owned commercial/retail establishment. Designed and implemented a Site Investigation, Remedial Investigation, and Remedial Action of the property and ultimate issuance of Response Action Outcome (RAO). Identified the presence of petroleum impacts in septic system and historically applied pesticide impacts that were able to be remediated via compliance.

Served as a Project Manager and LSRP of Record for due diligence investigations (Phase I ESA and Phase II SI) of a former automobile dealership property and redevelopment into a national chain owned retail and gasoline sales establishment. Designed and implemented a Site Investigation and Remedial Investigation ultimate issuance of Response Action Outcome (RAO). Established the Site as a class III-A groundwater aquitard due to encountered geologic conditions and soil characteristics.

Designed and provided project oversight of removal of a 10,000-gallon underground storage tank and installation of new state-of-the-art fiberglass reinforced plastic underground storage tank system at Monmouth University.

- 2022 – Present – Dynamic Earth, LLC - Principal
- 2013 – 2022 – Dynamic Earth, LLC – Senior Project Manager
- 2013 – 2013 – Whitman Inc. – Project Manager
- 2003 – 2013 – Birdsall Services Group, Inc. – Project Manager

APPENDIX B
Laboratory Certifications

State of New Jersey

Department of Environmental Protection

Certifies That

PACE ANALYTICAL SERVICES, LLC-FAIRFIELD

Laboratory Certification ID # 07010

is hereby approved as a

Nationally Accredited Environmental Laboratory

to perform the analyses as indicated on the Annual Certified Parameter List which must accompany this certificate to be valid

having duly met the requirements of the

Regulations Governing the Certification of Laboratories and Environmental Measurements N.J.A.C. 7:18 et. seq.

and

having been found compliant with the 2016 TNI Standard approved by the

The NELAC Institute

Expires June 30, 2025

NELAP RECOGNIZED TNI ACCREDITATION BODY

Michele M. Potter
Manager

NJDEP is a NELAP Recognized Accreditation Body

This certificate is to be conspicuously displayed at the laboratory with the annual certified parameter list in a location on the premises visible to the public. Consumers are urged to verify the laboratory's current accreditation status with the State of NJ, NELAP.

New Jersey Department of Environment Protection
Environmental Laboratory Certification Program

Annual Certified Parameter List and Current Status

Effective as of 12/09/2024 until 6/30/2025

Laboratory Name: PACE ANALYTICAL SERVICES, LLC-FAIRFIELD Laboratory Number: 07010 Activity ID: NLC 240010
1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: DW01 --Microbiology

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	DW01.00350	Heterotrophic bacteria	Pour Plate	SM 9215 B	NJ
Certified	Yes	DW01.00500	Total coliform / E. coli	ONPG-MUG (Colilert/Colilert-18) (P-A)	SM 9223 B	NJ
Certified	Yes	DW01.00550	Total coliform / E. coli	ONPG-MUG (Colilert/Colilert-18), Enumeration	SM 9223 B, Multi-well Procedure	NJ
Certified	Yes	DW01.01250	Total coliform / E. coli	Membrane Filter (MF) Technique (P-A)	SM 9222 B plus 9221 F	NJ

Category: DW03 --Inorganic Parameters

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	DW03.00050	Alkalinity	Electrometric Titration	SM 2320 B	NJ
Certified	Yes	DW03.01800	Chloride	Ion Chromatography	EPA 300.0	NJ
Certified	Yes	DW03.02550	Color	Platinum-Cobalt	SM 2120 B	NJ
Certified	Yes	DW03.02700	Conductivity	Conductance	SM 2510 B	NJ
Certified	Yes	DW03.03050	Cyanide	Spectrophotometric, Distill, Manual	SM 4500-CN C, E	NJ
Certified	Yes	DW03.03350	Dissolved organic carbon (DOC)	Persulfate-UV, Filtration	SM 5310 C	NJ
Certified	Yes	DW03.03750	Fluoride	Ion Chromatography	EPA 300.0	NJ
Certified	Yes	DW03.03950	Foaming agents	Methylene Blue	SM 5540 C	NJ
Certified	Yes	DW03.04350	Nitrate	Automated Cadmium Reduction	SM 4500-NO3 F	NJ
Certified	Yes	DW03.04600	Nitrate	Ion Chromatography	EPA 300.0	NJ
Certified	Yes	DW03.05350	Nitrite	Auto, Bypass Cadmium Reduction	SM 4500-NO3 F	NJ
Certified	Yes	DW03.05450	Nitrite	Ion Chromatography	EPA 300.0	NJ
Certified	Yes	DW03.05850	Odor	Consistent Series	SM 2150 B	NJ
Certified	Yes	DW03.05950	Orthophosphate	Colorimetric	SM 4500-P E	NJ
Certified	Yes	DW03.06900	Sulfate	Ion Chromatography	EPA 300.0	NJ
Certified	Yes	DW03.07150	Total dissolved solids (TDS)	Gravimetric At 180	SM 2540 C	NJ
Certified	Yes	DW03.07550	Total organic carbon (TOC)	Persulfate-UV	SM 5310 C	NJ

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FAIRFIELD NJ 07004

Category: DW03 --Inorganic Parameters

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	DW03.07800	Turbidity	Nephelometric	EPA 180.1	NJ

Category: DW04 --Analyze Immed, Cont Monitor and/or PWTA

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	DW04.00300	Chlorine - total, free or combined	DPD, Colorimetric	SM 4500-Cl G	NJ
Certified	Yes	DW04.01050	pH	Electrometric	SM 4500-H B	NJ
Certified	Yes	DW04.01200	Temperature	Thermometric	SM 2550 B	NJ

Category: DW06 --Metals

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	DW06.01500	Mercury	Manual Cold Vapor	EPA 245.1	NJ

Category: DW07 --Metals - ICP, ICP/MS and DCP

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	DW07.00950	Aluminum	ICP	EPA 200.7	NJ
Certified	Yes	DW07.01200	Calcium	ICP	EPA 200.7	NJ
Certified	Yes	DW07.01350	Copper	ICP	EPA 200.7	NJ
Certified	Yes	DW07.01400	Iron	ICP	EPA 200.7	NJ
Certified	Yes	DW07.01500	Magnesium	ICP	EPA 200.7	NJ

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1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: DW07 --Metals - ICP, ICP/MS and DCP

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	DW07.01550	Manganese	ICP	EPA 200.7	NJ
Certified	Yes	DW07.01650	Nickel	ICP	EPA 200.7	NJ
Certified	Yes	DW07.01800	Silver	ICP	EPA 200.7	NJ
Certified	Yes	DW07.01850	Sodium	ICP	EPA 200.7	NJ
Certified	Yes	DW07.02100	Zinc	ICP	EPA 200.7	NJ
Certified	Yes	DW07.02150	Aluminum	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.02200	Antimony	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.02250	Arsenic	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.02300	Barium	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.02350	Beryllium	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.02400	Cadmium	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.02450	Chromium	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.02550	Copper	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.02600	Lead	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.02650	Manganese	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.02800	Nickel	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.02850	Selenium	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.02900	Silver	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.02950	Thallium	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.03000	Uranium	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.03100	Zinc	ICP/MS	EPA 200.8	NJ
Certified	Yes	DW07.03200	Total hardness	Hardness By Calculation, ICP	SM 2340 B	NJ

Category: DW08 --Organic Parameters - Chromatography

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State

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1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: DW08 --Organic Parameters - Chromatography

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	DW08.17550	Bromochloroacetic acid	Liquid/Liquid Extraction/GC	EPA 552.2	NJ
Certified	Yes	DW08.17750	Dibromoacetic acid	Liquid/Liquid Extraction/GC	EPA 552.2	NJ
Certified	Yes	DW08.17800	Dichloroacetic acid	Liquid/Liquid Extraction/GC	EPA 552.2	NJ
Certified	Yes	DW08.17850	Monobromoacetic acid (MBAA)	Liquid/Liquid Extraction/GC	EPA 552.2	NJ
Certified	Yes	DW08.17900	Monochloroacetic acid (MCAA)	Liquid/Liquid Extraction/GC	EPA 552.2	NJ
Certified	Yes	DW08.18000	Trichloroacetic acid	Liquid/Liquid Extraction/GC	EPA 552.2	NJ

Category: DW09 --Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Applied	No	DW09.11400	Dioxane (1,4-)	SPE, GC/MS/SIM	EPA 522	NJ
Certified	Yes	DW09.11450	Acetone	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.11500	Acrylonitrile	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.11550	Allyl chloride	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.11600	Benzene	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.11650	Bromobenzene	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.11700	Bromochloromethane	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.11750	Bromodichloromethane	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.11800	Bromoform	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.11850	Bromomethane	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.11900	Butanone (2-) (Methyl ethyl ketone)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.11950	Butylbenzene (n-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12000	Carbon disulfide	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12050	Carbon tetrachloride	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12100	Chloroacetonitrile	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12150	Chlorobenzene	GC/MS, P & T	EPA 524.2	NJ

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1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: DW09 --Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	DW09.12200	Chlorobutane (1-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12250	Chloroethane	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12300	Chloroform	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12350	Chloromethane	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12400	Chlorotoluene (2-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12450	Chlorotoluene (4-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12500	Dibromo-3-chloropropane (1,2-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12550	Dibromochloromethane	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12600	Dibromoethane (1,2-) (EDB)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12650	Dibromomethane	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12700	Dichloro-2-butene (trans-1,4-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12750	Dichlorobenzene (1,2-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12800	Dichlorobenzene (1,3-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12850	Dichlorobenzene (1,4-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12900	Dichlorodifluoromethane	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.12950	Dichloroethane (1,1-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13000	Dichloroethane (1,2-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13050	Dichloroethene (1,1-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13100	Dichloroethene (cis-1,2-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13150	Dichloroethene (trans-1,2-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13200	Dichloropropane (1,2-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13250	Dichloropropane (1,3-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13300	Dichloropropane (2,2-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13350	Dichloropropanone (1,1-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13400	Dichloropropene (1,1-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13450	Dichloropropene (cis-1,3-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13500	Dichloropropene (trans-1,3-)	GC/MS, P & T	EPA 524.2	NJ

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1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: DW09 --Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	DW09.13550	Diethyl ether (Ethyl ether)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13650	Ethyl methacrylate	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13700	Ethylbenzene	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13800	Hexachlorobutadiene (1,3-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13850	Hexachloroethane	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.13950	Hexanone (2-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14000	Isopropylbenzene	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14050	Isopropyltoluene (4-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14100	Methacrylonitrile	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14150	Methyl acrylate	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14200	Methyl iodide	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14250	Methyl methacrylate	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14300	Methyl tert-butyl ether	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14350	Methylene chloride (Dichloromethane)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14400	Naphthalene	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14450	Nitrobenzene	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14500	Nitropropane (2-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14550	Pentachloroethane	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14600	Pentanone (4-methyl-2-) (MIBK)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14650	Propionitrile	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14700	Propylbenzene (n-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14750	Sec-butylbenzene	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14800	Styrene	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14900	Tert-butyl alcohol	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.14950	Tert-butylbenzene	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.15000	Tetrachloroethane (1,1,1,2-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.15050	Tetrachloroethane (1,1,2,2-)	GC/MS, P & T	EPA 524.2	NJ

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Laboratory Name: PACE ANALYTICAL SERVICES, LLC-FAIRFIELD Laboratory Number: 07010 Activity ID: NLC 240010
1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: DW09 --Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	DW09.15100	Tetrachloroethene	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.15150	Tetrahydrofuran	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.15200	Toluene	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.15250	Trichlorobenzene (1,2,3-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.15300	Trichlorobenzene (1,2,4-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.15350	Trichlorobenzene (1,3,5-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.15400	Trichloroethane (1,1,1-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.15450	Trichloroethane (1,1,2-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.15500	Trichloroethene	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.15550	Trichlorofluoromethane	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.16000	Trichloropropane (1,2,3-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.16050	Trimethylbenzene (1,2,4-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.16100	Trimethylbenzene (1,3,5-)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.16150	Vinyl chloride	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.16300	Xylenes (total)	GC/MS, P & T	EPA 524.2	NJ
Certified	Yes	DW09.30850	N-ethylperfluorooctanesulfonamidoacetic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.30900	N-methylperfluorooctanesulfonamidoacetic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.30950	Perfluorobutanesulfonic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.31000	Perfluorodecanoic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.31050	Perfluorododecanoic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.31100	Perfluoroheptanoic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.31200	Perfluorohexanoic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.31250	Perfluorononanoic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.31300	Perfluorooctanesulfonic acid (PFOS)	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.31350	Perfluorooctanoic acid (PFOA)	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ

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Category: DW09 --Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	DW09.31400	Perfluorotetradecanoic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.31450	Perfluorotridecanoic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.31500	Perfluoroundecanoic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.31550	Perfluorohexanesulfonic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.31600	Hexafluoropropylene oxide dimer acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.31650	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.31700	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ
Certified	Yes	DW09.31750	4,8-dioxa-3H-perfluorononanoic acid	LC MS/MS, Electrospray Ionization	EPA 537.1	NJ

Category: DW12 --Drinking Water Sample Collection

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	DW12.00001	PWTA Sampling Parameters	All Categories Sample Handling Procedures	Other N.J.A.C. 7:18-6 & 9	NJ

Category: NPW01--Microbiology

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW01.00850	Escherichia coli (E coli)	MPN/Multiple Tube/Multiple Well	Other Colilert 18	NJ
Certified	Yes	NPW01.01300	Fecal coliform	Multiple Tube/Mutiple Well	Other Colilert 18	NJ
Certified	Yes	NPW01.01650	Fecal coliform	Membrane Filter (MF), Single Step	SM 9222 D-15	NJ
Applied	No	NPW01.01850	Fecal streptococci	Membrane Filter	SM 9230 C-13	NJ
Certified	Yes	NPW01.02100	Heterotrophic plate count	Pour Plate	SM 9215 B-04	NJ
Applied	No	NPW01.02300	Pseudomonas aeruginosa	Multiple Well or P-A	Other Pseudalert	NJ

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Category: NPW01--Microbiology

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW01.02350	Pseudomonas aeruginosa	Membrane Filter	SM 9213 E	NJ
Certified	Yes	NPW01.02800	Total coliform	MF Single Step	SM 9222 B-15	NJ

Category: NPW03--Inorganic Parameters

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW03.00350	Alkalinity as CaCO3	Electrometric Titration	SM 2320 B-11	NJ
Applied	No	NPW03.00850	Ammonia	Distillation, Electrode	SM 4500-NH3 B plus D-11	NJ
Applied	No	NPW03.01550	Biochemical oxygen demand	Dissolved Oxygen Depletion - Membrane Electrode	SM 5210 B-16	NJ
Applied	No	NPW03.02900	Carbonaceous BOD (CBOD)	Diss. Oxygen Depl., Nitrif. Inhib. - Membrane Electrode	SM 5210 B-16	NJ
Certified	Yes	NPW03.03600	Chemical oxygen demand	Spectrophotometric Manual/Auto	SM 5220 D-11	NJ
Certified	Yes	NPW03.04900	Chloride	Ion Chromatography	EPA 300.0	NJ
Certified	Yes	NPW03.05100	Chloride	Ion Chromatography	SW-846 9056A	NJ
Certified	Yes	NPW03.06000	Color	Colorimetric (Platinum-Cobalt)	SM 2120 B-11	NJ
Certified	Yes	NPW03.06300	Cyanide	Titrimetric/Manual Spectrophotometric	SW-846 9014	NJ
Certified	Yes	NPW03.06450	Cyanide	Distillation, Spectrophotometric (Manual)	SM 4500-CN C-16 plus E-16	NJ
Certified	Yes	NPW03.07200	Cyanide	Distillation	SW-846 9010C	NJ
Certified	Yes	NPW03.07750	Dissolved organic carbon (DOC)	Filtration and Persulfate/UV	SM 5310 C-14	NJ
Certified	Yes	NPW03.08500	Fluoride	Ion Chromatography	EPA 300.0	NJ
Certified	Yes	NPW03.08700	Fluoride	Ion Chromatography	SW-846 9056A	NJ
Applied	No	NPW03.10100	Kjeldahl nitrogen - total	Digestion, Distillation, Electrode	SM 4500-N Org C plus NH3 B plus NH3 D-11	NJ
Certified	Yes	NPW03.11050	Nitrate	Ion Chromatography	EPA 300.0	NJ
Certified	Yes	NPW03.11250	Nitrate	Ion Chromatography	SW-846 9056A	NJ
Certified	Yes	NPW03.12000	Nitrate - nitrite	Cadmium Reduction, Automated	SM 4500-NO3 F-16	NJ
Certified	Yes	NPW03.13150	Nitrite	Auto, bypass Cd reduction	SM 4500-NO3 F-16	NJ

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FAIRFIELD NJ 07004

Category: NPW03--Inorganic Parameters

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW03.13650	Nitrite	Ion Chromatography	EPA 300.0	NJ
Certified	Yes	NPW03.13900	Nitrite	Ion Chromatography	SW-846 9056A	NJ
Certified	Yes	NPW03.14150	Oil & grease - hem-LL	Gravimetric, Hexane Extractable Material-LL	EPA 1664B	NJ
Certified	Yes	NPW03.14300	Oil & grease - hem-SPE	Gravimetric, Hexane Extractable Material-SPE	EPA 1664B	NJ
Applied	No	NPW03.14450	Oil & grease - sgt-non polar	Gravimetric, Silica Gel Treated-Hem-SPE	EPA 1664B	NJ
Applied	No	NPW03.14600	Oil & grease - sgt-non polar	Gravimetric, Silica Gel Treated-Hem-LL	EPA 1664B	NJ
Certified	Yes	NPW03.14750	Organic nitrogen	Total Kjeldahl-N Minus Ammonia-N	SM TKN - NH3 method references	NJ
Certified	Yes	NPW03.15350	Orthophosphate	Ascorbic Acid, Manual Single Reagent	SM 4500-P E-11	NJ
Certified	Yes	NPW03.16600	Phenols	Manual Distillation, Colorimetric 4AAP, Manual	EPA 420.1	NJ
Certified	Yes	NPW03.16700	Phenols	Manual Distillation, Colorimetric 4AAP, Manual	SW-846 9065	NJ
Certified	Yes	NPW03.17150	Phosphorus (total)	Persulfate Digestion + Manual	SM 4500-P B5-11 plus E-11	NJ
Certified	Yes	NPW03.17850	Residue - filterable (TDS)	Gravimetric, 180 Degrees C	SM 2540 C-15	NJ
Certified	Yes	NPW03.18000	Residue - nonfilterable (TSS)	Gravimetric, 103-105 Degrees C, Post Washing	SM 2540 D-15	NJ
Certified	Yes	NPW03.18100	Residue - settleable	Volumetric (Imhoff Cone) or Gravimetric	SM 2540 F-15	NJ
Certified	Yes	NPW03.18150	Residue - total	Gravimetric, 103-105 Degrees C	SM 2540 B-15	NJ
Applied	No	NPW03.18250	Residue - volatile	Gravimetric, 550 Degrees C	EPA 160.4	NJ
Certified	Yes	NPW03.18800	Specific conductance	Wheatstone Bridge	SM 2510 B-11	NJ
Certified	Yes	NPW03.19850	Sulfate	Ion Chromatography	EPA 300.0	NJ
Certified	Yes	NPW03.20050	Sulfate	Ion Chromatography	SW-846 9056A	NJ
Certified	Yes	NPW03.20500	Sulfides	Colorimetric (Methylene Blue)	SM 4500-S B, C plus D-11	NJ
Certified	Yes	NPW03.20750	Surfactants	Colorimetric (Methylene Blue)	SM 5540 C-11	NJ
Certified	Yes	NPW03.21300	Total organic carbon (TOC)	Heated or UV	SM 5310 C-14	NJ
Certified	Yes	NPW03.21850	Total, fixed, and volatile solids (SQAR)	Gravimetric, 500 Degrees C	SM 2540 G SM 18th Ed.	NJ
Certified	Yes	NPW03.22150	Turbidity	Nephelometric	SM 2130 B-11	NJ

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Category: NPW04--Analyze Immed, Cont Monitor and/or PWTA

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW04.00400	Chlorine	Spectrophotometric, DPD	SM 4500-Cl G-11	NJ
Certified	Yes	NPW04.00950	Oxygen (dissolved)	Membrane Electrode	SM 4500-O G-16	NJ
Certified	Yes	NPW04.01300	Oxygen (dissolved)	Winkler, Azide Modification	SM 4500-O C-16	NJ
Certified	Yes	NPW04.01650	pH	Electrometric	SM 4500-H B-11	NJ
Certified	Yes	NPW04.01750	pH (corrosivity)	Aqueous, Electrometric	SW-846 9040C	NJ
Certified	Yes	NPW04.01950	Temperature	Thermometric	SM 2550 B-10	NJ

Category: NPW06--Metals - NPW Preparation Methods

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW06.00050	Metals	TCLP, Toxicity Procedure, Shaker	SW-846 1311	NJ
Certified	Yes	NPW06.00200	Metals, Total Rec and Dissolved	Acid Digestion/Surface and Groundwater	SW-846 3005A	NJ
Certified	Yes	NPW06.00250	Metals, Total	Acid Digestion/Aqueous Samples	SW-846 3010A	NJ

Category: NPW07--Metals

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW07.03350	Mercury	Manual Cold Vapor	EPA 245.1	NJ
Certified	Yes	NPW07.08650	Chromium (VI)	0.45u Filter, Colorimetric DPC	SM 3500-Cr B-11	NJ
Certified	Yes	NPW07.11950	Chromium (VI)	Colorimetric	SW-846 7196A	NJ
Certified	Yes	NPW07.12150	Mercury - liquid waste	AA, Manual Cold Vapor	SW-846 7470A	NJ

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1275 BLOOMFIELD AVE
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Category: NPW08--Metals - ICP, ICP/MS and DCP

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW08.04150	Aluminum	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04200	Antimony	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04250	Arsenic	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04300	Barium	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04350	Beryllium	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04400	Boron	ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04450	Cadmium	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04500	Calcium	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04550	Chromium	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04600	Cobalt	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04650	Copper	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04700	Iron	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04750	Lead	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04850	Magnesium	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04900	Manganese	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.04950	Molybdenum	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.05000	Nickel	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.05100	Potassium	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.05150	Selenium	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.05250	Silver	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.05300	Sodium	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.05400	Thallium	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.05550	Vanadium	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.05600	Zinc	Digestion, ICP	EPA 200.7	NJ
Certified	Yes	NPW08.05650	Aluminum	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.05700	Antimony	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.05750	Arsenic	Digestion, ICP/MS	EPA 200.8	NJ

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Category: NPW08--Metals - ICP, ICP/MS and DCP

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW08.05800	Barium	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.05850	Beryllium	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.05950	Cadmium	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.06050	Chromium	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.06100	Cobalt	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.06150	Copper	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.06300	Lead	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.06400	Manganese	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.06450	Molybdenum	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.06500	Nickel	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.06600	Selenium	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.06700	Silver	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.06850	Thallium	Digestion, ICP/MS	EPA 200.8	NJ
Applied	No	NPW08.07000	Titanium	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.07150	Vanadium	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.07200	Zinc	Digestion, ICP/MS	EPA 200.8	NJ
Certified	Yes	NPW08.09800	Hardness - total as CaCO3	Ca + Mg Carbonates, ICP	SM 2340 B-11	NJ
Certified	Yes	NPW08.12800	Aluminum	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.12850	Antimony	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.12900	Arsenic	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.12950	Barium	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13000	Beryllium	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13100	Cadmium	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13150	Calcium	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13200	Chromium	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13250	Cobalt	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13300	Copper	ICP	SW-846 6010D	NJ

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Category: NPW08--Metals - ICP, ICP/MS and DCP

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW08.13350	Iron	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13400	Lead	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13450	Lithium	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13500	Magnesium	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13550	Manganese	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13600	Molybdenum	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13650	Nickel	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13750	Potassium	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13800	Selenium	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13850	Silver	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.13900	Sodium	ICP	SW-846 6010D	NJ
Applied	No	NPW08.13950	Strontium	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.14000	Thallium	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.14100	Tin	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.14250	Vanadium	ICP	SW-846 6010D	NJ
Certified	Yes	NPW08.14300	Zinc	ICP	SW-846 6010D	NJ

Category: NPW09--Organics - NPW Preparation Methods

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW09.00250	Organics	Synthetic PPT Leachate Procedure	SW-846 1312	NJ
Certified	Yes	NPW09.00450	Semivolatile organics	TCLP, Toxicity Procedure, Shaker	SW-846 1311	NJ
Certified	Yes	NPW09.00500	Semivolatile organics	Separatory Funnel Extraction	SW-846 3510C	NJ
Certified	Yes	NPW09.00700	Semivolatile organics	Microwave Extraction	SW-846 3546	NJ
Certified	Yes	NPW09.01350	Volatile organics	TCLP, Toxicity Procedure, ZHE	SW-846 1311	NJ
Certified	Yes	NPW09.01550	Volatile organics	Purge & Trap Aqueous	SW-846 5030C	NJ

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Laboratory Name: PACE ANALYTICAL SERVICES, LLC-FAIRFIELD Laboratory Number: 07010 Activity ID: NLC 240010
1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: NPW10--Organic Parameters - Chromatography

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW10.19150	Aldrin	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.19200	Alpha BHC	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.19300	Beta BHC	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.19650	Chlordane	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.20050	DDD (4,4'-)	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.20100	DDE (4,4'-)	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.20150	DDT (4,4'-)	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.20200	Delta BHC	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.20350	Dieldrin	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.20400	Endosulfan I	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.20450	Endosulfan II	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.20500	Endosulfan sulfate	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.20550	Endrin	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.20600	Endrin aldehyde	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.20650	Endrin ketone	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.20800	Heptachlor	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.20850	Heptachlor epoxide	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.21000	Lindane (gamma BHC)	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.21050	Methoxychlor	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.21200	Mirex	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.21800	Toxaphene	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.21900	PCB 1016	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.21950	PCB 1221	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.22000	PCB 1232	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.22050	PCB 1242	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.22100	PCB 1248	Extract/GC (ECD)	EPA 608.3	NJ

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1275 BLOOMFIELD AVE
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Category: NPW10--Organic Parameters - Chromatography

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW10.22150	PCB 1254	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.22200	PCB 1260	Extract/GC (ECD)	EPA 608.3	NJ
Certified	Yes	NPW10.31650	Extractable Petroleum Hydrocarbons	Extraction, GC, FID	Other NJDEP EPH 10/08, Rev. 3	NJ
Certified	Yes	NPW10.37350	Mirex	Extract/GC (ECD)	SM 6630 B-07	NJ
Certified	Yes	NPW10.38750	Mirex	Extract/GC (ECD)	SM 6630 C-07	NJ
Certified	Yes	NPW10.44600	Aldrin	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.44650	Alpha BHC	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.44750	Beta BHC	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Applied	No	NPW10.44800	Chlordane (alpha) (cis-)	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Applied	No	NPW10.44850	Chlordane (gamma) (trans-)	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.44900	Chlordane (technical)	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.45250	DDD (4,4'-)	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.45300	DDE (4,4'-)	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.45350	DDT (4,4'-)	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.45400	Delta BHC	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.45450	Dieldrin	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.45500	Endosulfan I	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.45550	Endosulfan II	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.45600	Endosulfan sulfate	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.45650	Endrin	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.45700	Endrin aldehyde	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.45750	Endrin ketone	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.45850	Heptachlor	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.45900	Heptachlor epoxide	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.46050	Lindane (gamma BHC)	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.46100	Methoxychlor	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.46250	Mirex	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ

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Category: NPW10--Organic Parameters - Chromatography

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW10.46450	Toxaphene	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	NPW10.47600	PCB 1016	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ
Certified	Yes	NPW10.47650	PCB 1221	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ
Certified	Yes	NPW10.47700	PCB 1232	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ
Certified	Yes	NPW10.47750	PCB 1242	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ
Certified	Yes	NPW10.47800	PCB 1248	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ
Certified	Yes	NPW10.47850	PCB 1254	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ
Certified	Yes	NPW10.47900	PCB 1260	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ

Category: NPW11--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW11.38400	Acetone	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.38500	Acrolein	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.38550	Acrylonitrile	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.38650	Amyl acetate (n-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.38750	Benzene	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.38800	Bromobenzene	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.38850	Bromochloromethane	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.38900	Bromodichloromethane	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.39000	Bromoform	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.39050	Bromomethane	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.39200	Butanone (2-) (Methyl ethyl ketone)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.39250	Butyl acetate (n-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.39400	Butylbenzene (n-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.39450	Carbon disulfide	GC/MS, P & T, Capillary Column	EPA 624.1	NJ

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FAIRFIELD NJ 07004

Category: NPW11--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW11.39500	Carbon tetrachloride	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.39550	Chlorobenzene	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.39600	Chloroethane	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.39650	Chloroethyl vinyl ether (2-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.39700	Chloroform	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.39750	Chloromethane	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.39800	Chlorotoluene (2-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.39850	Chlorotoluene (4-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.39950	Cyclohexane	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40050	Dibromo-3-chloropropane (1,2-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40100	Dibromochloromethane	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40105	Dibromoethane (1,2-) (EDB)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40200	Dibromomethane	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40350	Dichlorobenzene (1,2-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40400	Dichlorobenzene (1,3-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40450	Dichlorobenzene (1,4-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40500	Dichlorodifluoromethane	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40550	Dichloroethane (1,1-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40600	Dichloroethane (1,2-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40650	Dichloroethene (1,1-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40700	Dichloroethene (cis-1,2-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40750	Dichloroethene (trans-1,2-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40800	Dichloropropane (1,2-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40850	Dichloropropane (1,3-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.40900	Dichloropropane (2,2-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.41000	Dichloropropene (cis-1,3-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.41200	Dioxane (1,4-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ

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1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: NPW11--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW11.41350	Ethyl acetate	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.41450	Ethylbenzene	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.41600	Hexachlorobutadiene (1,3-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.41700	Hexanone (2-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.41900	Isopropyl acetate	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.42000	Isopropylbenzene	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.42050	Isopropyltoluene (4-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.42150	Methyl acetate	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.42350	Methyl isobutyl ketone (MIBK)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.42450	Methyl tert-butyl ether	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.42500	Methylcyclohexane	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.42550	Methylene chloride (Dichloromethane)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.42600	Naphthalene	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.42900	Propylbenzene (n-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.42950	Sec-butylbenzene	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43000	Styrene	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43150	Tert-butyl alcohol	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43200	Tert-butylbenzene	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43250	Tetrachloroethane (1,1,1,2-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43300	Tetrachloroethane (1,1,2,2-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43350	Tetrachloroethene	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43450	Toluene	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43500	Trichloro (1,1,2-) trifluoroethane (1,2,2-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43550	Trichlorobenzene (1,2,3-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43600	Trichlorobenzene (1,2,4-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43650	Trichloroethane (1,1,1-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43700	Trichloroethane (1,1,2-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ

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Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW11.43750	Trichloroethene	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43800	Trichlorofluoromethane	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43850	Trichloropropane (1,2,3-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.43950	Trimethylbenzene (1,2,4-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.44000	Trimethylbenzene (1,3,5-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.44050	Vinyl acetate	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.44100	Vinyl chloride	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.44150	Xylene (m- + p-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.44250	Xylene (o-)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.44350	Xylenes (total)	GC/MS, P & T, Capillary Column	EPA 624.1	NJ
Certified	Yes	NPW11.44400	Acenaphthene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.44450	Acenaphthylene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.44800	Aniline	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.44850	Anthracene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.45200	Benzidine	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.45250	Benzo(a)anthracene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.45300	Benzo(a)pyrene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.45350	Benzo(b)fluoranthene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.45400	Benzo(ghi)perylene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.45500	Benzo(k)fluoranthene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.45550	Benzoic acid	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.45700	Bis (2-chloroethoxy) methane	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.45750	Bis (2-chloroethyl) ether	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.45800	Bis(2-chloroisopropyl)ether|2,2'-oxybis(1-chloropropane)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.45850	Bis (2-ethylhexyl) phthalate	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.46000	Bromophenyl-phenyl ether (4-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.46050	Butylbenzylphthalate	Extract, GC/MS	EPA 625.1	NJ

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Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW11.46250	Carbazole	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.46400	Chloroaniline (4-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.46550	Chloronaphthalene (2-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.46650	Chlorophenol (2-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.46700	Chlorophenyl-phenyl ether (4-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.46900	Chrysene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.47500	Dibenzo(a,h)anthracene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.47650	Dibenzofuran	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.47750	Dichlorobenzidine (3,3'-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.47800	Dichlorophenol (2,4-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.47850	Dichlorophenol (2,6-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.47950	Diethyl phthalate	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.48100	Dimethyl phthalate	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.48250	Dimethylphenol (2,4-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.48300	Di-n-butyl phthalate	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.48400	Dinitrophenol (2,4-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.48450	Dinitrophenol (2-methyl-4,6-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.48500	Dinitrotoluene (2,4-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.48550	Dinitrotoluene (2,6-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.48600	Di-n-octyl phthalate	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.48700	Diphenylhydrazine / Azobenzene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.49250	Fluoranthene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.49300	Fluorene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.49350	Hexachlorobenzene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.49400	Hexachlorobutadiene (1,3-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.49450	Hexachlorocyclopentadiene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.49500	Hexachloroethane	Extract, GC/MS	EPA 625.1	NJ

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Laboratory Name: PACE ANALYTICAL SERVICES, LLC-FAIRFIELD Laboratory Number: 07010 Activity ID: NLC 240010
1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: NPW11--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW11.49700	Indeno(1,2,3-cd)pyrene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.49800	Isophorone	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.50350	Methyl phenol (4-chloro-3-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.50450	Methylnaphthalene (2-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.50550	Methylphenol (2-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.50650	Methylphenol (4-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.50950	Naphthalene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.51150	Nitroaniline (2-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.51200	Nitroaniline (3-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.51250	Nitroaniline (4-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.51300	Nitrobenzene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.51350	Nitrophenol (2-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.51400	Nitrophenol (4-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.51450	N-Nitrosodiethylamine	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.51500	N-Nitrosodimethylamine	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.51530	N-Nitroso-di-n-butylamine	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.51550	N-Nitroso-di-n-propylamine	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.51600	N-Nitrosodiphenylamine / Diphenylamine	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.51800	N-Nitrosopyrrolidine	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.52300	Parathion ethyl (Parathion)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.52400	Pentachlorobenzene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.52550	Pentachlorophenol	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.52700	Phenanthrene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.52750	Phenol	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.53400	Pyrene	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.55100	Tetrachlorobenzene (1,2,4,5-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.55400	Trichlorobenzene (1,2,4-)	Extract, GC/MS	EPA 625.1	NJ

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Category: NPW11--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW11.55500	Trichlorophenol (2,4,5-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.55550	Trichlorophenol (2,4,6-)	Extract, GC/MS	EPA 625.1	NJ
Certified	Yes	NPW11.56650	TCDD (2,3,7,8-)	GC/MS	EPA 625.1 (screen only)	NJ
Certified	Yes	NPW11.68750	Acetone	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.68850	Acrolein	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.68900	Acrylonitrile	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.69100	Benzene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.69200	Bromobenzene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.69250	Bromochloromethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.69300	Bromodichloromethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.69400	Bromoform	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.69450	Bromomethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.69650	Butanone (2-) (Methyl ethyl ketone)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.69850	Butylbenzene (n-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.69900	Carbon disulfide	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.69950	Carbon tetrachloride	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70000	Chlorobenzene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70050	Chloroethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70100	Chloroethyl vinyl ether (2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70150	Chloroform	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70200	Chloromethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70250	Chlorotoluene (2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70300	Chlorotoluene (4-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70400	Cyclohexane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70500	Dibromo-3-chloropropane (1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70550	Dibromochloromethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70600	Dibromoethane (1,2-) (EDB)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ

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1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: NPW11--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW11.70650	Dibromomethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70800	Dichlorobenzene (1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70850	Dichlorobenzene (1,3-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70900	Dichlorobenzene (1,4-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.70950	Dichlorodifluoromethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.71000	Dichloroethane (1,1-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.71050	Dichloroethane (1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.71100	Dichloroethene (1,1-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.71150	Dichloroethene (cis-1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.71200	Dichloroethene (trans-1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.71250	Dichloropropane (1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.71300	Dichloropropane (1,3-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.71450	Dichloropropene (cis-1,3-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.71500	Dichloropropene (trans-1,3-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.71900	Ethylbenzene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.72050	Hexachlorobutadiene (1,3-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.72200	Hexanone (2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.72400	Isopropylbenzene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.72450	Isopropyltoluene (4-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.72600	Methyl acrylate	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.72750	Methyl tert-butyl ether	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.72800	Methylcyclohexane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.72850	Methylene chloride (Dichloromethane)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.73000	Naphthalene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.73350	Pentanone (4-methyl-2-) (MIBK)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.73450	Propylbenzene (n-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.73500	Sec-butylbenzene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ

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1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: NPW11--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW11.73550	Styrene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.73700	Tert-butyl alcohol	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.73750	Tert-butylbenzene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.73800	Tetrachloroethane (1,1,1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.73850	Tetrachloroethane (1,1,2,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.73900	Tetrachloroethene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.74000	Toluene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.74100	Trichloro (1,1,2-) trifluoroethane (1,2,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.74150	Trichlorobenzene (1,2,3-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.74200	Trichlorobenzene (1,2,4-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.74250	Trichloroethane (1,1,1-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.74300	Trichloroethane (1,1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.74350	Trichloroethene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.74400	Trichlorofluoromethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.74450	Trichloropropane (1,2,3-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.74550	Trimethylbenzene (1,2,4-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.74600	Trimethylbenzene (1,3,5-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.74750	Vinyl chloride	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.74950	Xylenes (total)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	NPW11.75150	Acenaphthene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.75200	Acenaphthylene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.75250	Acetophenone	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.75600	Aniline	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.75650	Anthracene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.75750	Atrazine	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.75850	Benzaldehyde	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.75950	Benzidine	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ

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Category: NPW11--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW11.76000	Benzo(a)anthracene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76050	Benzo(a)pyrene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76100	Benzo(b)fluoranthene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76150	Benzo(ghi)perylene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76250	Benzo(k)fluoranthene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76300	Benzoic acid	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76400	Benzyl alcohol	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76550	Biphenyl (1,1'-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76600	Bis (2-chloroethoxy) methane	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76650	Bis (2-chloroethyl) ether	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76700	Bis(2-chloroisopropyl)ether|2,2'-oxybis(1-chloropropane)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76750	Bis (2-ethylhexyl) phthalate	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76800	Bromophenyl-phenyl ether (4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76850	Butylbenzylphthalate	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76900	Caprolactam	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.76950	Carbazole	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.77150	Chloroaniline (4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.77300	Chloronaphthalene (2-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.77350	Chlorophenol (2-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.77400	Chlorophenyl-phenyl ether (4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.77450	Chrysene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.78000	Dibenzo(a,h)anthracene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.78200	Dibenzofuran	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.78250	Dichlorobenzene (1,2-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.78300	Dichlorobenzene (1,3-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.78350	Dichlorobenzene (1,4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.78400	Dichlorobenzidine (3,3'-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ

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Category: NPW11--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW11.78450	Dichlorophenol (2,4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.78600	Diethyl phthalate	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.78750	Dimethyl phthalate	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.79100	Dimethylphenol (2,4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.79150	Di-n-butyl phthalate	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.79300	Dinitrophenol (2,4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.79350	Dinitrophenol (2-methyl-4,6-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.79400	Dinitrotoluene (2,4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.79450	Dinitrotoluene (2,6-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.79500	Di-n-octyl phthalate	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.79650	Diphenylhydrazine / Azobenzene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.80150	Fluoranthene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.80200	Fluorene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.80350	Hexachlorobenzene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.80400	Hexachlorobutadiene (1,3-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.80450	Hexachlorocyclopentadiene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.80500	Hexachloroethane	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.80750	Indeno(1,2,3-cd)pyrene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.80850	Isophorone	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.81300	Methyl phenol (4-chloro-3-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.81450	Methylnaphthalene (2-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.81500	Methylphenol (2-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.81550	Methylphenol (3-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.81600	Methylphenol (4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.81650	Naphthalene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.81850	Nitroaniline (2-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.81900	Nitroaniline (3-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ

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1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: NPW11--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW11.81950	Nitroaniline (4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.82000	Nitrobenzene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.82100	Nitrophenol (2-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.82150	Nitrophenol (4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.82250	N-Nitrosodimethylamine	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.82350	N-Nitroso-di-n-propylamine	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.82400	N-Nitrosodiphenylamine / Diphenylamine	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.83300	Pentachlorophenol	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.83400	Phenanthrene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.83450	Phenol	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.83850	Pyrene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.83900	Pyridine	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Applied	No	NPW11.84350	Tetrachlorobenzene (1,2,4,5-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.84650	Trichlorobenzene (1,2,4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.84700	Trichlorophenol (2,4,5-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.84750	Trichlorophenol (2,4,6-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.85050	Benzo(a)anthracene	GC/MS/SIM, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.85100	Benzo(a)pyrene	GC/MS/SIM, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.85150	Benzo(b)fluoranthene	GC/MS/SIM, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.85250	Benzo(k)fluoranthene	GC/MS/SIM, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.85350	Dibenzo(a,h)anthracene	GC/MS/SIM, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.85550	Dioxane (1,4-)	GC/MS/SIM, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.85700	Hexachlorobenzene	GC/MS/SIM, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.85850	Indeno(1,2,3-cd)pyrene	GC/MS/SIM, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.86100	N-Nitrosodimethylamine	GC/MS/SIM, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	NPW11.86150	Pentachlorophenol	GC/MS/SIM, Extract or Dir Inj, Capillary	SW-846 8270E	NJ

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Category: SCM02--Characteristics of Hazardous Waste

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM02.00450	Free liquid	Flow-Through Paint Filter, Observation	SW-846 9095B	NJ
Certified	Yes	SCM02.00560	Flash Point	Pensky-Martens	SW-846 1010B	NJ
Certified	Yes	SCM02.00800	pH - soil and waste	Mix with Water or Calcium Chlorides	SW-846 9045D	NJ

Category: SCM03--Inorganic Parameters and Preparation

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM03.00900	Chloride	Ion Chromatography	SW-846 9056A	NJ
Certified	Yes	SCM03.01150	Cyanide	Distillation	SW-846 9010C	NJ
Certified	Yes	SCM03.01500	Cyanide	Titrimetric/Manual Spectrophotometric	SW-846 9014	NJ
Certified	Yes	SCM03.01950	Fluoride	Ion Chromatography	SW-846 9056A	NJ
Certified	Yes	SCM03.02700	Nitrate	Ion Chromatography	SW-846 9056A	NJ
Certified	Yes	SCM03.03100	Nitrite	Ion Chromatography	SW-846 9056A	NJ
Certified	Yes	SCM03.03200	Oil & grease - sludge-hem	Extraction & Gravimetric	SW-846 9071B	NJ
Certified	Yes	SCM03.04200	Sulfate	Ion Chromatography	SW-846 9056A	NJ

Category: SCM05--Metals - SCM Preparation Methods

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM05.00050	Metals	Acid Digestion, Soil Sediment & Sludge	SW-846 3050B	NJ
Certified	Yes	SCM05.00600	Metals	TCLP, Toxicity Procedure, Shaker	SW-846 1311	NJ

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Category: SCM06--Metals

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM06.02800	Mercury - solid waste	AA, Manual Cold Vapor	SW-846 7471B	NJ
Certified	Yes	SCM06.02850	Mercury - solid waste	AA, Thermal Decomposition, Amalgamation	SW-846 7473	NJ

Category: SCM07--Metals - ICP, ICP/MS and DCP

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM07.00001	Aluminum	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00050	Antimony	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00100	Arsenic	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00150	Barium	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00200	Beryllium	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00300	Cadmium	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00350	Calcium	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00400	Chromium	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00450	Cobalt	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00500	Copper	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00550	Iron	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00600	Lead	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00700	Magnesium	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00750	Manganese	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00800	Molybdenum	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00850	Nickel	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.00950	Potassium	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.01000	Selenium	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.01050	Silver	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.01100	Sodium	ICP	SW-846 6010D	NJ

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Category: SCM07--Metals - ICP, ICP/MS and DCP

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM07.01150	Strontium	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.01200	Thallium	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.01450	Vanadium	ICP	SW-846 6010D	NJ
Certified	Yes	SCM07.01500	Zinc	ICP	SW-846 6010D	NJ

Category: SCM08--Organics - SCM Prep. / Screening Methods

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM08.00400	Organics	Synthetic PPT Leachate Procedure	SW-846 1312	NJ
Certified	Yes	SCM08.00500	Organics	Waste Dilution	SW-846 3580A	NJ
Certified	Yes	SCM08.00700	Semivolatile organics	TCLP, Toxicity Procedure, Shaker	SW-846 1311	NJ
Certified	Yes	SCM08.00900	Semivolatile organics	Microwave Extraction	SW-846 3546	NJ
Certified	Yes	SCM08.00950	Semivolatile organics	Ultrasonic Extraction	SW-846 3550C	NJ
Certified	Yes	SCM08.01350	Semivolatile organics	Cleanup-Florisil	SW-846 3620C	NJ
Certified	Yes	SCM08.01550	Semivolatile organics	Cleanup-Sulfur Removal	SW-846 3660B	NJ
Certified	Yes	SCM08.01600	Semivolatile organics	Cleanup-Sulfuric Acid/KMnO4	SW-846 3665A	NJ
Certified	Yes	SCM08.01850	Volatile organics	TCLP, Toxicity Procedure, ZHE	SW-846 1311	NJ
Certified	Yes	SCM08.02050	Volatile organics - high conc.	Methanol Extract, Closed System P & T	SW-846 5035A	NJ
Certified	Yes	SCM08.02100	Volatile organics - low conc.	Closed System Purge & Trap	SW-846 5035A	NJ

Category: SCM09--Organic Parameters - Chromatography

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State

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Category: SCM09--Organic Parameters - Chromatography

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM09.00150	Extractable Petroleum Hydrocarbons	Extraction, GC, FID	Other NJDEP EPH 10/08, Rev. 3	NJ
Certified	Yes	SCM09.00450	Diesel range organic	Extraction, GC, FID	SW-846 8015D	NJ
Certified	Yes	SCM09.00500	Gasoline range organic	GC P&T, FID	SW-846 8015D	NJ
Certified	Yes	SCM09.05650	Aldrin	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.05700	Alpha BHC	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.05800	Beta BHC	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Applied	No	SCM09.05850	Chlordane (alpha) (cis-)	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Applied	No	SCM09.05900	Chlordane (gamma) (trans-)	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.05950	Chlordane (technical)	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.06300	DDD (4,4'-)	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.06350	DDE (4,4'-)	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.06400	DDT (4,4'-)	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.06450	Delta BHC	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.06500	Dieldrin	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.06550	Endosulfan I	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.06600	Endosulfan II	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.06650	Endosulfan sulfate	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.06700	Endrin	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.06750	Endrin aldehyde	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.06800	Endrin ketone	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.06900	Heptachlor	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.06950	Heptachlor epoxide	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.07100	Lindane (gamma BHC)	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.07150	Methoxychlor	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.07500	Toxaphene	GC, Extraction, ECD or HECD, Capillary	SW-846 8081B	NJ
Certified	Yes	SCM09.08700	PCB 1016	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ
Certified	Yes	SCM09.08750	PCB 1221	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ

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1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: SCM09--Organic Parameters - Chromatography

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM09.08800	PCB 1232	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ
Certified	Yes	SCM09.08850	PCB 1242	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ
Certified	Yes	SCM09.08900	PCB 1248	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ
Certified	Yes	SCM09.08950	PCB 1254	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ
Certified	Yes	SCM09.09000	PCB 1260	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ
Certified	Yes	SCM09.09050	PCB 1262	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ
Certified	Yes	SCM09.09100	PCB 1268	GC, Extraction, ECD or HECD, Capillary	SW-846 8082A	NJ
Certified	Yes	SCM09.15400	D (2,4-)	GC, Extraction, ECD, Capillary	SW-846 8151A	NJ
Certified	Yes	SCM09.16550	TP (2,4,5-) (Silvex)	GC, Extraction, ECD, Capillary	SW-846 8151A	NJ

Category: SCM10--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM10.22900	Acetone	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.23000	Acrolein	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.23050	Acrylonitrile	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.23200	Benzene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.23300	Bromobenzene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.23350	Bromochloromethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.23400	Bromodichloromethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.23500	Bromoform	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.23550	Bromomethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.23650	Butanone (2-) (Methyl ethyl ketone)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.23800	Butylbenzene (n-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.23850	Carbon disulfide	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.23900	Carbon tetrachloride	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ

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Category: SCM10--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM10.23950	Chlorobenzene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24000	Chloroethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24050	Chloroethyl vinyl ether (2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24100	Chloroform	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24150	Chloromethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24200	Chlorotoluene (2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24250	Chlorotoluene (4-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24330	Cyclohexane	GC/MS, P & T, or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24400	Dibromo-3-chloropropane (1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24450	Dibromochloromethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24500	Dibromoethane (1,2-) (EDB)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24550	Dibromomethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24700	Dichlorobenzene (1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24750	Dichlorobenzene (1,3-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24800	Dichlorobenzene (1,4-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24850	Dichlorodifluoromethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24900	Dichloroethane (1,1-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.24950	Dichloroethane (1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.25000	Dichloroethene (1,1-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.25050	Dichloroethene (cis-1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.25100	Dichloroethene (trans-1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.25150	Dichloropropane (1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.25200	Dichloropropane (1,3-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.25350	Dichloropropene (cis-1,3-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.25400	Dichloropropene (trans-1,3-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.25750	Ethylbenzene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.25850	Hexachlorobutadiene (1,3-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ

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Category: SCM10--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM10.25950	Hexanone (2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.26150	Isopropylbenzene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.26200	Isopropyltoluene (4-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.26300	Methyl acrylate	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.26330	Methylcyclohexane	GC/MS, P & T, or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.26450	Methyl tert-butyl ether	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.26500	Methylene chloride (Dichloromethane)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.26650	Naphthalene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.26850	Pentanone (4-methyl-2-) (MIBK)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.26950	Propylbenzene (n-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27000	Sec-butylbenzene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27050	Styrene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27200	Tert-butyl alcohol	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27250	Tert-butylbenzene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27300	Tetrachloroethane (1,1,1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27350	Tetrachloroethane (1,1,2,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27400	Tetrachloroethene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27500	Toluene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27600	Trichloro (1,1,2-) trifluoroethane (1,2,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27650	Trichlorobenzene (1,2,3-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27700	Trichlorobenzene (1,2,4-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27750	Trichloroethane (1,1,1-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27800	Trichloroethane (1,1,2-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27850	Trichloroethene	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27900	Trichlorofluoromethane	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.27950	Trichloropropane (1,2,3-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.28000	Trimethylbenzene (1,2,4-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ

New Jersey Department of Environment Protection
Environmental Laboratory Certification Program

Annual Certified Parameter List and Current Status

Effective as of 12/09/2024 until 6/30/2025

Laboratory Name: PACE ANALYTICAL SERVICES, LLC-FAIRFIELD Laboratory Number: 07010 Activity ID: NLC 240010
1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: SCM10--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM10.28050	Trimethylbenzene (1,3,5-)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.28200	Vinyl chloride	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.28400	Xylenes (total)	GC/MS, P & T or Direct Injection, Capillary	SW-846 8260D	NJ
Certified	Yes	SCM10.28900	Acenaphthene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.28950	Acenaphthylene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.29000	Acetophenone	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.29350	Aniline	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.29450	Anthracene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.29550	Atrazine	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.29650	Benzaldehyde	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.29750	Benzidine	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.29800	Benzo(a)anthracene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.29850	Benzo(a)pyrene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.29900	Benzo(b)fluoranthene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.29950	Benzo(ghi)perylene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.30050	Benzo(k)fluoranthene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.30100	Benzoic acid	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.30200	Benzyl alcohol	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.30350	Biphenyl (1,1'-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.30400	Bis (2-chloroethoxy) methane	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.30450	Bis (2-chloroethyl) ether	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.30500	Bis(2-chloroisopropyl)ether|2,2'-oxybis(1-chloropropane)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.30550	Bis (2-ethylhexyl) phthalate	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.30600	Bromophenyl-phenyl ether (4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.30650	Butylbenzylphthalate	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.30700	Caprolactam	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.30750	Carbazole	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ

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1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: SCM10--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM10.30950	Chloroaniline (4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.31100	Chloronaphthalene (2-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.31150	Chlorophenol (2-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.31200	Chlorophenyl-phenyl ether (4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.31250	Chrysene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.31800	Dibenzo(a,h)anthracene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.32000	Dibenzofuran	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.32050	Dichlorobenzene (1,2-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.32100	Dichlorobenzene (1,3-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.32150	Dichlorobenzene (1,4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.32200	Dichlorobenzidine (3,3'-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.32250	Dichlorophenol (2,4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.32400	Diethyl phthalate	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.32550	Dimethyl phthalate	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.32900	Dimethylphenol (2,4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.32950	Di-n-butyl phthalate	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.33100	Dinitrophenol (2,4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.33150	Dinitrophenol (2-methyl-4,6-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.33200	Dinitrotoluene (2,4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.33250	Dinitrotoluene (2,6-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.33300	Di-n-octyl phthalate	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.33400	Dioxane (1,4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.33450	Diphenylhydrazine / Azobenzene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.33950	Fluoranthene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.34000	Fluorene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.34150	Hexachlorobenzene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.34200	Hexachlorobutadiene (1,3-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ

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1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: SCM10--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM10.34250	Hexachlorocyclopentadiene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.34300	Hexachloroethane	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.34550	Indeno(1,2,3-cd)pyrene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.34650	Isophorone	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.35100	Methyl phenol (4-chloro-3-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.35250	Methylnaphthalene (2-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.35300	Methylphenol (2-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.35350	Methylphenol (3-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.35400	Methylphenol (4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.35450	Naphthalene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.35650	Nitroaniline (2-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.35700	Nitroaniline (3-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.35750	Nitroaniline (4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.35800	Nitrobenzene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.35900	Nitrophenol (2-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.35950	Nitrophenol (4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.36050	N-Nitrosodimethylamine	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.36150	N-Nitroso-di-n-propylamine	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.36200	N-Nitrosodiphenylamine / Diphenylamine	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.37100	Pentachlorophenol	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.37200	Phenanthrene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.37250	Phenol	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.37650	Pyrene	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.37700	Pyridine	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Applied	No	SCM10.38150	Tetrachlorobenzene (1,2,4,5-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.38450	Trichlorobenzene (1,2,4-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ
Certified	Yes	SCM10.38500	Trichlorophenol (2,4,5-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ

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1275 BLOOMFIELD AVE
FAIRFIELD NJ 07004

Category: SCM10--Organic Parameters - Chromatography/MS

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	SCM10.38550	Trichlorophenol (2,4,6-)	GC/MS, Extract or Dir Inj, Capillary	SW-846 8270E	NJ

Michele M. Potter, Manager

APPENDIX C
Sample Forms

Pace® Location Requested (City/State):

CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here

Scan QR Code for instructions

Company Name:	Contact/Report To:
Street Address:	Phone #:
	E-Mail:
	Cc E-Mail:
Customer Project #:	Invoice to:
Project Name:	Invoice E-mail:
Site Collection Info/Facility ID (as applicable):	Purchase Order # (if applicable):
	Quote #:
Time Zone Collected: [ ] AK [ ] PT [ ] MT [ ] CT [ ] ET	County / State origin of sample(s):
Data Deliverables: [ ] Level II [ ] Level III [ ] Level IV [ ] EQUIS [ ] Other_____	Regulatory Program (DW, RCRA, etc.) as applicable: Reportable [ ] Yes [ ] No
	Rush (Pre-approval required): [ ] Same Day [ ] 1 Day [ ] 2 Day [ ] 3 Day Other _____ **Date Results Requested:**
	DW PWSID # or WW Permit # as applicable: Field Filtered (if applicable): [ ] Yes [ ] No Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SS), Oil (OL), Wipe (WP), Tissue (TS), Bioassay (B), Vapor (V), Surface Water (SW),Sediment (SED), Sludge (SL), Caulk (CK), Leachate (LL), Biosolid (BS), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Composite Start Date	Composite Start Time	Collected or Composite End Date	Collected or Composite End Time	# Cont.	Residual Chlorine Result	Residual Chlorine Units	Analysis Requested	Sample Comment

Specify Container Size **

Identify Container Preservative Type***

**Container Size: (1) 1L, (2) 500mL, (3) 250mL, (4) 125mL, (5) 100mL, (6) 40mL vial, (7) EnCore, (8) TerraCore, (9) 90mL, (10) Other

*** Preservative Types: (1) None, (2) HNO3, (3) H2SO4, (4) HCl, (5) NaOH, (6) Zn Acetate, (7) NaHSO4, (8) Sod. Thiosulfate, (9) Ascorbic Acid, (10) MeOH, (11) Other

Lab Use Only

Proj. Mgr:

AcctNum / Client ID:

Table #:

Profile / Template:

Prelog / Bottle Ord. ID:

Preservation non-conformance identified for sample.

Additional Instructions from Pace® :	Collected By: Printed Name Signature	Customer Remarks / Special Conditions / Possible Hazards:

# Coolers:	Thermometer ID:	Correction Factor (°C):	Obs. Temp. (°C):	Corrected Temp. (°C):	[ ] On Ice

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Tracking Number:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Delivered by: [ ] In- Person [ ] Courier
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	[ ] FedEX [ ] UPS [ ] Other
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Page: of

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace® Terms and Conditions found at https://info.pacelabs.com/hubfs/pas-standard-terms.pdf.

Chain of Custody Instructions

***Pace Location Requested**: City and State of Pace Laboratory testing is to be performed at.
***Company Name**: Client's company name
***Street Address**: Client's mailing address
***City, State, Zip**: Client's city, state and zip code for mailing
***Contact/ Report to**: Person to receive results
Customer Project # and Project Name: Client's reference to the project or work involved with these samples.
Site Collection Info/ Facility ID: Client's location of project
Time Zone: Check time zone of sample to ensure proper hold times are met.
Purchase Order #: Client specific number to be listed on project invoice for client billing purposes.
Invoice To: Client contact the project invoice needs to be emailed to.
Invoice Email: Email address that project invoice will need to be emailed to
***Phone #**: Client's contact phone number
E-mail: Client's e-mail for correspondence and final report
Regulatory Program: List the program that is guiding the work to ensure proper regulations are followed: DW, RCRA, etc.
Data Deliverable: Please select or enter required deliverables.
***County/State Origin of Samples**: Enter the county to ensure proper handling of regulated soils. State required to ensure proper reporting.
Field Filtered: Indicate if samples have been filtered in the field. If samples are required to be field filtered and filtering is not indicated, a qualifier will be added to all associated data.

***Customer Sample ID**: The unique sample ID you want to appear on the analytical report
***Collected Date**: Date sample was collected. For composite samples, please fill in both beginning and end date.
***Collected Time**: Time sample was collected. For composite samples, please fill in both beginning and end time.
***Comp/Grab**: Please denote "GRAB" if the sample was collected at one time from one specific location. Please denote "COMP" if the sample is a composite of samples collected at one or more times or locations and combined to make one sample.
***Matrix**: Select from list provided list. If prepopulated chain is provided for you matrix codes may vary.
***Number and Type of Containers**: Total number of containers per container type submitted for the samples
***Container Size:** Specify container size from list.
***Container Preservation Type**: Specify sample preservation from provided list.
***Analysis Requested**: Write the analysis name (or an abbreviation), the name of a group of tests, or the method number you would like us to perform. Examples are BOD, TCLP Metals, PCBs, Method 624, etc. Place a check mark in the small boxes that correspond to the sample(s) on which you want these tests performed.

Sample Comment: List any notes or important information about the individual sample here. Please identify in the sample comment if a sample should be used for MS/MSD.

Customer Remarks/Special Conditions/Possible Hazards: List special instructions about the sample here. If the sample is known or suspected to be hazardous indicate that here and attach SDS if possible. This space can also be used for listing additional analyses, or to request an extra copy of the report to be sent to an alternate person/address, etc.

Rush request: If faster than standard turnaround time results are needed. Circle one of the rush options and note the day the results are requested by. All rush requests require preapproval by the laboratory. Surcharges will apply for non- standard turnaround times. Results will be due by the end of business on the date due based on standard turnaround time unless other arrangements have been made with your Project Manager.

Summarized Sample Acceptance Policy Requirements:

- Proper, full and completed chain-of-custody documentation
- Readable unique sample container identification written in indelible ink
- Appropriate sample container
- Sufficient sample volume to perform requested tests
- Received within required holding time
- Received within temperature preservation requirements
- Sample containers received in good condition (not leaking or broken)
- Any custody seal intact
- Properly preserved
- No headspace in volatile water samples
- **Note:** When sample specific Quality Control is required (e.g. MS/MSD) please ensure necessary sample containers and sample volume is provided.

A data qualifier and/or case narrative will be added to the final test report when the above sample acceptance requirements are not met.

Location Specific Sample Acceptance Policy available from your Project Manager

***Collected By**: Printed name of sample collector
***Collected By Signature**: Signature of sample collector

***Relinquished By/Received By:** This form **must be signed** each time the sample(s) changes hands. Custody seals are available upon request if needed.

***Required field**: Failure to fill in a required field may result in a sample(s) being put on hold until information can be obtained. This may result in a delay in receiving results.

APPENDIX D
Field Equipment Operation and Maintenance Manuals

MiniRAE 3000
User's Guide



RAE SYSTEMS by Honeywell

Rev. D
April 2014
P/N 059-4020-000

FCC Information

Contains FCC ID: PI4411B

The enclosed device complies with part 15 of the FCC rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

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Read Before Operating

This manual must be carefully read by all individuals who have or will have the responsibility of using, maintaining, or servicing this product. The product will perform as designed only if it is used, maintained, and serviced in accordance with the manufacturer's instructions. The user should understand how to set the correct parameters and interpret the obtained results.

CAUTION!

To reduce the risk of electric shock, turn the power off before removing the instrument cover. Disconnect the battery before removing sensor module for service. Never operate the instrument when the cover is removed. Remove instrument cover and sensor module only in an area known to be non-hazardous.

Special Notes



When the instrument is taken out of the transport case and turned on for the first time, there may be some residual organic or inorganic vapor trapped inside the detector chamber. The initial PID sensor reading may indicate a few ppm. Enter an area known to be free of any organic vapor and turn on the instrument. After running for several minutes, the residual vapor in the detector chamber will be cleared and the reading should return to zero.



The battery of the instrument discharges slowly even if it is turned off. If the instrument has not been charged for 5 to 7 days, the battery voltage will be low. Therefore, it is a good practice to always charge the instrument before using it. It is also recommended to fully charge the instrument for *at least 10 hours* before first use. Refer to this User Guide's section on battery charging for more information on battery charging and replacement.

WARNINGS

STATIC HAZARD: Clean only with damp cloth.

For safety reasons, this equipment must be operated and serviced by qualified personnel only. Read and understand instruction manual completely before operating or servicing.

Use only RAE Systems battery packs, part numbers 059-3051-000, 059-3052-000, and 059-3054-000. This instrument has not been tested in an explosive gas/air atmosphere having an oxygen concentration greater than 21%. Substitution of components may impair intrinsic safety. Recharge batteries only in non-hazardous locations.

Do not mix old and new batteries or batteries from different manufacturers.

The calibration of all newly purchased RAE Systems instruments should be tested by exposing the sensor(s) to known concentration calibration gas before the instrument is put into service.

For maximum safety, the accuracy of the instrument should be checked by exposing it to a known concentration calibration gas before each day's use.

Do not use USB/PC communication in hazardous locations.

AVERTISSEMENT

DANGER RISQUE D'ORIGINE ELECTROSTATIQUE: Nettoyer uniquement avec un chiffon humide.

Pour des raisons de sécurité, cet équipment doit être utilisé, entretenu et réparé uniquement par un personnel qualifié. Étudier le manuel d'instructions en entier avant d'utiliser, d'entretenir ou de réparer l'équipement.

Utiliser seulement l'ensemble de batterie RAE Systems, la reference 059-3051-000 au 059-3052-000 au 059-3054-000. Cet instrument n'a pas été essayé dans une atmosphère de gaz/air explosive ayant une concentration d'oxygène plus élevée que 21%. La substitution de composants peut compromettre la sécurité intrinsique. Ne charger les batteries que dans emplacements désignés non-dangereuse.

Ne pas melanger les anciennes et les nouvelles batteries, ou bien encore les batteries de differents fabriquants.

La calibration de toute instruments de RAE Systems doivent être testé en exposant l'instrument a une concentration de gaz connue par une procédure diétalonnage avant de mettre en service l'instrument pour la première fois.

Pour une securite maximale, la sensibilité du l'instrument doit être verifier en exposant l'instrument a une concentration de gaz connue par une procédure diétalonnage avant chaque utilisation journalière.

Ne pas utiliser de connection USB/PC en zone dangereuse.

Standard Contents

Instrument
Calibration Kit
Charging Cradle
AC/DC Adapter
Alkaline Battery Adapter
Data Cable
CD-ROM With User's Guide, Quick Start Guide, and related materials

General Information

The compact instrument is designed as a broadband VOC gas monitor and datalogger for work in hazardous environments. It monitors Volatile Organic Compounds (VOC) using a photoionization detector (PID) with a 9.8 eV, 10.6 eV, or 11.7 eV gas-discharge lamp. Features are:

Lightweight and Compact

- Compact, lightweight, rugged design
- Built-in sample draw pump

Dependable and Accurate

- Up to 16 hours of continuous monitoring with rechargeable battery pack
- Designed to continuously monitor VOC vapor at parts-per-million (ppm) levels

User-friendly

- Preset alarm thresholds for STEL, TWA, low- and high-level peak values.
- Audio buzzer and flashing LED display are activated when the limits are exceeded.

Datalogging Capabilities

- 260,000-point datalogging storage capacity for data download to PC

The instrument consists of a PID with associated microcomputer and electronic circuit. The unit is housed in a rugged case with a backlit LCD and 3 keys to provide easy user interface. It also has a built-in flashlight for operational ease in dark locations.

Physical Description

The main components of the portable VOC monitoring instrument include:

- Three keys for user to interact with the instrument: 3 operation/programming keys for normal operation or programming
- LCD display with back light for direct readout and calculated measurements
- Built-in flashlight for illuminating testing points in dark environments
- Buzzer and red LEDs for alarm signaling whenever exposures exceed preset limits
- Charge contacts for plugging directly to its charging station
- Gas entry and exit ports
- USB communication port for PC interface
- Protective rubber cover

Specifications

Size:	9.25" L x 3.6" W x 2.9" H
Weight:	28 oz with battery pack
Detector:	Photoionization sensor with 9.8, 10.6, or 11.7 eV UV lamp
Battery:	A 3.7V rechargeable Lithium-Ion battery pack (snap in, field replaceable, at non-hazardous location only)
	Alkaline battery holder (for 4 AA batteries)
Battery Charging:	Less than 8 hours to full charge
Operating Hours:	Up to16 hours continuous operation
Display:	Large dot matrix screen with backlight

Measurement range & resolution

Lamp	Range	Resolution
10.6 eV	0.1 ppm to 15,000 ppm	0.1 ppm
9.8 eV	0.1 ppm to 5,000 ppm	0.1 ppm
11.7 eV	0.1 ppm to 2,000 ppm	0.1 ppm

Response time (T_{90}): 2 seconds

Accuracy (Isobutylene): 10 to 2000 ppm: ±3% at calibration point.

PID Detector: Easy access to lamp and sensor for cleaning and replacement

Correction Factors: Over 200 VOC gases built in (based on RAE Systems Technical Note TN-106)

Calibration: Two-point field calibration of zero and standard reference gases

Calibration Reference: Store up to 8 sets of calibration data, alarm limits and span values

Inlet Probe: Flexible 5" tubing

Radio module: Bluetooth (2.4GHz)

Keypad: 1 operation key and 2 programming keys; 1 flashlight switch

Direct Readout: Instantaneous, average, STEL, TWA and peak value, and battery voltage

Intrinsic Safety: US and Canada: Class I, Division 1, Groups A, B, C, D

Europe: ATEX (0575 Ex II 2G Ex ia IIC/IIB T4 Gb)
KEMA 07 ATEX 0127
Complies with EN60079-0:2009, EN60079-11:2007

	IECEx CSA 10.0005 Ex ia IIC/IIB T4 Gb Complies with IEC 60079-0:2007, IEC 60079-11:2006 (IIC: 059-3051-000 Li-ion bat pack or 059-3054-000 NiMH bat pack; IIB: 059-3052-000 alkaline bat pack)
EM Interference:	Highly resistant to EMI/RFI. Compliant with EMC R&TTE (RF Modules)
Alarm Setting:	Separate alarm limit settings for Low, High, STEL and TWA alarm
Operating Mode:	Hygiene or Search mode
Alarm:	Buzzer 95dB at 30cm and flashing red LEDs to indicate exceeded preset limits, low battery voltage, or sensor failure
Alarm Type:	Latching or automatic reset
Real-time Clock:	Automatic date and time stamps on datalogged information
Datalogging:	260,000 points with time stamp, serial number, user ID, site ID, etc.
Communication:	Upload data to PC and download instrument setup from PC via USB on charging station.
Sampling Pump:	Internally integrated. Flow rate: 450 to 550 cc/min.
Temperature:	-20º C to 50º C (-4º to 122º F)
Humidity:	0% to 95% relative humidity (non-condensing)
Housing (including rubber boot):	Polycarbonate, splashproof and dustproof Battery can be changed without removing rubber boot.

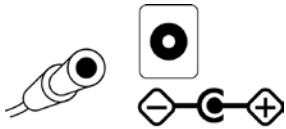
Charging The Battery

Always fully charge the battery before using the instrument. The instrument's Li-ion battery is charged by placing the instrument in its cradle. Contacts on the bottom of the instrument meet the cradle's contacts, transferring power without other connections.

Note: Before setting the instrument into its charging cradle, visually inspect the contacts to make sure they are clean. If they are not, wipe them with a soft cloth. Do not use solvents or cleaners.

Follow this procedure to charge the instrument:

1. Plug the AC/DC adapter's barrel connector into the instrument's cradle.



2. Plug the AC/DC adapter into the wall outlet.
3. Place the instrument into the cradle, press down, and lean it back. It locks in place and the LED in the cradle glow

The instrument begins charging automatically. The "Primary" LED in the cradle blinks green to indicate charging. During charging, the diagonal lines in the battery icon on the instrument's display are animated and you see the message "Charging..."

When the instrument's battery is fully charged, the battery icon is no longer animated and shows a full battery. The message "Fully charged!" is shown. The cradle's LED glows continuously green.



Note: If you see the "Battery Charging Error" icon (a battery outline with an exclamation mark inside), check that the instrument or rechargeable battery has been set into the cradle



properly. If you still receive the message, check the Troubleshooting section of this guide.

Note: If the instrument or battery has been in the cradle for more than 10 hours and you see the "Battery Charging Error" icon and a message that says, "Charging Too Long," this indicates that the battery is not reaching a full charge. Try changing the battery and make sure the contacts between the instrument (or battery) are meeting the cradle. If the message is still shown, consult your distributor or RAE Systems Technical Services.

Charging A Spare Rechargeable Battery

A rechargeable Li-ion battery can be charged when it is not inside the monitor. The charging cradle is designed to accommodate both types of charging. Contacts on the bottom of the battery meet the contacts on the cradle, transferring power without other connections, and a spring-loaded capture holds the battery in place during charging.

1. Plug the AC/DC adapter into the monitor's cradle.
2. Place the battery into the cradle, with the gold-plated contacts on top of the six matching charging pins.
3. Plug the AC/DC adapter into the wall outlet.

The battery begins charging automatically. During charging, the Secondary LED in the cradle blinks green. When charging is complete, it glows steady green.

Release the battery from the cradle by pulling it back toward the rear of the cradle and tilting it out of its slot.

Note: If you need to replace the Li-ion battery pack, replacements are available from RAE Systems. The part number is 059-3051-000.

Note: An Alkaline Battery Adapter (part number 059-3052-000), which uses four AA alkaline batteries (Duracell MN1500), may be substituted for the Li-Ion battery.

WARNING!

To reduce the risk of ignition of hazardous atmospheres, recharge and replace batteries only in areas known to be non-hazardous. Remove and replace batteries only in areas known to be non-hazardous.

Low Voltage Warning



When the battery's charge falls below a preset voltage, the instrument warns you by beeping once and flashing once every minute, and the "empty battery" icon blinks on and off once per second. You should turn off the instrument within 10 minutes and either recharge the battery by placing the instrument in its cradle, or replace the battery with a fresh one with a full charge.

Clock Battery

An internal clock battery is mounted on one of the instrument's printed circuit boards. This long-life battery keeps settings in memory from being lost whenever the Li-ion battery or alkaline batteries are removed. This backup battery should last approximately five years, and must be replaced by an authorized RAE Systems service technician. It is not user-replaceable.

Data Protection While Power Is Off

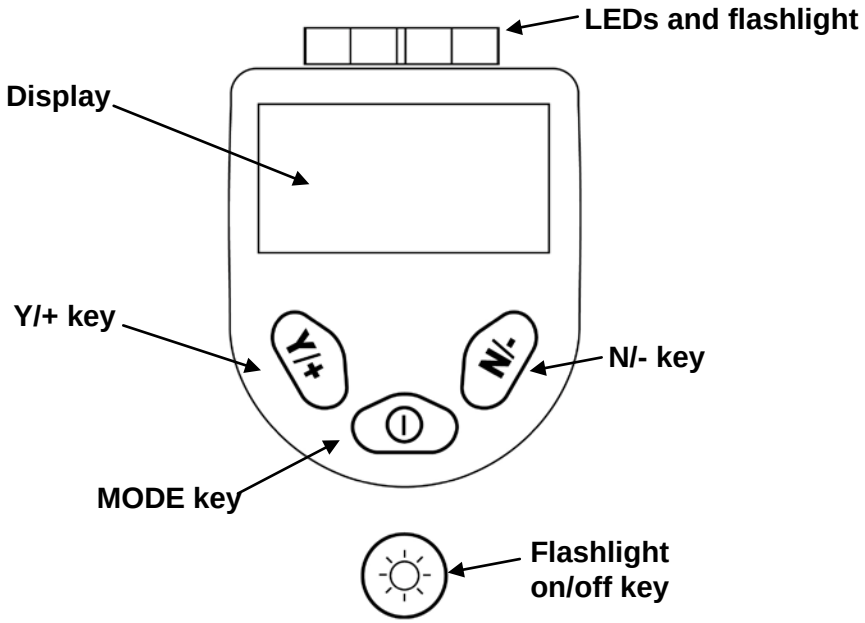
When the instrument is turned off, all the current real-time data including last measured values are erased. However, the datalog data is preserved in non-volatile memory. Even if the battery is disconnected, the datalog data will not be lost.

User Interface

The instrument's user interface consists of the display, LEDs, an alarm transducer, and four keys. The keys are:

Y/+
MODE
N/-
Flashlight on/off

The LCD display provides visual feedback that includes the reading, time, battery condition, and other functions.

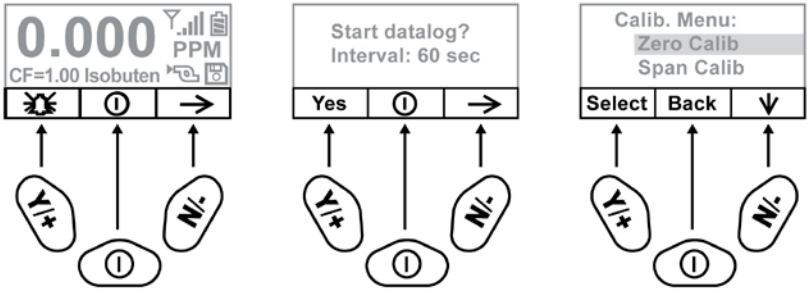


In addition to their labeled functions, the keys labeled Y/+, MODE, and N/- act as "soft keys" that control different parameters and make different selections within the instrument's menus. From menu to

menu, each key controls a different parameter or makes a different selection.

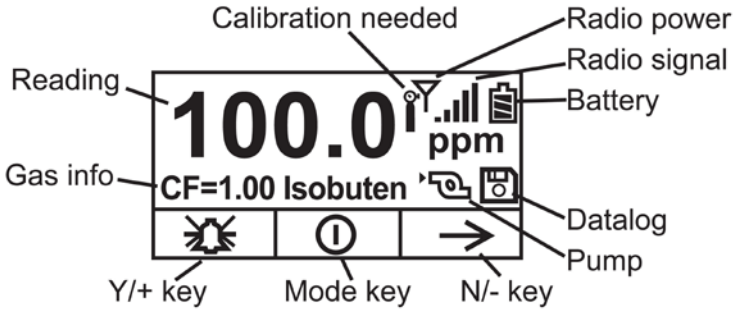
Three panes along the bottom of the display are "mapped" to the keys. These change as menus change, but at all times the left pane corresponds to the [Y/+] key, the center pane corresponds to the [MODE] key, and the right pane corresponds to the [N/-] key. Here are three examples of different menus with the relationships of the keys clearly shown:

RELATIONSHIP OF BUTTONS TO CONTROL FUNCTIONS



Display

The display shows the following information:



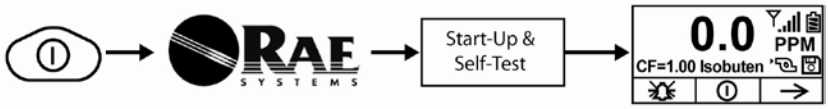
Graph	Graphic representation of concentration plotted over time
Gas info	Tells the Correction Factor and type of calibration gas
Reading	Concentration of gas as measured by the instrument
Calibration needed	Indicates that calibration should be performed
Radio power	Indicates whether radio (wireless Bluetooth) connection is on or off
Radio signal	Indicates signal strength in 5-bar bargraph
Battery	Indicates battery level in 3 bars
Pump	Indicates that pump is working
Datalog	Indicates whether datalog is on or off
Y/+	Y/+ key's function for this screen
MODE	MODE key's function for this screen
N/-	N/- key's function for this screen

Operating The Instrument

The instrument is designed as a broadband VOC gas monitor and datalogger for work in hazardous environments. It gives real-time measurements and activates alarm signals whenever the exposure exceeds preset limits. Prior to factory shipment, the instrument is preset with default alarm limits and the sensor is pre-calibrated with standard calibration gas. However, you should test the instrument and verify the calibration before the first use. After the instrument is fully charged and calibrated, it is ready for immediate operation.

Turning The Instrument On

1. With the instrument turned off, press and hold [MODE].
2. When the display turns on, release the [MODE] key.



The RAE Systems logo should appear first. (If the logo does not appear, there is likely a problem and you should contact your distributor or RAE Systems Technical Support.) The instrument is now operating and performs self tests. If any tests (including sensor and memory tests fail), refer to the Troubleshooting section of this guide.

Once the startup procedure is complete, the instrument shows a numerical reading screen with icons. This indicates that the instrument is fully functional and ready to use.

Turning The Instrument Off

1. Press and hold the Mode key for 3 seconds. A 5-second countdown to shutoff begins.
2. Once the countdown stops, the instrument is off. Release the Mode key.
3. When you see "Unit off..." release your finger from the [MODE] key. The instrument is now off.

Note: You must hold your finger on the key for the entire shutoff process. If you remove your finger from the key during the countdown, the shutoff operation is canceled and the instrument continues normal operation.

Operating The Built-In Flashlight

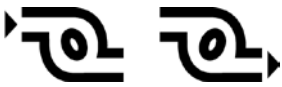
The instrument has a built-in flashlight that helps you point the probe in dark places. Press the flashlight key to turn it on. Press it again to turn it off.

Note: Using the flashlight for extended periods shortens the battery's operating time before it needs recharging.

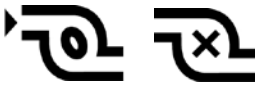
Pump Status

IMPORTANT!

During operation, make sure the probe inlet and the gas outlet are free of obstructions. Obstructions can cause premature wear on the pump, false readings, or pump stalling. During normal operation, the pump icon alternately shows inflow and outflow as shown here:



During duty cycling (PID lamp cleaning), the display shows these icons in alternation:



If there is a pump failure or obstruction that disrupts the pump, you will see this icon blinking on and off:



If you see this blinking icon, consult the Troubleshooting section of this guide.

Calibration Status

The instrument displays this icon if it requires calibration:



Calibration is required (and indicated by this icon) if:

- The lamp type has been changed (for example, from 10.6 eV to 9.8 eV).
- The sensor has been replaced.
- It has been 30 days or more since the instrument was last calibrated.
- If you have changed the calibration gas type without recalibrating the instrument.

Operating Modes

Your instrument operates in different modes, depending on the model and its factory default settings. In some cases, you can change modes using a password and using the instrument's navigation. In other cases, you must use ProRAE Studio software.

The default setting for your instrument is:

User Mode: Basic
Operation Mode: Hygiene

This is outlined in detail on page 74.

The other options, covered later in this guide, are:

User Mode: Advanced (page 78)
Operation Mode: Hygiene

User Mode: Advanced (page 82)
Operation Mode: Search

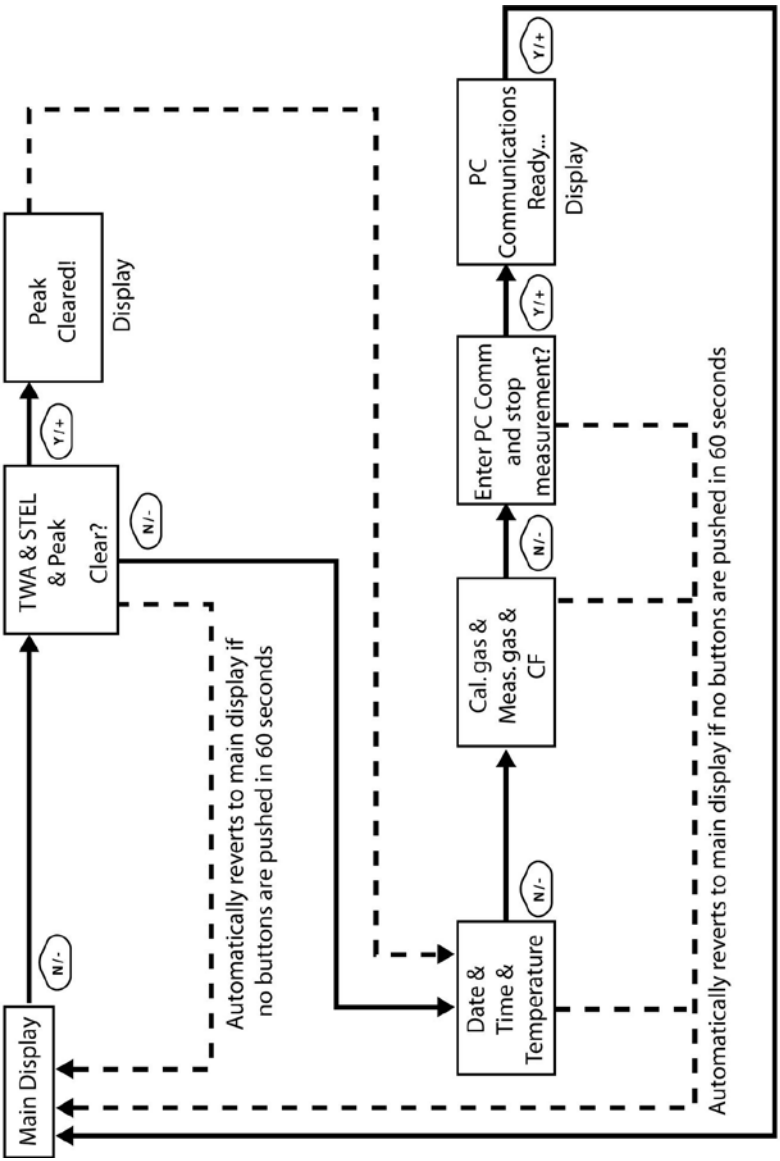
Using ProRAE Studio allows access to other options. In addition, Diagnostic Mode (page 83) is available for service technicians.

Basic User Level/Hygiene Mode (Default Settings)

The instrument is programmed to operate in Basic User Level/Hygiene Mode as its default. This gives you the most commonly needed features while requiring the fewest parameter adjustments.

Pressing [N/-] steps you from one screen to the next, and eventually return to the main display. If you do not press a key within 60 seconds after entering a display, the instrument reverts to its main display.

Note: While viewing any of these screens, you can shut off your instrument by pressing [MODE].



Note: Dashed line indicates automatic progression.

After the instrument is turned on, it runs through the start-up menu. Then the message "**Please apply zero gas…**" is displayed.

At this point, you can perform a zero air (fresh air) calibration. If the ambient air is clean, you can use that. Otherwise, use a cylinder of zero air. Refer to Zero Calibration on page 37 for a more detailed description of zero calibration.

Start zero calibration by pressing Start. You see the message "Zeroing…" followed by a 30-second countdown.

Note: You can press [MODE] to quit, bypassing the zero air calibration.

When zero calibration is complete, you see the message:

Zeroing is done!

Reading = 0.0 ppm

The instrument is now sampling and collecting data.

Note: At the Average & Peak, Date & Time & Temperature, Calibration Gas & Measurement Gas & Correction Factor, and PC Communications screens, the instrument automatically goes to the main display after 60 seconds if you do not push a key to make a selection.

Alarm Signals

During each measurement period, the gas concentration is compared with the programmed alarm limits (gas concentration alarm limit settings). If the concentration exceeds any of the preset limits, the loud buzzer and red flashing LED are activated immediately to warn you of the alarm condition.

In addition, the instrument alarms if one of the following conditions occurs: battery voltage falls below a preset voltage level, failure of the UV lamp, or pump stall.

Alarm Signal Summary

Message	Condition	Alarm Signal
HIGH	Gas exceeds "High Alarm" limit	3 beeps/flashes per second*
OVR	Gas exceeds measurement range	3 beeps/flashes per second*
MAX	Gas exceeds electronics' maximum range	3 beeps/flashes per second*
LOW	Gas exceeds "Low Alarm" limit	2 beeps/flashes per second*
TWA	Gas exceeds "TWA" limit	1 Beep/flash per second*
STEL	Gas exceeds "STEL" limit	1 Beep/flash per second*
Pump icon flashes	Pump failure	3 beeps/flashes per second
Lamp	PID lamp failure	3 beeps/flashes per second plus "Lamp" message on display
Battery icon flashes	Low battery	1 flash, 1 beep per minute plus battery icon flashes on display
CAL	Calibration failed, or needs calibration	1 beep/flash per second
NEG	Gas reading measures less than number stored in calibration	1 beep/flash per second

* Hygiene mode only. In Search mode, the number of beeps per second (1 to 7) depends upon the concentration of the sampled gas. Faster rates indicate higher concentrations.

Preset Alarm Limits & Calibration

The instrument is factory calibrated with standard calibration gas, and is programmed with default alarm limits.

Cal Gas (Isobutylene)	Cal Span	unit	Low	High	TWA	STEL
MiniRAE 3000	100	ppm	50	100	10	25

Testing The Alarm

You can test the alarm whenever the main (Reading) display is shown. Press [Y/+], and the audible and visible alarms are tested.

Integrated Sampling Pump

The instrument includes an integrated sampling pump. This diaphragm-type pump that provides a 450 to 550 cc per minute flow rate. Connecting a Teflon or metal tubing with 1/8" inside diameter to the gas inlet port of the instrument, this pump can pull in air samples from 100' (30 m) away horizontally or vertically.

Note: In Search Mode, the pump turns on when a sample measurement is started, and turns off when the sample is manually stopped.

If liquid or other objects are pulled into the inlet port filter, the instrument detects the obstruction and immediately shuts down the pump. The alarm is activated and a flashing pump icon is displayed.

You should acknowledge the pump shutoff condition by clearing the obstruction and pressing the [Y/+] key while in the main reading display to restart the pump.

Backlight

The LCD display is equipped with an LED backlight to assist in reading the display under poor lighting conditions.

Datalogging

During datalogging, the instrument displays a disk icon to indicate that datalogging is enabled. The instrument stores the measured gas concentration at the end of every sample period (when data logging is enabled). In addition, the following information is stored: user ID, site ID, serial number, last calibration date, and alarm limits. All data are retained (even after the unit is turned off) in non-volatile memory so that it can be down- loaded at a later time to a PC.

Datalogging event

When Datalogging is enabled, measurement readings are being saved. These data are stored in "groups" or "events." A new event is created and stored each time the instrument is turned on and is set to automatic datalogging, or a configuration parameter is changed, or datalogging is interrupted. The maximum time for one event is 24 hours or 28,800 points. If an event exceeds 24 hours, a new event is automatically created. Information, such as start time, user ID, site ID, gas name, serial number, last calibration date, and alarm limits are recorded.

Datalogging sample

After an event is recorded, the unit records a shorter form of the data. When transferred to a PC running ProRAE Studio, this data is arranged with a sample number, time, date, gas concentration, and other related information.

Auto/Manual/Snapshot Datalogging

The instrument has three datalog types:

Auto	Default mode. Collects datalog information when the instrument is sampling.
Manual	Datalogging occurs only when the instrument's datalogging is manually started (see page 63 for details).
Snapshot	Datalogs only during snapshot (single-event capture, initiated by pressing [MODE]) sampling. See page 65 for details.

Note: You can only choose one datalog type to be active at a time.

Accessories

The following accessories are included with the instrument:

- An AC Adapter (Battery Charger)
- Alkaline battery adapter
- External Filter
- Organic Vapor Zeroing kit

Hard-case kits also include these accessories:

- Calibration adapter
- Calibration regulator and Flow controller

Standard Kit & Accessories

AC Adapter (Battery Charger)

WARNING

To reduce the risk of ignition of hazardous atmospheres, recharge battery only in area known to be non-hazardous. Remove and replace battery only in area known to be non-hazardous.

Ne charger les batteries que dans emplacements designés non-dangereuses.

A battery charging circuit is built into the instrument cradle. It only needs a regular AC to 12 VDC adapter (wall-mount transformer, part number 500-0114-000) to charge the instrument.

To charge the battery inside the instrument:

1. Power off the instrument.
2. Connect the AC adapter to the DC jack on the instrument's cradle. If the instrument is off, it automatically turns on.
3. While charging, the display message shows "Charging." The Primary LED on the cradle flashes green when charging.
4. When the battery is fully charged, the LED changes to glowing green continuously, and the message "Fully charged" appears on the

display. If there is a charging error, the LED glows red continuously.

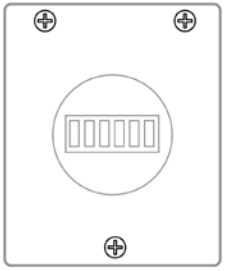
A completely discharged instrument can be charged to full capacity within 8 hours. Batteries drain slowly even if an instrument is off. Therefore, if the instrument has been in storage or has not been charged for several days or longer, check the charge before using it.

The factory-supplied battery is designed to last for 16 hours of normal operation (no alarm), for a new battery under the optimum circumstances. As the battery becomes older or is subject to adverse conditions (such as cold ambient temperature), its capacity will be significantly reduced.

Alkaline Battery Adapter

An alkaline battery adapter is supplied with each instrument. The adapter (part number 059-3052-000) accepts four AA alkaline batteries (use only Duracell MN1500) and provides approximately 12 hours of operation. The adapter is intended to be used in emergency situations when there is no time to charge the Li-ion battery pack.

To insert batteries into the adapter:



1. Remove the three Philips-head screws to open the compartment in the adapter.
2. Insert four fresh AA batteries as indicated by the polarity (+/-) markings.
3. Replace the cover. Replace the three screws.

To install the adapter in the instrument:

1. Remove the Li-ion battery pack from the instrument by sliding the tab and tilting out the battery.
2. Replace it with the alkaline battery adapter
3. Slide the tab back into place to secure the battery adapter.

IMPORTANT!

Alkaline batteries cannot be recharged. The instrument's internal circuit detects alkaline batteries and will not allow recharging. If you place the instrument in its cradle, the alkaline battery will not be recharged. The

internal charging circuit is designed to prevent damage to alkaline batteries and the charging circuit when alkaline batteries are installed inside the instrument. If you try to charge an alkaline batteries installed in the instrument, the instrument's display will say, "Alkaline Battery," indicating that it will not charge the alkaline batteries.

Note: When replacing alkaline batteries, dispose of old ones properly.

WARNING!

To reduce the risk of ignition of hazardous atmospheres, recharge the battery only in areas known to be non-hazardous. Remove and replace the battery only in areas known to be non-hazardous.

External Filter

The external filter is made of PTFE (Teflon®) membrane with a 0.45 micron pore size to prevent dust or other particles from being sucked into the sensor manifold, which would cause extensive damage to the instrument. It prolongs the operating life of the sensor. To install the external filter, simply connect it to the instrument's inlet tube.

Optional Accessories

Calibration Adapter

The calibration adapter for the instrument is a simple 6-inch Tygon tubing with a metal adapter on one end. During calibration, simply insert the metal adapter into the regular gas inlet probe of the instrument and the tubing to the gas regulator on the gas bottle.

Calibration Regulator

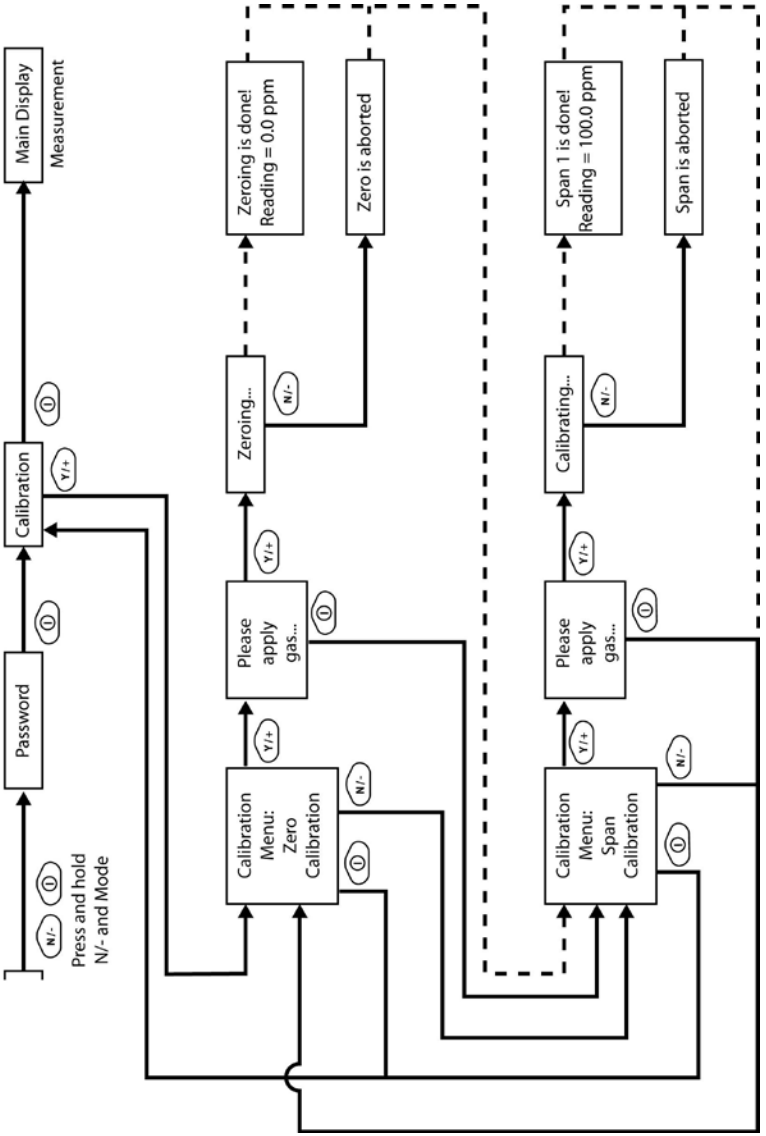
The Calibration Regulator is used in the calibration process. It regulates the gas flow rate from the Span gas cylinder into the gas inlet of the instrument during calibration process. The maximum flow rate allowed by the flow controller is about 0.5L/min (500 cc per min.). Alternatively, a demand-flow regulator or a Tedlar gas bag may be used to match the pump flow precisely.

Organic Vapor Zeroing Kit

The Organic Vapor Zeroing Kit is used for filtering organic air contaminants that may affect the zero calibration reading. To use the Organic Vapor Zeroing Kit, simply connect the filter to the inlet port of the instrument.

Standard Two-Point Calibration (Zero & Span)

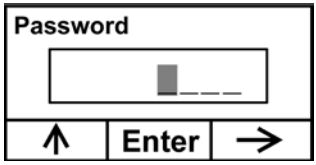
The following diagram shows the instrument's calibrations in Basic/Hygiene mode.



Note: Dashed line indicates automatic progression.

Entering Calibration

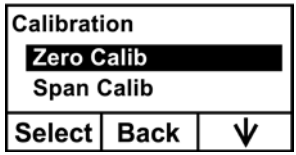
1. Press and hold [MODE] and [N/-] until you see the Password screen.



2. In Basic User Level, you do not need a password to perform calibrations. Instead of inputting a password, enter calibration by pressing [MODE].

   Note: If you inadvertently press [Y/+] and change any of the numbers, simply press [MODE] and you will be directed to the calibration menu.

The Calibration screen is now visible with Zero Calibration highlighted.



These are your options:

- Press [Y/+] to select the highlighted calibration (Zero Calib or Span Calib).
- Press [MODE] to exit calibration and return to the main display and resume measurement.
- Press [N/-] to toggle the highlighted calibration type.

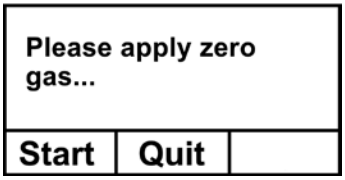
Zero (Fresh Air) Calibration

This procedure determines the zero point of the sensor calibration curve. To perform a fresh air calibration, use the calibration adapter to connect the instrument to a "fresh" air source such as from a cylinder or Tedlar bag (optional accessory). The "fresh" air is clean, dry air without organic impurities and an oxygen value of 20.9%. If such an air cylinder is not available, any clean ambient air without detectable contaminants or a charcoal filter can be used.

At the Zero Calibration menu, you can proceed to perform a Zero calibration or bypass Zero calibration and perform a Span calibration. You may also go back to the initial Calibration menu if you want to exit calibration.

- Press [Y/+] to start calibration.
- Press [MODE] to quit and return to the main calibration display.

If you have pressed [Y/+] to enter Zero calibration, then you will see this message:



1. Turn on your Zero calibration gas.
2. Press [Y/+] to start calibration.

   Note: At this point, you may press [MODE] if you decide that you do not want to initiate calibration. This will take you directly to the Calibration menu, highlighted for Span calibration.

3. Zero calibration starts a 30-second countdown and displays this message:

   Zeroing...

During the zeroing process, the instrument performs the Zero calibration automatically and does not require any action on your part.

Note: To abort the zeroing process at any time and proceed to Span calibration, press [N/-] at any time while zeroing is being performed. You will see a confirmation message that says "Zero aborted!" and then the Span calibration menu appears.

When Zero calibration is complete, you see this message:

Zeroing is done!
Reading = 0.0 ppm

The instrument will then show the Calibration menu on its display, with Span Calib highlighted.

Span Calibration

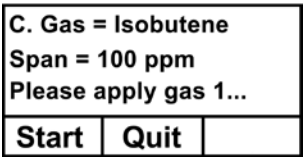
This procedure determines the second point of the sensor calibration curve for the sensor. A cylinder of standard reference gas (span gas) fitted with a 500 cc/min. flow-limiting regulator or a flow-matching regulator is the simplest way to perform this procedure. Choose the 500 cc/min. regulator only if the flow rate matches or slightly exceeds the flow rate of the instrument pump. Alternatively, the span gas can first be filled into a Tedlar bag or delivered through a demand-flow regulator. Connect the calibration adapter to the inlet port of the instrument, and connect the tubing to the regulator or Tedlar bag.

Another alternative is to use a regulator with >500 cc/min flow but allow the excess flow to escape through a T or an open tube. In the latter method, the span gas flows out through an open tube slightly wider than the probe, and the probe is inserted into the calibration tube.

At the Span Calibration menu, you perform a Span calibration. You may also go back to the Zero calibration menu or to the initial Calibration menu if you want to exit calibration.

- Press [Y/+] to enter Span calibration.
- Press [N/-] to skip Span calibration and return to Zero calibration.
- Press [MODE] to exit Span calibration and return to the top calibration menu.

If you have pressed [Y/+] to enter Span calibration, then you will see the name of your Span gas (the default is isobutylene) and the span value in parts per million (ppm). You will also see this message that prompts you:



1. Turn on your span calibration gas.
2. Press [Y/+] to initiate calibration.

Note: You may press [MODE] if you decide that you do not want to initiate calibration. This will abort the span calibration and take you directly to the Calibration menu for Zero calibration.

3. Span calibration starts and displays this message:

   Calibrating...

During the Span calibration process, there is a 30-second countdown and the instrument performs the Span calibration automatically. It requires no actions on your part.

Note: If you want to abort the Span calibration process, press [N/-] at any time during the process. You will see a confirmation message that says "Span is aborted!" and then the Zero calibration menu appears. You can then proceed to perform a Zero calibration, perform a Span calibration, or exit to the topmost Calibration menu.

When Span calibration is complete, you see a message similar to this (the value is an example only):

Span 1 is done!
Reading = 100.0 ppm

The instrument then exits Span calibration and shows the Zero calibration menu on its display.

Note: The reading should be very close to the span gas value.

Exiting Two-Point Calibration In Basic User Level

When you are done performing calibrations, press [MODE], which corresponds with "Back" on the display. You will see the following message:

Updating settings…

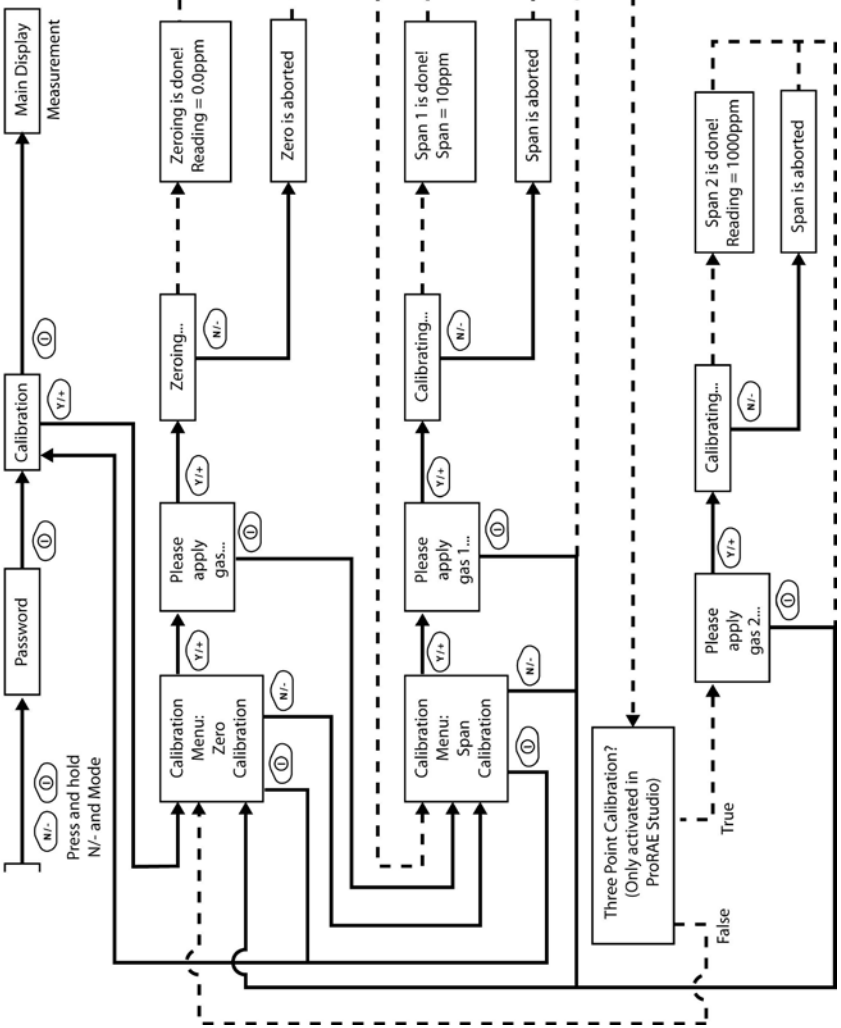
The instrument updates its settings and then returns to the main display. It begins or resumes monitoring.

Three-Point Calibration

For enhanced accuracy, it is possible to perform a second Span calibration in addition to the Zero and Span calibrations outlined in the previous section. Your instrument first must be set to allow this third calibration. This requires using ProRAE Studio software and a PC, as well as a higher concentration of calibration gas.

Note: Once the third calibration is set, you do not need to use ProRAE Studio to allow future 3-point calibrations. Also, you can only disable 3-point calibration capability by using ProRAE Studio again.

Perform the Zero and Span calibrations. After the first Span calibration (Span 1) is completed, the display a second Span calibration (Span 2) can be performed. The process is identical to the first calibration. As in the Span 1 calibration, you may exit and return to the Zero calibration screen if you choose not to perform this calibration or to abort it.



Note: Dashed line indicates automatic progression.

Span 2 Calibration

A cylinder of standard reference gas (span gas) fitted with a 500 cc/min. flow-limiting regulator or a flow-matching regulator is the simplest way to perform this procedure.

Note: This gas should be of a higher concentration than the gas used for Span 1 calibration.

Choose the 500 cc/min. regulator only if the flow rate matches or slightly exceeds the flow rate of the instrument pump. Alternatively, the span gas can first be filled into a Tedlar bag or delivered through a demand-flow regulator. Connect the calibration adapter to the inlet port of the instrument, and connect the tubing to the regulator or Tedlar bag.

Another alternative is to use a regulator with >500 cc/min flow but allow the excess flow to escape through a T or an open tube. In the latter method, the span gas flows out through an open tube slightly wider than the probe, and the probe is inserted into the calibration tube.

At the Span Calibration menu, you perform a Span calibration. You may also go back to the Zero calibration menu or to the initial Calibration menu if you want to exit calibration.

- Press [Y/+] to enter Span 2 calibration.
- Press [N/-] to skip Span calibration and return to Zero calibration.
- Press [MODE] to exit Span calibration and return to the top calibration menu.

If you have pressed [Y/+] to enter Span calibration, then you will see the name of your Span gas (the default is isobutylene) and the span value in parts per million (ppm). You will also see this message that prompts you:

Please apply gas...

4. Turn on your span calibration gas.
5. Press [Y/+] to initiate calibration.

Note: You may press [MODE] if you decide that you do not want to initiate calibration. This will take you directly to the Calibration menu for Zero calibration.

6. Span calibration starts a 30-second countdown and displays this message:

   Calibrating...

During the Span calibration process, the instrument performs the Span calibration automatically and does not require any action on your part.

Note: If you want to abort the Span calibration process, press [N/-] at any time during the process. You will see a confirmation message that says "Span is aborted!" and then the Zero calibration menu will appear. You can then proceed to perform a Zero calibration, perform a Span calibration, or exit to the topmost Calibration menu.

When Span calibration is complete, you will see a message similar to this (the value shown here is for example only):

Span 2 is done!
Reading = 1000 ppm

The instrument then exits Span calibration and shows the Zero calibration menu on its display.

Note: The reading should be very close to the span gas value.

Exiting Three-Point Calibration

When you are done performing calibrations, press [MODE], which corresponds with "Back" on the display. You will see the following message:

Updating settings…

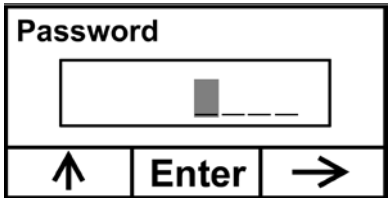
The instrument updates its settings and then returns to the main display. It begins or resumes monitoring.

Programming Mode

Programming Mode can be entered from either Hygiene Mode or Search Mode. If the current user mode is Basic, you must provide a 4-digit password to enter.

Entering Programming Mode

1. Press and hold [MODE] and [N/-] until you see the Password screen.



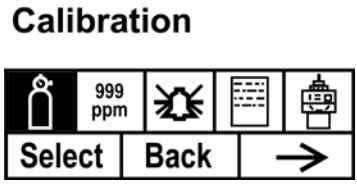
2. Input the 4-digit password:

- Increase the number from 0 through 9 by pressing [Y/+].
- Step from digit to digit using [N/-].
- Press [MODE] when you are done.

If you make a mistake, you can cycle through the digits by pressing [N/-] and then using [Y/+] to change the number in each position.

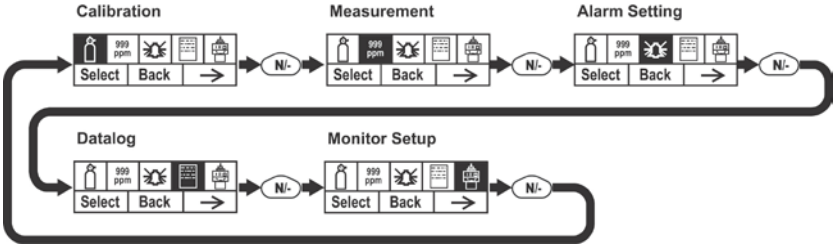
Note: The default password is 0000.

When you have successfully entered Programming Mode, you see this screen:



Note: The password can only be changed by connecting the instrument to a PC running ProRAE Studio software. Follow the instructions in ProRAE Studio to change it.

The Calibration label is shown and its icon is highlighted, but you can press [N/-] to step from one programming menu to the next, with the name of the menu shown at the top of the display and the corresponding icon highlighted. As you repeatedly press [N/-], the selection moves from left to right, and you see these screens:

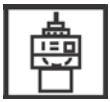


Note: When you reach Monitor Setup and press [N/-], the menu cycles back to Calibration.

Programming Mode Menus

The Programming Mode allows anyone with the password to change the instrument's settings, calibrate the instrument, modify the sensor configuration, enter user information, etc. Programming Mode has five menus. Each menu includes several sub-menus to perform additional programming functions.

This table shows the menus and sub-menus:

				
Calibration	**Measurement**	**Alarm Setting**	**Datalog**	**Monitor Setup**
Zero Calibration	Meas. Gas	High Alarm	Clear Datalog	Radio Power
Span Calibration	Meas. Unit	Low Alarm	Interval	Op Mode
		STEL Alarm	Data Selection	Site ID
		TWA Alarm	Datalog Type	User ID
		Alarm Type		User Mode
		Buzzer & Light		Date
				Time
				Pump Duty Cycle
				Pump Speed
				Temperature Unit
				Language
				Real Time Protocol
				Power On Zero
				Unit ID
				LCD Contrast

Once you enter Programming Mode, the LCD displays the first menu, Calibration. Each subsequent menu is accessed by pressing [N/-]

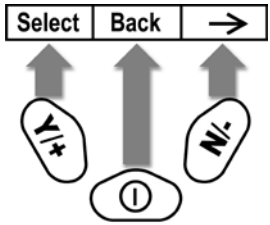
repeatedly until the desired menu is displayed. To enter a sub-menu of a menu, press [Y/+].

Exiting Programming Mode

To exit Programming Mode and return to normal operation, press [MODE] once at any of the programming menu displays. You will see "Updating Settings…" as changes are registered and the mode changes.

Navigating Programming Mode Menus

Navigating through the Programming Mode menus is easy and consistent, using a single interface format of "Select," "Back" and "Next" at the top level. The three control buttons correspond to these choices as shown:



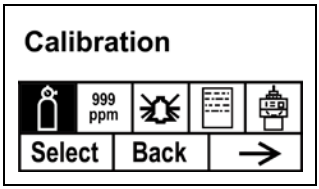
Note: Pressing [MODE] in the Programming Mode's top level causes the instrument to exit Programming Mode and return to monitoring.

The three keys perform the following functions in Programming Mode:

Key	Function in Programming Mode
[MODE]:	Exit menu when pressed momentarily or exit data entry mode
[Y/+]:	Increase alphanumerical value for data entry or confirm (yes) for a question
[N/-]:	Provides a "no" response to a question

Calibration

Two types of calibration are available: Zero (fresh air) and Span.



Select Zero or Span Calibration by pressing [N/+]. Once your choice is highlighted, press [Y/+].

Zero Calibration

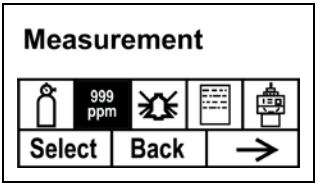
The procedure for performing a zero calibration is covered on page 35.

Span Calibration

The procedure for performing a basic span calibration is covered on page 35.

Measurement

The sub-menus for Measurement are Measurement Gas and Measurement Unit.



Meas. Gas

Measurement gases are organized in four lists:

- My List is a customized list of gases that you create. It contains a maximum of 10 gases and can only be built in ProRAE Studio on a PC and transferred to the instrument. **Note:** The first gas in the list is always isobutylene (it cannot be removed from the list).
- Last Ten is a list of the last ten gases used by your instrument. The list is built automatically and is only updated if the gas selected from Custom Gases or Library is not already in the Last Ten. This ensures that there is no repetition.
- Gas Library is a library that consists of all the gases found in RAE Systems' Technical Note TN-106 (available online at www.raesystems.com).
- Custom Gases are gases with user-modified parameters. Using ProRAE Studio, all parameters defining a gas can be modified, including the name, span value(s), correction factor, and default alarm limits.

1. Scroll through each list by pressing [N/-].
2. Press [Y/+] to select one (My List, Last Ten, Gas Library, or Custom Gases).

3. Once you are in one of the categories, press [N/-] to scroll through its list of options and [Y/+] to select one. (If you press [MODE], you exit to the next submenu.)
4. Press [Y/+] to save your choice or [N/-] to undo your selection.

Leave the sub-menu and return to the Programming Mode menus by pressing [MODE].

Meas. Unit

Standard available measurement units include:

Abbreviation	Unit	MiniRAE 3000
ppm	parts per million	Yes
ppb	parts per billion	
mg/m3	milligrams per cubic meter	Yes
ug/m3	micrograms per cubic meter	

- Scroll through the list by pressing [N/-].
- Select by pressing [Y/+].
- Save your selection by pressing [Y/+] or undo your selection by pressing [N/-].

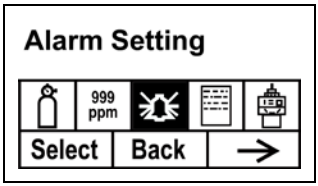
Leave the sub-menu and return to the Programming Mode menus by pressing [MODE].

Alarm Setting

During each measurement period, the gas concentration is compared with the programmed alarm limits (gas concentration alarm limit settings: Low, High, TWA and STEL). If the concentration exceeds any of the preset limits, the loud buzzer and red flashing LED are activated immediately to warn of the alarm condition.

An alarm signal summary is shown on page 27.

In this menu, you can change the High and Low alarm limits, the STEL limit, and the TWA. Press [Y/+] to to enter the Alarm Setting menu. **Note:** All settings are shown in ppb (parts per billion), or µg/m^3 (micrograms per cubic meter), depending on your setting.



1. Scroll through the Alarm Limit sub-menu using the [N/-] key until the display shows the desired limit to be changed (High Alarm, Low Alarm, STEL Alarm, and TWA Alarm)
2. Press [Y/+] to select one of the alarm types. The display shows a flashing cursor on the left-most digit of the previously stored alarm limit.
3. Press [Y/+] to increase each digit's value.
4. Press [N/-] to advance to the next digit.
5. Again, use [Y/+] to increase the number.

Repeat this process until all numbers are entered.

Press [MODE] when you are done.

- Press [Y/+] to save the changes.
- Press [N/-] to undo the changes and revert to the previous settings.

When all alarm types have been changed or bypassed, press [MODE] to exit to the Programming Menu.

High Alarm

You can change the High Alarm limit value. The value is typically set by the instrument to match the value for the current calibration gas. It is expressed in parts per billion (ppb). **Note:** The default value depends on the measurement gas.

To change the High Alarm value:

1. Press [Y/+] to increase each digit's value.
2. Press [N/-] to advance to the next digit.
3. Again, use [Y/+] to increase the number.

Repeat this process until all numbers are entered.
When you have completed your selections, press [MODE]. You will see two choices: Save and Undo. You have the opportunity to register the new settings or to change your mind and revert to your previous settings.

Press [Y/+] to save the changes.
Press [N/-] to undo the changes and revert to the previous settings.

Low Alarm

You can change the Low Alarm limit value. The value is typically set by the instrument to match the value for the current calibration gas. It is expressed in parts per billion (ppb). **Note:** The default value depends on the measurement gas.

To change the Low Alarm value:

1. Press [Y/+] to increase each digit's value.
2. Press [N/-] to advance to the next digit.
3. Again, use [Y/+] to increase the number.

Repeat this process until all numbers are entered.

When you have completed your selections, press [MODE]. You will see two choices: Save and Undo. You have the opportunity to register the new settings or to change your mind and revert to your previous settings.

- Press [Y/+] to save the changes.
- Press [N/-] to undo the changes and revert to the previous settings.

STEL Alarm

You can change the STEL Alarm limit value. The value is typically set by the instrument to match the value for the calibration gas. It is expressed in parts per billion (ppb). **Note:** The default value depends on the measurement gas.

To change the STEL Alarm value:

1. Press [Y/+] to increase each digit's value.
2. Press [N/-] to advance to the next digit.
3. Again, use [Y/+] to increase the number.

Repeat this process until all numbers are entered.

When you have completed your selections, press [MODE]. You will see two choices: Save and Undo. You have the opportunity to register the new settings or to change your mind and revert to your previous settings.

- Press [Y/+] to save the changes.
- Press [N/-] to undo the changes and revert to the previous settings.

TWA Alarm

You can change the TWA (time-weighted average) Alarm limit value. The value is typically set by the instrument to match the value for the calibration gas. It is expressed in parts per billion (ppb). **Note:** The default value depends on the measurement gas.

To change the TWA Alarm value:

1. Press [Y/+] to increase each digit's value.
2. Press [N/-] to advance to the next digit.
3. Again, use [Y/+] to increase the number.

Repeat this process until all numbers are entered.

When you have completed your selections, press [MODE]. You will see two choices:

- Save
- Undo

You have the opportunity to register the new settings or to change your mind and revert to your previous settings.

- Press [Y/+] to save the changes.
- Press [N/-] to undo the changes and revert to the previous settings.

Alarm Type

There are two selectable alarm types:

Latched — When the alarm is triggered, you can manually stop the alarm.
The latched setting only controls alarms for High Alarm, Low Alarm, STEL Alarm, and TWA alarm.

Note: To clear an alarm when the instrument is set to "Latched," press [Y/+] when the main (Reading) display is shown.

Automatic Reset — When the alarm condition is no longer present, the alarm stops and resets itself.

1. Press **[N/-]** to step from one alarm type to the other.
2. Press **[Y/+]** to select an alarm type.

When you have completed your selections, press [MODE].

You will see two choices: Save and Undo. You have the opportunity to register the new settings or to change your mind and revert to your previous settings.

- Press [Y/+] to save the changes.
- Press [N/-] to undo the changes and revert to the previous settings.

Buzzer & Light

The buzzer and light alarms can be programmed to be on or off individually or in combination. Your choices are:

- Both on
- Light only
- Buzzer only
- Both off

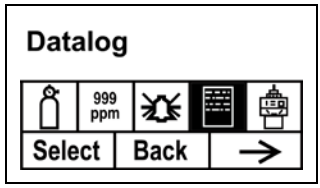
1. Press [N/-] to step from one option to the next.
2. Press [Y/+] to make your selection (the dark circle in the "radio button" indicates your selection).
3. When you have completed your selections, press [MODE].

   You will see two choices: Save and Undo. You have the opportunity to register the new settings or to change your mind and revert to your previous settings.

   - Press [Y/+] to save the changes.
   - Press [N/-] to undo the changes and revert to the previous settings.

Datalog

The instrument calculates and stores the concentration and ID of each sample taken. In the datalog sub-menu, a user can perform the tasks and functions shown below.



1. Scroll through the Datalog sub-menu using the [N/-] key until the display shows the desired parameter to be changed:

   Clear Datalog
   Interval
   Data Selection
   Datalog Type

2. Press [Y/+] to make your selection. Exit by pressing [MODE] for Back.

Clear Datalog

This erases all the data stored in the datalog.

Note: Once the datalog is cleared, the data cannot be recovered.

Press [Y/+] to clear the datalog. The display asks, "Are you sure?"

- Press [Y/+] if you want to clear the datalog. When it has been cleared, the display shows "Datalog Cleared!"
- Press [N/-] if you do not want to clear the datalog.

The display changes, and you are taken to the next sub-menu, Interval.

Interval

Intervals are shown in seconds. The default value is 60 seconds. The maximum interval is 3600 seconds.

1. Press [Y/+] to increase each digit's value.
2. Press [N/-] to advance to the next digit.
3. Again, use [Y/+] to increase the number.

Repeat this process until all numbers are entered.

When you have completed your selections, press [MODE].

You will see two choices: Save and Undo. You have the opportunity to register the new settings or to change your mind and revert to your previous settings.

- Press [Y/+] to save the changes.
- Press [N/-] to undo the changes and revert to the previous settings.

Data Selection

Data Selection allows you to select which types of data are stored and made available when you offload your datalog to a computer via ProRAE Studio software.

You can choose any or all of three types of data (you must choose at least one):

- Average
- Maximum
- Minimum

1. Press [N/-] to step from one option to the next. The highlighter indicates your choice.
2. Press [Y/+] to toggle your selection on or off (the check box indicates "on" with an "X").
3. When you have completed your selections, press [MODE].

You will see two choices: Save and Undo. You have the opportunity to register the new settings or to change your mind and revert to your previous settings.

- Press [Y/+] to save the changes.
- Press [N/-] to undo the changes and revert to the previous settings.

Datalog Type

The instrument has three datalog types:

Auto	Default mode. Collects datalog information when the instrument is sampling.
Manual	Datalogging occurs only when the instrument's datalogging is manually started (see below for details).
Snapshot	Datalogs only during single-event capture sampling.

Note: You can only choose one datalog type to be active at a time.

1. Press [N/-] to step from one option to the next.
2. Press [Y/+] to make your selection (the dark circle in the "radio button" indicates "on").
3. When you have completed your selection, press [MODE].

You will see two choices: Save and Undo. You have the opportunity to register the new settings or to change your mind and revert to your previous settings.

- Press [Y/+] to save the changes.

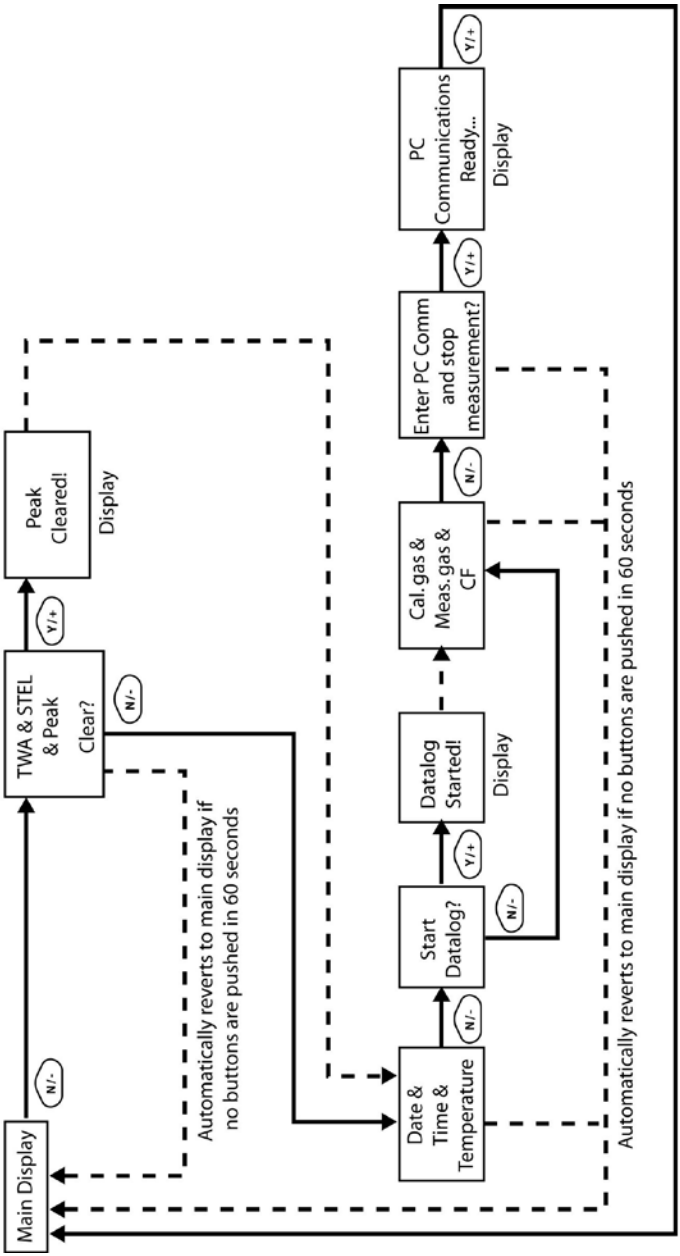
Press [N/-] to undo the changes and revert to the previous settings.

Manual Datalog

When the instrument is set to Manual Datalog, you turn datalogging on and off by stepping through the displays from the Main Display, and then pressing the keys to select datalog on/off functions.

- When you reach the screen that says "Start Datalog?" press [Y/+] to start it. You see "Datalog Started," confirming that datalogging is now on.

When you reach the screen that says "Stop Datalog?" press [Y/+] to stop it. You see "Datalog Stopped," confirming that datalogging is now off.



Note: Dashed line indicates automatic progression.

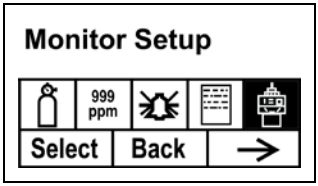
Snapshot Datalog

When the instrument is in Snapshot datalogging mode, it captures a single "snapshot" of the data at the moment of your choosing. Whenever the instrument is on and it is set to Snapshot, all you have to do is press [MODE] each time you want to capture a snapshot of the data at that instant.

When you send the data to a computer using ProRAE Studio, the data snapshots are uniquely identified by time and other parameters.

Monitor Setup

Many settings can be accessed in this menu, including setting the date and time and adjusting the pump's on/off duty cycle.



Radio Power

The radio connection can be turned on or off.

1. Press [N/-] to step from one option to the next (on or off).
2. Press [Y/+] to make your selection (the dark circle in the "radio button" indicates that the option is selected).
3. When you have completed your selection, press [MODE].

    - Press [Y/+] to accept the new radio setting (on or off).
    - Press [N/-] to discard the change and move to the next sub-menu.

Op Mode

Under Monitor Setup is "Op Mode."

Press [Y/+] to select.

You see two options (one is highlighted):

Hygiene
Search

The current mode is indicated by a dark circle within the circle in front of either Hygiene or Search.

1. Select Hygiene or Search by pressing [N/-]. The highlighting changes from one to the other each time you press [N/-].
2. Press [Y/+] to select that mode for the instrument.
3. Press [MODE] when you want to register your selection to place the instrument in the selected mode.
4. Press [Y/+] to commit the change and exit to the Monitor Setup screen, or press [N/-] to Undo (exit to the Monitor Setup screen without changing the Mode).

Site ID

Enter an 8-digit alphanumeric/character Site ID in the programming mode. This Site ID is included in the datalog report.

1. Press [Y/+] and the display shows the current site ID. Example: "RAE00001." Note that the left-most digit flashes to indicate it is the selected one.
2. Press [Y/+] to step through all 26 letters (A to Z) and 10 numerals (0 to 9).
   Note: The last four digits must be numerals.
3. Press [N/-] to advance to the next digit. The next digit to the right flashes.

Repeat this process until all eight digits of the new site ID are entered.

Press [MODE] to exit.

If there is any change to the existing site ID, the display shows "Save?" Press [Y/+] to accept the new site ID. Press [N/-] to discard the change and move to the next sub-menu.

User ID

Enter an 8-digit alphanumeric User ID in the programming mode. This User ID is included in the datalog report.

1. Press [Y/+] and the display shows the current User ID. Example: "RAE00001." Note that the left-most digit flashes to indicate it is the selected one.
2. Press [Y/+] to step through all 26 letters (A to Z) and 10 numerals (0 to 9).
3. Press [N/-] to advance to the next digit. The next digit to the right flashes.

   Repeat this process until all eight digits of the new User ID are entered.

Press [MODE] to exit.

If there is any change to the existing User ID, the display shows "Save" Press [Y/+] to accept the new site ID. Press [N/-] to discard (undo) the change and move to the next sub-menu.

User Mode

The instrument has two user modes:

Basic Basic users can only see and use a basic set of functions.
Advanced Advanced users can see all screens and perform all available functions.

Note: The default value for User Mode is Basic.

To change the User Mode:

1. Press [N/-] to step from one option to the next. The highlighting changes each time you press [N/-].
2. Press [Y/+] to make your selection (the dark circle in the "radio button" indicates "on").
3. When you have completed your selection, press [MODE].
4. Press [Y/+] to accept the new User Mode. Press [N/-] to discard the change and move to the next sub-menu.

Date

The Date is expressed as Month/Day/Year, with two digits for each.

1. Press [Y/+] and the display shows the current date. Note that the left-most digit flashes to indicate it is selected.
2. Press [Y/+] to step through all 10 numerals (0 to 9).
3. Press [N/-] to advance to the next digit. The next digit to the right flashes.

   Repeat this process until all six digits of the new date are entered.

Press [MODE] to exit.

- Press [Y/+] to save the new date.
- Press [N/-] to undo the change and move to the next sub-menu.

Time

The Time is expressed as Hours/Minutes/Seconds, with two digits for each. The time is in 24-hour (military) format.

1. Press [Y/+] and the display shows the current time. Note that the left-most digit flashes to indicate it is selected.

2. Press [Y/+] to step through all 10 numerals (0 to 9).
3. Press [N/-] to advance to the next digit. The next digit to the right flashes.

   Repeat this process until all six digits of the new time are entered.

Press [MODE] to exit.

- Press [Y/+] to save the new date.
- Press [N/-] to undo the change and move to the next sub-menu.

Duty Cycle

The pump's duty cycle is the ratio of its on time to off time. The duty cycle ranges from 50% to 100% (always on), and the period is 10 seconds. Therefore, a duty cycle of 60% means that the pump is on for 6 seconds and off for four seconds. Duty cycling is employed by the instrument to clean the PID. A lower duty cycle has a greater effect on keeping the PID clean than a higher duty cycle.

Important! Pump duty cycling is interrupted when the instrument senses a gas. The pump's duty cycle is disabled when the measurement is greater than the 2ppm threshold and is re-enabled when the reading falls below 90% of the threshold (1.8 ppm).

1. Press [Y/+] to increase the value.
2. When you have completed your selection, press [MODE].
   - Press [Y/+] to save the new duty cycle value.
   - Press [N/-] to undo the change and move to the next sub-menu.

Temperature Unit

The temperature display can be switched between Fahrenheit and Celsius units.

1. Press [N/-] to step from one option to the next.
2. Press [Y/+] to make your selection (the dark circle in the "radio button" indicates "on").
3. When you have completed your selection, press [MODE].
   - Press [Y/+] to save the new temperature unit.
   - Press [N/-] to undo the change and move to the next sub-menu.

Pump Speed

The pump can operate at two speeds, high and low. Running at low speed is quieter and conserves a small amount of power. There is almost no difference in sampling accuracy.

1. Press [N/-] to step from one option to the next.
2. Press [Y/+] to make your selection (the dark circle in the "radio button" indicates "on").
3. When you have completed your selection, press [MODE].
   - Press [Y/+] to save the new temperature unit.
   - Press [N/-] to undo the change and move to the next sub-menu.

Language

English is the default language, but other languages can be selected for the instrument.

1. Press [N/-] to step from one option to the next.
2. Press [Y/+] to make your selection (the dark circle in the "radio button" indicates "on").
3. When you have completed your selection, press [MODE].
   - Press [Y/+] to save your new language choice.
   - Press [N/-] to undo it and return to the previous language selection.

Real Time Protocol

Real Time Protocol is the setting for data transmission.

The choices are:

P2M (cable)	Point to multipoint. Data is transferred from the instrument to multiple locations using a wired connection. Default data rate: 19200 bps.
P2P (cable)	Point to point. Data is transferred only between the instrument and one other location, such as a computer. Default data rate: 9600 bps.
P2M (wireless)	Point to multipoint, wireless. Data is transferred wirelessly and can be received by multiple receivers.

1. Press [N/-] to step from one option to the next.
2. Press [Y/+] to make your selection (the dark circle in the "radio button" indicates "on").
3. When you have completed your selection, press [MODE].
   - Press [Y/+] to save the new real-time communications protocol.
   - Press [N/-] to undo the change and move to the next sub-menu.

Power On Zero

When Power On Zero is on, the instrument performs a zero calibration when it is turned on.

1. Press [N/-] to step from one option to the next.
2. Press [Y/+] to make your selection (the dark circle in the "radio button" indicates your selection).
3. When you have completed your selection, press [MODE].
   - Press [Y/+] to save the change.
   - Press [N/-] to discard the change and move to the next sub-menu.

Unit ID

This three-digit number keeps data separated by instrument when more than one instrument is used in a network. If multiple sensing units are attempting to communicate with the same Host, then the units must all have a different Unit ID.

1. Press [Y/+] to step through all 10 numerals (0 to 9). If you pass the numeral you want, keep pressing [Y/+]. After it counts up to 9, it starts counting up from 0 again.
2. Press [N/-] to advance to the next digit. The next digit to the right flashes.

Repeat this process until all three digits of the Unit ID are entered.

3. Press [MODE] when you are done.
   - Press [Y/+] to save the change.
   - Press [N/-] to discard the change and move to the next sub-menu.

LCD Contrast

The display's contrast can be increased or decreased from its default setting. You may not need to ever change the default setting, but sometimes you can optimize the display to suit extreme temperature and ambient brightness/darkness conditions.

- The minimum value is 20.
- The maximum value is 60.

1. Press [Y/+] to increase the value or [N/-] to decrease the value.
2. Press [MODE] to save your selection.
   - Press [Y/+] to save your new contrast value.
   - Press [N/-] to undo it and return to the previous value.

Hygiene Mode

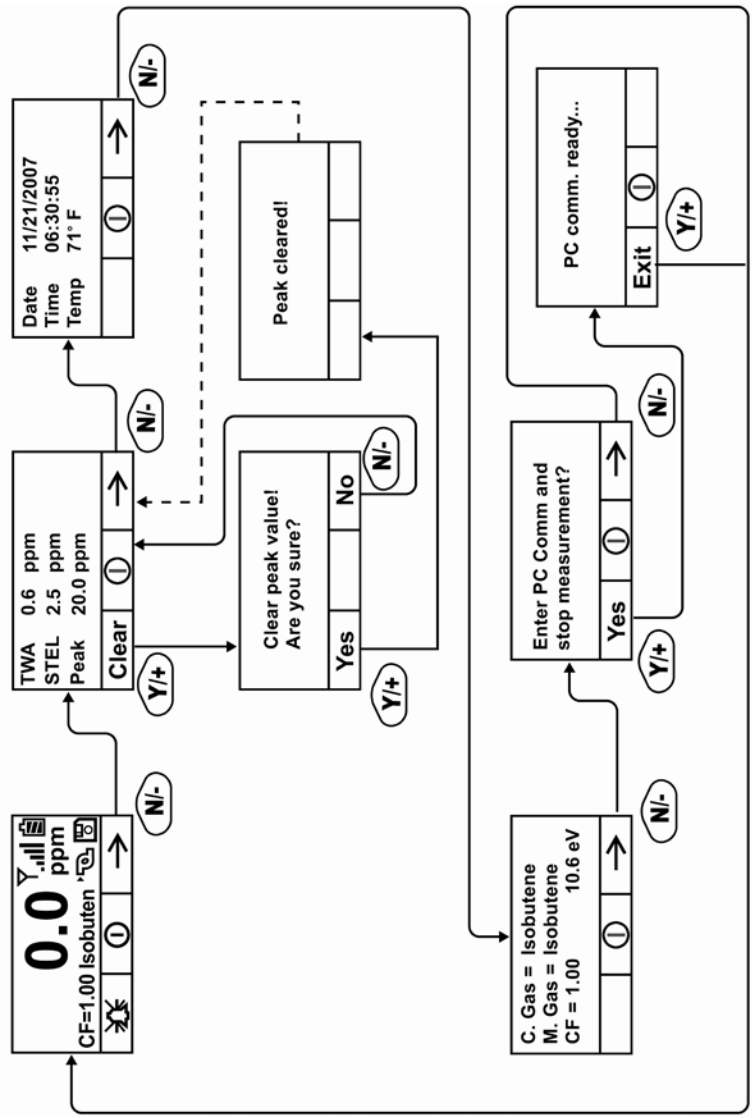
The instrument usually operates in Hygiene Mode, which provides basic functionality. However, it is possible to operate it in a second mode called Search Mode. Here are the primary differences:

Hygiene Mode: Automatic measurements, continuously running and datalogging, and calculates additional exposure values.

Search Mode: Manual start/stop of measurements and display of certain exposure values.

Basic User Level & Hygiene Mode

The default setting is navigated in the following way:



Note: Dashed line indicates automatic progression.

Pressing [N/-] steps you from screen to screen. Options include clearing the Peak value and turning on the instrument's PC Communications for data transfer to a PC.

Entering Search Mode From Hygiene Mode

In order to change the instrument's operational mode from Hygiene Mode to Search Mode, you must enter the password-protected Programming Mode:

1. Hold [MODE] and [N/-] until you see the password screen.
2. Use [Y/+] to increment to the number you want for the first digit. (If you pass by the desired number, press [Y/+] until it cycles through to 0 again. Then press [Y/+] until you reach the desired number.)
3. Press [N/-] to advance to the next digit.
4. Again press [Y/+] to increment the number.
5. Press [N/-] to advance to the next digit.

Continue the process until all four numbers of the password have been input. Then press [MODE] to proceed.

The screen changes to icons with the label "Calibration."

1. Press [N/-] to advance to "Monitor Setup."
2. Press [Y/+] to select Monitor Setup.

Under Monitor Setup, you will see "Op Mode."

Press [Y/+] to select.

You will see:

Hygiene
Search

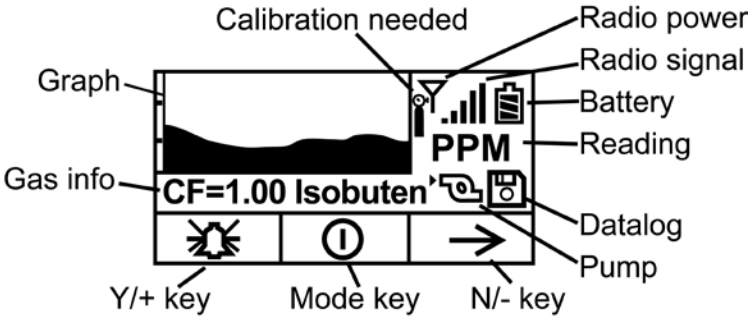
The current mode is indicated by a dark circle within the circle in front of either Hygiene or Search.

1. Select Hygiene or Search by pressing [N/-].
2. Press [Y/+] to place the instrument into the selected mode.

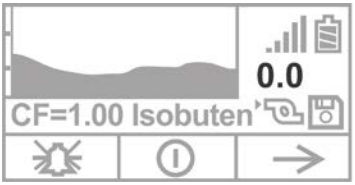
3. Press [MODE] when you want to register your selection to place the instrument in the selected mode.
4. Press [Y/+] to commit the change and exit to the Monitor Setup screen, or press [N/-] to Undo (exit to the Monitor Setup screen without changing the Mode).

Optional Graphic Screen In Search Mode

Using ProRAE Studio, you can set your instrument to show a graphic display instead of a numeric display of ongoing data. Consult your ProRAE Studio disc for information.



During sampling, the display's readings are shown numerically, plus the graph tracks the highest readings over time. The numeric reading alternates between the value and the measurement units, as well:





Advanced User Level (Hygiene Mode Or Search Mode)

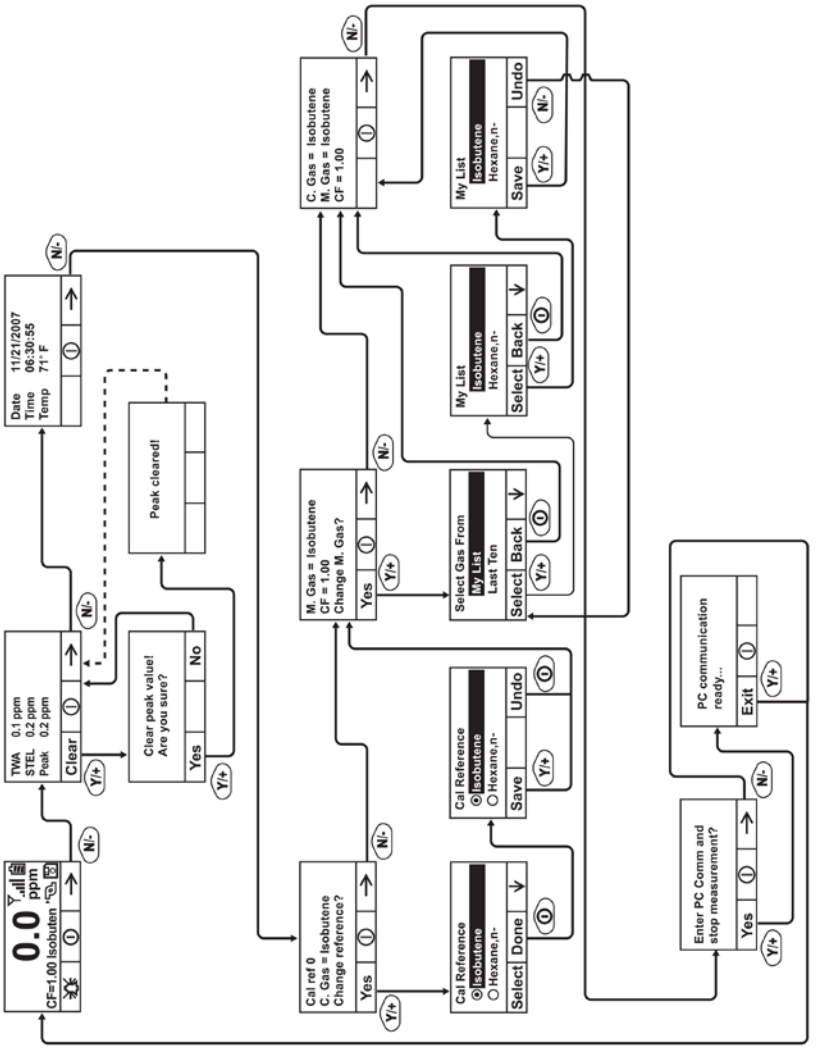
The User Mode called Advanced User Level allows a greater number of parameters to be changed than Basic User Level. It can be used with either of the Operation Modes, Hygiene Mode or Search Mode.

Advanced User Level & Hygiene Mode

With the instrument in Operation Mode: Hygiene Mode, enter User Mode: Advanced User Level (refer to the section called Monitor Mode for instructions).

Once you are in Advanced User Level and Hygiene Mode together, you can change the calibration reference and measurement gas, in addition to performing normal monitoring functions.

Pressing [N/-] progresses through the screens, while pressing [Y/+] selects options. Pressing [MODE] makes menu choices when it is shown for "Done" or "Back." Pressing and holding [Mode] whenever the circle with a vertical line in the middle is shown activates the countdown to shutoff.

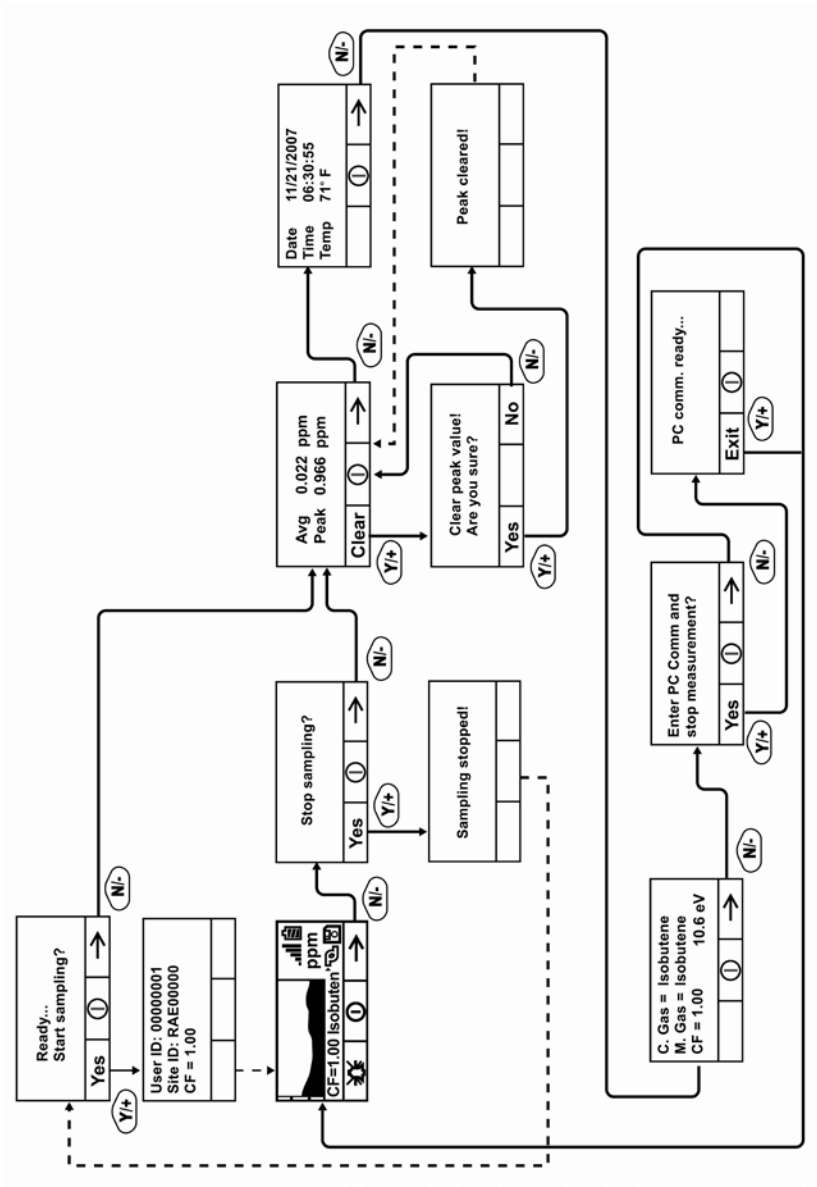


Note: Dashed line indicates automatic progression.

Basic User Level & Search Mode

With the instrument in Operation Mode: Search Mode, enter User Mode and select Basic User Level (refer to the section called User Mode for instructions).

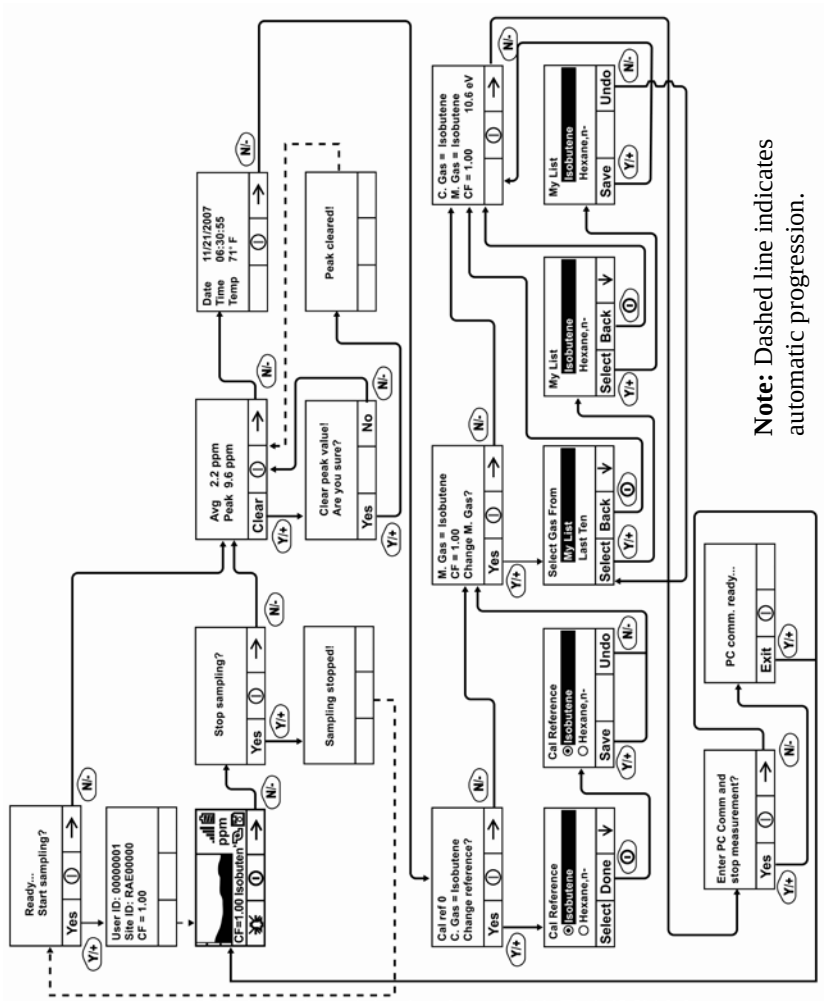
When the instrument is in Search Mode, it only samples when you activate sampling. When you see the display that says, "Ready…Start sampling?" press [Y/+] to start. The pump turns on and the instrument begins collecting data. To stop sampling, press [N/-] while the main display is showing. You will see a new screen that says, "Stop sampling?" Press [Y/+] to stop sampling. Press [N/-] if you want sampling to continue.



Note: Dashed line indicates automatic progression.

Advanced User Level & Search Mode

With the instrument in Operation Mode: Search Mode, enter User Mode and select Advanced User Level (refer to the section called Monitor Mode for instructions). Operation is similar to Basic User Level & Sampling Mode, but now allows you to change calibration and measurement reference gases. Refer to the section on measurement gases on page 52 for more details.



Diagnostic Mode

IMPORTANT! Diagnostic Mode is designed for servicing and manufacturing, and therefore is not intended for everyday use, even by advanced users. It provides raw data from sensors and about settings, but only allows adjustment of pump stall parameters, which should only be changed by qualified personnel.

Note: If the instrument is turned on in Diagnostic Mode and you switch to User Mode, datalog data remains in raw count form. To change to standard readings, you must restart the instrument.

Entering Diagnostic Mode

Note: To enter Diagnostic Mode, you must begin with the instrument turned off.

Press and hold [Y/+] and [MODE] until the instrument starts.

The instrument goes through a brief startup, and then displays raw data for the PID sensor. These numbers are raw sensor readings without calibration. The instrument is now in Diagnostic Mode.

Note: In Diagnostic Mode, the pump and lamp are normally on.

You can enter Programming Mode and calibrate the instrument as usual by pressing both [MODE] and [N/-] for three seconds.

You can enter Monitoring Mode by pressing [MODE] and [Y/+] together for three seconds.

Once the instrument is started up in Diagnostic Mode, you can switch between Diagnostic Mode and Monitoring Mode by pressing and holding [MODE] and [Y/+] simultaneously for two seconds.

In Diagnostic mode, you can step through parameter screens by pressing [MODE].

Adjusting The Pump Stall Threshold

If the gas inlet is blocked but the pump does not shut down, or the pump shuts down too easily with a slight blockage, the pump stall threshold value may be set too high or too low.

Use the following steps to adjust the pump stall threshold:

Pump High

In Diagnostic Mode, press the [MODE] key until "Pump High" is displayed. The display shows the maximum, minimum, and stall values for the pump at its high speed. Write down the "Max" reading.

Block the gas inlet and watch the pump current reading (labeled "I") increase. Write down its blocked reading. **Note:** If the pump current reading does not increase significantly (less than 10 counts), then there may be a leak in the gas inlet or the pump is weak or defective.

Add the two readings you wrote down. This is the average of the maximum block count and the maximum idle count. Divide that number by 2. Use the [Y/+] or [N/-] key to increase or decrease the stall value to equal that number.

Press the [MODE] key to exit this display.

Pump Low

In Diagnostic Mode, press the [MODE] key until "Pump Low" is displayed. The display shows the maximum, minimum, and stall values for the pump at its low speed. Write down the "Max" reading.

Block the gas inlet and watch the pump current reading (labeled "I") increase. Write down its blocked reading. **Note:** If the pump current reading does not increase significantly (less than 10 counts), then there may be a leak in the gas inlet or the pump is weak or defective.

Add the two readings you wrote down. This is the average of the maximum block count and the maximum idle count. Divide that

number by 2. Use the [Y/+] or [N/-] key to increase or decrease the stall value to equal that number.

Press the [MODE] key to exit this display.

Exiting Diagnostic Mode

You can exit Diagnostic Mode and go directly to Programming Mode or Monitor Mode as outlined above, or you can exit Diagnostic Mode completely.

To exit Diagnostic Mode so that it cannot be re-entered without a restart:

Shut down the instrument. When it is off, restart it by holding the [MODE] key. Diagnostic Mode cannot be entered until the instrument is restarted as outlined in "Entering Diagnostic Mode."

Transferring Data To & From A Computer

Once you have connected your instrument cradle to the PC, you can can transfer data, including a download of the datalog to the computer and updates of firmware to the instrument (should this ever be necessary).

Downloading The Datalog To A PC

1. Connect the data cable to the PC and the cradle.
2. Place the instrument into its cradle. The charging LED should be illuminated.
3. Start ProRAE Studio on your PC.
4. From ProRAE Studio, select "Operation" and select Setup Connection.
5. Select the COM port to establish a communication link between the PC and the instrument.
6. To receive the datalog in the PC, select "Downlog Datalog."
7. When you see "Unit Information," click OK.

During the data transfer, the display shows a progress bar.

When the transfer is done, you will see a screen with the datalog information. You can now export this datalog for other use or printing.

Uploading Firmware To The instrument From A PC

Uploading new firmware to your instrument requires connecting the instrument and PC. Follow these steps to make the connection:

1. Connect the data cable to the PC and the cradle.
2. Place the instrument into its cradle. The charging LED should be illuminated.
3. Start RAEProgrammer 7000 on your PC.
4. From RAEProgrammer 7000, select "Operation" and select Setup Connection.
5. Select the COM port to establish a communication link between the PC and the instrument.
6. Select Operation → Download Firmware.

Once communication is established, follow the instructions that accompany RAEProgrammer 7000 and the firmware to upload the new firmware to your instrument.

Note: Check for the latest updates to ProRAEProgrammer 7000 at www.raesystems.com.

Maintenance

The major maintenance items of the instrument are:

- Battery pack
- Sensor module
- PID lamp
- Sampling pump
- Inlet connectors and filters

Note: Maintenance should be performed by qualified personnel only.

NOTE: The printed circuit board of the instrument is connected to the battery pack even if the power is turned off. **Therefore, it is very important to disconnect the battery pack before servicing or replacing any components inside the instrument**. **Severe damage to the printed circuit board or battery may occur if the battery pack is not disconnected before servicing the unit.**

Battery Charging & Replacement

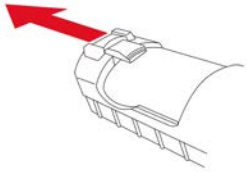
When the display shows a flashing empty battery icon, the battery requires recharging. It is recommended to recharge the instrument upon returning from fieldwork. A fully charged battery runs a instrument for 16 hours continuously. The charging time is less than 8 hours for a fully discharged battery. The battery may be replaced in the field (in areas known to be non-hazardous), if required.

WARNING!

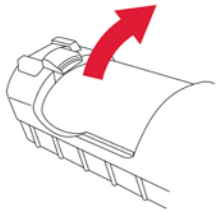
To reduce the risk of ignition of hazardous atmospheres, recharge battery only in area known to be non-hazardous. **Remove and replace battery only in areas known to be non-hazardous.**

Replacing The Li-ion Battery

1. Turn off the instrument.
2. Located on the rear of the instrument is a battery tab. Slide it down to unlock the battery.



3. Remove the battery pack from the battery compartment by tilting it out.



4. Replace a fully charged spare battery pack inside the battery compartment. Make sure the battery pack is oriented properly inside the compartment.
5. Slide the capture tab back up to its locked position.

Replacing The Alkaline Battery Adapter

An alkaline battery adapter is supplied with each instrument. The adapter (part number 059-3052-000) accepts four AA alkaline batteries (use only Duracell MN1500) and provides approximately 12 hours of operation. The adapter is intended to be used in emergency situations when there is no time to charge the Li-ion battery pack.

To insert batteries into the adapter:

1. Remove the three Philips-head screws to open the compartment.
2. Insert four fresh AA batteries as indicated by the polarity (+/-) markings.
3. Replace the cover. Replace the three screws.

To install the adapter in the instrument:

1. Remove the Li-ion battery pack from the battery compartment by sliding the tab and tilting out the battery.
2. Replace it with the alkaline battery adapter
3. Slide the tab back into place to secure the battery adapter.

IMPORTANT!

Alkaline batteries cannot be recharged. The instrument's internal circuit detects alkaline batteries and will not allow recharging. If you place the instrument in its cradle, the alkaline battery will not be recharged. The internal charging circuit is designed to prevent damage to alkaline batteries and the charging circuit when alkaline batteries are installed inside the instrument.

Note: When replacing alkaline batteries, dispose of old ones properly.

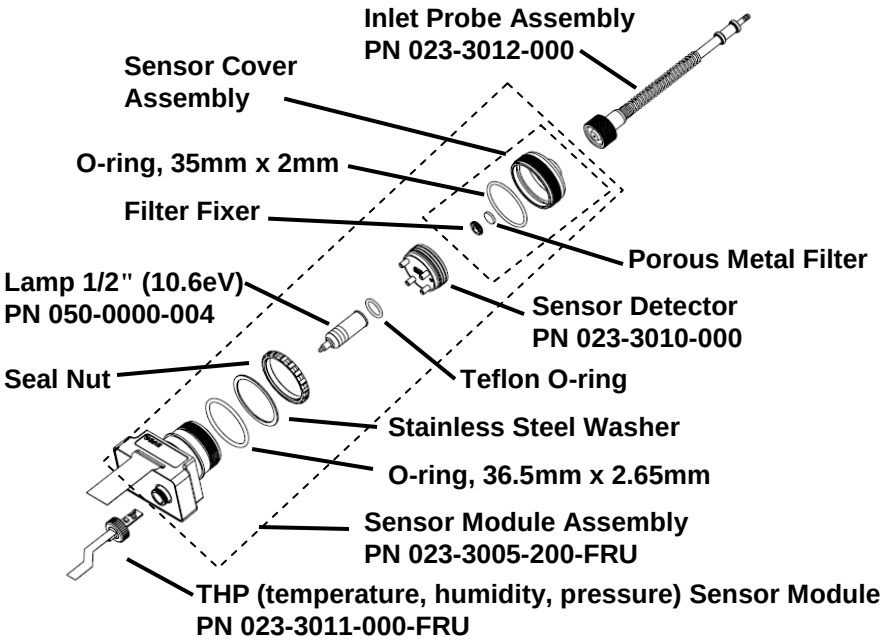
WARNING!

To reduce the risk of ignition of hazardous atmospheres, recharge the battery only in areas known to be non-hazardous. Remove and replace the battery only in areas known to be non-hazardous.

Note: The internal charging circuit is designed to prevent charging to alkaline batteries.

PID Sensor & Lamp Cleaning/Replacement

The sensor module is made of several components and is attached to the lamp-housing unit as shown below.



Sensor Components

Note: The cleaning procedure is not normally needed. Clean the PID sensor module, the lamp and the lamp housing only if:

1. The reading is inaccurate even after calibration.
2. The reading is very sensitive to air moisture.
3. A liquid has been sucked into the unit and damaged the unit.

Use of the external filter helps to prevent contamination of the sensor.

To access the sensor components and lamp, gently unscrew the lamp-housing cap, remove the sensor adapter with the gas inlet probe and the metal filter all together. Then hold the PID sensor and pull it straight out. A slight, gentle rocking motion helps release the sensor.

Cleaning The PID Sensor

Place the entire PID sensor module into GC grade methanol. It is highly recommended that an ultrasound bath to be used to clean the sensor for at least 15 minutes. Then dry the sensor thoroughly. Never touch the electrodes of the sensor by hand.
Also use a methanol-soaked cotton swab to wipe off the lamp housing where it contacts the sensor when the sensor is installed.

Turn over the sensor so that the pins point up and the sensor cavity is visible. Examine the sensor electrodes for any corrosion, damage, or bending out of alignment. The metal sensor electrode "fingers" should be flat and straight. If necessary, carefully bend the sensor fingers to ensure that they do not touch the Teflon portions and that they are parallel to each other. Make sure that the nuts on the sensor pins are snug but not overtight. If the sensor is corroded or otherwise damaged, it should be replaced.

Cleaning The Lamp Housing Or Changing The Lamp

If the lamp does not turn on, the instrument will display an error message to indicate replacement of the lamp may be required.

1. If the lamp is operational, clean the lamp window surface and the lamp housing by wiping it with GC grade methanol using a cotton swab using moderate pressure. After cleaning, hold the lamp up to the light at an angle to detect any remaining film. Repeat the process until the lamp window is clean. Never use water solutions to clean the lamp. Dry the lamp and the lamp housing thoroughly after cleaning.

   CAUTION: Never touch the window surface with the fingers or anything else that may leave a film. Never use acetone or aqueous solutions.

2. If the lamp does not turn on, remove the lamp from the lamp housing. Place the lamp O-ring onto the new lamp. Insert the new lamp, avoiding contact with the flat window surface.
3. Reinstall the PID sensor module.
4. Tighten the Lamp Housing Cap.

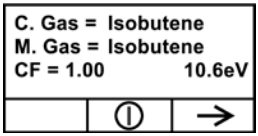
Determining The Lamp Type

The monitor can accommodate three lamp values: 10.6eV (standard), 9.8eV, and 11.7eV. The monitor automatically reads a marking on the side of the lamp to set the proper Correction Factor. There are two ways to determine the lamp type:

Remove the lamp and look for markings (bars) on the side:

- No bars: 10.6eV
- 1 bar: 11.7eV
- 2 bars: 9.8eV

Also, when the monitor is running, the lamp type is shown along with the calibration and measurement gas and Correction Factor:



Note: This screen can be accessed from the reading screen by pressing [N/-] four times.

Sampling Pump

When approaching the end of the specified lifetime of the pump, it will consume higher amount of energy and reduce its sample draw capability significantly. When this occurs, it is necessary to replace or rebuild the pump. When checking the pump flow, make sure that the inlet connector is tight and the inlet tubing is in good condition. Connect a flow meter to the gas inlet probe. The flow rate should be above 450 cc/min when there is no air leakage.

If the pump is not working properly, refer the instrument to qualified service personnel for further testing and, if necessary, pump repair or replacement.

Cleaning The Instrument

Occasional cleaning with a soft cloth is recommended. Do not use detergents or chemicals.

Visually inspect the contacts at the base of the instrument, on the battery, and on the charging cradle to make sure they are clean. If they are not, wipe them with a soft, dry cloth. Never use solvents or cleaners.

Ordering Replacement Parts

If you need replacement parts, contact your local RAE Systems distributor. A list is available online:

http://www.raesystems.com

In the U.S., you can order sensors, replacement batteries, and other accessories online at:

http://istore.raesystems.com/

Special Servicing Note

If the instrument needs to be serviced, contact either:

1. The RAE Systems distributor from whom the instrument was purchased; they will return the instrument on your behalf.

   or

2. The RAE Systems Technical Service Department. Before returning the instrument for service or repair, obtain a Returned Material Authorization (RMA) number for proper tracking of your equipment. This number needs to be on all documentation and posted on the outside of the box in which the instrument is returned for service or upgrade. Packages without RMA Numbers will be refused at the factory.

Troubleshooting

Problem	Possible Reasons & Solutions	
Cannot turn on power after charging the battery	**Reasons:**	Discharged battery. Defective battery.
	Solutions:	Charge or replace battery.
Lost password	**Solutions:**	Call Technical Support at +1 408-752-0723 or toll-free at +1 888-723-4800
Reading abnormally High	**Reasons:**	Dirty filter. Dirty sensor module. Excessive moisture and water condensation. Incorrect calibration.
	Solutions:	Replace filter. Blow-dry the sensor module. Calibrate the unit.
Reading abnormally Low	**Reasons:**	Dirty filter. Dirty sensor module. Weak or dirty lamp. Incorrect calibration.
	Solutions:	Replace filter. Remove Calibration Adapter. Calibrate the unit. Check for air leakage.
Buzzer Inoperative	**Reasons:**	Bad buzzer.
	Solutions:	Check that buzzer is not turned off. Call authorized service center.

Inlet flow too low	**Reasons:**	Pump diaphragm damaged or has debris. Flow path leaks.
	Solutions:	Check flow path for leaks; sensor module O-ring, tube connectors, Teflon tube compression fitting. Call Technical Support at +1 408-752-0723 or toll-free at +1 888-723-4800
"Lamp" message during operation	**Reasons:**	Lamp drive circuit. Weak or defective PID lamp, defective.
	Solutions:	Turn the unit off and back on. Replace UV lamp

Technical Support

To contact RAE Systems Technical Support Team:

Monday through Friday, 7:00AM to 5:00PM Pacific (US) Time
Phone (toll-free): +1 888-723-4800
Phone: +1 408-952-8461
Email: tech@raesystems.com

Life-critical after-hours support is available:

+1 408-952-8200 select option 8

RAE Systems Contacts

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Web Site: www.raesystems.com

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Kyungki-Do, Korea
Phone: 82-32-328-7123
Fax: 82-32-328-7127
Email: krsales@raesystems.com

Controlled Part of Manual

Intrinsic Safety:
US and Canada: Class I, Division 1, Groups A,B,C,D T4

Europe: ATEX (0575 Ex II 2G Ex ia IIC/IIB T4 Gb)
KEMA 07 ATEX 0127
Complies with EN60079-0:2009, EN60079-11:2007
IECEx CSA 10.0005 Ex ia IIC/IIB T4 Gb
Complies with IEC 60079-0:2007, IEC 60079-11:2006

Temperature: -20º C to 50º C (-4º to 122º F)

Humidity: 0% to 95% relative humidity (non-condensing)

Basic Operation

Turning The Instrument On

1. With the instrument turned off, press and hold [MODE].
2. When the display turns on, release the [MODE] key.

The instrument is now operating and performs self tests. Once the self tests are complete, the display shows a graph or numerical gas reading. This indicates that the instrument is fully functional and ready to use.

Turning The Instrument Off

1. Press and hold the Mode key for 3 seconds. A 5-second countdown to shutoff begins.
2. When you see "Unit off..." release your finger from the [MODE] key. The instrument is now off.

Note: You must hold your finger on the key for the entire shutoff process. If you remove your finger from the key during the countdown, the shutoff operation is canceled and the instrument continues normal operation.

Alarm Signals

During each measurement period, the gas concentration is compared with the programmed alarm limits (gas concentration alarm limit settings). If the concentration exceeds any of the preset limits, the loud buzzer and red flashing LED are activated immediately to warn you of the alarm condition.

In addition, the instrument alarms if one of the following conditions occurs: battery voltage falls below a preset voltage level, failure of the UV lamp, pump stall, or when the datalog memory is full.

Alarm Signal Summary

Message	Condition	Alarm Signal
HIGH	Gas exceeds "High Alarm" limit	3 beeps/flashes per second*
OVR	Gas exceeds measurement range	3 beeps/flashes per second*
MAX	Gas exceeds electronics' maximum range	3 beeps/flashes per second*
LOW	Gas exceeds "Low Alarm" limit	2 beeps/flashes per second*
TWA	Gas exceeds "TWA" limit	1 Beep/flash per second*
STEL	Gas exceeds "STEL" limit	1 Beep/flash per second*
Pump icon flashes	Pump failure	3 beeps/flashes per second
Lamp	PID lamp failure	3 beeps/flashes per second plus "Lamp" message on display

Battery icon flashes	Low battery	1 flash, 1 beep per minute plus battery icon flashes on display
CAL	Calibration failed, or needs calibration	1 beep/flash per second
NEG	Gas reading measures less than number stored in calibration	1 beep/flash per second

Preset Alarm Limits & Calibration

The instrument is factory calibrated with standard calibration gas, and is programmed with default alarm limits.

Cal Gas (Isobutylene)	Cal Span	unit	Low	High	TWA	STEL
ppbRAE 3000	10	ppm	10	25	10	25
MiniRAE 3000	100	ppm	50	100	10	25
MiniRAE Lite	100	ppm	50	100	10	25
UltraRAE 3000	100	ppm	50	100	10	25

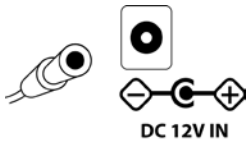
Charging The Battery

Always fully charge the battery before using the instrument. The instrument's Li-ion/NiMH battery is charged by placing the instrument in its cradle. Contacts on the bottom of the instrument meet the cradle's contacts, transferring power without other connections.

Note: Before setting the instrument into its charging cradle, visually inspect the contacts to make sure they are clean. If they are not, wipe them with a soft cloth. Do not use solvents or cleaners.

Follow this procedure to charge the instrument:

1. Plug the AC/DC adapter's barrel connector into the instrument's cradle.



2. Plug the AC/DC adapter into the wall outlet.
3. Place the instrument into the cradle, press down, and lean it back. It locks in place and the LED in the cradle glows.

Note: To release the instrument, press down and tilt the top out of the cradle and lift up.

The instrument begins charging automatically. The LED on the front of the cradle marked "Primary" blinks during charging. During charging, the diagonal lines in the battery icon on the instrument's display are animated and you see the message "Charging..."

When the instrument's battery is fully charged, the battery icon is no longer animated and shows a full battery. The message "Fully charged!" is shown and the Primary LED on the cradle glows continuously green.

Note: A spare Li-ion battery (059-3051-000) or NiMH(059-3054-000) can be charged by placing it directly in the charging port on the back of the cradle. It can be charged at the same time as the instrument. Press the battery in place, sliding it slightly toward the front of the cradle. This locks it in the cradle. To release the battery, slide it forward again and tilt it up.

Note: An Alkaline Battery Adapter (part number 059-3052-000), which uses four AA alkaline batteries (Duracell MN1500), may be substituted for the Li-Ion battery.

WARNING!

To reduce the risk of ignition of hazardous atmospheres, recharge and replace batteries only in areas known to be non-hazardous. **Remove and replace batteries only in areas known to be non-hazardous.**

Low Voltage Warning

When the battery's charge falls below a preset voltage, the instrument warns you by beeping once and flashing once every minute, and the battery icon blinks once per second. You should turn off the instrument within 10 minutes and either recharge the battery by placing the instrument in its cradle, or replace the battery with a fresh one with a full charge.

Clock Battery

An internal clock battery is mounted on one of the instrument's printed circuit boards. This long-life battery keeps settings in memory from being lost whenever the Li-ion, NiMH, or alkaline batteries are removed. This backup battery should last approximately five years, and must be replaced by an authorized RAE Systems service technician. It is not user-replaceable.

WARNING

To reduce the risk of ignition of hazardous atmospheres, recharge battery only in area known to be non-hazardous. Remove and replace battery only in an area known to be non-hazardous.

Replacing Rechargeable Li-Ion or NiMH Battery

Caution: Turn off the instrument before removing or replacing the battery.

Alkaline Battery Adapter

An alkaline battery adapter is supplied with each instrument. The adapter (part number 059-3052-000) accepts four AA alkaline batteries (use only Duracell MN1500).

Do not mix old and new batteries or different type batteries.

Troubleshooting

Problem	Possible Reasons & Solutions	
Cannot turn on power after charging the battery	**Reasons:**	Discharged battery. Defective battery.
	Solutions:	Charge or replace battery.
Lost password	**Solutions:**	Call Technical Support at +1 408-752-0723 or toll-free at +1 888-723-4800
Reading abnormally High	**Reasons:**	Dirty filter. Dirty sensor module. Excessive moisture and water condensation. Incorrect calibration.
	Solutions:	Replace filter. Blow-dry the sensor module. Calibrate the unit.
Reading abnormally Low	**Reasons:**	Dirty filter. Dirty sensor module. Weak or dirty lamp. Incorrect calibration.
	Solutions:	Replace filter. Remove Calibration Adapter. Calibrate the unit. Check for air leakage.
Buzzer Inoperative	**Reasons:**	Bad buzzer.
	Solutions:	Check that buzzer is not turned off. Call authorized service center.

Inlet flow too low	**Reasons:**	Pump diaphragm damaged or has debris. Flow path leaks.
	Solutions:	Check flow path for leaks; sensor module O-ring, tube connectors, Teflon tube compression fitting. Call Technical Support at +1 408-752-0723 or toll-free at +1 888-723-4800
"Lamp" message during operation	**Reasons:**	Lamp drive circuit. Weak or defective PID lamp, defective.
	Solutions:	Turn the unit off and back on. Replace UV lamp

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Rev. D
April 2014
P/N 059-4020-000

CSA INTERNATIONAL

Certificate of Compliance

Certificate: 1865837 **Master Contract:** 217005

Project: 2218210 **Date Issued:** 2010/01/14

Issued to: **RAE Systems, Inc.**

3775 North First St
San Jose, CA 95134
USA
Attention: James Pan

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

C US

Rich Masek

Issued by: Rich Masek

PRODUCTS

CLASS 4828 82 - SIGNAL APPLIANCES-Toxic Gas Detection Instruments - For Hazardous Locations. Certified to U.S. Standards

CLASS 4828 02 - SIGNAL APPLIANCES - Toxic Gas Detection Instruments - For Hazardous Locations

Class I; Division 1; Group A, B, C, D; T4

- MiniRAE 3000, Model PGM 7320, Portable Handheld VOC Monitor
- ppbRAE 3000, Model PGM 7340, Portable Handheld VOC Monitor
- MiniRAE Lite, Model PGM 7350, Portable Handheld VOC Monitor
- UltraRAE 3000, Model PGM 7360, Portable Handheld VOC Monitor

All monitors rated 6 Vdc. Ambient –20 °C to +50 °C, Intrinsically safe when powered by battery pack 059-3052-000 using either Duracell MN1500 or Energizer E91 alkaline batteries, powered by rechargeable Li-Ion battery pack 059-3051-000 or powered by rechargeable NiMH battery pack 059-3054-000.

APPLICABLE REQUIREMENTS

CSA INTERNATIONAL

Certificate:	1865837	**Master Contract:**	217005
Project:	2218210	**Date Issued:**	2010/01/14

C22.2 No. 0-M91 - General Requirements – Canadian Electrical Code, Part II

C22.2 No. 142-M1987 - Process Control Equipment

C22.2 No. 157-92 - Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations

ANSI/UL 913:2004 - Intrinsically Safe Apparatus

ANSI/UL 916:1998 - Energy Management Equipment

MARKINGS

The following markings are required.
- Submittor's identification
- Model designation or equivalent
- Complete electrical rating (List of acceptable batteries)
- Applicable hazardous locations designation - Class I; Division 1; Groups A, B, C and D;
- Temperature Code – T4
- Serial Number or date code
- CSA Monogram with c/us indicator as shown on the Certificate of Compliance.
- WARNING: DO NOT CHANGE OR CHARGE BATTERIES IN A HAZARDOUS LOCATION.
- WARNING: - DO NOT MIX OLD/NEW OR DIFFERENT TYPE BATTERIES.
- WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY. (May be in User Manual)

Battery Pack Markings
- Submittor's identification
- Battery Pack part number
- Voltage
- WARNING to not replace or charge battery pack in a hazardous location

Multi Water Quality Checker
U-50 Series

Instruction Manual

CODE:GZ0000144342C

Preface

This manual describes the operation of the Multi Water Quality Checker, U-50 Series.
Be sure to read this manual before using the product to ensure proper and safe operation of the instrument. Also safely store the manual so it is readily available whenever necessary.

Product specifications and appearance, as well as the contents of this manual are subject to change without notice.

■ Warranty and Responsibility

HORIBA warrants that the Product shall be free from defects in material and workmanship and agrees to repair or replace free of charge, at HORIBA's option, any malfunctioned or damaged Product attributable to HORIBA's responsibility for a period of one (1) year from the delivery unless otherwise agreed with a written agreement. In any one of the following cases, none of the warranties set forth herein shall be extended;

- Any malfunction or damage attributable to improper operation
- Any malfunction attributable to repair or modification by any person not authorized by HORIBA
- Any malfunction or damage attributable to the use in an environment not specified in this manual
- Any malfunction or damage attributable to violation of the instructions in this manual or operations in the manner not specified in this manual
- Any malfunction or damage attributable to any cause or causes beyond the reasonable control of HORIBA such as natural disasters
- Any deterioration in appearance attributable to corrosion, rust, and so on
- Replacement of consumables

HORIBA SHALL NOT BE LIABLE FOR ANY DAMAGES RESULTING FROM ANY MALFUNCTIONS OF THE PRODUCT, ANY ERASURE OF DATA, OR ANY OTHER USES OF THE PRODUCT.

■ Trademarks

Generally, company names and brand names are either registered trademarks or trademarks of the respective companies.

 © 2008 – 2009 HORIBA, Ltd.

Conformable Directive

This equipment conforms to the following directives and standards:

Directives: the EMC Directive 2004/108/EC

Standards: [the EMC Directive]
EN61326-1:2006 Class B, Portable test and measurement equipment

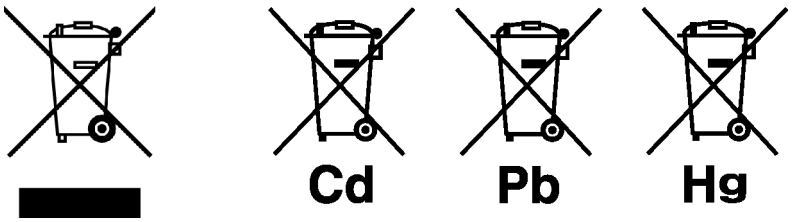
Information on Disposal of Electrical and Electronic Equipment and Disposal of Batteries and Accumulators

The crossed out wheeled bin symbol with underbar shown on the product or accompanying documents indicates the product requires appropriate treatment, collection and recycle for waste electrical and electronic equipment (WEEE) under the Directive 2002/96/EC, and/or waste batteries and accumulators under the Directive 2006/66/EC in the European Union.

The symbol might be put with one of the chemical symbols below. In this case, it satisfies the requirements of the Directive 2006/66/EC for the object chemical.

This product should not be disposed of as unsorted household waste.
Your correct disposal of WEEE, waste batteries and accumulators will contribute to reducing wasteful consumption of natural resources, and protecting human health and the environment from potential negative effects caused by hazardous substance in products.

Contact your supplier for information on applicable disposal methods.



FCC Rules

Any changes or modifications not expressly approved by the party responsible for compliance shall void the user's authority to operate the equipment.

WARNING

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

For your safety

Warning messages are described in the following manner. Read the messages and follow the instructions carefully.

● Meaning of warning messages

⚠DANGER	This indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.
⚠WARNING	This indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠CAUTION	This indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. Without safety alert indication of hazardous situation which, if not avoided, could result in property damage.

● Symbols



Description of what should be done, or what should be followed



Description of what should never be done, or what is prohibited

■ Safety Precautions

This section provides precautions to enable you to use the product safely and correctly and to prevent injury and damage. The terms of DANGER, WARNING, and CAUTION indicate the degree of imminency and hazardous situation. Read the precautions carefully as it contains important safety messages.

⚠ WARNING
Do not disassemble or modify the meter. May cause overheating or fire, resulting in accidents.

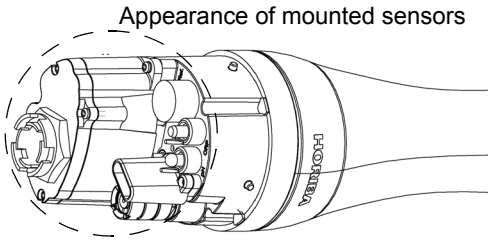
⚠ CAUTION
The pH and ORP sensors are made of glass. Handle them carefully to avoid breakage.
Do not ingest the DO, pH or ORP standard solutions. If it comes into contact with the eyes, rinse thoroughly with water. If swallowed, consult a physician.
Keep away from water when using USB communication. Improper use may result in fire or damage.

Points of concern

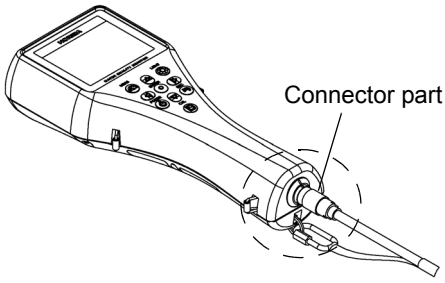
Use of the equipment in a manner not specified by the manufacturer may impair the protection provided by the equipment. It may also reduce equipment performance.

● Sensor probe

- Do not immerse the sensor probe in seawater or other samples with high salinity. Doing so may erode metallic parts. After use, promptly wash the sensor probe thoroughly in water.
- Do not immerse the sensor probe in alcohol, organic solvent, strong acid, strong alkaline, and other similar solutions.
- Do not subject to strong shocks.
- Do not perform measurement in environments of magnetic fields. Measurement errors may result.
- The sensor probe is no longer waterproof when the sensors are not mounted.

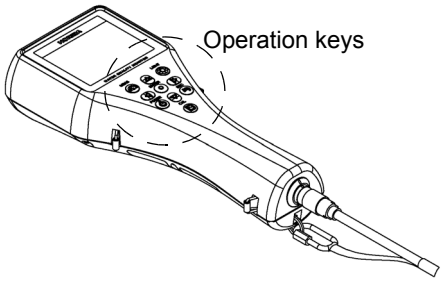


- Does not support measurement of samples containing fluorine.
- To disconnect the sensor cable or interface cable, pull them out with holding the connector part. Do not pull the cable part; it may cause breakage.



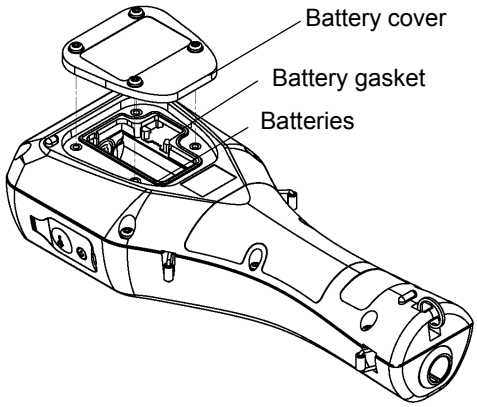
● Control unit

- Do not subject to strong shocks.
- The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.



- The control unit is no longer waterproof when the USB cable is connected.
- When operating the control unit only, protect the connector with the connector cap provided.

- Remove the batteries when not using the control unit for an extended period of time. Battery fluid leakage may cause equipment failure.
- Do not wipe the control unit with organic solvents or powder polish. The surface may deteriorate or its printing may disappear. If the display becomes dirty, wipe the dirt off with a soft cloth soaked in neutral detergent.
- Do not turn the power OFF or disconnect the cable during calibration or setting. Memory data may be erased.
- To perform measurement, connect the sensor probe cable before turning the power ON.
- Do not remove the battery gasket or twist it.
- When opening the battery case, make sure that no foreign matter is attached to the battery gasket.
- Do not use any unspecified batteries; it may cause breakage.



Measurement

- Do not pull the cable when lowering the sensor probe into the sample during measurement. Lower the sensor probe into the sample on a chain or string.
- Before lowering the sensor probe into the sample, do not connect the hook on the unit to a human body.
- The correct values are not displayed if the sensor is not mounted when the measurement display is activated.
- Perform DO measurement with no air bubbles in the internal solution.
- Do not reuse a membrane cap of DO sensor.
- Use the spanner for DO sensor provided to attach or remove the DO sensor.
- Avoid both U-53 and U-53G turbidity measurement in air, since the rubber wiper will quickly become damaged.
- Avoid turbidity measurement in direct sunlight, since the readout may be affected.

Calibration

During atmosphere calibration for the DO electrode with DO salinity compensation set to automatic, values are compensated based on electrical conductivity, but calibration is performed normally.

Location of use and storage

- Storage temperature: −10°C to 60°C
- Relative humidity: Under 80% and free from condensation

Store the meter in locations void of dust, strong vibrations, direct sunlight, corrosive gases, near air conditioners or windy areas.

Disposal of the product

When disposing of the product, follow the related laws and/or regulations of your country for disposal of the product.

Description in this manual

Note

This interprets the necessary points for correct operation and notifies the important points for handling the unit.

Reference

This indicates where to refer for information.

Tip

This indicates reference information.

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1 About this Unit

The U-50 Series Multi Water Quality Checker features an integrated control unit and sensors. It is capable of making a maximum of eleven simultaneous measurements for various parameters, and is perfect for use in the field. The U-50 Series is designed with on-site ease-of-use in mind, provides a wide variety of functions, and can be used for water quality measurements and inspections of river water, groundwater, and waste water.

2 Device Information

2.1 Measurement parameters

Parameters	Model				
	U-51	U-52	U-52G	U-53	U-53G
pH (pH)	✓	✓	✓	✓	✓
pH (mV)	✓	✓	✓	✓	✓
Oxidation reduction potential (ORP)	✓	✓	✓	✓	✓
Dissolved oxygen (DO)	✓	✓	✓	✓	✓
Electrical conductivity (COND)	✓	✓	✓	✓	✓
Salinity (SAL) [expressed as electrical conductivity]	✓	✓	✓	✓	✓
Total dissolved solids (TDS) [expressed as electrical conductivity]	✓	✓	✓	✓	✓
Seawater specific gravity (SG) [expressed as electrical conductivity]	✓	✓	✓	✓	✓
Water temperature (TEMP)	✓	✓	✓	✓	✓
Turbidity (TURB) [LED transmission/front 30° scattering method]	–	✓	✓	–	–
Turbidity (TURB) [tungsten lamp 90° transmission/scattering method] with wiper	–	–	–	✓	✓
Water depth (DEP)	–	–	✓	✓	✓
GPS	–	–	✓	–	✓

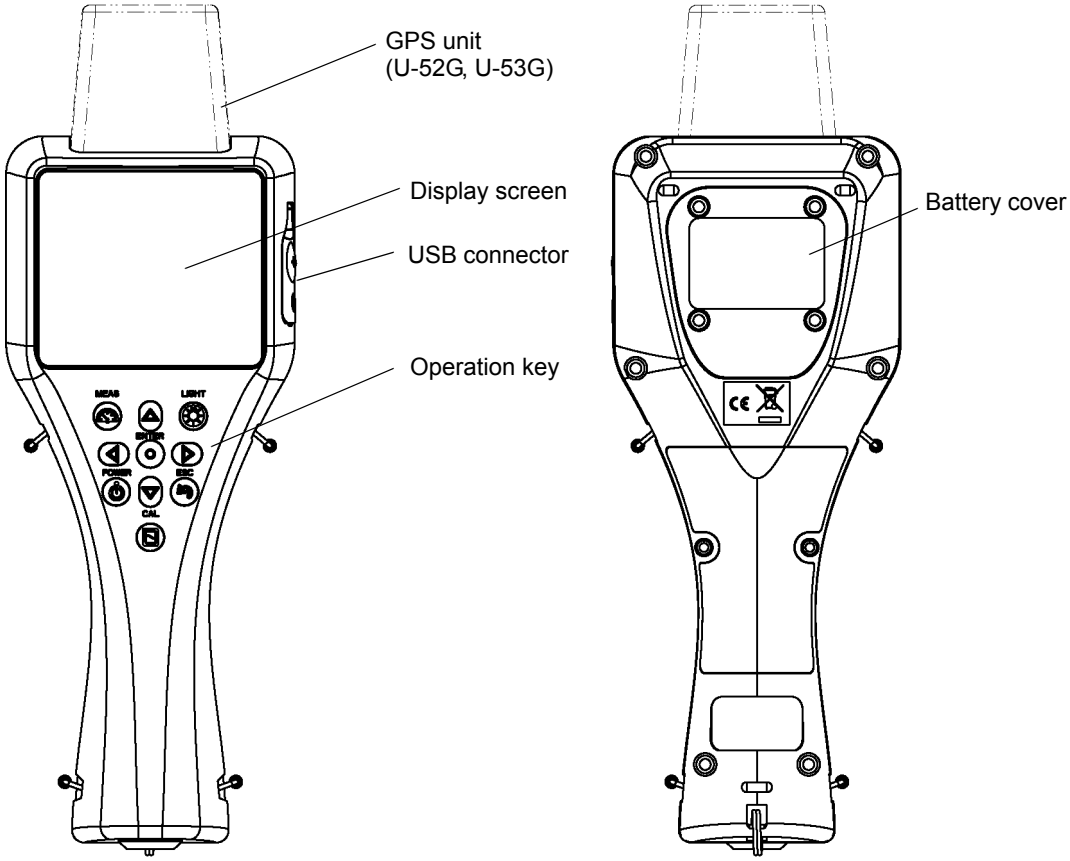
"✓" indicates a measurable parameter.

2.2 Packing list

Parts Name	Quantity	Note
Control unit	1	
Sensor probe	1	
pH sensor (#7112)	1	
ORP sensor (#7313)	1	
Reference electrode (#7210)	1	
DO sensor (#7543)	1	
Turbidity sensor (#7800)	1	With U-52/U-52G only. Attached to the sensor probe.
Turbidity sensor (#7801)	1	With U-53/U-53G only. Attached to the sensor probe.
pH 4 standard solution (#100-4)	1	500 mL
pH reference internal solution (#330)	1	250 mL
DO sensor internal solution set (#306)	1	Internal solution (50 mL), Sandpaper (#8000, #600), Syringe
DO Membrane spare parts set	1	
Spanner for DO sensor	1	
Cleaning brush	1	
calibration cup	1	transparent calibration cup, black calibration cup
Back pack	1	
Strap	1	
Alkaline batteries	4	LR14
Silicon grease	1	
Instruction manual	1	

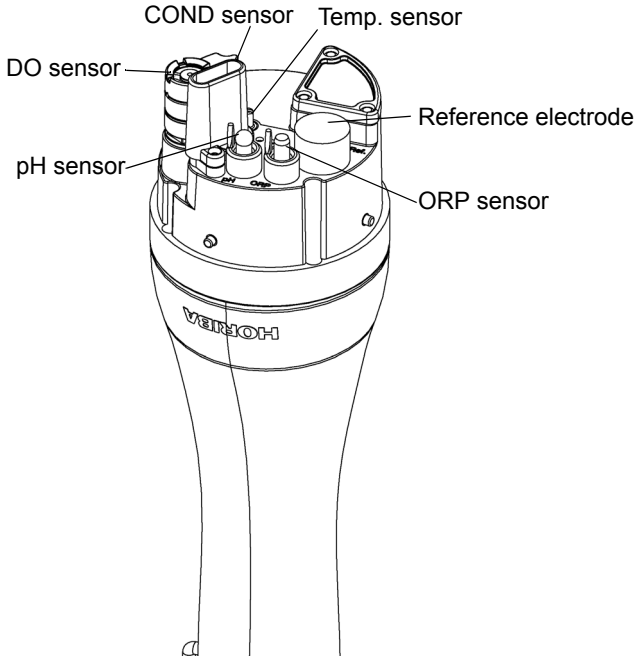
2.3 Parts name and functions

● Display

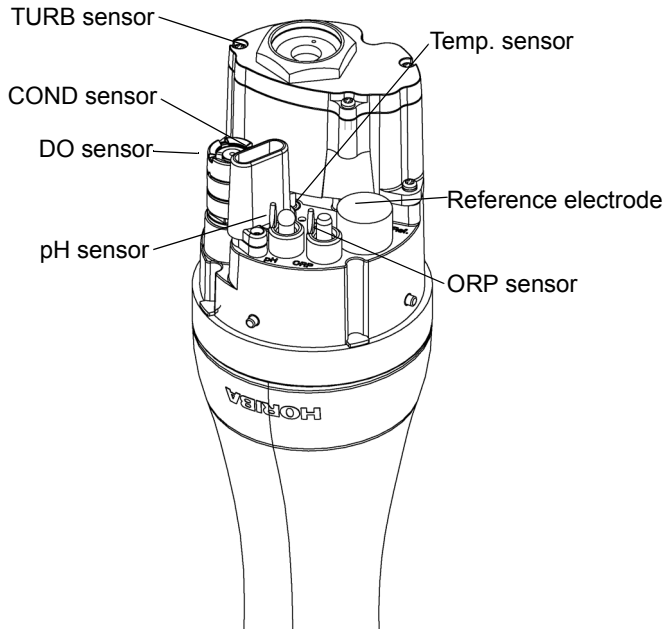


Front view　　Back view

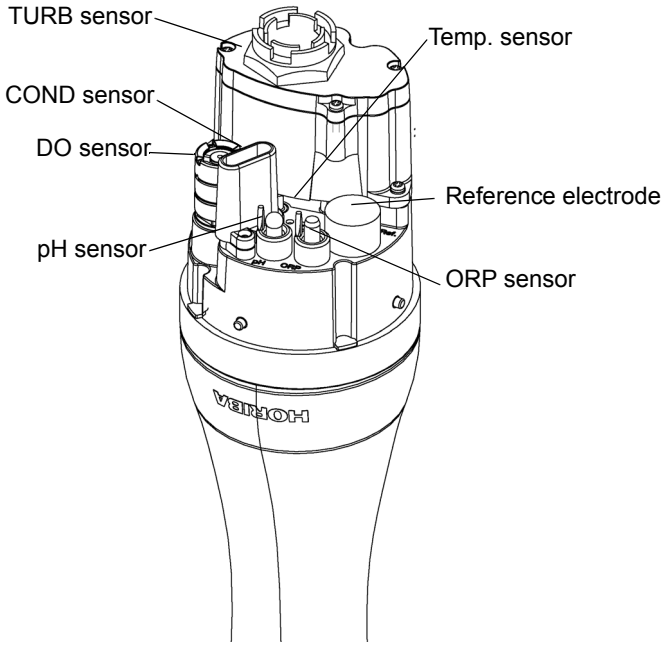
● Sensor probe (U-51)



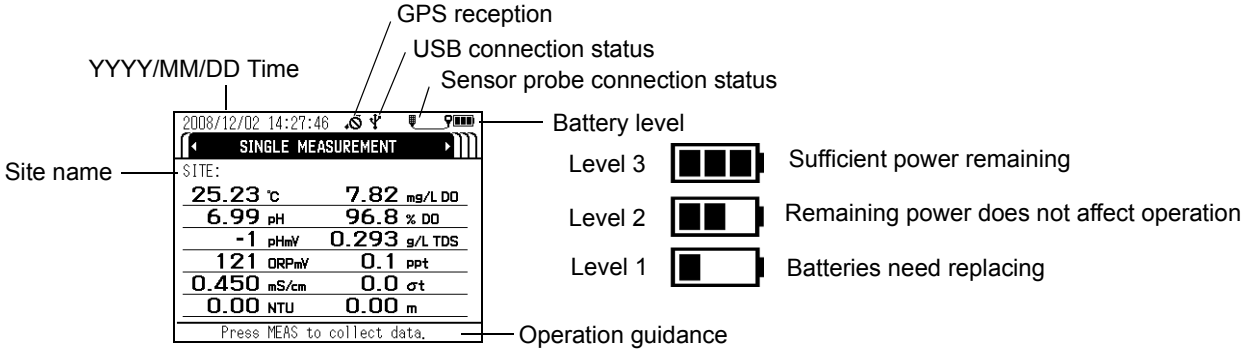
● Sensor probe (U-52)



● Sensor probe (U-53)



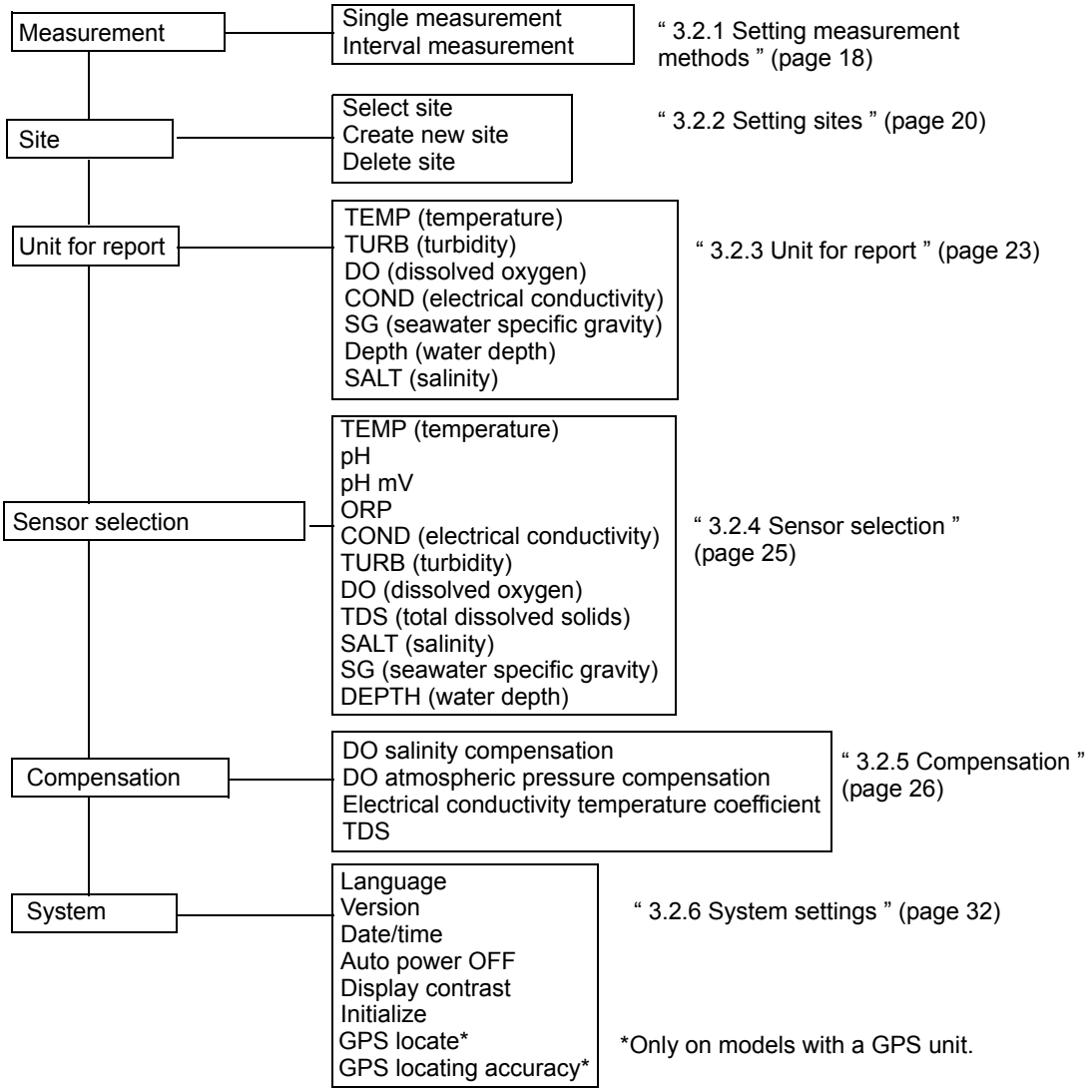
● Display screen



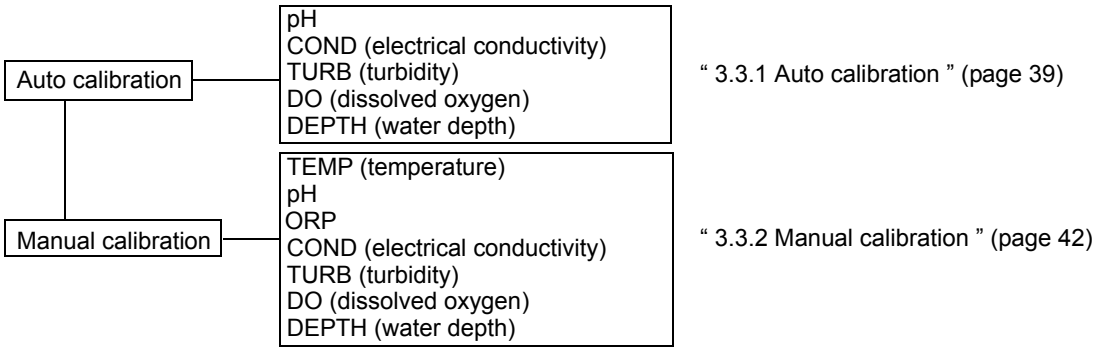
● Operation key

	Key name	description
	POWER key	Turns the system's power ON/OFF. The initial screen appears immediately after turning the power ON. Press and hold down the POWER key for about 3 seconds to turn the power ON and OFF.
	MEAS key	When pressed in the measurement screen, used to set the measurement values of all the measurement parameters. Measurement values flash until the data stabilizes.
		When pressed in the setting, calibration or data operation screen, returns to the measurement screen.
	ENTER key	Used to execute functions, set entered values or store data in memory.
	CAL key	Switches to the calibration screen.
	ESC key	Returns to the immediately preceding operation.
	LIGHT key	Turns the backlight ON/OFF. ● Using the backlight shortens battery life. ● The backlight does not light for about 3 seconds after power ON. ● When the sensor probe is connected while the display's backlight is lit, the backlight goes out for about 3 seconds.
	Left key	Moves the cursor to the left.
	Right key	Moves the cursor to the right.
	Up key	Moves the cursor up.
	Down key	Moves the cursor down.

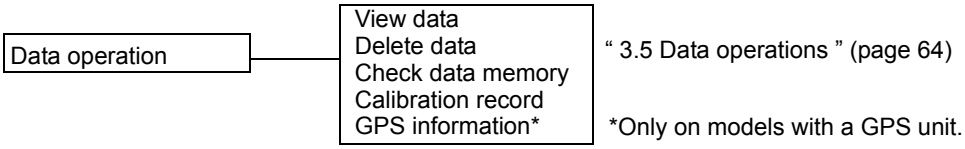
2.4 Setting menu items



2.5 Calibration menu items



2.6 Data operation menu items



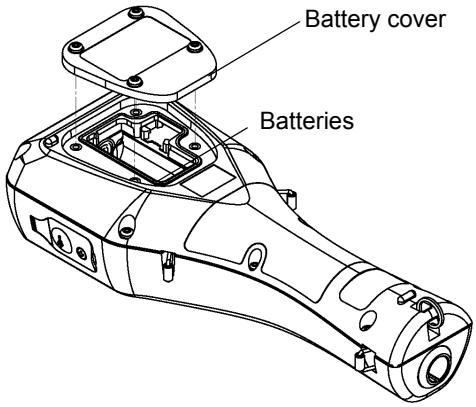
3 Basic Operation

3.1 System setup

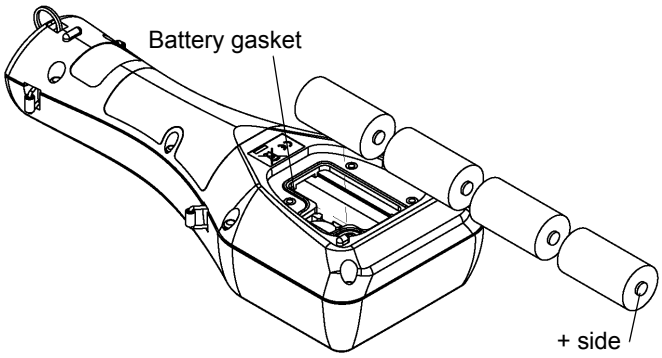
3.1.1 Inserting and replacing the batteries

The control unit is shipped without batteries. Follow the steps below to insert the batteries when using the system for the first time or replacing old batteries.

1. **Loosen the 4 screws on the battery cover by using No. 2 Phillips head screwdriver and remove the cover.**



2. **If replacing the batteries, discard the old batteries.**
3. **Insert new batteries in the control unit.**
   Check that the battery gasket is not dirty or twisted.



4. **Replace the battery cover and fasten it with the 4 screws.**
   Tighten the screws to less than 0.5 N·m.

Note

- **Data and settings will not be lost when the batteries are replaced.**
- **If dirty or twisted, the battery gasket will fail to keep the batteries dry. Check its condition before closing the cover.**
- **To ensure long service life, replacing the battery gasket periodically (once a year) is recommended.**

Precautions when using dry cell batteries

- **Batteries to use: LR14 alkaline dry cell batteries (C-size dry cell batteries) or rechargeable nickel-metal hydride dry cell batteries (C-size)**
  Do not use manganese batteries.
- **Dry cell batteries used incorrectly may leak or burst. Always observe the following**
  - Orient the batteries correctly (positive and negative ends in correct positions).
  - Do not combine new and used batteries, or batteries of different types.
  - Remove the batteries when not using the system for a prolonged period.
  - If batteries leak, have the system inspected at your nearest Horiba service station.

● Battery life

- The battery life for continuous operation when using C-size alkaline dry cell batteries is about 70 hours.
- Using the backlight consumes a proportionate amount of battery power, shortening battery life.
- Searching position information using the GPS unit consumes a proportionate amount of battery power, shortening battery life.
- Nickel-metal hydride secondary batteries can be used, but the battery life is not guaranteed since it will vary according to usage (number of times data is saved, number of charges and amount of each charge). In general, secondary batteries have one-half to one-third the life of C-size alkaline batteries.
- The 70-hour battery life figure applies to a control unit operating temperature of 20°C or more. The battery characteristics shorten the battery life at operating temperatures lower than 20°C, so check the remaining battery level, and replace the batteries before it reaches Level 1.
- The batteries packed with the system at the time of shipment are for checking operation. Their life is not guaranteed.
- The 70-hour battery life figure is the amount of operating time the batteries can provide until the system stops operating. The system may fail during operation if the remaining battery level is low, so it is a good idea to check the remaining battery level and replace the batteries with new ones well before the batteries run out completely.

U-51/52

Battery life: 70 hours (backlight off)

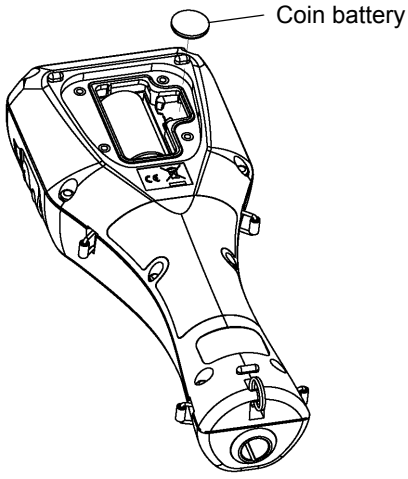
U-53

Battery life: 500 measurements (backlight off)

- Since U-53 is designed for turbidity measurement with wiper, its battery life is estimated in terms of the number of turbidity measurement sequences performed.
- Battery power is also consumed by measurement operations other than turbidity measurement.
- The battery life when turbidity measurement is not performed is about 70 hours.

3.1.2 Replacing the coin battery

- Coin battery to use: CR-2032
- The coin battery is only for the clock. It will provide problem-free operation for three years, but when using the clock continuously, it should be replaced every two years as a precaution.
- When replacing the coin battery for the clock, leave the control unit ON. If the coin battery is replaced when the control unit is turned OFF, the clock will be reset to the default settings.



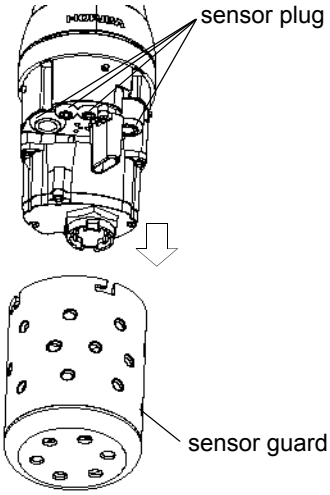
3.1.3 Attaching sensors

Note

- **When attaching or replacing a sensor, wipe any moisture off the sensor probe and sensor.**
- **Be sure to keep water out of sensor connectors. If moisture comes in contact with a sensor connector, blow-dry it with dry air.**
- **The sensor probe is not waterproof when the sensor is not mounted.**
- **Take care not to tighten the sensor too much.**

● Attaching the pH sensor

1. **Remove the sensor guard.**



2. **Remove the sensor plug.**

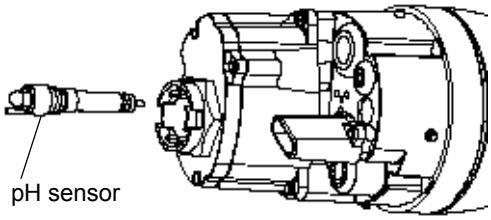
3. **Coat the pH sensor O-ring with a thin layer of silicon grease (part No. 3014017718).**

Note

Be sure no grease from the O-ring gets on the sensor connector. If the sensor connector gets grease on it, wipe it off with a soft cloth soaked in alcohol.

4. **Make sure there is no moisture on the sensor probe's sensor connector (marked "pH").**

5. **Fasten the pH sensor securely by hand.**



6. **Clean the sensor with an alcohol-soaked cloth.**

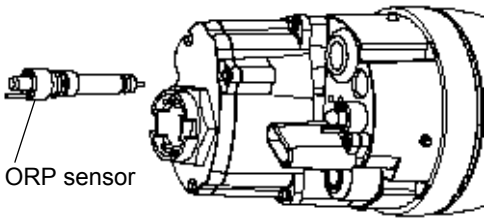
Attaching the ORP sensor

1. **Remove the sensor guard.**
2. **Remove the sensor plug.**
3. **Coat the ORP sensor O-ring with a thin layer of grease (part No. 3014017718).**

Note

Be sure no grease from the O-ring gets on the sensor connector. If the sensor connector gets grease on it, wipe it off with a soft cloth soaked in alcohol.

4. **Make sure there is no moisture on the sensor probe's sensor connector (marked "ORP").**
5. **Fasten the ORP sensor securely by hand.**



6. **Clean the sensor with an alcohol-soaked cloth.**

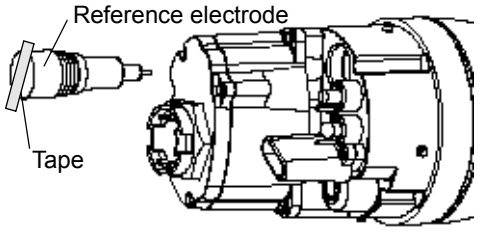
Attaching the reference electrode

1. **Remove the sensor guard.**
2. **Remove the sensor plug.**
3. **Coat the reference electrode O-ring with a thin layer of grease (part No. 3014017718).**

Note

Be sure no grease from the O-ring gets on the sensor connector. If the sensor connector gets grease on it, wipe it off with a soft cloth soaked in alcohol.

4. **Make sure there is no moisture on the sensor probe's sensor connector (marked "REF").**
5. **Fasten the reference electrode securely by hand.**
6. **Remove the tape from the liquid junction part of the reference electrode.**



Attaching the dissolved oxygen (DO) sensor

1. **Remove the membrane cap mounted on the DO sensor beforehand, and replace it with the new membrane cap provided. Replace the internal solution with fresh solution. The main component of the internal solution is potassium chloride (KCl), so the old solution can be disposed of down a sink or other drain.**

Reference

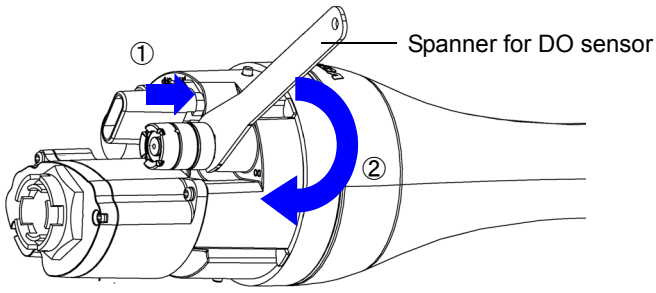
“ 4.5 Replacing the membrane cap ” (page 87)

2. **Screw in the DO sensor to attach it, allowing the internal solution to overflow slightly.**
3. **Use a soft cloth to wipe off the internal solution that overflowed onto the DO sensor.**
4. **Remove the sensor guard.**
5. **Remove the sensor plug.**
6. **Coat the DO sensor O-ring with a thin layer of grease (part No. 3014017718).**

Note

Be sure no grease from the O-ring gets on the sensor connector. If the sensor connector gets grease on it, wipe it off with a soft cloth soaked in alcohol.

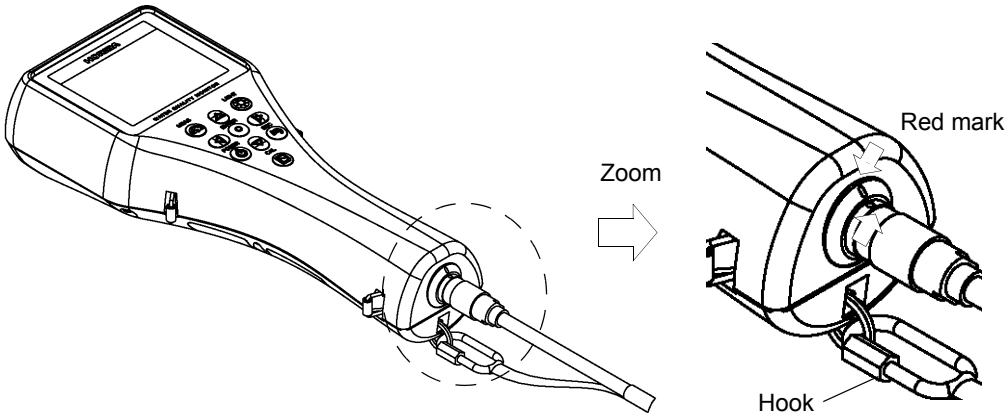
7. **Make sure there is no moisture on the sensor probe’s sensor connector (marked "DO").**
8. **Fasten the DO sensor securely using the spanner for DO sensor.**
   - Hold the DO sensor with the provided spanner for DO sensor and push the sensor down. (Step 1 in figure below)
   - Screw the DO sensor in place. (Step 2 in figure below)



3.1.4 Connecting the control unit and sensor probe

Note

Connect the control unit with its power OFF.

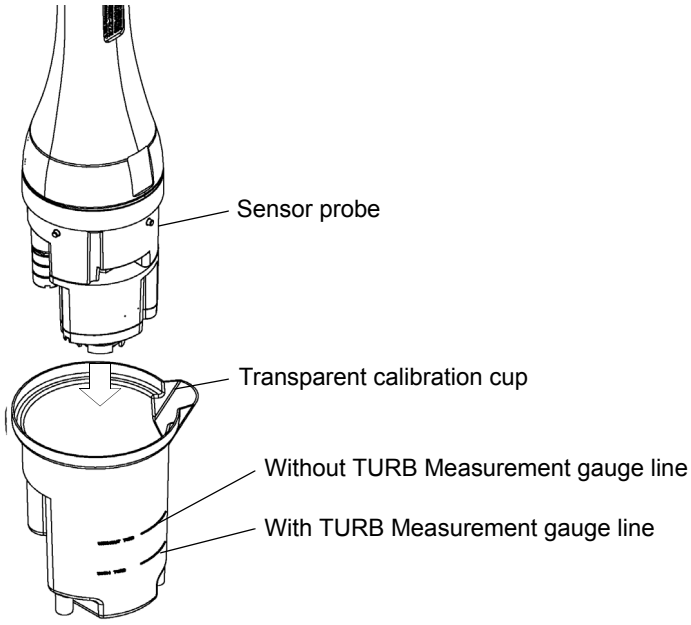


1. **Align the red mark on the connector, and press the connector in until you hear it click.**
2. **Connect the cable's hook to the display.**

3.1.5 Conditioning

Carry out the steps below when using the unit for the first time or when the system has not been used for 3 months or longer.

1. **Fill the transparent calibration cup to the line with pH 4 standard solution.**
   The transparent calibration cup has With TURB Measurement and Without TURB Measurement gauge lines.
2. **Insert the sensor probe in the transparent calibration cup.**



Note

Check that all sensors are attached.

3. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON. Leave the unit for at least 20 minutes to condition the sensors.**

Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

Tip

- **The procedure for immersing the sensor probe in the pH standard solution is the same as that described in " 3.3.1 Auto calibration " (page 39).**
  Auto calibration can be performed using the same pH 4 standard solution that was used in the conditioning procedure.
- **Immersing the sensor in the standard solution is generally required for sensor conditioning, but a voltage supply is required for DO sensor conditioning. Turning ON the power of the control unit is necessary during sensor conditioning.**

3.1.6 GPS (U-52G, U-53G)

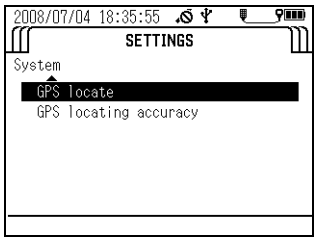
The GPS position measurement precision is proportional to the GPS position measurement time. When the position measurement precision increases, the position measurement time also increases. See " ● GPS locating accuracy" (page 17) for how to set the position measurement precision. See " ● GPS locate" (page 15) below for how to check acquired GPS data.

● GPS locate

1. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**

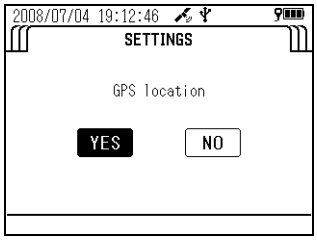
2. **Press the down (▽) key to move the cursor to "System", then press the ENTER key.**

3. **Press the down (▽) key to move the cursor to "GPS locate", then press the ENTER key.**



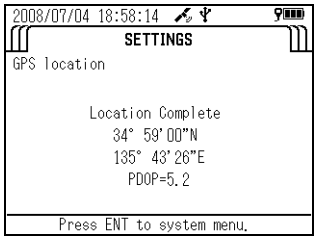
4. **The message "Press ENT key to start position measurement." appears. Press the ENTER key.**

5. **The message "Execute GPS position measurement?" appears. Move the cursor to "YES", then press the ENTER key.**

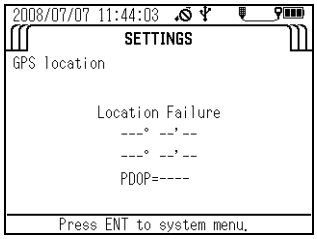


6. **The message "Warming up. Please wait." appears. Wait until the system has finished warming up (about 10 seconds).**

- Position measurement starts automatically when warmup has finished. Position measurement is performed up to 10 times.
- The GPS location complete screen appears after successful position measurement.

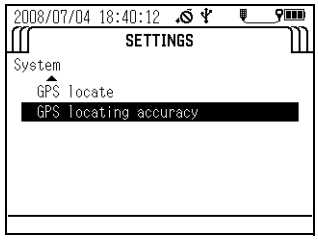


- The GPS location failure screen appears after position measurement has failed. Redo the measurement in a location free from obstacles, or wait for the meteorological conditions to improve before redoing the measurement.

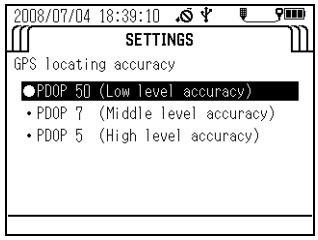


● GPS locating accuracy

1. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**
2. **Press the down (▽) key to move the cursor to "System", then press the ENTER key.**
3. **Press the down (▽) key to move the cursor to "GPS locating accuracy", then press the ENTER key.**



4. **The screen below appears. Move the cursor to the locating accuracy, then press the ENTER key. The black circle (●) indicates the currently set precision.**



3.2 Settings

3.2.1 Setting measurement methods

This section describes how to set the measurement method.

● Measurement methods

● U-51/U-52

Single measurement	Pressing the MEAS key acquires the 5-second average for the selected measurement parameter.
Interval measurement	Pressing the MEAS key acquires and saves the 5-second average for the selected measurement parameter in the set interval. The measurement interval can be set to any value between 10 seconds and 24 hours.

● U-53

The U-53 turbidity sensor uses a tungsten lamp. The lamp lights for about 10 seconds, and the average measurement value acquired during this interval is displayed.

Single measurement	Pressing the MEAS key acquires the 5-second average for the selected measurement parameter after wiper operation. The 10-second average is acquired when measuring turbidity.
Interval measurement	Pressing the MEAS key acquires and saves the 5-second average for the selected measurement parameter in the set interval. The 10-second average is acquired when measuring turbidity. The measurement interval can be set to any value between 10 seconds (final check of this value required; 30 seconds may be better for U-52) and 24 hour.

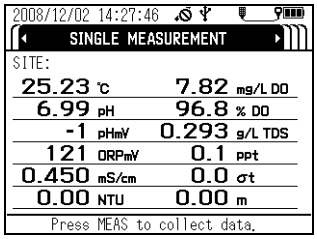
Reference

“ 3.4 Measurement ” (page 61)

● Operation method

1. **Press and hold down the control unit’s POWER key for about 3 seconds to turn the power ON.**

The "MEASUREMENT" screen appears after about 10 seconds.

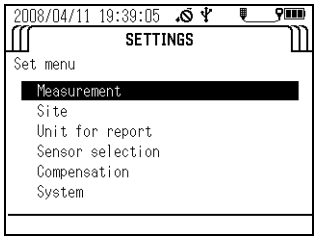


Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

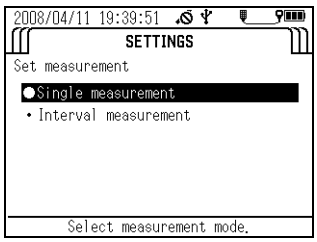
2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**

3. **Press the down (▽) key to move the cursor to "Measurement", then press the ENTER key.**



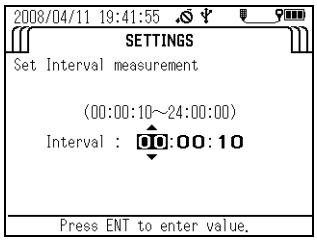
4. **Press the down (▽) key to move the cursor to the desired measurement mode. Press the ENTER key to save the setting.**

The black circle (●) indicates the currently selected measurement mode.



5. **If you selected "Interval measurement", the display switches to the screen used to set the measurement interval. Press the up (△) and down (▽) keys to set the measurement interval.**

The measurement interval can be set to any value between 10 seconds and 24 hours in the case of the U-51 and U-52, or between 30 seconds and 24 hours in the case of the U-53.



3.2.2 Setting sites

The site function allows position data to be connected to corresponding measurement data. Sites have the following specifications and features:

Site names: Text data consisting of up to 20 one-byte alphanumeric characters, spaces, etc.
Site names can be used for control unit searches and as labels for computer processing.
Site names allow measurement data to be saved with a name corresponding to the actual location where it was measured.

You can use site information as a search key when viewing data uploaded by a PC or data saved in the control unit (see " 3.5 Data operations " (page 64)).

- **Selecting sites**

  You can select previously created sites. The black circle (●) indicates the name of the currently selected site. No sites are created at new purchasing or after initialization. Select a site after first creating one from the "Create new site" menu.

- **Creating new sites**

  You can create and save new sites. Up to 20 site names can be registered.

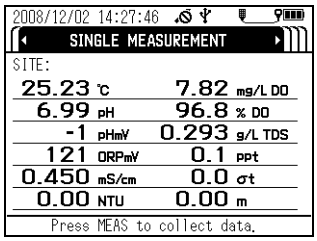
- **Deleting sites**

  You can select a previously created site and delete it.

● Operation methods

- **Selecting a site**

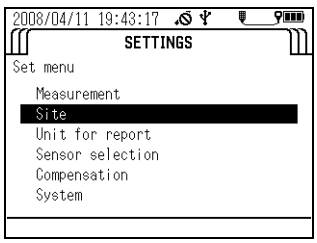
  1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
     The "MEASUREMENT" screen appears after about 10 seconds.



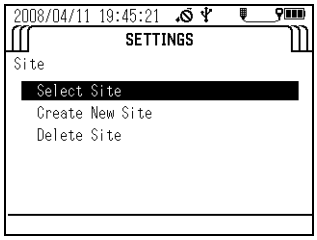
Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

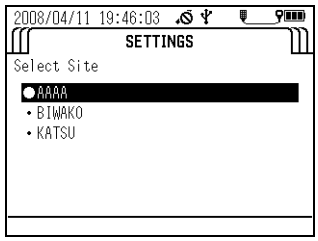
  2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**
  3. **Press the down (▽) key to move the cursor to "Site", then press the ENTER key.**



4. **Press the down (▽) key to move the cursor to "Select Site", then press the ENTER key to display the names of the currently saved sites.**

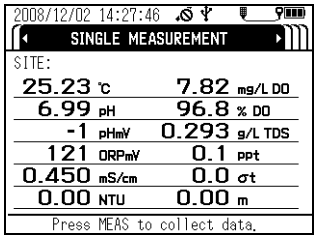


The black circle (●) indicates the currently selected site.



● **Creating a new site**

1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
The "MEASUREMENT" screen appears after about 10 seconds.

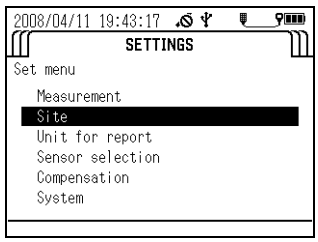


Note

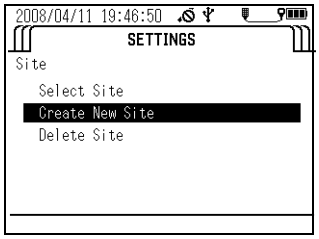
The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**

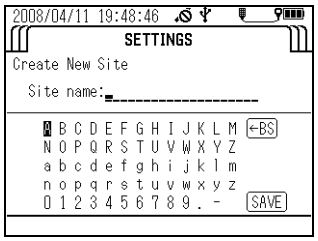
3. **Press the down (▽) key to move the cursor to "Site", then press the ENTER key.**



4. **Press the down (▽) key to move the cursor to "Create New Site", then press the ENTER key.**
Enter the desired site name (up to 20 alphanumeric non-Asian width characters).

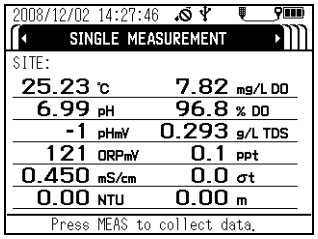


5. **Press the up (△), down (▽), right (▷), and left (◁) keys to move the cursor to each letter or number to use in the name, then press the ENTER key to confirm the entered characters. To delete incorrectly entered characters, move the cursor to "BS" and press the ENTER key to start deleting from the last character. When you have finished entering the name, save it by moving the cursor to "SAVE" and pressing the ENTER key.**



● **Deleting a site**

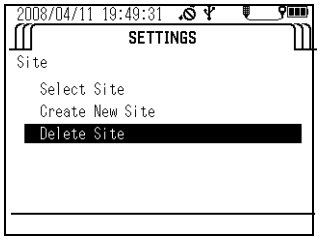
1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
The "MEASUREMENT" screen appears after about 10 seconds.



Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

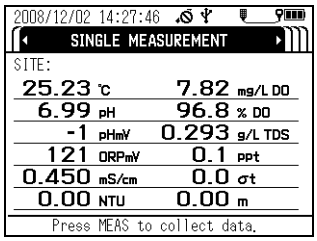
2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**



3. **Press the down (▽) key to move the cursor to "Site", then press the ENTER key.**

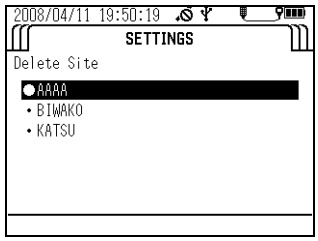
4. **Press the down (▽) key to move the cursor to "Delete Site", then press the ENTER key.**

A list of the currently saved sites appears. The black circle (●) indicates the currently selected site.



5. **Press the down (▽) key to move the cursor to the site to delete, then press the ENTER key to delete it.**

The currently selected site can be deleted after a different site has been selected from the site selection menu or after all unselected sites have been deleted. The same site name cannot be registered more than once.



3.2.3 Unit for report

Note

Units can only be selected when the sensor probe is connected.

Follow the steps below to set the measurement units of measurement parameters. No units are displayed if a measurement parameter has not been selected in the measurement parameter selection screen (see “ 3.2.4 Sensor selection ” (page 25)).

1. **Press and hold down the control unit’s POWER key for about 3 seconds to turn the power ON.**

The "MEASUREMENT" screen appears after about 10 seconds.

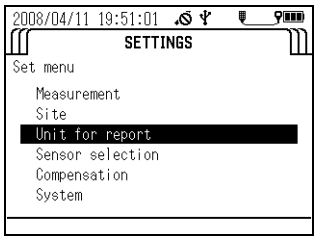
Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

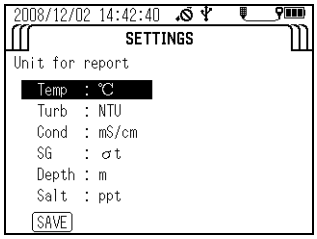
2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**

3. **Press the down (▽) key to move the cursor to "Unit for report", then press the ENTER key.**

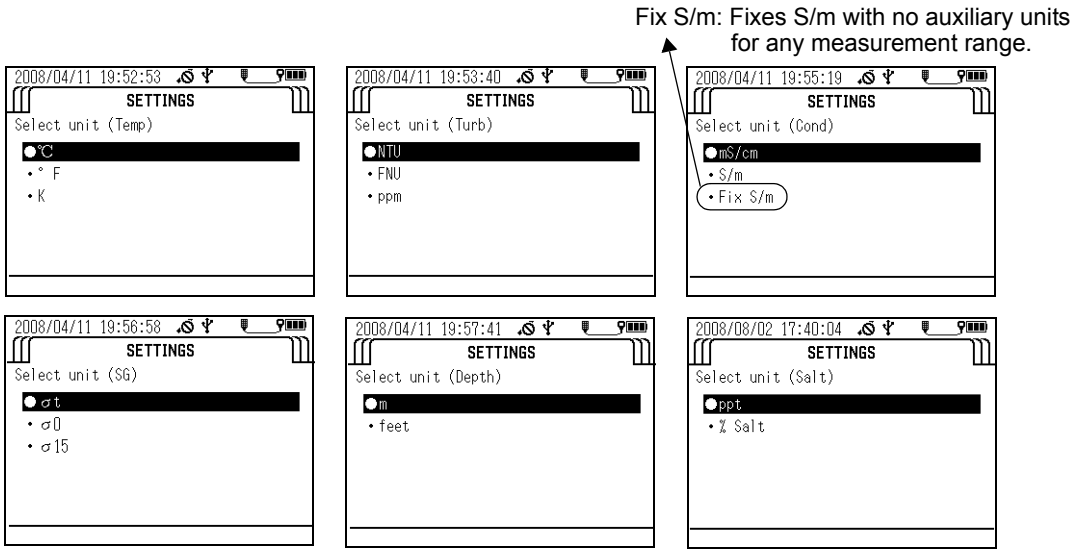
A list of the currently selected measurement parameters and their units appears. Note that measurement parameters not selected (in the measurement parameter selection screen) are not displayed.



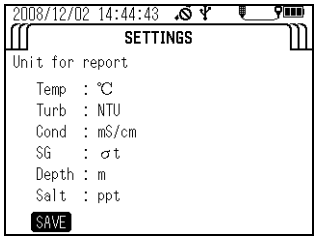
4. **Press the up (△) and down (▽) keys to move the cursor to the item to change, then press the ENTER key.**



5. **A list of the units that can be selected appears. The black circle (●) indicates the currently selected unit. Press the up (△) and down (▽) keys to move the cursor to the desired unit, then press the ENTER key.**



6. **To save the changes, press the up (△) and down (▽) keys to move the cursor to SAVE, then press the ENTER key. If you do not want to save the changes, press the ESC key.**



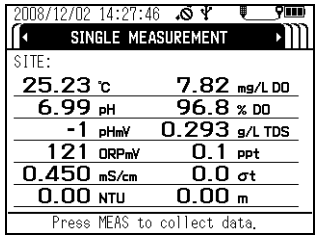
3.2.4 Sensor selection

Note

Measurement parameters can only be selected when the sensor probe is connected.

You can set between 1 and 11 measurement parameters to display in the control unit screen. Follow the steps below to select the desired measurement parameters.

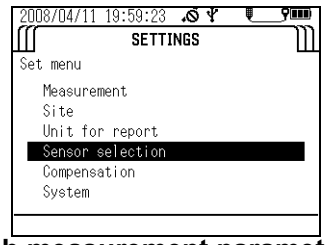
1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
   The "MEASUREMENT" screen appears after about 10 seconds.



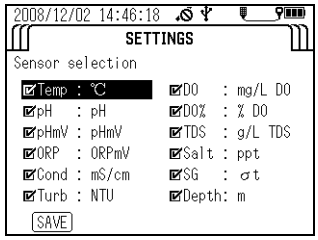
Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**
3. **Press the down (▽) key to move the cursor to "Sensor selection", then press the ENTER key.**
   A list of the measurement parameters that can be set and the currently set units are displayed.



4. **Move the cursor to each measurement parameter to change, then press the ENTER key.**
   A check in the check box of a measurement parameter indicates it will be displayed.
5. **To save the changes, press the up (△), down (▽), left (◁) and right (▷) keys to move the cursor to SAVE, then press the ENTER key. If you don't want to save the changes, press the ESC key.**



Note

Available measurement parameters differ according to product specifications.

3.2.5 Compensation

Note

Compensation settings can only be made when the sensor probe is connected.

U-50 series have following functions of compensation.

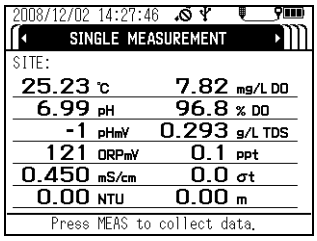
- Salinity compensation and atmospheric pressure compensation for dissolved oxygen (DO)
- Temperature compensation for conductivity (COND)
- Setting total dissolved solid (TDS) coefficient for TDS

● **Salinity compensation (DO)**

The dissolved oxygen (DO) value is presented higher than actual value if salinity compensation is not added, because the increase of salinity gives higher DO value. To obtain correct value salinity compensation is needed. The following modes are available for calculation of salinity compensation.

AUTO:	Salinity compensation is performed automatically with salinity converted from conductivity.
Value input:	Press the up (△) and down (▽) keys to enter a setting value when the salinity is known.

1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
The "MEASUREMENT" screen appears after about 10 seconds.

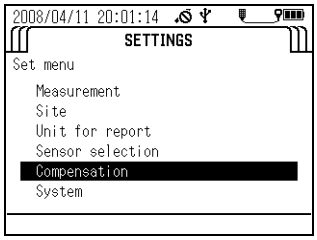


Note

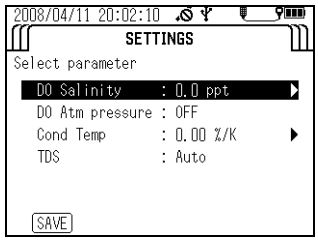
The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**

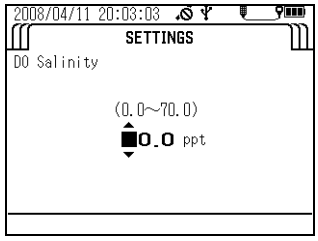
3. **Press the down (▽) key to move the cursor to "Compensation", then press the ENTER key.**



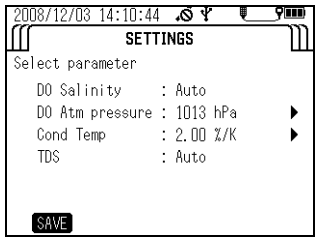
4. **Press the down (▽) key to move the cursor to "DO Salinity", then press the ENTER key to toggle the setting between "Auto" and "Input mode".**
Default: Auto



5. **If you selected "Input mode", press the right (▷) key to display the compensation value input screen. Press the up (△) and down (▽) keys to enter the desired value, then press the ENTER key to set it.**



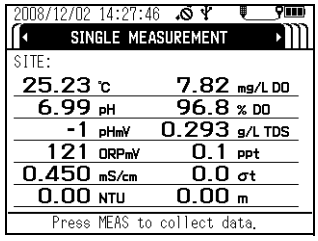
6. **To save the change, press the up (△) and down (▽) keys to move the cursor to SAVE, then press the ENTER key. If you don't want to save the change, press the ESC key.**



● **Atmospheric pressure compensation (DO)**

Differences in the atmospheric pressure of the measurement location influence the Dissolved Oxygen (DO) measurement. By setting (input) the actual atmospheric pressure of the measurement location into the control unit, it is possible to standardize the measured Dissolved Oxygen (DO) value to a value at the standard atmospheric pressure (1013 hPa).

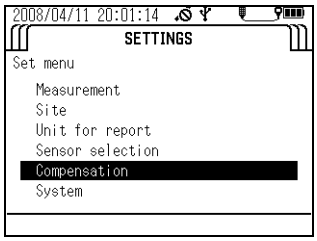
1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
The "MEASUREMENT" screen appears after about 10 seconds.



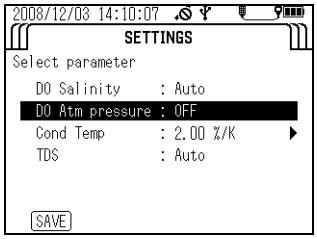
Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

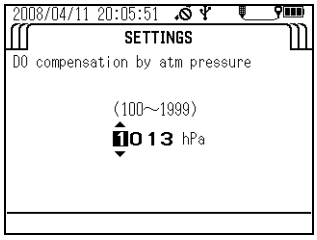
2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**
3. **Press the down (▽) key to move the cursor to "Compensation", then press the ENTER key.**



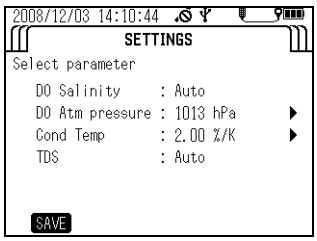
4. **Press the down (▽) key to move the cursor to "Cond Temp", then press the ENTER key to toggle the setting between "OFF" and "Input mode".**
   Default: OFF



5. **If you selected "Input mode", press the right (▷) key to display the compensation value input screen. Press the up (△) and down (▽) keys to enter the desired value, then press the ENTER key to set it.**



6. **To save the change, press the up (△) and down (▽) keys to move the cursor to SAVE, then press the ENTER key. If you don't want to save the change, press the ESC key.**

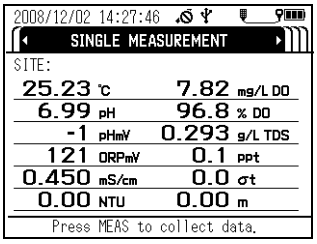


● Temperature compensation for conductivity (COND)

Sample conductivity (COND) varies with temperature, and this control unit uses a temperature compensation coefficient to automatically standardize the conductivity (COND) at 25°C. The initial setting coefficient is 2%/K, which is the generally used.

1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**

The "MEASUREMENT" screen appears after about 10 seconds.

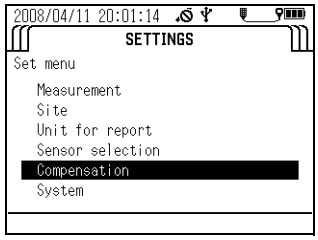


Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

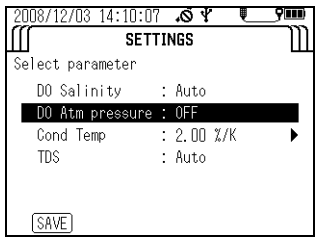
2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**

3. **Press the down (▽) key to move the cursor to "Compensation", then press the ENTER key.**

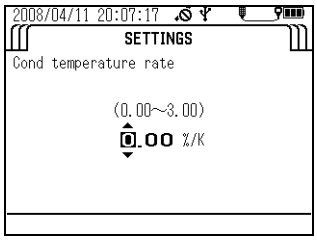


4. **Press the down (▽) key to move the cursor to "Cond Temp", then press the ENTER key to toggle the setting between "OFF" and "Input mode".**

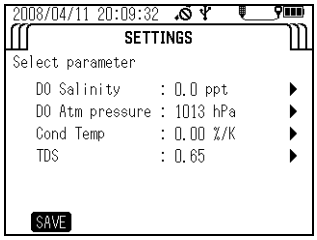
Default: 2.00%/K



5. **If you selected "Input mode", press the right (▷) key to display the compensation value input screen. Press the up (△) and down (▽) keys to enter the desired value, then press the ENTER key to set it.**



6. **To save the change, press the up (△) and down (▽) keys to move the cursor to SAVE, then press the ENTER key.**
If you don't want to save the change, press the ESC key.

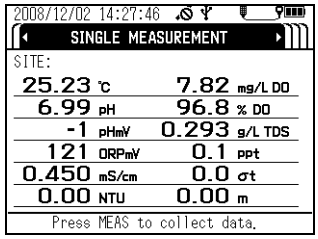


● Setting a total dissolved solid (TDS) coefficient

The total dissolved solid amount (TDS) is a converted value obtained by multiplying the conductivity (COND) by a known coefficient. The coefficient initially set for the control unit is based on a conversion for KCl and $CaCO_3$ solutions and it depends on the conductivity (COND) value as shown below.

Conductivity (COND) (S/m)	Conversion coefficient
< 0.05	0.65
0.05 to 0.5	0.64
0.5 to 1	0.63
1 to 3	0.62
3 to 5	0.61
> 5	0.60

1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
The "MEASUREMENT" screen appears after about 10 seconds.

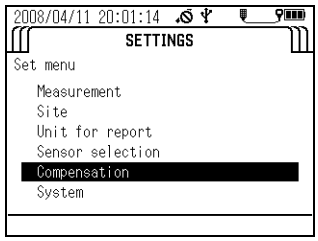


Note

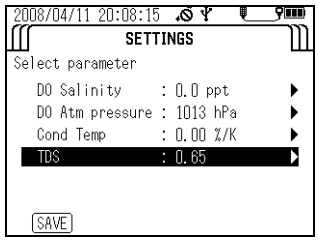
The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**

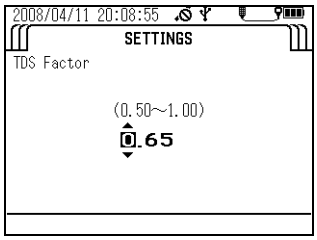
3. **Press the down (▽) key to move the cursor to "Compensation", then press the ENTER key.**



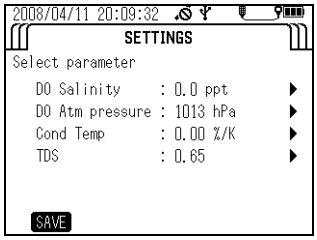
4. **Press the down (▽) key to move the cursor to "TDS", then press the ENTER key to toggle the setting between "AUTO" and "Input mode".**
Default: Auto



5. **If you selected "Input mode", press the right (▷) key to display the compensation value input screen. Press the up (△) and down (▽) keys to enter the desired value, then press the ENTER key to set it.**



6. **To save the change, press the up (△) and down (▽) keys to move the cursor to SAVE, then press the ENTER key. If you don't want to save the change, press the ESC key.**



3.2.6 System settings

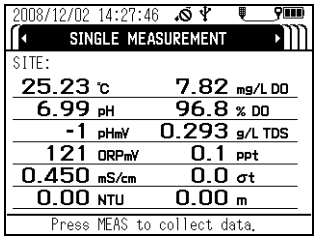
The system settings let you change the display language, check the system software version, set the date/time, set the auto power OFF time, set the display contrast, and initialize the settings.

● **Display language**

Follow the steps below to select either English or Japanese as the display language.

1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**

The "MEASUREMENT" screen appears after about 10 seconds.

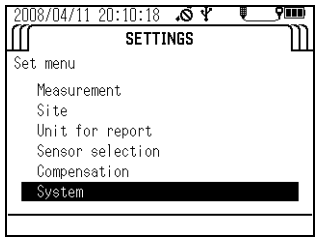


Note

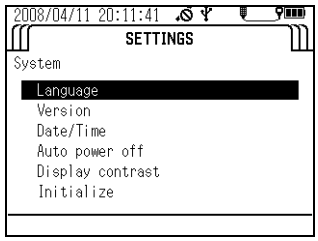
The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**

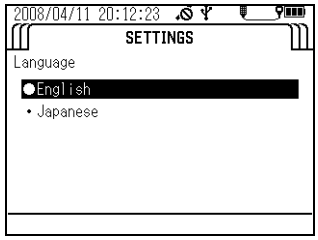
3. **Press the down (▽) key to move the cursor to "System", then press the ENTER key.**



4. **Press the down (▽) key to move the cursor to "Language", then press the ENTER key.**



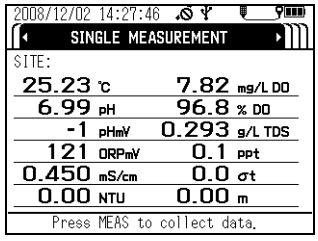
5. **A list of the supported display languages appears. Press the up (△) and down (▽) keys to move the cursor to the desired language, then press the ENTER key.**
The black circle (●) indicates the currently selected display language.



● Version

Follow the steps below to display the program No. and version of the control unit and sensor probe software.
The program No. and version of the sensor probe software will not be displayed if the sensor probe is not connected.

1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
The "MEASUREMENT" screen appears after about 10 seconds.

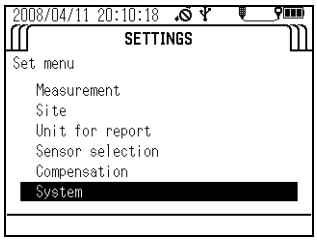


Note

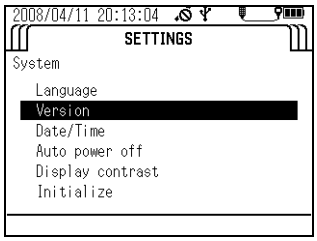
The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**

3. **Press the down (▽) key to move the cursor to "System", then press the ENTER key.**



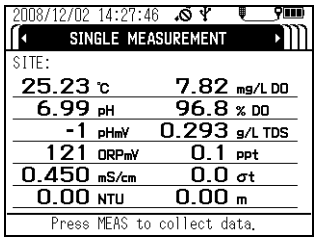
4. **Press the down (▽) key to move the cursor to "Version", then press the ENTER key.**
The program No. of the control unit and sensor probe software appears.



● **Setting the date/time**

Follow the steps below to set the date and time.

1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
The "MEASUREMENT" screen appears after about 10 seconds.

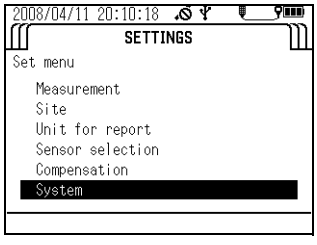


Note

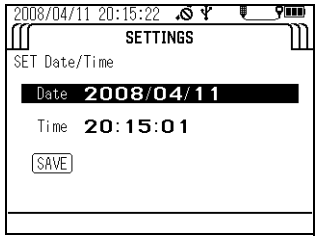
The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**

3. **Press the down (▽) key to move the cursor to "System", then press the ENTER key.**

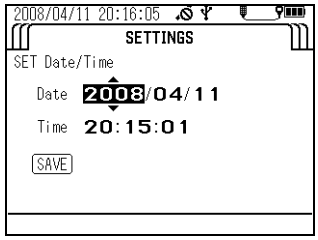


4. **Press the down (▽) key to move the cursor to "Date/time", then press the ENTER key.**

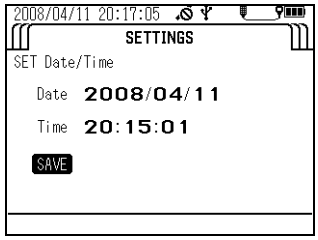


5. **Move the cursor to the date, then press the ENTER key.**

6. **Press the right (▷) key to move the cursor to the year, month, day, hour, minute and second, and press the up (△) and down (▽) keys to enter each value.**



7. **When finished entering settings, press the ENTER key to move the cursor to SAVE, then press the ENTER key again to save the settings.**

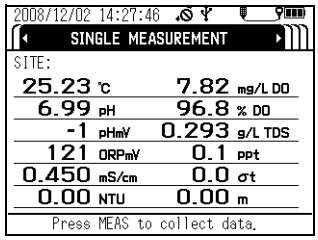


● Setting the auto power OFF time

Follow the steps below to set the time for the auto power OFF function (which turns the power OFF automatically when no operation is performed for the preset amount of time).

1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**

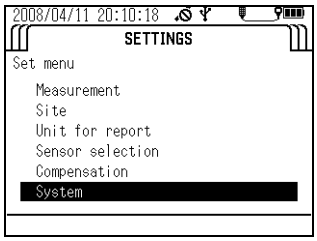
The "MEASUREMENT" screen appears after about 10 seconds.



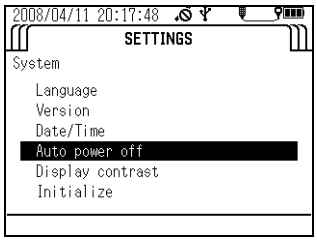
Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

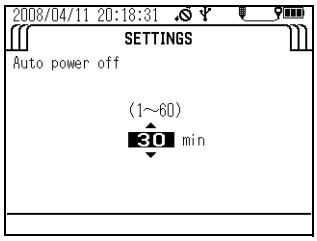
2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**
3. **Press the down (▽) key to move the cursor to "System", then press the ENTER key.**



4. **Press the down (▽) key to move the cursor to "Auto power off", then press the ENTER key.**



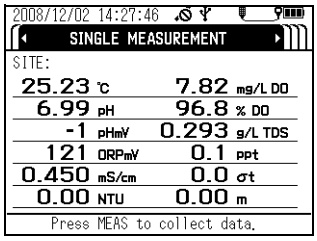
5. **Press the up (△) and down (▽) keys to select the desired time setting, then press the ENTER key.**
   You can select OFF, or settings of 1, 2, 5, 10, 20, 30 or 60 minutes.
   Default: 30 minutes



● Display contrast

Follow the steps below to adjust the display's contrast.

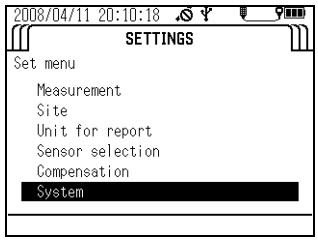
1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
   The "MEASUREMENT" screen appears after about 10 seconds.



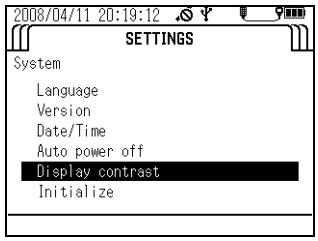
Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

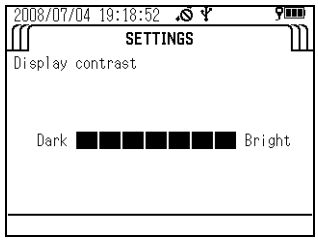
2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**
3. **Press the down (▽) key to move the cursor to "System", then press the ENTER key.**



4. **Press the down (▽) key to move the cursor to "Display contrast", then press the ENTER key.**



5. **Press the left (◁) and right (▷) keys to adjust the contrast.**
   Adjustment can be made in 26 steps.

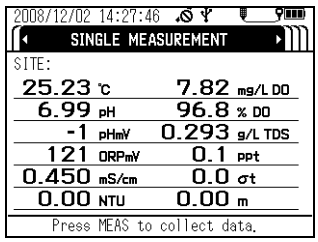


6. **Press the ENTER key.**

● Initialization

Follow the steps below to restore all the settings except date/time to their factory defaults. Factory default calibration data for the electrical conductivity and turbidity sensors will also be deleted at the same time.

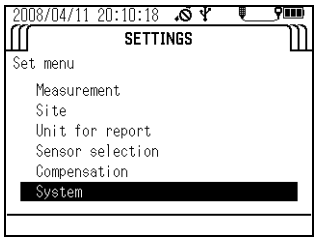
1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
   The "MEASUREMENT" screen appears after about 10 seconds.



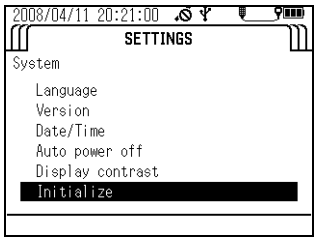
Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

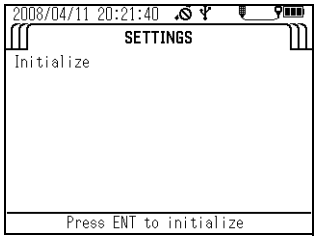
2. **Press the right (▷) key to switch the display to the "SETTINGS" screen.**
3. **Press the down (▽) key to move the cursor to "System", then press the ENTER key.**



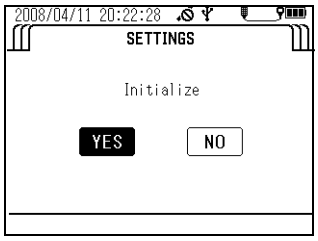
4. **Press the down (▽) key to move the cursor to "Initialize", then press the ENTER key.**



5. **Press the ENTER key again.**



6. **A confirmation message appears asking whether to execute initialization. Press the left (◁) key to move the cursor to YES, then press the ENTER key.**
   The message "Initialize Complete" appears to indicate the process has finished.



3.3 Calibration

To obtain correct measurement values, the sensors need to be calibrated using standard solution before measurement. You can select simultaneous auto calibration of the pH, COND and TURB sensors in pH4 standard solution and DO and DEP sensors simultaneously in air, or manual calibration of individual measurement parameters. You can check the result of the previous calibration using the procedure on " 3.5.4 Checking the calibration record " (page 70).

Note

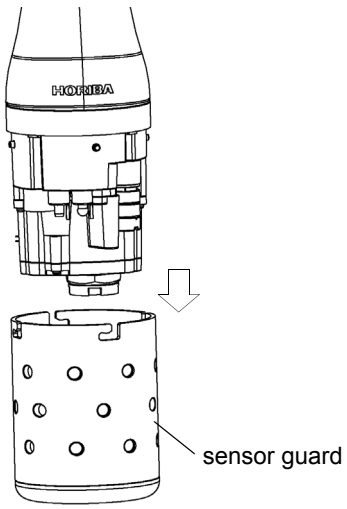
- **Wait at least 20 minutes after turning the system power ON before calibrating the DO sensor.**
- **Make the DO and COND compensation settings before calibration since these settings are applied during calibration.**
- **You can select only the desired parameters for calibration and calibrate just those parameters (see " 3.2.4 Sensor selection " (page 25)).**
- **Use about 200 mL of standard solution in the calibration cup.**
- **Calibration data is stored in the sensor probe.**

3.3.1 Auto calibration

Tip

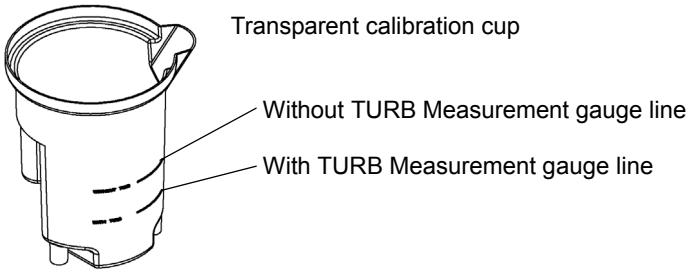
- **The following parameters are calibrated (at 25°C):**
  pH: Set to 4.01 (zero-point calibration); the span is adjusted to the factory default value.
  COND: 0.449 S/m (4.49 mS/cm, span calibration); the zero point is adjusted to the factory default value.
  TURB: 0 NTU (zero-point calibration); the span is adjusted to the factory default value.
  DO: 8.92 mg/L (span calibration); the zero point is adjusted to the factory default value.
  DEP: 0 m (zero-point calibration); the zero point is adjusted to the factory default value.
- **If the air temperature changes, the readout value may not be stable. Ensure that the ambient air temperature is the same temperature as the calibration solution, because the internal probe temperature sensor and external temperature sensor (in the calibration solution) are used for the auto calibration. Allow the probe and standard solution to equilibrate for 1 hour if a thermometer is not available to verify that these temperatures are the same.**
- **Do not hold the probe while performing the auto calibration. Body temperature may elevate the internal temperature sensor measurement creating DO calibration error.**

1. **Remove the sensor guard and wash the sensor probe 2 or 3 times with deionized water.**

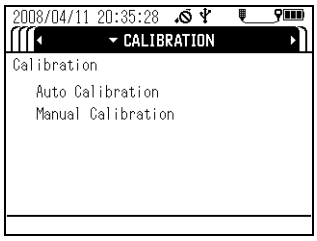


2. **Remove the transparent calibration cup.**

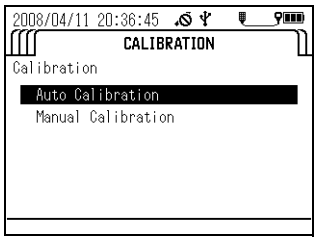
3. **Fill the transparent calibration cup to the line with pH 4 standard solution.**
The transparent calibration cup has With TURB Measurement and Without TURB Measurement gauge lines.



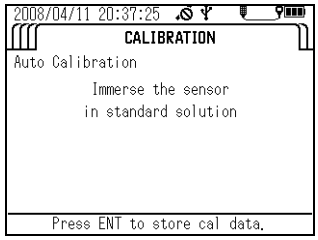
4. **Press the control unit's CAL key to set the calibration mode.**

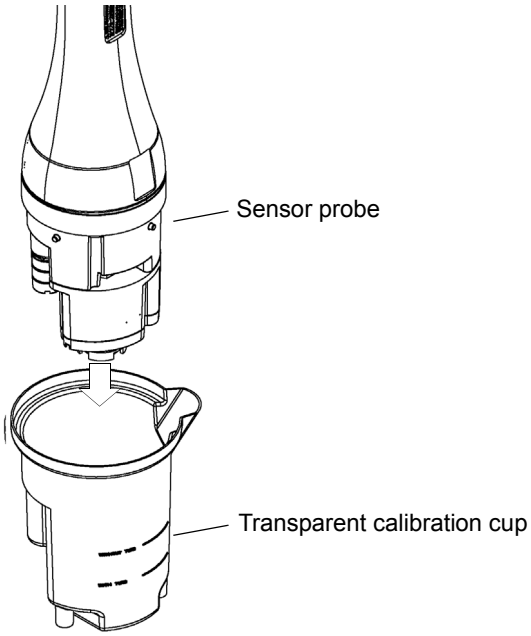


5. **Press the down (▽) key to move the cursor to "Auto Calibration", then press the ENTER key.**

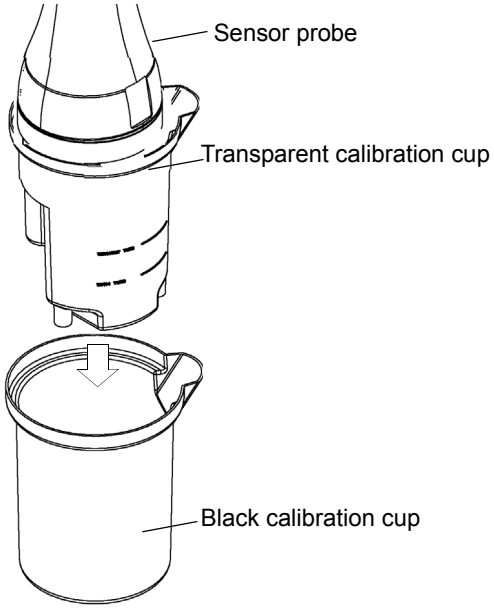


6. **Immerse the sensor probe in the transparent calibration cup.**
Check that the pH sensor, ORP sensor, reference electrode, COND sensor, TURB sensor and temperature sensor are submerged in the pH 4 standard solution and check that there are no air bubbles on the sensor.





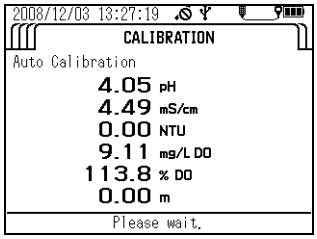
7. **With the sensor probe still in the transparent calibration cup, place the transparent calibration cup into the black calibration cup.**



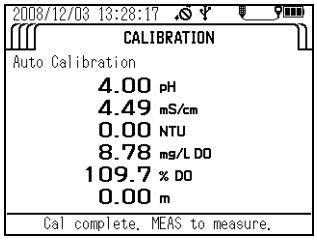
8. **When all the sensor values have stabilized, press the ENTER key to start calibration.**

Note

Do not remove the sensor probe from the calibration solution. U-53 turbidity data will display "----" until the calibration is completed.



Calibration is finished when the message "Cal complete. MEAS to measure." appears. Press the MEAS key to set the measurement screen, then start measurement.



If a calibration error occurs, start calibration after first resolving the issue according to the instructions in " 4.6 Troubleshooting " (page 89).

3.3.2 Manual calibration

The procedures below describe how to calibrate each sensor individually.

Note

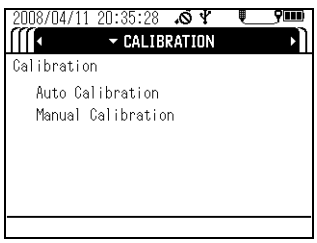
The displayed units are the units set by selecting "Unit for report" in the "SETTINGS" screen.

● **Temperature (TEMP) calibration**

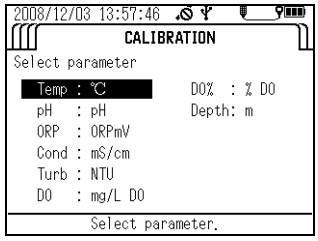
1. **Fill a bucket or similar container with water of a known temperature, and insert the sensor probe in it.**
Wait 5 minutes before starting calibration to allow the sensor probe temperature to stabilize.

2. **Press the control unit's CAL key to set the calibration mode.**

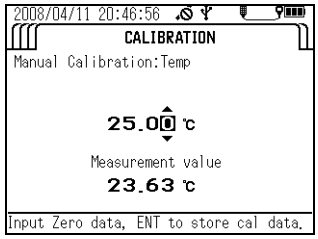
3. **Press the down (▽) key to move the cursor to "Manual Calibration", then press the ENTER key.**



4. **In the parameter selection screen, move the cursor to “Temp”, then press the ENTER key.**



5. **Press the up (△) and down (▽) keys to set the calibration value - the temperature of the water containing the submerged sensor probe.**



6. **Check that “Measurement value” has stabilized, then press the ENTER key to start calibration.**
Calibration is finished when the message “Cal complete. CNT to measure.” appears.

● pH calibration

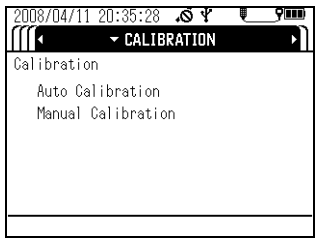
Note

You can select one calibration point (zero-point calibration) or two calibration points (zero-point calibration and span calibration). Carry out two calibration procedures to ensure good measurement precision throughout all measurement ranges.

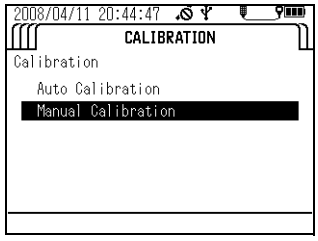
1. **Calibrate the zero point. Wash the transparent calibration cup 2 or 3 times with deionized water, then fill it to the reference line with pH 7 standard solution.**

2. **Wash the sensor probe 2 or 3 times in deionized water to remove any dirt, then submerge the sensor probe in the transparent calibration cup.**

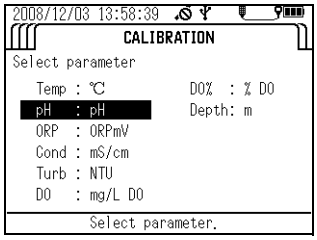
3. **Press the control unit’s CAL key to set the calibration mode.**



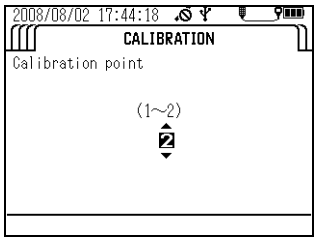
4. **Press the down (▽) key to move the cursor to "Manual Calibration", then press the ENTER key.**



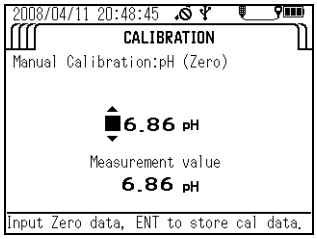
5. **In the parameter selection screen, move the cursor to "pH", then press the ENTER key.**



6. **Set the number of calibration points, then press the ENTER key.**



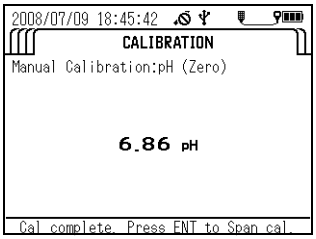
7. **Press the up (△) and down (▽) keys to set the pH value of the pH 7 standard solution containing the submerged sensor probe at the measurement temperature**



Temp. (°C)	pH 4 standard solution Phthalate	pH 7 standard solution Neutral phosphate	pH 9 standard solution Borate
0	4.01	6.98	9.46
5	4.01	6.95	9.39
10	4.00	6.92	9.33
15	4.00	6.90	9.27
20	4.00	6.88	9.22
25	4.01	6.86	9.18
30	4.01	6.85	9.14
35	4.02	6.84	9.10
40	4.03	6.84	9.07
45	4.04	6.84	9.04

8. **Check that "Measurement value" has stabilized, then press the ENTER key to start calibration.**

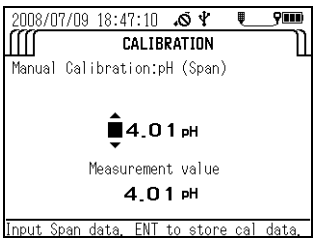
9. **Press the ENTER key to start the span calibration procedure when the message "Cal complete. Press ENT to Span cal." appears.**



10. **Wash the transparent calibration cup 2 or 3 times with deionized water, then fill it to the reference line with pH 4 or pH 9 standard solution.**

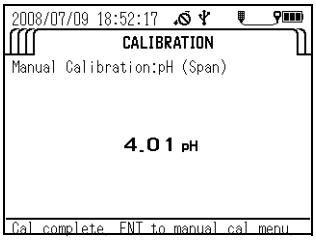
11. **Wash the sensor probe 2 or 3 times in deionized water to remove any dirt, then submerge the sensor probe in the transparent calibration cup.**

12. **Press the up (△) and down (▽) keys to set the pH value of the pH 4 or pH 9 standard solution containing the submerged sensor probe at the measurement temperature.**



13. **Check that "Measurement value" has stabilized, then press the ENTER key to start calibration.**

14. **Calibration is finished when the message "Cal complete. ENT to manual cal menu." appears. Press the ENTER key to return to the calibration parameter**

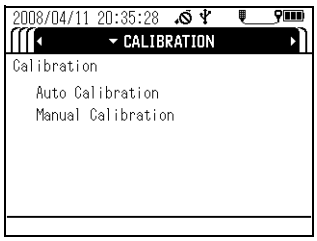


● ORP calibration

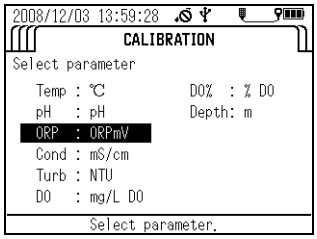
Note

- **If the prepared ORP standard solution is left in open air for one hour or more, the solution may be transformed. For this reason ORP standard solution cannot be stored.**
  Calibrate within one hour of preparing the solution.
- **When measuring sample with low concentrations of oxidants and reductants after conducting an operational check using a standard substance, the measured values may not stabilize or the results of measurement might not be repeatable. If this is the case, start the measurement after immersing the sensors in the sample water sufficiently.**
- **Note that when measuring the ORP of solution with extremely low concentrations of oxidants and reductants, such as tap water, well water, or water treated with purifying equipment, there may be less responsiveness, repeatability, and stability, in general.**
- **When alkaline ion water is left for 5 minutes, its ORP undergoes changes significantly. Always measure alkaline ion water promptly.**

1. **Fill a clean beaker with one bag of ORP standard powder No. 160-22 or No. 160-51. Add 250 mL of deionized water and agitate the solution thoroughly (there will be some excess quinhydrone (a black powder) that floats on the surface when agitating the solution). Fill the transparent calibration cup to the reference line with this standard solution.**
2. **Wash the sensor probe 2 or 3 times in deionized water to remove any dirt, then submerge the sensor probe in the transparent calibration cup.**
3. **Press the control unit's CAL key to set the calibration mode.**
4. **Press the down (▽) key to move the cursor to "Manual Calibration", then press the ENTER key.**



5. **In the parameter selection screen, move the cursor to ORP, then press the ENTER key.**



6. **Press the up (△) and down (▽) keys to set the mV value of the ORP standard solution containing the submerged sensor probe at the measurement temperature.**

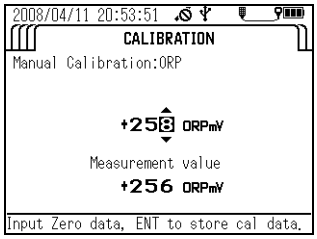


Table 1 Indicated value of ORP standard solution at various temperatures (mV)

Temperature	160-22	16051
5	+274	+112
10	+271	+107
15	+267	+101
20	+263	+95
25	+258	+89
30	+254	+83
35	+249	+76
40	+244	+69

7. **Check that "Measurement value" has stabilized, then press the ENTER key to start calibration.**

8. **Calibration is finished when the message "Cal complete. ENT to manual cal menu." appears. Press the ENTER key to return to the calibration parameter selection screen.**

● Conductivity (COND) calibration

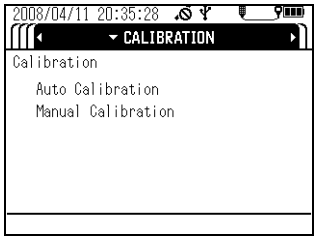
Note

- **To support a wide range of sample concentrations, electrical conductivity is divided into three measurement ranges: 0.0 mS/m to 99.9 mS/m, 0.090 S/m to 0.999 S/m, and 0.9 S/m to 9.99 S/m.**
- **When manually calibrating conductivity, you can select two calibration points (one zero-point calibration point and a span calibration point for one of the three measurement ranges) or four calibration points (one zero-point calibration point and span calibration points for all three measurement ranges). Carry out the four calibration points to ensure good measurement precision throughout all measurement ranges.**
- **Make the compensation setting before calibration since this setting is applied during calibration. (Refer to " 6.5.3 Temperature coefficient " (page 104)).**

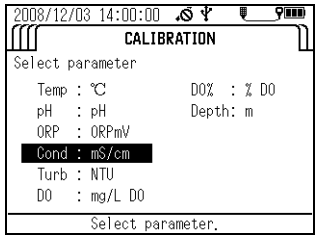
1. **Prepare the standard solution. Dry Potassium chloride (KCl) powder (high-grade commercially available) at 105°C for two hours, and leave it to cool in a desiccator.**
2. **Consult the following table and weigh potassium chloride (KCl), then prepare three standard potassium chloride (KCl) solutions following the procedure below.**

Potassium chloride (KCl) standard solution	Conductivity (COND) value	Potassium chloride (KCl) mass (g) at solution temperature of 25 °C	Calibration range
0.005 mol/L	71.8 mS/m (0.718 mS/cm)	0.373	0.0 mS/m to 99.9 mS/m (0.00 mS/cm to 0.999 mS/cm)
0.050 mol/L	0.667 S/m (6.67 mS/cm)	3.73	0.090 S/m to 0.999 S/m (1.00 mS/cm to 9.99 mS/cm)
0.500 mol/L	5.87 S/m (58.7 mS/cm)	37.2	0.9 S/m to 9.99 S/m (10.0 mS/cm to 99.9 mS/cm)

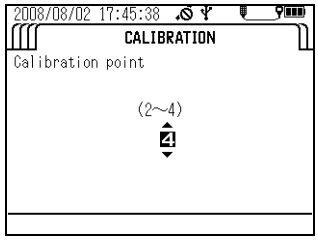
3. **Dissolve the weighed Potassium Chloride (KCl) in deionized water.**
4. **Put the dissolved Potassium Chloride (KCl) into a 1 L measuring flask, and fill to the 1 L mark with deionized water.**
5. **Calibrate the zero point. Wash the sensor probe 2 or 3 times in deionized water to remove any dirt, then remove all moisture from the sensor probe (it will be calibrated in air).**
6. **Press the control unit's CAL key to set the calibration mode.**
7. **Press the down (▽) key to move the cursor to "Manual Calibration", then press the ENTER key.**



8. **In the parameter selection screen, move the cursor to “Cond”, then press the ENTER key.**



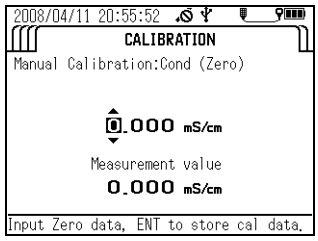
9. **Set the number of calibration points, then press the ENTER key.**



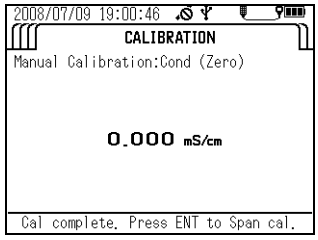
The instructions below assume that four calibration points have been set.

10. **Press the up (△) and down (▽) keys to set the "Cond" value to 0.0 mS/m (0.000 mS/cm).**

11. **Check that "Measurement value" has stabilized, then press the ENTER key to start calibration.**



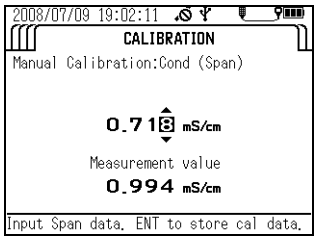
12. **When the message "Cal complete. Press ENT to Span cal." appears, press the ENTER key to start the first span calibration procedure.**



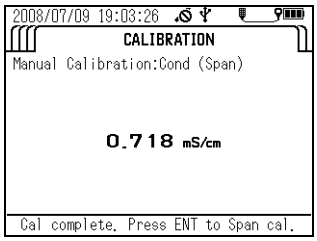
13. **Wash the transparent calibration cup 2 or 3 times with deionized water, then fill it to the reference line with 71.8 mS/m (0.718 mS/cm) standard solution.**

14. **Wash the sensor probe 2 or 3 times in deionized water to remove any dirt, then submerge the sensor probe in the transparent calibration cup.**

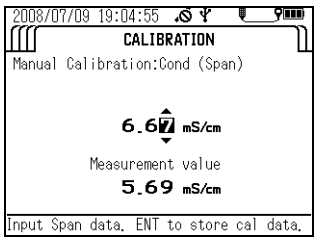
15. **Press the up (△) and down (▽) keys to set the "Cond" value to 71.8 mS/m (0.718 mS/cm).**
    Calibration range = 0 mS/m to 99.9 mS/m (0 mS/cm to 0.999 mS/cm)



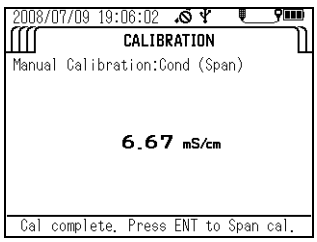
16. **Check that "Measurement value" has stabilized, then press the ENTER key to start calibration.**
17. **When the message "Cal complete. Press ENT to Span cal." appears, press the ENTER key to start the next span calibration procedure.**



18. **Wash the transparent calibration cup 2 or 3 times with deionized water, then fill it to the reference line with 0.667 S/m (6.67 mS/cm) standard solution.**
19. **Wash the sensor probe 2 or 3 times in deionized water to remove any dirt, then submerge the sensor probe in the transparent calibration cup.**
20. **Press the up (△) and down (▽) keys to set the "Cond" value to 0.667 S/m (6.67 mS/cm).**
    Calibration range = 0.100 S/m to 0.999 S/m (1.00 mS/cm to 9.99 mS/cm)



21. **Check that "Measurement value" has stabilized, then press the ENTER key to start calibration.**
22. **When the message "Cal complete. Press ENT to Span cal." appears, press the ENTER key to start the next span calibration procedure.**

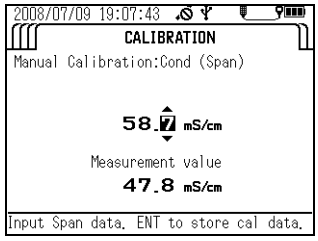


23. **Wash the transparent calibration cup 2 or 3 times with deionized water, then fill it to the reference line with 5.87 S/m (58.7 mS/cm) standard solution.**

24. **Wash the sensor probe 2 or 3 times in deionized water to remove any dirt, then submerge the sensor probe in the transparent calibration cup.**

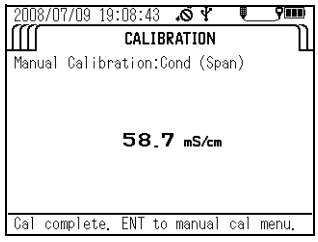
25. **Press the up (△) and down (▽) keys to set the "Cond" value to 5.87 S/m (58.7 mS/cm).**

Calibration range = 1.00 S/m to 10.00 S/m(10.0 mS/cm to 100.0 mS/cm)



26. **Check that "Measurement value" has stabilized, then press the ENTER key to start calibration.**

27. **Calibration is finished when the message "Cal complete. ENT to manual cal menu." appears. Press the ENTER key to return to the calibration parameter selection screen.**



● Turbidity (TURB) calibration

Note

- **To support a wide range of sample concentrations, turbidity is divided into three measurement ranges: 0.0 to 9.9 NTU, 10 to 100 NTU, and over 100 NTU.**
- **When manually calibrating turbidity, you can select two calibration procedures (one zero-point calibration procedure and a span calibration procedure for one of the three measurement ranges), three calibration procedures (one zero-point calibration procedure and a span calibration procedure for two of the three measurement ranges) or four calibration procedures (one zero-point calibration procedure and span calibration procedures for all three measurement ranges). Carry out the four calibration procedures to ensure good measurement precision throughout all measurement ranges.**
- **Always use the calibration cup provided. Using other containers can create effects from ambient light that cause incorrect calibration.**

● Preparing the standard solutions

1. **Weigh out 5.0 g of hydrazine sulfate (commercial special grade or above), and dissolve it in 400 mL of deionized water. Dissolve 50 g of hexamethylene tetramine (commercial special grade or above) in 400 mL of deionized water in anther flask.**
2. **Mix the two solutions and add deionized water until the total solution volume is 1000 mL, and mix well. Store this solution at a temperature of 25°C ±3°C for 48 hours.**
   The turbidity value (TURB) of this solution is equivalent to 4000 NTU.
3. **Dilute 4000 NTU-solution 5 times (use a pipette to measure 50 mL of the 4000 NTU solution and pour it into a 250 mL measuring flask, and fill up to 250 mL meniscus)**
   The turbidity value (TURB) of this solution is equivalent to 800 NTU.
4. **Dilute 800 NTU solution 10 times (use a pipette to measure 25 mL of the 800 NTU solution and pour it into a 250 mL measuring flask, and fill up to 250 mL meniscus)**
   The turbidity value (TURB) of this solution is equivalent to 80 NTU.
5. **Dilute 80 NTU solution 10 times (use a pipette to measure 25 mL of the 80 NTU solution and pour it into a 250 mL measuring flask, and fill up to 250 mL meniscus)**
   The turbidity value (TURB) of this solution is equivalent to 8 NTU.

Note

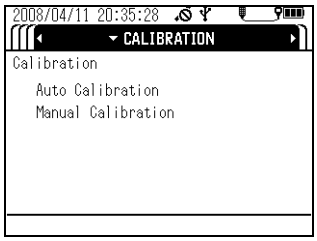
Instead of the standard solutions above, you can use other standard solutions of known concentration measured with other standard instruments.

● U-52, U-53 turbidity calibration

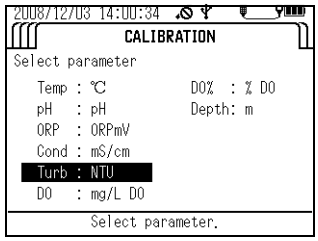
Set the number of calibration points.

You can set between 2 and 4 points.

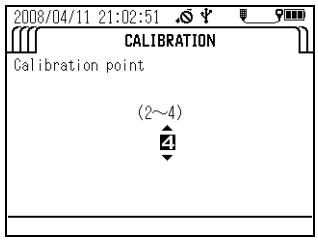
1. **Press the control unit's CAL key to set the calibration mode.**
2. **Press the down (▽) key to move the cursor to "Manual Calibration", then press the ENTER key.**



3. **In the parameter selection screen, move the cursor to "Turb", then press the ENTER key.**



4. **Press the up (△) and down (▽) keys to set the number of calibration points, then press the ENTER key.**

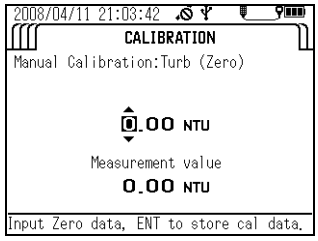


The instructions below assume that four calibration points have been set.

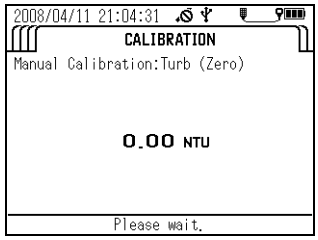
5. **Calibrate the zero point. Wash the transparent calibration cup 2 or 3 times with deionized water, then fill it to the reference line with deionized water.**

6. **Wash the sensor probe 2 or 3 times in deionized water to remove any dirt, then submerge the sensor probe in the transparent calibration cup.**

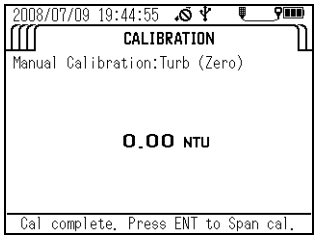
7. **Press the up (△) and down (▽) keys to set the "Turb" value to 0.0 NTU.**



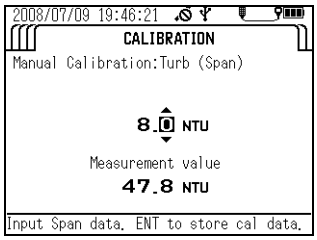
8. **Check that "Measurement value" has stabilized, then press the ENTER key to start calibration.**



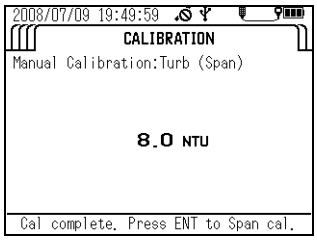
9. **When the message "Cal complete. Press ENT to Span cal." appears, press the ENTER key to start the first span calibration procedure.**



10. **Wash the transparent calibration cup 2 or 3 times with deionized water, then fill it to the reference line with 8 NTU standard solution, or a standard solution of known concentration between 0.1 and 10 NTU.**
11. **Wash the sensor probe 2 or 3 times in deionized water to remove any dirt, then submerge the sensor probe in the transparent calibration cup.**
12. **Press the up (△) and down (▽) keys to set the "TURB" value to 8 NTU, or to the known concentration of the standard solution between 0.1 and 10 NTU. (Input range = 0 NTU to 9.9 NTU (U-51) or 0 NTU to 9.99 NTU (U-52))**

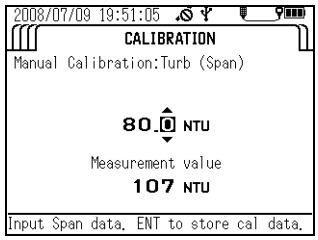


13. **Check that "Current measurement value" has stabilized, then press the ENTER key to start calibration.**
14. **When the message "Cal complete. Press ENT to Span cal." appears, press the ENTER key to start the next span calibration procedure.**



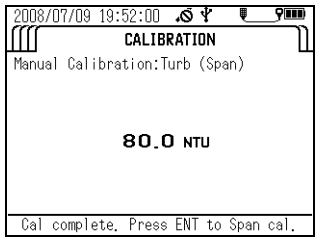
15. **Wash the transparent calibration cup 2 or 3 times with deionized water, then fill it to the reference line with 80 NTU standard solution, or a standard solution of known concentration between 10 and 100 NTU.**
16. **Wash the sensor probe 2 or 3 times in deionized water to remove any dirt, then submerge the sensor probe in the transparent calibration cup.**

17. **Press the up (△) and down (▽) keys to set the "Turb" value to 80 NTU, or to the known concentration of the standard solution between 10 and 100 NTU. (Input range = 10.0 NTU to 99.9 NTU)**



18. **Check that "Measurement value" has stabilized, then press the ENTER key to start calibration.**

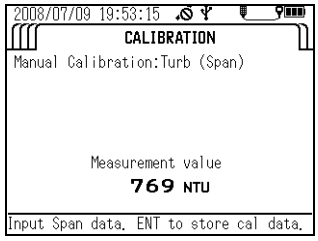
19. **When the message "Cal complete. Press ENT to Span cal." appears, press the ENTER key to start the next span calibration procedure.**



20. **Wash the transparent calibration cup 2 or 3 times with deionized water, then fill it to the reference line with 800 NTU standard solution, or a standard solution of known concentration 100 NTU above.**

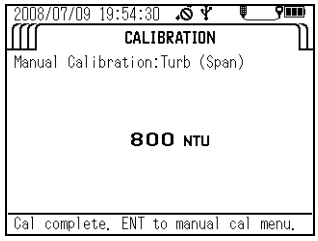
21. **Wash the sensor probe 2 or 3 times in deionized water to remove any dirt, then submerge the sensor probe in the transparent calibration cup.**

22. **Press the up (△) and down (▽) keys to set the "TURB" value to 800 NTU, or to the known concentration of the standard solution 100 NTU above.**
(Input range = 100 NTU to 800 NTU (U-51), 100 NTU to 1000 NTU (U-52))



23. **Check that "Measurement value" has stabilized, then press the ENTER key to start calibration.**

24. **Calibration is finished when the message "Cal complete. ENT to manual cal menu." appears. Press the ENTER key to return to the calibration parameter selection screen.**



● Dissolved oxygen (DO) calibration

Note

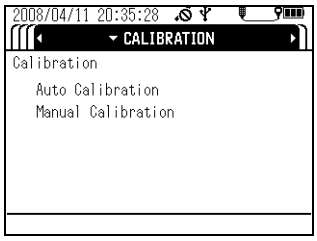
- **You can select one calibration procedure (span calibration) or two calibration procedures (zero-point calibration and span calibration). Carry out the two calibration procedures to ensure good measurement precision throughout all measurement ranges.**
- **It is necessary to prepare new solution before calibration of the Dissolved Oxygen (DO) sensor.**
- **The calibration cup (included) cannot be used to manually calibrate the DO sensor. Use a suitable bottle in which the DO sensor and the temperature sensor can be immersed.**
- **Wait at least 20 minutes after turning the system power ON before calibrating the DO sensor.**
- **Make the compensation setting before calibration since the setting is applied during calibration.**
- **The DO sensor is affected by flow. When performing span calibration with saturated dissolved oxygen water, move the cable slowly up and down (move the sensor probe at a rate of roughly 20 to 30 cm a second) or agitate the saturated dissolved oxygen water.**

1. **Prepare the standard solution.**

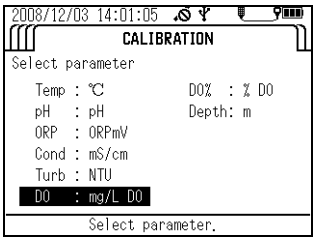
- Add about 50 g of sodium sulfite to 1000 mL of water (either deionized water or tap water) and stir the mixture to dissolve the sodium sulfite in it.
- Pour 1 to 2 liters of water into a suitable flask (either deionized water or tap water). Using a air pump, feed air into the water and aerate the solution until oxygen is saturated.

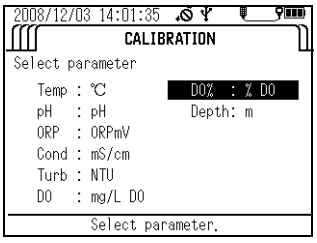
2. **First, calibrate the zero point. Press the control unit's CAL key to set the calibration mode.**

3. **Press the down (▽) key to move the cursor to "Manual Calibration", then press the ENTER key.**

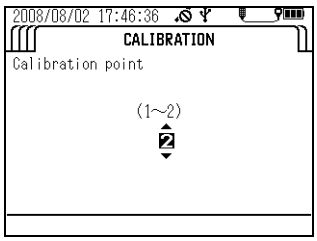


4. **In the parameter selection screen, move the cursor to DO or DO%, then press the ENTER key.**



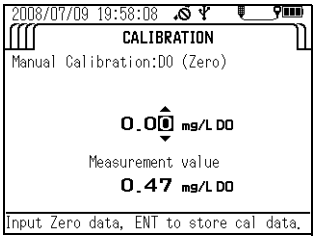


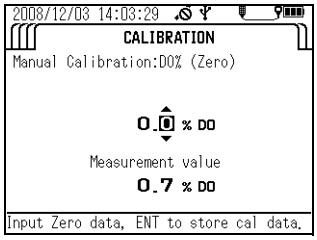
5. **Set the number of calibration procedures, then press the ENTER key.**



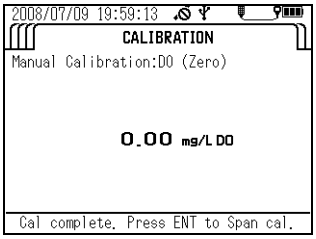
The instructions below assume that two calibration points have been set.

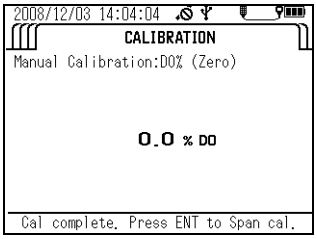
6. **Wash the sensor probe 2 or 3 times in deionized water to remove any dirt, then submerge the sensor probe in the bottle.**
7. **Press the up (△) and down (▽) keys to set the DO value to 0.00 mg/L or 0.0%.**



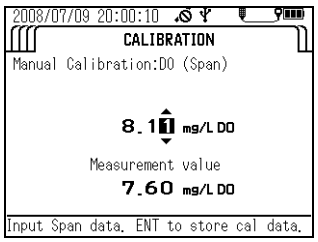


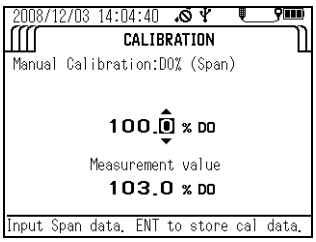
8. **Check that "Measurement value" has stabilized, then press the ENTER key to start calibration.**
9. **When the message "Cal complete. Press ENT to Span cal." appears, press the ENTER key to start the span calibration procedure.**



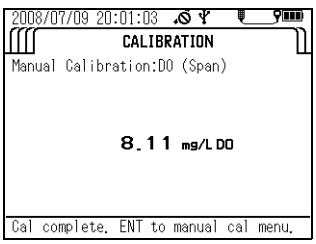


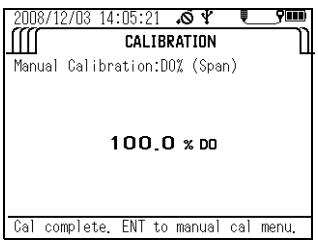
10. **Wash the sensor probe 2 or 3 times with deionized water to remove any dirt, then submerge the sensor probe in the container filled with the span solution.**
11. **Press the up (△) and down (▽) keys to set the DO value to the saturated dissolved oxygen value (mg/L) of the water at that temperature or the dissolved oxygen saturation ratio.**





12. **Check that "Measurement value" has stabilized, then press the ENTER key to start calibration.**
13. **Calibration is finished when the message "Cal complete. ENT to manual cal menu." appears. Press the ENTER key to return to the calibration parameter selection screen.**





Amounts of saturated dissolved oxygen in water at various temperatures (salinity=0.0%)

JIS K0101

Temp. (°C)	DO (mg/L)	Temp. (°C)	DO (mg/L)	Temp. (°C)	DO (mg/L)	Temp. (°C)	DO (mg/L)
0	14.16						
1	13.77	11	10.67	21	8.68	31	7.42
2	13.40	12	10.43	22	8.53	32	7.32
3	13.04	13	10.20	23	8.39	33	7.22
4	12.70	14	9.97	24	8.25	34	7.13
5	12.37	15	9.76	25	8.11	35	7.04
6	12.06	16	9.56	26	7.99	36	6.94
7	11.75	17	9.37	27	7.87	37	6.86
8	11.47	18	9.18	28	7.75	38	6.76
9	11.19	19	9.01	29	7.64	39	6.68
10	10.92	20	8.84	30	7.53	40	6.59

ISO5814

Temp. (°C)	DO (mg/L)	Temp. (°C)	DO (mg/L)	Temp. (°C)	DO (mg/L)
0	14.62				
1	14.22	11	11.03	21	8.91
2	13.83	12	10.78	22	8.74
3	13.46	13	10.54	23	8.58
4	13.11	14	10.31	24	8.42
5	12.77	15	10.08	25	8.26
6	12.45	16	9.87	26	8.11
7	12.14	17	9.66	27	7.97
8	11.84	18	9.47	28	7.83
9	11.56	19	9.28	29	7.69
10	11.29	20	9.09	30	7.56

● **Span setting values for calibration in air**

The software should display these values when auto calibration is performed.
Use this table to input values for manual span calibrations in air.

Tip

The DO measurement value of "air-saturated water" and air are different.
Due to the pressure difference against the membrane in air versus the membrane in water, the measurement value in air is about 10% higher than the value of air-saturated water on average.

Amounts of saturated dissolved oxygen in air at various temperatures

Following tables are applicable only to the air calibration of the U-50 DO sensor. Do not use them for other purpose.

Air calibration value in adopting evaluation based on JIS K0101

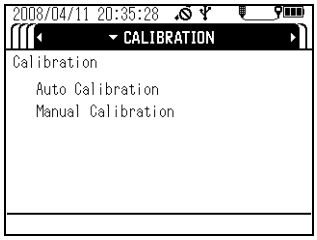
Temp (°C)	DO (mg/L)	Temp (°C)	DO (mg/L)	Temp (°C)	DO (mg/L)	Temp (°C)	DO (mg/L)
0	15.58						
1	15.15	11	11.74	21	9.55	31	8.16
2	14.74	12	11.47	22	9.38	32	8.05
3	14.34	13	11.22	23	9.23	33	7.94
4	13.97	14	10.97	24	9.08	34	7.84
5	13.61	15	10.74	25	8.92	35	7.74
6	13.27	16	10.52	26	8.79	36	7.63
7	12.93	17	10.31	27	8.66	37	7.55
8	12.62	18	10.10	28	8.53	38	7.44
9	12.31	19	9.91	29	8.40	39	7.35
10	12.01	20	9.72	30	8.28	40	7.25

Air calibration value in adopting evaluation based on ISO5814

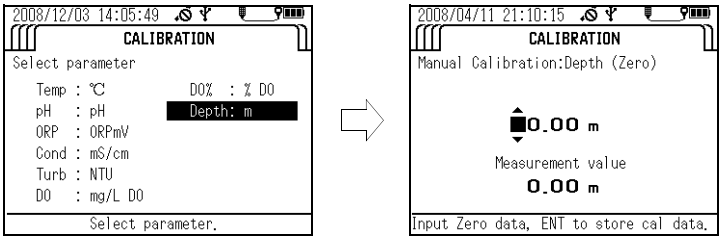
Temp. (°C)	DO (mg/L)	Temp. (°C)	DO (mg/L)	Temp. (°C)	DO (mg/L)
0	16.08				
1	15.64	11	12.13	21	9.80
2	15.21	12	11.86	22	9.61
3	14.81	13	11.59	23	9.44
4	14.42	14	11.34	24	9.26
5	14.05	15	11.09	25	9.09
6	13.70	16	10.86	26	8.92
7	13.35	17	10.63	27	8.77
8	13.02	18	10.42	28	8.61
9	12.72	19	10.21	29	8.46
10	12.42	20	10.00	30	8.32

● **Water depth (DEPTH) calibration**

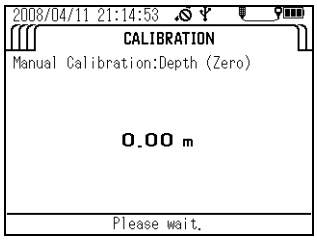
1. **Calibrate the zero point. Wash the sensor probe 2 or 3 times in deionized water to remove any dirt, then remove all moisture from the sensor probe (it will be calibrated in air).**
2. **Press the control unit's CAL key to set the calibration mode.**
3. **Press the down (▽) key to move the cursor to "Manual Calibration", then press the ENTER key.**



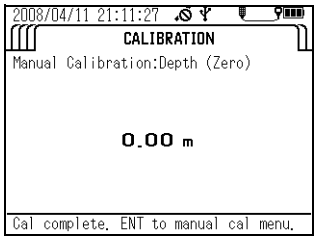
4. **In the parameter selection screen, move the cursor to "Depth", then press the ENTER key.**



5. **Press the up (△) and down (▽) keys to set the "Depth" value to 0.00 m.**
6. **Check that "Measurement value" has stabilized, then press the ENTER key to start calibration.**



7. **Calibration is finished when the message "Cal complete. ENT to manual cal menu." appears. Press the ENTER key to return to the calibration parameter selection screen.**



3.4 Measurement

You can perform measurement by either of the methods below.

- Storing data in memory manually with reference to the measurement value (single measurement)
- Having data stored in memory automatically and continuously
  U-51/U-52: Interval measurement (minimum memory interval of 10 seconds)
  U-53: Interval measurement (minimum memory interval of 30 seconds)

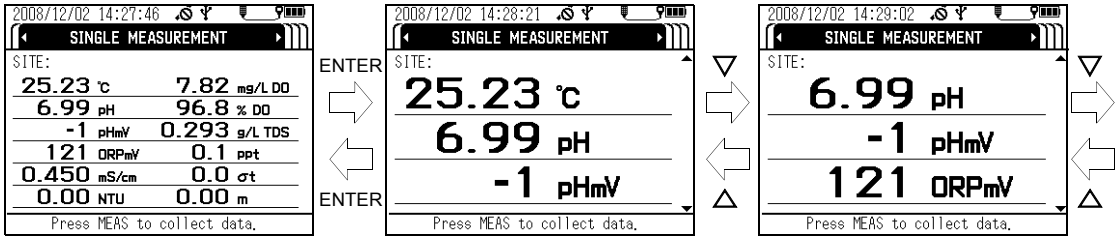
Select the measurement method that meets your requirements.

Note

- **Lower sensor probe slowly when submerging them in samples.**
- **Sensors may break if sensor probe are dropped from a height of 1 meter or more.**
- **Do not submerge sensor probe in water depths of over 30 meters. Sensor probe are only resistant to water pressure of up to 30 meters.**
- **After turning the power ON, check that the DO readout value has stabilized before starting measurement (takes around 20 minutes).**

Tip

- **When on the measurement screen, pressing the ENTER key enlarges the display and shows three measured values at a time.**
- **Pressing the up (△) and down (▽) keys scrolls through the measured values one item at a time.**
- **Pressing the ENTER key again reverts to the normal measurement screen display.**



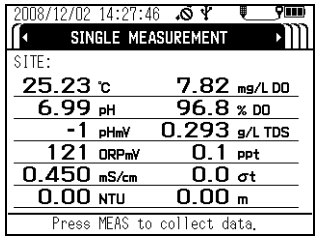
Measurement screen Normal Enlarged

3.4.1 Storing data in memory manually

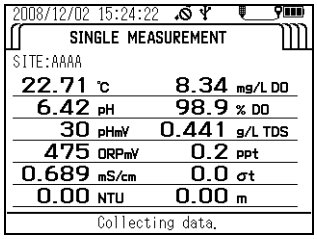
Follow the steps below to manually store data in memory while referring to the measurement value to check the readout value is stable.

● **U-51/U-52**

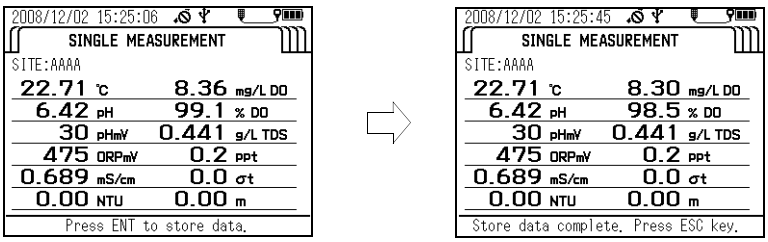
1. **Check that each sensor and sensor guard is mounted.**
2. **Check that "SINGLE MEASUREMENT" has been selected in the measurement screen.**



3. **Submerge the sensor probe in the sample, gently shaking them in the sample to remove any air bubbles from the sensors.**
   If the sample is non-flowing, move the cable slowly up and down (move the sensor probe at a rate of roughly 20 to 30 cm a second) to ensure that fresh sample is continuously supplied to the DO sensor.
4. **When the measurement values are stable, press the MEAS key to acquire the 5-second average.**



5. **Press the ENTER key to save the held measurement values, or press the ESC key to cancel the operation.**

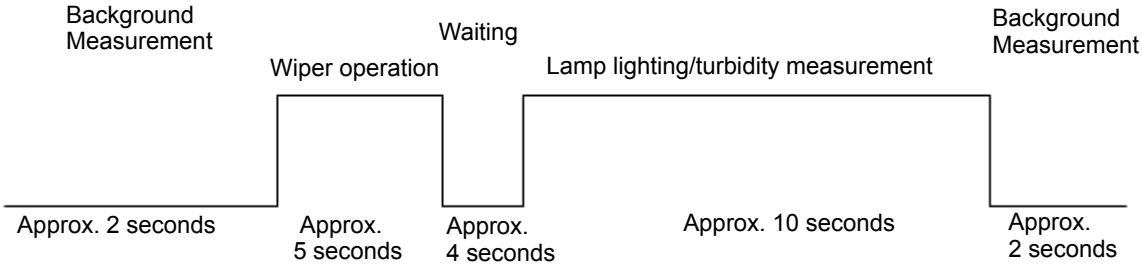


● U-53

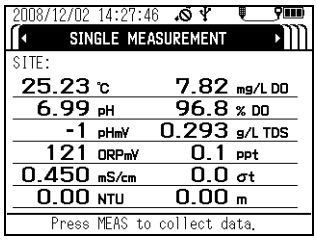
Note

Do not perform turbidity measurement in air as it may damage the wiper.

U-53 turbidity measurement follows the sequence below. The measurement values are held after each sequence.

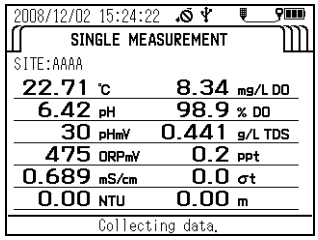


1. **Check that each sensor and sensor guard is mounted.**
2. **Check that "SINGLE MEASUREMENT" has been selected in the measurement screen.**

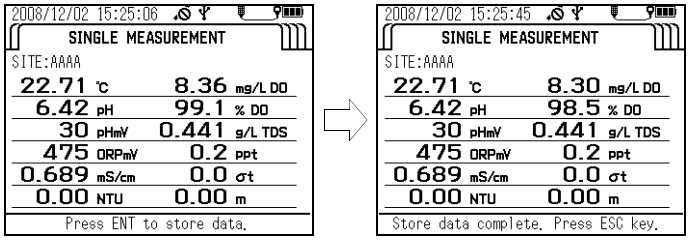


3. **Submerge the sensor probe in the sample, gently shaking them in the sample to remove any air bubbles from the sensors.**
If the sample is non-flowing, move the cable slowly up and down (move the sensor probe at a rate of roughly 20 to 30 cm a second) to ensure that fresh sample is continuously supplied to the DO sensor.

4. **When the non-turbidity meter measurement values are stable, press the MEAS key to start the sequence above.**



5. **When the sequence has finished, hold the measurement values. Press the ENTER key to store the held measurement values, or press the ESC key to cancel the operation.**



3.4.2 Automatic, continuous measurement

● Interval measurement

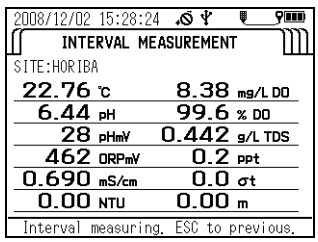
1. **Select the "Interval measurement" measurement setting (see " 3.2.1 Setting measurement methods " (page 18)).**

2. **Press the up (△) and down (▽) keys to set the interval value to the desired value (U-51/U-52: minimum interval: 10 seconds, U-53: minimum interval: 30 seconds), then press the ENTER key.**
The measurement screen appears automatically, and the system becomes ready for measurement.

3. **Check that each sensor and sensor guard is mounted.**

4. **Submerge the sensor probe in the sample, gently shaking them in the sample to remove any air bubbles from the sensors.**
If the sample is non-flowing, move the cable slowly up and down (move the sensor probe at a rate of roughly 20 to 30 cm a second) to ensure that fresh sample is continuously supplied to the DO sensor.

5. **Press the ENTER key to start measurement.**



3.5 Data operations

Use the procedures below to retrieve data stored in memory, delete all the data, check the remaining data memory capacity, and check the calibration record.

3.5.1 Displaying data

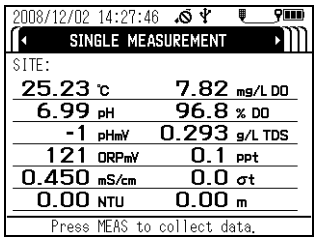
For maximum efficiency, there are 3 methods of displaying data.

- Displaying the data for a specified site
- Displaying the data for a specified date/time
- Displaying all the data

Use the method that best suits your requirements.

● **Displaying the data for a specified site**

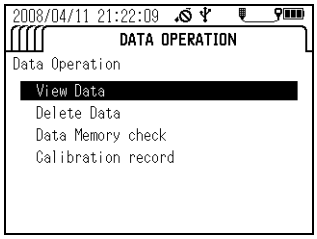
1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
   The "MEASUREMENT" screen appears after about 10 seconds.



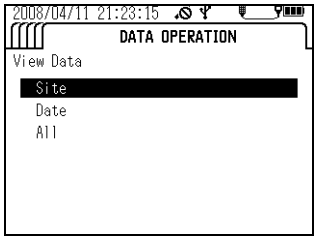
Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

2. **Press the right (▷) key 3 times to display the "DATA OPERATION" screen.**
3. **Press the down (▽) key to move the cursor to "View Data", then press the ENTER key.**

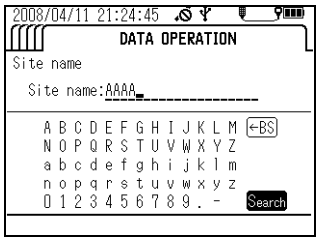


4. **Move the cursor to "Site", then press the ENTER key.**



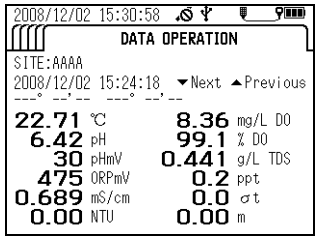
5. **Press the up (△), down (▽), left (◁) and right (▷) keys to enter the site to retrieve.**

6. **Move the cursor to "Search", then press the ENTER key.**



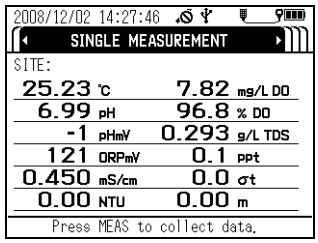
All site names that begin with the entered text are displayed.
The most recently measured data for the entered site is displayed.

7. **Press the up (△) and down (▽) keys to display earlier data.**



● Displaying the data for a specified date/time

1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
The "MEASUREMENT" screen appears after about 10 seconds.

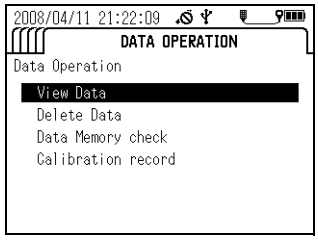


Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

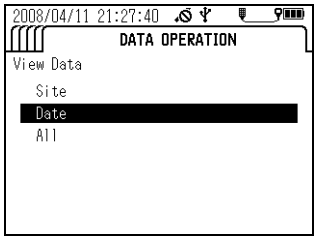
2. **Press the right (▷) key 3 times to display the "DATA OPERATION" screen.**

3. **Press the down (▽) key to move the cursor to "View Data", then press the ENTER key.**



4. **Move the cursor to "Date", then press the ENTER key.**

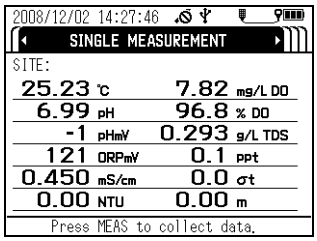
5. **With the cursor on the Date, press the ENTER key.**



6. **Press the up (△), down (▽), left (◁) and right (▷) keys to enter the desired date/ time, then press the ENTER key to apply the setting.**
7. **The cursor moves to "Search". Press the ENTER key to start the search.**
8. **Press the up (△) and down (▽) keys to display earlier data.**

● Displaying all the data

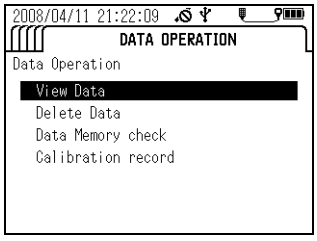
1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
   The "MEASUREMENT" screen appears after about 10 seconds.



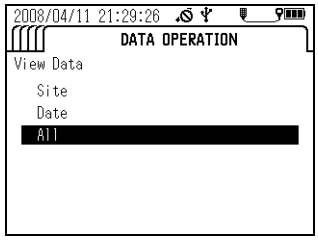
Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

2. **Press the right (▷) key 3 times to display the "DATA OPERATION" screen.**
3. **Press the down (▽) key to move the cursor to "View Data", then press the ENTER key.**



4. **Move the cursor to "All", then press the ENTER key.**
The most recently measured data is displayed.

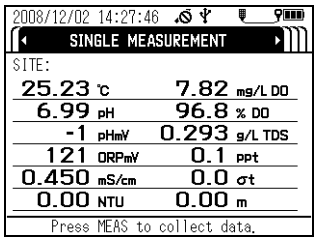


5. **Press the up (△) and down (▽) keys to display earlier data.**

3.5.2 Deleting data

Follow the steps below to delete all the data stored in memory.

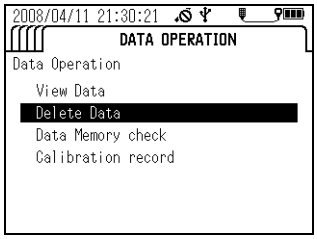
1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
   The "MEASUREMENT" screen appears after about 10 seconds.



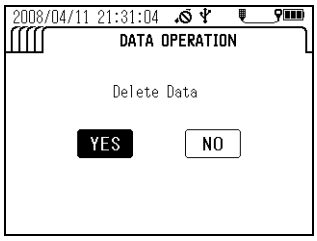
Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

2. **Press the right (▷) key 3 times to display the "DATA OPERATION" screen.**
3. **Press the down (▽) key to move the cursor to "Delete Data", then press the ENTER key.**



4. **Press the left (◁) key to move the cursor to YES, then press the ENTER key.**
   All the data has been deleted when the indicator appears along with the message "No data exists".

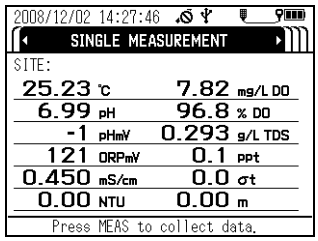


3.5.3 Checking the data memory

You can check the used data capacity and the remaining data capacity.

1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**

The "MEASUREMENT" screen appears after about 10 seconds.

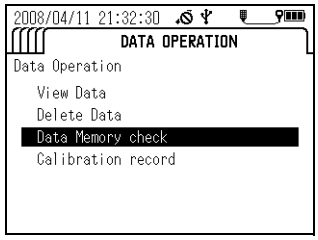


Note

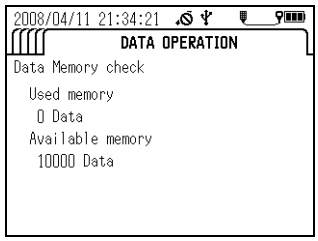
The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

2. **Press the right (▷) key 3 times to display the "DATA OPERATION" screen.**

3. **Press the down (▽) key to move the cursor to "Data Memory Check", then press the ENTER key.**



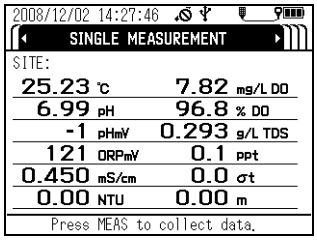
The amount of memory in use and amount of available memory are displayed.



3.5.4 Checking the calibration record

Follow the steps below to check the latest calibration history.

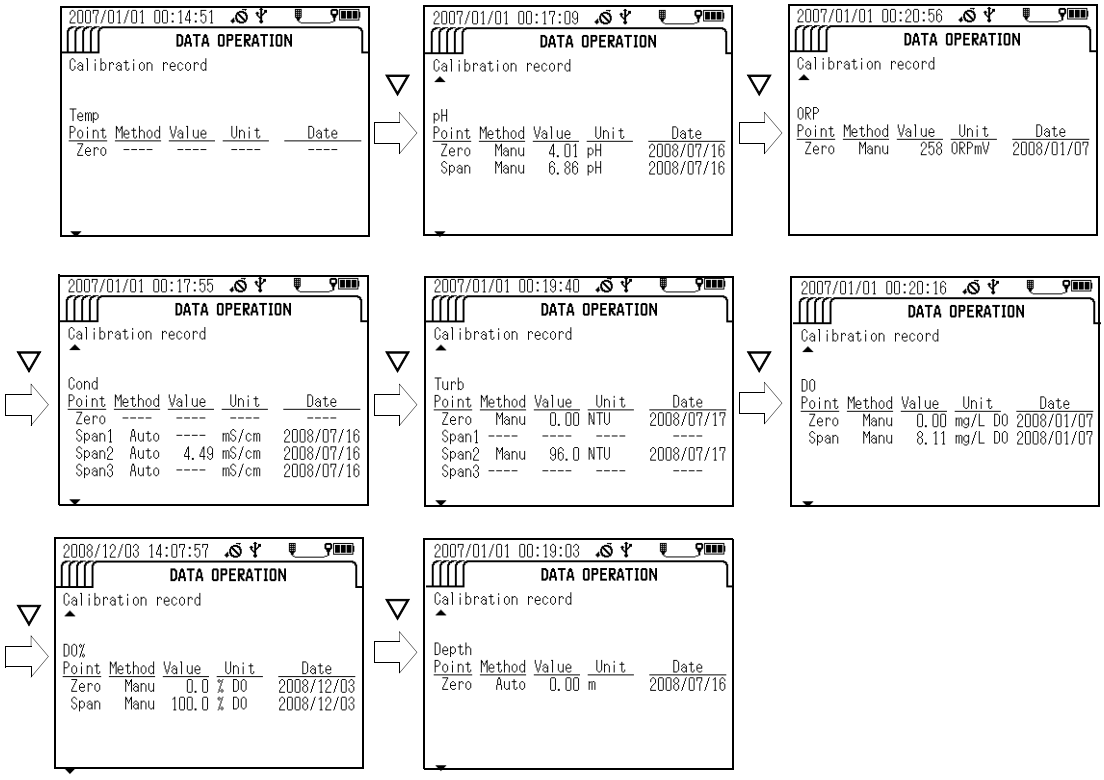
1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
   The "MEASUREMENT" screen appears after about 10 seconds.



Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

2. **Press the right (▷) key 3 times to display the "DATA OPERATION" screen.**
3. **Press the down (▽) key to move the cursor to "Calibration record", then press the ENTER key.**
   The latest calibration record is displayed.



3.5.5 GPS data operations

The menu for GPS data operations appears on the display to which the GPS unit is mounted.

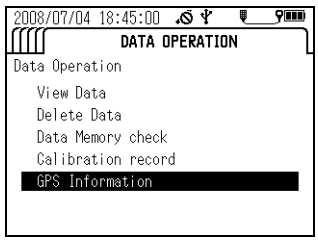
● GPS information

Follow the steps below to display acquired GPS information.

Note

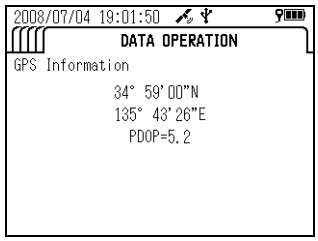
Turning the power OFF erases the GPS information.

1. **Press the right (▷) key to switch the display to the "DATA OPERATION" screen.**
2. **the down (▽) key to move the cursor to "GPS Information", then press the ENTER key.**

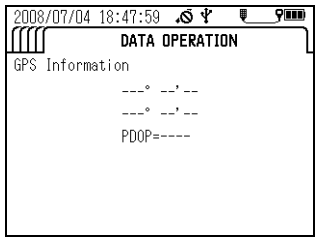


The last GPS information acquired is displayed.

● When received data exists

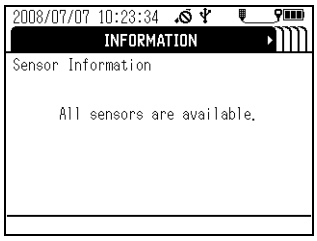


● When no received data exists

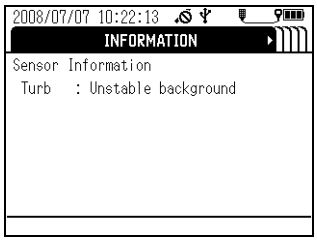


3.6 Sensor information

1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power ON.**
   The "MEASUREMENT" screen appears after about 10 seconds.
2. **Press the left (◁) key once to display the "INFORMATION" screen.**
   The "Sensor Information" screen displays the sensor probe's status.
   - When the sensor probe is normal, the display below appears.



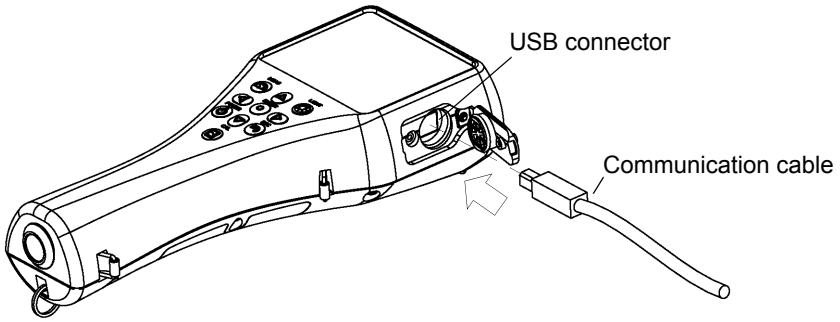
   - When there is a sensor probe problem, individual measurement parameters generate messages such as the one shown below. Follow the troubleshooting information to remove the problem before continuing to operate the system.



3.7 USB communication

The separately-sold, dedicated PC connection cable comes with data collection software. This software allows data to be downloaded from the control unit in CSV format.
This section contains instructions for communication commands used for USB communication.

● Connecting the cable



Dedicated cable
Part name: Communication cable (with data collection software)
Part no.: 3200174823

● Cautions when using USB communication

Take care to observe the following when using USB communication.

- Use the dedicated cable (with data collection software) or a commercially-available USB cable (A-B type) to connect to a PC.
- Be sure to match the transmission format on the control unit and the computer.
  The control unit uses the following transmission format:

Baud rate:	19200 bps
Number of stop bits:	1 bit
Data bit length:	8 bits
Parity:	None
Flow control:	None

Tip

If the transmission formats do not match, a communication error occurs and USB communication will not function normally. After changing the transmission format, restart the control unit and the computer.

- If received data is not sent back or an error occurs after a data request has been sent, adjust the program configuration so that it allows a little waiting time before a data request is sent again. This will enable more stable communication.
- The unit does not use DCD, CTS, or DSR signals. Take care of this when creating programs.

3.7.1 Communication settings

Baud rate:	19200 bps
Number of stop bits:	1 bit
Data bit length:	8 bits
Parity:	None
Flow control:	None

3.7.2 Commands

● Instant data requests

● Request command format

#	RD	@	XX	[CR]	[LF]
1	2	3	4		

1	Header	1 character
2	Command	2 characters
3	Delimiter character	1 character
4	Frame check sequence (FCS)	2 characters

The two ASCII-code characters created by converting the 8 bits of data created by successively combining the value of each character from # through @ in an exclusive OR (XOR) operation with the value of the next character.

Example: #RD@

(1)	0	XOR	35	(ASCII code of # symbol)	⇒	35
(2)	35	XOR	82	(ASCII code of R)	⇒	113
(3)	113	XOR	68	(ASCII code of D)	⇒	53
(4)	53	XOR	64	(ASCII code of @ symbol)	⇒	117 (decimal) ↓ 75 (hex) ↓ Sets "75".

Example: 35 XOR 82 operation

35 in binary	⇒	0	0	1	0	0	0	1	1	
82 in binary	⇒	0	1	0	1	0	0	1	0	
XOR result		0	1	1	1	0	0	0	1	⇒ 113 (decimal)

Note: Set "XX" if you do not want to test for communication frame errors with FCS.

● Response format

#	RD	AAAAAAAAAAAAAAAAAAAA	X	X	XXXX	XX	X	X	XXXXX	X
1	2	3	4	5	6	7	8	9	10	11

XX	X	X	XXXXX	X	XX	X	X	XXXXX	X	XX	X	X	XXXXX	X
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

XX	X	X	XXXXX	X	XX	X	X	XXXXX	X	XX	X	X	XXXXX	X
27	28	29	30	31	32	33	34	35	36	37	38	39	40	41

XX	X	X	XXXXX	X	XX	X	X	XXXXX	X	XX	X	X	XXXXX	X
42	43	44	45	46	47	48	49	50	51	52	53	54	55	56

```
XX  X  X  XXXXX  X  XX  X  X  XXXXX  X  XX  X  X  XXXXX  X
57  58 59 60      61 62  63 64 65      66 67  68 69 70      71

XX XX XX XX XX XX XX XX XX X  X  XXX XX XX X  X  @  XX [CR] [LF]
72 73 74 75 76 77 78 79 80 81 82 83  84 85 86 87 88 89
```

1	Header		1 character
2	Command		2 characters
3	Site name	Upper- and lowercase letters, numbers, periods (.) hyphens (-) and spaces ( )	20 characters
4	Probe status	(3) Status code	1 character
5	Probe error	(4) Status error code	1 character
6	Unused		4 characters
7	Parameter 1 code	(1) Parameter code	2 characters
8	Parameter 1 status	(5) Parameter status code	1 character
9	Parameter 1 error	(6) Parameter error code	1 character
10	Parameter 1 data	5 characters including decimal point, right-justified with blanks filled	5 characters
11	Parameter 1 unit	(2) Unit code	1 character
12	Parameter 2 code	(1) Parameter code	2 characters
13	Parameter 2 status	(5) Parameter status code	1 character
14	Parameter 2 error	(6) Parameter error code	1 character
15	Parameter 2 data	5 characters including decimal point, right-justified with blanks filled	5 characters
16	Parameter 2 unit	(2) Unit code	1 character
17	Parameter 3 code	(1) Parameter code	2 characters
18	Parameter 3 status	(5) Parameter status code	1 character
19	Parameter 3 error	(6) Parameter error code	1 character
20	Parameter 3 data	5 characters including decimal point, right-justified with blanks filled	5 characters
21	Parameter 3 unit	(2) Unit code	1 character
22	Parameter 4 code	(1) Parameter code	2 characters
23	Parameter 4 status	(5) Parameter status code	1 character
24	Parameter 4 error	(6) Parameter error code	1 character
25	Parameter 4 data	5 characters including decimal point, right-justified with blanks filled	5 characters
26	Parameter 4 unit	(2) Unit code	1 character
27	Parameter 5 code	(1) Parameter code	2 characters
28	Parameter 5 status	(5) Parameter status code	1 character
29	Parameter 5 error	(6) Parameter error code	1 character
30	Parameter 5 data	5 characters including decimal point, right-justified with blanks filled	5 characters
31	Parameter 5 unit	(2) Unit code	1 character
32	Parameter 6 code	(1) Parameter code	2 characters
33	Parameter 6 status	(5) Parameter status code	1 character
34	Parameter 6 error	(6) Parameter error code	1 character

35	Parameter 6 data	5 characters including decimal point, right-justified with blanks filled	5 characters
36	Parameter 6 unit	(2) Unit code	1 character
37	Parameter 7 code	(1) Parameter code	2 characters
38	Parameter 7 status	(5) Parameter status code	1 character
39	Parameter 7 error	(6) Parameter error code	1 character
40	Parameter 7 data	5 characters including decimal point, right-justified with blanks filled	5 characters
41	Parameter 7 unit	(2) Unit code	1 character
42	Parameter 8 code	(1) Parameter code	2 characters
43	Parameter 8 status	(5) Parameter status code	1 character
44	Parameter 8 error	(6) Parameter error code	1 character
45	Parameter 8 data	5 characters including decimal point, right-justified with blanks filled	5 characters
46	Parameter 8 unit	(2) Unit code	1 character
47	Parameter 9 code	(1) Parameter code	2 characters
48	Parameter 9 status	(5) Parameter status code	1 character
49	Parameter 9 error	(6) Parameter error code	1 character
50	Parameter 9 data	5 characters including decimal point, right-justified with blanks filled	5 characters
51	Parameter 9 unit	(2) Unit code	1 character
52	Parameter 10 code	(1) Parameter code	2 characters
53	Parameter 10 status	(5) Parameter status code	1 character
54	Parameter 10 error	(6) Parameter error code	1 character
55	Parameter 10 data	5 characters including decimal point, right-justified with blanks filled	5 characters
56	Parameter 10 unit	(2) Unit code	1 character
57	Parameter 11 code	(1) Parameter code	2 characters
58	Parameter 11 status	(5) Parameter status code	1 character
59	Parameter 11 error	(6) Parameter error code	1 character
60	Parameter 11 data	5 characters including decimal point, right-justified with blanks filled	5 characters
61	Parameter 11 unit	(2) Unit code	1 character
62	Parameter 12 code	(1) Parameter code	2 characters
63	Parameter 12 status	(5) Parameter status code	1 character
64	Parameter 12 error	(6) Parameter error code	1 character
65	Parameter 12 data	5 characters including decimal point, right-justified with blanks filled	5 characters
66	Parameter 12 unit	(2) Unit code (6) Parameter error code	1 character
67	Parameter 13 code	(1) Parameter code	2 characters
68	Parameter 13 status	(5) Parameter status code	1 character
69	Parameter 13 error	(6) Parameter error code	1 character
70	Parameter 13 data	5 characters including decimal point, right-justified with blanks filled	5 characters
71	Parameter 13 unit	(2) Unit code	1 character
72	Year	00 to 99	2 characters

73	Month	01 to 12	2 characters
74	Day	01 to 31	2 characters
75	Hour	00 to 23	2 characters
76	Minute	00 to 59	2 characters
77	Second	00 to 59	2 characters
78	Longitude (degrees)	00 to 90 or "--" (no GPS data)	2 characters
79	Longitude (minutes)	00 to 59 or "--" (no GPS data)	2 characters
80	Longitude (seconds)	00 to 59 or "--" (no GPS data)	2 characters
81	Unused	1 character	1 character
82	North latitude/South latitude	N: North; S: South	1 character
83	Latitude (degrees)	000 to 180 or "---" (no GPS data)	3 characters
84	Latitude (minutes)	00 to 59 or "--" (no GPS data)	2 characters
85	Latitude (seconds)	00 to 59 or "--" (no GPS data)	2 characters
86	Unused		1 character
87	East longitude/West longitude	E: East; W: West	1 character
88	Delimiter character		1 character
89	Frame check sequence (FCS)		2 characters

● Memory data requests

● Request command format

#	RM	X	X	AAAAAAAAAAAAAAAAAAAA	XX	XX	XX	@	XX	[CR]	[LF]
1	2	3	4	5	6	7	8	9	10		

1	Header		1 character
2	Command		2 characters
3	Data specification[*1]	0: Start search; 1: Next data item; 2: Previous data item; 3: Request same data again	1 character
4	Search method specification	0: All data; 1: Site search; 2: Date search	1 character
5	Search site[*2]	Upper- and lowercase letters, numbers, periods (.) hyphens (-) and spaces ( )	20 characters
6	Search year[*3]	00 to 99	2 characters
7	Search month[*3]	01 to 12	2 characters
8	Search day[*3]	01 to 31	2 characters
9	Delimiter character		1 character
10	Frame check sequence (FCS)		2 characters

*1: When sending the RM command, first send 0 [Start search], then 1 [Next data item], 2 [Previous data item] or 3 [Request same data again].

*2: [Search site] is only needed when [Site search] is specified as the search method. If another search method is specified, fill this field with spaces.

*3: [Search year], [Search month] and [Search day] are only needed when [Date search] is specified as the search method. If another search method is specified, fill this field with spaces.

● **Response format**

(when data exists)

```
#    RM  AAAAAAAAAAAAAAAAAAAA   XX  X    X    XXXXX   X
1    2   3                      4   5    6    7       8

XX  X   X   XXXXX  X   XX  X   X   XXXXX  X   XX  X   X   XXXXX  X
9   10  11  12      13  14  15  16  17      18  19  20  21  22      23

XX  X   X   XXXXX  X   XX  X   X   XXXXX  X   XX  X   X   XXXXX  X
24  25  26  27      28  29  30  31  32      33  34  35  36  37      38

XX  X   X   XXXXX  X   XX  X   X   XXXXX  X   XX  X   X   XXXXX  X
39  40  41  42      43  44  45  46  47      48  49  50  51  52      53

XX  X   X   XXXXX  X   XX  X   X   XXXXX  X   XX  X   X   XXXXX  X
54  55  56  57      58  59  60  61  62      63  64  65  66  67      68

XX  XX  XX  XX  XX  XX  XX  XX  XX  X   X   XXX  XX  XX  X   X   @   XX  [CR]  [LF]
69  70  71  72  73  74  75  76  77  78  79  80   81  82  83  84  85  86
```

1	Header		1 character
2	Command		2 characters
3	Site name	Upper- and lowercase letters, numbers, periods (.) hyphens (-) and spaces ( )	20 characters
4	Parameter 1 code	(1) Parameter code	2 characters
5	Parameter 1 selection	0: No selection; 1: Selection made	1 character
6	Parameter 1 error	(6) Parameter error code	1 character
7	Parameter 1 data	5 characters including decimal point, right-justified with blanks filled	5 characters
8	Parameter 1 unit	(2) Unit code	1 character
9	Parameter 2 code	(1) Parameter code	2 characters
10	Parameter 2 selection	0: No selection; 1: Selection made	1 character
11	Parameter 2 error	(6) Parameter error code	1 character
12	Parameter 2 data	5 characters including decimal point, right-justified with blanks filled	5 characters
13	Parameter 2 unit	(2) Unit code	1 character
14	Parameter 3 code	(1) Parameter code	2 characters
15	Parameter 3 selection	0: No selection; 1: Selection made	1 character
16	Parameter 3 error	(6) Parameter error code	1 character
17	Parameter 3 data	5 characters including decimal point, right-justified with blanks filled	5 characters
18	Parameter 3 unit	(2) Unit code	1 character
19	Parameter 4 code	(1) Parameter code	2 characters
20	Parameter 4 selection	0: No selection; 1: Selection made	1 character

21	Parameter 4 error	(6) Parameter error code	1 character
22	Parameter 4 data	5 characters including decimal point, right-justified with blanks filled	5 characters
23	Parameter 4 unit	(2) Unit code	1 character
24	Parameter 5 code	(1) Parameter code	2 characters
25	Parameter 5 selection	0: No selection; 1: Selection made	1 character
26	Parameter 5 error	(6) Parameter error code	1 character
27	Parameter 5 data	5 characters including decimal point, right-justified with blanks filled	5 characters
28	Parameter 5 unit	(2) Unit code	1 character
29	Parameter 6 code	(1) Parameter code	2 characters
30	Parameter 6 selection	0: No selection; 1: Selection made	1 character
31	Parameter 6 error	(6) Parameter error code	1 character
32	Parameter 6 data	5 characters including decimal point, right-justified with blanks filled	5 characters
33	Parameter 6 unit	(2) Unit code	1 character
34	Parameter 7 code	(1) Parameter code	2 characters
35	Parameter 7 selection	0: No selection; 1: Selection made	1 character
36	Parameter 7 error	(6) Parameter error code	1 character
37	Parameter 7 data	5 characters including decimal point, right-justified with blanks filled	5 characters
38	Parameter 7 unit	(2) Unit code	1 character
39	Parameter 8 code	(1) Parameter code	2 characters
40	Parameter 8 selection	0: No selection; 1: Selection made	1 character
41	Parameter 8 error	(6) Parameter error code	1 character
42	Parameter 8 data	5 characters including decimal point, right-justified with blanks filled	5 characters
43	Parameter 8 unit	(2) Unit code	1 character
44	Parameter 9 code	(1) Parameter code	2 characters
45	Parameter 9 selection	0: No selection; 1: Selection made	1 character
46	Parameter 9 error	(6) Parameter error code	1 character
47	Parameter 9 data	5 characters including decimal point, right-justified with blanks filled	5 characters
48	Parameter 9 unit	(2) Unit code	1 character
49	Parameter 10 code	(1) Parameter code	2 characters
50	Parameter 10 selection	0: No selection; 1: Selection made	1 character
51	Parameter 10 error	(6) Parameter error code	1 character
52	Parameter 10 data	5 characters including decimal point, right-justified with blanks filled	5 characters
53	Parameter 10 unit	(2) Unit code	1 character
54	Parameter 11 code	(1) Parameter code	2 characters
55	Parameter 11 selection	0: No selection; 1: Selection made	1 character
56	Parameter 11 error	(6) Parameter error code	1 character
57	Parameter 11 data	5 characters including decimal point, right-justified with blanks filled	5 characters
58	Parameter 11 unit	(2) Unit code	1 character
59	Parameter 12 code	(1) Parameter code	2 characters

60	Parameter 12 selection	0: No selection; 1: Selection made	1 character
61	Parameter 12 error	(6) Parameter error code	1 character
62	Parameter 12 data	5 characters including decimal point, right-justified with blanks filled	5 characters
63	Parameter 12 unit	(2) Unit code	1 character
64	Parameter 13 code	(1) Parameter code	2 characters
65	Parameter 13 selection	0: No selection; 1: Selection made	1 character
66	Parameter 13 error	(6) Parameter error code	1 character
67	Parameter 13 data	5 characters including decimal point, right-justified with blanks filled	5 characters
68	Parameter 13 unit	(2) Unit code	1 character
69	Year	00 to 99	2 characters
70	Month	01 to 12	2 characters
71	Day	01 to 31	2 characters
72	Hour	00 to 23	2 characters
73	Minute	00 to 59	2 characters
74	Second	00 to 5	2 characters
75	Longitude (degrees)	00 to 90 or "--" (no GPS data)	2 characters
76	Longitude (minutes)	00 to 59 or "--" (no GPS data)	2 characters
77	Longitude (seconds)	00 to 59 or "--" (no GPS data)	2 characters
78	Unused		1 character
79	North latitude/South latitude	N: North; S: South	1 character
80	Latitude (degrees)	000 to 180 or "---" (no GPS data)	3 characters
81	Latitude (minutes)	00 to 59 or "--" (no GPS data)	2 characters
82	Latitude (seconds)	00 to 59 or "--" (no GPS data)	2 characters
83	Unused		1 character
84	East longitude/West longitude	E: East; W: West	1 character
85	Delimiter character		1 character
86	Frame check sequence (FCS)		2 characters

When no data exists, or memory is at capacity)

#	RM	@	XX	[CR]	[LF]
1	2	3	4		

1	Header	1 character
2	Command	2 characters
3	Delimiter character\	1 character
4	Frame check sequence (FCS)	2 characters

● Memory data count request

● Request command format

#	RN	@	XX	[CR]	[LF]
1	2	3	4		

1	Header	1 character
2	Command	2 characters
3	Delimiter character\	1 character
4	Frame check sequence (FCS)	2 characters

● Response format

#	RN	XXXXX	@	XX	[CR]	[LF]
1	2	3	4	5		

1	Header		1 character
2	Command		2 characters
3	Total data count	0 to 10000	5 characters
4	Delimiter character\		1 character
5	Frame check sequence (FCS)		2 characters

● Command parse failure response

#	??	X	XX	X	@	XX	[CR]	[LF]
1	2	3	4	5	6	7		

1	Header	1 character
2	Command	2 characters
3	Command parse failure reason*4	1 character
4	Received command*5	2 characters
5	(3) Status code for probe status*5	1 character
6	Delimiter character	1 character
7	Frame check sequence (FCS)	2 characters

*4: List of command parse failure reasons

1: Frame length error
2: FCS mismatch
3: Undefined command
4: Data error
5: Data out of range
6: No "@" delimiter character
7: No "#" header character
8: No [Carriage return] + [Line feed] footer
9: Cannot accept command in this timing.

*5: Only set for command parse failure reason 9, [Cannot accept command in this timing]. Otherwise this field is filled with spaces.

4 Maintenance

Tip

HORIBA recommends regular manufacturer maintenance checks in order to ensure a long product life.

4.1 Routine care

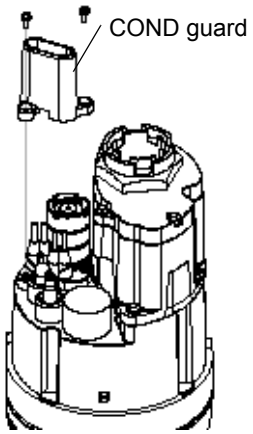
● **After measurement**

1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power OFF.**

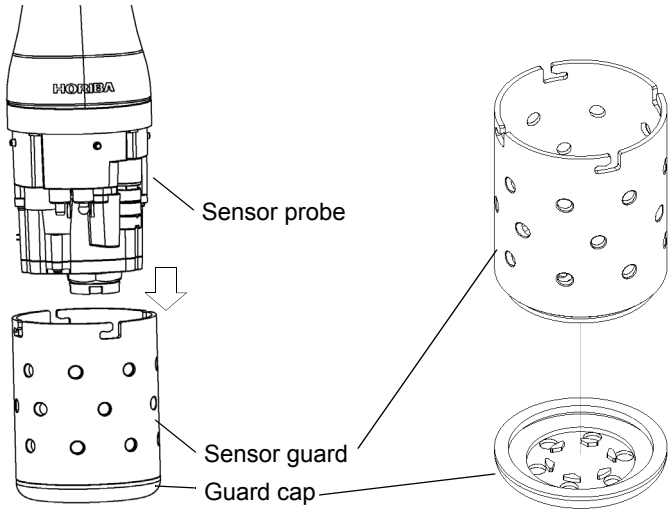
Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

2. **Remove the sensor guard, and clean the sensor with tap water.**
3. **Clean the turbidity sensor with the cleaning brush provided.**
4. **Remove the two screws securing the COND guard, and the COND guard itself, and use a test tube brush to gently remove any dirt from the electrical conductivity electrode.**



5. **Wipe off any dirt with a soft cloth. If parts are very dirty, clean them with neutral detergent, then rinse them. If parts are contaminated by oil, wipe it off with a soft cloth soaked in alcohol.**
6. **Put the COND guard back in place.**
7. **Remove the sensor guard's guard cap, wash off any dirt with tap water, then put the guard cap back in place.**



4.2 Every 2 months maintenance

● Dissolved oxygen (DO) sensor

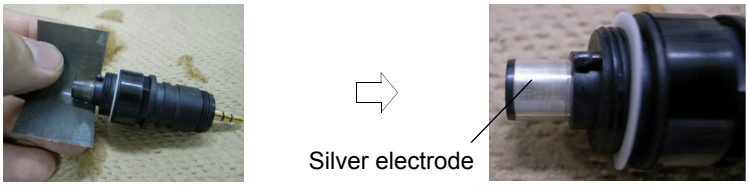
Note

- **The DO sensor's internal solution is potassium chloride (KCl). Although KCl is harmless, protective equipment such as gloves and goggles should be worn when working with it.**
- **Internal solution can be disposed of down a sink.**

- Replace the membrane cap.
- Polish the gold and silver electrodes when replacing the membrane cap.
  The gold electrode does not need to be polished if it is not dirty.

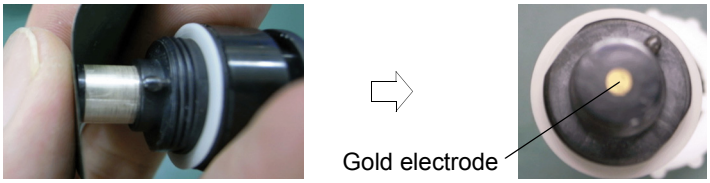
● **Silver electrode**

Polish a silver electrode part with sandpaper (#500) and then wash metal electrode parts with water.



● **Gold electrode**

Polish a gold electrode part with sandpaper (#8000) and then wash metal electrode parts with water.



Replace a membrane cap after clean metal electrodes parts.
Refer to “ 4.5 Replacing the membrane cap ” (page 87).

● **Reference electrode**

Note

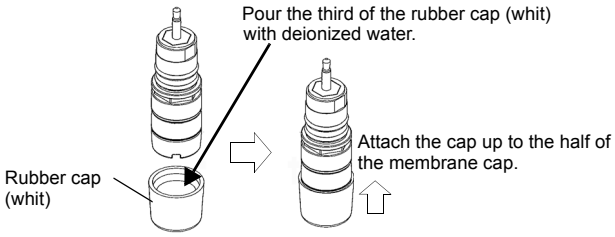
- **The pH reference internal solution is potassium chloride (KCl). Although KCl is harmless, protective equipment such as gloves and goggles should be worn when working with it.**
- **Internal solution can be disposed of down a sink.**

1. **Remove the rubber liquid junction plug from the reference electrode and dispose of the internal solution.**
2. **To prevent air entering, fill the reference electrode to the brim with its internal solution (No. 330).**
3. **Put the rubber liquid junction plug back in place.**
   If the rubber liquid junction plug is dirty, replace the liquid junctions (set of two; No. 9037005100). The reference electrode's internal solution will spill when replacing the liquid junctions. Rinse parts with tap water and dry them with a soft cloth.

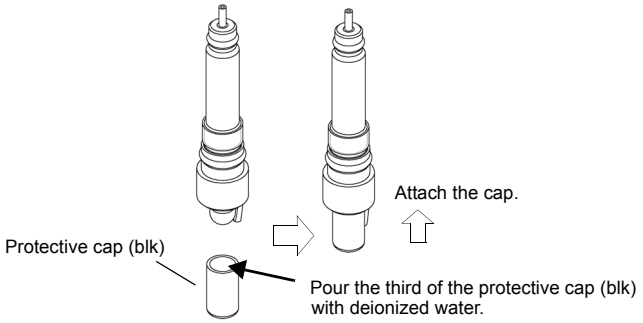
4.3 Storage

● Short-term (under 2 months) storage

- Before storing the DO sensor, pour the third of the rubber cap (whit) provided with deionized water and cover the DO sensor with them.



- Before storing the pH sensor, pour the third of the protective cap (blk) provided with deionized water and cover the pH sensor with them.



Note

Before measuerment, remove the rubber cap (whit) and the protective cap (blk).

● Long-term (2 months or more) storage

- Remove a membrane cap from DO sensor, and wash the gold electrode and silver electrode parts with water. Wipe off the moisture before storing DO sensor in the pack.
- Prevent internal solution seeping out of the reference chip by taping over the point of seepage with electrical tape.
- Before storing the system, remove the control unit's batteries to prevent battery leakage.

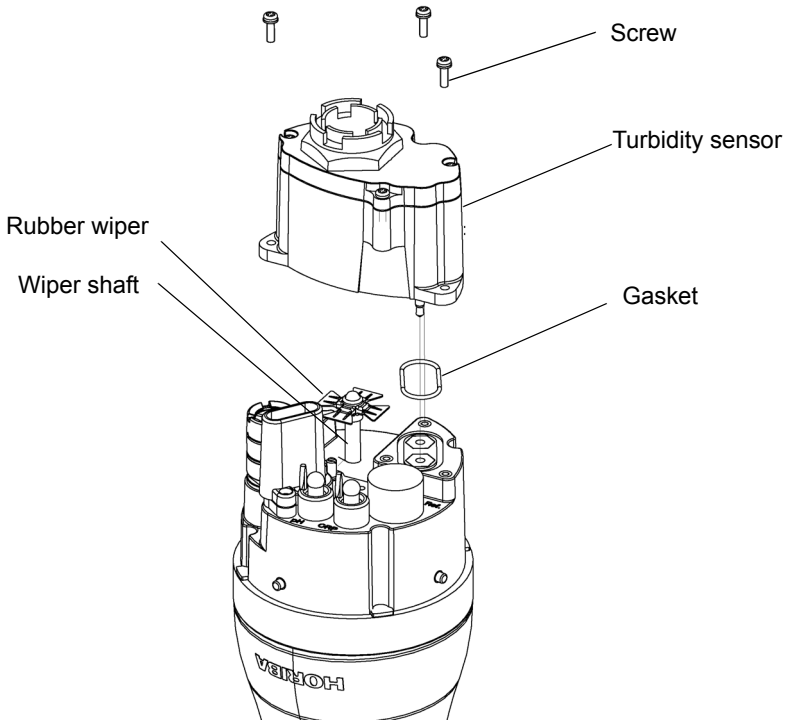
4.4 Replacing the turbidity sensor

1. **Press and hold down the control unit's POWER key for about 3 seconds to turn the power OFF.**

Note

The operation keys are designed to operate using the pad of a finger, sharp objects can tear the control unit cover damaging the operation keys.

2. **Remove the sensor guard, and clean the sensor probe with tap water.**
3. **Use dry air to blow away and dry off any moisture.**
4. **Remove the three screws holding the turbidity sensor by using No. 2 Phillips head screwdriver.**
5. **Pull out the turbidity sensor horizontally.**
6. **Remove the rubber wiper and gasket, and use a soft cloth to wipe off any dirt from the wiper shaft and turbidity sensor attachment. If parts are very dirty, use a soft cloth soaked in neutral detergent or alcohol.**
7. **Replace the rubber wiper and gasket with new ones. Coat the gasket with a thin layer of grease (No. 3014017718).**
8. **Attach the new turbidity sensor and fasten it in place with the three screws.**
9. **Perform four-point calibration before using the sensor.**



4.5 Replacing the membrane cap

● Replacement procedure

1. **Prepare the DO sensor.**

- Take a DO sensor out of pack (newly purchasing).
- Remove a DO sensor from the sensor probe (after use).



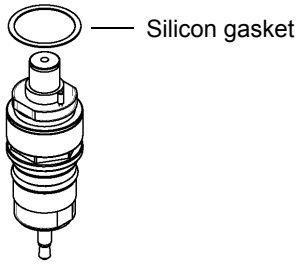
Newly purchasing



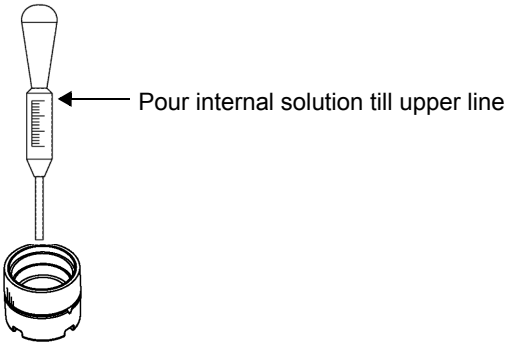
Undo a DO sensor from the sensor probe

- Twist a membrane cap from DO sensor.
- Wash the gold electrode and silver electrode parts with water.

2. **Replace the silicone gasket with a new one.**



3. **Pour internal solution into a membrane cap with a dropper.**

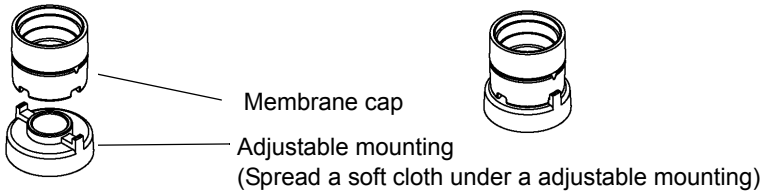


- Check air bubbles in a membrane cap.

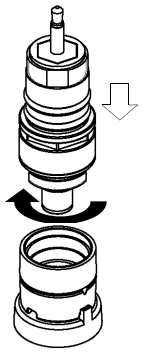


Pick a Cap up and drop it down, if there is air bubbles in internal solution of it.

4. **Set up a membrane cap on a adjustable mounting.**



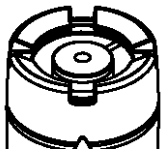
5. **Attach a membrane cap to DO sensor**



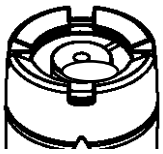
Twist a DO sensor
with holding a membrane cap tight.

6. **Check for membrane surface**

Check air bubbles in a membrane cap.



Good: Limited air bubbles



NG: Air bubbles of more than 5 mm in diameter

- NG → Replace a membrane cap again.
- Check that span calibration can be performed.

If the membrane cap is not attached correctly, sensitivity may be lost or response speed may decrease.

4.6 Troubleshooting

Note

If the sensor probe is removed while the control unit is indicating an error, errors cannot be canceled by using the ESC key. Either reconnect the sensor probe or restart the control unit.

4.6.1 Error displays

Error	Cause	Solution
Probe ADC error	Internal IC failure	Contact your nearest sales outlet to have the sensor probe repaired.
Probe EEPROM error/Factory	Internal IC failure	Turn the power OFF, then restart the system. If the error persists, initialize the system from the "System" menu. If the error still persists, contact your nearest sales outlet to have the sensor probe repaired.
Probe EEPROM error/User	Internal IC failure	Turn the power OFF, then restart the system. If the error persists, initialize the system from the "System" menu. If the error still persists, contact your nearest sales outlet to have the sensor probe repaired.
Turbidity sensor light source error	Turbidity sensor light source failure	Turn the power OFF, wipe off any water droplets on the probe, then remove the turbidity sensor. Check there are no water droplets around the turbidity sensor connector, then mount the sensor again. If the error persists, replace the turbidity sensor.
Turbidity sensor wiper motor error	The turbidity sensor wiper is not operating.	Press the ESC key. Check there are no obstacles near the wiper, then perform the measurement again. If the error persists, the motor will need to be replaced. Contact your nearest sales outlet to have the sensor probe repaired.
Probe capacitor error	Low battery voltage or internal IC failure	Turn the power OFF. Replace the display's batteries. If the error persists, contact your nearest sales outlet to have the sensor probe repaired.
Probe EEPROM error	Internal IC failure	Press the ESC key, then redo the operation. If the error persists, turn the power OFF, then restart the system (the current data will not be saved). If the error still persists, contact your nearest sales outlet to have the display repaired.
Probe board error	Probe board failure	Turn the power OFF. Contact your nearest sales outlet to have the sensor probe repaired.

Error	Cause	Solution
Zero-point calibration error	pH sensor 1. The pH standard solution is contaminated. 2. The pH-responsive membrane is dirty. 3. The concentration of the reference electrode's internal solution has changed. 4. The pH-responsive membrane is torn.	pH sensor 1. Replace the standard solution with new solution. 2. Clean the pH-responsive membrane. 3. Refil the reference electrode's internal solution. 4. Replace the sensor.
	COND sensor 1. There is moisture on the sensor. 2. The sensor is dirty. 3. The COND sensor is broken.	COND sensor 1. Blow-dry the moisture off the sensor. 2. Clean the sensor. 3. Contact your nearest sales outlet.
	TURB sensor 1. There are air bubbles on the cell. 2. The cell window is dirty. 3. The sensor is being affected by ambient light. 4. The solution is dirty. 5. The TURB sensor has failed.	TURB sensor 1. Shake the sensor probe vigorously. 2. Clean the cell window. 3. Calibrate using the calibration cup provided. 4. Replace the solution with new solution. 5. Replace the TURB sensor.
	DO sensor 1. There are air bubbles in the internal solution. 2. The DO sensor has failed.	DO sensor 1. Replace the diaphragm with a new one, and fill the DO sensor with new internal solution. 2. Replace the DO sensor.
	Water depth sensor 1. The water depth sensor is dirty. 2. The water depth sensor has failed.	Water depth sensor 1. Clean the water depth sensor. 2. Contact your nearest sales outlet.

Error	Cause	Solution
Span calibration error	pH sensor 1. The pH standard solution is contaminated. 2. The pH-responsive membrane is dirty. 3. The concentration of the reference electrode's internal solution has changed. 4. The pH-responsive membrane is torn.	pH sensor 1. Replace the standard solution with new solution. 2. Clean the pH-responsive membrane. 3. Refil the reference electrode's internal solution. 4. Replace the sensor.
	ORP sensor 1. The ORP standard solution is contaminated. 2. The ORP electrode is dirty. 3. The concentration of the reference electrode's internal solution has changed. 4. The ORP electrode has failed.	ORP sensor 1. Replace the standard solution with new solution. 2. Clean the ORP electrode. 3. Refil the reference electrode's internal solution. 4. Replace the ORP electrode.
	COND sensor 1. The calibration solution is not correct. 2. The sensor is dirty. 3. The COND sensor has failed.	COND sensor 1. Use the correct calibration solution for calibration. 2. Clean the sensor. 3. Contact your nearest sales outlet.
	TURB sensor 1. There are air bubbles on the cell. 2. The cell window is dirty. 3. The sensor is being affected by ambient light. 4. The solution is dirty. 5. The TURB sensor has failed.	TURB sensor 1. Shake the sensor probe vigorously. 2. Clean the cell window. 3. Calibrate using the calibration cup provided. 4. Replace the solution with new solution. 5. Replace the TURB sensor.
	DO sensor 1. The diaphragm is torn. 2. There are air bubbles in the internal solution. 3. The DO sensor has failed.	DO sensor 1. Replace the diaphragm with a new one, and fill the DO sensor with new internal solution. 2. Replace the diaphragm with a new one, and fill the DO sensor with new internal solution. 3. Replace the DO sensor.
	Temperature sensor The temperature sensor has failed.	Temperature sensor Contact your nearest sales outlet.
Calibration stability error	The calibration value of an individual parameter is not stable. 1. The sensor is dirty. 2. The sensor has not adjusted to the standard solution. 3. The temperature was unstable during calibration.	1. Clean the sensor. 2. Fill the transparent calibration cup with pH 4 standard solution, and wait for at least 20 minutes of conditioning before starting calibration. 3. Start calibration after the temperature has stabilized.
Turbidity calibration error	Error in turbidity measurement sequence	Turbidity calibration failed. Redo calibration after removing the displayed error.
Wet check	The cable connector is submerged.	Turn the power OFF and disconnect the cable connector. Wipe or blow-dry off all the water droplets on the probe. If the error persists, contact your nearest sales outlet to have the display and sensor probe repaired.
Power voltage error	The display's power board has failed.	This error could also be caused by poor cable contact. Turn the power OFF and disconnect the cable connector. Reconnect the connector and turn the power ON. If the error persists, contact your nearest sales outlet to have the display and sensor probe repaired.
Turbidity lamp power voltage error	The remaining battery level is low.	Turn the power OFF and replace the display's batteries with new ones.

Error	Cause	Solution
Display RTC error	The time display is incorrect.	Replace the coin battery.
Display FROM error	Internal IC failure	Contact your nearest sales outlet to have the control unit repaired.
Display EEPROM error	Internal IC failure	Contact your nearest sales outlet to have the control unit repaired.
Display save error	Insufficient memory space	Move data from the display, use the data operations screen to delete data, then redo the measurement.
Measurement sequence error	● When the measurement item is turbidity 1. The battery power is low. 2. The wiper is not operating normally. 3. The light source lamp is not lit. ● If items other than turbidity are also displayed 4. Board failure	1. Replace the batteries with new ones. 2. Check there are no obstacles near the wiper, then redo the measurement. If the error persists, the motor will need to be replaced. Contact your nearest sales outlet to have the sensor probe repaired. 3. Wipe off any water droplets on the probe, then remove the turbidity sensor. Check there are no water droplets around the turbidity sensor connector, then mount the sensor again. If the error persists, replace the turbidity sensor. 4. Contact your nearest sales outlet to have the sensor probe repaired.
Out of measurement range	The attempted measurement is outside the measurement range supported for that item.	The system must be used within its supported measurement ranges.
Last zero-point calibration invalid	pH sensor 1. The pH standard solution is contaminated. 2. The pH-responsive membrane is dirty. 3. The concentration of the reference electrode's internal solution has changed. 4. The pH-responsive membrane is torn.	pH sensor 1. Replace the standard solution with new solution. 2. Clean the pH-responsive membrane. 3. Refil the reference electrode's internal solution. 4. Replace the sensor.
	COND sensor 1. There is moisture on the sensor. 2. The sensor is dirty. 3. The COND sensor has failed.	COND sensor 1. Blow-dry the moisture off the sensor. 2. Clean the sensor. 3. Contact your nearest sales outlet.
	TURB sensor 1. There are air bubbles on the cell. 2. The cell window is dirty. 3. The sensor is being affected by ambient light. 4. The solution is dirty. 5. The TURB sensor has failed.	TURB sensor 1. Shake the sensor probe vigorously. 2. Clean the cell window. 3. Calibrate using the calibration cup provided. 4. Replace the solution with new solution. 5. Replace the TURB sensor.
	DO sensor 1. There are air bubbles in the internal solution. 2. The DO sensor has failed.	DO sensor 1. Replace the diaphragm with a new one, and fill the DO sensor with new internal solution. 2. Replace the DO sensor.
	Water depth sensor 1. The water depth sensor is dirty. 2. The water depth sensor has failed.	Water depth sensor 1. Clean the water depth sensor. 2. Contact your nearest sales outlet.
Out of measurement range	[See above.]	[See above.]
Last zero-point calibration invalid		

Error	Cause	Solution
Last span calibration invalid	pH sensor 1. The pH standard solution is contaminated. 2. The pH-responsive membrane is dirty. 3. The concentration of the reference electrode's internal solution has changed. 4. The pH-responsive membrane is torn.	pH sensor 1. Replace the standard solution with new solution. 2. Clean the pH-responsive membrane. 3. Refil the reference electrode's internal solution. 4. Replace the sensor.
	ORP sensor 1. The ORP standard solution is contaminated. 2. The ORP electrode is dirty. 3. The concentration of the reference electrode's internal solution has changed. 4. The ORP sensor glass is broken.	ORP sensor 1. Replace the standard solution with new solution. 2. Clean the ORP electrode. 3. Refil the reference electrode's internal solution. 4. Replace the sensor.
	COND sensor 1. The calibration solution is not correct. 2. The sensor is dirty. 3. The COND sensor has failed.	COND sensor 1. Use the correct calibration solution for calibration. 2. Clean the sensor. 3. Contact your nearest sales outlet.
	TURB sensor 1. There are air bubbles on the cell. 2. The cell window is dirty. 3. The sensor is being affected by ambient light. 4. The solution is dirty. 5. The TURB sensor has failed.	TURB sensor 1. Shake the sensor probe vigorously. 2. Clean the cell window. 3. Calibrate using the calibration cup provided. 4. Replace the solution with new solution. 5. Replace the TURB sensor.
	DO sensor 1. The diaphragm is torn. 2. There are air bubbles in the internal solution. 3. The DO sensor has failed.	DO sensor 1. Replace the diaphragm with a new one, and fill the DO sensor with new internal solution. 2. Replace the diaphragm with a new one, and fill the DO sensor with new internal solution. 3. Replace the DO sensor.
	Temperature sensor ● The temperature sensor has failed.	Temperature sensor ● Contact your nearest sales outlet.
Out of measurement range Last zero-point calibration invalid	[See above.]	[See above.]
Last span calibration invalid	The calibration value of an individual parameter is not stable. 1. The sensor is dirty. 2. The sensor has not adjusted to the standard solution. 3. The temperature was unstable during calibration.	1. Clean the sensors. 2. Fill the transparent calibration cup with pH 4 standard solution, and wait for at least 20 minutes of conditioning before starting calibration. 3. Start calibration after the temperature has stabilized.
Out of measurement range Last zero-point calibration invalid	[See above.]	[See above.]
Calibration value is factory default value.	Internal IC failure	Turn the power OFF, then restart the system. If the error persists, initialize the system from the "System" menu. If the error still persists, contact your nearest sales outlet to have the sensor probe repaired.

Error	Cause	Solution
Sample is unstable.	1. The concentration of the sample is unstable. 2. External light disturbance has affected the sensor. 3. Water has entered the turbidity sensor's connector.	1. Use a stirrer to agitate the sample during measurement. 2. Perform measurement away from direct sunlight. 3. Turn the power OFF, wipe off any water droplets on the probe, then remove the turbidity sensor. Check there are no water droplets around the turbidity sensor connector, then mount the sensor again. If the error persists, replace the turbidity sensor.

4.6.2 Error displays in sensor information

Error display	Cause	Solution
Measurement sequence error	Measurement sequence error	Turn the power OFF, then restart the system. If the error persists, have the probe repaired.
Out of measurement range	The measurement value is outside the measurement range.	Samples for measurement must be within the measurement range.
Last calibration invalid	The last calibration failed.	Redo calibration.
Calibration invalid	The calibration value is the factory default value.	Redo calibration.
Background unstable	The U-53 turbidity sensor is exposed to direct light.	Mount the guard cap and sensor guard and perform measurement away from direct sunlight.
	The turbidity value changed rapidly during measurement.	Measure a sample that has stable turbidity.

5 Specifications

Specification		Basic value	Model				
			U-51	U-52	U-52G	U-53	U-53G
Sensor probe	Measurement temperature range	−10°C to 55°C	✓	✓	✓	✓	✓
	Maximum sensor outer diameter	Approx. 96 mm					
	Sensor length	Approx. 340 mm					
	Cable length	2 m (standard) 10 m/30 m (options)					
	Mass	Approx. 1800 g					
	Auto calibration function	Uses pH 4 standard solution.					
	Measurement depth	30 m max.	✓	✓	✓	✓	✓
	Wet-part materials*3	PPS, glass, SUS316L, SUS304, FKM, PEEK, Q, titanium, FEP membrane, POM					
	Waterproofing standard	IP-68					
Control unit	Outer dimensions (W × D × H)	115 × 66 × 283 mm	✓	✓	—	✓	—
		115 × 66 × 335 mm	—	—	✓	—	✓
	Mass	Approx. 800 g	✓	✓	✓	✓	✓
	LCD	320 × 240 mm graphic LCD (monochrome) with backlight	✓	✓	✓	✓	✓
	Memory data items	10000	✓	✓	✓	✓	✓
	Communication interface	USB peripheral	✓	✓	✓	✓	✓
	Batteries	C-size dry cells (×4)	✓	✓	✓	✓	✓
	Waterproofing standard	IP-67	✓	✓	✓	✓	✓
	GPS unit	● Reception method (12 channel parallel) ● Measurement precision [With PDOP (high precision): 30 m or less (2 drms)]	—	—	✓	—	✓
	Estimated battery life*1	—	70 hours (no backlight)			500 measurements (no backlight)	
	Storage temperature range	−10°C to 60°C	✓	✓	✓	✓	✓
	Ambient temperature range	−5°C to 45°C					

Specification		Basic value	Model				
			U-51	U-52	U-52G	U-53	U-53G
pH measurement Two calibration	Measurement method	Glass electrode method	✓	✓	✓	✓	✓
	Range	pH 0 to 14					
	Resolution	0.01 pH					
	Precision*2	±0.1 pH					
Dissolved oxygen measurement ● Salinity conversion (0 to 70 PPT, automatic) ● Automatic temperature compensation	Measurement method	Polarographic method	✓	✓	✓	✓	✓
	Film thickness	25 μm					
	Range	0 mg/L to 50.0 mg/L					
	Resolution	0.01 mg/L					
	Precision*2	0 mg/L to 20 mg/L: ±0.2 mg/L 20 mg/L to 50 mg/L: ±0.5 mg/L					
Electrical conductivity measurement ● Auto range ● Automatic temperature conversion (25°C)	Measurement method	Four-AC-electrode method	✓	✓	✓	✓	✓
	Range	0 S/m to 10 S/m (0 mS/cm to 100 mS/cm)					
	Resolution	0.000 mS/cm to 0.999 mS/cm: 0.001 1.00 mS/cm to 9.99 mS/cm: 0.01 10.0 mS/cm to 99.9 mS/cm: 0.1 0.0 mS/m to 99.9 mS/m: 0.1 0.100 S/m to 0.999 S/m: 0.001 1.00 S/m to 9.99 S/m: 0.01					
	Precision*2	1% of full-scale (midpoint of two calibration points)					
Salinity measurement	Measurement method	Electrical conductivity conversion	✓	✓	✓	✓	✓
	Range	0 PPT to 70 PPT (parts per thousand)					
	Resolution	0.1 PPT					
	Precision	±3 PPT					
TDS (total dissolved solid) measurement ● Conversion coefficient setting	Measurement method	Electrical conductivity conversion	✓	✓	✓	✓	✓
	Range	0 g/L to 100 g/L					
	Resolution	0.1% of full-scale					
	Repeatability	±2 g/L					
	Precision	±5 g/L					
Seawater specific gravity measurement ● σt, σ0, σ15 display	Measurement method	Electrical conductivity conversion	✓	✓	✓	✓	✓
	Range	0 σt to 50 σt					
	Resolution	0.1 σt					
	Precision	±5 σt					

Specification		Basic value	Model				
			U-51	U-52	U-52G	U-53	U-53G
Temperature measurement	Measurement method	Platinum temperature sensor	✓	✓	✓	✓	✓
	Range	−10°C to 55°C					
	Resolution	0.01°C					
	Sensor	Platinum temperature sensor, JIS Class B (0.3 + 0.005 |t|)					
Turbidity measurement	Measurement method		—	LED forward 30° transmission/ scattering method		Tungsten lamp 90° transmission scattering method	
	Range			0 NTU to 800 NTU		0 NTU to 1000 NTU	
	Resolution			0.1 NTU		0.01 NTU	
	Precision*2			±5%of readout or ±1 NTU, whichever is larger		● ±0.5NTU (for 0 NTU to 10 NTU measurement range) ● 3% of readout or 1 NTU, whichever is larger (for 10 NTU to 1000 NTU measurement range)	
	Turbidity sensor wiper			—		✓	
Water depth measurement	Measurement method	Pressure method	—	—	✓	✓	✓
	Range	0 m to 30 m					
	Resolution	0.05 m					
	Precision*2	±0.3 m					
ORP (oxidation reduction potential) measurement	Measurement method	Platinum electrode method	✓	✓	✓	✓	✓
	Range	−2000 ～ +2000 mV					
	Resolution	1 mV					
	Precision*2	±15 mV					

*1: Battery life is estimated under following conditions.
- Continuous operation
- Using batteries: C-size alkaline dry cells
- Ambient temperature of the control unit: 20°C or more
- Backlight off

*2: The precision is defined by measuring the standard solution in the following cases.
- Turbidity and conductivity: after four point calibration
- pH and DO: after two point calibration
- Water depth and ORP: after one point calibration

*3: Metallic parts are made of stainless steel. Immersing in seawater may erode metallic parts.

6 Reference

6.1 Consumable parts

● Sensor

Name	Model	No.	Description
pH sensor	#7112	3014057312	Standard type pH sensor
pH sensor ToupH	#7113	3200170923	Tough glass type pH sensor
ORP sensor	#7313	3200170920	
DO sensor	#7543	3200170924	
Reference electrode	#7210	3200043582	
R bush unit	—	3200043587	Reference electrode liquid junction
TURB cell U-52	#7800	3200172803	For U-52/U-52G
TURB cell U-53	#7801	3200172800	For U-53/U-53G
Membrane cap	—	3200170194	For DO sensor

● Standard solution and inner solution

Name	Model	No.	Description
pH 4 (For automatic calibration) 500 mL	#100-4	3200043638	Standard solution for auto calibration. Also used for manual pH span calibration.
pH 4 (For automatic calibration) 4 L	#140-4	3200174430	
pH 7 500 mL	#100-7	3200043637	Standard solution for pH zero-point calibration.
pH 9 500 mL	#100-9	3200043636	Standard solution for pH manual span calibration.
Powder for ORP standard solution 10 packs	#160-51	3200043618	For ORP calibration.
Powder for ORP standard solution 10 packs	#160-22	3200043617	
Inner solution for DO sensor, 50 mL	#306	3200170938	Internal solution for DO sensor.
Internal solution for pH, 250 mL	#330	3200043641	Supplementary internal solution for pH reference electrode.

● Others

Name	Model	No.	Description
Silicone grease	—	3014017718	Silicone grease for coating sensor O-ring.
Sponge brush unit	—	3200169531	Brush for cleaning sensor probe.
O-ring set for reference electrode	—	3200169376	O-rings for reference electrode.
O-ring set for DO sensor	—	3200169426	O-rings for DO sensor.
Rubber cap set for sensor guard	—	3200169428	Rubber caps used between sensor guard and sensor probe.
O-ring set for pH and ORP sensor	—	3200169520	O-rings for pH and ORP sensors.
Wiper unit	—	3200169789	Rubber wiper for U-53/U-53G turbidity sensors.
Protective cap (blk) for pH sensor	—	3200175019	Cap attached to tip of pH sensor for sensor probe storage.
Rubber cap (whit) for DO sensor	—	3200175020	Cap attached to tip of DO sensor for sensor probe storage.

6.2 Options sold separately

Name	Model	No.	Description
Bag	U-5030	3200174772	Storage bag for sensor probes and flow cell. Can be carried in one hand.
Flow cell assy	—	3200156570	Used when collecting measurement samples by pump.
Probe guard	—	3200167002	Used for taking measurements in locations where there is a current or where there is a thick layer of sludge.
Communication cable	—	3200174823	A PC connection cable. Comes with data collection software.

6.3 pH measurement

6.3.1 Principle of pH measurement

U-50 series use the glass electrode method for pH measurements. The glass electrode method measures a potential difference between the glass film for pH and the reference electrode. For more information, refer to “JIS Z 8802 pH measurement method”.

6.3.2 Temperature compensation

The electromotive force generated by the glass electrode changes depending on the temperature of the solution.

Temperature compensation is used to compensate for the change in electromotive force caused by temperature.

This function does not compensate the change in pH caused by the temperature of the solution. When pH is to be measured, the temperature of the solution must be recorded along with that pH value, even if a pH meter has automatic temperature compensation function. If the solution temperature is not recorded, the results of the pH measurement may be meaningless.

6.3.3 Standard solutions

When measuring pH, the pH meter must be calibrated using standard solution. There are five kinds of standard solutions specified in “JIS Z 8802 pH measurement”. For normal measurement, two of standard solutions with pH of 4, 7, and 9 are sufficient to accurately calibrate the meter.

For standard solutions, refer to “JIS Z 8802 pH measurement”.

pH 4 standard solution: (Phthalate)	0.05 mol/L potassium hydrogen phthalate aqueous solution
pH 7 standard solutio: (Neutral phosphate)	0.025 mol/L potassium dihydrogenphosphate, 0.025 mol/L disodium hydrogenphosphate aqueous solution
pH 9 standard solution: (Borate)	0.01 mol/L sodium tetraborate aqueous solution

Table 2 pH values of pH standard solutions at various temperatures settings

Temp. (℃)	pH 4 standard solution Phthalate	pH 7 standard solution Neutral phosphate	pH 9 standard solution Borate
0	4.01	6.98	9.46
5	4.01	6.95	9.39
10	4.00	6.92	9.33
15	4.00	6.90	9.27
20	4.00	6.88	9.22
25	4.01	6.86	9.18
30	4.01	6.85	9.14
35	4.02	6.84	9.10
40	4.03	6.84	9.07
45	4.04	6.84	9.04

6.4 DO measurement

6.4.1 Principle of DO measurement

Dissolved oxygen (DO) refers to the amount of oxygen that is contained in water.
The concentration of dissolved oxygen is generally given as mg/L or as a percentage value (the dissolved oxygen saturation ratio).
Dissolved oxygen is essential for maintaining the self-purifying ability of rivers and seas and also for fish to live. The concentration of dissolved oxygen acts as an indicator of water quality. It is often measured when processing waste water and managing water quality. Fig. 1 provides an overview of the principles behind dissolved oxygen sensor measurement.

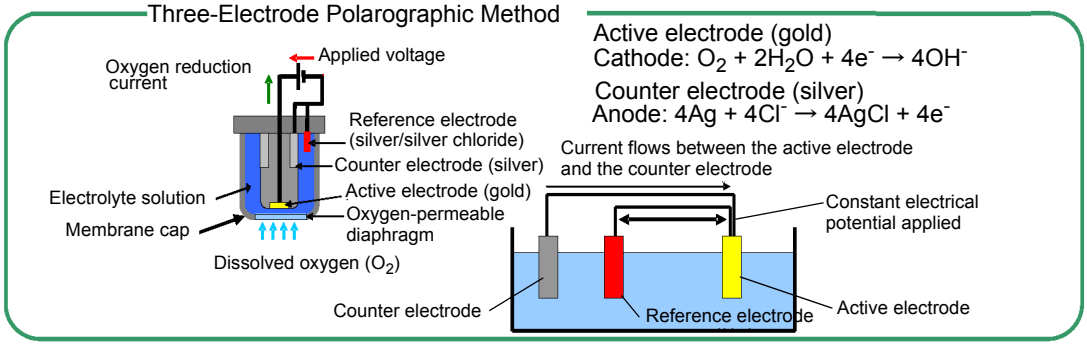


Fig. 1 Overview of principles behind dissolved oxygen sensor

The polarographic oxygen sensor is an enclosed sensor wherein voltage is applied to a cathode made of a precious metal (such as gold or platinum) and an anode also made of a precious metal (such as silver) via an external circuit, and a cap with an oxygen permeable diaphragm (membrane) is filled with electrolyte solution. As indicated in Fig. 1, the concentration of dissolved oxygen can be measured by measuring the current proportional to the amount of reduced oxygen when oxygen that has dispersed through the oxygen permeable diaphragm produces a reductive reaction on the surface of the active electrode (gold). The method of measuring dissolved oxygen based on the above principle is called the Membrane Electrode Method. Compared to the Chemical Analysis Method, which requires complicated pre-processing to alleviate the effect of reduced materials and oxidizing materials, this method allows dissolved oxygen to be measured very easily. It is also easy to remove undesired buildup from the silver electrode by polishing and cleaning if an insulator forms on it due to oxidation, making the method reusable.

6.4.2 Salinity calibration

When the solution and air come into contact and form an equilibrium (i.e. saturation), the relationship between the concentration of dissolved oxygen in the solution, C, [mol/L], and the partial pressure of oxygen in the air, Ps, [MPa/(mg/L)], can be represented by the following formula:

$$C = Ps/H$$

Where H [MPa/(mg/L)] is the Henry constant, a value that changes according to the composition of the solution. As H typically becomes larger as the salinity of the water increases, C becomes smaller.

The DO sensor detects the partial pressure of oxygen (Ps) in the above formula. Accordingly, if the DO sensor is immersed in deionized water saturated with air, or in an aqueous solution containing salt, the output current does not change, resulting in an erroneous measurement. For example, when salt is added to a sample, the amount of oxygen that can be dissolved in the solution decreases, but because the partial pressure of oxygen does not change, the value displayed by the control unit stays the same regardless of salt content. This concept is indicated in graph form below. (Fig. 2)

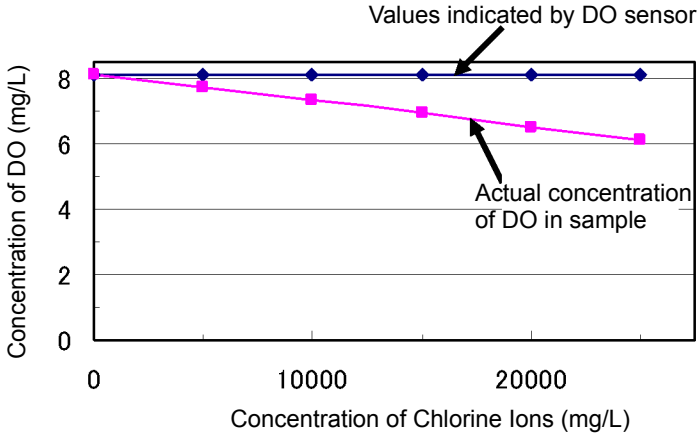


Fig. 2 Relationship between chlorine ion concentration and dissolved oxygen concentration

In samples with a high salt concentration, the solubility of oxygen is lower, but as the partial pressure of oxygen does not change, the value actually indicated on the control unit is higher than the actual value. In order to obtain a measurement of the concentration of dissolved oxygen in an aqueous solution that contains salt, it is therefore necessary to first perform salinity compensation. Conventionally, dissolved oxygen sensors have performed salinity compensation by inputting the salinity of the sample. This is fine as long as the salinity is already known. However, in most cases salinity is unknown, so even if dissolved oxygen sensors contained a salinity compensation function, it was of no practical use.

The U-50 Series can calculate and measure salinity in samples from electrical conductivity values, and can thus be used to automatically compensate for salinity.

6.5 Conductivity (COND) measurement

6.5.1 Four-AC-electrode method

Conductivity is an index of the flow of electrical current in a substance.

Salts dissolved in water are separated into cations and anions. Such solution is called electrolytic solution.

Electrolytic solution has the property of allowing the flow of current according to Ohm's law. This property is referred

to as ionic conductivity, since current flow is caused by ion movement in electrolytic solution.

Metals, on the other hand, allow the flow of current by means of electrons. This property is called electronic conductivity,

which is distinguished from ionic conductivity.

A cube with 1 m on each side, as shown in Fig. 3, is used to demonstrate an electrolytic solution. Two electrode plates are placed on opposite sides, and the cube is filled with solution. If the resistance between these two electrode plates is represented by r(Ω), the conductivity of the solution L($S \cdot m^{-1}$) is represented as L=1/r. S stands for Siemens, a unit of measurement of conductance.

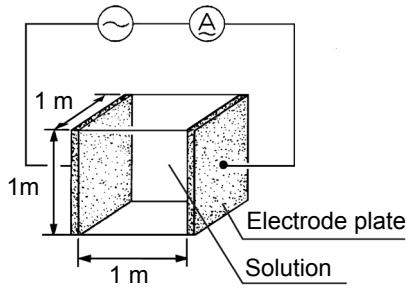


Fig. 3 Definition of conductivity

The most general method for measuring conductivity is based on the above principle, and is called the 2-electrode method.

In the 2-electrode method the influence of polarization cannot be ignored for solutions with high conductivity and conductivity cannot be measure accurately. In addition, contamination on the surface of the electrode increases apparent resistance, resulting in inaccurate measurement of conductivity.

The U-50 series has adopted the 4-electrode method to overcome these disadvantages of the the 2-electrode method.

As shown in Fig. 4, the U-50 series uses two voltage-detecting electrodes and two voltage-applying electrodes, for a total of four electrodes. The voltage-detecting electrodes are for detecting AC voltage, and the voltage-applying electrodes are for applying AC voltage.

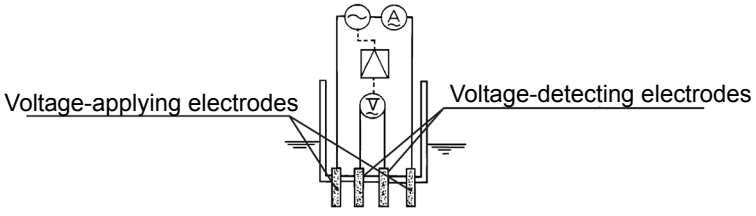


Fig. 4 Principle of the 4-electrode method

Let us assume that the current, I(A), flows in a sample of conductivity L – under automatic control of the voltage-applying electrodes – so that the voltage at the voltage-detecting-electrodes, E(V), remains constant at all times.
Then, the resistance of the sample, R(Ω), across the voltage-detecting electrodes is represented as R=E/I. The resistance, R, of the sample is inversely proportional to its conductivity, L. Accordingly, a measurement of current, Is,
of a standard solution of known conductivity, Ls, enables calculation of conductivity of a sample according to the formula L = Ls (I/Is) from the ratio L : Ls = I : Is.
Even in the 4-electrode method, polarization occurs, since AC current flows in the voltage-applying electrodes. The voltage-detecting electrodes are, however, free from the effects of polarization, since they are separated from the voltage-applying electrodes, and furthermore, current flow is negligible. Therefore, the 4-electrode method is an excellent method to enable measurement of conductivity covering a very high range.

6.5.2 SI units

New measurement units, called SI units, have been in use from 1996. Accordingly, the U-50 series also uses SI units. The following conversion table is provided for people who use the conventional kind of conductivity meter.
Note that along with the change in unit systems, the measurement values and cell counts have also changed.

	Former units	→	SI unit
Measurement value	0.1 mS/cm	→	0.01 S/m
	1 mS/cm	→	0.1 S/m
	100 mS/cm	→	10 S/m

6.5.3 Temperature coefficient

In general, the conductivity of a solution varies largely with its temperature.
The conductivity of a solution depends on the ionic conductivity, described earlier. As the temperature rises, conductivity becomes higher since the movement of the ions becomes more active.
The temperature coefficient shows the change in % of conductivity per °C, with a certain temperature taken as the reference temperature. This is expressed in units of %/°C. The temperature coefficient assumes the premise that the conductivity of a sample changes linearly according to temperature.
Strictly speaking, with actual samples, however, conductivity changes along a curve. Furthermore, the cuve varies with the type of sample. In the ranges of smaller temperature changes, however, samples are said to have the temperature coefficient of 2%/°C (at reference temperature 25°C); this holds for most samples, except in certain special cases.
(The temperature coefficients for various types of solutions are listed on the next page.)
The U-50 series uses an automatic temperature conversion function to calculate conductivity at 25°C at a temperature
coefficient of 2 %/°C based on the measured value of the temperature. Results are displayed on the readout.
The U-50 series's temperature conversion function is based on the following formula.
$L_{25} = L_t / \{ 1 + K (t - 25) \}$
L_{25} : Conductivity of solution converted to 25°C
t : Temperature of solution at time of measurement (°C)
L_t : Conductivity of solution at t (°C)
K : Temperature coefficient (%/°C)

● Conductivity and temperature coefficient for various solutions

Conductivity and related temperature coefficients of representative substances (at 25°C) are shown in the table below.

Substance	Temp. (ºC)	Conc. (wt%)	Cond. (S/m)	Temp.coef. (%/°C)	Substance	Temp. (ºC)	Conc. (wt%)	Cond. (S/m)	Temp.coef. (%/°C)
NaOH	15	5	19.69	2.01	NaCl	18	5	6.72	2.17
		10	31.24	2.17			10	12.11	2.14
		15	34.63	2.49			15	16.42	2.12
		20	32.70	2.99			20	19.57	2.16
		30	20.22	4.50			25	21.35	2.27
		40	11.64	6.48	Na_2SO_4	18	5	4.09	2.36
KOH	15	25.2	54.03	2.09			10	6.87	2.49
		29.4	54.34	2.21			15	8.86	2.56
		33.6	52.21	2.36	Na_2CO_3	18	5	4.56	2.52
		42	42.12	2.83			10	7.05	2.71
NH_3	15	0.1	0.0251	2.46			15	8.36	2.94
		1.6	0.0867	2.38	KCl	18	5	6.90	2.01
		4.01	0.1095	2.50			10	13.59	1.88
		8.03	0.1038	2.62			15	20.20	1.79
		16.15	0.0632	3.01			20	26.77	1.68
HF	18	1.5	1.98	7.20			21	28.10	1.66
		4.8	5.93	6.66	KBr	15	5	4.65	2.06
		24.5	28.32	5.83			10	9.28	1.94
HCl	18	5	39.48	1.58			20	19.07	1.77
		10	63.02	1.56	KCN	15	3.25	5.07	2.07
		20	76.15	1.54			6.5	10.26	1.93
		30	66.20	1.52			—	—	—
H_2S0_4	18	5	20.85	1.21	NH_4Cl	18	5	9.18	1.98
		10	39.15	1.28			10	17.76	1.86
		20	65.27	1.45			15	25.86	1.71
		40	68.00	1.78			20	33.65	1.61
		50	54.05	1.93			25	40.25	1.54
		60	37.26	2.13	NH_4NO_3	15	5	5.90	2.03
		80	11.05	3.49			10	11.17	1.94
		100.14	1.87	0.30			30	28.41	1.68
		—	—	—			50	36.22	1.56
HNO_3	18	6.2	31.23	1.47	$CuSO_4$	18	2.5	10.90	2.13
		12.4	54.18	1.42			5	18.90	2.16
		31	78.19	1.39			10	32.00	2.18
		49.6	63.41	1.57			15	42.10	2.31
		62	49.64	1.57	CH_3COOH	18	10	15.26	1.69
H_3PO_4	15	10	5.66	1.04			15	16.19	1.74
		20	11.29	1.14			20	16.05	1.79
		40	20.70	1.50			30	14.01	1.86
		45	20.87	1.61			40	10.81	1.96
		50	20.73	1.74			60	4.56	2.06

6.6 Salinity (SAL) conversion

The U-50 series is designed to calculate salinity as well as the other parameters.
Note that the “salinity” here is the salinity of sea water. There is a constant relation between conductivity and salinity at certain temperatures.
Therefore, if data on the conductivity and temperature are available, the corresponding salinity can be known. In other words, the salinity measurement of the U-50 series is based on the principle of calculating the salt content, making use of the measured values of conductivity and temperature.
Note therefore, that measured results of all substances whose conductivity is detected are displayed as salinity. For example, the measured result is displayed as NaCl concentration, even if in fact the sample component is, hydrochloric acid (HCl).

6.7 TDS conversion

TDS is short for Total Dissolved Solids and means the total dissolved solid amount.
The conductivity of a solution is affected by the amount of salinity, minerals, and dissolved gases. That is, conductivity is an index that shows the total amount of all substances in the solution. Of these substances, TDS indicates only the amount of dissolved solids.
TDS can be used for a comparison of the state of substances composed of a single component such as NaCl. However, the use of TDS for the comparison of solutions of different types causes serious errors.
Conductivity and TDS are expressed by the following formulas.
Conductivity in SI units (S/m) ..... TDS(g/L) = L (S/m) $\times$ K $\times$ 10
TDS(g/L) = L (mS/m) $\times$ K $\div$ 100
Conductivity in the old units (mS/cm) ..... TDS(g/L) = L (mS/cm)$\times$ K
K = TDS coefficient
Initial settings use the values listed in the table (Page 80) that generally uses TDS coefficients.
For accurate TDS comparisons, find the TDS coefficient from measured conductivity values. Then set the value thus obtained and make measurements.

6.8 σt conversion

- **Specific gravity of seawater**

The density and specific gravity of seawater are equal numerically and generally are not distinguished strictly. Since seawater density ρ is between 1.000 and 1.031, 1 is subtracted from ρ and σ is obtained by multiplying the value by 1000.
The resultant value is used as the specific gravity of seawater.
$\sigma = (\rho - 1) \times 1000$
The density of seawater ρ is expressed by function of temperature, hydraulic pressure, and salinity. The density of seawater under the atmospheric pressure is expressed as σ_t. The density of seawater under the atmospheric pressure is determined by temperature and salinity.
The U-50 Series models make salinity measurement through temperature measurements and conductivity conversion and find σ_t through calculations.
In Japan σ_{15} at 15°C is called a standard specific gravity and widely used while in foreign countries σ_0 at 0°C is employed. σ_{15} and σ_0 are determined by the function of salinity.
In ocean surveys, in particular, these values σ_t, σ_{15}, and σ_0 are more widely used than conductivity and salinity and, in the U-50 Series models, newly added as measurement components.

6.9 Turbidity (TURB) measurement

6.9.1 Principle of turbidity measurement

U-52 and U-53 sensors measure turbidity using the Transmitting and Scattering Method shown in Fig. 5. U-52 sensors use a pulse light LED (infra-red emitting diode) as a light source, and detect scattered light from a 30° angle off center. U-53 sensors use a tungsten lamp as a light source and detect scattered light from a 90° angle. Both models display turbidity as a ratio of scattered light to transmitted light to reduce the affect of the color of the sample. The U-53 method conforms to EPA Method 180.1, and employs wipers to reduce the affect of air bubbles.

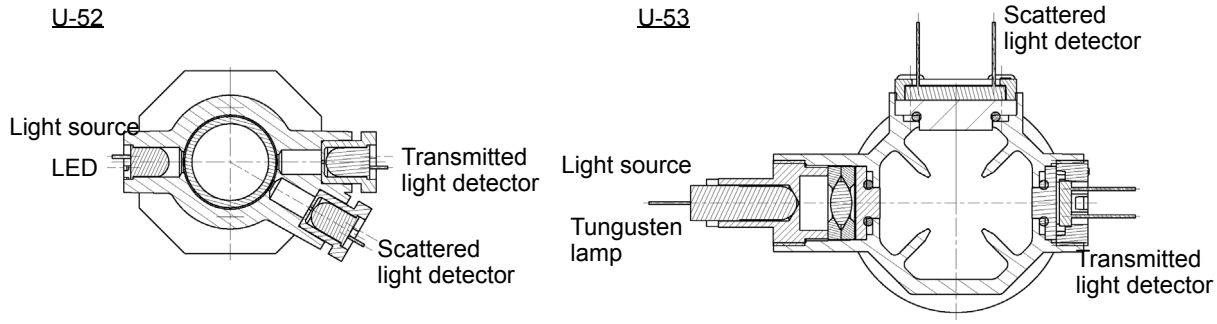


Fig. 5 Turbidity cell

6.9.2 Standard solution

U-50 series can perform calibration using formazin (NTU) or kaolin standard solutions as a turbidity standard solution. However, units for the solution used for calibration should be displayed in measurements. Do not use more than 400 mg/L of kaolin standard solution because it increases precipitation speed, resulting in measurement error.

6.10 Depth (DEPTH) measurement

6.10.1 Principle of depth measurement

For the W-22XD and W-23XD models, depth measurement can be made through use of a pressure gauge. The principle of the depth measurement uses the relation between depth and pressure.

Although the measurement with the depth sensor is affected by atmospheric pressure, the depth sensor, however, makes zero-point adjustments through the automatic calibration before measurements.

6.10.2 Influence of temperature and calibration

The depth sensor depends greatly on temperature. For a wide difference between the temperature at which the sensor has been automatically calibrated and the temperature of the measurement sample, the sensor can make depth measurements with a higher accuracy by the following method:

1. **Immerse the depth sensor of the sensor probe in the sample.**
2. **Keep the sensor immersed in the sample for about 30 minutes until the temperatures of the sensor and the sample are the same.**
3. **Then make the zero calibration of the sensor manually.**

6.11 Oxidation reduction potential (ORP) measurement

6.11.1 Principle of ORP measurement

ORP is an abbreviation for oxidation-reduction potential. ORP is the energy level (potential) determined according to the state of equilibrium between the oxidants (M^{Z+}) and reductants $M^{(Z-N)+}$ that coexist within a solution.

$$M^{Z+} + ne^- \Leftrightarrow M^{(Z-N)+} \quad \cdots (1)$$

If only the solution, forming the ORP measuring system shown in Fig. 6. The difference of potential between two electrodes is generally expressed by the following equation.

$$E = E_0 - \frac{RT}{nF} \ln \frac{a_M{}^{(z-n)+}}{a_M{}^{z+}} \quad \cdots (2)$$

E: Electric potential E_0 : Constant R: Gas constant T : Absolute temperature
n: Electron count F : Faraday constant a : Activity

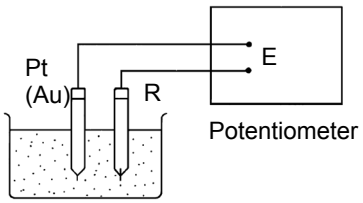


Fig. 6 Measuring mV

For example, for a solution in which trivalent iron ions coexist with bivalent iron ions, equations 1 and 2 would be as follows.

$$Fe^{3+} + e^- \Leftrightarrow Fe^{2+} \quad \cdots (1)$$

$$E = E_0 - \frac{RT}{F} \ln \frac{a_{Fe}{}^{2+}}{a_{Fe}{}^{3+}} \quad \cdots (2)$$

When only one type of state of equilibrium uniquely by equation (Fe^{3+}) and the reductant (Fe^{2+}) (using the equation $a_{Fe}{}^{2+}/ a_{Fe}{}^{3+}$). Actually, however many kinds of states of equilibrium exist simultaneously between various kinds of ions, in most solutions. This means that under actual circumstances, ORP cannot be expressed using the simple equation shown above and that the physical and chemical significance with respect to the solution is not very clear.
In this respect, the value of ORP must be understood to be only one indicator of the property of a solution. The measurement of ORP is widely used, however, as an important index in the analysis of solutions (potentiometric titration) and in the waste water treatment.

6.11.2 Standard electrode (reference electrode) types and ORP

The ORP is obtained comparing with corresponding reference electrode employed.
If different kinds of reference electrodes are used for measurement, the ORP value of the same solution may appear to be different. HORIBA's reference electrode uses Ag/AgCl with 3.33 mol/L KCl as inner solution. According to general technical literature, normal hydrogen electrodes (N.H.E.) are often used as the standard electrode.
The relationship between N.H.E. and the ORP that is measured using an Ag/AgCl with 3.33 mol/L KCl electrode is expressed by the following equation.
$E_{N.H.E.} = E + 206 - 0.7(t - 25)$ mV t = 0 - 60°C
$E_{N.H.E.}$: Measured ORP value using N.H.E. as the reference electrode

E: Measured ORP value using Ag/AgCl with 3.33 mol/L KCl as the reference electrode Potential sign

Standard ORP is expressed in the following way, in literature related to electrochemistry and analytical chemistry.

A $Li^{+} + e^{-} \rightarrow Li$

$E_0 = -3.024$ V VS N.H.E.

However, in some literature, the "+" and "-" signs are reversed.

B $Li \rightarrow Li^{+} + e^{-}$

$E_0 = +3.024$ V VS N.H.E.

In expressions like B, above, the reaction is just reversed and there is no essential difference. But this kind of expression does invite confusion. The majority of the world, today, is consistent in its use of the signs as they are used in A, above.

For this reason, HORIBA, too, uses signs concerning ORP that are consistent with A, above.

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