DELTA

Delta Air Lines, Inc.
1020 Delta Blvd.
Atlanta, GA 30354
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June 23, 2023

**<u>Via Electronic Mail</u>**

Georgia Department of Natural Resources
Mr. Jim Sliwinski
Hazardous Waste Corrective Action Program
Environmental Protection Division
2 Martin Luther King Jr Dr SE
Atlanta, Georgia 30334

Re: Delta Air Lines (Delta) – Atlanta, GA, Hazardous Waste Facility Permit No. HW-036 (S&D)-2, EPA ID GAD006924872 – Permit Renewal Application

Dear Mr. Sliwinski:

Enclosed please find Delta Air Lines, Inc.'s updated application for renewal of Hazardous Waste Facility Permit No. HW-036 (S&D)-2, EPA ID GAD006924872 in electronic format. Delta will also submit three hard copies of the application.

Should you have any questions or need additional information, please do not hesitate to contact me at (404) 714-4645 or via email at alison.lathrop@delta.com.

Regards,

Alison

Alison Lathrop
Managing Director - Corporate Environment & Regulatory Compliance

cc:
Philip Henderson, EPD
Penny Gaynor, EPD
Robert Darwin, de maximis, inc.
Scott Christensen, Delta Air Lines, Inc.

# Permit Renewal Application

## Permit Renewal Application
## Parts A & B

Delta Air Lines, Inc.
EPA ID No. GAD006924872
RCRA Part B Permit No.: HW-036(S&D)-2
1775 M H Jackson Service Road
Technical Operations Center (TOC)

Atlanta, Georgia 30354

**June 2023**

# TABLE OF CONTENTS

## TABLE OF CONTENTS (Continued)

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# INTRODUCTION

This Permit Renewal Application was prepared to comply with the regulatory requirements of the Georgia Hazardous Waste Management Act as codified in Chapter 391-3-11 of the Rules of the Georgia Department of Natural Resources Environmental Protection Division (EPD). These regulations largely adopt by reference the requirements of 40 Code of Federal Regulations (CFR) Parts 264 and 270, promulgated under the Resource Conservation and Recovery Act (RCRA). Specifically, the Permit Renewal Application follows Federal requirements established in CFR 270.28 (i.e., Part B Requirements for Post-Closure Permits). For Post-Closure Permits, the owner or operator is required to submit only the information specified in §§ 270.14(b)(1), (4), (5), (6), (11), (13), (14), (16), (18) and (19)(c) and (d).

This Permit Renewal Application is for reissuance of the existing RCRA permit (HW-036-[S&D]-2) dated February 6, 2004. Objectives of this Application are for Delta Air Lines, Inc. (Delta) (EPA No. GAD006924872) to delete outdated provisions regarding the former permitted storage of hazardous waste, continue post-closure care of the Closed Varsol Regulated (CVR) Unit, document Closure Certifications for the former Drum Processing Building (DPB), Drum Storage Building (DSB) and associated Underground Storage Tank (UST) System, and to further integrate corrective actions for the CVR Unit and other Solid Waste Management Units (SWMUs) at the Delta Facility’s Technical Operations Center (TOC) into the reissued Permit. The CVR Unit is a former hazardous waste management unit that has undergone closure. Post-closure and corrective action activities are currently being performed relative to the CVR Unit, and corrective action activities are being performed for other closed units (i.e., the DPB, DSB, the UST System, previously identified SWMUs, and other potential Areas of Concern (AOCs) under the existing RCRA permit (HW-036-[S&D]-2).

This Permit Application consists of two parts: Part A and Part B. The Application includes the sections that are relevant to post-closure status. As the facility no longer stores or treats hazardous waste, certain sections of the Application are omitted. Those omitted sections include Section C – Waste Analysis Plan, Section D – Process Information, Section G – Contingency Plan and Section H – Personnel Training.

The headings and organization of the Application follow the headings and organization of the Federal Post-Closure (PC) permit review checklist included after this introduction. Checklist sections PC-1 through PC-8 refer to Part A of the Permit Application, and sections PC-9 through PC-33 refer to Part B of the Permit Application. The checklist column titled “Location in Application” has been completed to aid in review of the Application. Regulatory citations are found in brackets in the headings for each section and subsection of this Application. Figures, tables, and attachments referenced in the text are included at the end of the Part A and Part B Applications.

# PERMIT RENEWAL APPLICATION CHECKLIST

1

Note: This checklist may be used for review of a permit application for a post-closure facility with no active hazardous waste management units. It provides a guideline to the basic requirements of a Part B post-closure permit application. Information no longer required by Federal regulations (contingency plan and personnel training) are included in the checklist, beginning with element PC-29, and indicated by italics. If a post-closure unit is present at a facility seeking a permit for active hazardous waste management units, the post-closure unit must be incorporated in the permit application like an operating unit in all appropriate sections.

## CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

## POST-CLOSURE FACILITY REQUIREMENTS

| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| **PART A** | | | | | |
| PC-1 | Description of Activities Conducted which Require Facility to Obtain a Permit under the Resource Conservation and Recovery Act (RCRA) and Brief Description of Nature of the Business | 270.13(a),(m) | | **Part A** | |
| PC-2 | Name, Mailing Address, and Location of Facility for which the Application is Submitted, including a Topographic Map | 270.13(b),(1) | | **Part A<br>Figures A-1, A-2 and A-3** | |
| PC-3 | Up to four Standard Industrial Classification Codes (SIC) which Best Reflect the Products or Services Provided by the Facility | 270.13(c) | | **Part A** | |
| PC-4 | Operator/Owner's Name, Address, Telephone Number, and Ownership Status | 270.13(d),(e) | Ownership status must include status as federal, state, private, public, or other entity. | **Part A** | |

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1

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|---|---|---|---|---|---|
| PC-5 | Facility is New, Existing, or Located on Indian Lands | 270.13(f),(g) | Description must include information on whether this is a first or revised application with date of last signed permit application. | **Part A** | |
| PC-6 | Description of Processes for Disposing of Hazardous Waste | 270.13(i) | Description must include design capacity for these items. | **Part A** | |
| PC-7 | Specification of the Hazardous Wastes Listed or Designated Under Title 40 of the Code of Federal Regulations (40 CFR) Part 261 | 270.13(j) | Specifications must include estimate on quantity of waste to be disposed of. | **Part A** | |
| PC-8 | Listing of all Permits or Construction Approvals Received or Applied for | 270.13(k) | Permits include the following programs: Hazardous Waste Management under RCRA; Underground Injection Control under Solid Waste Disposal Act; Prevention of Significant Deterioration, Nonattainment Program, and National Emissions Standards for Hazardous Pollutants under the Clean Air Act; ocean dumping permits under the Marine Protection Research and Sanctuaries Act; dredge and fill permits under Section 404 of the Clean Water Act; or other relevant environmental permits including state permits. | **Part A** | |

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## POST-CLOSURE FACILITY REQUIREMENTS

| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| **PART B** | | | | | |
| PC-9 | Part B General Description | 270.14(b)(1) | | **Page B-1** | |
| PC-10a | Topographic Map | 270.14(b)(19) | Show distance of 1,000 feet around unit at a scale of 1 inch to not more than 200 feet (multiple maps may be submitted at this scale), and should be similar to Part A topographic map. | **Figures B-1, B-2, B-3** | |
| PC-10a(1) | Scale and Date | 270.14(b)(19)(i) | Other scales may be used if justified. | **Figures B-1, B-2, B-3** | |
| PC-10a(2) | The 100-Year Flood Plain Area | 270.14(b)(19)(ii) | | **Figure B-4** | |
| PC-10a(3) | Surface Waters | 270.14(b)(19)(iii) | | **None present** | |
| PC-10a(4) | Surrounding Land Use | 270.14(b)(19)(iv) | | **Figures B-1, B-2, B-3** | |
| PC-10a(5) | Wind Rose | 270.14(b)(19)(v) | | **Figure B-1** | |
| PC-10a(6) | Map Orientation | 270.14(b)(19)(vi) | | **Figures B-1, B-2, B-3** | |
| PC-10a(7) | Legal Boundaries | 270.14(b)(19)(vii) | | **Figures B-1, B-2, B-3** | |
| PC-10a(8) | Access Control | 270.14(b)(19)(viii) | | **Figure B-2** | |
| PC-10a(9) | Injection and Withdrawal Wells (on site and off site) | 270.14(b)(19)(ix) | | **None present** | |
| PC-10a(10) | Buildings and Other Structures | 270.14(b)(19)(x) | | **Figures B-1, B-2, B-3** | |
| PC-10a(11) | Drainage and Flood Control Barriers | 270.14(b)(19)(xi) | | **None present**<br>**Figure B-4** | |
| PC-10a(12) | Location of the Disposal Unit(s) | 270.14(b)(19)(xii) | | **Figures B-1, B-2, B-3** | |

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1

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| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| PC-10a(13) | Location of Solid Waste Management Units | 270.14(d)(1)(i) | SWMUs are cross-referenced with Areas of Concern (AOCs). | **Figures B-2, B-8 through B-13** | |
| PC-10b | Additional Information on the Topographic Map for Land Disposal Facilities | 270.14(c)(3) | The CVR Unit is the subject of the corrective action and Post-Closure Plan (see Attachment B-1) | **Figures B-1, B-2, B-3, B-5, B-9 - B-13 and Attachment B-1** | |
| PC-10b(1) | Waste Management Areas | 270.14(c)(3) | | **Figures B-1, B-2, B-3** | |
| PC-10b(2) | Property Boundaries | 270.14(c)(3) | | **Figures B-1, B-2, B-3** | |
| PC-10b(3) | Point of Compliance Location | 270.14(c)(3); 264.95 | Point of compliance is defined in 264.95 (Also see guidance in the Federal Register, Vol.1 No. 85, May 1, 1996, p 19432. Advanced Notice of Proposed Rulemaking) | **Figure B-2, B-7, and B-9** | |
| PC-10b(4) | Location of Groundwater Monitoring Wells | 270.14(c)(3); 264.97 | | **Figures B-2, B-5, B-6, B-7 through B-13** | |
| PC-10c | Uppermost Aquifer and Hydraulically Connected Aquifers Beneath Facility Property | 270.14(c)(2) | | **Pages B-5 and B-6** | |
| PC-10d | Groundwater Flow Direction | 270.14(c)(2), (3) | Should be included on the topographic map, if possible. | **Pages B-6 and B-7, Figures B-5, and B-6** | |
| PC-10e | Extent of any Groundwater Contaminant Plume | 270.14(c)(4)(i) | Should be included on the topographic map, if possible. | **Page B-7, Figure B-7, B-7b through B-7h** | |
| PC-11a | Seismic Requirements | | Not applicable to existing facilities. | **Page B-7** | |

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Reviewer:

1

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## POST-CLOSURE FACILITY REQUIREMENTS

| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| PC-11a(1) | Political Jurisdiction in which Facility is Proposed to be Located | 270.14(b)(11)(i) | | **Page B-7** | |
| PC-11a(2) | Indication of Whether Facility is Listed in Appendix VI of 264 (New Facilities) | 270.14(b)(11)(i) | | **Page B-7** | |
| PC-11a(3) | New Facility must be Located at Least 200 feet from a Fault which has had Displacement in Holocene Time | 270.14(b)(11)(ii); 264.18(a) | If facility location is listed in Appendix VI of 264, this information is required. | **Page B-7** | |
| PC-11b | Flood Plain Requirements | 270.14(b)(11)(iii), (iv); 264.18(b) | Facility is not within a flood plain. | **Pages B-7** | |
| PC-11b(1) | Copy of Federal Insurance Administration or other Flood Map | 270.14(b)(11)(iii) | Reference source used to determine whether facility is located in 100-year flood plain. | **Page B-7, Figure B-4** | |
| PC-11b(2) | Engineering Analysis to Indicate the Various Hydrodynamic and Hydrostatic Forces Expected to Result from the 100-Year Flood Plain | 270.14(b)(11)(iv) (A); 264.18(b) | Flood plain requirements applicable if facility is located in 100-year flood plain. | **Page B-7** | |
| PC-11b(3) | Structural or other Engineering Studies showing the Design of Operational Units and Flood Protection Devices and how these will Prevent Washout | 270.14(b)(11)(iv) (B); 264.18(b) | Flood plain requirements applicable if facility is located in 100-year flood plain. | **Page B-7** | |
| PC-11b(4) | Plan and Schedule for Future Compliance | 270.14(b)(11)(v) | Flood plain requirements applicable if facility is located in 100-year flood plain and not in compliance with 264.18(b). | **Page B-7** | |

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1

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| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| PC-11c | Interim Status Groundwater Monitoring Data | 270.14(c)(1) | Not applicable. Groundwater Monitoring is performed per Delta's existing RCRA permit (HW-036-[S&D]-2) and the Sampling and Analysis Plan (SAP - 2023). | **NA, Page B-6** | . |
| PC-11c(1) | Description of Wells | 270.14(c)(1) | A copy of topographic map required by 270.14(b) on which location and identification of each interim status monitoring well is indicated. Details of design and construction of each interim status monitoring well. | **NA, Page B-7** | |
| PC-11c(2) | Description of Sampling and Analysis Procedures | 270.14(c)(1); 265.92 | A copy of facility's groundwater sampling and analysis plan (SAP-2023) is attached to this application. | **Page B-8 and Attachment B-2** | |
| PC-11c(3) | Monitoring Data | 270.14(c)(1); 265.92 | Provide all interim status monitoring results. | **NA, Page B-8** | |
| PC-11c(4) | Statistical Procedures | 270.14(c)(1); 265.93 | Provide information relating to statistical procedures. | **NA, Page B-8** | |
| PC-11c(5) | Groundwater Assessment Plan | 270.14(c)(1); 265.93(d)(2) | If required, based on statistical comparison results, provide plan implemented for groundwater quality assessment program along with results obtained from implementation. | **NA, Page B-8** | |
| PC-12 | General Hydrogeologic Information | 270.14(c)(2) | Include description of the regional and site-specific geologic and hydrogeological setting. | **Pages B-8, B-9** | |
| PC-12a | Topographic Map Requirements | 270.14(c)(2),(3), (4)(i), | Included on several figures. | **Page B-9, Figures B-5, B-6 and B-7** | |

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1

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| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| PC-13 | Contaminant Plume Description | 270.14(c)(2), (4), (7); Part 261, Appendix VIII | In some cases, contaminant plumes may have been defined under groundwater quality assessment programs carried out during the interim status period, which may not address the complete list of Appendix IX constituents as required under 270.14(c)(4). Additional monitoring may be required to identify the concentration of each Appendix VIII constituent in the plume. | **Page B-9** | |
| PC-14 | General Monitoring Program Requirements | 270.14(c)(5); 264.90(b)(4); 264.97 | The groundwater monitoring requirements are being modified as part of the Permit renewal. See Groundwater Monitoring Plan Attachment B-3 for the list of wells, sampling schedule and constituents to be included in the Groundwater Protection Standard. | **Pages B-9, B-10, and Attachment B-3** | |
| PC-14a | Description of Wells | 270.14(c)(5); 264.97(a),(b),(c) | | **Pages B-9 and B-10, Attachment B-3** | |
| PC-14b | Description of Sampling and Analysis Procedures | 270.14(c)(5); 264.97(d),(e),(f) | | **Pages B-9 and B-10, Attachments B-2, and B-3** | |
| PC-14c | Procedures for Establishing Background Quality | 270.14(c)(5); 264.97(a)(1),(g) | | **Pages B-9 and B-10, Attachments B-2 and B-3** | |
| PC-14d | Statistical Procedures | 270.14(c)(5); 264.97(h), (i)(1),(5),(6) | | **Pages B-9 and B-10** | |
| PC-14d(1) | Parametric Analysis of Variance (ANOVA) | 270.14(c)(5); 264.97(h)(1), (i)(2) | | **Pages B-9 and B-10** | |

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1

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| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| PC-14(2) | Nonparametric ANOVA | 270.14(c)(5); 264.97(h)(2), (i)(2) | | **Pages B-9 and B-10** | |
| PC-14d(3) | Tolerance or Prediction Interval Procedure | 270.14(c)(5); 264.97(h)(3), (i)(4) | | **Pages B-9 and B-10** | |
| PC-14d(4) | Control Chart Approach | 270.14(c)(5); 264.97(h)(4), (i)(3) | | **Pages B-9 and B-10** | |
| PC-14d(5) | Alternative Approach | 270.14(c)(5); 264.97(h)(5),(i) | | **Pages B-9 and B-10** | |
| PC-15 | Detection Monitoring Program | 270.14(c)(6); 264.91(a)(4); 264.98 | Not Applicable; see PC-14. | **NA** | |
| PC-15a | Indicator Parameters, Waste Constituents, Reaction Products to be Monitored | 270.14(c)(6)(i); 264.98(a) | Not Applicable; see PC-14 | **NA** | |
| PC-15b | Groundwater Monitoring System | 270.14(c)(6)(ii); 264.97(a)(2),(b),(c); 264.98(b) | Identify number, location, and depth of each well, and describe well construction materials. The SAP has been revised as part of the Application and Permit renewal process. | **Pages B-8, B-9 and B-10 and Attachment B-2** | |
| PC-15c | Background Groundwater Concentration Values for Proposed Parameters | 270.14(c)(6)(iii); 264.97(g); 264.98(c), (d) | See PC-14 | **Pages B-9 and B-10** | |
| PC-15d | Proposed Sampling and Analysis Procedures | 270.14(c)(6)(iv); 264.97(d),(e),(f); 264.98(d),(e),(f) | See PC-14 | **Pages B-9 and B-10 and Attachments B-2, and B-3** | |
| PC-15e | Statistically Significant Increase in any Constituent or Parameter Identified at any Compliance Point Monitoring Well | 270.14(c)(6); 264.98(g); Part 264 Appendix IX | See PC-14 | **Pages B-9 and B-10** | |

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1

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| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| PC-16 | Compliance Monitoring Program | 270.14(c)(7); 264.99 | The groundwater monitoring requirements are being modified as part of the Permit renewal. | **Pages B-10 through B-13 and Attachment B-3** | |
| PC-16a | Waste Description | 270.14(c)(7)(i) | Description must include historical records of volumes, types, and chemical composition of waste placed in units in waste management areas. | **Pages B-10 through B-13** | |
| PC-16b | Characterization of Contaminated Groundwater | 270.14(c)(7)(ii) | For each well at point of compliance and for each background well, provide concentrations of each constituent in 261 Appendix VIII, major cations and anions, and constituents listed in Table 1 of 264.94, if not already mentioned above. | **Pages B-10 through B-13 and Attachment B-3** | |
| PC-16c | Hazardous Constituents to be Monitored in Compliance Program | 270.14(c)(7)(iii); 264.98(g)(3); 264.99(a)(1) | See PC-17a | **Pages B-10 through B-12 and Attachment B-3** | |
| PC-16d | Concentration Limits | 270.14(c)(7)(iv); 264.94, 264.97(g),(h); 264.99(a)(2) | See PC-17a | **Pages B-10 through B-12, and Attachment B-3** | |
| PC-16e | Alternate Concentration Limits | 270.14(c)(7)(iv); 264.94(b); 264.99(a)(2) | Provide justification for establishing alternate concentration limits. Justification must address the following two factors. See PC-17a | **Pages B-10 through B-12** | |
| PC-16e(1) | Adverse Effects on Groundwater Quality | 270.14(c)(7)(iv); 264.94(b)(1) | See PC-17a. | **Pages B-10 through B-12** | |
| PC-16e(2) | Potential Adverse Effects | 270.14(c)(7)(iv); 264.94(b)(2) | See PC-17a. | **Pages B-10 through B-12** | |

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1

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## POST-CLOSURE FACILITY REQUIREMENTS

| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| PC-16f | Engineering Report Describing Groundwater Monitoring Systems | 270.14(c)(7)(v);<br>264.95;<br>264.97(a)(2), (b),(c);<br>264.99(b) | Provide details supporting representative nature of groundwater quality at background monitoring points and compliance monitoring point. See PC-17a. | **Pages B-10 and B-11** | |
| PC-16g | Groundwater Monitoring Well Design | 264.97(c) | Wells must be designed in accordance with American Society for Testing and Materials standards. Any well within loess must be designed to minimize turbidity. The SAP 2023 describes well design procedure. | **Pages B-10 and B-11 and Attachment B-2** | |
| PC-16h | Proposed Sampling and Statistical Analysis Procedures for Groundwater Data | 270.14(c)(7) (vi); 264.97 (d),(e),(f); 264.99(c) - (g) | The SAP (2023) is attached. | **Pages B-10 and B-11 and Attachment B-2** | |
| PC-17 | Groundwater Protection Standard Exceeded at Compliance Point Monitoring Well | 270.14(c)(8);<br>264.99(h),(i) | | **Pages B-10 and B-11** | |
| | | | | | |
| PC-17a | Corrective Action Program | 270.14(c)(8);<br>264.99(j); 264.100 | If hazardous constituents have been detected in the groundwater, an owner or operator must submit sufficient information, supporting data, etc., to establish a corrective action program that meets the requirements of 264.100. | **Pages B-10, B-11, and B-12** | |
| PC-17b | Characterization of Contaminated Groundwater | 270.14(c)(8)(i) | For each well at point of compliance and for each background well, provide concentrations of each constituent in 261 Appendix VIII, major cations and anions, and constituents listed in Table 1 of 264.94, if not already determined by the above. See PC-26. | **Page B-12 and Attachments B-3 and B-4** | |

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1

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| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| PC-17c | Concentration Limits | 270.14(c)(8)(ii);<br>264.94;<br>264.100(a)(2) | Specify the proposed concentration limits for each hazardous constituent in groundwater. | **Page B-12 and Attachment B-3** | |
| PC-17d | Alternate Concentration Limits | 270.14(c)(8)(ii);<br>264.94(b);<br>264.100(a)(2) | Provide a justification for establishing alternate concentration limits. This justification must address each of the following two factors. | **NA, Page B-12** | |
| PC-17d(1) | Adverse Effects on Groundwater Quality | 270.14(c)(8);<br>264.94(b)(1) | | **Page B-12** | |
| PC-17d(2) | Potential Adverse Effects | 270.14(c)(8);<br>264.94(b)(2) | | **Page B-12** | |
| PC-17e | Corrective Action Plan | 270.14(c)(8) (iii); 264.100(b) | Provide detailed plans and engineering report on corrective actions proposed for facility, including maps of engineered structures, construction details, plans for removing waste, description of treatment technologies, effectiveness of correction program, description of reinjection system, additional hydrogeologic data, operation and maintenance plans, and closure and post-closure plans. | **Pages B-12 and PC-17A** | |
| PC-17f | Groundwater Monitoring Program | 270.14(c)(8) (iv); 264.100(d) | The Groundwater Monitoring Program is being modified as part of the Permit renewal and is provided in Attachment B-3. | **Page B-12, B-13, and Attachment B-3** | |
| PC-17f(1) | Description of Monitoring System | 270.14(c)(7)(v), (8) | See PC-17f. | **Page B-12, B-13 and Attachments B-2 and B-3** | |
| PC-17f(2) | Description of Sampling and Analysis Procedures | 270.14(c)(7)(v), (8) | See PC-17f. | **Page B-12, B-13 and Attachments B-2 and B-3** | |

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| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| PC-17f(3) | Monitoring Data and Statistical Analysis Procedures | 270.14(c)(7)(v), (8) | See PC-17f. | **Page B-12, B-13 and Attachments B-2 and B-3** | |
| PC-17f(4) | Reporting Requirements | 270.14(c)(7); 264.100(g) | See PC-17f. | **Page B-12, B-13 and Attachments B-2 and B-3** | |
| PC-18 | Security | 270.14(b)(4); 264.14 | Demonstrate that ongoing post-closure use does not allow disturbance of the integrity of the final cover, liner(s), or any other components of the containment system, or the function of the facility's monitoring system. | **Page B-13** | |
| PC-18a | Security Procedures and Equipment and 24-Hour Surveillance System | 270.14(b)(4); 264.14 | Unless waiver is granted, facility must have surveillance system or barrier or other means to control entry. | **Page B-13** | |
| PC-18b | Warning Signs | 270.14(b)(4); 264.14(c) | Signs in English must be posted at each entrance, and be legible from 25 feet. | **Page B-13** | |
| PC-19 | Inspection Schedule | 270.14(b)(5); 264.15 | Include where applicable, as part of the post-closure inspection schedule, specific requirements for each type of disposal facility. These specific requirements and the schedule should be included as part of the post-closure plan. | **Page B-13 and B-14 and Attachment B-1** | |

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## CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

## POST-CLOSURE FACILITY REQUIREMENTS

| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| PC-19a | General Inspection Requirements | 270.14(b)(5);<br>264.15(a), (b);<br>264.33 | Describe the inspections to be conducted during the post-closure care period, their frequency, the inspection procedure, and the logs to be kept. Inspection is required for monitoring equipment, safety emergency equipment, communication and alarm systems, decontamination equipment, security devices, and operating and structural equipment. Should be included as part of post-closure plan. | **Page B-13 and B-14; Table B-1** | |
| PC-19b | Types of Problems | 270.14(b)(5);<br>264.15(b)(3) | Inspection checklist should be included as part of post-closure plan and must identify types of problem. | **Page B-14; Table B-1** | |
| PC-19c | Frequency of Inspections | 270.14(b)(5);<br>264.15(b)(4) | The rationale for determining the length of time between inspections should be provided as part of the post-closure plan. | **Page B-14 and Attachment B-1** | |
| PC-19d | Schedule of Remedial Action | 264.15(c) | Owner/operator must immediately remedy any deterioration or malfunction of equipment or structures to ensure problem does not lead to environmental or human health hazard. | **Page B-14; Table B-1** | |
| PC-19e | Inspection Log | 264.15(d) | Provide example log or summary. Should be included as part of the post-closure plan | **Page B-14; Table B-1** | |
| PC-20 | Waiver or Documentation of Preparedness and Prevention Requirements | 270.14(b)(6)<br>264.32(a) - (d) | Facility must submit justification for any waiver to requirements of this section. | **Page B-14** | |
| PC-21 | Emergency Equipment | 270.14(a); 264.32(c) | Demonstrate that portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment are available, if necessary. | **Page B-14** | |

1

## CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

## POST-CLOSURE FACILITY REQUIREMENTS

| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| PC-21a | Water and Fire Control | 270.14(a); 264.32(d) | Demonstrate facility has adequate fire control systems, water volume and pressure, foaming equipment, automatic sprinklers, etc., if necessary | **Page B-14** | |
| PC-21b | Testing and Maintenance of Equipment | 270.14(a); 264.33 | Demonstrate communication, alarm, fire control equipment, spill control equipment, and decontamination equipment are tested and maintained, if applicable. | **Page B-14** | |
| PC-22 | Documentation of Arrangements with Emergency Agencies | 270.14(a); 264.37 | Owner/operator must make arrangements, as appropriate, with type of waste and hazard potential, for the potential need for services. | **Page B-14** | |
| PC-22a | Document Agreement Refusal | 270.14(a); 264.37(b) | Document refusal to enter into a coordination agreement. | **Page B-14** | |
| PC-22b | Equipment and Power Failure | 270.14(b)(8)(iv) | Describe procedure used to mitigate the effects of equipment failure and power outages, if applicable. | **Page B-14** | |
| PC-23 | Closure Plans | 270.14(b)(13);<br>264.112(a)(1),(2) | Include an approved closure plan consistent with the requirements of 264.112. This plan is included for post-closure facilities as a description of how the facility was closed. | **Pages B-15 and B-16, and Attachment B-1** | |
| PC-23a | Post-Closure Plan | 270.14(b)(13) | Submit a copy of the approved post-closure plan. | **Pages B-16, Attachment B-1** | |
| PC-23b | Post-Closure Care Contact | 270.14(b)(13);<br>264.118(b)(3) | Provide the name, address, and phone number of the person or office to contact about the hazardous waste disposal unit or facility during the post-closure care period. | **Page B-16** | |

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## CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

## POST-CLOSURE FACILITY REQUIREMENTS

| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| PC-24 | Notices Required for Disposal Facilities | 270.14(b)(14) | Provide a certification of closure, a survey plat, and a post-closure certification. Also include a statement that the post-closure notices required by 270.149(b)(14) will be filed and submitted appropriately. | **Pages B-16** | |
| PC-25 | Post-Closure Cost Estimate | 270.14(b)(16)<br>264.144 | Provide a copy of the most recent post-closure cost estimate, calculated to cover the cost, in current dollars, of post-closure monitoring and maintenance of the facility in accordance with the applicable post-closure plan. Estimate must be based on the third party performing the post-closure activities. The cost estimate must be adjusted annually for inflation pursuant to 264.144(b). | **Page B-17,<br>Table B-2** | |
| PC-25a | Financial Assurance Mechanism for Post-Closure Care | 270.14(b)(16);<br>264.145; 264.151 | Provide a copy of the established financial assurance mechanism for post-closure care of the facility. The mechanism must be one of the following:<br>trust fund<br>• surety bond<br>• letter of credit<br>• insurance<br>• financial test and corporate guarantee for post-closure care<br>• use of multiple financial mechanisms<br>• use of financial mechanism for multiple facilities. | **Pages B-17 and B-18;<br>Attachment B-5** | |

Robert L. Darwin, de maximis, inc.

Reviewer: ______________________

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## CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

## POST-CLOSURE FACILITY REQUIREMENTS

| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| PC-25b | Use of State-Required Mechanisms | 270.14(b)(18);<br>264.149 | When state has regulations that provide equivalent or greater liability requirements for financial assurance for closure post-closure, submit copy of state-required financial mechanism. | **NA, Page B-18** | |
| PC-25c | State Assumption of Responsibility | 270.14(b)(18);<br>264.150 | If state assumes legal responsibility for compliance with closure, post-closure, or liability requirements there must be a letter submitted from the state specifying assumption of responsibilities and amounts of liability coverage assured by state. | **NA, Page B-18** | |
| PC-26 | Solid Waste Management Units (SWMU) | 270.14(d)(1);<br>264.101 | Identify all SWMUs at the facility including hazardous and nonhazardous waste units, as well as active and inactive units, if known. SWMUs are cross-referenced to Areas of Concern (AOCs). | **Pages B-18 through B-26; Figures B-2, B-8 through B-13, and Attachment B-4** | |
| PC-26a | Characterize the SWMU | 270.14(d)(1) | Submit SWMU information including: type of each unit; location on a topographic map; engineering drawings, if available, dimensions; dates of operation; description of wastes in each unit; and quantity or volume of waste, if known. | **Pages B-18 through B-26; Figures B-2, B-8 through B-13; Attachment B-4** | |
| PC-26b | No SWMUs | | Describe methodology used to determine that no existing or former SWMUs exist at the facility. | **Page B-27** | |
| PC-26c | Releases | 270.14(d)(2) | | **Page B-26; Figures B2, B-8 through B-13; Attachment B-4** | |

Reviewer: Robert L. Darwin, de maximis, inc.

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## CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

## POST-CLOSURE FACILITY REQUIREMENTS

| Section and Requirement | | Federal Regulation | Review Considerations[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| PC-26c(1) | Characterize Releases | 270.14(d)(3) | Provide following information concerning releases: date of release; type, quantity, and nature of release; groundwater monitoring and other analytical data; physical evidence of stressed vegetation; historical evidence of releases; any state, local, or federal enforcement action that may address releases; any public citizen complaints that indicate a release; and any other information showing the migration of the release. | **Pages B-18 through B-26; Figures B-2, B-8 through B-13; Attachment B-4** | |
| PC-26c(2) | No Releases | | Describe methodology used to determine that releases from SWMUs are not present. | **Pages B-18 through B-26** | |
| PC-27 | Part B Certification | 270.11 | | **Page B-27; Attachment B-6** | |
| PC-28 | Information on the Potential for the Public to be Exposed to Releases. At a Minimum, this must include:<br>• reasonably foreseeable potential releases<br>• potential pathways of human exposure<br>• potential magnitude and nature of exposure | 270.10(j) | The federal requirement is for surface impoundments and land disposal units. | **Pages B-27 through B-28** | |

Robert L. Darwin, de maximis, inc.

Reviewer: ____________________

Checklist Revision Date (March 1998)

1

This section of the checklist contains elements no longer required by the Federal regulations in 40 CFR Part 270.

**CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS**

**POSTCLOSURE FACILITY REQUIREMENTS**

| Section and Requirement | | Federal Regulation | Review Consideration[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| *PC-29* | *Contingency Plan* | | *Not Applicable.* | **NA, B-28** | |
| *PC-29a* | *Emergency Coordinators* | *270.14(b)(7); 264.52(d); 264.55* | *Not Applicable.* | **NA** | |
| *PC-29b* | *Implementation* | *270.14(b)(7); 264.52(a); 264.56(d)* | *Not Applicable.* | **NA** | |
| *PC-29c* | *Emergency Actions* | *270.14(b)(7); 264.56* | *Not Applicable.* | **NA** | |
| *PC-29c(1)* | *Notification* | *270.14(b)(7); 264.56(a)* | *Not Applicable.* | **NA** | |
| *PC-29c(2)* | *Identification of Hazardous Materials* | *270.14(b)(7); 264.56(b)* | *Not Applicable.* | **NA** | |
| *PC-29c(3)* | *Assessment* | *270.14(b)(7); 264.56(c),(d)* | *Not Applicable.* | **NA** | |
| *PC-29c(4)* | *Control Procedures* | *270.14(b)(7); 264.52(a)* | *Not Applicable.* | **NA** | |
| *PC-29c(5)* | *Post-Emergency Equipment Management* | *270.14(b)(7); 264.56(h)(2)* | *Not Applicable.* | **NA** | |
| *PC-29d* | *Evacuation Plan for Facility Personnel* | *270.14(b)(7); 264.52(f)* | *Not Applicable.* | **NA** | |
| *PC-29e* | *Notification of Federal, State and Local Authorities before Resuming Post-closure Care* | *270.14(b)(7); 264.56(i)* | *Not Applicable.* | **NA** | |
| *PC-29f* | *Notification Reports* | *270.14(b)(7); 264.196(d)* | *Not Applicable.* | **NA** | |
| *PC-30* | *Outline of Introductory and Continuing Training Programs* | *270.14(b)(12); 264.16(a)(1)* | *Not Applicable.* | **NA, B-29** | |

Reviewer: Robert L. Darwin, de maximis, inc.

1

## CHECKLIST FOR REVIEW OF FEDERAL RCRA PERMIT APPLICATIONS

## POSTCLOSURE FACILITY REQUIREMENTS

| Section and Requirement | | Federal Regulation | Review Consideration[a] | Location in Application[b] | See Attached Comment Number[c] |
|---|---|---|---|---|---|
| *PC-30a* | *Job Title/Job Description* | *270.14(b)(12); 264.16(d)1), (d)(2)* | *Not Applicable.* | **NA** | |
| *PC-30b* | *Description of How Training will be Designed to Meet Actual Job Tasks* | *270.14(b)(12); 264.16(c),(d) (3)* | *Not Applicable.* | **NA** | |
| *PC-30c* | *Training Director* | *270.14(b)(12); 264.16(a)(2)* | *Not Applicable.* | **NA** | |
| *PC-30d* | *Relevance of Training to Job Position* | *270.14(b)(12); 264.16(a)(2)* | *Not Applicable.* | **NA** | |
| *PC-30e* | *Training for Emergency Response* | *270.14(b)(12); 264.16(a)(3)* | *Not Applicable.* | **NA** | |
| *PC-30f* | *Maintenance of Training Records/Copy of Personnel Training Documents* | *270.14(b)(12); 264.16(b),(d) (4),(e)* | *Not Applicable.* | **NA** | |
| *PC-31* | *Chemical and Physical Analyses* | *270.14(b)(2); 264.13(a)* | *Not Applicable.* | **NA, B-29** | |
| *PC-32* | *Waste Analysis Plan* | *270.14(b)(3); 264.13(b),(c) 266.102(a)(2)(ii); 266.104(a); (2), 268.7* | *Not Applicable.* | **NA, B-29** | |
| *PC-33* | *Other Federal Laws* | *270.14(b)(20); 270.3* | *Demonstrate compliance with requirements of applicable Federal Laws such as the Wild and Scenic Rivers Act, National Historic Preservation Act of 1966, Endangered Species Act, Coastal Zone Management Act, and Fish and Wildlife Coordination Act.* | **Page B-29** | |

Reviewer: Robert L. Darwin, de maximis, inc.

1

Notes:

[a] Considerations in addition to the requirements presented in the regulations.

[b] For each requirement, this column must indicate one of the following: NA for not applicable, IM for information missing, or the exact location of the information in the application.

[c] If application is deficient in an area, prepare a comment describing the deficiency, attach it to the checklist, and reference the comment in this column.

Reviewer: Robert L. Darwin, de maximis, inc.

# PART A

# PART A APPLICATION

Revised September 3, 2004

Georgia Department of Natural Resources
Environmental Protection Division
Hazardous Waste Management Branch

EPD USE ONLY
RECEIPT DATE:

HANDLER INFORMATION EPA ID NUMBER: GAD006924872

FACILITY NAME: Delta Air Lines, Inc.

Facility Location Address: Hartsfield-Jackson Atlanta International Airport; 1775 M H Jackson Service Road
City: Atlanta State: GA ZIP: 303540 County: Clayton
Land Type: M Facility Existence Date (mm/dd/yyyy): 05/03/1994
Facility Latitude (dd/mm/ss): 33, 38, 40 Longitude (dd/mm/ss): 84, 25, 75
Facility Mailing Address: Dept. 885 1020 Delta Blvd.
City: Atlanta State: GA ZIP: 30354
Contact: Last Name: Lathrop First Name: Alison
Title: Manager Director- Corporate Environmental & Regulatory Compliance Contact Telephone: 404-714-4645

Mailing/location/other address?
Contact Address
City: State: ZIP:

OPERATOR INFORMATION
Name of Operator: Delta Air Lines, Inc.
Operator Type: P Telephone: (404) 714-4645
Street Address: 1775 MH Jackson Service Road
City: Atlanta State: GA ZIP: 30354
Current/Previous: "Current" Change Date (mm/dd/yyyy): N/A

OWNER INFORMATION
Name of Owner: Delta Air Lines, Inc.
Owner Type: P Telephone: (404) 714-4645
Street Address: Dept 885, 1020 Delta Blvd.
City: Atlanta State: GA ZIP: 30354
Current/Previous: "Current" Change Date (mm/dd/yyyy): N/A

BUSINESS INFORMATION
NAICS Codes: Primary: 481111 NAICS Code Description: Scheduled Passenger Air Transportation
Secondary: none
Brief Description of Business at Facility Site: Commercial Aircraft Maintenance

Closed Hazardous Waste Management Units:

Closed container and tank storage units. Operational dates: 1988 to 2004. Estimated date of closure certifications and clean closure equivalency demonstration: Closure Certification for Drum Processing Building, Drum Storage Building and Underground Storage Tank System was accepted by EPD on August 24, 2006.

Topographic Map, Scale Drawing, Photograph attached?

Figures A-1, A-2, and A-3 depict the topographic map and scale drawing. Photographs are enclosed as Attachment A-1.

REGULATORY INFORMATION

Permit Type: S Permit Number: HW-036(S&D) Description: Georgia Hazardous Waste Facility Permit

Facility Indicator: X Regulatory Status: R Regulatory Status Description: Closure/Post-Closure

Cross-Reference ID: N/A

OTHER ENVIRONMENTAL PERMITS (continue on an attachment as necessary):

Type: N Number: F030-001 Description: Industrial Wastewater Discharge Permit for TOC Metal Finishing.

Type: N Number: F030-003 Description: Industrial Wastewater Discharge Permit for TOC Oily Waste.

Type: N Number: F029 Description: Industrial Wastewater Discharge Permit for TOC Groundwater.

Type: P Number: 4512-063-0105-V-04-0 Description: TOC Title V Operating Permit.

Type: P Number: 678209 Description: Georgia Industrial General Permit NOI.

Type: T Number: 070903 550 039KM Description: DOT Registration.

List of Affected Governments:

Chairman of County Commission
Clayton County
121 South McDonough Street
Jonesboro, Georgia 30236

Chairman of County Commission
Fulton County
141 Pryor Street, S.W.
Atlanta, Georgia 30303

Mayor Mayor
City of Atlanta
55 Trinity Avenue S.W.
Atlanta, Georgia 30303

Mayor Mayor
City of College Park
3667 Main Street
College Park, Georgia 30337

Mayor Mayor
City of East Point
2777 East Point Street
East Point, Georgia 30344

Mayor
City of Ellenwood
Ellenwood, Georgia 30049

Mayor
City of Jonesboro
102 McDonough Street
Jonesboro, Georgia 30236

City of Lake City
5535 North Parkway
Lake City, Georgia 30260

City of Lovejoy
2491 Lovejoy Road
Lovejoy, Georgia 30250

City of Morrow
1500 Morrow Road
Morrow, Georgia 30260

Mayor Mayor
City of Riverdale
6690 Church Street
Riverdale, Georgia 30274

Mayor Mayor
City of Forest Park
745 Forest Parkway
Forest Park, Georgia 30050

Atlanta Fire Department
City of Atlanta

4601 West Fayetteville Road
College Park, Georgia 3033

City of Hapeville
3468 North Fulton Avenue
Hapeville, Georgia 30354

City of Conley
Conley, Georgia 30027

PROCESS INFORMATION:

| Process Code: | Process Total Amount: | UOM: | Process Units: | Description: |
|---|---|---|---|---|
| D80 | * | * | 1 | closed Varsol distribution and reclamation system |

WASTE INFORMATION:

| Waste Stream #: | Annual Amount: | UOM: | Waste Amt. In TONS: | Handling Description/ Process Codes: | Waste Codes: |
|---|---|---|---|---|---|
| PC | 0 | NA | NA | D80 | D001 |

**Additional waste streams *generated* onsite are attached as Table A-1.

**Notes: *No disposal capacity exists—the D80 unit is a post-closure unit that does not receive waste.**
****The waste streams in Table A-1 are managed in less than 90-day storage areas prior to shipment offsite**

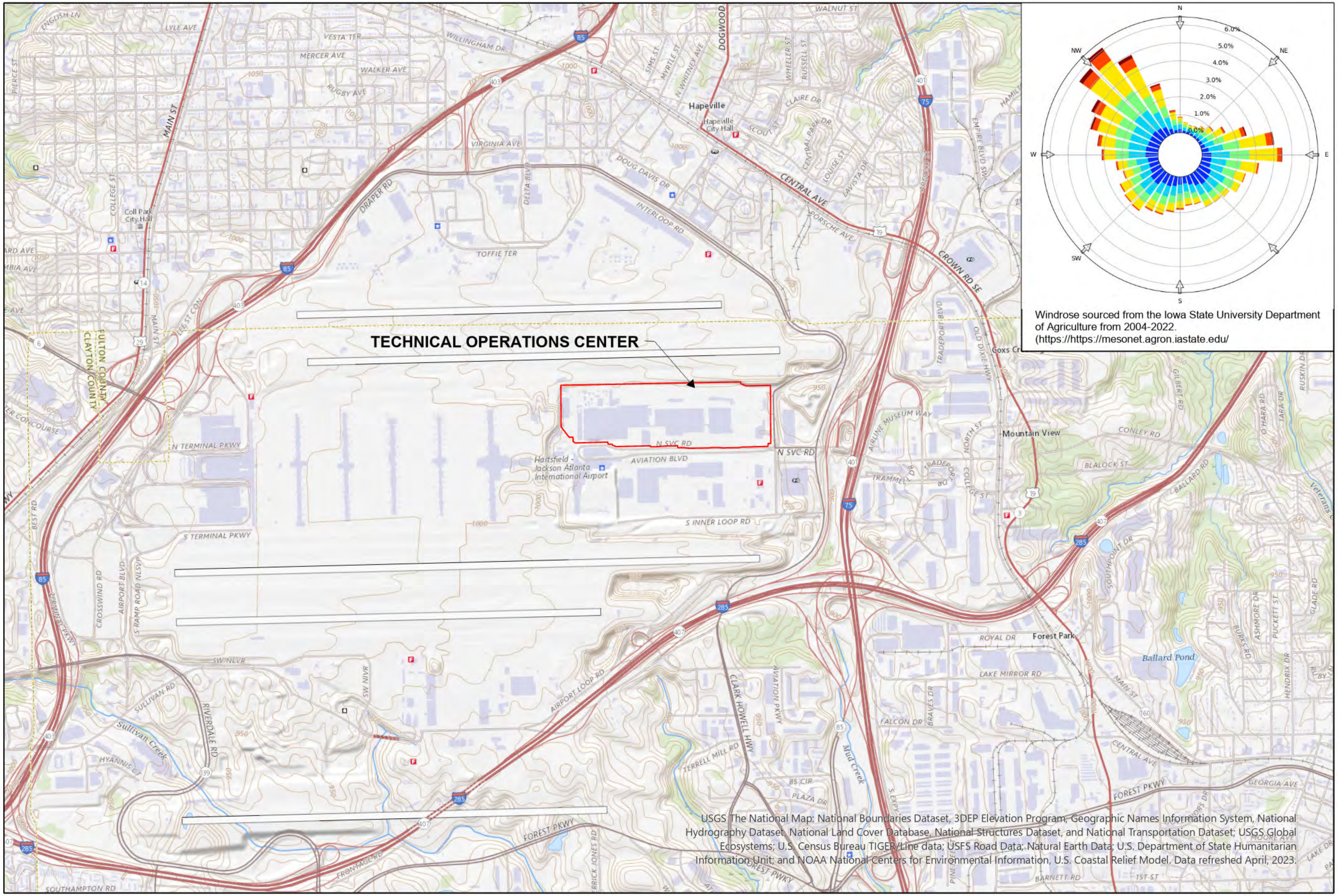
CERTIFICATON:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Alison Lathrop, Managing Director – Corporate Environment & Regulatory Compliance

A J Lathrop
Signature

6-23-23
Date



Windrose sourced from the Iowa State University Department of Agriculture from 2004-2022.
(https://https://mesonet.agron.iastate.edu/

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed April, 2023.

| REVISION: | DATE: |
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**de maximis, inc.**

450 Montbrook Lane
Knoxville, Tennessee 37919

DATE: 6/23/2023
DRAWN BY: KWR
CHECKED BY: RD
SCALE: AS SHOWN
PROJECT NO: 4132

JOB DESCRIPTION:

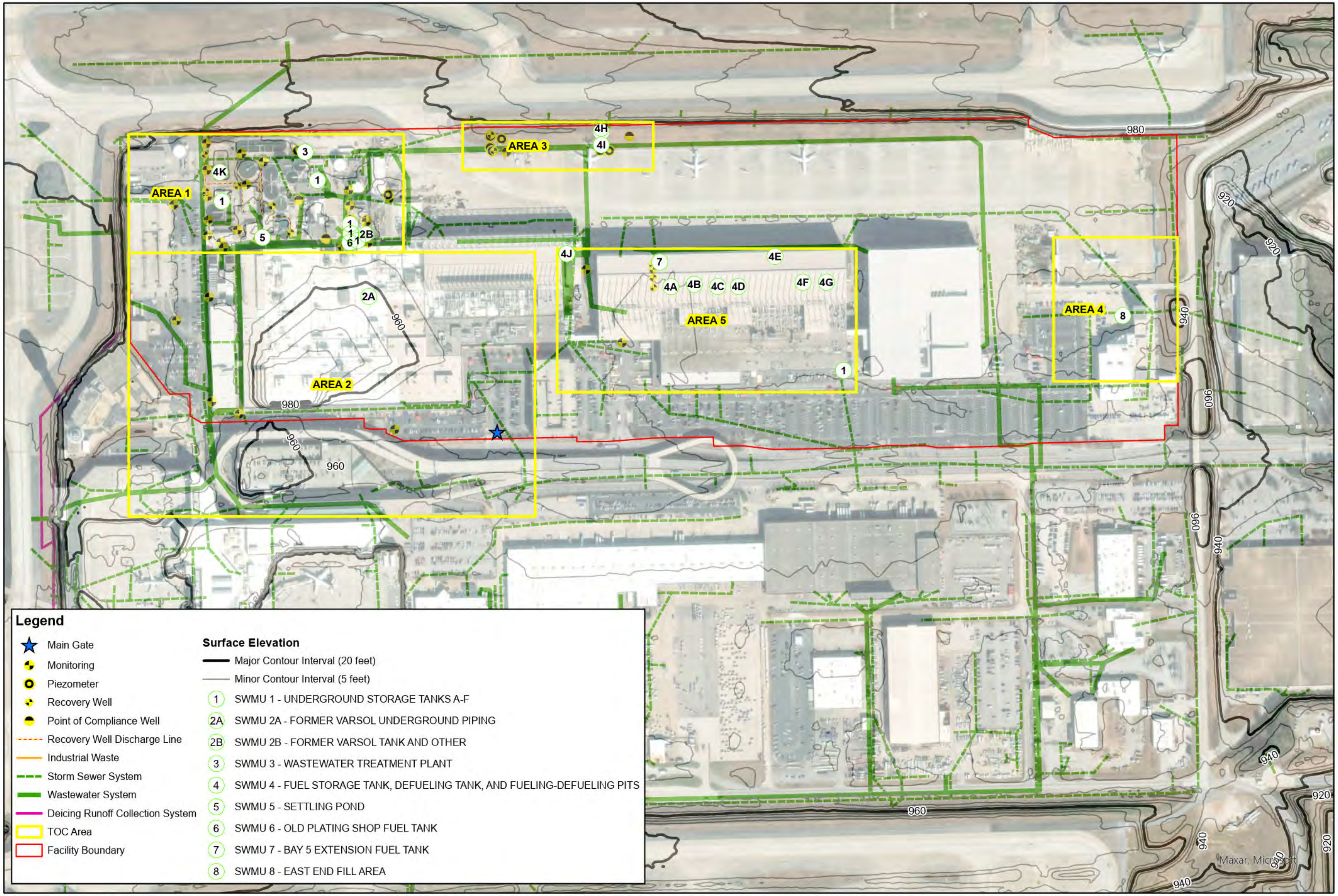
TECHNICAL OPERATIONS CENTER
HARTSFIELD-JACKSON ATLANTA
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

LOCATION AND
TOPOGRAPHIC MAP

SHEET NO.

FIGURE A-1



Map adapted from National Elevation Dataset courtesy of the U.S. Geological Survey, and from the Airport Master Plan Inventory, Ricondo & Associates, Inc., 2012. See figures B-9 through B-13 for additional detail.

| REVISION: | DATE: |
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Knoxville, Tennessee 37919

DATE: 6/23/2023
DRAWN BY: KWR
CHECKED BY: RD
SCALE: AS SHOWN
PROJECT NO: 4132

JOB DESCRIPTION:

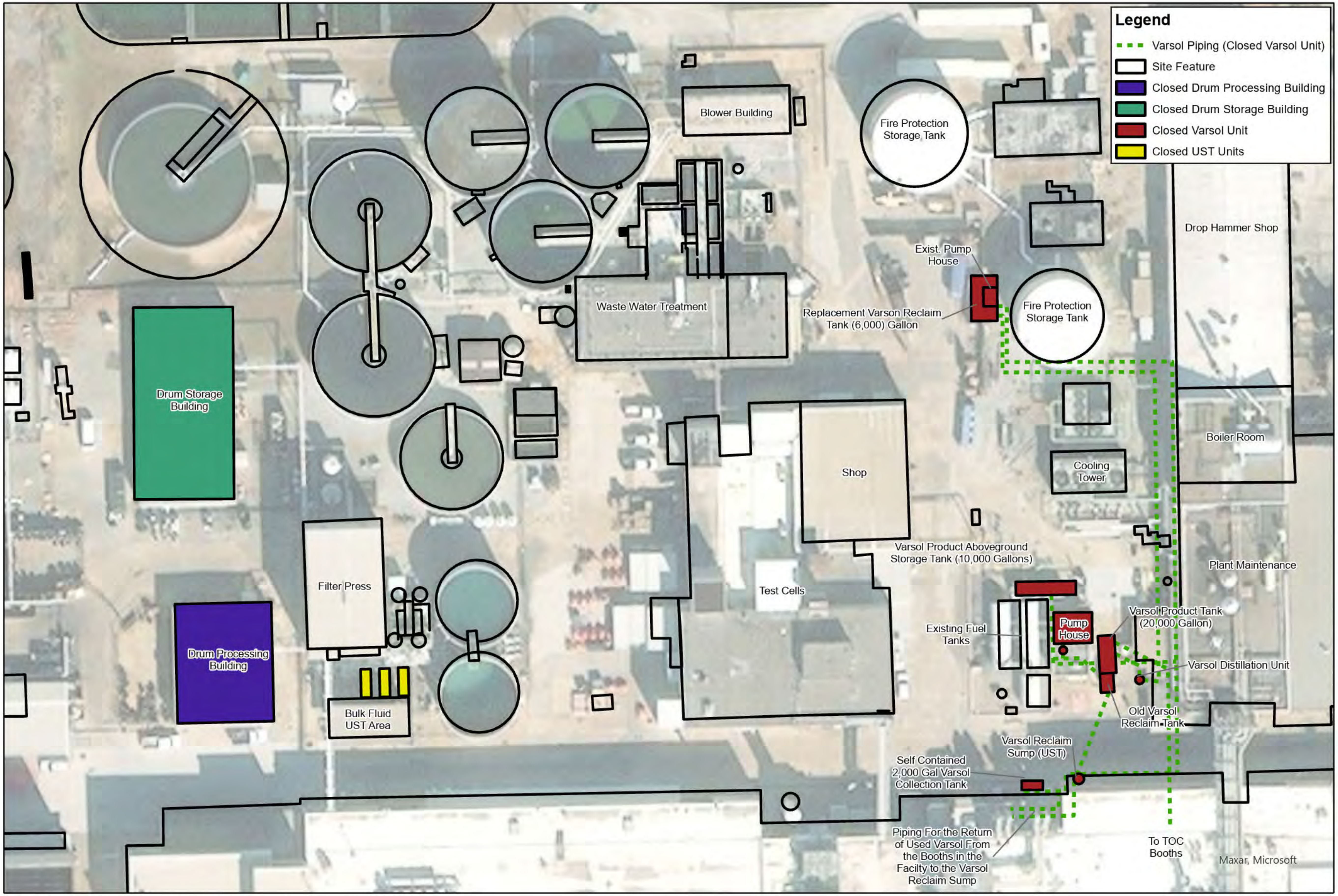
TECHNICAL OPERATIONS CENTER
HARTSFIELD-JACKSON ATLANTA
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

TECHNICAL OPERATIONS CENTER (DETAILED MAP)

SHEET NO.

FIGURE A-2



Note site features and piping are based on previous reports and inspection of aerial photography.

| REVISION: | DATE: |
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| | |
|---|---|
| DATE: | 6/23/2023 |
| DRAWN BY: | KWR |
| CHECKED BY: | RD |
| SCALE: | AS SHOWN |
| PROJECT NO: | 4132 |

JOB DESCRIPTION:

TECHNICAL OPERATIONS CENTER
HARTSFIELD-JACKSON ATLANTA
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

CLOSED REGULATED UNITS

SHEET NO.

FIGURE A-3

# Table A-1
# Delta Air Lines - RCRA Part A
# Hazardous Waste Stream Inventory

| Profile Number | Description | Federal Waste Codes | 2013 Quantity (lbs) |
|---|---|---|---|
| LCCRA | Labpack Acid & Acid Compatibles For Incineration | D002 | 10 |
| LCCRB | Labpack Basic & Basic Compatibles For Incineration | D002 | 20 |
| LCCRB | Labpack Basic & Basic Compatibles For Incineration | D002 | 15 |
| LCCRC | Labpack Organics For Incineration | D011,F002 | 45 |
| LCCRD | Labpack Flammables For Incineration | D001,D035,F003,F005 | 90 |
| LCCRO | Labpack Oxidizers For Incineration | D001,D002 | 15 |
| LCCRQ | Labpack Aerosols For Incineration | D001 | 85 |
| LCHG2 | Labpack Elemental Mercury for Retort | D009 | 2 |
| 2082770 | NICKEL FILTERS (INDLT200) | D002 | 393 |
| 2082780 | N-190 EN-STRIP | D002,D006 | 22780 |
| 2085640 | NIKLAD 1000HPH | D002 | 857 |
| 2173292A | Niklad Low pH | D002 | 1862 |
| 2297746 | SODIUM SILICATE CLEANING SOLUTION | D002 | 253 |
| 2297859 | SMUT GO ACID CLEANER | D002,D006,D007,D008 | 3591 |
| CH224887 | Caustic bath | D002,D004,D007 | 1645 |
| CH314658 | Alodine 22 TONER | D002 | 137 |
| CH314660 | ALODINE 1600 | D007 | 1134 |
| CH331733 | Groundwater Remediation Fluid | D001,D018 | 2684 |
| CH344261 | Alodine 1660 Additive | D002 | 94 |
| CH352108 | Spent Carbon w/Cyanide | D003,D006 | 904 |
| CH367829 | Dow 18 | D006,D007,D011 | 484 |
| CH367936 | Lead Contaminated Debris | D006,D007,D008 | 265 |
| CH398298 | Honey Bee 60 spent | D002 | 430 |
| CH411885 | Descaler Solution | D002,D005,D006,D007 | 1594 |
| CH413185 | B-9 Nickel Strip | D007 | 6050 |
| CH434004 | Dry Caustic Potash | D002 | 86 |
| CH440057 | Silver Plating Tank Clean Out | D003,D006,D011,F008 | 109 |
| CH461899 | Cee Bee J3 | D002,D006,D007,D010 | 11500 |
| CH478665 | Anodize Solution | D002 | 1425 |
| CH484159 | Chromate Conversion | D007 | 2253 |
| CH489257 | CeeBee J84 | D002,D006,D007,D008 | 6000 |
| CH570761 | Cyanide Scrubber Filters w/solids | D003,D006 | 300 |
| CH604321 | Copper Strike | D002,D003 | 320 |
| CH625407 | Potassium Cyanide unused | D003,P098 | 98 |
| CH630578 | CN basement tank cleanout | D003,D006,D007,D011,F008 | 826 |
| CH718829 | Enstrip A | D003 | 100 |
| CH718859 | Turco Altrex 24 exp | D002 | 44 |
| INDLT104 | Cadmium Electroplating Debris | D003,F008 | 1197 |
| INDLT110 | 796 TRICHLOROETHYLENE | D040,F001 | 12202 |
| INDLT110A | Rags Contaminated with Trichloroethylene | D040 | 188 |
| INDLT116 | DRY CLEANING SOLVENT | D039,F001 | 22828 |
| INDLT116B | Tetrachloroethylene and Wax | F001 | 5500 |
| INDLT116D | Perc Debris | D039 | 250 |
| INDLT153 | OXYGEN GENERATORS EMPTY | D005 | 1532 |
| INDLT156 | 275 MURIATIC ACID | D002,D006,D007 | 57400 |
| INDLT157 | 275 Nitric Acid/Nickel | D002,D007 | 1800 |

Table A-1

Delta Air Lines - RCRA Part A

Hazardous Waste Stream Inventory

| | | | |
|---|---|---|---|
| INDLT158 | 275 NICKEL STRIKE | D002,D006,D007,D008 | 3571 |
| INDLT196 | SILVER STRIPPING/PLATING SOLUTIONS | D002,D003,F008,F009 | 3784 |
| INDLT197 | ELECTROLYS - NICKEL STRIP EN86 A & B | D002 | 68540 |
| INDLT197 | ELECTROLYS - NICKEL STRIP EN86 A & B | D002 | 4000 |
| INDLT206 | Sulfuric Acid Etching Solution | D002,D007,D008 | 10214 |
| INDLT211 | CHROMIC ACID SOLUTION | D002,D006,D007,D008 | 49506 |
| INDLT211 | CHROMIC ACID SOLUTION | D002,D006,D007,D008 | 17810 |
| INDLT211 | CHROMIC ACID SOLUTION | D002,D006,D007,D008 | 550 |
| INDLT221 | COPPER CYANIDE | D003,P029 | 1735 |
| INDLT223 | CHROMIC ACID SLUDGE | D002,D007 | 630 |
| INDLT242 | ALODINE 1201 SOLUTION | D002,D007 | 779 |
| INDLT247 | Cadmium Plating Carbonates | D002,D006,F008 | 658 |
| INDLT265 | Industrial Drain Sludge | D006,D007,D008 | 3250 |
| INDLT281 | Acid Contaminated Material | D002,D007 | 174 |
| INDLT285 | Rodine Solution | D001 | 1698 |
| INDLT287 | Cadmium Electroplating Solution with Cyanide and Bicarbonate | D002,F007 | 24730 |
| LCCRA | Labpack Acid & Acid Compatibles For Incineration | D001,D002 | 24 |
| LM02-0153 | PLATING WASTE SLUDGE | D006,D007,D008,D011,F006 | 65800 |
| 77-2747 | Lead Anodes | D007, D008 | 1318 |
| 77-1450 | Spray Blast Media | D006, D007, D008 | 190200 |
| 77-1452 | Paint Filters | D006, D007, D008 | 22476 |
| 77-1456 | Dried paint bottom | D001, D007 | 30160 |
| 77-1459 | Waste paint and debris | D001, D005, D006, D007, D008, D035, F002, F003 | 35750 |
| 77-2754 | Chromic Acid debris | D007 | 36180 |
| 77-2895 | Cee Bee J3 | D002, D006, D007 | 30350 |
| 77-2759 | Vacuum Dust | D006 | 36880 |
| 77-1454 | Aerosol Cans | D001, D007 | 920 |
| 77-2565 | Contaminated oils | D001, D006, D007, D008, D040, F003, F005 | 1600 |
| 77-1472 | Turco 4181 | D002, D006, D007, D008 | 8000 |
| 77-2752 | Alodine Rags | D007 | 296 |

# ATTACHMENT A-1

## PHOTOGRAPH NUMBER 1 OF THE CLOSED VARSOL REGULATED UNIT

The Closed Varsol Regulated Unit is beneath the concrete alleyway in front of the double doors. Photograph was taken September 2014 and the view is oriented toward the south.

# ATTACHMENT A-1

## PHOTOGRAPH NUMBER 2 OF THE CLOSED VARSOL REGULATED UNIT

Photograph above is also of the Closed Varsol Regulated Unit area. The closed unit is beneath the concrete alleyway. Photograph was taken in September 2014 from the double doors shown above and is facing northeast.

# ATTACHMENT A-1

## PHOTOGRAPH NUBMER 3 OF THE CLOSED VARSOL REGULATED UNIT

This photograph is of the alleyway over the Closed Varsol Regulated Unit. Note that the double doors are on the right. Photograph was taken in September 2014 and is oriented toward the east.

# ATTACHMENT A-1

## PHOTOGRAPH OF THE CLOSED DRUM PROCESSING BUILDING (DPB)

Photograph of the Closed Drum Processing Building (DPB) that was taken in September 2014. Photograph is taken from the alleyway and is oriented to the northwest.

# ATTACHMENT A-1

## PHOTOGRAPH OF THE CLOSED DRUM STORAGE BUILDING (DSB)

Photograph of the Closed Drum Storage Building (DSB) taken in September 2014 and is oriented toward the northeast. The DSB is located north of the DPB.

# ATTACHMENT A-1

# PHOTOGRAPH OF THE CLOSED UNDERGROUND STORAGE TANK AREA

Photograph above is of the Closed Underground Storage Tank (UST) Area. The photograph was taken in September 2014 and the view is toward the northeast. This area is along the same alleyway (and inside of the fence).

# PART B

# PART B

## PC-9 Part B General Description [40 CFR 270.14 (b)(1)]

This Part B Permit Renewal Application, submitted by Delta Air Lines, Inc. (Delta) (EPA No. GAD006924872), is for reissuance of the existing RCRA permit (HW-036-[S&D]-2) dated February 6, 2004. Objectives of this Application are to update HW-036-[S&D]-2 to remove outdated provisions regarding the former permitted storage of hazardous waste, continue post-closure care of the Closed Varsol Regulated (CVR) Unit, document Closure Certifications for the former Drum Processing Building (DPB), Drum Storage Building (DSB) and associated Underground Storage Tank (UST) System, and to further integrate corrective actions for the CVR Unit and other Solid Waste Management Units (SWMUs) at Delta's Technical Operations Center (TOC) into the reissued Permit.

Post-closure and corrective action activities are currently being performed relative to the CVR Unit. In addition, corrective action is being performed at other closed storage units (i.e., the DPB, the DSB, and the associated UST System), previously identified SWMUs and other potential Areas of Concern (AOCs) under the existing Permit. The CVR Unit, the DSB, the DPB, and the associated UST System are owned and operated by Delta. These closed units are located on property owned by the City of Atlanta.

The CVR Unit, the closed DPB, the closed DSB and the associated closed UST System are located in the northwest corner of the Technical Operations Center (TOC) and just south of Runway 8R/26L at the Hartsfield-Jackson Atlanta International Airport in Atlanta, Clayton County, Georgia (ATL). Figure B-1 illustrates the TOC location at ATL. Figures B-2 and B-3 illustrate additional detail concerning the TOC and closed regulated unit locations. Delta's facility location address is:

Delta Air Lines, Inc.
Hartsfield-Jackson Atlanta International Airport
1775 MH Jackson Service Road
Atlanta, Georgia 30320

Prior to closure, the CVR Unit was a component of the facility's Varsol distribution and reclamation system. Used Varsol from parts cleaning booths in TOC Building 1 was drained into a Varsol distillation unit, where it was recycled and reclaimed before being piped to a 20,000-gallon underground Varsol product storage tank. The Varsol distribution and reclamation system included the following components:

- A 6,000-gallon underground reclaim holding tank.
- A 20,000-gallon underground storage tank for new and reclaimed Varsol product.
- The Varsol reclaim sump.
- The Varsol distillation unit.

- Piping (portions underground) from the TOC Building 1 booths to the Varsol reclaim sump.
- Piping (underground) from the Varsol reclaim sump to the 6,000-gallon reclaim holding tank.
- Piping (underground) from the 6,000-gallon reclaim holding tank to the Varsol distillation unit; and
- Piping (portions underground) from the Varsol distillation unit to the 20,000-gallon product storage tank.

The Varsol reclamation system was constructed in 1960. In 1988, a tightness test revealed that the 6,000-gallon reclaim holding tank no longer had structural integrity. Upon removing the tank and associated piping, Delta discovered that used Varsol had been released to the surrounding soils, and Delta reported the release to Georgia EPD. Some contaminated soils could not be removed due to their proximity to large structures. Excavation would have caused structural damage to these structures. Delta installed a new 6,000-gallon underground reclaim tank constructed with double-walled fiberglass and a leak detection system.

On February 16, 1996, Delta removed the Varsol distillation unit from service and closed short segments of associated underground piping in place. In 1997, Delta discontinued use of the Varsol reclaim sump and all underground piping associated with the Varsol reclamation system, removed the 20,000-gallon underground product storage tank from service, and replaced the tank with a 10,000-gallon above-ground product storage tank. Delta also conducted RCRA corrective action activities through completion of a RCRA Facility Investigation (RFI) and Phase I and II interim measures.

Delta submitted an initial "*Closure/Decontamination Plan for Discontinued Components of the Former Varsol Reclamation System at Delta Air Lines Technical Operations Center*" (Law Engineering and Environmental Services, Inc.) to Georgia EPD in November 1998, and the revised plan in May 1999. Georgia EPD approved the Closure/Decontamination Plan on June 7, 1999.

On December 14, 1998, Delta also submitted a Post-Closure Care Plan and Permit Application modification to Delta's then-existing RCRA permit [HW-036(S&T)-2]. Georgia EPD approved the Plan and Permit modifications on November 14, 2001, and issued a revised RCRA Permit [HW-036(S&D)-2] reflecting the requested modifications. (See Attachment B-1 for the Post-Closure Plan).

Delta conducted closure of the CVR Unit and, on August 13, 1999, submitted a closure certification report entitled "*Report of Closure/Decontamination of the Discontinued Components of the Former Varsol Reclamation System*" (Stewart-Brown Industrial, Inc.). Georgia EPD approved the report on November 18, 1999.

On January 11, 2002, Delta submitted to Georgia EPD a "*Certification of Closure for the Closed Varsol Regulated Unit*", signed by a representative of Delta and by an independent registered Professional Engineer. The CVR Unit does not receive any hazardous waste and is therefore not involved in any manner with on-going, short-term hazardous waste generation activities at Delta's TOC. Corrective action activities have been ongoing in this area since the closure of this unit.

Following the closure of the Varsol Unit, Delta closed the DPB, DSB and the associated UST System in 2006. In the past, Delta had operated the DPB and the DSB as greater-than 90-day hazardous waste storage units (depicted on Figure B-3). The closed DPB and DSB, and the associated UST System, are located within the footprint of SWMU-5 (Wastewater Treatment Plant Settling Pond). After closure of the DPB and DSB, hazardous wastes have been transported offsite within 90 days. As such, the greater than 90-day hazardous waste storage requirements for containers and tanks no longer applies to the TOC.

The UST System, associated with the DPB and the DSB, consisted of two tanks with a capacity of 5,000 gallons each and one tank with a capacity of 2,000 gallons. In 2001, Delta converted one of the 5,000-gallon tanks from hazardous waste bulk storage to used oil storage. Delta continued to use the other 5,000-gallon tank and the 2,000-gallon tank to store hazardous waste prior to closure of the system. All of the tanks were double-walled steel tanks with external fiberglass-clad coatings. This UST System is separate from SWMU 1, which previously consisted of USTs A – F that were removed in the late 1980's.

The UST System associated with the DPB and the DSB underwent rigorous tank integrity testing in 2004 even though the tanks have secondary containment. Results of the testing showed that the tanks were structurally sound, affording more than 20 years of additional use. However, at that time, the UST System was no longer used for storage of hazardous waste or used oil.

Closure of the DSB, DPB and the associated UST System was addressed via implementation of Soil Sampling Work Plans for the Permitted Storage Units (dated December 3, 2004, and amended on May 27, 2005) pursuant to the 1998 RCRA Part B Permit Modification and Post-Closure Care Application. A Closure Soil Sampling Report and Certification for the DSB, DPB and associated UST System were submitted to EPD in June 2006. EPD approved the Closure Certifications for the DPB, DSB, and the associated UST System in a letter dated August 26, 2006. After these units were closed the greater than 90-day hazardous waste storage requirements for containers and tanks no longer applied to the TOC.

The TOC currently operates as a large quantity hazardous waste generator with less-than-90-day storage. A thorough discussion of SWMUs and AOCs relative to waste generation, and the less-than-90-day storage provision, is provided in Sections PC-17a and PC-26. Hazardous waste generated from TOC operations primarily results from the maintenance of aircraft. These operations include:

- Degreasing
- Painting
- Paint stripping
- Engine cleaning
- Electroplating

- General maintenance
- Generation of expired shelf-life products

Waste types include degreasing sludges, stripper sludges, wastewater treatment plant sludges, contaminated blast media, and waste paint thinners, expired epoxy quick repair kits, VOC containing pre-preg. materials, and spent plating baths and chemicals.

## PC-10 Topographic Map [40 CFR 270.14 (b) and (c)]

### PC-10a Topographic Map [40 CFR 270.14 (b)(19)]

A series of topographic maps depicting the location of the post-closure unit, SWMUs, and AOCs are attached as Figures B-1 through B-3 and B-8 through B-13. Together these figures meet the requirements of 40 CFR 270.14 (b)(19) and contain the following information:

- Various Scales (less than 1 inch = 200 feet)
- Date
- Surrounding land use
- Wind rose
- Map orientation
- Access control
- Buildings and other structures
- Location of solid waste management units
- Point of compliance wells
- Manmade drainage swales
- Contour interval

The 100-year flood plain data is presented in Figure B-4 and discussed in Section PC-11b. Figures B-9, B-10, B-11, B-12, and B-13 illustrate the locations of monitoring wells, including point of compliance (POC) wells. No surface waters, injection and withdrawal wells, or drainage and flood control barriers are present.

Figures B-1 and B-2 show the boundaries of the TOC. The TOC is leased and operated by Delta. It is located on property owned by the City of Atlanta. Access control is provided via a security fence that surrounds the entire TOC and through 24-hour on-site security personnel. All personnel who enter the TOC are badged employees, contractors, or escorted visitors.

### PC-10b Additional Information on the Topographic Map for Land Disposal Facilities [40 CFR 270.14 (c)(2),(3),(4)(i); 264.95; 264.97]

The CVR Unit is the subject of post-closure care and corrective action. Details concerning property boundaries, point of compliance locations, and groundwater monitoring well locations were originally presented in the Post-Closure Care Plan and Permit Application modification to Delta's then-existing RCRA permit [HW-036(S&T)-2] approved by Georgia EPD in November 2001 (Attachment B-1 Post-Closure Plan). The current groundwater monitoring system provides a sufficient network of wells, installed at appropriate locations and depths to meet the referenced requirements. Figures B-5 through B-7h show the groundwater network including the background well MW-UG.

Current, Point of Compliance (POC) wells are identified on Figure B-7 and the groundwater monitoring plan proposed in the Permit Renewal Application is presented in Attachment B-3.

### PC-10c Aquifer Connectivity [40 CFR 270.14 (c)(2)]

A "*Site Conceptual Hydrogeologic Model" (SCHM)* has been developed based on former and ongoing investigation and remediation activities at the TOC. These activities have revealed that the shallow hydrogeological unit is relatively complex, and the system consists of water-bearing zones that occur as thin lenses of higher permeability, sandy deposits located within an overall finer-grained, low permeability matrix consisting of saprolite that inhibits groundwater flow. The permeable layers appear to be sand "stringers" located at multiple depths that are not well-connected to each other and are not horizontally continuous. The resulting hydrogeological setting contains multiple occurrences of perched groundwater, or wetting fronts, of varying saturated thickness.

Some of the stringers encountered at the TOC are the result of the deeply weathered underlying bedrock, while others could be alluvial/channel deposits of the Flint River. In addition, the former channels of the Flint River likely have some bearing on the migration/distribution pattern of constituents of concern (COCs) due to its original channel location and subsequent multiple re-routings during the expansion of the TOC and ATL. The Flint River originally flowed through the area that was eventually developed as the TOC. In the early-1960's, the flow of the Flint River was proximate to the east side of settling ponds at the TOC at that time. Subsequently, in the mid-to-late 1960's, it was re-routed to an engineered channel located adjacent to the west side of the settling ponds. In the early-mid 1970's, the Flint River was again moved further to the west to its current location (i.e., the Flint River Culvert/Enclosure) during the expansion of the airport. The Flint River Enclosure, or Flint River Culvert, is an underground 18-foot diameter poured-in-place culvert/tunnel that crosses beneath the airport runways in a north-south orientation on the western boundary of the TOC leasehold. The former channels of the Flint River (that were backfilled as the TOC was constructed) may have been potential pathways whereby COCs could have migrated from the settling ponds to areas south of the current TOC-1 building.

In general, groundwater in the shallow water-bearing sand lenses and stringers is derived from rainfall and storm water run-off from paved and unpaved areas at higher elevations to the north and west and in the TOC. While much of the storm water is directed into the Flint River Culvert, some accumulates in utility trenches and other disturbed areas. In addition to the pre-existing hydrogeological setting, TOC construction and long-term operational activities have resulted in large areas of disturbed soil and significant quantities of engineered fill materials.

Much of the TOC is underlain by placed fill materials that support various structures (e.g., sewers, tanks, buildings, etc.). Abundant buried utility corridors are also present throughout the TOC that provide additional groundwater flow pathways. In summary, the hydrogeological setting and infrastructure overprint factors create a non-homogenous, complex shallow groundwater system.

Groundwater pressure gradients indicate that hydraulic heads are lower on the western and southern areas of the TOC; however, observations during subsurface work associated with the Flint River Culvert and International Terminal indicated that groundwater presence is limited and not connected to the impacted groundwater at TOC-1. Therefore, the potential for off-site migration of water contained in the pore spaces of the sand stringers is low.

Given the hydrogeological setting at the TOC, the long-term monitoring program, and empirical observation/evaluation, it has been shown that there is limited migration of impacted groundwater at the TOC.

## PC-10d Groundwater Flow Direction [40 CFR 270.14 (c)(2),(3)]

Extensive information concerning the geology and hydrogeology of the area has been submitted to Georgia EPD in documents over the years. Delta's "*1990 Phase II Groundwater Assessment Report*" (ERM, 1990), as well as the *RCRA Facility Investigation (RFI) Report,* (Parsons, 1997) described the hydrogeologic conditions at the CVR Unit. Delta's 1990 assessment of the shallow water-bearing zones indicated that the water table was about 15 feet below ground surface and that natural groundwater flow was toward the west and southwest. The assessment estimated that the hydraulic conductivity of the shallow water-bearing zones ranges from $1.3x10^{-3}$ to $1x10^{-4}$ centimeters per second and that the estimated average linear velocity was about 1.20 meters per year (4.2 feet per year) (ERM 1990).

Groundwater flow direction and groundwater hydraulic conductivity are currently being re-evaluated per the *SCHM* via tracer test studies initiated in July 2022. Based on several rounds of potentiometric mapping of groundwater elevations under ambient conditions (non-pumping of recovery wells) the mapping shows a stable hydraulic gradient with general east-to-west head pressure decrease in wells towards the Flint River Culvert.

Overlying the bedrock are residual soils of varying thicknesses. These soils were formed from *in situ* weathering of the underlying bedrock; their character depends on the nature of the rock from which they are weathered. In addition to the naturally occurring soils, the TOC has received significant disturbance to shallow geological materials from construction and operational activities over time. Much of the TOC contains placed fill material that supports various structures (e.g., tanks, buildings, etc.). Buried utility corridors are also present throughout the general facility area. The construction of the Flint River Culvert (i.e., a poured-in-place concrete structure) with surrounding compacted fill provides an obstacle to natural groundwater flow to the west and southwest from the shallow water-bearing zone of discontinuous sand units that are observed within the naturally occurring soil saprolite-matrix.

Figure B-5 shows the groundwater elevations as measured in October 2022. Figure B-6 presents the groundwater flow path analysis based on those hydraulic pressure gradient contours. Interim findings from the ongoing tracer studies and recent hydrogeologic information for the closed units and the TOC area are presented in the "December 2022 *Semi-Annual Corrective Action System Performance Effectiveness Report,*" prepared for Delta by *de maximis, inc.* (*de maximis, inc.,* 2022).

### PC-10e Extent of any Groundwater Contaminant Plume [40 CFR 270.14(c)(4)(i)

Groundwater contamination at the TOC occurs in the shallow water-bearing zones. Impacts to groundwater originated from the former CVR Unit, and other SWMUs and AOCs. Iso-concentration distribution maps of selected primary constituents have been presented in the *Semi-Annual Performance Effectiveness (SAPE) Reports* over the past several years and are presented in Figures B-7b through B-7h. Primary COCs include chlorobenzene, tetrachloroethene, trichloroethene, 1,1-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, and vinyl chloride. The generalized combined extent of the individual dissolved phase constituents is summarized in Figure B-7, while Figure B-7a shows the wells with a product history from 2018 - 2022. The Flint River Culvert (shown on figure B-7 and discussed in section PC-11b) acts as a boundary for the migration of COCs to the west. Iso-concentration maps are not reflective of actual distribution due to the presence of discontinuous sand lenses and varying depths of well screen intervals of monitoring and recovery wells that do not intersect the same lithologic zone when compared to nearby monitoring wells.

## PC-11 Location and Interim Status [40 CFR 270.14(b) (11); 40 CFR 270.14(c)(1); 264.18]

### PC-11a Seismic Requirements [40 CFR 270.14 (b)(11)(i),(ii),(iii); 264.18 (a)]

The seismic requirements are not applicable to existing facilities.

### PC-11b Flood Plain Requirements [40 CFR 270.14 (b)(11)(iii),(iv); 264.18 (b)]

The headwaters of the Flint River are enclosed in an 18-foot diameter concrete culvert. The river is totally enclosed inside the airport property and poses no flood potential for the CVR Unit, other closed units, SWMUs, or AOCs. A review of the Atlanta, College Park, and Clayton County Flood Insurance Rate Map (FIRM) panels indicates that the airport area has not been included in a flood study. The digital FIRM for the area (Federal Emergency Management Agency, June 21, 2010, National Flood hazard Layer, Version 1.1.1.0, FEMA-NFHL, Washington, D.C. https://msc.fema.gov), however does include the airport area and indicates that the TOC does not lie within a defined 100-year flood plain. The digital FIRM encompassing the TOC is shown on Figure B-4.

Review of U.S. Geological Survey topographic maps and flood study maps indicates that the TOC is at an elevation between 960 and 980 feet. The closest stream within a flood study area is approximately 4,000 feet from the TOC and has a 100-year flood elevation of 884 feet or approximately 70 feet below the level of the TOC. The TOC is not within a flood plain nor likely to be affected by a 100-year flood.

### PC-11c Interim Status Groundwater Monitoring Data [40 CFR 270.14 (c)(1); 265.92; 265.93]

Not applicable. Groundwater sampling and analysis is being conducted as outlined in Delta's "*Sampling and Analysis Plan (SAP-2023*)" Attachment B-2).

## PC-12 General Hydrogeologic Information [40 CFR 270.14 (c)(2)]

Extensive information concerning the hydrogeology of the area has been submitted to Georgia EPD in documents over the years. Delta's "*1990 Phase II Groundwater Assessment Report*" (ERM, 1990), as well as the 1997 *RFI Report* described the hydrogeologic conditions at the CVR Unit. The post-closure CVR unit and other SWMUs/AOCs are underlain by a complex of pre-Cambrian to lower Paleozoic metamorphic and igneous rocks referred to as the Atlanta Group. The uppermost formation beneath the post-closure unit is the Camp Creek Formation, which consists of massive granite gneiss interlayered with thin, fine-grained, dark green, hornblende-plagioclase amphibolite.

Overlying the bedrock are residual soils of varying thicknesses. These soils were formed from *in situ* weathering of the underlying bedrock; their character depends on the nature of the rock from which they are weathered. In addition to the naturally occurring soils, the TOC has received significant overprint from construction and operational activities over time. Much of the TOC contains placed fill material that supports various structures (e.g., tanks, buildings, etc.). Buried utility corridors are also present throughout the general facility area. The construction of the Flint River culvert (i.e., a poured in-place concrete structure) with surrounding compacted fill provides an obstacle to natural groundwater flow to the west and southwest from the shallow water-bearing zone of discontinuous sand units that are observed within the naturally occurring soil saprolite-matrix.

As described in Section PC-10c, groundwater beneath the TOC occurs within multiple separate and minimally interconnected water-bearing zones. Shallow water-bearing zones are typically observed in thin lenses of higher permeability, sandy deposits located within an overall finer grained saprolite-matrix. The sandy layers appear to be sand "stringers" located at multiple depths that are not well connected to each other and are not aerially continuous. Across the TOC areas, multiple perched groundwater flow systems of varying saturated thickness are contained in these sand layers. In general, groundwater in the shallow water-bearing sand lenses flows from upland areas toward lower drainage areas.

Delta's 1990 assessment of the shallow water-bearing zones indicated that the water table was about 15 feet below ground surface and that natural groundwater flow was toward the west and southwest. The assessment estimated that the hydraulic conductivity of the shallow water-bearing zones ranges from $1.3 \times 10^{-3}$ to $1 \times 10^{-4}$ centimeters per second and that the estimated average linear velocity was about 1.20 meters per year (4.2 feet per year) (ERM 1990).

As described in Section PC-10d above, groundwater flow direction and groundwater hydraulic conductivity are currently being re-evaluated per the *SCHM* via tracer test studies initiated in July 2022. Based on several rounds of potentiometric mapping of groundwater elevations under ambient conditions (non-pumping of recovery wells) the mapping shows a general east-to-west gradient towards the Flint River Culvert. Figure B-5 shows the groundwater hydraulic pressure gradient as measured in October 2022. Figure B-6 presents the groundwater flow path analysis for measurements conducted in October 2022. Additional recent hydrogeologic information for the closed unit and SWMUs/AOCs is presented in the "*December 2022 SAPE Report*" prepared by *de maximis, inc.*

### PC-12a Topographic Map Requirements [270.14(c)(2),(3), (4)(i)]

Figures B-5, B-6, B-7, and B-7a through B-7h provide information related to the flow direction and general delineation of the extent of the groundwater plume. As discussed in the geology and hydrogeology sections, there are multiple, perched groundwater flow systems beneath the TOC. Therefore, the groundwater flow directions presented on the figures represent a generalized representation of the average hydraulic head in separate sand stringers and lenses beneath the Site. Likewise, there is not a single "plume" of COCs; rather, the occurrence of COCs is also coincident with the presence of sand stringers and lenses. Based on these data, iso-concentration maps should also be viewed as generalized representations of COC distribution beneath the Site.

## PC-13 Contaminant Plume Description [40 CFR 270.14 (c)(2)]

Extensive information concerning the existing contamination at the CVR Unit, and other SWMUs, was submitted in the *RFI Report for SWMUs 1 - 8* in July 1997. The RFI characterized the contaminated groundwater attributed to SWMUs 1 through 8. Subsequent data associated with contaminated groundwater in the area has been collected and submitted in *SAPE Reports* submitted to Georgia EPD. The most recent of these reports was submitted in December 2022. In addition, tracer test studies have been ongoing at the TOC since June 2022 to evaluate groundwater flow direction, velocity, and potential migration.

## PC-14 General Monitoring Program Requirements [40 CFR 270.14 (c)(5); 264.90; 264.97]

The CVR Unit and other SWMUs and AOCs are currently subject to the groundwater monitoring requirements in Delta's existing RCRA Permit (HW-036-[S&D]-2) as being modified by the Groundwater Monitoring Plan (Attachment B-3), proposed to be used in the reissued Permit. The existing Permit requires on-going groundwater monitoring and establishes the following:

- Background water quality
- Point of compliance wells
- Compliance period

- Groundwater protection standard

Groundwater sampling and analysis has been conducted as outlined in Delta's *SAP* (Attachment B-2). Monitoring program operating objectives for the CVR Unit are presented in the *SAPE Reports*.

## PC-15 Detection Monitoring Program [40 CFR 270.14 (c)(6); 264.91 (a)(4); 264.98]

Not applicable.

## PC-16 Compliance Monitoring Program [40 CFR 270.14 (c)(7); 264.99]

In accordance with Delta's existing RCRA permit (HW-036-[S&D]-2) and Attachment B-3 compliance monitoring activities have and will continue to be conducted at the post-closure Varsol unit, other SWMUs and AOCs. The corrective action and groundwater monitoring program is at least as effective as the compliance monitoring program of 40 CFR 264.99 in determining compliance with the groundwater protection standard and the effectiveness of the corrective action program. Accordingly, the informational requirements of sections 16(a) through 16(f) of the post-closure checklist are addressed through the groundwater monitoring program established by Delta's existing permit that is to be reissued, as described in PC-17 below.

## PC-17 Groundwater Protection Standard Exceeded at Compliance Point Monitoring Well [40 CFR 270.14 (c)(8); 264.99 (h),(i)]

### PC-17a Corrective Action Program [40 CFR 270.14 (c)(8); 264.99 (j); 264.100]

Corrective action and post-closure activities for the CVR Unit were established in the Permit Modification Application dated December 14, 1998, as modified, and approved by EPD (see Attachment B-1 Post-Closure Plan). These corrective action activities have included the long-term free product removal, pumping/recovery/treatment of dissolved phase impacted groundwater, routine groundwater sampling and analysis per the Permit, and systematic inspections of the CVR Unit and the entire monitoring/recovery well network. The operation and documentation of the effectiveness of corrective action activities is described in Section VI of the existing RCRA permit (HW-036-[S&D]-2). Recovery well operations have ceased per approval by EPD and subsequent extension of a Temporary Authorization Request for performance of tracer testing.

Relative to ongoing corrective action activities, the groundwater monitoring network, groundwater protection standards for specified constituents, point of compliance wells, and the monitoring/sampling program are provided and/or identified in Attachments B-2 and B-3. The results of the sampling and analyses performed are reported to Georgia EPD per 40 CFR 264.100(g).

Given the ongoing post-closure and corrective action activities performed at the facility since the last permit revision in 2004, the closed SWMUs have been grouped into “Areas” in the *SAPE Reports*. These Areas are described below (see Section PC-26). Due to the commingled nature of COCs in impacted groundwater, it would be appropriate to consider these areas for on-going Corrective Actions in lieu of SWMUs.

Area 1 (Main TOC) contains the largest number of recovery and monitoring wells. Area 1 formerly contained a number of SWMUs, including the CVR Unit (SWMU-2), former underground storage tanks (USTs A – F; -SWMU-1) and the footprint of the former Wastewater Treatment Plant Settling Ponds (SWMU-5). These former structures are considered to be potential sources of residual product and chlorinated COCs. Area 1 also includes the closed DPB, the closed DBS, and the closed associated UST System. Delta received approval for the Closure Certification of these units within Area 1 of the TOC from EPD in a letter dated August 26, 2006.

The recovery well system in Area 1 began operation in January 1993. Since then, enhancements and modifications to the system have been undertaken and, currently, there are a total of 10 recovery wells in Area 1, including two monitoring wells that have been converted to recovery points (H and MW-3). The Area 1 recovery points pump, as needed, groundwater for treatment at Delta’s industrial wastewater treatment facility located at the TOC. The groundwater recovery wells are connected to the TOC’s industrial wastewater treatment facility through the industrial drain system. The locations of the existing recovery wells in Area 1 are shown in Figure B-9. The original corrective action objectives for the Area 1 recovery system were to provide hydraulic gradient control, as needed, to minimize the potential for migration of COCs off-site to the west and south, as well as to recover impacted groundwater and/or product. However, based on the development of the *SCHM*, coupled with the preliminary results of the ongoing tracer study, and the evaluation of 30 years of groundwater sampling data, the hydraulic gradient in Area 1 appears to be stable and gradient control is being evaluated and may not be necessary at this time.

Area 2 (southern TOC) contains monitoring wells at the locations shown in Figure B-10. The operational objective in Area 2 is to maintain monitoring points to evaluate the movement of groundwater and attenuation of dissolved COCs near the southern boundary of the TOC. The monitoring network in Area 2 was modified due to the City of Atlanta’s construction of the new International Terminal.

Area 3 contains two recovery wells and eight monitoring wells, including the background well MW-UG (see Figure B-11). Area 3 is located northeast of Area 1 and north of the hangar area, adjacent to the concrete apron of the taxiway. The product in the area of MW-D2 was previously reported as diesel fuel released from a former pipeline. The product in the vicinity of PZ-20 and PZ-21 was reported as Jet-A fuel. Recovery wells RW-12 and RW-14 had previously been used to recover total fluids. The corrective action objectives in Area 3 had included the removal of product at recovery wells RW-12 and RW-14 and the maintenance of monitoring points to evaluate groundwater and product flow patterns in this area. Product has been largely eliminated in this area and recovery well pumping is unnecessary for the control of groundwater flow.

Area 4 (Eastern TOC) was previously comprised of four monitoring wells (MW-L13, MW-L14, MW-L15, and MW-L16) and no recovery wells as shown on Figure B-12. Product had not been detected historically in this area and the monitoring wells were abandoned in 2017.

Area 5 (Bay 5) is an active aircraft maintenance hangar where four product (Jet-A fuel) recovery wells (RW-15, RW-16, RW-17, and RW-18), as well as monitoring wells MW-7-1 and MW-D4, are located (see Figure B-13). Product thickness monitoring and recovery operations are conducted routinely in Area 5. Product removal activities are coordinated with Delta's facility operations and security personnel to schedule access to the Area 5 recovery wells. The corrective action objective for Area 5 is the removal of product at recovery wells RW-15, RW-16, RW-17, and RW-18.

### PC-17b Characterization of Contaminated Groundwater [40 CFR 270.14 (c)(8)(i)]

An RFI for SWMUs 1 through 8 (see Section PC-26) was conducted and a report (See Attachment B-4) was prepared and submitted to Georgia EPD in July 1997. The RFI characterized the contaminated groundwater in the vicinity of SWMUs 1 through 8 (including the Closed Varsol Regulated Unit, as SWMU 2). Subsequent data associated with the contaminated groundwater in the area has been collected and submitted in *SAPE Reports* submitted to Georgia EPD. The most recent of these reports was submitted in December 2022.

### PC-17c Concentration Limits [40 CFR 270.14 (c)(8)(ii); 264.94; 264.100 (a)(2)]

Groundwater quality and separate phase product thickness in monitoring wells are currently being monitored in accordance with Delta's existing RCRA permit (HW-036- [S&D]-2) and will be monitored for specified hazardous constituents set forth in Attachment B-3 under the reissued Permit.

### PC-17d Alternate Concentration Limits [40 CFR 270.14 (c)(8)(ii); 264.94 (b); 264.100 (a)(2)]

Not applicable.

### PC-17e Corrective Action Plan [40 CFR 270.14 (c)(8)(iii); 264.100 (b)]

Please see PC-17a for details regarding corrective action activities.

### PC-17f Groundwater Monitoring Program [40 CFR 270.14 (c)(8)(iv); 264.100 (d)]

Groundwater quality in corrective action monitoring wells had previously been monitored in accordance with Section III of Delta's existing RCRA permit (HW-036-[S&D]-2) and modified via the *Interim Groundwater Monitoring Plan* (2005) and subsequent Addenda that were necessary to accommodate the construction of the new International Terminal at the Hartsfield-Jackson International Airport. The groundwater monitoring program has been updated as part of this application and permit renewal process (see Attachment B-2 [*Sampling and Analysis Plan*] and Attachment B-3 [TOC Well Network, Sampling Schedule, and Groundwater Protection Standards].

## PC-18 Security [40 CFR 270.14 (b)(4); 264.14]

Security information, as required by 40 CFR 264.14, must be provided for the active portions of a facility. The units subject to this permit are closed; therefore, the security requirements applicable to active units do not apply. Sections 18a and 18b of the post-closure checklist are therefore not applicable. Nonetheless, Delta has included a description of TOC security within this Permit Application, for informational purposes only.

### PC-18a Security Procedures and Equipment and 24-Hour Surveillance System [270.14(b)(4); 264.14]

Delta maintains a 24-hour surveillance system with a staff of trained security guards who monitor entry and exit from the TOC and provide security around the perimeter and within the TOC premises. On the landside, the only authorized entry point is the main gate as shown in Figure B-2. Secondary gates (i.e., badged employee and contractor entrances) are open for early morning and late afternoon rush hours. Guards at the secondary gates control entry/exit during the brief time that these gates are open. Two to four guards occupy the guardhouse at the main entrance to the facility 7 days a week, 24 hours per day. Additionally, there is authorized access to SIDA badge holders through the backside of the facility (i.e., the airport ramp side). There are signs indicating authorized personnel only and cameras monitoring the area.

In addition to the 24-hour surveillance system, an 8-foot-high chain link fence is constructed around the entire TOC and connects to the airport fence. Guards at the main entrance gate control entry to the TOC. All personnel that enter the TOC secure facility are badge-wearing employees, contractors, or escorted visitors. Employees are required to show identification upon entry to the TOC and wear identification badges during work. Visitors and contractors entering the TOC must obtain visitor passes.

## PC-19 Inspection Schedule [40 CFR 270.14 (b)(5); 264.15; 264.33]

### PC-19a General Inspection Requirements [40 CFR 270.14 (b)(5); 264.15 (a),(b); 264.33]

There are no active regulated units. Inspection and maintenance of the post-closure unit and its monitoring systems are conducted in accordance with the approved Post-Closure Plan. In summary, activities associated with the CVR Unit include periodic inspections and required maintenance of the concrete cover. Inspections are conducted by trained personnel at least semi-annually. Records of such inspections are provided in *SAPE Reports* submitted to EPD. A checklist for the inspection of the concrete cover is provided as Table B-1.

### PC-19b Types of Problems [40 CFR 270.14 (b)(5); 264.15 (b)(3)]

The types of problems anticipated during inspections of the post-closure unit are documented in the Post-Closure Plan.

### PC-19c Frequency of Inspections [40 CFR 270.14 (b)(5); 264.15 (b)(4)]

Inspection and maintenance of the post-closure unit and its monitoring systems is conducted in accordance with the Post-Closure Plan.

### PC-19d Schedule of Remedial Action [40 CFR 270.14 (b)(5); 264.15 (c)]

If an inspection of the post-closure unit reveals that maintenance is needed, such maintenance will be promptly completed. As specified in the inspection checklist provided as Table B-1, the nature and timing of any required maintenance is documented in the inspection log.

### PC-19e Inspection Log [40 CFR 264.15 (d)]

As noted above, and in accordance with the approved post-closure plan, inspection records for the CVR are provided in *SAPE Reports* and maintained at Delta's Corporate Environment and Regulatory Compliance Department.

## PC-20 Waiver or Documentation of Preparedness and Prevention Requirements [40 CFR 270.14 (b)(6); 264.32 (a)–(d)]

Closure of the CVR Unit in accordance with the closure plan has eliminated the possibility of fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil, or surface water from the CVR Unit that could threaten human health or the environment. Therefore, pursuant to 40 CFR 270.14(b)(6), Delta requests a waiver of the preparedness and prevention requirements of 40 CFR Part 264 Subpart C.

## PC-21 Emergency Equipment [40 CFR 270.14 (b); 264.32 (c)]

(See Section PC-20, Waiver)

## PC-22 Documentation of Arrangements with Emergency Agencies [40 CFR 270.14 (a); 264.37]

(See Section PC-20, Waiver)

## PC-23 Closure Plans [40 CFR 270.14 (b)(13); 264.112 (a)(1),(2)]

On February 16, 1996, Delta removed the Varsol distillation unit from service and closed short segments of associated underground piping in place. In 1997, Delta discontinued use of the Varsol reclaim sump and all underground piping associated with the Varsol reclamation system, removed the 20,000-gallon underground product storage tank from service, and replaced the tank with a 10,000-gallon above ground product storage tank. Delta also completed corrective action in the form of an RFI and Phase I and II interim measures.

Delta submitted the closure/decontamination plan "*Closure/Decontamination Plan for Discontinued Components of the Former Varsol Reclamation System at Delta Air Lines Technical Operations Center*" (Law Engineering and Environmental Services, Inc.) in November 1998, and revised it in May 1999. Georgia EPD approved the plan on June 7, 1999.

On December 14, 1998, Delta also submitted a Post-Closure Care Plan and permit modification for Delta's then-existing RCRA permit. Georgia EPD approved the permit modifications on November 14, 2001, with revised permit conditions reflecting these modifications. (See Attachment B-1)

Delta conducted closure of the CVR Unit and, on August 13, 1999, submitted a closure certification report entitled "*Report of Closure/Decontamination of the Discontinued Components of the Former Varsol Reclamation System*" (Stewart-Brown Industrial, Inc.). Georgia EPD approved the report on November 18, 1999.

On January 11, 2002, Delta submitted to Georgia EPD a "*Certification of Closure for the Closed Varsol Regulated Unit*" signed by a representative of Delta and by an independent registered Professional Engineer.

Following closure of the Varsol unit, Delta closed out the DPB, DSB and associated UST System Units. In the past, Delta had operated the DPB Container Unit and the DSB Container Unit as greater-than 90-day hazardous waste container storage areas at the TOC (depicted on Figure B-3). The DSB and DPB, along with the associated UST System, were located within the footprint of SWMU-5 (Wastewater Treatment Plant Settling Ponds).

Following the closure of the Varsol Unit, Delta closed the DPB, DSB and the associated UST System in 2006. In the past, Delta had operated the DPB and the DSB as storage areas for greater-than 90-day hazardous waste containers (depicted on Figure B-3). The closed DPB and DSB, and the associated UST System, are located within the footprint of SWMU-5 (Wastewater Treatment Plant Settling Pond). After closure of the DPB and DSB, hazardous wastes have been transported offsite within 90 days. As such, the greater than 90-day hazardous waste storage requirements for containers and tanks no longer applies to the TOC and Delta requests that the storage provision for the DSB and DPB be removed in the reissued Permit.

The UST System associated with the DSB and DPB consisted of two tanks with a capacity of 5,000 gallons each and one tank with a capacity of 2,000 gallons. In 2001, Delta converted one of the 5,000-gallon tanks from hazardous waste bulk storage to used oil storage. Delta continued to use the other 5,000-gallon tank and the 2,000-gallon tank to store hazardous waste. All of the tanks are double-walled steel tanks with external fiberglass-clad coatings.

The UST System associated with the DSB and DPB underwent rigorous tank integrity testing in 2004 even though the tanks have secondary containment. Results of the testing showed that the tanks were structurally sound, affording more than 20 years of additional life. At that time, the UST System was no longer used for storage of hazardous waste or used oil.

Closure of the DSB and DPB and the associated UST System Units was addressed via implementation of *Soil Sampling Work Plans for the Permitted Storage Units* (dated December 3, 2004, and amended on May 27, 2005) pursuant to the 1998 RCRA Part B Permit Modification and Post-Closure Care Application. A *Closure Soil Sampling Report* and Certification for the DSB, DRB and UST System were submitted to EPD in June 2006. EPD approved the Closure Certifications for the DPB, DSB and UST System in a letter dated August 26, 2006. After these units were closed, the greater than 90-day hazardous waste storage requirements for containers and tanks no longer applied to the TOC.

### PC-23a Post-Closure Plan [40 CFR 270.14(b)(13)]

The approved Post-Closure Plan is provided as Attachment B-1 of this Permit Renewal Application. The plan was approved by Georgia EPD on November 14, 2001.

### PC-23b Post-Closure Care Contact [40 CFR 270.14(b)(13); 264.118 (b)(3)]

Alison Lathrop, Managing Director Corporate Environment and Regulatory Compliance is the post-closure care contact. Her mailing address and telephone number are:

Delta Air Lines, Inc.
Department 885
1020 Delta Blvd
Atlanta, Georgia 30354-1989-
Telephone: 404-714-3977
Fax: 404-714-4645

## PC-24 Notices Required for Disposal Facilities [40 CFR 270.14 (b)(13)]

As described below, appropriate closure and post-closure notices for the Closed Varsol Regulated Unit have been made.

### PC-24a Certification of Closure [40 CFR 270.14(b)(13); 264.115; 264.280]

A Certification of Closure was submitted to Georgia EPD for the CVR Unit on January 11, 2002, signed by a representative of Delta and by an independent registered Professional Engineer. A *Closure Soil Sampling Report* and Certifications for the DPB and DSB Units, and the associated UST System were submitted to EPD in June 2006. EPD approved the Closure Certifications for the DPB, DSB and UST System in a letter dated August 26, 2006. After these units were closed, the greater than 90-day hazardous waste storage requirements for containers and tanks no longer applied to the TOC.

### PC-24b Survey Plat [40 CFR 270.14(b)(13); 264.116]

A survey plat of the CVR Unit, meeting the requirements of 40 CFR 264.116, was placed on file with the City of Atlanta on January 11, 2002, and was submitted to Georgia EPD.

### PC-24c Post-Closure Certification [40 CFR 270.14(b)(13); 264.120]

A post-closure certification for the CVR Unit, in accordance with 40 CFR 264.120, will be submitted upon completion of the post-closure care period.

### PC-24d Post-Closure Notices [40 CFR 270.14(b)(13) and (14); 264.119]

In accordance with 40 CFR 264.119, Delta submitted notification to the City of Atlanta and to Georgia EPD concerning the type, location, and quantity of the wastes disposed in the CVR Unit on January 10, 2002. In accordance with CFR 264.119, "*Notification Concerning Use of Land to Manage Hazardous Wastes*," was recorded in the Clayton County Deed Records on March 7, 2002, providing notice that the land has been used to manage hazardous waste and that its use is restricted. Delta submitted to Georgia EPD a certification of the recordation of this document, together with a copy of the document that was filed.

## PC-25 Post-Closure Cost Estimate [40 CFR 270.14(b)(16); 264.144]

A post-closure cost estimate for the CVR Unit has been prepared in accordance with 40 CFR 264.144. The post-closure cost estimate is provided in Table B-2. The estimate accounts for the cost of third-party services required to administer, operate, monitor, and maintain the post-closure care plan and its related tasks. The estimate will be updated annually.

### PC-25a Financial Assurance Mechanism for Post-Closure Care [40 CFR 270.14 (b)(16); 264.145; 264.151]

Delta Air Lines has selected a certificate of insurance to establish financial assurance for post-closure care. This certificate of insurance is also applicable to corrective action activities and provides adequate financial assurance for both. Delta Air Lines' Certificate of Insurance for

Corrective Action and Post-Closure Care is included in Attachment B-5 of this Permit Application.

### PC-25b Use of State-Required Mechanisms [40 CFR 270.14 (b)(18); 264.149]

Not applicable.

### PC-25c State Assumption of Responsibility [40 CFR 270.14 (b)(16); 264.145; 264.151]

Not applicable.

## PC-26 Solid Waste Management Units [40 CFR 270.14 (d)(1); 264.101]

Delta has previously identified eight areas as SWMUs 1 through 8 at the TOC based on information from the April 19, 1991, RCRA Facility Assessment (RFA) and subsequent investigations. These SWMUs are identified as follows along with the current classification of those SWMUs into Project Areas, using the terminology in the *SAPE Reports*. These SWMUs and/or Areas are being addressed along with the CVR Unit per Section VI of the existing Permit entitled "Corrective Action Plan and Groundwater Protection Standard for Existing Solid Waste Management Units."

| SWMU No. | AREA No. | SWMU Identification |
|---|---|---|
| 1 | 1 | Underground Storage Tanks (A through F) |
| 2 | 1 | (2A) Varsol Underground Piping under the TOC-1 Building and Adjacent Test Cell Building |
|  | 1 | (2B) Former Varsol Product Tank, Varsol Distillation Unit and Associated Underground Piping |
| 3 | 1 | Wastewater Treatment Unit and Appurtenances Used in Waste Management |
| 4 | 1, 3 & 5 | Fuel Storage and Defueling Tanks Adjacent to TOC-1, TOC-2, and TOC-3 |
| 5 | 1 | Settling Ponds |
| 6 | 1 | Old Plating Shop Floor Pits |
| 7 | 5 | Bay 5 Extension Fuel Leak |
| 8 | 4 | East End Fill Area |
|  |  |  |

An RFI for SWMUs 1 through 8 was conducted and a report was prepared and submitted to Georgia EPD in July 1997 (See Attachment B-4 – *RFI Report*). The descriptions of SWMUs 1 and 3 through 8, provided in the following narrative, were summarized from this report. The results of soil and groundwater samples collected during the investigation are presented in the July

1997 *RFI Report* (Attachment B-4). A description of SWMUs 2A and 2B is also provided. Figure B-8 through Figure B-13 illustrate the locations of the SWMUs. As noted, the SWMUs have been grouped into Areas in the *SAPE Reports* submitted to EPD.

### PC-26a Characterization of the SWMUs [40 CFR 270.14(d)(1)]

SWMU characterizations are presented below. Additional information may be found in the *RFI Work Plan for SWMUs 1 – 8* (Parsons, 1996), and 1997 *RFI Report*, as well as *SAPE Reports*. Each SWMU is cross-referenced to its corresponding project area per the Semi-Annual Report terminology. The 1997 *RFI Report* is included as Attachment B-4 to provide additional details of investigation activities and summaries of data collection from the corresponding SWMUs.

#### SWMU 1 – Underground Storage Tanks A – F (Area 1)

SWMU 1 consists of Former USTs A, B, C, D, E, and F. The six tanks, collectively identified as SWMU 1, were formerly used to store waste oil, waste thinner, and contaminated fluids. The tanks were removed during Phase I of an underground storage tank closure program in 1988. They were dismantled and either removed as scrap or taken to an RCRA disposal facility. During the implementation of the Phase I program, soil, and groundwater in the vicinity of the removed tanks were found to be contaminated. Five monitoring wells were installed at the TOC for the Phase I program. Historical releases have been addressed through corrective action activities, including free-product recovery, groundwater recovery and monitoring. Figures B-8 and B-9 illustrate the location of SWMU 1.

*UST A:*

Tank A was a 5,000-gallon waste oil tank (dimensions unknown) located northeast of the Waste Treatment Control Building in the TOC area. UST A, installed in 1968, was no longer in service by the time it was removed in May of 1988. The tank was made of steel with an external paint seal, and it was reportedly intact with no holes when removed in 1988. Tank A periodically received untreated oily wastewater. There were no known releases or spills from UST A.

*UST B*

Tank B was a 1,000-gallon (dimensions unknown) tank located south of the fuel pump pad in the TOC area. It received spilled Jet A fuel and, possibly, Jet A fuel leakage from the defueling filter. It was installed in 1970 and removed in April of 1989. The tank was empty, clean, and not in service when removed. There were no known releases or spills from UST B.

*UST C*

Tank C was a 1,000-gallon waste oil tank (dimensions unknown) located on the southeast corner of TOC-2. The tank contained used motor oil from the Ground Support Equipment (GSE) vehicles such as tugs and pickup trucks. It was installed in 1971 and removed in May of 1988. The tank was empty, clean, and not in service when removed. There were no known releases or spills from UST C.

*UST D*

Tank D, a 2,000-gallon tank (dimensions unknown) for storage of waste thinner up to 90 days, was located west of the fuel pump house in the TOC area. UST D was used to store paint and waste thinner from spray guns. It was installed in 1960 and removed in May of 1988. There reportedly were holes in the bottom of the tank when the tank was removed. Because of the nature of the waste and the condition of the tank when removed, a recovery well was installed in the area of the former tank location as part of the corrective action program. Due to the proximity to the CVR Unit, there appears to be a commingling of impacted groundwater in this location.

*UST E*

Tank E, a 10,000-gallon tank (dimensions unknown) used for storage of contaminated fluids for up to 90 days, was located southwest of the fuel pump house in the TOC area. UST E was used to store contaminated fluids consisting mostly of oil, paint stripper, and waste paint. It may also have contained solvents. The tank was installed in 1960 and removed in May of 1988. It reportedly had no bottom when removed. Because of the nature of the waste and the condition of the tank when removed, a recovery well was installed in the area of the former tank location as part of the corrective action program. Due to the proximity to the CVR Unit, there appears to be a commingling of impacted groundwater in this location.

*UST F*

Tank F, a 5,000-gallon tank (dimensions unknown) used for storage of waste oil up to 90 days, was located on the southwest corner of the fuel pump house in the TOC area. UST F was used to store lubricating and hydraulic oil from aircraft engines. The tank was installed in 1960 and removed in May 1988. There reportedly were holes in the bottom of the tank when the tank was removed. Because of the nature of the waste and the condition of the tank when removed, a recovery well was installed in the area of the former tank location as part of the corrective action program. Due to the proximity to the CVR Unit, there appears to be a commingling of impacted groundwater in this location.

## SWMU 2 – Former Varsol Reclamation System (Area 1)

SWMU 2, which consists of SWMU 2A and SWMU 2B (see Figures B-3 and B-9), is associated with Delta's former Varsol reclamation and distribution system installed in 1960. Used Varsol from parts cleaning booths in the TOC Building 1 was drained into a Varsol distillation unit, where it was recycled and reclaimed before being piped to a 20,000-gallon (dimensions unknown) underground Varsol product storage tank. In 1988, a tightness test revealed that the 6,000-gallon (dimensions unknown) underground reclaim tank did not have integrity. Upon removing the tank and associated piping, Delta discovered that used Varsol had been released to the surrounding soils, and Delta reported the release to Georgia EPD. Some contaminated soils could not be removed due to their proximity to large structures and the possibility of excavation causing structural damage.

Stewart-Brown Industrial contracted with Delta in 1999 to permanently close the out-of-service Varsol reclamation system. The closure of the system consisted of the removal of the various mechanical components, in-place closure of the Varsol reclaim sump (dimensions unknown) and grouting/plugging of associated pipelines. The portions of the system closed/decontaminated consisted of approximately 1,500 linear feet of underground pipeline, 300 linear feet of aboveground pipeline, and the Varsol distillation unit and associated equipment.

Historical releases have been addressed through ongoing corrective action activities of groundwater recovery, free-product recovery and monitoring as applies to SWMU-1 (i.e., recovery wells RW-5, RW-9, and H with pumping, as needed). The location of SWMUs 2A and 2B is illustrated on Figures B-8 and B-9 and discussed further in the 1997 *RFI Report* included as Attachment B-4.

*SWMU 2A*

SWMU 2A is comprised of the Varsol underground piping beneath the TOC-1 Building and adjacent Test Cell Building. The former Varsol reclamation and distribution system drained Varsol for parts cleaning through an underground piping network linked to several booths within TOC-1. As additions were constructed to the west side of TOC-1, portions of the underground piping were expanded to the new areas. As of July 1, 1997, Delta discontinued the use of underground piping. As part of the assessment and closure of the Varsol reclaim sump in 1999, a total of 15 drainage hub inlets were identified as connecting to the Varsol gravity drainage system of pipelines. All pipelines were determined to be 3-inch diameter which all terminated into single pipeline leading to the reclaim sump. The Varsol network of piping was subsequently flushed with water and then pressure grouted. The reclaim sump was drained, cleaned, and grouted with concrete to the existing surface and surrounding concrete pavement. SWMU 2A is monitored as Area 1 in the *SAPE Reports*.

*SWMU 2B*

SWMU 2B is comprised of the Varsol distillation unit, the 20,000-gallon Varsol product storage tank, and associated underground piping. The distillation unit was used to reclaim used Varsol from the TOC-1 booths. The reclaimed Varsol was piped underground from the distillation units to the 20,000-gallon underground Varsol product storage tank. The short segments of underground piping from the distillation unit were closed in place. The Varsol distillation unit was removed from service on February 6, 1996. The 20,000-gallon underground product storage tank was used to store new and/or reclaimed Varsol from

1960 to 1997. In 1997, the tank was removed from service and replaced with a 10,000-gallon aboveground Varsol product storage tank.

As part of closure in 1999, all electrical, steam, and piping connections associated with the Varsol distillation unit, and the pumps were disconnected. After removal of the piping and pumps, the distillation unit was cleaned. All fluids were processed through the wastewater treatment system. Following decontamination, the unit was transported to Delta's scrap metal storage yard. SWMU 2B is addressed as part of Area 1 in the *SAPE Reports*.

## SWMU 3 – Wastewater Treatment Unit and Appurtenances Used in Waste Management (Area 1)

Delta operates wastewater treatment systems for plating waste and oily waste at the TOC. The wastewater treatment plant was built in 1968 and was expanded in 1986. Figures B-8 and B-9 illustrate the location of SWMU 3.

The metals plant treats cyanide wastewater, chrome wastewater, and miscellaneous wastewater from Delta's electroplating operations. Approximately 50,000 gallons per day (gpd) are treated by unit operations/processes that include flow equalization, initial treatment (cyanide destruction and reduction of hexavalent chromium), neutralization, flocculation, clarification, and aeration. The treated wastewater is retained in effluent holding tanks for sampling. After sampling, the effluent is discharged to the City of Atlanta sewer system under Permit Number F030-001.

The oily waste plant treats miscellaneous wastewater from Delta's TOC shop operations. Approximately 250,000 gpd are treated by unit operations/processes that include influent pumping, grit removal, two primary clarifiers (also called solids contact clarifiers or SCCs), an aeration basin for biological treatment, and a secondary clarifier (also called a final clarifier). The treated wastewater is sampled in a new effluent monitoring flume and discharged to the City of Atlanta sewer system under Permit Number F030-003. The original Oxidation Ditch #1 was the subject of a voluntary study in August 2011 for evaluation of potential re-use options prior to the decision to upgrade the WWTP in 2014 - 2015. The results of the study were provided to Georgia EPD in the "*Semi-Annual Corrective Action System Performance Effectiveness Report*" (December 2011) and in the "*Investigation Results and Evaluation of Response Options Report*", dated November 15, 2012. The upgrades included the conversion of one of the three Emulsion Break Tanks (EBTs), which serve as additional wastewater storage for the facility, into the aeration tank for biological treatment; and demolition of the former Oxidation Tank #2 to repurpose a location for the new secondary clarifier.

Corrective action activities within the SWMU-3 area include groundwater recovery and monitoring (i.e., recovery wells RW-7, RW-8, and MW-3, as needed). See Attachment B-4 (*RFI Report*) for additional details and sampling and analysis data from SWMU 3. SWMU-3 is included within Area 1 in the *SAPE Reports*.

## SWMU 4 – Fuel Storage and Defueling Tanks Adjacent to TOC-1, TOC-2, and TOC-3 (Area 1 & 3 & 5)

**SWMUs 4-A through 4-G:** SWMUs 4A through 4G are former fueling/de-fueling pits that were installed in 1970 as part of the fueling/defueling system in and adjacent to TOC-1 and TOC-2 and were later abandoned in-place with concrete in 1987. Each of these pits have the same dimensions (length of 9 feet, 2 inches, width of 2 feet, and depth of 2 feet, 10 inches). These seven pits are located in Bays 6, 7, 8, and 9 (active aircraft maintenance areas) of TOC-2. Each pit was constructed of concrete walls and is covered with a heavy steel plate (in several sections) that lies flush with the concrete slab in the aircraft bay. Figures B-8 and B-11 illustrate the locations of SWMUs 4A through 4G.

Two four-inch jet fuel supply pipes and one six-inch fuel oil drainpipe entered each pit through the bottom. These pipes supplied jet fuel to and drained jet fuel from parked aircraft. A small drain was installed in each pit floor to remove spillage or floor wash water to Delta's industrial sewer system. According to construction drawings, the pit drain feeds a U-trap that feeds into a three-inch sewer lateral that is approximately 10 feet long. The three-inch lateral then joined a six-inch industrial sewer line that eventually drains to Delta's wastewater treatment plant.

In the former fueling/defueling pits in SWMUs 4A through 4G, the debris has been removed, the drains have been blocked, and the pits have been filled with concrete. According to the RFI, cadmium detected in the debris removed from the pits is suspected to have originated from Delta's former practice of polishing aircraft wheels inside the aircraft bays and was unrelated to the fueling/defueling function of the pits. The RFI also indicates that pits 4A through 4G do not appear to be a source of ongoing contamination because the debris has been removed and they have been filled with concrete when abandoned in place in 1987. See Attachment B-4 (*RFI Report*) for additional details and results of sampling and analyses for these SWMUs. Although future impacts to groundwater associated with these SWMUs are not anticipated (and have not been observed), those potential impacts would be addressed through the corrective action product recovery wells RW-15, RW-16, RW-17, and RW-18. These wells are located downgradient of these SWMUs and identified as Area 5 in the *SAPE Reports*.

**SWMUs 4-H and 4-I:** SWMUs 4H and 4I were two additional fueling/defueling vaults that were also installed in 1970 as part of the fueling/defueling system in and adjacent to TOC-1 and TOC-2 and were later abandoned in-place in 1987. These two vaults were located off the apron on the north side of TOC-2 and were of the following dimensions (2 feet wide, 9 feet long and 3 feet deep). Two four-inch jet fuel supply pipes and one six-inch fuel oil drainpipe enter the vault through the bottom. These pipes were used to supply jet fuel to and drain jet fuel from parked aircraft. A small drain is installed in the vault floor to remove spillage. This area has been addressed by corrective actions (via free-product and dissolved phase removal from recovery wells RW-12, RW-14, and other monitoring wells). These correction action activities are described and identified as Area 3 in the *SAPE Reports*.

According to a 1970 piping drawing, the floor drainpipes from SWMUs 4-H and 4-I fed into a 6-foot by 3-foot-deep adjacent gravel-filled vault that was covered with roofing felt material and backfill. The top of the gravel was at the same elevation as the pipes. The drawing shows that the gravel vault was to be installed to the west of SWMU 4-I. No evidence of this gravel vault was observed during a prior review of the area.

See Attachment B-4 (*RFI Report*) for additional details and sampling and analysis data from these SWMUs. As previously noted, ongoing corrective actions for the SWMUs have been documented in *SAPE Reports* (as Area 3) over the years.

**SWMU 4-J:** SWMU 4-J was an 11,000-gallon UST (with dimensions of 17 feet, 2 inches in length and 10 feet, 6 inches in diameter) that was installed in 1970 as part of the fueling/defueling system located between TOC-1 and TOC-2. This tank was installed in 1970 and abandoned in place in 1987. It is located on the east side of Area 1. See Attachment B-4 (*RFI Report*) for additional details and sampling and analysis data from these SWMU.

**SWMU 4-K:** SWMU 4-K is the location of a former aboveground fuel storage tank (AST) northwest of TOC-1. This former tank was approximately 32 feet high by 50 feet in diameter (470,000 gallons). The tank formerly supplied jet fuel to four engine test cells and to the auxiliary power unit test cell located at the west end of the TOC. The fuel storage tank was originally installed in 1970 and the closure date is unknown. There were no known releases from the fuel storage tank itself, although there were fuel leaks from the piping that formerly ran from the pump pad (located south of the fuel storage tank) to the defueling tank and pits. These fuel leaks have been addressed under Delta's corrective actions (groundwater recovery at RW-7, RW-8, H, and MW-3, as needed) and the area is included within Area 1 in the *SAPE Reports*.

## SWMU 5 – Settling Ponds (Area 1)

Delta used the Settling Ponds in the 1970s as a final polishing step in the wastewater treatment process. The wastewater was generated from cleaning and plating operations. Three of the Settling Ponds were taken out of service in the 1970's and the final Settling Pond was taken out of service in 1980. The ponds were drained, excavated, and then backfilled to grade. The area is currently paved. Delta's closed DPB, DSB, and the associated UST Systems were also situated within the Settling Pond's former location. The DSB, DPB and associated UST System Units were closed in 2006. Figures B-8 and B-9 illustrate the location of SWMU 5.

The approximate dimensions of the final rectangular Settling Pond were as follows:

- Surface – 210 ft. X 120 ft.
- Base – 115 ft. X 30 ft.
- Depth – 12 ft.

The dimensions of the three earlier ponds were similar based on comparison of aerial photography and drawings. SWMU 5 has been addressed by Delta's ongoing corrective action activities (i.e., closure of units situated within the former pond and via recovery wells RW-3A, MW-3, and RW-7, as needed and groundwater monitoring). See Attachment B-4 (*RFI Report)* for additional details and sampling and analysis data from SWMU 5. SWMU 5 is located within Area 1 in the *SAPE Reports*.

## SWMU 6 – Old Plating Shop Floor Pits (Area 1)

The Old Plating Shop was operational prior to 1971, based on review of the 1971 engineering drawings for the expansion of the industrial waste treatment plant and was decommissioned in the fall of 1991. The decommissioning is documented in the Old Plating Shop Decommissioning Project Records. The pit floors were observed to be in good structural condition and were left in place. The pits were filled with No. 57 stone and paved over with six inches of concrete. A parts storage area now lies above the location of the old floor pits. Figures B-8 and B-9 illustrate the location of SWMU 6 (dimensions are unknown).

During the decommissioning, borings were made through the shop floor, and soil and groundwater samples were collected. Based upon the analytical results and the fact that the location is now paved over, no further investigation of this SWMU was conducted during the RFI. This area is in close proximity to former SWMUs 1D, 1E, 1F and 2A and thus, has been addressed as part of ongoing corrective action activities (i.e., free-product recovery, dissolved COC recovery in RW-5, RW-9, and H, as needed). SWMU 6 is included within Area 1 in the *SAPE Reports*.

## SWMU 7 – Bay 5 Extension Fuel Leak (Area 5)

In June 1990, 2 to 3 inches of product were observed in an excavation associated with the construction of the Bay 5 hangar addition. The excavation was located at the northwest corner of the existing hangar. The suspected source of the product was a 2-inch fuel oil supply pipeline located under the slab within the existing Bay 5. The pipeline was reportedly abandoned in place in 1986.

In response to discovery of the release, Delta installed three sumps and four recovery wells (RW-15, RW-16, RW-17, and RW-18) in the construction area in June of 1990. The sumps were installed in the corners of the Bay 5 Extension and were dug to intercept the water table. The recovery wells (4-inch diameter) were installed to an approximate depth of 30 feet. Delta removed 418 cubic yards of contaminated soil associated with the sump excavations. Approximately 4,150 gallons of free product were pumped from the recovery wells and the sumps.

Delta conducted an initial site assessment in conjunction with the response activities described above. Assessment of this SWMU is documented in the Initial Site Assessment Report for the Bay 5 Hangar Addition. Analyses of free product samples identified the product as No. 2 fuel oil.

Free product recovery was terminated in 1990 due to concerns that the groundwater pumping was causing settling in the nearby apron and in the hangar. These sumps were backfilled with clean fill.

The four recovery wells are located beneath the floor of the aircraft hangar at Bay 5. The four wells were connected with a header pipe, which was terminated and capped below the concrete slab approximately 5 feet outside the south wall of Bay 5.

SWMU 7 is now covered by the Bay 5 Hangar addition, which is an active aircraft maintenance hangar. The floor of the hangar consists of 12- to 18-inch-thick concrete. Based on the results of the Initial Site Assessment, petroleum contaminated soils may exist under the hangar, adjacent to and below the fuel line. However, the extensive concrete cover prevents infiltration of storm water and should therefore minimize leaching of residual soil contamination to the groundwater. Historic groundwater monitoring downgradient of the SWMU 7 demonstrates that migration of product and/or impacted groundwater has not occurred. Figures B-8 and B-13 illustrate the location of SWMU 7. See Attachment B-4 (*RFI Report*) for additional details and sampling and analysis data from SWMU-7. SWMU 7 is included within Area 5 in the *SAPE Reports*.

### SWMU 8 – East End Fill Area (Area 4)

The excavated material from the Settling Pond (SWMU 5) was placed as a fill material in the East End Fill Area in or about 1980. This SWMU was previously investigated (dimensions approximately 220 ft by 380 ft) and is currently the location of an Engine Test Cell facility. Figures B-8 and B-11 illustrate the location of SWMU 8. See Attachment B-4 (*RFI Report*) for additional details and sampling and analysis data from SWMU 8. Product was never detected in this area and the four monitoring wells previously installed in this area were abandoned in 2017, as documented in the *SAPE Reports*.

### PC-26b No SWMUs

Not applicable

### PC-26c Releases [40 CFR 270.14 (d)]

Detailed information on releases can be found in the 1996 *RFI Work Plan*, the 1997 *RFI Report* (See Attachment B-4 for SWMUs 1 through 8), and *SAPE Reports*. Delta has conducted corrective action to address releases.

## PC-27 Part B Certification [40 CFR 270.11]

The signed Part B certification is provided as Attachment B-6.

## PC-28 Exposure Assessment for the Post-Closure Unit [40 CFR 270.10 (j)]

As outlined in 40 CFR 270.10(j), any Part B post-closure permit application submitted after August 8, 1995, must include an assessment of the potential for the public to be exposed to hazardous wastes or hazardous constituents through releases related to units being permitted for post-closure. The exposure assessment for the CVR Unit includes the following information: reasonably foreseeable potential releases, potential pathways of human exposure, and potential magnitude and nature of exposure.

### PC-28a Reasonably Foreseeable Potential Releases

Currently, the CVR Unit is closed and does not pose any risk of unplanned sudden or non-sudden releases of hazardous waste or hazardous constituents to air, soil, or surface water. A concrete pavement covers the post-closure unit to reduce infiltration and surface exposure.

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### PC-28b Potential Pathways of Human Exposure

The post-closure units are located within the TOC of the Hartsfield-Jackson Atlanta International Airport complex. Adjacent facilities include cargo facilities, flight kitchens, concourses, taxiways and runways, a traffic control tower, a Georgia Power Company substation, and a U.S. Postal Service Air Mail facility.

**Groundwater**

Hazardous constituents have been reported in groundwater beneath the post-closure unit. Releases are being addressed by corrective action, including periodic groundwater recovery, free product removal, and monitored natural attenuation. Groundwater flow beneath the post-closure unit (as well as other SWMUs, and AOCs) has not migrated off-site and is monitored by a robust network of wells per the SAP and groundwater monitoring program. In addition, a groundwater recovery system was used at the TOC for further hydraulic control as needed. Gradient control is being evaluated and may not be necessary at this time due to the extremely limited groundwater velocity and low conductivity of the subsurface matrix (see Figures B-5 and B-6). The potential magnitude and nature of human exposure to contaminated groundwater is discussed in Section PC-28c below.

**Surface and Subsurface Soil**

Surface and subsurface soil are not expected to be potential migration pathways. Most of the contaminated soils at the post-closure unit have been excavated, and a concrete pavement covers the post-closure unit (as well as other SWMUs and AOCs). Although some contaminated subsurface soil has been left in place because of structures in close proximity, the concrete pavement prevents human contact and groundwater infiltration.

### Surface Water and Sediment

Surface water and sediment are not expected to be potential pathways of human exposure. The post-closure unit (as well as the SWMUs and AOCs) are located outside of the 100-year flood plain, and no surface waters or drainage and flood control barriers are present within 1,000 feet of the post-closure units. Additionally, groundwater flow beneath the closed unit (as well as other SWMUs and AOCs) is extremely limited due to assumed linear flow velocity and low conductivity due to the subsurface matrix (see Figures B-5 and B-6).

### Indoor and Outdoor Air

Air is not expected to be a potential pathway of human exposure. The post-closure unit is closed and covered with concrete pavement.

### PC-28c Potential Magnitude and Nature of Exposure

In 1990, Delta conducted a survey of public drinking water wells (Engineering-Science 1990). The survey included reviewing available documents from state agencies and contacting water authorities in Atlanta, East Point, College Park, Hapeville, Clayton County, and Fulton County. The survey found that no public wells were present within a 3-mile radius of the TOC. The area is serviced by public water supplies sourced from other areas. Additionally, the airport authority reported that no drinking water wells are located within airport boundaries.

Inadequate recharge of the residuum and shallow bedrock in the area limits the development of wells with large sustainable yields sufficient for municipal or industrial use. Highly variable and unsustainable yields were reported for bedrock dewatering wells installed during construction of the "people mover" tunnel at the airport.

The probability of human contact with contaminated groundwater is very low given industrial land use in the surrounding area, the absence of public water supply wells, and the low likelihood of installing municipal or industrial supply wells in an area with low groundwater yields. Limited human exposure to contaminated groundwater may occur during routine groundwater monitoring and sampling activities at the TOC. Because actual exposure parameters for industrial and airport workers are significantly lower than those used to determine groundwater protection standards (i.e., 8 hours per day, 250 days per year, for 25 years), exposure to groundwater contaminants is not expected to be significant.

## PC-29 Contingency Plan [40 CFR 270.14 (b)(7); 264 Subpart D]

The CVR (as well as the DSB, DPB and the associated UST System Units) is closed and does not pose risk of fire, explosions, or unplanned sudden or non-sudden releases of hazardous waste or hazardous constituents to the air, soil, or surface water. As such, the Contingency Plan requirements are not applicable.

## PC-30 Outline of Introductory and Continuing Training Programs [40 CFR 270.14 (b)(12); 264.16 (a)(1)]

The requirements of this section are not applicable.

## PC-31 Chemical and Physical Analyses [40 CFR 270.14 (b)(2); 264.13 (a)]

The post-closure Varsol unit is closed (as are the DSB, DPB and the associated UST System Units). No waste from on-site sources is currently being added to the units and no waste will be added in the future. As such this section is not applicable.

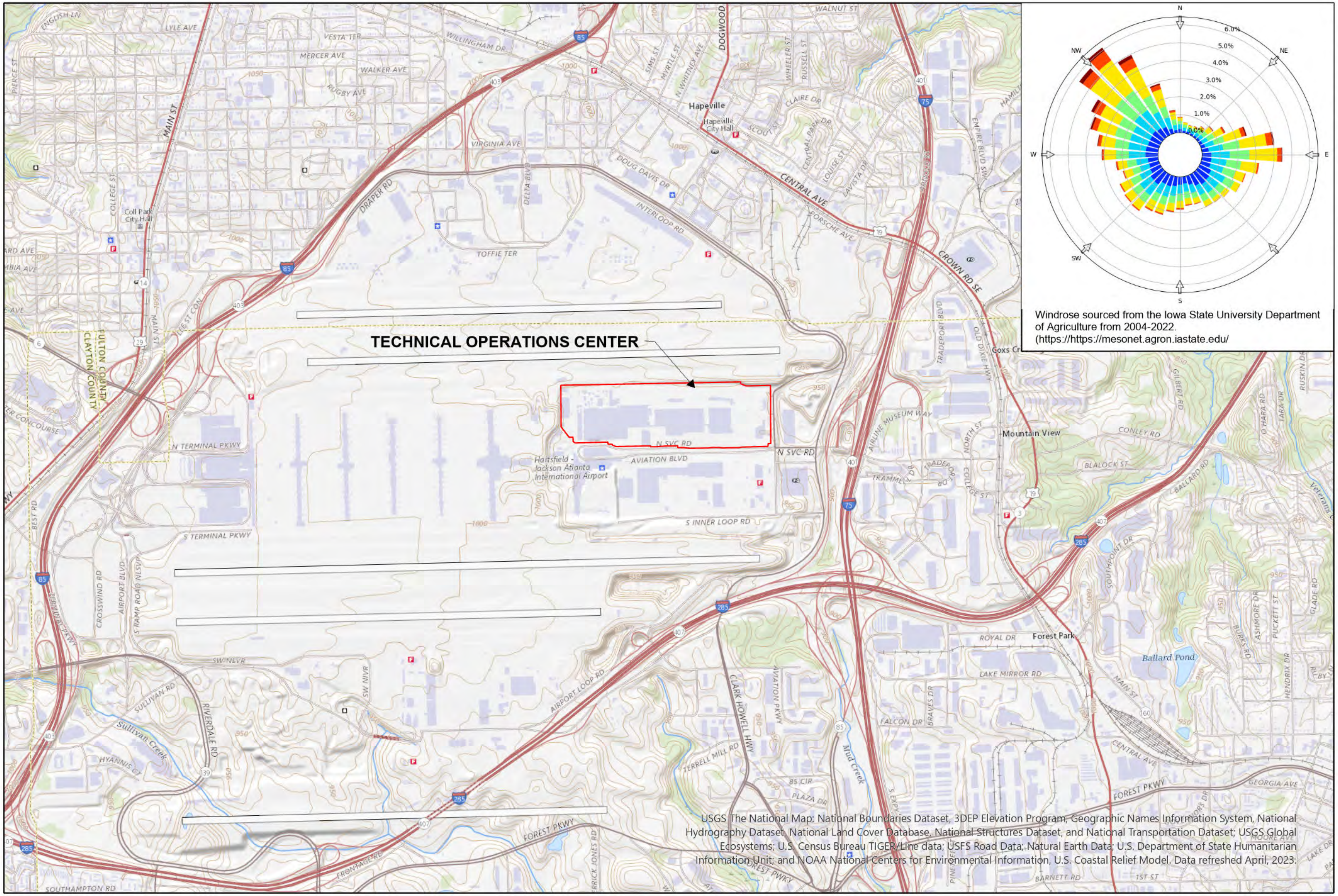
## PC-32 Waste Analysis Plan [40 CFR 270.14(b)(3), 264.13(b) and (c)]

Because the post-closure Varsol unit, (as are the DSB, DPB and the associated UST System Units) is closed and no longer receives any waste, a waste analysis plan is not applicable to this Permit Application.

## PC-33 Other Federal Laws [40 CFR 270.14(b)(20); 270.3]

The Federal laws identified in 40 CFR 270.3 are inapplicable to the activities addressed by this Permit Application.

# FIGURES



Windrose sourced from the Iowa State University Department of Agriculture from 2004-2022. (https://https://mesonet.agron.iastate.edu/

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed April, 2023.

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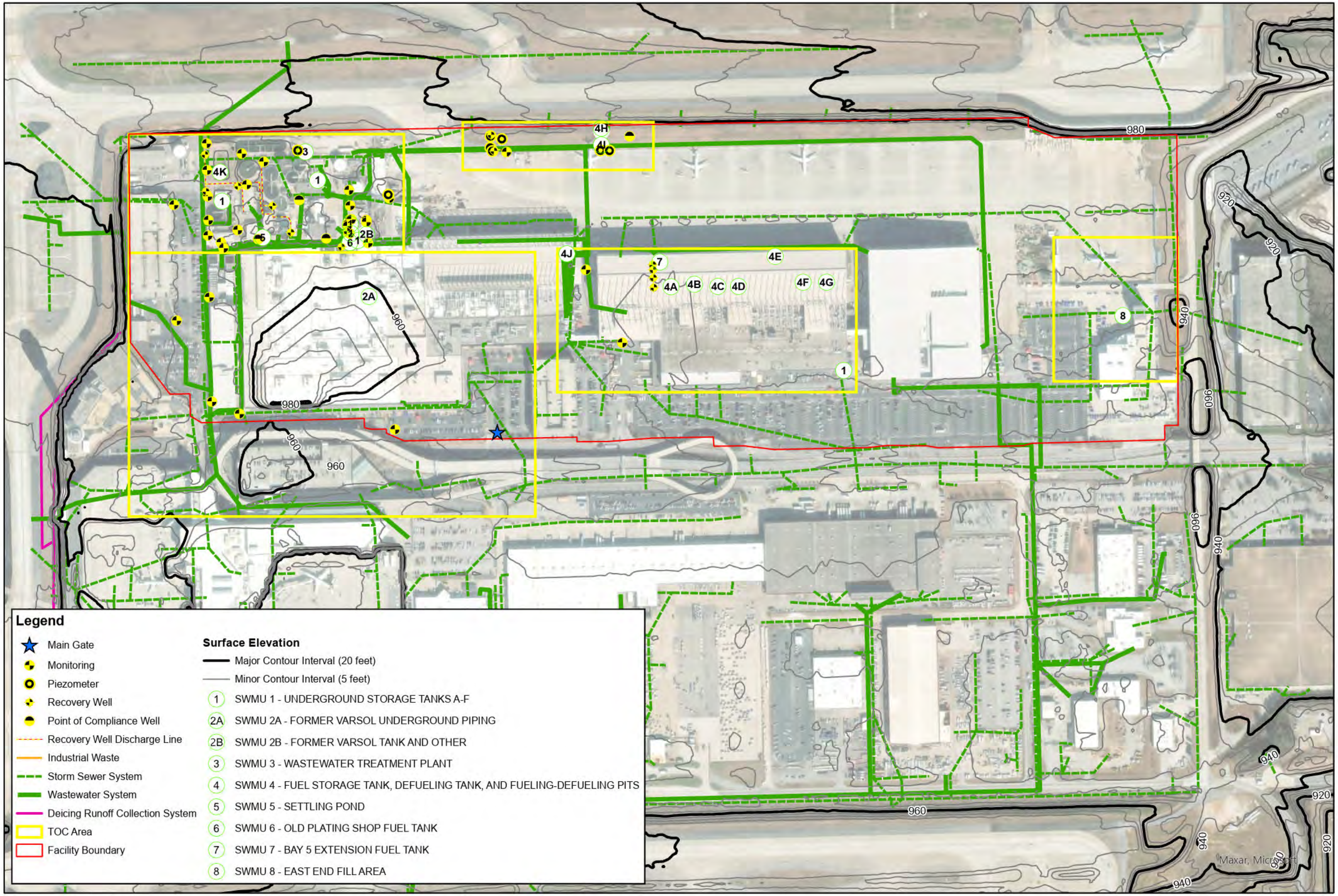
LOCATION AND
TOPOGRAPHIC MAP

SHEET NO.

FIGURE B-1



Map adapted from National Elevation Dataset courtesy of the U.S. Geological Survey, and from the Airport Master Plan Inventory, Ricondo & Associates, Inc., 2012. See figures B-9 through B-13 for additional detail.

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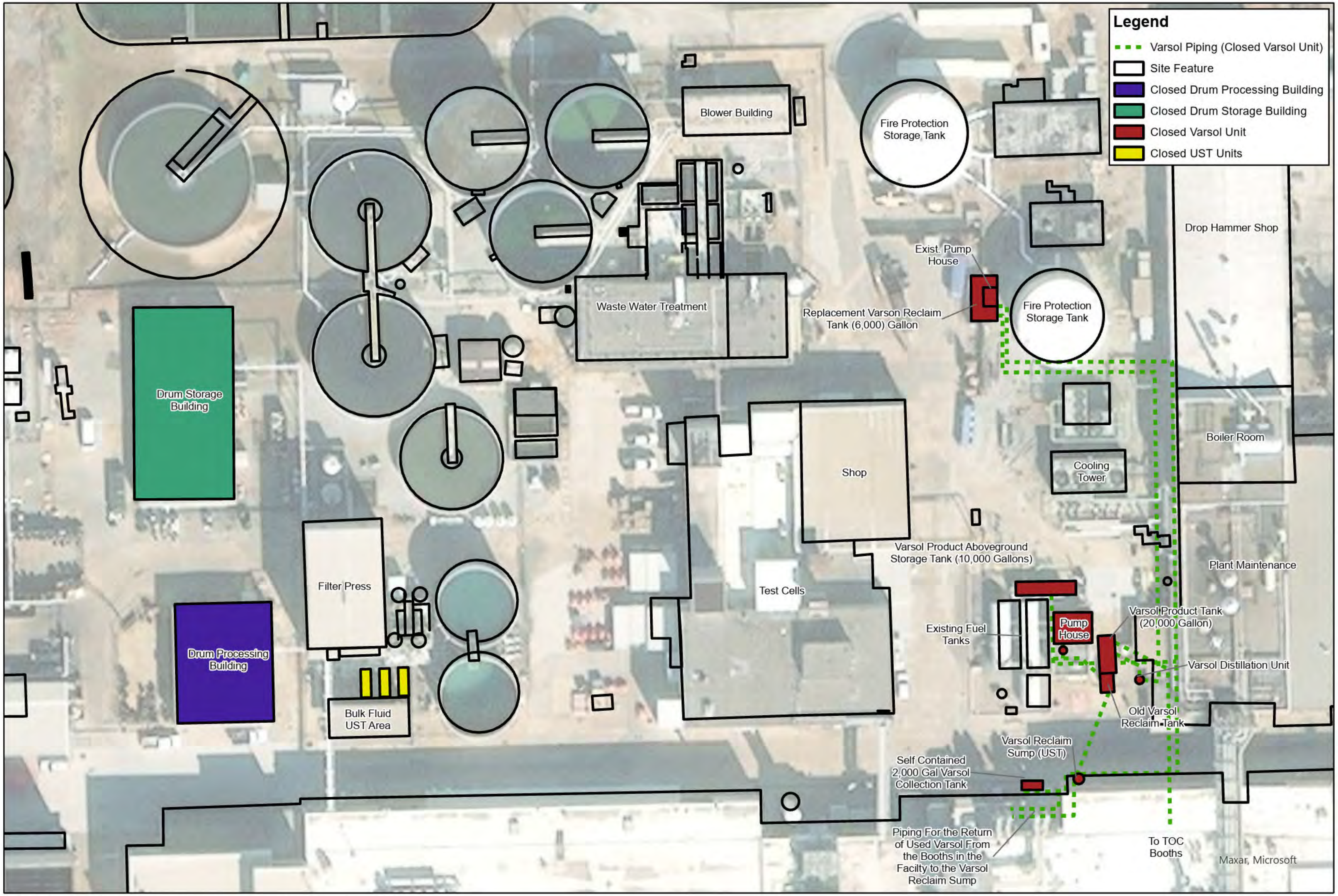
SHEET TITLE:

TECHNICAL OPERATIONS
CENTER (DETAILED MAP)

SHEET NO.

FIGURE B-2



Note site features and piping are based on previous reports and inspection of aerial photography.

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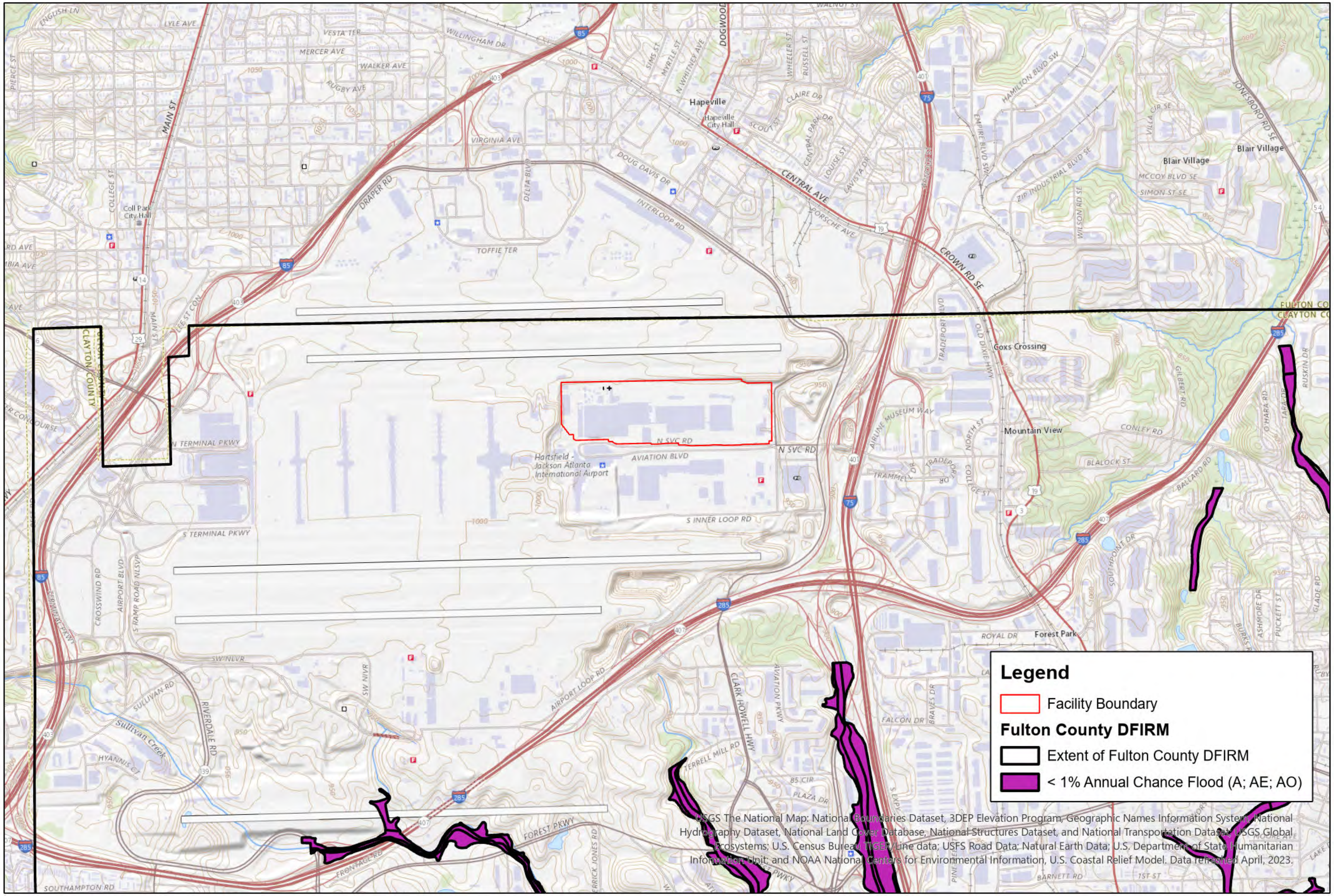
SHEET TITLE:

CLOSED REGULATED UNITS

SHEET NO.

FIGURE B-3



USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed April, 2023.

Map adapted from Federal Emergency Management Agency, June, 21, 2010, National Flood hazard Layer, Version 1.1.1.0, FEMA-NFHL, Washington, D.C. (https://msc.fema.gov).

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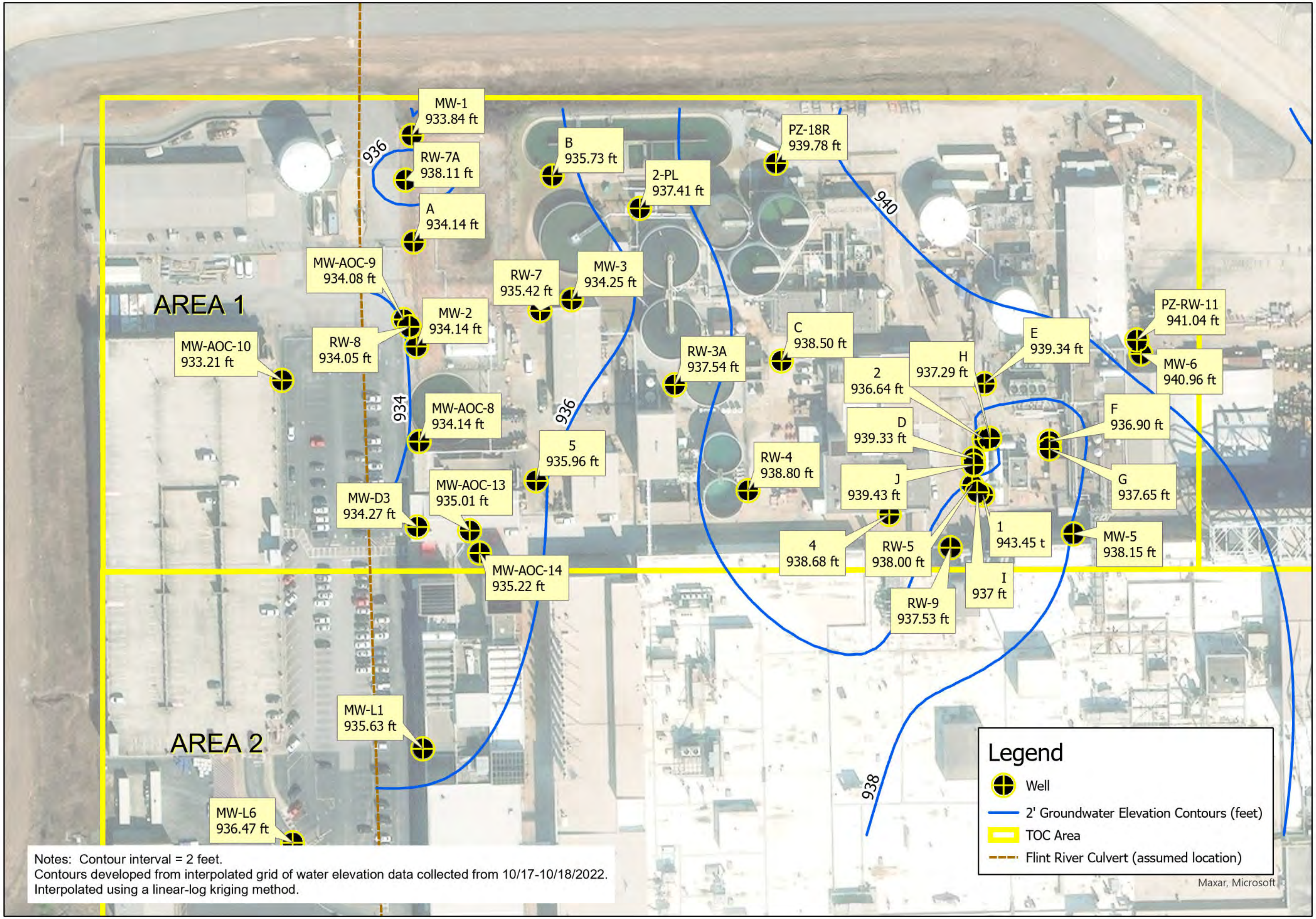
SHEET TITLE:

FLOOD INSURANCE
RATE MAP

SHEET NO.

FIGURE B-4



Notes: Contour interval = 2 feet.
Contours developed from interpolated grid of water elevation data collected from 10/17-10/18/2022.
Interpolated using a linear-log kriging method.

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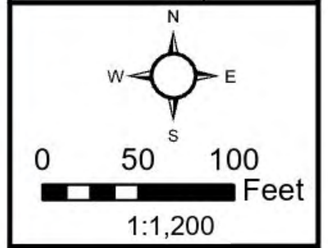

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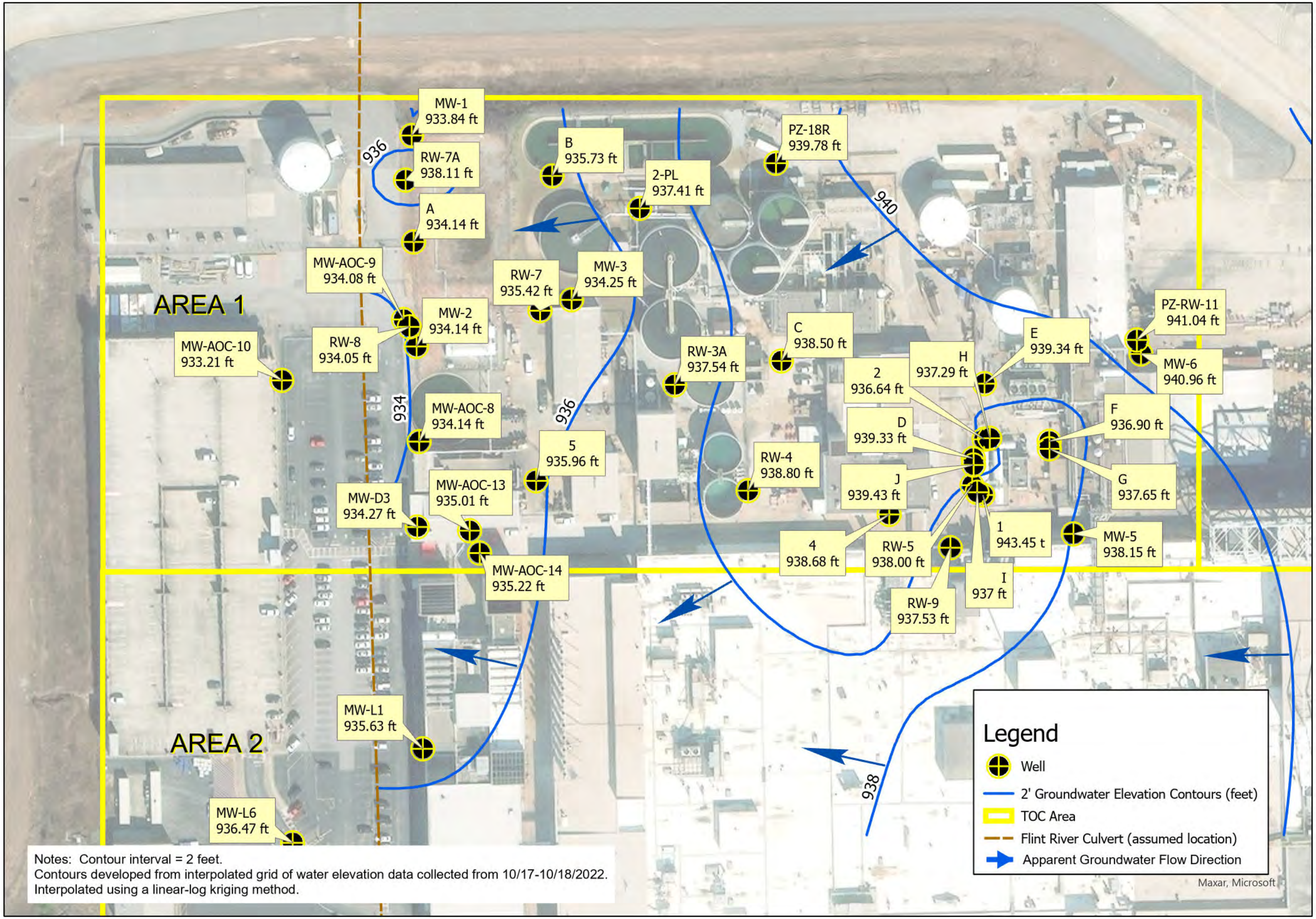
SHEET TITLE:

GROUNDWATER ELEVATIONS
OCTOBER 2022

SHEET NO.

FIGURE B-5



Notes: Contour interval = 2 feet.
Contours developed from interpolated grid of water elevation data collected from 10/17-10/18/2022.
Interpolated using a linear-log kriging method.

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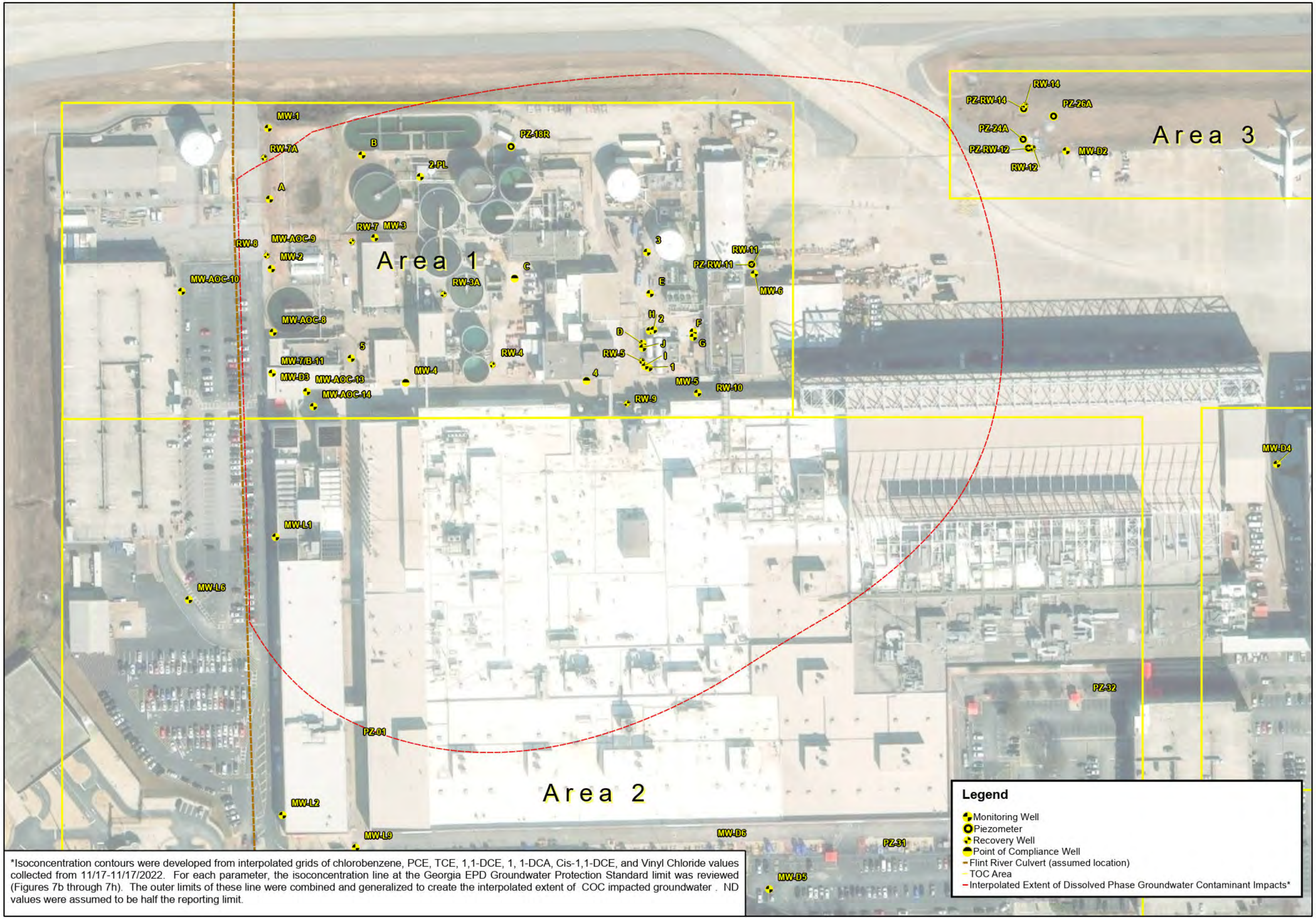
ATLANTA, GEORGIA

SHEET TITLE:

GROUNDWATER FLOW PATH
ANALYSIS OCTOBER 2022

SHEET NO.

FIGURE B-6



**Legend**

- Monitoring Well
- Piezometer
- Recovery Well
- Point of Compliance Well
- Flint River Culvert (assumed location)
- TOC Area
- Interpolated Extent of Dissolved Phase Groundwater Contaminant Impacts*

*Isoconcentration contours were developed from interpolated grids of chlorobenzene, PCE, TCE, 1,1-DCE, 1, 1-DCA, Cis-1,1-DCE, and Vinyl Chloride values collected from 11/17-11/17/2022. For each parameter, the isoconcentration line at the Georgia EPD Groundwater Protection Standard limit was reviewed (Figures 7b through 7h). The outer limits of these line were combined and generalized to create the interpolated extent of COC impacted groundwater . ND values were assumed to be half the reporting limit.

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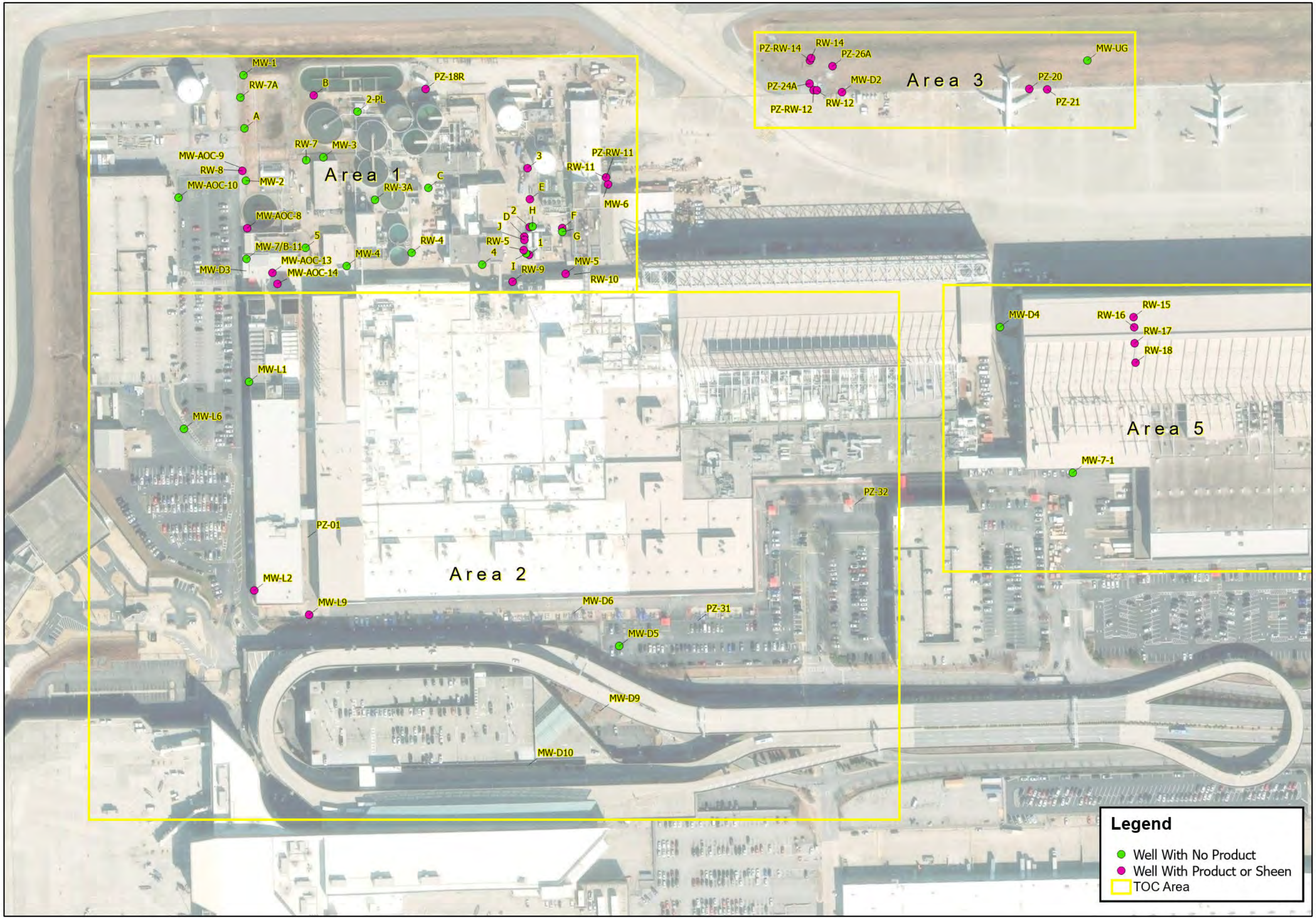
SHEET TITLE:

DISSOLVED PHASE
IMPACTED GROUNDWATER
NOVEMBER 2022

SHEET NO.

FIGURE B-7



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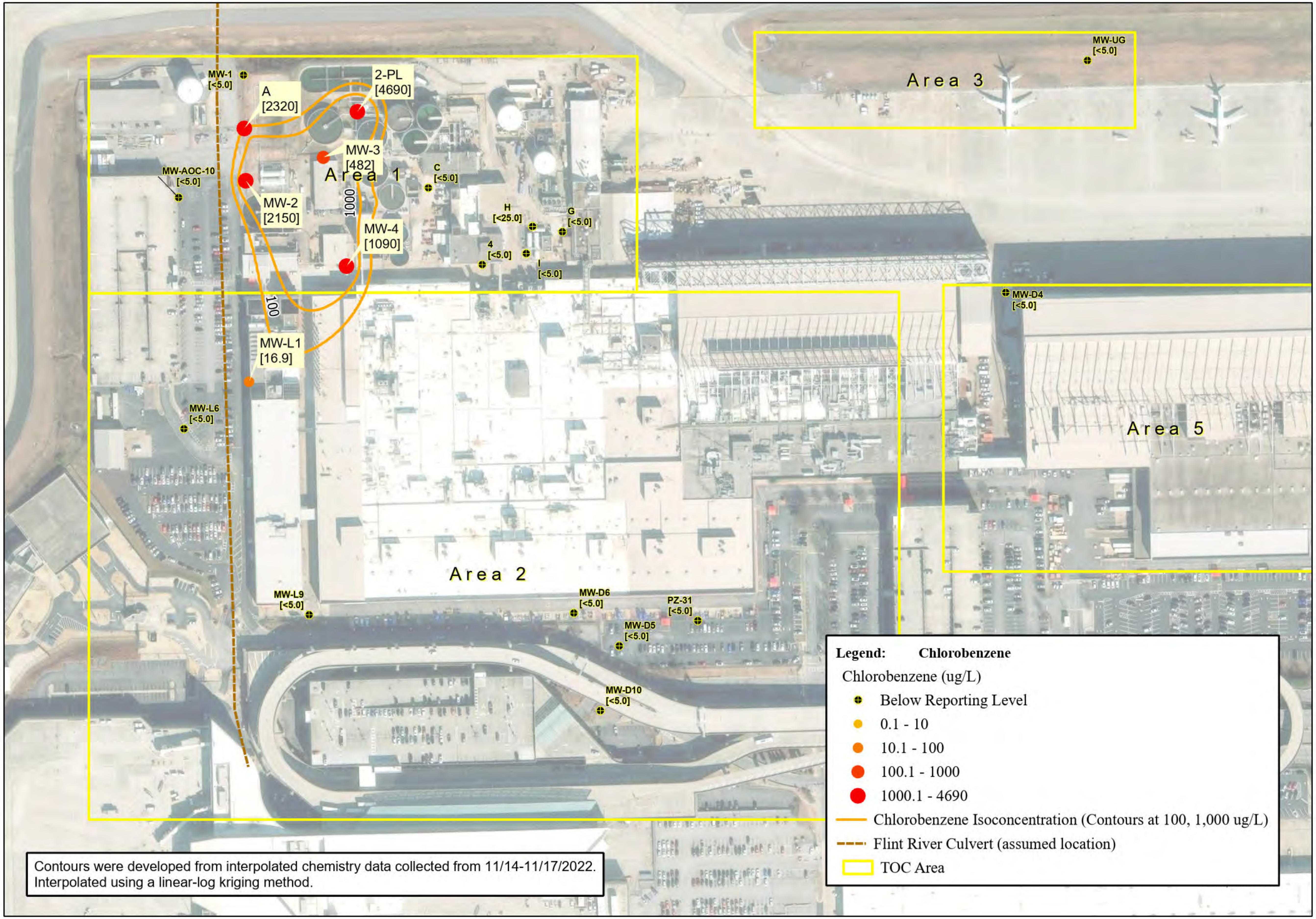
ATLANTA, GEORGIA

SHEET TITLE:

WELLS WITH FREE-PRODUCT OR SHEEN
2018-2022

SHEET NO.

FIGURE B-7a



**Legend: Chlorobenzene**

Chlorobenzene (ug/L)

- ⊕ Below Reporting Level
- ● 0.1 - 10
- ● 10.1 - 100
- ● 100.1 - 1000
- ● 1000.1 - 4690
- — Chlorobenzene Isoconcentration (Contours at 100, 1,000 ug/L)
- - - Flint River Culvert (assumed location)
- ▭ TOC Area

Contours were developed from interpolated chemistry data collected from 11/14-11/17/2022.
Interpolated using a linear-log kriging method.

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| SCALE: | AS SHOWN |
| PROJECT NO: | 4132 |

JOB DESCRIPTION:

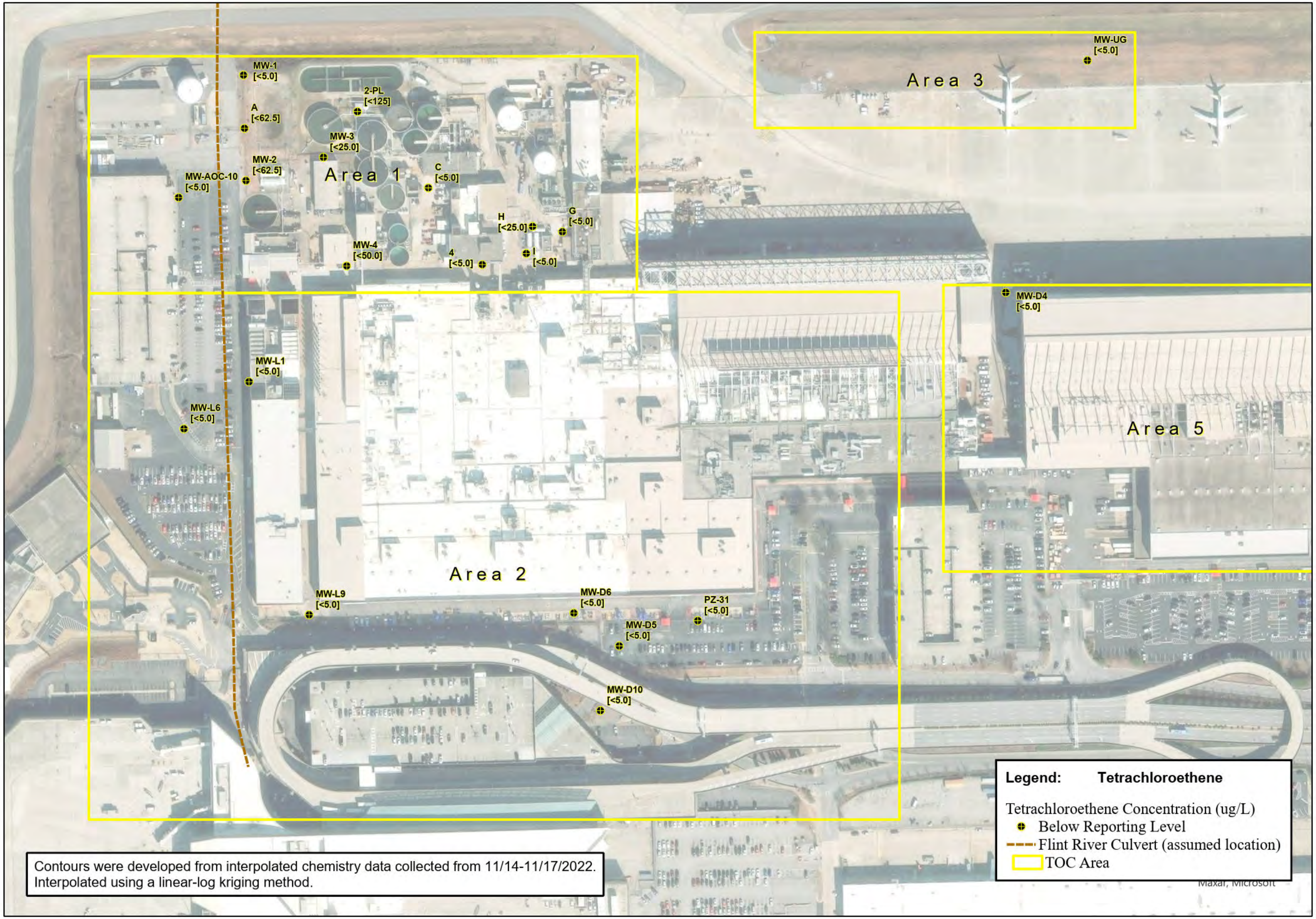
TECHNICAL OPERATIONS CENTER
HARTSFIELD-JACKSON ATLANTA
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

CHLOROBENZENE
ISOCONCENTRATION
11/14 - 11/17/2022

SHEET NO.

FIGURE B-7b



Contours were developed from interpolated chemistry data collected from 11/14-11/17/2022. Interpolated using a linear-log kriging method.

**Legend:** **Tetrachloroethene**

Tetrachloroethene Concentration (ug/L)

- ⊕ Below Reporting Level
- - - Flint River Culvert (assumed location)
- ▭ TOC Area

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| PROJECT NO: | 4132 |

JOB DESCRIPTION:

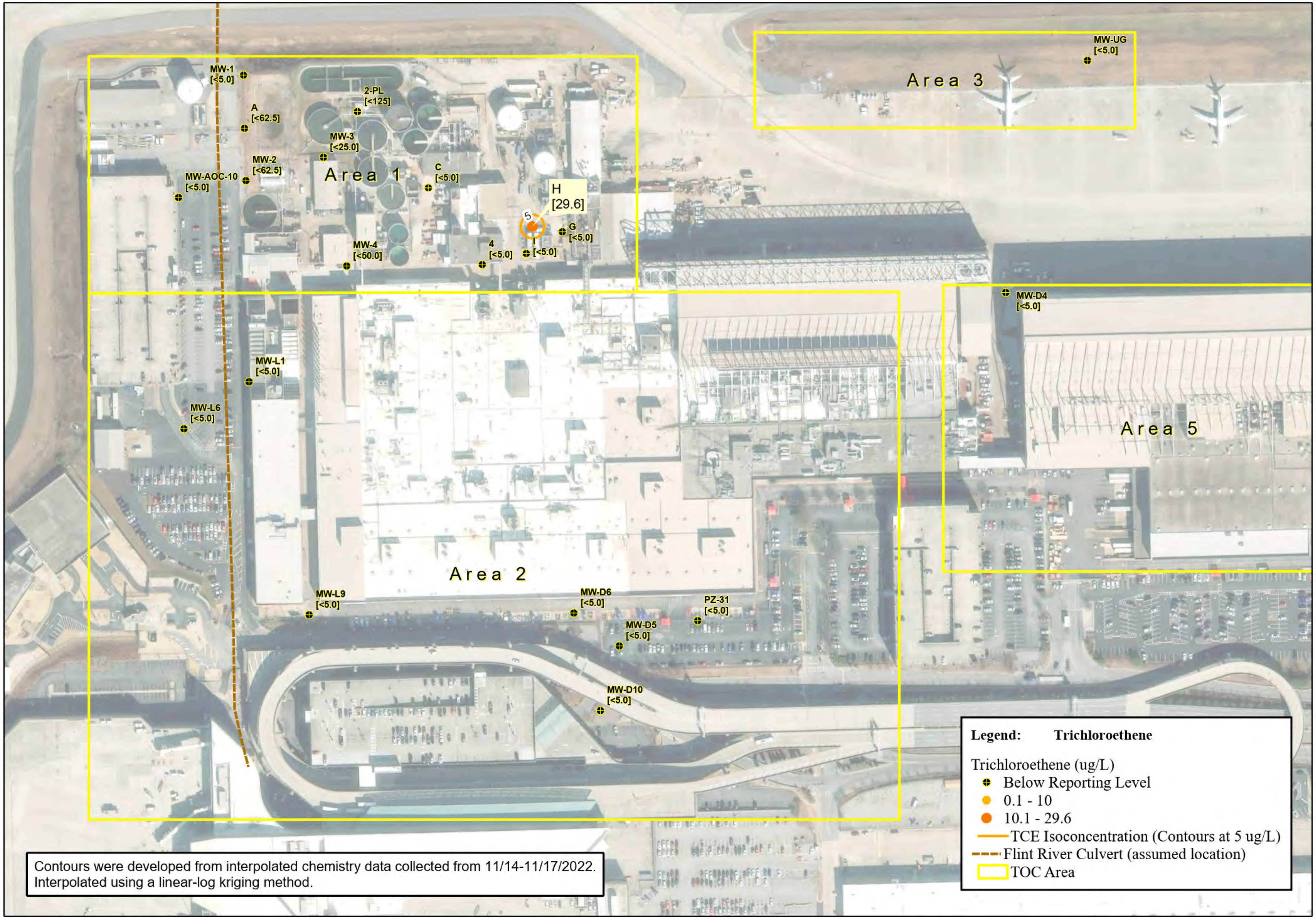
TECHNICAL OPERATIONS CENTER
HARTSFIELD-JACKSON ATLANTA
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

TETRACHLOROETHENE
ISOCONCENTRATION
11/14 - 11/17/2022

SHEET NO.

FIGURE B-7c



Contours were developed from interpolated chemistry data collected from 11/14-11/17/2022. Interpolated using a linear-log kriging method.

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PROJECT NO: 4132

JOB DESCRIPTION:

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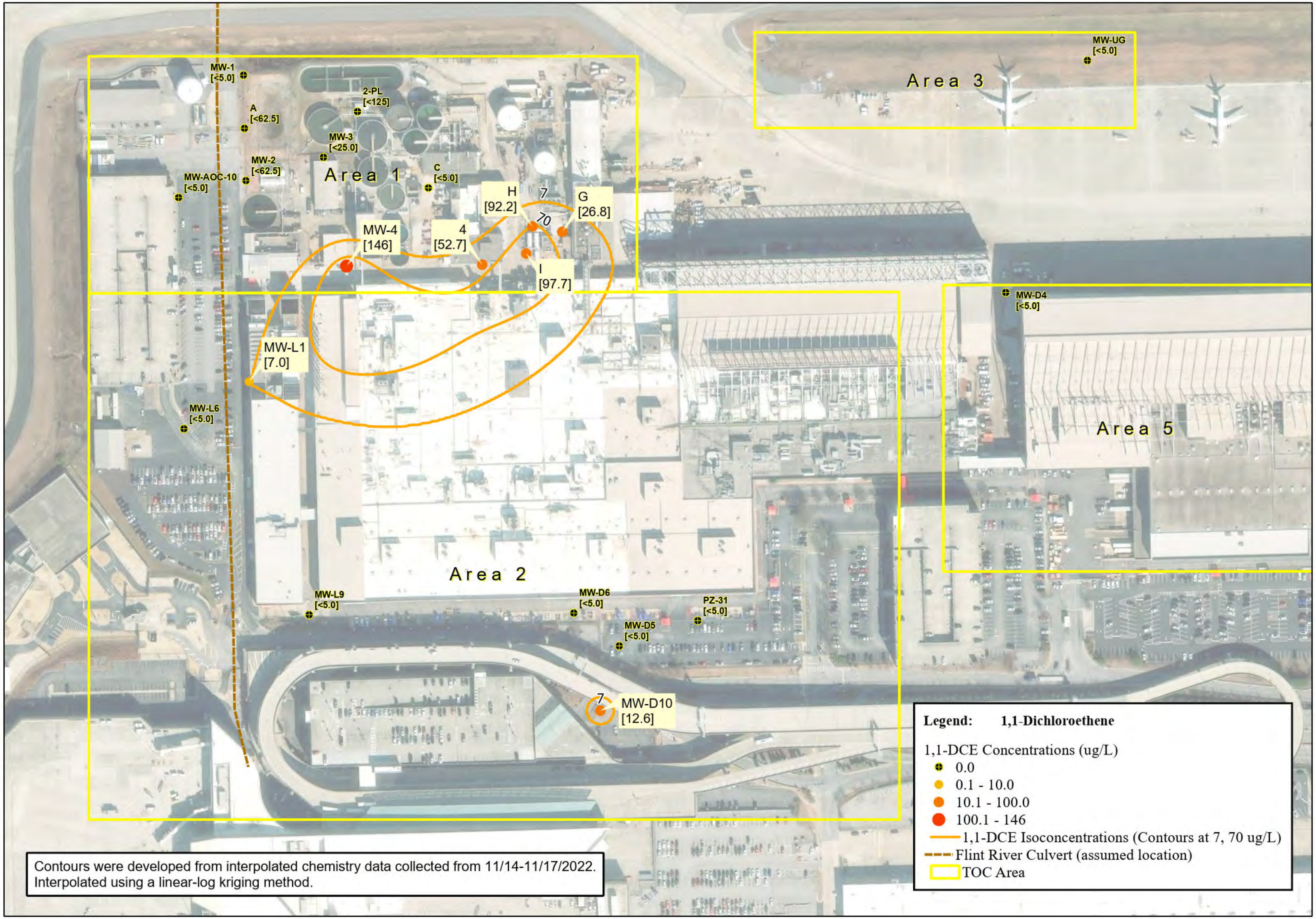
HARTSFIELD-JACKSON ATLANTA
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

TRICHLOROETHENE
ISOCONCENTRATION
11/14 - 11/17/2022

SHEET NO.

FIGURE B-7d



Contours were developed from interpolated chemistry data collected from 11/14-11/17/2022. Interpolated using a linear-log kriging method.

**Legend:** **1,1-Dichloroethene**

1,1-DCE Concentrations (ug/L)
- ⊕ 0.0
- ● 0.1 - 10.0
- ● 10.1 - 100.0
- ● 100.1 - 146

— 1,1-DCE Isoconcentrations (Contours at 7, 70 ug/L)
- - Flint River Culvert (assumed location)
▭ TOC Area

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| PROJECT NO: | 4132 |

JOB DESCRIPTION:

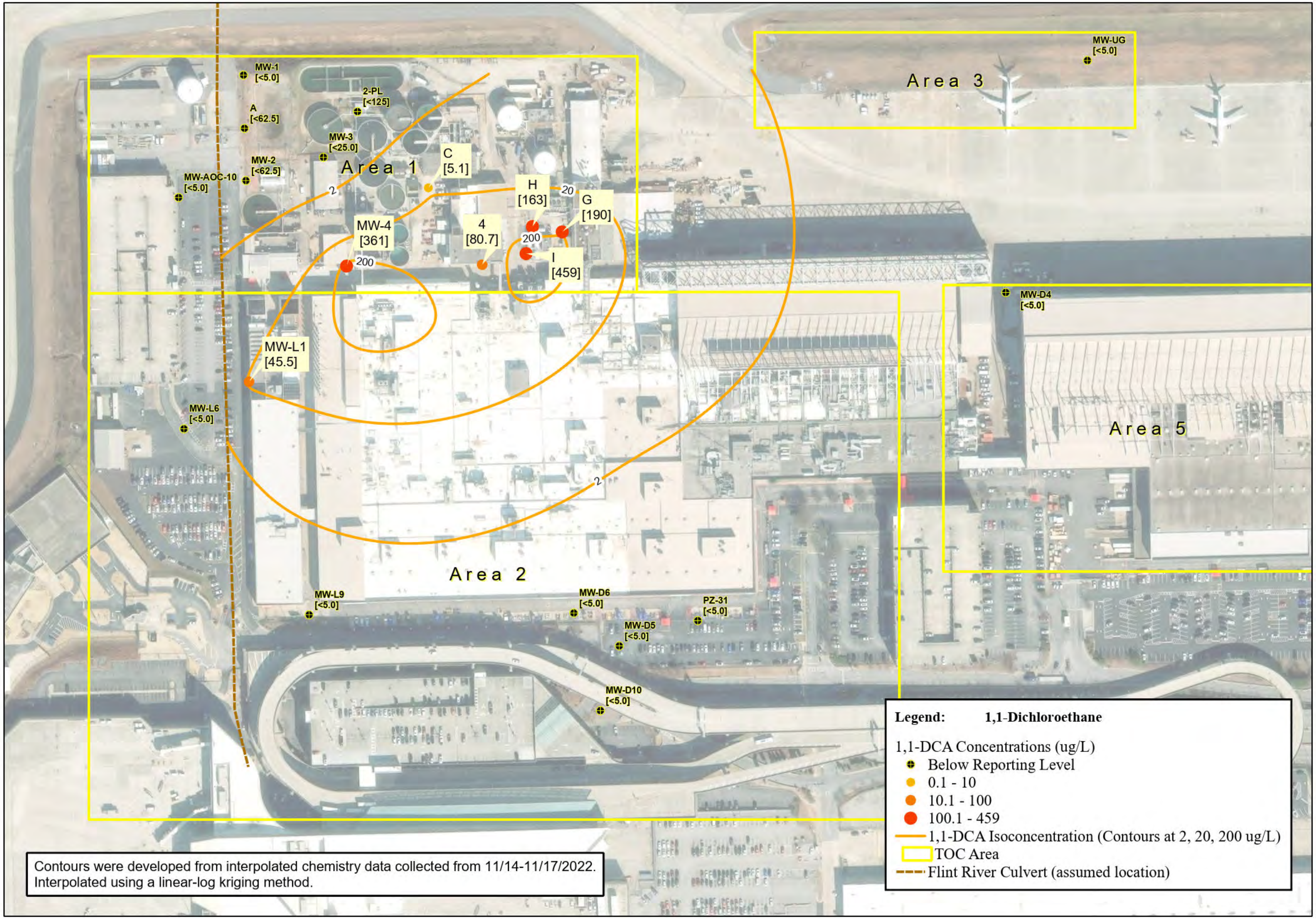
TECHNICAL OPERATIONS CENTER
HARTSFIELD-JACKSON ATLANTA
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

1,1-DICHLOROETHENE
ISOCONCENTRATION
11/14 - 11/17/2022

SHEET NO.

FIGURE B-7e



**Legend:** **1,1-Dichloroethane**

1,1-DCA Concentrations (ug/L)
- ⊕ Below Reporting Level
- ● 0.1 - 10
- ● 10.1 - 100
- ● 100.1 - 459
- ― 1,1-DCA Isoconcentration (Contours at 2, 20, 200 ug/L)
- ☐ TOC Area
- - - Flint River Culvert (assumed location)

Contours were developed from interpolated chemistry data collected from 11/14-11/17/2022. Interpolated using a linear-log kriging method.

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JOB DESCRIPTION:

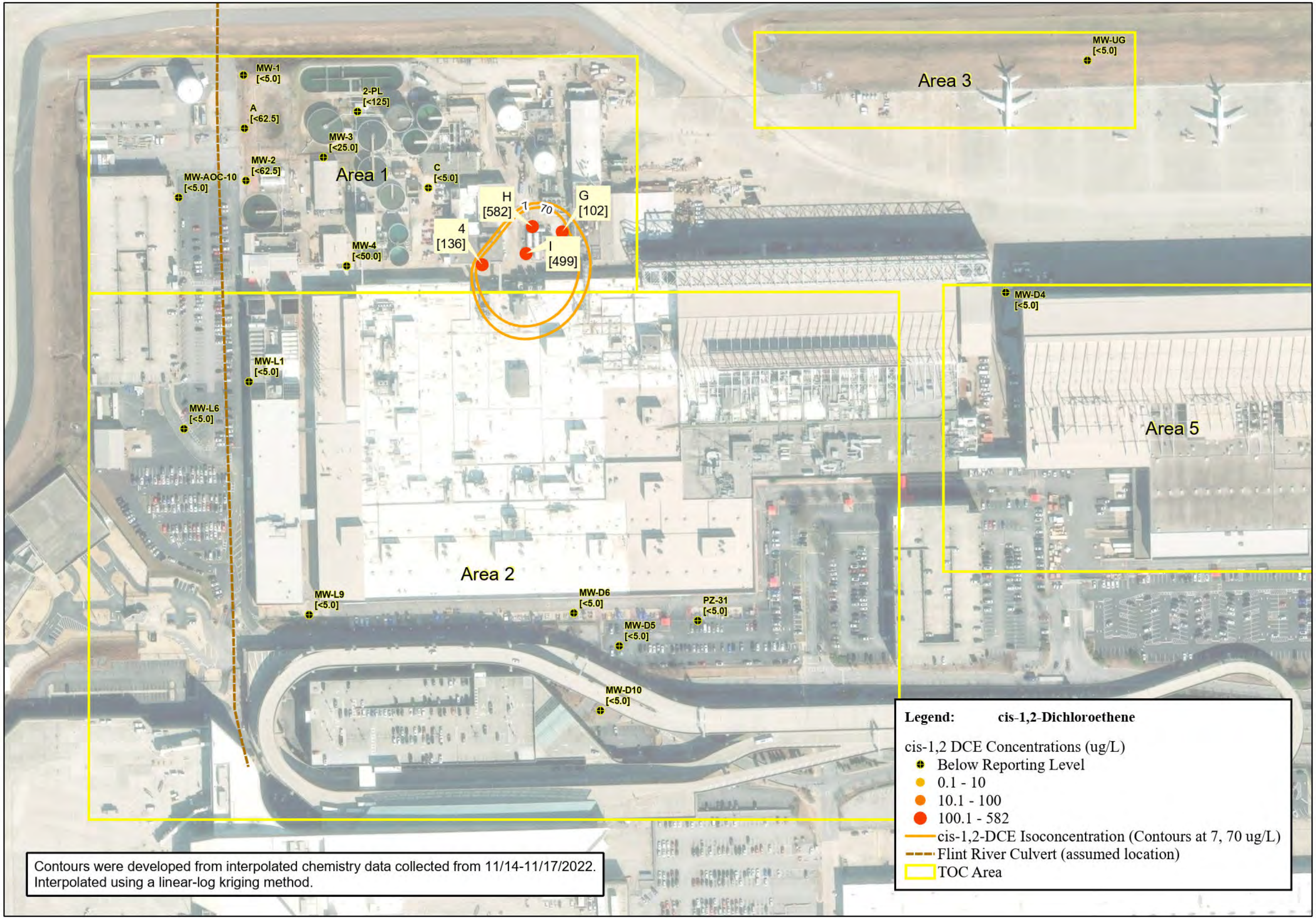
TECHNICAL OPERATIONS CENTER
HARTSFIELD-JACKSON ATLANTA
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

1,1-DICHLOROETHANE
ISOCONCENTRATION
11/14 - 11/17/2022

SHEET NO.

FIGURE B-7f



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Contours were developed from interpolated chemistry data collected from 11/14-11/17/2022. Interpolated using a linear-log kriging method.

**Legend:** **cis-1,2-Dichloroethene**

cis-1,2 DCE Concentrations (ug/L)

| | |
|---|---|
| ⊕ | Below Reporting Level |
| ● | 0.1 - 10 |
| ● | 10.1 - 100 |
| ● | 100.1 - 582 |
| — | cis-1,2-DCE Isoconcentration (Contours at 7, 70 ug/L) |
| - - | Flint River Culvert (assumed location) |
| ▭ | TOC Area |

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| PROJECT NO: | 4132 |

JOB DESCRIPTION:

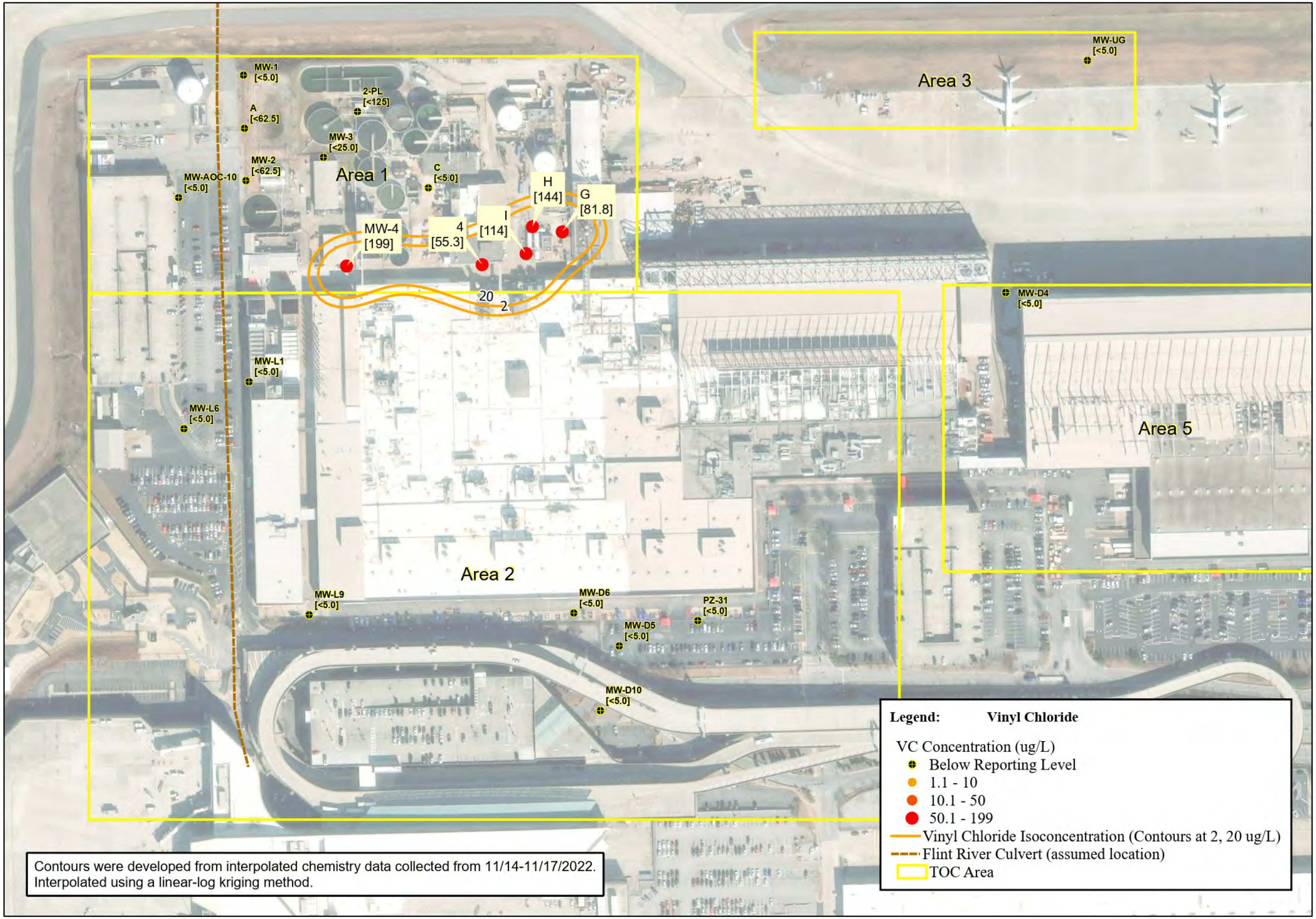
TECHNICAL OPERATIONS CENTER
HARTSFIELD-JACKSON ATLANTA
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

CIS-1,2-DICHLOROETHENE
ISOCONCENTRATION
11/14 - 11/17/2022

SHEET NO.

FIGURE B-7g



**Legend:** **Vinyl Chloride**

VC Concentration (ug/L)
- ● Below Reporting Level
- ● 1.1 - 10
- ● 10.1 - 50
- ● 50.1 - 199

— Vinyl Chloride Isoconcentration (Contours at 2, 20 ug/L)
-- Flint River Culvert (assumed location)
▭ TOC Area

Contours were developed from interpolated chemistry data collected from 11/14-11/17/2022. Interpolated using a linear-log kriging method.

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PROJECT NO: 4132

JOB DESCRIPTION:
TECHNICAL OPERATIONS CENTER
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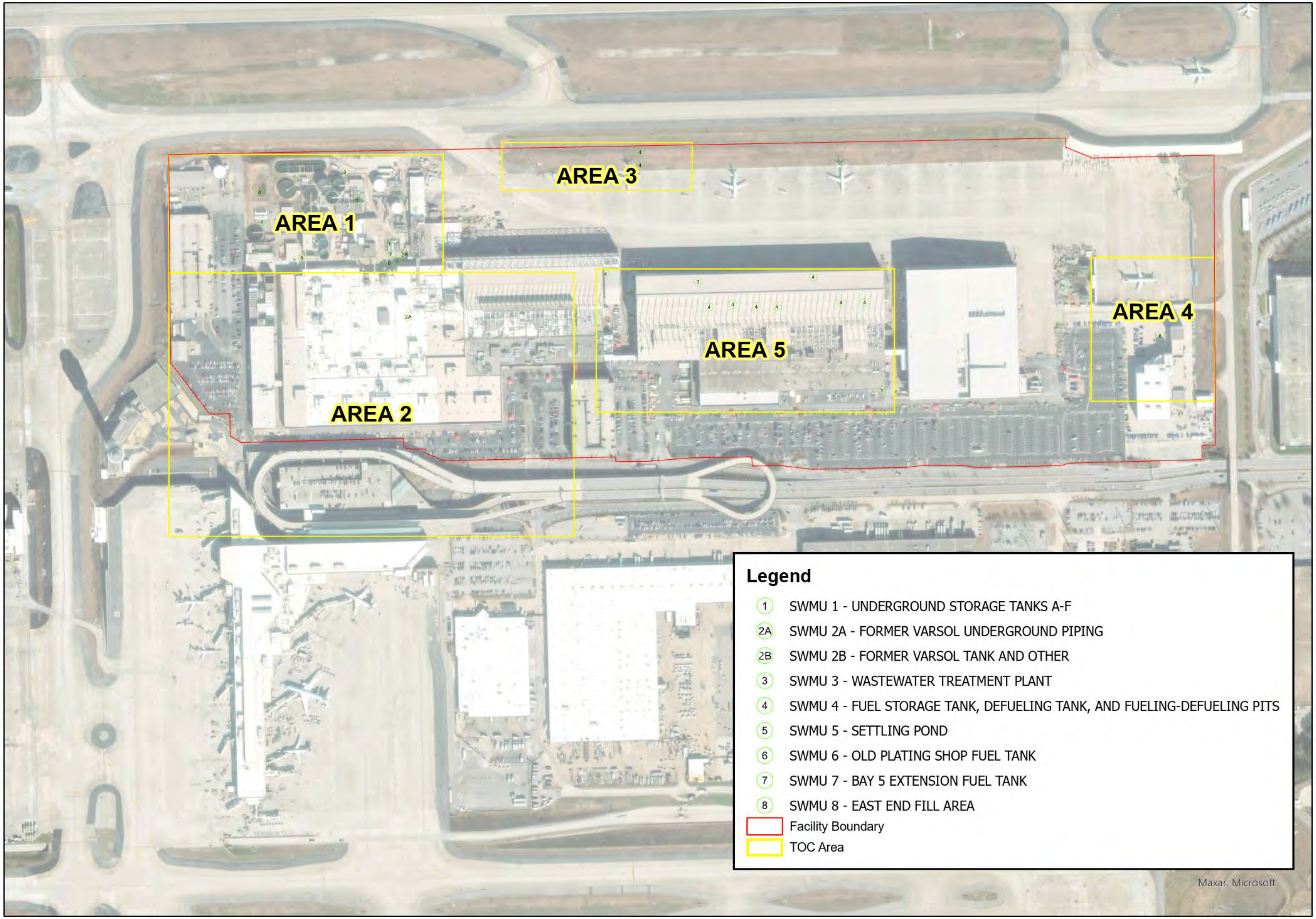
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:
VINYL CHLORIDE
ISOCONCENTRATION
11/14 - 11/17/2022

SHEET NO.
FIGURE B-7h



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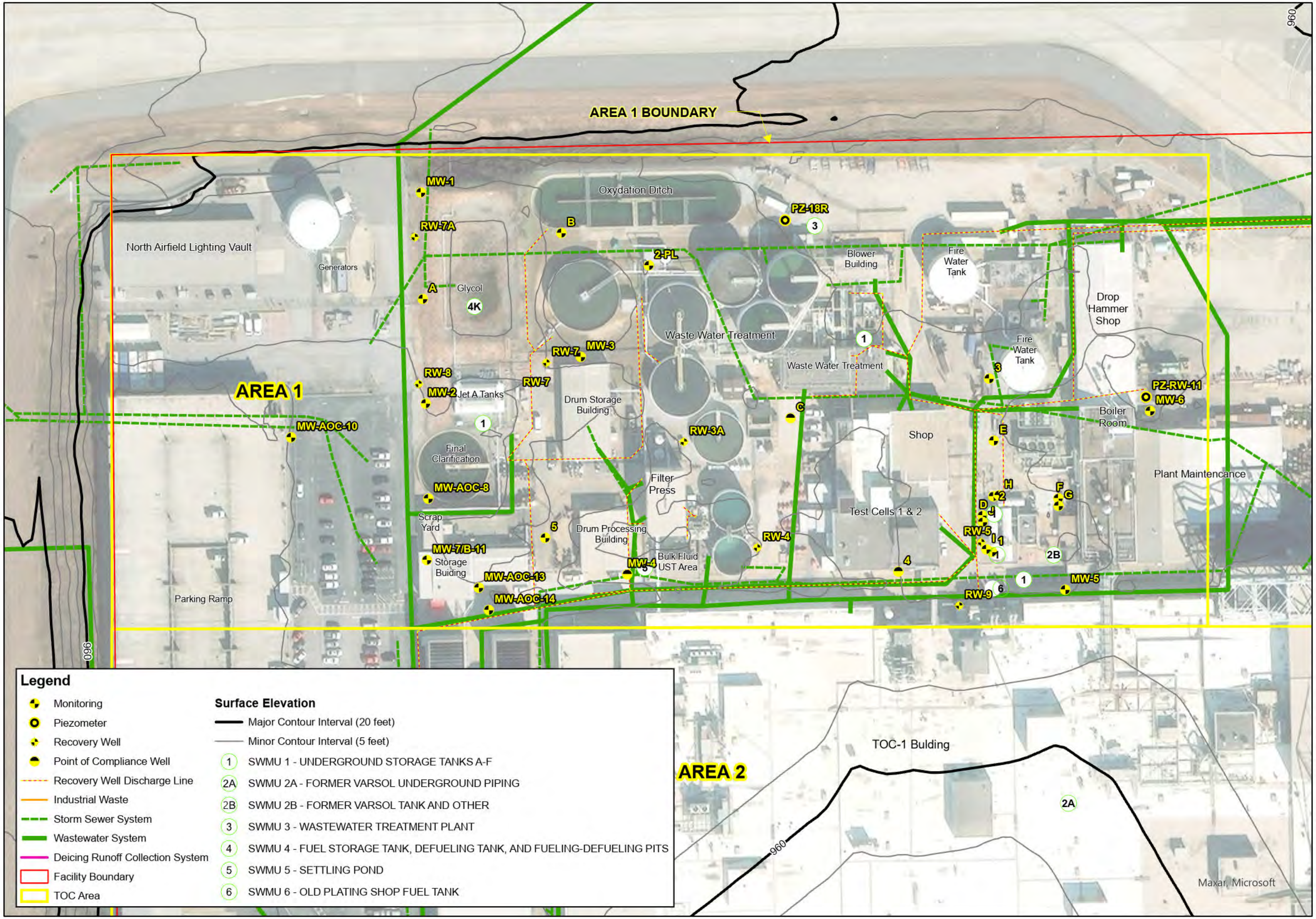
ATLANTA, GEORGIA

SHEET TITLE:

SWMU LOCATIONS

SHEET NO.

FIGURE B-8



**Legend**

- Monitoring
- Piezometer
- Recovery Well
- Point of Compliance Well
- Recovery Well Discharge Line
- Industrial Waste
- Storm Sewer System
- Wastewater System
- Deicing Runoff Collection System
- 🟥 Facility Boundary
- 🟨 TOC Area

**Surface Elevation**

- Major Contour Interval (20 feet)
- Minor Contour Interval (5 feet)
- ① SWMU 1 - UNDERGROUND STORAGE TANKS A-F
- 2A SWMU 2A - FORMER VARSOL UNDERGROUND PIPING
- 2B SWMU 2B - FORMER VARSOL TANK AND OTHER
- ③ SWMU 3 - WASTEWATER TREATMENT PLANT
- ④ SWMU 4 - FUEL STORAGE TANK, DEFUELING TANK, AND FUELING-DEFUELING PITS
- ⑤ SWMU 5 - SETTLING POND
- ⑥ SWMU 6 - OLD PLATING SHOP FUEL TANK

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| PROJECT NO: | 4132 |

JOB DESCRIPTION:

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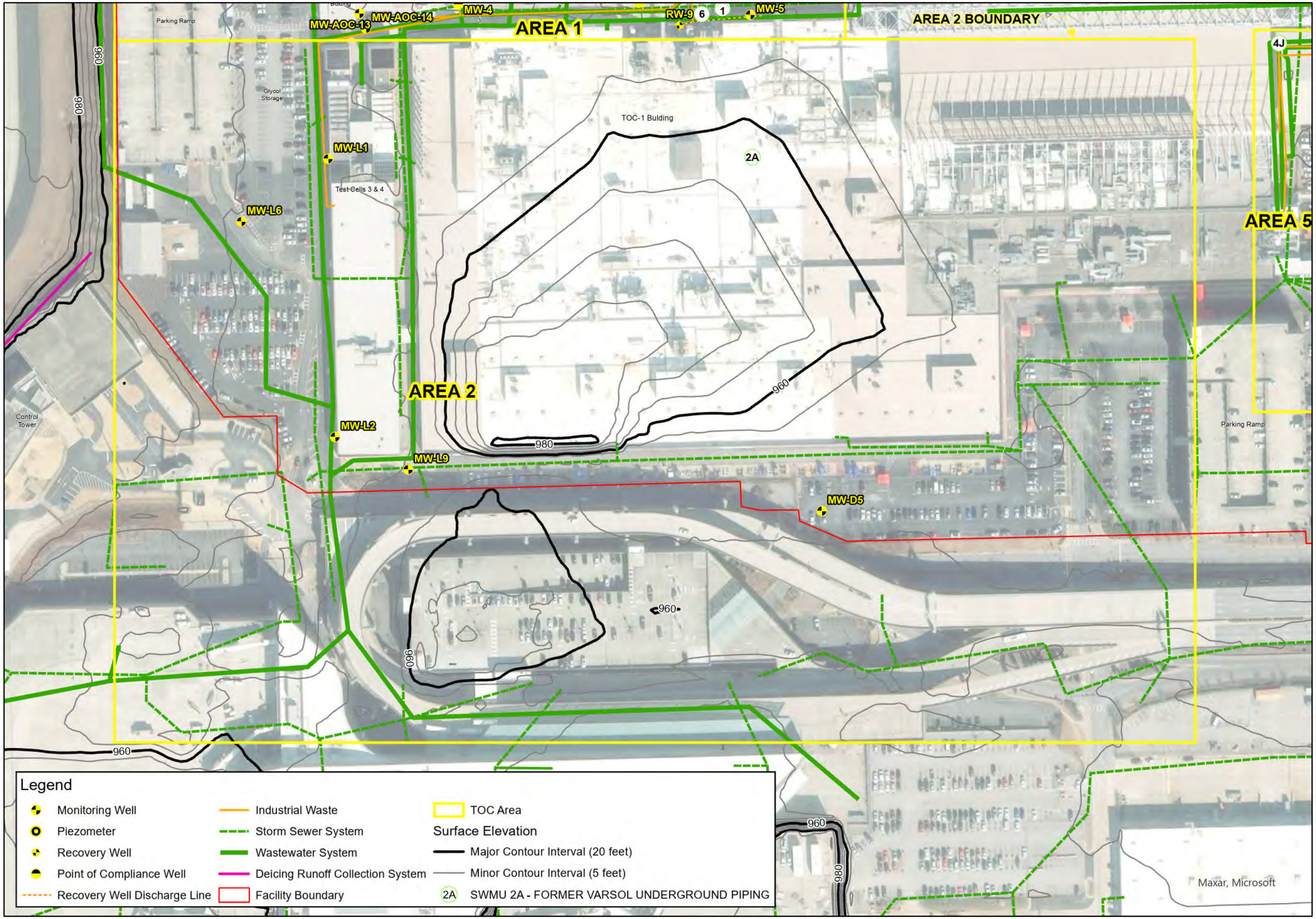
ATLANTA, GEORGIA

SHEET TITLE:

AREA 1

SHEET NO.

FIGURE B-9



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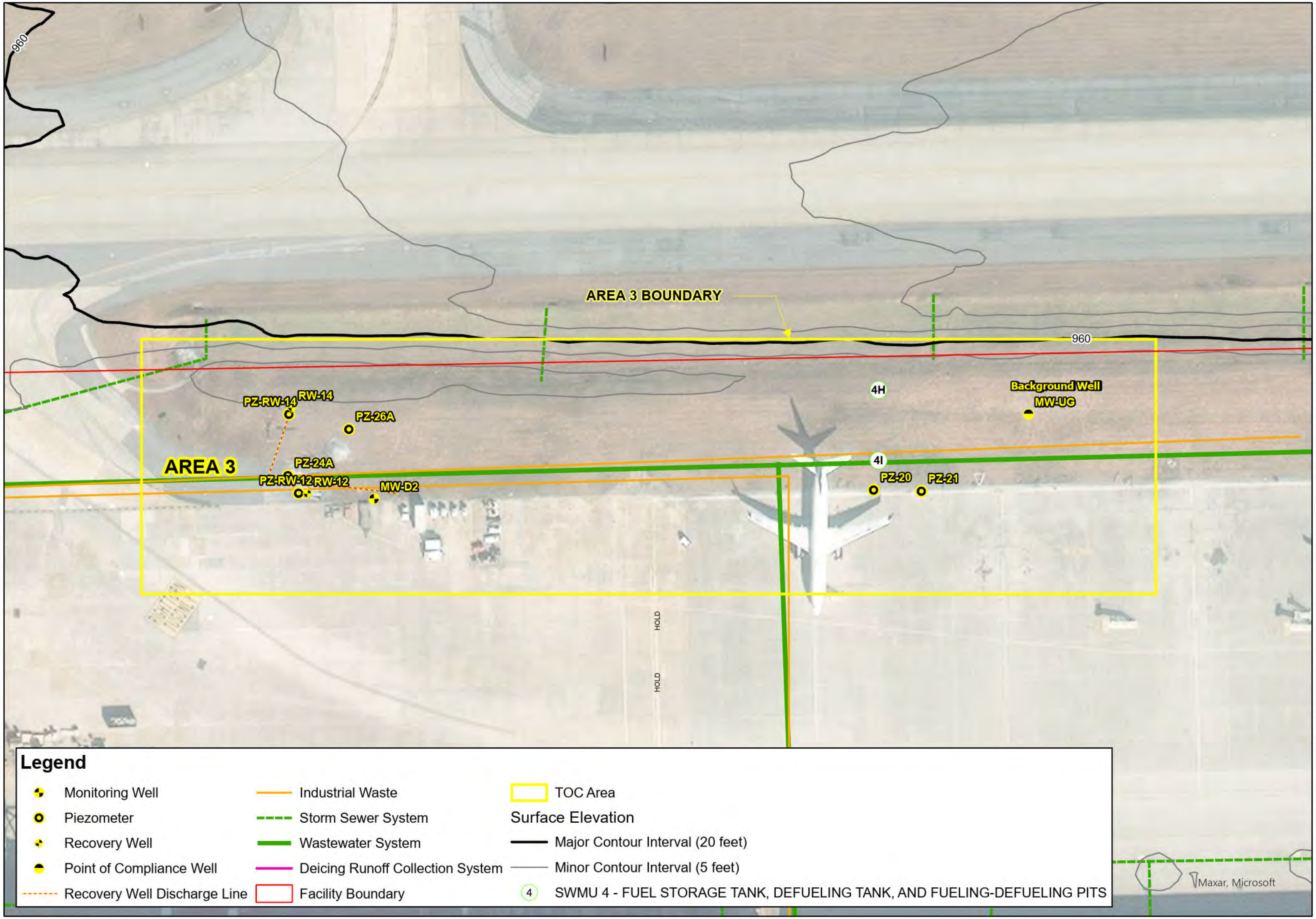
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

AREA 2

SHEET NO.

FIGURE B-10



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JOB DESCRIPTION:

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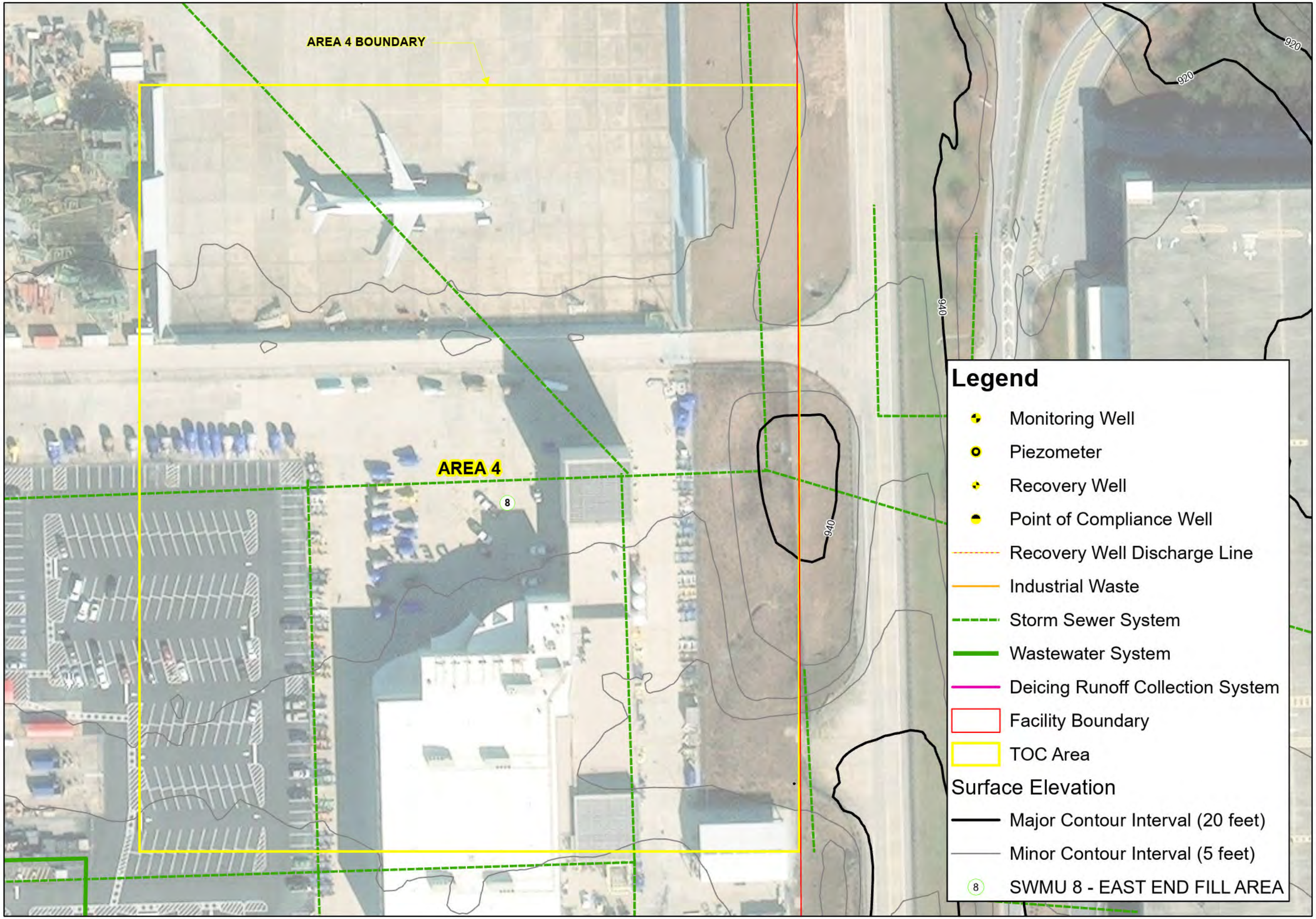
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

AREA 3

SHEET NO.

FIGURE B-11



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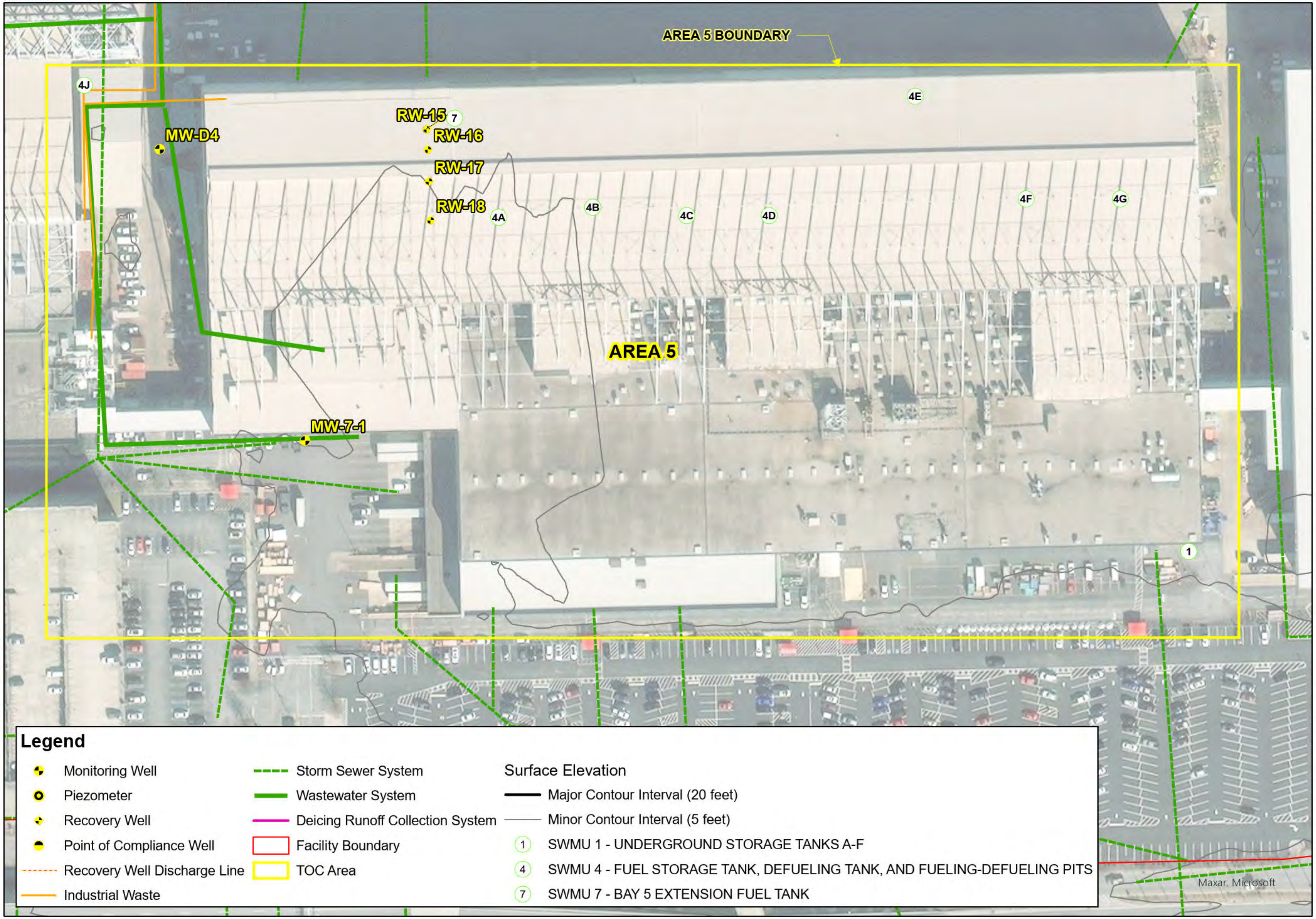
ATLANTA, GEORGIA

SHEET TITLE:

AREA 4

SHEET NO.

FIGURE B-12



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JOB DESCRIPTION:

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INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

AREA 5

SHEET NO.

FIGURE B-13

# TABLES

# TABLE B-1

## CONCRETE COVER INSPECTION CHECKLIST

Date/Time of Inspection ______________________________

Reason for Inspection
(routine/non-routine) ______________________________

Name of Inspector ______________________________

Concrete Cover Conditions:

Cracking (yes/no)________________
Settling (yes/no)________________
Subsidence (yes/no)______________
Displacement (yes/no)____________
Erosion (yes/no)_________________

Comments (note any required corrective action)______________________________

______________________________________________________________

______________________________________________________________

Date and Type of Corrective Action Performed ______________________________

______________________________________________________________

______________________________________________________________

# TABLE B-2

## POST-CLOSURE COST ESTIMATES
## Annual Estimate and 30-Year Estimate

### ANNUAL ESTIMATE

| | | |
|---|---|---|
| 1. | Deed Notation (Completed) | $ 0.00 |
| 2. | Certification of Post-Closure (Completed) | $ 0.00 |
| 3. | Maintenance and Inspection of Asphalt Cover | $ 23,310.04 |
| 4. | Patch and Repair of Concrete Cover | $ 6,434.48 |
| 5. | Repair Slab on Grade of Concrete Cover | $ 21,124.34 |
| 6. | Engineering Expenses | $ 5,686.50 |
| 7. | Groundwater Compliance Monitoring | $ 19,473.98 |
| 8. | Contingency Allowance | $ 15,618.71 |
| **TOTAL ANNUAL POST-CLOSURE COST** | | **$ 91,648.05** |

### THIRTY-YEAR (30) ESTIMATE

| | | |
|---|---|---|
| 1. | Deed Notation (Completed) | $ 0.00 |
| 2. | Certification of Post-Closure (Completed) | $ 0.00 |
| 3. | Maintenance and Inspection of Asphalt Cover | $ 699,301.34 |
| 4. | Patch and Repair of Concrete Cover | $ 193,034.39 |
| 5. | Repair Slab on Grade of Concrete Cover | $ 633,730.34 |
| 6. | Engineering Expenses | $ 170,594.95 |
| 7. | Groundwater Compliance Monitoring | $ 584,219.25 |
| 8. | Contingency Allowance | $ 468,561.32 |
| **TOTAL LONG-TERM POST-CLOSURE COST** | | **$ 2,749,441.59** |

Note:

Annual Costs Derived Using the Implicit Price Deflator for Gross National Product published by the U.S. Department of Commerce per RCRA Subpart H, Section 264.142(b) using 3Q-2022 factors.

# ATTACHMENTS

# ATTACHMENT B-1

# POST-CLOSURE PLAN

### I-1f(3)(f) Closure Report/Certification

Closure of the Old Varsol Reclaim Tank has been completed (1988) as previously described, and a copy of the Closure Certification Statement is included as Attachment I-1. A Closure/Decontamination Plan for the Discontinued Components of the former Varsol Reclamation System (which includes the Varsol reclaim sump and the underground piping from the sump to the Old Varsol Reclaim Tank) has been submitted to GA EPD. Upon approval of this plan by GA EPD, the closure/decontamination activities will be conducted and a certification signed by a registered Professional Engineer in the State of Georgia will be provided stating that the closure of the Varsol reclaim sump and the underground piping from the sump to the Old Varsol Reclaim Tank was performed in accordance with the approved plan and that the cover meets the requirements of 40 CFR 264.310 (a).

### I-1f (4) - I-1f(6)

Not applicable to Delta Air Lines

## I-2 Post-Closure Care Plan

This Post-Closure Care Plan describes the on-going monitoring and maintenance that will occur during the Post-Closure Care period for the Varsol Regulated Unit. This Post-Closure Care Plan describes the activities that will be performed to manage the closed Varsol Regulated Unit throughout the post-closure care period in accordance with 40 CFR 264.117 and 118. This Plan describes ground-water monitoring, inspection and maintenance activities. Delta will maintain a copy of the approved Post-Closure Care Plan (and any revisions) on-site until the post-closure report has been submitted and accepted by the GA EPD.

### I-2a Inspection Plan

The area of the closed Varsol Regulated Unit will be inspected and maintained throughout the Post-Closure Care period. Activities will consist of periodic inspections and required maintenance of the concrete cover. Inspections will be made by trained personnel at least semi-annually. Records of inspection will be kept at the facility. A checklist for the inspection of the concrete cover is provided in Attachment I-2.

### I-2b Ground-Water Monitoring Plan

The Varsol Regulated Unit is located in a portion of the facility of historic fuel and solvent storage and releases, and where contaminated ground water and separate phase product are being recovered as a part of on-going Corrective Actions. Considering the commingling of both separate and dissolved phase constituents from multiple sources in this area, and the influence of on-going remediation activities, ground-water quality data collected from a point-of-compliance well would not be representative of specific impacts from the Varsol Regulated Unit, if any, nor would it be appropriate to evaluate compliance with Ground-Water Protection Standards based on these data.

Ground-water quality and separate phase product thickness in monitoring wells in this area are currently being monitored in accordance with Section VI, Corrective Action Plan, of Delta's Permit Number HW-036 (S&T)-2. Monitoring wells are sampled on a quarterly basis and analyzed for the specific constituents listed in Section VI.D.1(a) of the permit. The results of the analyses are reported semi-annually in Corrective Action System Performance Effectiveness Reports. The data collected as part of the sampling and reporting requirements for Corrective Action will be used to monitor ground-water quality in the area of the Varsol Regulated Unit.

## I-2c Maintenance Plan

Maintenance of the closed Varsol Regulated Unit will include the following:

1. Maintenance and Repair of Cover - The concrete cover will be inspected at least semi-annually. Inspections are to detect any damage to the cover surface, erosion, or any other observable adverse conditions. Repair efforts will be promptly initiated. If significant repairs or reconstruction are required, these will be executed under the guidance of a professional engineer.
2. Ground-Water Monitoring System - The ground-water monitoring system incorporated in Delta's permit for Corrective Action is inspected at least annually and during scheduled sampling events to verify that visible portions of the wells are maintained.

## I-2d Land Treatment

This section is not applicable to the Delta facility.

## I-2e Post-Closure Care for Miscellaneous Units

This section is not applicable to the Delta facility.

## I-2f Post-Closure Security

As discussed in Part F-1, security measures and procedures are in place to minimize potential unauthorized entry into the facility. The entire Technical Operations Center is protected by perimeter security, including an 8-foot high chain link fence, and by Delta security personnel. The only authorized entry point is the main gate, which is staffed 24 hours a day, 7 days a week.

A chain link fence surrounds the boundary of the excavated area of the Old Varsol Reclaim Tank. The Varsol Reclaim Sump is offset into the north side of and essentially covered by the Technical Operations Center building. The piping between the two is located beneath the concrete driveway which is the primary access along the north side of the TOC.

## I-2g Post-Closure Contact

Mr. Shannon Scruggs, Project Manager for Delta's Corrective Action Activities at the TOC, is the post-closure contact. His mailing address and telephone number are:

Delta Air Lines, Inc.
Department 885
P.O. Box 20706
Atlanta, Georgia 30320-6001
Telephone 404-714-3237
Fax 404-714-3310

## I-3 Notices Required for Disposal Facilities

### I-3a Certification of Closure

A Certification of Closure will be submitted to GA EPD within 60 days of completion of closure, signed by a representative of Delta and by an independent registered Professional Engineer.

### I-3b Survey Plat

A survey plat of the Varsol Regulated Unit will be placed on file with the Planning and Zoning Office of the Community Development Department, Clayton County, and with the GA EPD within 60 days of certification of closure of the unit.

### I-3c Notice to Local Land Authority

In accordance with 40 CFR 264.119, Delta will submit notification to Clayton County and to GA EPD of the type, location and approximate quantity ( to the best of Delta's knowledge) of the wastes disposed in the Varsol Regulated Unit.

### I-3d Post-Closure Certification

A post-closure certification in accordance with 40 CFR 264.120 will be submitted following closure activities.

### I-3e Notice in Deed to Property

In accordance with CFR 264.119, within 60 days after certification of closure, a document will be recorded in the Clayton County Deed Records which will provide notice that the land has been used to manage hazardous waste, that its use is restricted, and that, as stated in Section I-3b and I-3c, a survey plat of the Varsol Regulated Unit has been placed on file with the local zoning authority and with GA EPD. Delta will submit to GA EPD a certification of the recordation of this document, together with a copy of the document which was filed.

## I-4 Closure Cost Estimate

The cost information for closure of the Drum Storage and Drum Process Buildings is submitted in accordance with 40 CFR 264.142 and 270.14 (b) (15). An estimated $884,590 will be required for facility closure. The closure costs are presented in Table I-4.

# ATTACHMENT B-2

# SAMPLING AND ANALYSIS PLAN

# SAMPLING AND ANALYSIS PLAN

*Corrective Action System Monitoring*
*Delta Air Lines Technical Operations Center*
*Hartsfield-Jackson Atlanta International Airport*

**Prepared by:**

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**May 2023**

## TABLE OF CONTENTS

# 1.0 DELTA AIR LINES – TECHNICAL OPERATIONS CENTER

*de maximis, inc.* (*de maximis*), on behalf of Delta Air Lines, Inc. (Delta), has prepared this *Sampling and Analysis Plan (SAP)* for the Corrective Action System (CAS) at Delta's Technical Operations Center (TOC) located at Hartsfield-Jackson Atlanta International Airport in Atlanta, Georgia.

Corrective action and post-closure activities are currently being performed relative to the Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) under Delta's Hazardous Waste Facility Permit HW-036-[S&D]-2, as amended or reissued (Permit). Other storage units at the TOC [i.e., the Drum Processing Building (DPB), the Drum Storage Building (DSB), and the associated Underground Storage Tank (UST) System], received clean closure on August 26, 2006. The Closed Varsol Regulated (CVR) Unit and the other closed units are located on property leased by Delta from the City of Atlanta.

## 1.1 General Description

The general location of the TOC area at the Hartsfield-Jackson Atlanta International Airport is presented in Figure 1. Figure 2 shows the general locations of the project areas within the TOC, with a cross-reference to the SWMU designations previously assigned. Figures 3, 4, 5, and 6 present the locations of existing wells within each of the TOC project areas. Table 1 presents the TOC well network within each area and provides well construction details.

Area 1 formerly contained a number of SWMUs consisting of the CVR Unit, the UST System and the footprint of the former Wastewater Treatment Plant Settling Ponds. These former structures are potential sources of light non-aqueous phase liquids (product) and chlorinated constituents of concern (COCs).

## 1.2 Site Conceptual Hydrogeologic Model

A *Site Conceptual Hydrogeologic Model (SCHM)* has been developed based on former and ongoing investigation and remediation activities at the TOC. These activities have revealed that the shallow hydrogeological unit is relatively complex, and the system consists of water-bearing zones that occur as thin lenses of higher permeability, sandy deposits located within an overall finer-grained, low permeability matrix consisting of saprolite that inhibits groundwater flow. The permeable layers appear to be sand "stringers" located at multiple depths that are not well-connected to each other and are not horizontally continuous. The resulting hydrogeological setting contains multiple occurrences of perched groundwater, or wetting fronts, of varying saturated thickness.

Some of the stringers encountered at the TOC are the result of the deeply weathered underlying bedrock, while others could be alluvial/channel deposits of the Flint River. In addition, the former channels of the Flint River likely have some bearing on the migration/distribution pattern of COCs due to its original channel location and subsequent multiple re-routings during the expansion of the TOC and ATL. The Flint River originally flowed through the area that was eventually developed as the TOC. In the early-1960's, the flow of the Flint River was proximate to the east side of settling ponds at the TOC at that time. Subsequently, in the mid-to-late 1960's, it was re-routed to an engineered channel located adjacent to the west side of the settling ponds. In the early-mid 1970's, the Flint River was again moved further to the west to its current location (i.e., the Flint River Culvert/Enclosure) during the expansion of the airport. The Flint River Enclosure, or Flint River Culvert, is an underground 18-foot diameter poured-in-place culvert/tunnel that crosses beneath the airport runways in a north-south orientation on the western boundary of the TOC leasehold. The former channels of the Flint River (that were backfilled as the TOC was constructed) may have been potential pathways whereby COCs could have migrated from the settling ponds to areas south of the current TOC-1 building.

In general, groundwater in the shallow water-bearing sand lenses and stringers is derived from rainfall and storm water run-off from paved and unpaved areas at higher elevations to the north and west and in the TOC. While much of the storm water is directed into the Flint River Culvert, some accumulates in utility trenches and other disturbed areas. In addition to the pre-existing hydrogeological setting, TOC construction and long-term operational activities have resulted in large areas of disturbed soil and significant quantities of engineered fill materials. Much of the TOC is underlain by placed fill materials that support various structures (e.g., sewers, tanks, buildings, etc.). Abundant buried utility corridors are also present throughout the TOC that provide additional groundwater flow pathways. In summary, the hydrogeological setting and infrastructure overprint factors create a non-homogenous, complex shallow groundwater system.

Groundwater pressure gradients indicate that hydraulic heads are lower on the western and southern areas of the TOC; however, observations during subsurface work associated with the Flint River Culvert and International Terminal indicated that groundwater presence is limited and not connected to the impacted groundwater at TOC-1. Therefore, the potential for off-site migration of water contained in the pore spaces of the sand stringers is low.

Given the hydrogeological setting at the TOC, the long-term monitoring program, and empirical observation/evaluation, it has been shown that there is limited migration of impacted groundwater at the TOC.

### 1.3 General Geology and Hydrogeological Information

Extensive information concerning the geology and hydrogeology of the area has been submitted to Georgia EPD in documents over the years. Delta's "1990 Phase II Groundwater Assessment Report" (ERM, 1990), as well as the 1997 RFI Report described the hydrogeologic conditions at the CVR Unit. The post-CVR Unit and other SWMUs/AOCs are underlain by a complex of pre-Cambrian to lower Paleozoic metamorphic and igneous rocks referred to as the Atlanta Group. The uppermost formation beneath the post-closure unit is the Camp Creek Formation, which consists of massive granite gneiss interlayered with thin, fine-grained, dark green, hornblende-plagioclase amphibolite.

Overlying the bedrock are residual soils of varying thicknesses. These soils were formed from *in situ* weathering of the underlying bedrock; their character depends on the nature of the rock from which they are weathered. In addition to the naturally occurring soils, the TOC has received significant overprint from construction and operational activities over time. Much of the TOC contains placed fill material that supports various structures (e.g., tanks, buildings, etc.). Buried utility corridors are also present throughout the general facility area. The construction of the Flint River Culvert (i.e., a poured in-place concrete structure) with surrounding compacted fill provides an obstacle to natural groundwater flow to the west and southwest from the shallow water-bearing zone of discontinuous sand units that are observed within the naturally occurring soil saprolite-matrix.

Delta's 1990 assessment of the shallow water-bearing zones indicated that the water table was about 15 feet below ground surface and that natural groundwater flow was toward the west and southwest. The assessment estimated that the hydraulic conductivity of the shallow water-bearing zones ranges from $1.3 \times 10^{-3}$ to $1 \times 10^{-4}$ centimeters per second and that the estimated average linear velocity was about 1.20 meters per year (4.2 feet per year) (ERM 1990). This estimate is currently being re-evaluated per the *SCHM* via tracer test studies initiated in July 2022.

## 1.4 Groundwater Contamination

Groundwater contamination at the TOC occurs in the shallow water-bearing zones. These impacted areas of groundwater are derived from the CVR Unit, and other SWMUs and AOCs. Iso-concentration distribution maps of selected primary constituents have been presented in the *Semi-Annual Performance Effectiveness (SAPE) Reports* over the past several years. Primary COCs include chlorobenzene, tetrachloroethene, trichloroethene, 1,1-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, and vinyl chloride. The Flint River Culvert acts as a boundary for the migration of impacted groundwater to the west. Iso-concentration maps that are presented in the *SAPE Reports* are not reflective of actual distribution due to the presence of discontinuous sand lenses and varying depths of well screen intervals of monitoring and recovery wells that do not intersect the same lithologic zone when compared to nearby monitoring wells.

## 1.5 Groundwater Monitoring Program

The groundwater monitoring program will be implemented in accordance with the Permit and this *SAP (2023).*

System-wide groundwater monitoring at the TOC includes routine (e.g., weekly) groundwater elevation and product thickness monitoring, continuous groundwater measurements at selected wells, and periodic groundwater quality monitoring. Groundwater monitoring procedures are described in the sections that follow.

In addition to the groundwater medium, this *SAP* addresses the potential sampling requirements for other media. If sampling and analysis or monitoring is required as part of other investigations at the TOC (i.e., specific SWMUs, AOCs, or via implementation of Interim Measures, the methods and procedures are included in this *SAP*.

## 2.0 FIELD ACTIVITIES AND PROCEDURES

Procedures, which will be utilized for the RCRA-related activities at the Delta TOC include concrete coring (as required), soil borings, piezometers, monitoring well and recovery well installation, physical laboratory analyses of soil samples, and groundwater and separate phase product sampling and analysis. Where appropriate, all procedures are to be conducted in accordance with the most current U.S. Environmental Protection Agency, Region 4. Science and Ecosystem Support Division (SESD) *Field Branches Quality System and Technical Procedures*. These procedures are to be updated as changes are made in the future by the SESD per the following link: https://www.epa.gov/quality/quality-system-and-technical-procedures-lsasd-field-branches.

Prior to performing any subsurface borings, coring, or drilling activities, all locations at the TOC are to be marked for utility clearance by a Delta representative.

### 2.1 Soil Borings

Soil boring techniques and procedures to be used are provided in the SESD *Field Branches Quality System and Technical Procedures (i.e., Soil Sampling Operating Procedure)*.

### 2.2 Monitoring Well Installations

Monitoring wells should be designed and installed using procedures, methods, and considerations per the SESD *Field Branches Quality System and Technical Procedures (i.e., Guidance for Design and Installation of Monitoring Wells)* and should comply with the Georgia Water Well Standards Act.

### 2.3 Recovery Well Installation

Recovery wells are to be installed in the same manner as the monitoring wells with the exception that these wells will typically be larger in diameter (4”-6”) and in some cases may be constructed using a stainless-steel screen and riser.

## 2.4 Piezometer Installation or Temporary Well Installation

Piezometers and temporary monitoring wells will be designed and installed per SESD *Field Branches Quality System and Technical Procedures (i.e., Guidance for Design and Installation of Monitoring Wells).*

The boring and construction of wells will follow the referenced guidelines and all work will be supervised by a Licensed Georgia Professional Geologist.

## 2.5 Well Development

Well development will be performed per the SESD *Field Branches Quality System and Technical Procedures (i.e., Guidance for Design and Installation of Monitoring Wells).* All development water is to be discharged to Delta's industrial wastewater treatment system.

## 2.6 Specific Capacity Testing

Specific capacity testing may be conducted prior to the start of the recovery well systems. This test consists of pumping the recovery well at varying discharge rates in order to calculate the approximate flow rate that can be sustained during system operation. The specific capacity test duration will be approximately 8 hours and constant pump rate increments will be maintained for at least 2 hours. After the first 2-hour increments, the pump rate will either be increased or decreased depending on the water level response in the pumped well. During the test, depth to fluid levels will be obtained in nearby monitoring wells/piezometers to record their response to recovery well pumping. All recovered water will be discharged to Delta's wastewater treatment system.

## 2.7 Survey of Wells/Piezometers

The horizontal position and vertical datum (top of casing) of the wells will be surveyed by a registered land surveyor using standard surveying procedures. The top of casing elevations will be measured to an accuracy of 0.01-feet in reference to the national Geodetic Vertical Datum (NGVD). The top of the well casing will be the reference measuring point (vertical datum) for depth-to-fluid measurements and will be permanently marked/notched to signify the point of depth-to-fluid measurements to ensure that the actual location of the survey is used consistently for all measurements. The ground surface adjacent to each well will be surveyed to an elevation accuracy of 0.1 feet. The horizontal position of the wells will be surveyed to an accuracy of 0.1 feet.

## 2.8 Performance Monitoring

During the first three months of operations of a new recovery well, depth-to-product and depth-to-water measurements are to be recorded daily during the initial week, and subsequently measured at least weekly for the first month and monthly thereafter. Instantaneous volume totalizer flow rates are to be measured with a flow meter at each of the recovery wells. The data collected can be used to assist in capture zone assessment and/or other hydrogeologic evaluation.

### *2.8.1 Depth-to-Fluid Measurements*

The depth-to-product and depth-to-water measurements are to be made using an oil/water interface probe and measured to the nearest 0.01 foot from the top of well casing. Depth-to-fluid measurements are to be measured from an established measuring point marked on top of the well casing. The oil/water interface probe is to be inserted into the well and lowered to the ground-water surface. The depth-to-product and depth-to-water relative to the measuring point can be determined from the interface probe. These values are to be subtracted from the measuring point elevation to record the relative elevations to the nearest 0.01-foot. All measurements and calculations will be recorded in a bound, water-resistant field notebook. Water level data will also be recorded on a Water Level Data Form.

## 2.9 Well Maintenance, Repair, Rehabilitation and Abandonment

The monitoring well network is to be evaluated as a matter of course during ongoing corrective action and groundwater sampling activities at the TOC. An evaluation of the monitoring and recovery wells is to be performed on a regular basis to determine a need for maintenance, repair, rehabilitation and or abandonment.

### *2.9.1 Well Inspection and Maintenance*

All wells are to be properly maintained, marked, locked, and in good working condition. The structural integrity of the well casing, seals, caps, and pads are to be maintained to prevent surface water and contaminants from entering. To ensure proper maintenance and function, the well network is to be inspected on a semi-annual basis. A checklist is used during a semi-annual inspection to evaluate the condition of each well. Problems that are identified are to be corrected as soon as possible.

The semi-annual inspection includes visual observation of the following:

- Cracked or corroded well casing.
- Broken, damaged or missing well cap or lock.
- Damage to protective casing, including missing bolts on flush-mounted caps.
- Damage or absence of gaskets or O-rings for flush-mounted wells.
- Compromised integrity of the surface seals (including cracking and settling).
- Erosion or other structures around well that may be problematic.
- Ponded water in close proximity to the well or inside the protective casing.

- Poorly visible marking or survey point on well.
- Silt accumulation in the well during water level measurements for total depth.
- Poorly visible well identification number.
- Soil or vegetation covering well making it difficult to locate.

### 2.9.2 Well Repair/Rehabilitation/Replacement

Based on information collected during the semi-annual and/or routine inspections, certain repairs and/or rehabilitation may be deemed necessary. Items that are identified during the semi-annual inspection (such as missing seals or cracked pads/casings for monitoring wells) are to be repaired as soon as possible. In other situations, well rehabilitation or well replacement may be deemed necessary.to restore the well to its most efficient condition. These repairs or rehabilitation and/or replacement activities also relate to the components of the well. Recovery wells contain pumps, motors, piping, meters, and other components that require inspection and maintenance. Loss of performance, or a significant change, could indicate that the well or pump may need attention or that some plugging or clogging may be present in the well and some type of treatment or redevelopment is required.

In the event of a loss of performance, the cause of the problem is to be identified. Common problems are structural or mechanical failure, clogging due to geochemical impacts, physical or chemical factors, plugging due to biological activity, and corrosion. Depending on the evaluation or the problem, the appropriate remedy should be employed as soon as practical to address the issue such that the well performance is enhanced. These types of remedial maintenance actions that are performed by field personnel are documented in the *Performance Evaluation Reports* for that time interval.

### 2.9.3 Well Abandonment

If it becomes necessary for a recovery well, monitoring well, or piezometer to be abandoned, the borehole should be sealed in such a manner that the well cannot act as a conduit for migration of contaminants from the ground surface to the water table or between aquifers. Wells proposed for abandonment must be approved by EPD prior to conducting the work. Well abandonment plugging procedures will follow the SESD guidance, and the Georgia Water Well Standards Act.

All of the work will be supervised by a Licensed Georgia Professional Geologist.

## 3.0 SAMPLE COLLECTION PROCEDURES

The following sections describe the procedures that will be used for the collection of soil/sediment, water, and separate phase product samples. These procedures will be conducted in accordance with the most current U.S. Environmental Protection Agency, Region 4, Science and Ecosystem Support Division (SESD) *Field Branches Quality System and Technical Procedures.*

## 3.1 Groundwater Sampling

Groundwater sampling to be performed at the TOC is to conform to the SESD *Field Branches Quality System and Technical Procedures (i.e., Groundwater Sampling Operating Procedure)*. The procedures are to be used by field personnel collecting or handling groundwater samples. Special care is to be taken not to introduce outside contamination to the groundwater samples. This includes storing samples in a secure location prior to shipment to the analytical laboratory. Samples should be handled under chain-of-custody and quality assurance and quality control protocols for security and protection from potential cross-contamination.

### *3.1.1 Groundwater Sampling Schedule*

The groundwater monitoring network of wells to be sampled, the list of constituents to be analyzed and the sampling schedule is Attachment B-3 of the Permit Application. The sampling schedule includes the Point-of-Compliance (POC) wells for the CVR Unit. The POC wells are to be analyzed on a rotating basis for the list of constituents identified in Appendix IX of 40 CFR Part 264.

### *3.1.2 Groundwater Analytical Requirements and Summary Table*

The general analytical requirements for implementing the groundwater monitoring program are summarized below. If a well that is designated for sampling is observed to contain product during the scheduled sampling events, it will not be sampled at that time but evaluated for testing in the subsequent sampling event.

**GENERAL REQUIREMENTS**

| Analytical Parameter and/or Field Measurements | Analytical Method Number | Containers (number, type, size/volume) | Preservation Requirements (chem., temp., UV, etc.) | Maximum Holding Times |
|---|---|---|---|---|
| pH, Temperature, Conductivity, & Turbidity | Field Instrument | Not Applicable (NA) | NA | NA |
| Wells, Analytes in Attachment B-3 of the Permit Application. | EPA Method 8260 (most current version) | (3) 40-mL VOA glass vials with Teflon septa | HCL, pH<2, 4° | 14 days |

In addition to the testing described above, one of the POC wells for the CVR Unit is to be sampled annually and analyzed for the list of constituents identified in Appendix IX of 40 CFR Part 264. The testing will be rotated among the POC wells.

Also, upon identification of a distinct and previously undetected area of separate phase product, a sample of the separate phase product is to be collected and analyzed by EPA Methods SW-846, 8260, 8015, and/or any other applicable SW-846 Methods necessary for identification purposes.

For any future groundwater investigation performed at the Site and/or interim measure that is implemented, groundwater sampling and analytical requirements will be developed with EPD.

### 3.1.3 QA/QC Requirements for Groundwater Sampling

Trip blanks, field blanks, equipment rinsate blanks, and duplicate samples are to be collected relative to QA/QC requirements for groundwater sampling.

Trip blanks will be prepared to evaluate if the shipping and handling procedures are introducing contaminants into the samples, and if cross-contamination in the form of VOC migration has occurred between the collected samples. A minimum of one trip blank will be submitted to the laboratory for analysis with every shipment of samples for VOC analysis. Trip blanks are 40-ml vials that have been filled with laboratory HPLC-grade water that has been purged so it is VOC-free and shipped with the empty sampling containers to the Site prior to sampling. The sealed trip blanks are not opened in the field and are shipped to the laboratory in the same cooler as the samples collected for volatile analyses. The trip blanks will be preserved, packaged, and sealed in the manner described for the environmental samples.

Equipment rinsate blanks will be collected whenever field decontamination of equipment to be re-used in sampling activities is performed. When field cleaning of equipment is required during a sampling investigation, a piece of the field-cleaned equipment will be selected for the collection of a rinse blank. At least one rinse blank will be collected during each week of sampling operations. After the piece of equipment has been field cleaned and prior to its being used for sample operations, it will be rinsed with organic-free water. The rinse water will be collected and submitted for analyses of all constituents for which normal samples collected with that piece of equipment are being analyzed.

Field blank samples will be prepared in the field to evaluate the potential for contamination of a sample by site contaminants from a source not associated with the sample collected. Organic-free water is taken to the field in sealed containers or generated on-site. The water is poured into the appropriate sample containers at pre-designated locations at the Site. Field blanks should be collected in dusty environments and/or from areas where volatile organic contamination is present in the atmosphere and/or potentially originating from a source other than the source being sampled.

Duplicate samples are collected simultaneously with a standard sample from the same source under identical conditions into separate sample containers. Each duplicate portion should be assigned its own sample number so that it will be blind to the laboratory. A duplicate sample is treated independently of its counterpart in order to assess laboratory performance through comparison of the results. Every group of analytes for which a standard sample is analyzed will also be tested for one or more duplicate samples. Duplicate samples should be collected from areas of known or suspected contamination. Since the objective is to assess variability due to sampling technique and possible sample heterogeneity, source variability is a good reason to collect co-located samples, not to avoid their collection. In order to assure laboratory accuracy and consistency, field duplicate samples are to be collected at a rate of one per every twenty samples collected. The sample location should be disguised from the laboratory for quality assurance purposes.

All equipment introduced into the well for field measurements is to be appropriately decontaminated as described in Section 6.0. Disposable equipment will be used when possible. Equipment and samples will be handled with clean, powderless, nitrile and/or latex gloves that will be changed between each sampling location.

### 3.2 Soil Sampling

Selection of the sampling equipment is based on the depth of the sample to be collected and the characteristics of the soil. The soil sampling equipment should be constructed of inert materials such as stainless steel when possible. Soil sampling can be completed in any number of methods including but not limited to hand auger, split-spoon samplers, Geoprobe™ core samplers, sonic methods, and by use of a backhoe. Soil sampling methods will conform to those in the SESD – *Operational Procedure for Soil Sampling.*

### 3.3 Sediment Sampling *(If applicable to an area adjacent to the TOC)*

For the purposes of this procedure, sediments are those mineral and organic materials situated beneath an aqueous layer. The aqueous layer may be either static, as in lakes, ponds, and impoundments; or flowing, as in rivers and streams. Two sediment collection methods can be used – the use of a scooping device to remove sediments from a stream bed, or a direct sampling method using the EnCore® or Macro-Core Sampler device to both collect and containerize the sample. Sediment sampling methods will conform with those in the SESD - *Sediment Sampling Operating Procedure*.

### 3.4 Surface Water Sampling *(If applicable to an area adjacent to the TOC)*

Surface water samples that may be collected at the Delta TOC facility will conform with the SESD – *Operating Procedure for Surface Water Sampling.*

## 3.5 Field Parameter Measurements

Physical and chemical parameters of the ground water will be measured and recorded in the field. Physical parameters include depth to water, total well depth and the presence of immiscible layers. Chemical parameters will include pH, specific conductance, turbidity, and temperature. Calibration of field instruments will be recorded in the field logbook.

## 3.6 Depth-to-Water Measurements

Prior to well purging, depth-to-water measurements are to be performed to conform with the SESD *Field Branches Quality System and Technical Procedures (i.e., Groundwater Level and Well Depth Measurement Operating Procedure)*. Water-level measurements and/or total well depth measurements will be made relative to an established reference point on the well casing. Measurements of groundwater level and also total depth of all wells (without in-place plumbing) will be collected, at a minimum, on an annual basis. Measurements are to be taken using an electronic water-level instrument or other level indicator/recorder or method per the SESD procedure. All equipment and instruments are to be decontaminated prior to insertion into a well to minimize potential cross-contamination. Water-level measurements and/or total depth measurements are to be recorded in the field log. If immiscible layers are encountered in a monitoring well, the level and thickness of the layers will be measured and documented.

## 3.7 Decontamination Procedures

All field equipment is to be decontaminated prior to use. Decontamination is to be performed on field equipment to reduce or eliminate the possibility of cross-contamination from previous activities/sampling locations. The decontamination procedures, as described in Section 6.0, are to be performed before any non-dedicated equipment is used initially at the Site and after each subsequent use. The fluids and personal protective equipment generated during decontamination are to be collected and properly disposed of by Delta.

## 3.8 Sampling Equipment Inventory

Equipment used for sampling, field measurement, and routine operation and maintenance activities at the TOC is to be maintained properly in order to meet the identified quality requirements and kept in a secure location. Equipment used for field measurement activities is to achieve the accuracy and precision of measurement objectives. Equipment is to be handled, transported, shipped, stored, and operated in a manner that prevents damage, gross contamination, and deterioration. Operating instructions and/or manuals are to be available for equipment, when possible.

The following provides a general equipment inventory that is kept at the Site in a secure location and is properly maintained and calibrated (as needed):

- Oil/Water Level Probe
- Groundwater Field-Parameter Sampling Meter

If necessary to replace equipment, it will be documented in the field log.

### 3.9 Operation, Calibration and Maintenance Procedures

Prior to field activities, a determination is to be made as to which instruments are needed for the field activities. Some instruments are available from the equipment inventory or obtained from an equipment rental/supply company. Field personnel should locate, order, and coordinate delivery of the necessary instruments, calibration gases and/or standard solutions, and other necessary equipment and materials before the beginning of the field activities. Consideration should be made for specialty instruments and materials that may take longer to obtain.

Prior to field mobilization, instruments that are to be used during field activities should be checked for possible malfunctions, cleaned, and calibrated to manufacturer’s instructions. Some equipment provided by rental companies may be shipped pre-calibrated and a completed calibration sheet is sent with the equipment. These activities are to be conducted in accordance with the manufacturer’s procedures, where applicable.

In the event that manufacturer procedures are not available, standard acceptable calibration procedures will be used. Calibration verification will be performed on field instruments prior to their initial use, at least once daily, or whenever indications of instrument malfunction or questions in readings are observed. Some instruments, such as field water quality meters, or field gas chromatographs, may require more frequent calibration verification depending upon project quality objectives. In general, instrument identification and calibration will include the following steps:

1. Determine which instruments are needed for the specific field tasks.

2. Obtain the necessary instruments and associated calibration gases and/or standard solutions for calibration.

3. Check expiration dates on calibration gases and/or standard solutions, replace them if out of date.

4. Assemble the instrument and turn it on, allowing the instrument to warm up.

5. Check battery charge, charge or replace if necessary.

6. Check carrier gas volumes, and recharge if necessary [e.g., hydrogen carrier gas used in a flame ionization detector (FID)].

7. Clean the instrument (if necessary).

8. Calibrate the instrument prior to field use in accordance with manufacturer's instructions/procedures, and if necessary, adjust the instrument to meet calibration specifications (this step is sometimes referred to the initial calibration).

9. If the instrument malfunctions and cannot be corrected, obtain another instrument, and have the other repaired.

10. Clean and decontaminate the instrument after use, and before storage.

11. Conduct calibration verifications at least once per day, or as needed.

12. Conduct final calibration verification at the end of each day, or at completion of field measurement collection for the day.

13. Document all calibration activities and results.

14. Recharge batteries and add carrier gases (if applicable) at the end of each day or as needed. This should be carried out in a non-hazardous area.

15. Documentation of field calibration is to be provided in the *PE Reports.*

Important Note: Some types of rental equipment come with calibration standards. However, any rental equipment that requires gases for calibration will NOT come with the calibration gases. Shippers are restricted to Department of Transportation laws and regulations that prohibit the shipment of compressed gas cylinders by air. Therefore, calibration gases may need to be obtained from a separate source by ground transport.

### 3.9.1 Accuracy Requirements

In order for an instrument to be considered calibrated and ready for use, the instrument must read within at least 10% of the calibration standard. If the instrument reads >10% difference from the standard it should be recalibrated or taken out of service. Consult the manufacturer's instruction manual for more specific details on the instrument in use. Personnel responsible for the use of these instruments will read the manufacturer's instruction manual and will be trained for the use, calibration, and maintenance of the instrument prior to instrument use. The calibration, maintenance and use of these instruments will be conducted in accordance with the manufacturer's specifications and procedures. If instrument calibration cannot be met or if the instrument is malfunctioning, obtain another instrument and repair the malfunctioning instrument immediately (see Section 3.9.3 Corrective Action).

### *3.9.2 Records*

A record is to be maintained of the calibrations and calibration verification. The records are to include the following information, where applicable:

- Date and time of activities,
- Project name and number,
- Personnel conducting the calibration,
- Serial and/or meter numbers,
- Instrument name and model number,
- Calibration gases or standard solutions used, concentration of the gases and solutions used, and the associated units (if applicable), and lot numbers of calibration intervals,
- Instrument readings before and after calibration, and
- Instrument readings of calibration verification data.
- Calibration activities will be recorded in the field logbooks.

### *3.9.3 Corrective Action Procedures*

If an instrument cannot be successfully calibrated or if it is malfunctioning, the instrument will be repaired or replaced. In the event that this occurs during the course of the field activities, it will be the field personnel's responsibility to ensure that a replacement instrument is obtained as quickly as possible and that the Project Manager is notified. Field personnel should not continue with sampling activities until a replacement is obtained. Instances of instrument failure and corrective actions taken are to be documented in the field logbook.

Field instruments can be affected by changes in temperature, humidity, and barometric pressure. Instrument calibration should be checked when significant changes in weather occur. In addition, instrument calibration should be checked if maintenance activities (e.g., battery replacement, lamp replacement, or refueling) are required, if instrument malfunctions occur, or when questionable readings are observed. Calibration verification and recalibration activities shall be conducted and documented as outlined in Section 3.10.

## 4.0 SAMPLE DOCUMENTATION/SHIPPING AND QUALITY CONTROL

Ground-water samples collected from monitoring wells are to be analyzed for the analytes required by Delta's Permit. Table 2 presents potential analytical methods that may be used for future interim measures activities and/or investigations after approval from EPD. Tables 3 and 4 present summaries of sample containers, preservatives and holding time requirements for laboratory testing procedures relative to environmental testing and also for off-disposal characterization testing of solids and liquids.

The laboratory will provide sample containers that meet the sampling requirements of the study. The cleanliness of a batch of containers is to be verified by the laboratory prior to use. The laboratory will supply the necessary preservation solutions and ship these with the sample containers.

## 4.1 Quality Assurance/Quality Control Samples

In order to assure laboratory accuracy and consistency, field duplicate samples are to be collected at a rate of one per every twenty samples collected. The sample location should be disguised from the laboratory for quality assurance purposes.

## 4.2 Sample Custody

The sample custody and documentation procedure described herein is to be followed during sample collection. Each person involved with sample handling is to be trained in chain-of-custody procedures prior to the implementation of the field program. To reduce the chance of error, the number of personnel handling the samples will be limited.

A sample is under custody if:

- It is in your actual possession; or
- It is in your view, after being in your physical possession; or
- It was in your physical possession and then you locked it up to prevent tampering; or
- It is in a designated and identified secure area.

### *4.2.1 Sample Custody in the Field*

The following procedures are to be used to document, establish and maintain custody of the field samples:

- Sample labels will be completed for each sample, using waterproof ink, making sure that the labels are legible and affixed firmly to the sample container.
- All samples related information will be recorded in the project logbooks.
- The Fields Sample custodian will retain custody of the samples until they are transferred or properly dispatched; and

- During the course and at the end of the fieldwork, the field supervisor will determine whether these procedures have been followed, and if additional samples are required.

### 4.2.2 Transfer of Custody and Shipment

The following procedure is to be used in transferring and shipping samples:

- Samples will always be accompanied by a Chain-of-Custody. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the Record. This Record documents transfer of custody of samples from the sampler to another person, or to the laboratory.

- Samples are to be properly packaged for shipment and dispatched to the appropriate laboratory for analysis with a separate signed Chain-of-Custody Record enclosed in each sample box or cooler. Shipping containers are to be custody-sealed for shipment to the laboratory by overnight express.

- Whenever samples are split with a government agency, a separate Chain-of-Custody Record is to be prepared for those samples and marked to indicate with whom the samples are being split.

- All packages are to be accompanied by the Chain-of-Custody record showing identification of the contents. The original Record accompanies the shipment, and a copy is to be retained by the Field Supervisor.

- If sent by common carrier, a bill of lading is to be used. Receipts of Bill of Ladings are to be retained as part of the permanent documentation.

## 5.0 LABORATORY ANALYSES

### 5.1 Physical Laboratory Analyses

Physical laboratory analyses are to be performed on selected soil samples collected from soil test borings to aid in the design of recovery well screen-slot sizes and to characterize the physical attributes of the aquifer materials. Falling head permeability tests (ASTM-D5084) are to be performed on undisturbed soil samples collected in Shelby Tubes and grain size hydrometer (ASTM-D 422) will be performed on soils collected from split spoons.

### 5.2 Chemical Laboratory Analyses

Groundwater samples collected for laboratory analyses under the Permit will be analyzed for the list of constituents identified under the Permit. Groundwater and/or soil samples collected during future investigations or interim measures activities under the Permit may be analyzed for but not limited to VOCs, SVOCs and metals per Table 2. Groundwater analyses will be performed by Pace Analytical Services (Pace) in Atlanta, Georgia or another such lab as may be approved by Delta. Samples collected for characterization and off-site disposal will be analyzed for the parameters shown on Table 3. In addition to the testing described above, one of the POC wells for the CVR Unit is to be sampled annually (on a rotating basis). The POC well is to be analyzed for the list of constituents identified in Appendix IX of 40 CFR Part 264 and/or in conformance with the Permit.

Laboratory methods must be those specified in the most recent editions of Test Methods for Evaluating Solid Waste: Physical/ Chemical Methods, SW 846 or Standard Methods for the Examination of Water and Wastewater. Sampling and analyses of soil, sediment, surface water, and groundwater shall be conducted in accordance with methods and procedures acceptable to the Director and by a laboratory that is in compliance with the Georgia Commercial Analytical Laboratory Act, O.C.G.A. § 12-2-9 and the Rules for Commercial Environmental Laboratories, Section 391-3-26. Pace meets this requirement and is an accredited laboratory per the National Environmental Laboratory Accreditation Program (NELAP).

## 6.0 GENERAL DECONTAMINATION PROCEDURES

Decontamination is to be performed in accordance with the SESD - *Field Equipment Cleaning and Decontamination Operating Procedure*. Some basic procedures are identified below but details are provided in the *Field Equipment Cleaning and Decontamination Operating Procedures.*

### 6.1 General Decontamination Procedure

Equipment that comes in contact with potentially contaminated materials, soil, or water is to be cleaned prior to each use on this project. Decontamination consists of a combination of steam cleaning and/or phosphate-free laboratory detergent wash and potable water rinse.

### 6.2 Drilling Equipment

Drilling rigs and equipment are to be cleaned and decontaminated at a designated decontamination station before each boring or well installation. Equipment is to be inspected before use to determine if fluids (oils, lubricants, hydraulic fluids, etc.) are leaking. Fluid leaks are to be promptly repaired. Downhole drilling tools are to be steam-cleaned with high-pressure hot water.

### 6.3 Sampling Equipment

The cleaning procedures from the SESD *Field Equipment Cleaning and Decontamination Operating Procedures* are to be used for preparing non-dedicated sampling equipment prior to field use.

## 7.0 INVESTIGATION DERIVED WASTES AND RESIDUALS

Investigative activities will likely produce potentially contaminated drilling cuttings, monitoring well development water, decontamination water, and mixed liquids and solids. This section addresses the disposition of these materials. Investigation derived wastes (IDW), such as drilling cuttings and well development water, are to be containerized and labeled. These materials are to be handled in a manner consistent with good hazardous waste management practices until appropriate determinations for disposal are completed and consistent with SESD–*Management of IDW Operating Procedure*.

Information concerning the source and content of each drum is to be recorded in the field logbook. The information provided in the logbook will include:

- Source of material in each drum.
- Date material was placed in the drum.
- Volume of material in each drum.

### 7.1 Drill Cuttings

Drilling may generate potentially contaminated soils. Cuttings are to be containerized in 55-gallon drums or roll-off boxes by the drilling crew. Drums containing such materials are to be clearly marked and sealed pending receipt of sample analytical results. Further characterization may be conducted based on the requirements of the chosen disposal facility.

### 7.2 Decontamination Solids

The decontamination of drilling equipment, well construction, and sampling devices may produce a significant quantity of solids, primarily soils. These materials are to be handled in the manner previously described in Section 7.1.

### 7.3 Fluids

Recovery well fluids are either piped directly to Delta’s wastewater treatment system or transported in appropriate containment vessel. Fluids produced during the decontamination of drilling, sampling, and measuring devices are to be collected and containerized for disposal at Delta’s wastewater treatment system.

### 7.4 Personnel Protective Equipment

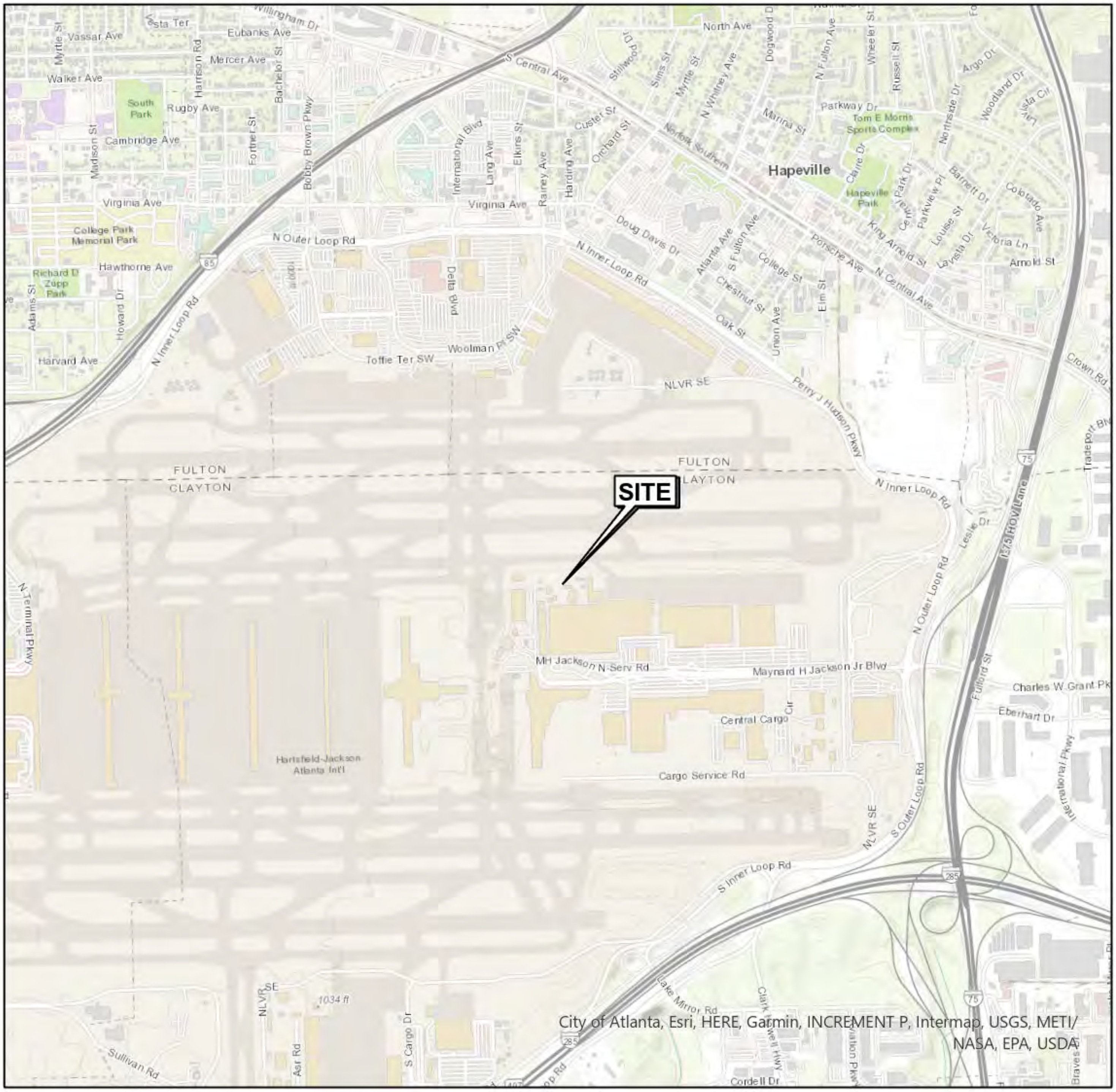
Used PPE and disposable equipment will be bagged and placed in a municipal refuse dumpster. These wastes are not considered hazardous and can be sent to a municipal landfill.

## 8.0 WASTE CHARACTERIZATION FOR DISPOSAL

If characterization of waste for off-site disposal becomes necessary per future investigation activities or performance of interim measures, this section is provided to make hazardous waste determinations and to quantify the presence and concentration of potentially underlying hazardous constituents. Results of the testing program would be used to select the appropriate TSD Facility/Facilities. Characterization sampling will be conducted per the guidelines established by the SESD *Waste Sampling Procedures.*

Table 3 presents a summary of analytical methods and parameters that may be used to accurately characterize materials for off-site disposal (solids and/or liquids). Table 4 provides a summary of containers used for specific analyses, associated preservation requirements, and holding times. Sample identification and chain-of-custody procedures should conform with the SESD *Sample and Evidence Management Procedure*.

# FIGURES



Map adapted from USGS 7.5 minute topographic map: Atlanta Southwest, GA

LEGEND

SITE LOCATION

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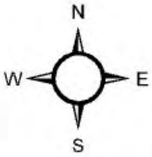


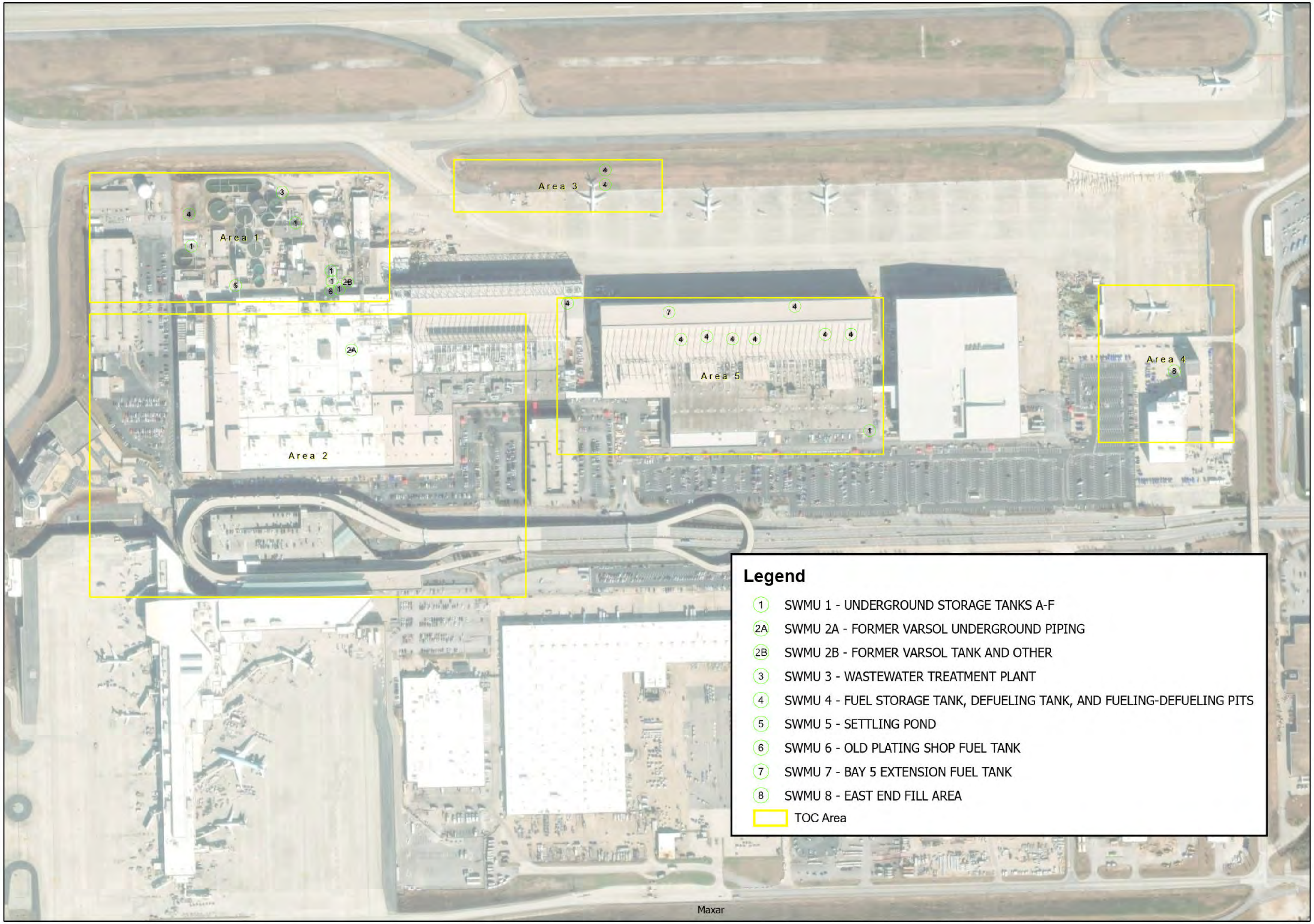
## SITE LOCATION MAP

Technical Operations Center
Hartsfield-Jackson Atlanta International Airport
Atlanta, Georgia

de maximis, inc.

FIGURE 1

File: fig01_SiteMap.mxd
Plot Date: 4/20/2023
Arc Operator: KWR
Reviewed by: RD



## Legend

| | |
|---|---|
| 1 | SWMU 1 - UNDERGROUND STORAGE TANKS A-F |
| 2A | SWMU 2A - FORMER VARSOL UNDERGROUND PIPING |
| 2B | SWMU 2B - FORMER VARSOL TANK AND OTHER |
| 3 | SWMU 3 - WASTEWATER TREATMENT PLANT |
| 4 | SWMU 4 - FUEL STORAGE TANK, DEFUELING TANK, AND FUELING-DEFUELING PITS |
| 5 | SWMU 5 - SETTLING POND |
| 6 | SWMU 6 - OLD PLATING SHOP FUEL TANK |
| 7 | SWMU 7 - BAY 5 EXTENSION FUEL TANK |
| 8 | SWMU 8 - EAST END FILL AREA |
| 🟨 | TOC Area |

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| DRAWN BY: | KWR |
| CHECKED BY: | RD |
| SCALE: | AS SHOWN |
| PROJECT NO: | 4132 |

JOB DESCRIPTION:

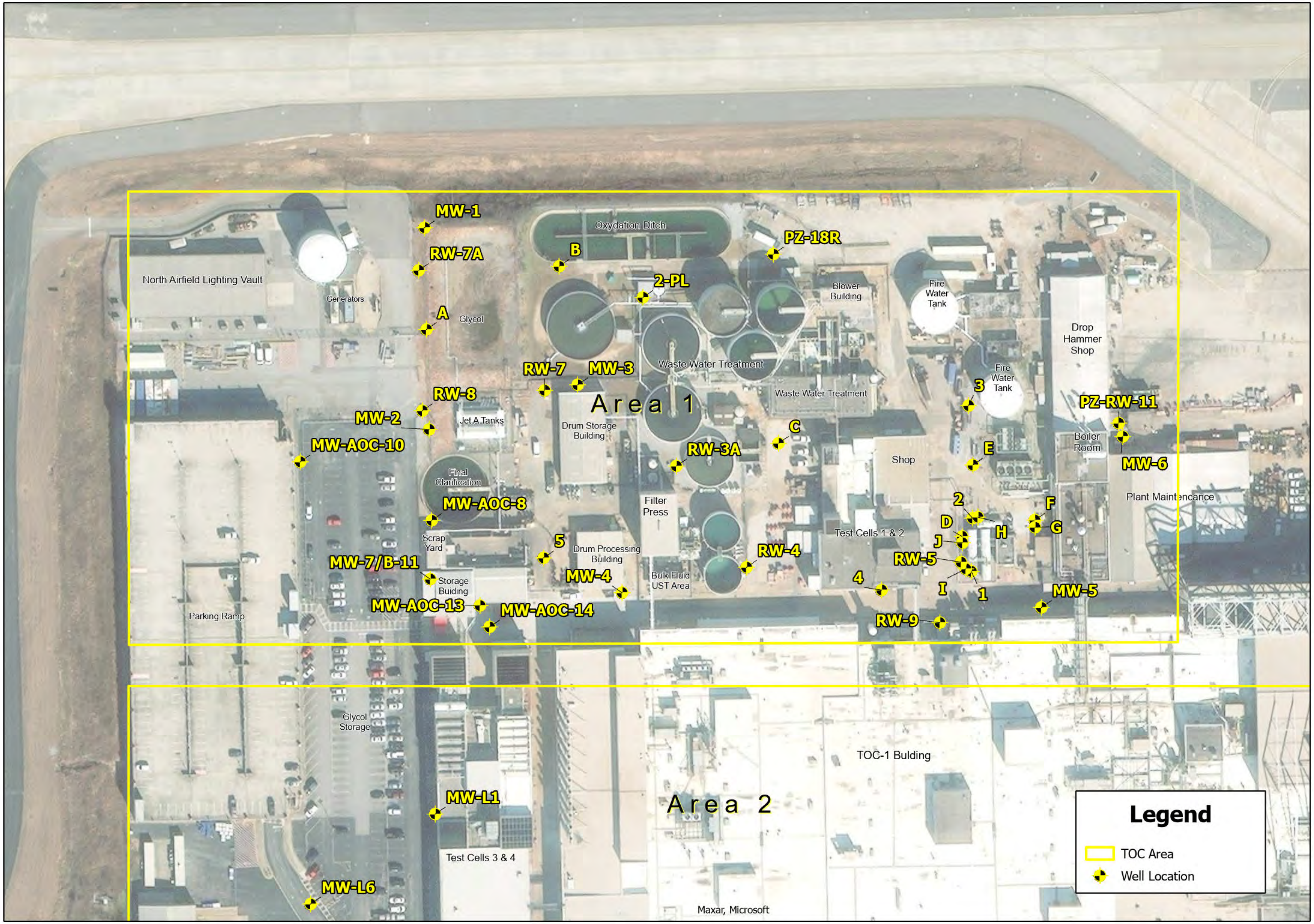
TECHNICAL OPERATIONS CENTER
HARTSFIELD-JACKSON ATLANTA
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

TOC AREAS AND
SWMU LOCATIONS

SHEET NO.

FIGURE 2



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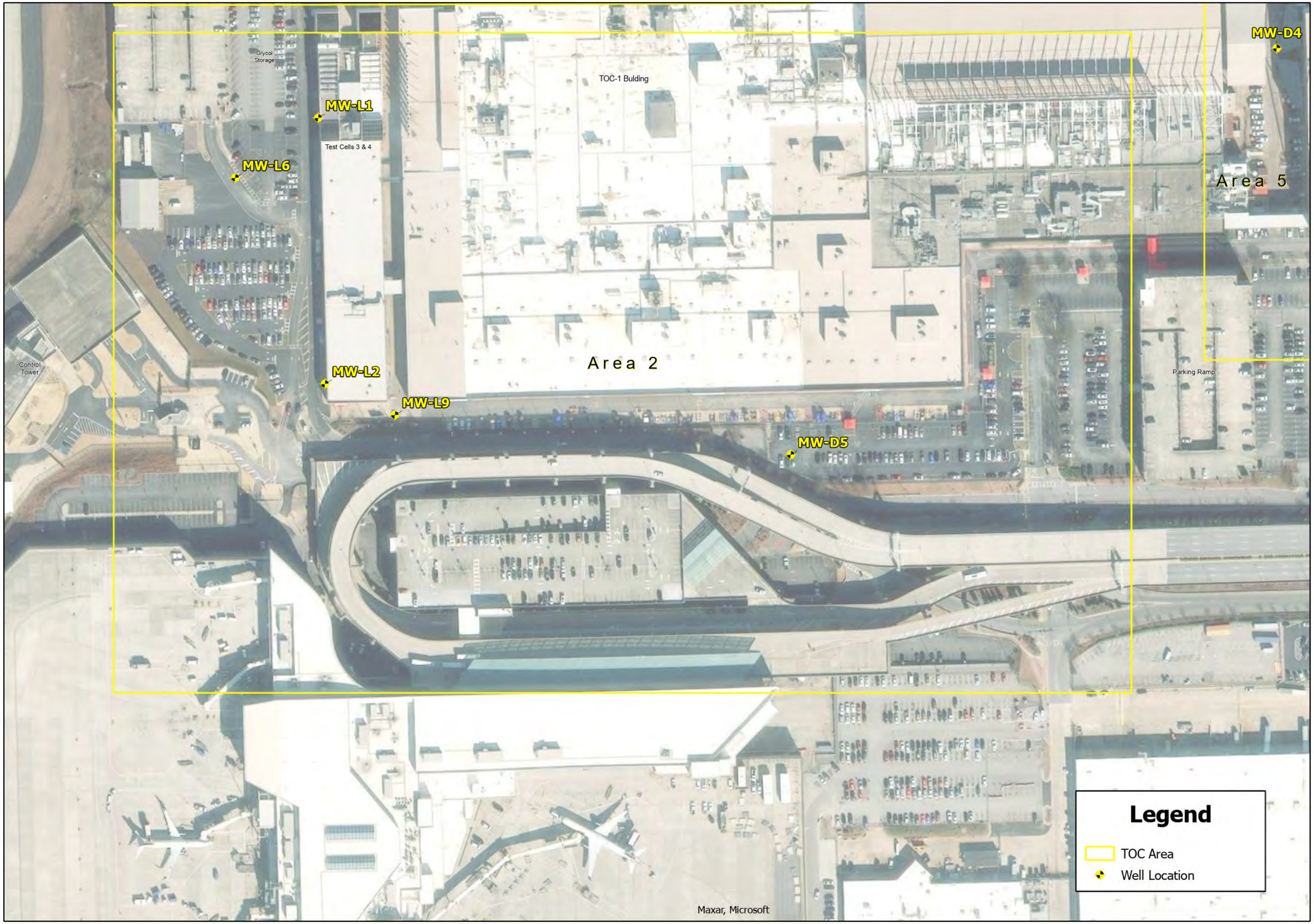
ATLANTA, GEORGIA

SHEET TITLE:

WELL LOCATIONS
AREA 1

SHEET NO.

FIGURE 3



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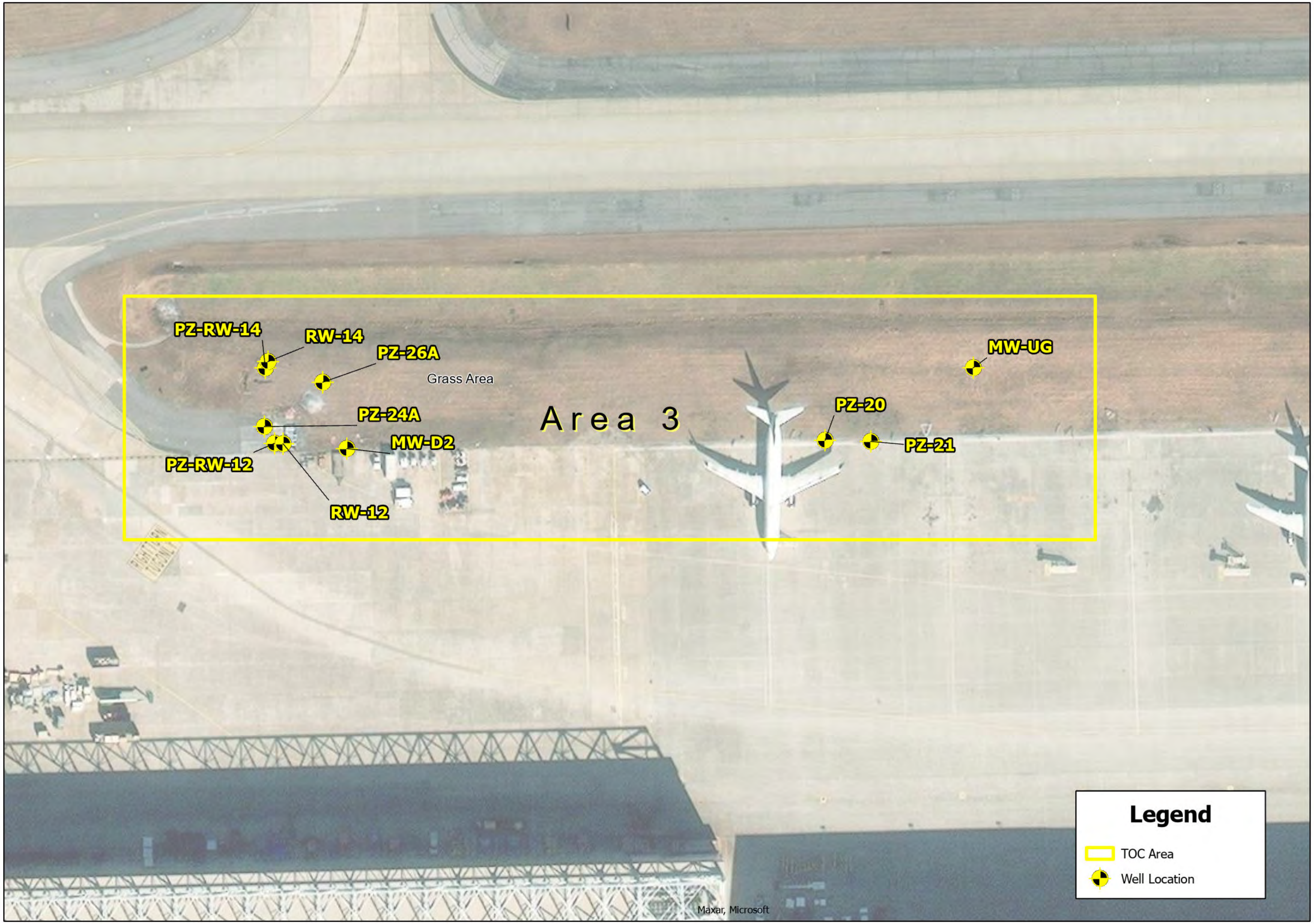
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

WELL LOCATIONS
AREA 2

SHEET NO.

FIGURE 4



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HARTSFIELD-JACKSON ATLANTA
INTERNATIONAL AIRPORT
ATLANTA, GEORGIA

SHEET TITLE:

WELL LOCATIONS
AREA 3

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FIGURE 5

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TECHNICAL OPERATIONS CENTER
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ATLANTA, GEORGIA

SHEET TITLE:

WELL LOCATIONS
AREA 5

SHEET NO.

FIGURE 6

# TABLES

# TABLE 1
# CAS WELL CONSTRUCTION AND MONITORING SUMMARY

*Delta Technical Operations Center*
*Hartsfield-Jackson Atlanta International Airport*

| WELL CONSTRUCTION | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Well ID** | **Completion Date** | **Top of Casing Elev. (ft)** | **Total Well Depth (ft)** | **Top of Screen (Depth)** | **Bottom of Screen (Depth)** | **Top of Screen (Elev.)** | **Bottom of Screen (Elev.)** |
| *Area 1 (Reference Figure 3)* | | | | | | | |
| **1** | 6/24/1988 | 952.5 | 23.47 | 6 | 21 | 946.5 | 931.5 |
| **2** | 6/27/1988 | 950.24 | 22.8 | 5 | 25 | 945.24 | 925.24 |
| **3** | 6/22/1988 | 949.64 | 15.32 | 5 | 15 | 944.64 | 934.64 |
| **4** | NA | 950 | 24.84 | 10 | 25 | 940 | 925 |
| **5** | 6/28/1988 | 949.69 | 25.26 | 13 | 28 | 936.69 | 921.69 |
| **2-PL** | NA | 949.83 | 20.95 | 11 | 21 | 938.83 | 928.83 |
| **A** | 12/27/1989 | 953.24 | 25.24 | 10 | 25 | 943.24 | 928.24 |
| **B** | 12/27/1989 | 949.7 | 20.64 | 10 | 20 | 939.7 | 929.7 |
| **C** | 12/28/1989 | 949.33 | 25.11 | 5 | 25 | 944.33 | 924.33 |
| **D** | 12/28/1989 | 949.72 | 23.5 | 10 | 25 | 939.72 | 924.72 |
| **E** | 1/2/1990 | 949.99 | 24.00 | 10 | 25 | 939.99 | 924.99 |
| **F** | 1/2/1990 | 949.6 | 25.10 | 10 | 25 | 939.6 | 924.6 |
| **G** | 1/3/1990 | 949.6 | 46.73 | 36.8 | 46.8 | 912.8 | 902.8 |
| **H** | 1/3/1990 | 949.83 | 47.37 | 37.3 | 47.3 | 912.53 | 902.53 |
| **I** | 1/5/1990 | 949.95 | 49.45 | 40 | 50 | 909.95 | 899.95 |
| **J** | 4/4/1997 | 952.04 | 32.24 | 10 | 30 | 942.04 | 922.04 |
| **MW-1** | 12/9/1992 | 953.37 | 32.53 | 18 | 33 | 935.37 | 920.37 |
| **MW-2** | 12/10/1992 | 949.58 | 25.28 | 10 | 25 | 939.58 | 924.58 |
| **MW-3** | 12/11/1992 | 949.79 | 25.26 | 10 | 25 | 939.79 | 924.79 |
| **MW-4** | 12/11/1992 | 949.91 | 25.10 | 10 | 25 | 939.91 | 924.91 |
| **MW-5** | 12/11/1992 | 950.5 | 21.72 | 7 | 22 | 943.5 | 928.5 |
| **MW-6** | 12/10/1992 | 950.57 | 19.18 | 5 | 20 | 945 | 930 |
| **MW-7/B-11** | 6/19/1995 | 949.73 | 28.35 | 15 | 30 | 934 | 919 |
| **MW-AOC-10** | 9/11/1996 | 950.02 | 26.60 | 10 | 25 | 938.52 | 923.52 |
| **MW-AOC-13** | NA | 949.89 | 24.07 | 10 | 25 | 940.17 | 925.17 |
| **MW-AOC-14** | NA | 949.81 | 24.66 | 10 | 25 | 940.04 | 925.04 |
| **MW-AOC-8** | 9/10/1996 | 949.83 | 24.80 | 10 | 25 | 939.83 | 924.83 |
| **PZ-18R** | 11/17/1998 | 950.26 | 22.98 | 5 | 20 | 945 | 930 |
| **PZ-RW-11** | 7/1/1998 | 950.26 | 31.75 | 5.5 | 35.7 | 944.76 | 914.56 |
| **RW-3A** | 9/24/1996 | 951.54 | 24.00 | 4 | 24 | 945.67 | 925.67 |
| **RW-4** | 10/1/1992 | 950.92 | NA | NA | NA | NA | NA |
| **RW-5** | 10/1/1992 | 951.23 | 49.35 | NA | NA | 933.23 | 922.23 |
| **RW-7** | 8/11/2010 | 951.87 | NM | 18 | 28 | 932 | 922 |
| **RW-7A** | 7/28/1997 | 954.56 | 40.10 | 20.6 | 40.1 | 932.49 | 912.39 |
| **RW-8** | 7/29/1997 | 952.58 | 37.40 | 18 | 37.4 | 932.28 | 912.88 |
| **RW-9** | 8/29/1997 | 949.81 | 60.00 | 11 | 57 | 938.81 | 889.81 |
| *Area 2 (Reference Figure 4)* | | | | | | | |
| **MW-D5** | 2/19/2005 | 954.41 | 31.31 | 17 | 32 | 937.41 | 922.41 |
| **MW-L1** | 3/4/1997 | 949.03 | 25.83 | 16.5 | 27 | 932.53 | 922.03 |
| **MW-L2** | 3/4/1997 | 947.68 | 25.70 | 16.5 | 27 | 931.18 | 921.18 |
| **MW-L6** | 11/25/1997 | 949.38 | 28.72 | 15 | 30.5 | 934.38 | 918.88 |
| **MW-L9** | 12/4/1997 | 950.26 | 24.70 | 8.5 | 24 | 941.76 | 926.26 |
| *Area 3 (Reference Figure 5)* | | | | | | | |
| **MW-D2** | 6/19/1995 | 952.39 | 24.75 | 10.1 | 25.3 | 942.39 | 927.39 |
| **MW-UG** | 6/19/1995 | 952.35 | 29.70 | 10 | 30 | 942.35 | 922.35 |
| **PZ-20** | 12/23/1997 | 952.57 | 13.00 | 3.5 | 12.5 | 949 | 940 |

# TABLE 1
# CAS WELL CONSTRUCTION AND MONITORING SUMMARY

*Delta Technical Operations Center*
*Hartsfield-Jackson Atlanta International Airport*

| WELL CONSTRUCTION | | | | | | | |
|---|---|---|---|---|---|---|---|
| Well ID | Completion Date | Top of Casing Elev. (ft) | Total Well Depth (ft) | Top of Screen (Depth) | Bottom of Screen (Depth) | Top of Screen (Elev.) | Bottom of Screen (Elev.) |
| **PZ-21** | 12/23/1997 | 952.4 | 13.11 | 3.5 | 12.5 | 948.9 | 939.9 |
| **PZ-24A** | 1/25/2001 | 952.05 | 35.47 | 5.7 | 35.7 | 946 | 916 |
| **PZ-26A** | 1/25/2001 | 952.53 | 35.30 | 5.5 | 35.5 | 946 | 916 |
| **PZ-RW-12** | 7/8/1998 | 952.48 | 39.01 | 5.8 | 40.8 | 946.68 | 911.68 |
| **PZ-RW-14** | 7/6/1998 | 951.8 | 42.65 | 5.9 | 46 | 945.9 | 905.8 |
| **RW-12** | 11/12/1998 | 951.28 | 42.76 | 7.36 | 42.16 | 943.92 | 909.12 |
| **RW-14** | 11/11/1998 | 949.49 | 47.00 | 7 | 47 | 945.16 | 907.16 |
| *Area 5 (Reference Figure 6)* | | | | | | | |
| MW-7-1 | 5/29/1997 | 949.73 | 22.62 | 4 | 24 | 945.73 | 925.73 |
| **MW-D4** | 12/10/2003 | 950.98 | 30.38 | 10 | 30 | 941 | 921 |
| **RW-15** | 6/20/1990 | 952.95 | 30.20 | 5 | 25 | 946.69 | 926.69 |
| **RW-16** | 6/23/1990 | 953.29 | 31.30 | 5 | 25 | 946.59 | 926.59 |
| **RW-17** | 6/24/1990 | 953.16 | 27.71 | 5 | 25 | 946.49 | 926.49 |
| **RW-18** | 6/24/1990 | 954.36 | 28.38 | 5 | 25 | 946.45 | 926.45 |

Notes:

| | |
|---|---|
| NP | No Product |
| NA | Not Available |
| Well ID | Well IDs that have been highlighted are currently used to recover product. |
| **Well ID** | Well IDs shown in bold are routinely monitored during O & M activities - includes groundwater elevation a<br>as well as routine manual bailing. |

# TABLE 2: SUMMARY OF ANALYTICAL PARAMETERS AND METHODS FOR INVESTIGATION AND/OR INTERIM MEASURE ACTIVITIES

| **Soils** | **Laboratory Parameter** | **Matrix** | **Testing Methodology*** |
|---|---|---|---|
| | Volatile Organic Compounds | Solid | SW-846 Method 5035/5030/8260 |
| | Semi-Volatile Organic Compounds | Solid | SW-846 Method 8270 |
| | Metals | Solid | SW-846 Method 6010 |

| **Groundwater** | **Laboratory Parameter** | **Matrix** | **Testing Methodology*** |
|---|---|---|---|
| | Volatile Organic Compounds | Water | SW-846 Method 8260 |
| | Semi-Volatile Organic Compounds | Water | SW-846 Method 8270 |
| | Metals | Water | SW-846 Method 6010 |

*Most current EPA testing methods to be utilized.

## TABLE 3: SUMMARY OF ANALYTICAL PARAMETERS AND METHODS FOR CHARACTERIZATION OF SOLIDS AND LIQUIDS FOR OFF-SITE DISPOSAL

| Sample Type | Laboratory Parameter | Matrix | Testing Methodology* |
|---|---|---|---|
| Solids (including soils, sludges and slurries) | Total Metals (except Mercury) | Solid | SW-846 Method 6010 |
| | Total Mercury | Solid | SW-846 Method 7471 |
| | Total VOCs w/Additional Analytes | Solid | SW-846 Method 8260 |
| | Total SVOCs w/Additional Analytes | Solid | SW-846 Method 8270 |
| | Total Organochlorine Pesticides | Solid | SW-846 Method 8081 |
| | Total PCBs | Solid | SW-846 Method 8082 |
| | Total Organophosphorus Compounds | Solid | SW-846 Method 8141 |
| | Total Chlorinated Herbicides | Solid | SW-846 Method 8151 |
| | Dioxins and Furans (all 17 D/F compounds) | Solid | SW-846 Method 8290/8290 |
| | Total and Amenable Cyanides | Solid | SW-846 Method 9010/9014 |
| | Total Sulfide | Solid | SW-846 Method 9030/9034 |
| | Total Inorganic Anions [1] | Solid | SW-846 Method 9056 |
| | TPH (GRO)[2] | Solid | SW-846 Method 8015 |
| | TPH (EPH)[3] | Solid | SW-846 Method 8015 |
| | Total Organic Halogens | Solid | SW-846 Method 9060 or Calculation |
| | TCLP Metals (except Mercury) | Solid | SW-846 Method 1311, 6010 |
| | TCLP Mercury | Solid | SW-846 Method 1311, 7174 |
| | TCLP VOCs | Solid | SW-846 Method 1311, 8260 |
| | TCLP SVOCs | Solid | SW-846 Method 1311, 8270 |
| | TCLP Pesticides | Solid | SW-846 Method 1311, 8081 |
| | TCLP Herbicides | Solid | SW-846 Method 1311, 8151 |
| | pH (Corrosivity) | Solid | SW-846 Method 9045 |
| | Reactive Cyanide | Solid | SW-846 Section 7.3 |
| | Reactive Sulfide | Solid | SW-846 Section 7.3 |
| | Ignitability | Solid | SW-846 Method 1010 |

| Sample Type | Laboratory Parameter | Matrix | Testing Methodology* |
|---|---|---|---|
| Liquids (aqueous and non-aqueous) | Total Metals (except Mercury) | Liquid | SW-846 Method 6010 |
| | Total Mercury | Liquid | SW-846 Method 7470 |
| | Total VOCs w/Additional Analytes | Liquid | SW-846 Method 8260 |
| | Total SVOCs | Liquid | SW-846 Method 8270 |
| | Total Organochlorine Pesticides | Liquid | SW-846 Method 8081 |
| | Total PCBs | Liquid | SW-846 Method 8082 |
| | Total Organophosphorus Compounds | Liquid | SW-846 Method 8141 |
| | Total Chlorinated Herbicides | Liquid | SW-846 Method 8151 |
| | Dioxins and Furans (all 17 D/F compounds) | Liquid | SW-846 Method 8290/8290 |
| | Total and Amenable Cyanides | Liquid | SW-846 Method 9010/9014 |
| | Total Sulfide | Liquid | SW-846 Method 9030/9034 |
| | Total Inorganic Anions [1] | Liquid | SW-846 Method 9056 |
| | TPH (GRO)[2] | Liquid | SW-846 Method 8015 |
| | TPH (EPH)[3] | Liquid | SW-846 Method 8015 |
| | Total Organic Halogens | Liquid | SW-846 Method 9060 or Calculation |
| | TCLP Metals (except Mercury) | Liquid | SW-846 Method 1311, 6010 |
| | TCLP Mercury | Liquid | SW-846 Method 1311, 7470 |
| | TCLP VOCs | Liquid | SW-846 Method 1311, 8260 |
| | TCLP SVOCs | Liquid | SW-846 Method 1311, 8270 |
| | TCLP Pesticides | Liquid | SW-846 Method 1311, 8081 |
| | TCLP Herbicides | Liquid | SW-846 Method 1311, 8151 |
| | pH (Corrosivity) | Liquid | SW-846 Method 9040 |
| | Reactive Cyanide | Liquid | SW-846 Section 7.3 |
| | Reactive Sulfide | Liquid | SW-846 Section 7.3 |
| | Ignitability | Liquid | SW-846 Method 1010 or 1020 |

Notes:

(1) - Total Inorganic Anions include Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, and Sulfate.

(2) - Total Petroleum Hydrocarbons (Gasoline Range Organics).

(3) - Total Petroleum Hydrocarbons (Extractable Petroleum Hydrocarbons - Diesel Range).

# TABLE 4: SAMPLE CONTAINERS, PRESERVATIVES AND HOLDING TIMES (Solids and Liquids)

| Sample Type | Laboratory Parameter | Analytical Method* | Container | Preservative | Holding Time$^{1}$ |
|---|---|---|---|---|---|
| Solids (including sludges and slurries) | Total Metals (except Mercury) | Method 6010C | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | 180 days |
| | Total Mercury | Method 7471B | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | 28 days |
| | Volatile Organic Compounds (VOCs) | Method 5035 | TerraCore Kit (1 to 3 containers) | Cool to 4ºC | 14 days |
| | Total VOCs | Method 5035/8260B | TerraCore Kit or 2-oz. glass | Cool to 4ºC | 14 days |
| | Total SVOCs | Method 8270D | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | Total Chlorinated Pesticides | Method 8081B | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | Total PCBs | Method 8082A | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | Total Organophosphorus Compounds | Method 8141B | 4-oz. glass bottle with Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | Total Chlorinated Herbicides | Method 8151A | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | Dioxins and Furans | SW-846 Method 8290/8290A | 4-oz. or 8-oz. glass bottle with Teflon lid | Cool to 4ºC | 30 days |
| | Total and Amenable Cyanides | Method 9010 | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | 14 days |
| | Total Sulfide | Method 9030/9034 | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | 7 days |
| | Total Inorganic Anions$^{3}$ | Method 9056 | 4-oz. glass bottle with Teflon lid | Cool to 4ºC | 7 days |
| | TPH (GRO)$^{4}$ | Method 8015C | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | TPH (EPH)$^{5}$ | Method 8015C | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | Total Organic Halogens | Method 9060A | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | 28 days |
| | TCLP Metals (except Mercury) | Method 1311, 6010C | 1 Liter glass bottle w/wide mouth (wm) | Cool to 4ºC | 180 days |
| | TCLP Mercury | Method 1311, 7174B | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | 28 days |
| | TCLP VOCs | Method 1311, 8260B | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | 14 days |
| | TCLP SVOCs | Method 1311, 8270D | 1 Liter glass bottle wm Polycarbonate | Cool to 4ºC | 14 days |
| | TCLP Pesticides | Method 1311, 8081B | 1 Liter glass bottle wm Polycarbonate | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | TCLP Herbicides | Method 1311, 8151A | 1 Liter glass bottle wm Polycarbonate | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | pH (Corrosivity) | Method 9045D | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | As soon as possible |
| | Reactive Cyanide | SW-846 Section 7.3 | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | Not Regulated |
| | Reactive Sulfide | SW-846 Section 7.3 | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | Not Regulated |
| | Ignitability | ASTM D92 - Method 1010A | 125 mL glass bottle w/Teflon lid | Cool to 4ºC | Not Regulated |

*Most Current EPA Methods to be Utilized.

| Sample Type | Laboratory Parameter | Analytical Method | Container | Preservative | Holding Time$^{1}$ |
|---|---|---|---|---|---|
| Liquids (aqueous and non-aqueous) | Total Metals (except Mercury) | SW-846 Method 6010C | 500 mL HDPE | HNO3 to pH < 2 | 180 days |
| | Total Mercury | SW-846 Method 7470A | 1-500 mL glass w/wide mouth | HNO3 to pH < 2 | 28 days |
| | Total VOCs | SW-846 Method 8260B | 3 x 40-ml amber glass vial with Teflon | HCl to pH < 2, Cool to 4ºC | 14 days |
| | Total SVOCs | SW-846 Method 8270D | 1-L amber glass bottle with Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | Total Chlorinated Pesticides | SW-846 Method 8081B | 2 x 1-L amber glass bottle with Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | Total PCBs | SW-846 Method 8082A | 2 x 1-L amber glass bottle with Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | Total Organophosphorus | SW-846 Method 8141A | 2 x 1-L amber glass bottle with Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | Total Chlorinated Herbicides | SW-846 Method 8151A | 2 x 1-L amber glass bottle with Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | Dioxins and Furans | SW-846 Method 8290/8290A | 2 x 1-L amber glass bottle with Teflon lid | Cool to 4ºC | 30 days |
| | Total and Amenable Cyanides | SW-846 Method 9014 | 1-L polyethylene | 0.6 gm Ascorbic acid, NaOH to pH > 12, Cool to 4ºC | 14 days |
| | Total Sulfide | SW-846 Method 9034 | 1-L polyethylene | Cool to 4ºC | As soon as possible |
| | Total Inorganic Anions$^{3}$ | SW-846 Method 9056 | 1-L glass bottle with Teflon lid | Zinc Acetate; NaOH to pH > 9 | 7 days |
| | TPH (GRO)$^{4}$ | SW-846 Method 8015C | 1-L amber glass bottle with Teflon lid | HCl to pH < 2, Cool to 4ºC | 14 days |
| | TPH (EPH)$^{5}$ | SW-846 Method 8015C | 1-L amber glass bottle with Teflon lid | HCl to pH < 2, Cool to 4ºC | 14 days/40 days$^{2}$ |
| | Total Organic Halogens | SW-846 Method 9060A | 2 x 250 mL amber glass w/ teflon septum | Cool to 4ºC | 28 days |
| | TCLP Metals (except Mercury) | SW-846 Method 1311, 6010C | 1-500 mL HDPE container | Cool to 4ºC | 180 days |
| | TCLP Mercury | SW-846 Method 1311, 7470A | 1-500 mL glass bottle with wide mouth | Cool to 4ºC | 28 days |
| | TCLP VOCs | SW-846 Method 1311, 8260B | 1-L amber glass bottle with Teflon lid | Cool to 4ºC | 14 days |
| | TCLP SVOCs | SW-846 Method 1311, 8270D | 1-L amber glass bottle with Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | TCLP Pesticides | SW-846 Method 1311, 8081B | 1-L amber glass bottle with Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | TCLP Herbicides | SW-846 Method 1311, 8151A | 1-L amber glass bottle with Teflon lid | Cool to 4ºC | 14 days/40 days$^{2}$ |
| | pH (Corrosivity) | SW-846 Method 9040C | 1-120 mL HDPE container | Cool to 4ºC | As soon as possible |
| | Reactive Cyanide | SW-846 Section 7.3 | 1-L amber glass bottle with Teflon lid | Cool to 4ºC | Not Regulated |
| | Reactive Sulfide | SW-846 Section 7.3 | 1-L amber glass bottle with Teflon lid | Cool to 4ºC | Not Regulated |
| | Ignitability | SW-846 Method 1010 or 1020B | 1-500 mL Glass - Wide Mouth | Cool to 4ºC | Not Regulated |

Notes:
(1) - Holding times are relative to the date of sample collection.
(2) - 14 days/40 days indicates 14 days from sample collection to initial extraction, and analysis within 40 days following sample collection.
(3) - Total Inorganic Anions include Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, and Sulfate.
(4) - Total Petroleum Hydrocarbons (Gasoline Range Organics).
(5) - Total Petroleum Hydrocarbons (Extractable Petroleum Hydrocarbons - Diesel Range).

# ATTACHMENT B-3

# GROUNDWATER MONITORING PLAN (TABLES)

# Groundwater Monitoring Plan

## Proposed Schedule

| Well ID | Well Construction | | | | | | Proposed Sampling Frequency |
|---|---|---|---|---|---|---|---|
| | Top of Casing Elev. (ft) | Total Well Depth (ft) | Top of Screen (Depth) | Bottom of Screen (Depth) | Top of Screen (Elev.) | Bottom of Screen (Elev.) | |
| *Area 1* | | | | | | | |
| **4** | 950 | 24.84 | 10 | 25 | 940 | 925 | Semi-Annual - POC Well |
| **C** | 949.33 | 25.11 | 5 | 25 | 944.33 | 924.33 | Semi-Annual - POC Well |
| **MW-4** | 949.91 | 25.10 | 10 | 25 | 939.91 | 924.91 | Semi-Annual - POC Well |
| **MW-AOC-10** | 950.02 | 26.60 | 10 | 25 | 938.52 | 923.52 | Bi-Annual (every 2 years) |
| **2-PL** | 949.83 | 20.95 | 11 | 21 | 938.83 | 928.83 | Annual |
| **5** | 949.69 | 25.26 | 13 | 28 | 936.69 | 921.69 | Annual |
| **A** | 953.24 | 25.24 | 10 | 25 | 943.24 | 928.24 | Annual |
| **G** | 949.6 | 46.73 | 36.8 | 46.8 | 912.8 | 902.8 | Annual |
| **H** | 949.83 | 47.37 | 37.3 | 47.3 | 912.53 | 902.53 | Annual |
| **I** | 949.95 | 49.45 | 40 | 50 | 909.95 | 899.95 | Annual |
| **MW-1** | 953.37 | 32.53 | 18 | 33 | 935.37 | 920.37 | Annual |
| **MW-2** | 949.58 | 25.28 | 10 | 25 | 939.58 | 924.58 | Annual |
| **MW-3** | 949.79 | 25.26 | 10 | 25 | 939.79 | 924.79 | Annual |
| **MW-7/B-11** | 949.73 | 28.35 | 15 | 30 | 934 | 919 | Annual |
| **RW-3A** | 951.54 | 24.00 | 4 | 24 | 945.67 | 925.67 | Annual |
| **RW-9*** | 949.81 | 60.00 | 11 | 57 | 938.81 | 889.81 | Annual |
| ***Area 2*** | | | | | | | |
| **MW-L6** | 949.38 | 28.72 | 15 | 30.5 | 934.38 | 918.88 | Bi-Annual (every 2 years) |
| **MW-D5** | 954.41 | 31.31 | 17 | 32 | 937.41 | 922.41 | Annual |
| **MW-L1** | 949.03 | 25.83 | 16.5 | 27 | 932.53 | 922.03 | Annual |
| **MW-L9**** | 950.26 | 24.70 | 8.5 | 24 | 941.76 | 926.26 | Annual |
| ***Area 3*** | | | | | | | |
| **MW-UG** | 952.35 | 29.70 | 10 | 30 | 942.35 | 922.35 | Semi-Annual with POC Wells |
| ***Area 5*** | | | | | | | |
| **MW-7-1** | 949.73 | 22.62 | 4 | 24 | 945.73 | 925.73 | Annual |
| **MW-D4** | 950.98 | 30.38 | 10 | 30 | 941 | 921 | Annual |

Notes:

*The well is used for product recovery, however, a groundwater sample can be taken from the total fluids pump.

** Well has a sheen and will be sampled when a sheen is not present.

POC wells will also be tested on an annual rotating basis for Appendix IX parameters.

POC wells & MW-UG are designated with a semi-annual frequency as testing will occur 6 months after the annual comprehensive well sampling event.

All POC wells will be tested annually for OCDD.

# Groundwater Monitoring Plan

## Analyte List

| Parameter | Standard (ug/L) |
|---|---|
| **Volatile Organic Compounds** | |
| 1,1-Dichloroethane | Background |
| 1,1-Dichloroethene | 7 |
| Benzene | 5 |
| Chlorobenzene | 100 |
| Chloroethane | Background |
| cis-1,2-Dichloroethene | 7 |
| Isopropylbenzene | Background |
| Naphthalene | Background |
| n-Butylbenzene | Background |
| n-Propylbenzene | Background |
| sec-Butylbenzene | Background |
| tert-Butylbenzene | Background |
| Tetrachloroethene | 5 |
| Trichloroethene | 5 |
| Vinyl Chloride | 2 |
| **Dioxins and Furans** | |
| OCDD* | Background |

*POC Well Annually Only

# ATTACHMENT B-4

# RFI REPORT for SWMUs 1 – 8 (1997)

# RCRA FACILITY INVESTIGATION FOR SWMUs 1 - 8

*Prepared For*

## DELTA AIR LINES, INC.

**HARTSFIELD ATLANTA**
**INTERNATIONAL AIRPORT**
**Atlanta, Georgia**

*Prepared By*

**PARSONS ENGINEERING SCIENCE, INC.**
**Atlanta, Georgia**

*July 1997*

*730657/cov-1.cdr*

PARSONS ENGINEERING SCIENCE, INC.

**PARSONS ENGINEERING SCIENCE, INC.**
A UNIT OF PARSONS INFRASTRUCTURE & TECHNOLOGY GROUP INC.
Suite 500 • 57 Executive Park South, N.E. • Atlanta, Georgia 30329-2265 • (404) 235-2300 • Fax: (404) 235-2500

July 8, 1997

Mr. Gerry Allen
Project Manager - Environmental
Airport and Corporate Affairs
Delta Air Lines, Inc. - Dept. 885 - TOC 1
P.O. Box 20706
1500 Aviation Boulevard
Atlanta, Georgia 30320

Subject: Project Report, RCRA Facility Investigation for SWMUs 1 - 8 (reference Delta Air Lines contract ATG ID# XCE033, Parsons ES project no. 730657)

Dear Mr. Allen:

Please find enclosed 8 copies, including 2 for EPD, of the project report for the RCRA Facility Investigation for SWMUs 1 - 8 at Delta's Technical Operations Center. Two copies of the report are due to EPD on Wednesday, July 9. In addition, I have included 2 copies of the RFI work plan for EPD's files per EPD's request and your concurrence. Bob Pierce of EPD has advised me that EPD will request a third copy of the RFI report after they review and comment on the original copies. Please add a certification page signed by David Hesterlee or his representative to each copy of the RFI report that is delivered to EPD.

The analytical data packages (Appendix B) have been included in only 2 copies of the report to save paper and copying expenses. Please provide 1 copy that includes the analytical data to EPD.

Parson ES appreciates the opportunity to provide services to Delta Air Lines. Please call me (404-235-2442) or Brad Lewis (404-235-2489) if you have any questions regarding this report.

Sincerely,

PARSONS ENGINEERING SCIENCE, INC.

Bert Pearce

Bert Pearce, P.E.
Project Manager

cc: R. Glenn - Parsons ES

I:\730657\ADMIN\CVRLTR1.WW6

Delta Air Lines

Delta Air Lines, Inc.
Post Office Box 20706
Atlanta, Georgia 30320-6001

July 9, 1997

Mr. David Yardumian, Unit Coordinator
Georgia Department of Natural Resources
Hazardous Waste Management Program
Environmental Protection Division
Floyd Towers East, Suite 1154
205 Butler Street S.E.
Atlanta, Georgia 30334

RE: RCRA Facility Investigation for SWMUs 1-8
Delta Air Lines Technical Operations Center
Hartsfield Atlanta International Airport
Atlanta, Georgia

Dear Mr. Yardumian:

Enclosed are two copies of the referenced report.

**I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.**

If you need any additional information, please contact Gerry Allen at (404) 714-3977.

Sincerely,

David R. Hesterlee
General Manager - Environmental & Corporate Affairs
Department 885

Enclosures

0709atl1

# GROUNDWATER SCIENTIST STATEMENT

I certify that I am a qualified groundwater scientist who has received a baccalaureate or post-graduate degree in the natural sciences or engineering, and have sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by myself or by a subordinate working under my direction.

Walker J. Dun

Name

7/9/97

Date

Walker J. Duncan

No. 648

Stamp of Georgia Registered Professional Geologist

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# TABLE OF CONTENTS

# TABLE OF CONTENTS
# (CONTINUED)

# TABLE OF CONTENTS
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# RCRA FACILITY INVESTIGATION
# FOR SWMUs 1 - 8

PREPARED FOR

**DELTA AIR LINES, INC.**

**HARTSFIELD ATLANTA**
**INTERNATIONAL AIRPORT**
Atlanta, Georgia

PREPARED BY

**PARSONS ENGINEERING SCIENCE, INC.**
57 Executive Park South, N.E.
Suite 500
Atlanta, Georgia 30329

July 1997

# TABLE OF CONTENTS
# (CONTINUED)

# LIST OF FIGURES

# LIST OF TABLES

# LIST OF ACRONYMS

| Acronym/Abbreviation | Explanation |
|---|---|
| bgs | below ground surface |
| BTEX | Benzene, toluene, ethylbenzene, and xylenes |
| COPC | Chemical of potential concern |
| DRO | Diesel range organics |
| EPD | Environmental Protection Division |
| GRO | Gasoline range organics |
| LNAPL | Light non-aqueous phase liquid |
| ND | nondetect |
| RFI | RCRA Facility Investigation |
| SCC | Solids contact clarifier |
| SVOCs | Semivolatile organic chemicals |
| SWMU | Solid Waste Management Unit |
| TCLP | Toxicity characteristic leaching procedure |
| TOC | Technical Operations Center |
| UST | Underground storage tank |
| VOCs | Volatile organic chemicals |

# 1

# Section One

# SECTION 1
# INTRODUCTION

Delta Air Lines, Inc. (Delta) retained Parsons Engineering Science (Parsons ES) to conduct a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) of 8 solid waste management units (SWMUs) at the Technical Operations Center (TOC), Hartsfield Atlanta International Airport, Atlanta, Georgia. The location of the TOC is shown on Figure 1.1. Section 1 presents the project background, permit requirements, RFI objectives, and RFI report organization.

## 1.1 BACKGROUND

Delta received a renewed Hazardous Waste Facility Permit [HW-036(S&T)-2] from the State of Georgia Environmental Protection Division (EPD) on September 8, 1994. The permit requires Delta to conduct an RFI of the following SWMUs:

|  |  |  |
|---|---|---|
| • | SWMU 1 | Underground Storage Tanks A, B, C, D, E, F |
| • | SWMU 2 | Varsol Reclaim Tank |
| • | SWMU 3 | Wastewater Treatment Unit and Appurtenances Used in Waste Management |
| • | SWMU 4 | Fuel Storage and Defueling Tanks Adjacent to TOC-1, 2, and 3 |
| • | SWMU 5 | Settling Pond |
| • | SWMU 6 | Old Plating Shop Floor Pits |
| • | SWMU 7 | Bay 5 Extension Fuel Leak |
| • | SWMU 8 | East End Fill Area |

This RFI report presents a summary of the RFI activities performed between December 31, 1996, and May 30, 1997, and the findings of these activities. The investigation was performed according to the approved RFI Work Plan for SWMUs 1-8, which is dated June 1996 and which includes an addendum (Appendix G) added in April 1997. The work plan includes a description of current conditions, a preliminary evaluation of corrective measure technologies that may be applicable to the SWMUs, a project management plan for conducting the RFI, a sampling and analysis plan for the RFI; a quality assurance/quality control (QA/QC) plan for the RFI, a data management plan for the RFI, and the health and safety plan for conducting field work at the facility.

The locations of SWMUs 1 through 8 are shown in Figure 1.2. A detailed description of each SWMU is presented in Section 2.2 of the approved RFI work plan.

## 1.2 HAZARDOUS WASTE FACILITY PERMIT REQUIREMENTS

Requirements for the RFI report are identified in Section V.B.3 of Delta's permit. According to the permit, the RFI report shall:

- provide a summary of all activities undertaken during the RFI;
- provide a complete description of the nature and extent of all releases identified during the RFI including sources, migration pathways, actual or potential receptors, and applicable background concentrations; and
- address all releases that extend beyond the facility property boundary (with some exceptions).

Delta is currently implementing a corrective action plan (CAP) to remediate groundwater contamination associated with SWMUs 1 and 2 identified above. Therefore, no further action was required to be implemented at SWMUs 1 and 2 under this RFI. The corrective action requirements are presented in Section VI of Delta's permit.

The groundwater protection standard for the TOC is presented in Section VI.D of the permit. The groundwater protection standard consists of 2 parts, concentration limits for specific constituents and a free product recovery effectiveness standard. The concentration limits are presented in Table 1.1. The free product recovery standard is specific to monitoring wells identified in the permit.

## 1.3 RFI OBJECTIVES

The RFI of SWMUs at Delta's facilities focused on identification of releases of contaminants and their sources and on potential exposure pathways. The specific RFI objectives for SWMUs 1 through 8 are described below.

### 1.3.1 SWMU 1: Underground Storage Tanks A through F

Releases have occurred in the past from these tanks. However, no action was required under this RFI for these SWMUs because the releases are currently being addressed by a Corrective Action Program of groundwater recovery and monitoring. In addition, all of these tanks have been removed.

### 1.3.2 SWMU 2: Varsol Reclaim Tank

A release has occurred in the past from this tank. However, no further action was required under this RFI for this SWMU because the release is currently being addressed by a Corrective Action Program of groundwater recovery and monitoring. In addition, the varsol reclaim tank has been removed.

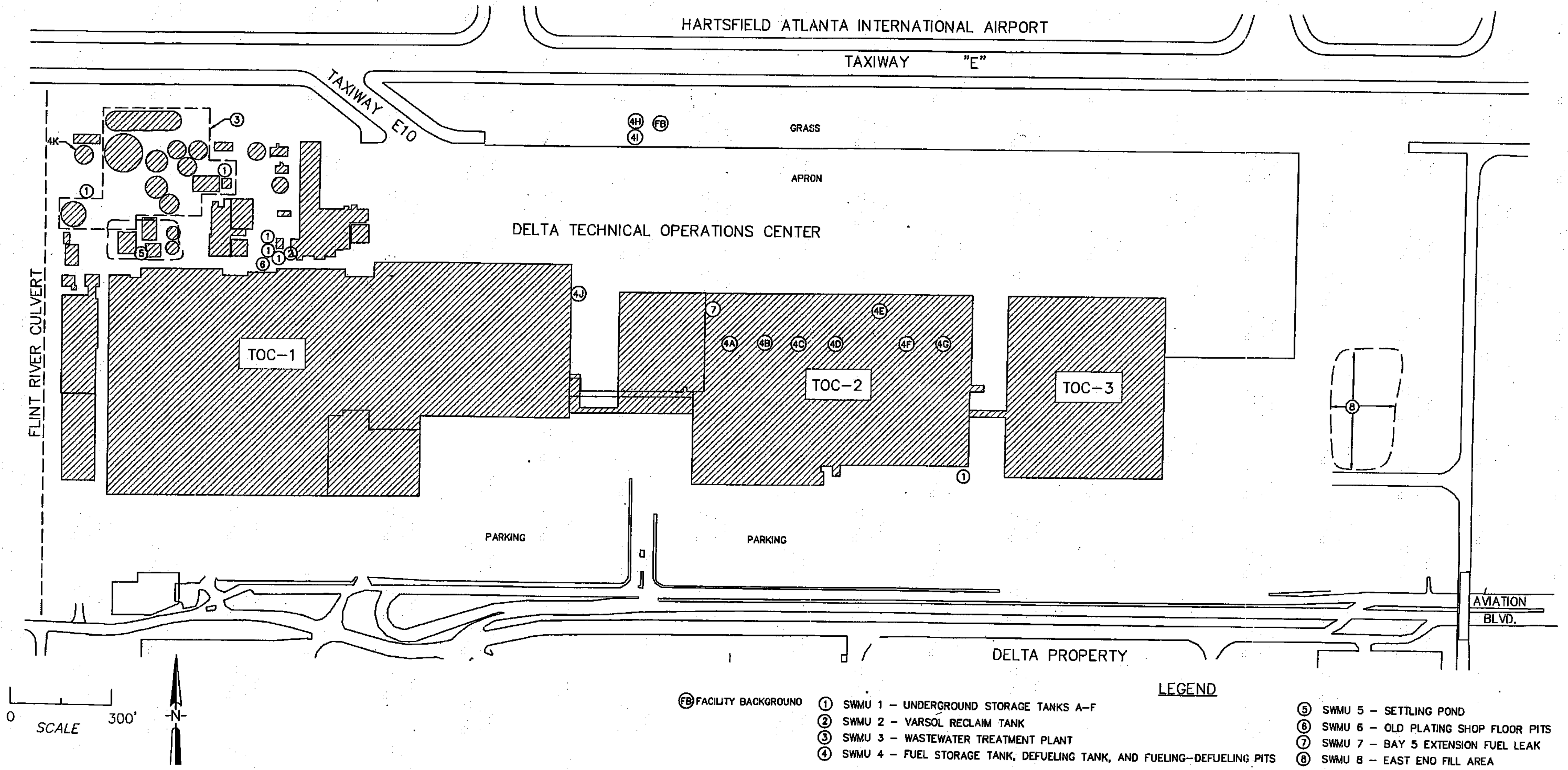
### 1.3.3 SWMU 3: Wastewater Treatment Unit and Appurtenances Used in Waste Management

The scum pits adjacent to the solids contact clarifiers have reportedly overflowed in the past. One scum pit is located next to Solids Contact Clarifier No. 1 (south) and a

Figure 1.2

# APPROXIMATE LOCATIONS OF SOLID WASTE MANAGEMENT UNITS 1-8

## Delta Air Lines, Technical Operations Center



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**PARSONS ENGINEERING SCIENCE, INC.**

second scum pit is located next to Solids Contact Clarifier No. 2 (north). The RFI objectives were to identify contaminant releases, if any, to soil above the water table next to the scum pits.

### 1.3.4 SWMU 4: Fuel Storage and Defueling Tanks Adjacent to TOC-1, TOC-2, and TOC-3

**Fueling/defueling pits in TOC-2 (SWMUs 4A - 4G).** Sample debris from pits for disposal purposes and remove the debris. Video survey the structural condition of the 3-inch pipes fed by the pit floor drains. Identify contaminant releases, if any, to soil below any of the three-inch pipes in which a structural failure is found.

The drain pipes from these pits are not pressurized and are connected to numerous other active drains in TOC-2. Therefore, it was not practical to pressure test these pipes. No release has been reported from these SWMUs.

**Fueling/defueling pits (SWMUs 4H and 4I).** Locate gravel drain pit and identify contaminant releases, if any, to soil below the pit and above the water table. Identify contaminant releases, if any, to soil near the gravel pit. No release has been reported from these SWMUs.

**Fueling/defueling UST (SWMU 4J).** Determine whether a release of contaminants has occurred to soil above the water table near tank and piping or whether a release has occurred to groundwater. No release has been reported from this SWMU.

### 1.3.5 SWMU 5: Settling Pond

Determine whether a release of contaminants has occurred to soil below the fill and above the water table at the location of the former settling pond.

### 1.3.6 SWMU 6: Old Plating Shop Floor Pits

EPD deferred a requirement for further investigation of this SWMU until EPD's risk assessment guidelines were published (correspondence from David Yardumian (EPD) to David Hesterlee (Delta) dated January 30, 1996). Therefore, no investigation activities were planned for this SWMU during the RFI.

### 1.3.7 SWMU 7: Bay 5 Extension Fuel Leak

Determine whether any free product remains at the water table and, if so, determine the identity and extent of the free product. Collect data on soil and groundwater contamination sufficient to evaluate with EPD options for additional investigation and/or corrective action. Determine the direction of groundwater flow in the Bay 5 area.

### 1.3.8 SWMU 8: East End Fill Area

Determine whether a release of contaminants has occurred to soil below the fill and above the water table. If soil contamination is found, determine whether a release has occurred to groundwater.

## 1.4 REPORT ORGANIZATION

The remaining sections of this RFI report are summarized as follows:

- Section 2 describes the investigative methods utilized during the RFI;
- Section 3 describes SWMU-specific activities, the results of the RFI, contaminant sources, and the nature and extent of contamination;
- Section 4 presents the environmental setting of the TOC and identifies potential pathways and receptors; and
- Section 5 presents conclusions and recommendations.

The tables and figures in Section 3 are presented after the last page of text and are organized by SWMU.

# Table 1.1
# Groundwater Protection Standard[1]
# Delta Air Lines, Technical Operations Center

| Constituent | Concentration (mg/L) | Concentration (µg/L) |
|---|---|---|
| Barium | 1.0 | 1000 |
| Chromium | 0.05 | 50 |
| Lead | 0.015 | 15 |
| Benzene | 0.005 | 5 |
| Vinyl Chloride | 0.002 | 2 |
| 1,2-Dichloroethane | 0.005 | 5 |
| 1,1-Dichloroethene | 0.007 | 7 |
| 1,1,1-Trichloroethane | 0.2 | 200 |
| Trichloroethene | 0.005 | 5 |
| Chloroform | Background | Background |
| Methylene Chloride | Background | Background |
| Chlorobenzene | Background | Background |
| Tetrachloroethene | 0.005 | 5 |
| Ethyl Benzene | Background | Background |
| Toluene | Background | Background |
| Xylenes | 0.100 | 100 |

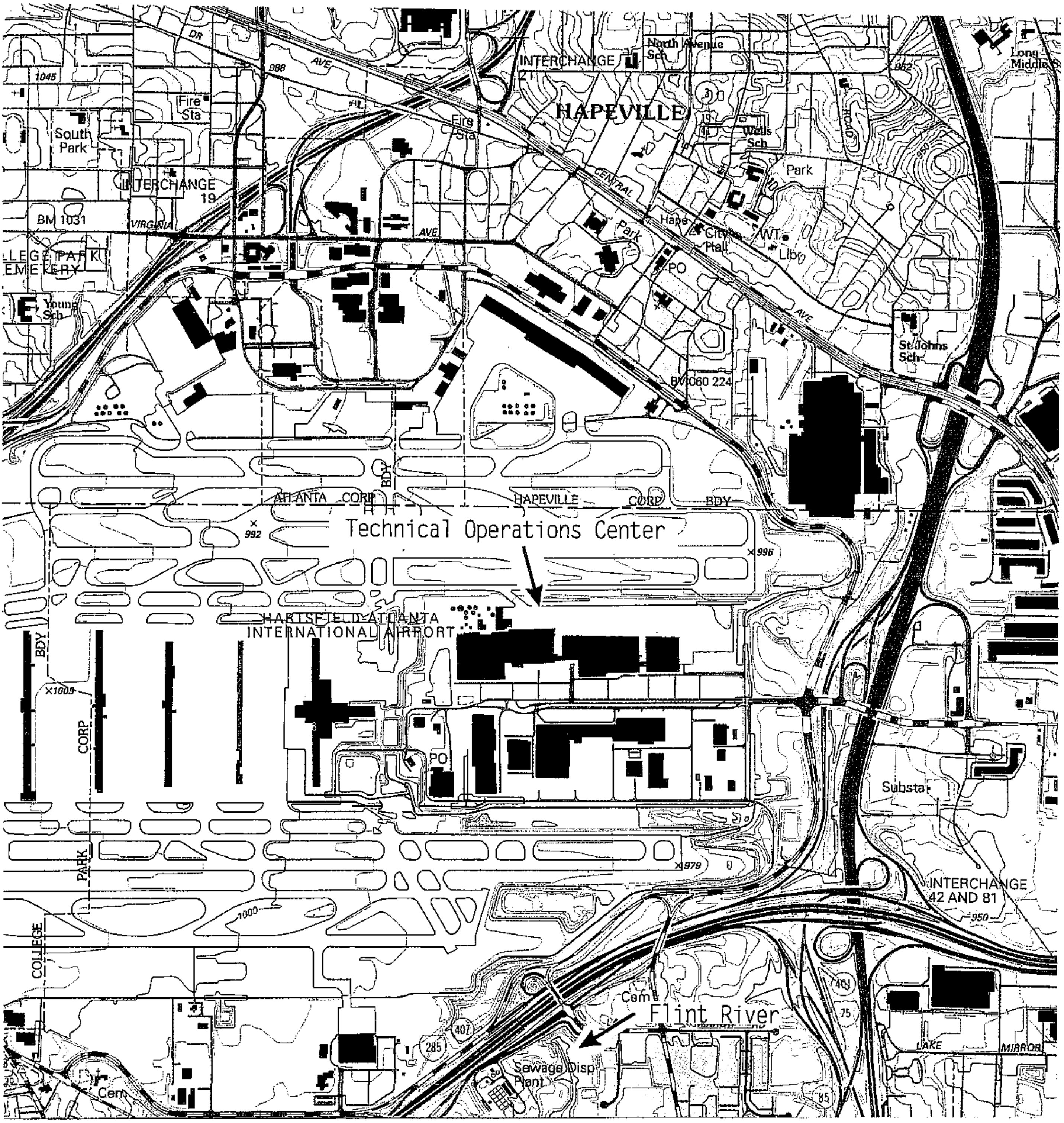
---

(1) Reference Section VI.D of Hazardous Waste Facility Permit No. HW-036(S&T)-2.

Figure 1.1

# SITE LOCATION

## Delta Air Lines, Technical Operations Center



Source, U.S.G.S., Southwest Atlanta Quadrangle, 1993

1 .5 0 1

MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10 000

FEET

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

# 2

# Section Two

# SECTION 2
# INVESTIGATIVE METHODS

This section presents a description of the investigative methods used during the RFI. The RFI field activities included soil, debris, groundwater, and light non-aqueous phase liquid (LNAPL) sampling.

## 2.1 SOIL SAMPLING

Soil sampling was accomplished using three different methods -- hand augering, direct-push drilling, and hollow-stem auger drilling. For all methods, lithologic analysis was performed visually in the field by Parsons ES's geologist. The following summarizes each method, however, additional detail may be found in Section 5 of the RFI work plan.

A hand auger was employed in situations where a drill rig could not access the sampling location. Parsons ES's driller would use a stainless steel hand auger to dig to a depth just above the desired sampling depth. Then, using a decontaminated auger bucket, a sample from the desired interval would be collected.

The majority of soil samples were collected using a Strataprobe™ split-spoon sampler which employs a direct-push method of sampling. The Strataprobe™ employs a combination of hydraulic pressure and a percussion hammer to drive a split-spoon sampler to the desired depth. Disposable acetate liners were used to collect the samples. To avoid volatilization losses, the portion of the sample used for volatiles analysis was taken from the center of the sample.

The final method of soil sampling was the hollow-stem auger drilling rig. Soil samples were collected by advancing the augers to the desired depth and lowering a decontaminated, stainless steel split-spoon sampler through the hollow auger. The split-spoon sampler was then driven into the soil. As with the direct-push method, the portion of the sample used for volatile analysis was taken from the center of the sample to avoid portions which may have been affected by volatilization losses.

## 2.2 DEBRIS SAMPLING

The debris from SWMUs 4A though 4G (fueling-defueling pits) was removed using a shovel and collected in 55 gallon drums. A composite sample was collected from each drum for laboratory analysis. Samples collected for volatiles analysis were not homogenized to reduce volatilization losses.

## 2.3 GROUNDWATER SAMPLING

Groundwater samples were collected using either direct-push methods in conjunction with a peristaltic pump or a teflon-lined bailer from temporary and permanent monitoring wells.

The majority of groundwater samples were collected using the Strataprobe™ technology. The Strataprobe™ system water sampler consists of a retractable stainless steel well screen which is encased in the lead probe tube. After the water sampler is advanced into the water-bearing zone the probe is withdrawn to allow the retractable assembly to open to the formation. For water recovery, tubing was run into the probe and, after insertion, was connected to a peristaltic pump at the surface. All down-hole equipment was decontaminated prior to its use at each sampling location. Depth to groundwater was estimated during the visual inspection of the of the soil samples. Accuracy is limited when this method is utilized due to the capillary fringe effect of groundwater and the variability of the soils.

Some groundwater samples were collected from temporary and permanent monitoring wells. Using a decontaminated, teflon-lined bailer attached to disposable rope, stagnant water was purged from the wells by hand to ensure the groundwater sample was representative of the formation surrounding the well. Then the groundwater samples were collected from the bailers. Volatiles samples were collected first to reduce volatilization losses.

## 2.4 LNAPL SAMPLING

Light non-aqueous phase liquids (LNAPLs) were collected from temporary and permanent monitoring wells using a disposable bailer attached to disposable rope. Thickness of LNAPLs in the wells was measured using an oil/water interface probe. However, thickness of LNAPL in a well is usually greater than the actual thickness in the aquifer. A baildown test was performed to estimate the true LNAPL thickness. Further details on the baildown test are provided in Section 3.10.5.

# 3

# Section Three

# SECTION 3
# INVESTIGATION ACTIVITIES AND RESULTS

This section describes the activities performed to determine background concentrations for the TOC and the nature and extent of contamination associated with individual SWMUs. The RFI field activities were performed between December 31, 1996, and May 30, 1997. Activities, results, and potential sources are summarized below and all tables and figures are presented at the end of the section.

Tables of soil results show an extra column with 2 x the maximum facility background concentration for comparison purposes. Tables of groundwater results show an extra column with Delta's groundwater protection standard (GPS) concentration for comparison purposes. The GPS is shown only for those constituents that were detected.

Acetone and bis (2-ethylhexyl) phthalate were detected at low levels in facility background samples and in samples from several SWMUs. These compounds are common laboratory contaminants and are not considered to be due to releases to soil or groundwater at the TOC. Therefore, detections of acetone and bis (2-ethylhexyl) phthalate are not discussed further in the text nor are they shown on the results figures. Detections of these compounds are shown on the individual results tables for soil and groundwater.

## 3.1 BACKGROUND MEASUREMENTS

Soil background concentrations for the TOC were determined by collecting samples near the facility boundary, north of TOC-2, at a depth just below ground surface and just above the water table. Soil samples were collected with a direct push sampler at 3 points approximately 50 feet apart, east of the background monitoring well (MW-UG). The locations of these points, FB-1 through FB-3, are presented on Figure 3.1. This area is believed not to have been disturbed by previous facility activities. The water table in this area is approximately 5 ft bgs, based on gauging MW-UG. Table 3.1 summarizes the field activities that were performed to determine soil background concentrations.

One soil sample was collected from each sampling point at a depth of 0 to 12 inches and a second sample was collected at a depth (generally 3 to 5 feet bgs) just above the water table. The samples were analyzed for volatile organics (SW5030/SW8260), semi-volatile organics (SW8270), RCRA metals (SW6010/SW7421), and cyanide (SW9010). Samples were analyzed for organics to verify that this location had not been impacted by contamination. Samples were analyzed for inorganics to determine background levels. The analytical data sheets and chain-of-custody records are presented in Appendix B. One duplicate sample was also collected from one of the sampling points for quality control. Samples from FB-1 through FB-3 were not analyzed for nickel. Therefore, a soil sample collected later at sample location SWMU4HI-3, which is adjacent to FB-3, was analyzed for nickel (SW6010).

The results of the laboratory analysis are presented in Table 3.2 and Figures 3.2 and 3.3. Also presented in this table are the maximum concentration of each constituent and a level that is equal to 2 x the maximum concentration for inorganic constituents. These numbers will be compared to the levels of inorganic contamination at the different SWMUs. If a constituent was not detected in the facility background samples, 2 x the maximum detection limit was utilized. The sample collected from 2-5 feet below ground surface (bgs) at location FB-3 was duplicated (FB-A). The higher concentration of these two samples was used as the maximum, if necessary.

The subsurface soils at the facility background area consist of a silt/clay mixture with mica. There were visible white, pink, and orange bands in the samples. This banding indicates that the soil is residual as opposed to backfill. The soil boring log for FB-1 is presented in Appendix C.

Metals that were detected include:

- arsenic (ND to 0.427 mg/kg);
- barium (11.9 mg/kg to 116 mg/kg);
- cadmium (ND to 1.26 mg/kg);
- chromium (2.28 J mg/kg to 25.4 J mg/kg);
- lead (2.36 J mg/kg to 20.4 J mg/kg);
- nickel (11.3 mg/kg); and
- selenium (ND to 0.130 mg/kg).

Silver and mercury were ND in all background samples. Cyanide was detected with a concentration range from ND to 0.2 mg/kg.

## 3.2 SWMU 1: USTS A, B, C, D, E, AND F

SWMU 1 consists of USTs A, B, C, D, E, and F. Additional information about this SWMU is presented in Section 2 of the approved RFI work plan. Releases have occurred in the past; however, no further action is required for SWMU 1 because the releases are being addressed by a Corrective Action Program of groundwater recovery and monitoring. As of March 3, 1997, LNAPL levels were detected up to 10 feet thick. Please reference the Semi-Annual Corrective Action System Performance Effectiveness Report, November 1996 - June 1997, prepared by Diversified Environmental Sciences, Inc. In addition, all of these tanks have been removed.

## 3.3 SWMU 2: VARSOL RECLAIM TANK

SWMU 2 consists of the varsol reclaim tank. Additional information about this SWMU is presented in Section 2 of the approved RFI work plan. Releases have occurred in the past; however, no further action is required for SWMU 2 because the releases are being addressed by the same Corrective Action Program of groundwater recovery and monitoring as SWMU 1. The reported LNAPL thickness is the same as SWMU 1. The old varsol reclaim tank was removed in 1988.

## 3.4 SWMU 3: WASTEWATER TREATMENT SCUM PITS

### 3.4.1 SWMU Description

SWMU 3 consists of 2 scum pump pits, one located next to each of the two primary clarifiers (also called solids contact clarifiers, or SCCs){Figure 3.4}. The scum pits receive scum from a trough located at the top of each of the SCCs. The dimensions of the pits are approximately 3 feet by 4 feet by 6 feet deep. Multiple overflows of scum have been reported. The water table in this area is approximately 10 feet bgs. Characterization activities, results, and potential contaminant sources are presented below.

### 3.4.2 Characterization Activities

Table 3.3 summarizes the field activities performed at SWMU 3. The contents of the two pits were removed and the pits were cleaned with a power washer to allow inspection of the walls and floors for cracks. There were approximately 10 minor pits in the walls of each of the scum pits. None of these depressions was more than 1/4 inch deep. No visible cracks were identified in either scum pit.

Four soil samples were collected at 2 locations (SWMU3-1 and SWMU3-2) using the direct-push Strataprobe™ method for SWMU3-1 and a stainless steel hand auger for SWMU3-2. The locations of these samples were next to each of the two scum pump pits near the reported spill locations, as shown on Figure 3.4. Samples were collected from a depth of 0 to 1 feet bgs and from just above the water table. Samples collected at this SWMU were analyzed for volatile organic compounds (SW8260), semi-volatile organic compounds (SW8270), RCRA metals (SW6010/SW7421), and cyanide (SW9012). The field team collected one duplicate sample (SWMU3-3) at location SWMU3-1 for quality control at a depth of 0 to 1 feet. The analytical data sheets and chain-of-custody records are presented in Appendix B.

### 3.4.3 Soil Results

The subsurface soils at SWMU 3 consist of a clay/silt mixture with mica and some granite gravel. These soils appear to be fill material placed at the time of scum pit construction. Table 3.4 presents the analytical results for soil samples collected at SWMU3.

Figure 3.5 presents the concentrations of organics detected in soil. The only volatile organic compounds that were detected were ethylbenzene and total xylene, each with only one detection of 0.0216 mg/kg and 0.155 mg/kg, respectively. Naphthalene were the only semi-volatile organic compound detected, with a concentration range from ND to 0.705 mg/kg.

Figure 3.6 presents the concentrations of inorganics detected in soil. RCRA metals that were detected include:

- silver (ND to 3.23 mg/kg);
- arsenic (ND to 0.500 mg/kg);
- barium (83 mg/kg to 142 mg/kg);
- cadmium (0.864 J mg/kg to 6.44 J mg/kg);
- chromium (27.6 J mg/kg to 104 J mg/kg);
- mercury (ND to 0.468 mg/kg);
- lead (16.3 mg/kg to 56.8 mg/kg); and
- selenium (ND to 0.218 mg/kg).

Cyanide was detected with a concentration range from ND to 0.4 mg/kg. Silver, cadmium, chromium, mercury, and lead were detected above 2 x the maximum background concentration.

### 3.4.4 Potential Sources of Contaminants

Potential sources include surface soil (0 - 1 ft bgs) and subsurface soils (8 - 9 ft bgs). The surface soils adjacent to the scum pit for SCC 1 were found to contain organics and inorganics above 2 x the average of concentrations in the background samples. Through interviews of employees during prior investigations, it is estimated that 10 to 15 overflows of scum have occurred from the 2 pits. These interviews are referenced in the EPD-approved RFI work plan. When the scum reaches a given level in the pits, a level switch activates scum pumps that pump the scum to the sludge thickener. The spills of scum occur due to malfunctions in the pump actuation mechanism.

## 3.5 SWMUS 4A-4G: FUELING-DEFUELING PITS INSIDE TOC-2

### 3.5.1 SWMU Description

SWMUs 4A through 4G are fueling-defueling pits that were part of the fueling-defueling system in and adjacent to TOC-1 and TOC-2. These 7 pits are located in Bays 6, 7, 8, and 9 (active aircraft maintenance areas) of TOC-2. Each pit is constructed of concrete walls and is covered with a heavy steel plate (in several sections) that lies flush with the concrete slab in the aircraft bay. The approximate dimensions of the pits, with the exception of 4E, are 2 feet in width, 9 feet in length, and 3 feet in depth. Pit 4E is approximately 7 feet by 2 feet by 4 feet deep.

In general, two four-inch jet fuel supply (JFS) pipes and one six-inch fuel oil drain (FOD) pipe enter each pit through the bottom. These pipes were intended to supply jet fuel A to and drain jet fuel A from parked aircraft. A small drain is installed in each pit floor to remove spillage or floor wash water to Delta's industrial sewer system. According to construction drawings, the pit drain feeds a U-trap that feeds into a three-inch sewer lateral that is approximately 10 feet long. The three-inch lateral then joins a six-inch industrial sewer line that eventually drains to Delta's wastewater treatment plant.

There is no known documentation that these pits were ever utilized. The locations of the pits are shown in Figure 3.7. Characterization activities, results, and potential contaminant sources are presented below.

### 3.5.2 Characterization Activities

Table 4.5 summarizes the field activities performed at SWMUs 4A through 4G. The objectives of field activities were to sample pit debris for disposal purposes and to identify potential contaminant releases to soil below the drain pipes and the sewer pipes up to the north wall of the aircraft maintenance bays. Field personnel removed debris from the pits and containerized it in 55-gallon drums, sampled the drums for disposal purposes, and stored the drums on site before disposal. The debris was removed and sampled on three separate occasions. The locations of the 7 pits are shown on Figure 3.7.

Debris was removed from pits 4A and 4B and placed into a single drum. One composite sample from the drum was analyzed for TCLP metals by EPA Methods SW6010/7470/7760. A second composite sample from the drum was analyzed for Toxicity Characteristic Leaching Procedure (TCLP) volatiles by EPA Method SW8260.

During the second removal/sampling event, the field team removed debris from pits 4C, 4D, 4F, and 4G and placed it into a single drum. Removal of debris from SWMU 4E was postponed because the cover could not be removed. One composite sample from the drum was analyzed for TCLP metals by EPA Methods SW6010/7470/7760. The field team did not collect a sample for TCLP volatiles from the 4C/4D/4F/4G debris because there was no organic odor coming from the debris and because the sample previously collected from 4A/4B was nondetect for volatiles.

During the third removal/sampling event, the field team successfully removed the pit 4E cover. Debris was removed from pit 4E and placed into a single drum. One composite sample from the drum was analyzed for TCLP metals by EPA Methods SW6010/7470/7760. Due to a strong hydrocarbon odor, a second composite sample was collected from the drum and was analyzed for TCLP volatiles by EPA Method SW8240. The analytical data sheets and chain-of-custody records are presented in Appendix B.

TV inspection of the 3-inch drain lines and 6-inch sewer lines at SWMUs 4A and 4B was attempted with a push camera. The purpose of the TV survey was to determine the existing condition of the pipe walls and to identify locations of potential releases from the pipes. The push camera penetrated the 3-inch lines approximately 4 feet but could not pass through bends in the lines. Inspection of the 6-inch lines was stopped by a 2-inch layer of sediment lying inside the pipes. The 6-inch lines were flushed with a large volume of water, but the water did not remove the sediment. Cleaning of the lines by jet-wash was not feasible due to the lack of manhole access downstream of the pipe segments of interest. The TV inspection was abandoned with EPD's concurrence (reference letter from D. Yardumian to D. Hesterlee dated March 14, 1997) due to the ineffectiveness of the method in these pipes.

All 7 of the pits were filled with concrete (reference EPD's concurrence in March 14 letter) following the attempted TV inspection. The pit drains were blocked prior to pouring the concrete. The pits were then filled with concrete (4000 psi compressive strength) and finished to match the aircraft bay floor slab.

### 3.5.3 Debris Results

As described above, debris was removed (on 3 separate days) from each of the 7 pits in the aircraft bays and placed in 55-gallon drums. The debris appeared to be floor sweepings (dust and dirt) and no free liquids were observed in any of the pits. Table 3.6 and Figure 3.7 present the analytical results of debris sampling performed at SWMUs 4A through 4G.

TCLP volatiles were nondetect in a composite sample collected from the drum of 4A/4B debris. Cadmium and mercury were detected in TCLP analysis of a second composite from the drum at 5.58 and 0.0004 mg/L, respectively. TCLP limits are 1 (cadmium) and 0.2 (mercury). Therefore, the debris exhibited the toxicity characteristic for cadmium.

Cadmium, chromium, and mercury were detected in the TCLP metals analysis of the 4C/4D/4F/4G debris at concentrations of 3.03, 0.074, and 0.0071 mg/L. The TCLP limits for cadmium, chromium, and mercury are 1, 5, and 0.2 mg/L, respectively. Therefore, the debris exhibited the toxicity characteristic for cadmium. TCLP volatiles were not analyzed for the reasons described above.

TCLP volatiles were nondetect in the pit 4E debris. Cadmium was detected in the TCLP metals analysis 4.33 mg/L, which exceeds the 1 mg/L TCLP limit for cadmium. Therefore, the pit 4E debris exhibited the toxicity characteristic for cadmium. All other TCLP metals were nondetect.

Delta marked the drummed pit debris as hazardous waste and placed it in their hazardous waste storage facility for subsequent disposal. Delta is permitted by EPD for the storage of hazardous waste in containers.

### 3.5.4 Potential Sources of Contaminants

The cadmium detected in the pit debris is believed to be due to Delta's former practice of polishing aircraft wheels inside the aircraft bays and is not believed to be related to the fueling/defueling function of pits. The practice of polishing wheels in the bays has been discontinued. It is believed that the fueling/defueling system was tested once after installation but was never put into operation. In addition, pits 4A through 4G have now been filled with concrete. Therefore, these pits do not appear to be a source of future contamination.

## 3.6 SWMUS 4H AND 4I: FUELING-DEFUELING PITS NORTH OF APRON

### 3.6.1 SWMU Description

SWMUs 4H and 4I are 2 of the fueling-defueling pits that were part of the fueling-defueling system in and adjacent to TOC-1 and TOC-2. These 2 pits are located off of the apron on the north side of TOC-2. The approximate dimensions of the pits are 2 feet in width, 9 feet in length, and 3 feet in depth. Two four-inch jet fuel supply (JFS) pipes and one six-inch fuel oil drain (FOD) pipe enter the pit through the bottom. These pipes were used to supply jet fuel A to and drain jet fuel A from parked aircraft. A small drain is installed in the pit floor to remove spillage.

According to a 1970 piping drawing, the pipes from each floor drain feed into a 6' x 3' x 3' deep gravel-filled pit that was covered with roofing felts and backfill. The top of the gravel is at the same elevation as the pipes. The drawing shows that the gravel pit was to be installed to the west of SWMU 4-I. By inserting a plumbers' snake into the drains, field personnel determined that the drain pipe turned to the east of SWMUs 4H/I rather than to the west. There is no known documentation that these pits were ever utilized or that there were any releases from them. The locations of these pits are shown in Figure 3.8. Characterization activities, results, and potential contaminant sources are presented below.

### 3.6.2 Characterization Activities

Table 3.7 summarizes the field activities that were performed at SWMUs 4H and 4I. The existence of the gravel drain pit associated with SWMUs 4H and 4I was verified by excavating with a backhoe on the east side of the defueling pits. During the excavation the drain pipes were exposed but left in place. A layer of crush-and-run rock was uncovered at about 7 feet bgs. LNAPL also was discovered flowing into the excavation at this depth. The pit was backfilled. Utilizing direct-push methods, soil samples were collected from two locations (SWMU4HI-1 and SWMU4HI-2) to gain more information on the extent of the LNAPL. Neither of these samples were sent for laboratory analysis. Based on visual observation, LNAPL did not appear to be present.

Due to the discovery of LNAPL, guidance for further activities was sought from EPD in a March 12, 1997, letter from Parsons ES. An addendum to the RFI work plan was submitted to and approved by EPD. The addendum was added to the RFI work plan as Appendix G. The objectives of additional activities were to determine the extent of free product, soil, and groundwater contamination in the vicinity of these 2 defueling pits.

Nine boreholes were installed in the locations shown on Figure 3.8. One of the boreholes was placed east of the defueling pits, where product was previously found. Two boreholes were then placed in each of 4 directions (north, south, east, and west) at approximately 50-foot intervals measured from the first borehole. The boreholes were advanced with a hollow-stem auger to a depth of 15 feet below ground surface. Two and a half feet of 2-inch diameter PVC coupled to 12.5 feet of 0.10 slot PVC screen was installed into each borehole to keep it open for 24 hours. A temporary cover was placed over the top of each borehole to prevent rain water from entering. Two of the boreholes were installed on the concrete apron and therefore the concrete (18 inches thick) was cored prior to installation. Following completion of sampling (described below), 2 of the temporary wells were completed as permanent monitoring wells (MW-4HI-1 and MW-4HI-2). The PVC pipe/screens were removed from the other 7 boreholes, and they were backfilled with bentonite. The concrete cores were repaired with 4000 psi non-shrink grout. The 2 defueling pits were not filled with concrete to facilitate possible removal of the pits at a later date. Before well abandonment, the approximate top-of-pipe elevation at each well was measured using a surveyor's level.

One soil sample and 1 groundwater sample were collected for laboratory analysis from each borehole. The soil samples were collected with a stainless steel split spoon. The soil sample with the highest VOA reading from a headspace analysis was submitted to the laboratory. The groundwater samples were collected using a hand bailer. Each well was developed and purged with the pump prior to sampling for groundwater. Purging continued until stabilization of the water's pH, conductivity, and temperature. Both the soil and groundwater samples were analyzed for VOCs (SW8260) and SVOCs (SW8270). The analytical data sheets and chain-of-custody records are presented in Appendix B.

LNAPL was detected in TW-4HI-G. Its thickness was measured with an oil/water interface probe and a sample was collected for laboratory analysis. The product sample was analyzed for diesel range organics (DRO) and gasoline range organics (GRO) both by EPA Method SW8015 Modified. The chromatogram was compared to chromatograms of known samples of gasoline and aviation fuel from Delta's stock. The specific gravity of the product also was measured by the lab so that an equivalent water table elevation could be calculated for TW-4HI-G. The analytical data sheets and chain-of-custody records are presented in Appendix B.

### 3.6.3 Soil Results

The subsurface soils at SWMU 4H and 4I consist of a silt/clay mixture with mica. There were visible yellow, black, and orange bands in the samples. This banding indicates that the soil is residual as opposed to backfill. The soil boring logs for SWMU4HI-3 through SWMU4HI-11 are presented in Appendix C.

Toluene, ethylbenzene, and total xylene were the only VOCs detected. Toluene, ethylbenzene, and total xylene were detected at one sample location (SWMU4HI-11 at a depth of 1-3 feet bgs) at concentrations of 0.018 mg/kg, 0.108 mg/kg, and 0.4 J mg/kg, respectively. No SVOCs were detected in the soils at this site. The soil analytical results are presented in Table 3.8 and on Figure 3.9.

### 3.6.4 Groundwater Results

At these SWMUs, the groundwater flows to the south based on groundwater elevation measurements. However, on a facility-wide scale, groundwater flow is to the southwest. Facility-wide flow direction was determined by comparing the groundwater elevations at these SWMUs to other elevations at the facility. Groundwater was measured at the monitoring and temporary wells at SWMUs 4H and 4I on May 28, 1997. The depth to groundwater was between 5 and 7 feet bgs as shown in Table 3.9.

Six VOCs were detected in groundwater. They are:

- benzene (ND to 291 µg/L);
- ethylbenzene (ND to 132 µg/L);
- tetrachloroethylene (ND to 6.51 µg/L);
- toluene (ND to 55.5 µg/L);
- trichloroethene (ND to 6.90 µg/L); and
- total xylene (ND to 542 µg/L).

The only SVOC detected was naphthalene (ND to 250 J µg/L). The 6 VOCs were detected above the groundwater protection standard (GPS) listed in Delta's hazardous waste facility permit. Naphthalene does not have a GPS, maximum contaminant limit (MCL) for drinking water, or in-stream standard. The groundwater analytical results are presented in Table 3.10 and on Figure 3.10.

### 3.6.5 LNAPL results

LNAPL thickness in TW-4HI-G was measured to be 0.63 feet thick as shown on Table 3.9. The LNAPL sample collected from this well was a greater than 99.9 percent match to Delta's Jet-A fuel stock sample. The LNAPL was approximately a 0.4 percent match (3840 mg/kg) to Delta's gasoline stock sample. The specific gravity of the LNAPL was determined to be 0.80.

Approximately 7 feet of LNAPL was measured in previously existing well MW-D2, located approximately 300 feet west of SWMUs 4H and 4I. Based on the absence of LNAPL in MW-4HI-2 and TW-4HI-B, the LNAPL in MW-D2 does not appear to be related to SWMUs 4H and 4I.

### 3.6.6 Potential Sources of Contaminants

The greater than 99.9 percent match indicates that a jet fuel release to the soil and groundwater has occurred at these SWMUs. This fuel could have originated from the activities involved in the operation of the fueling-defueling system. Another possible source is an unidentified 1-inch underground pipeline identified by a utility locator and uncovered during excavation activities (Figure 3.8). Therefore, the contaminant sources at SWMUs 4H and 4I consist of a layer of floating jet fuel and a dissolved BTEX plume that may be moving to the south.

## 3.7 SWMU 4J: DEFUELING TANK

### 3.7.1 SWMU Description

SWMU 4J is an 11,000-gallon UST that was part of the fueling-defueling system in and adjacent to TOC-1 and TOC-2. SWMU 4J is located between TOC-1 and TOC-2

(Figure 3.11). This tank was installed in 1970 and abandoned in place in 1987. Groundwater is approximately 10 feet bgs. There is no known documentation of a release from this tank during its operation. A detailed drawing of the defueling tank is included in Appendix D. Characterization activities, results, and potential contaminant sources are presented below.

### 3.7.2 Characterization Activities

Table 3.11 summarizes the field activities that were performed at SWMU 4J. Soil samples were collected from 3 points at Tank 4J using the direct-push Strataprobe™ method. These 3 locations are shown in Figure 3.11. Cores were cut through the concrete slab to allow sample collection. Two sampling points (SWMU4J-1 and SWMU4J-2) were located near the piping connections to the tank. One soil sample was to be collected from each of these 2 sampling points at a depth of approximately 1 foot below the pipe invert and above the water table. However, the pipe invert was located approximately 18 feet bgs at point SWMU4J-1. Groundwater was encountered at approximately 10 feet bgs. Therefore a sample was collected from 8-9 feet bgs (above the water table) at SWMU4J-1 to check for releases to the soil from sources other than the defueling tank. The pipe invert at point SWMU4J-2 was located approximately 6 feet bgs. One soil sample was collected at SWMU4J-2 just above the water table from 8-9 feet bgs. The third sampling point (SWMU4J-3) was located on the south side of the UST. One soil sample was to be collected at this location from a depth of 1 to 2 ft below the tank invert. As above, the invert was located below the groundwater table. Therefore, one soil sample was collected just above the water table at a depth of 8-9 feet bgs to check for releases to the soil from sources other than the defueling tank. All three soil samples collected were analyzed for aromatic volatile organic compounds by EPA Method SW5030/SW8020. The analytical data sheets and chain-of-custody records are presented in Appendix B.

Due to the locations of the inverts below the water table, groundwater samples were collected at point SWMU4J-1 and SWMU4J-3 using the direct push Strataprobe™ method. These samples were added to the scope of work (per guidance from EPD on February 6, 1997) to determine if any release had occurred to groundwater. The samples were analyzed for aromatic volatile organic compounds by EPA Method SW5030/SW8020. Chain-of-custody records and analytical data sheets are presented in Appendix B.

### 3.7.3 Soil Results

The subsurface soils at SWMU 4J consist of a silt/clay mixture with mica and some granite gravel. These soils appear to be fill material placed at the time of tank construction. The soil boring log for SWMU4J-1 is presented in Appendix C.

Benzene was not detected in any of the soil samples. Toluene was detected at one sample location at a concentration of 0.001 mg/kg (in sample location SWMU4J-1 at a depth of 8-9 feet bgs). Ethylbenzene was detected at one location at a concentration of 0.320 mg/kg (in sample location SWMU4J-2 at a depth of 8-9 feet bgs. Total xylene was detected at two locations with a maximum concentration of 5.29 mg/kg (in sample location SWMU4J-2 at a depth of 8-9 feet bgs. The soil analytical results are presented in Table 3.12 and on Figure 3.12.

### 3.7.4 Groundwater Results

Groundwater was encountered at approximately 10 feet bgs. Benzene, toluene, and ethylbenzene were not detected in either of the groundwater samples collected at SWMU 4J. Total xylene was detected in the groundwater sample collected at location SWMU4J-1 at a concentration of 1.75 µg/L. This level is below the groundwater protection standard for total xylene. The groundwater analytical results are presented in Table 3.13 and on Figure 3.13.

### 3.7.5 Potential Sources of Contaminants

The low concentrations of aromatic volatile compounds detected in soil and groundwater indicate that there was a minor petroleum release to these media. The potential sources of this release could have been the defueling tank, its connecting pipes, or the activities involved in the operation of the fueling-defueling system.

## 3.8 SWMU 5: SETTLING POND

### 3.8.1 SWMU Description

Delta used the Settling Pond in the 1970s as a final polishing step in their wastewater treatment process. The wastewater was generated from cleaning and plating operations. An approximate location of this SWMU is shown on Figure 3.14. The Settling Pond was taken out of service, and in 1980, the pond was drained, excavated, then backfilled to grade. Groundwater is approximately 11 feet bgs. The area currently is paved and Delta's drum storage building is situated on the Settling Pond's former location.

The approximate dimensions of the rectangular Settling Pond were as follows:

- Surface - 210 ft × 120 ft
- Base - 115 ft × 30 ft
- Depth - 12 ft

A detail of the former pond is presented in Appendix E.

The excavated material from the pond was placed as fill material in an area located to the east of TOC-3. This area is known as the East End Fill Area (SWMU 8). Characterization activities, results, and potential contaminant sources for SWMU 5 are presented below.

### 3.8.2 Characterization Activities

Table 3.14 summarizes the field activities that were performed at SWMU 5. Soil samples were collected with a direct-push sampler at four points in the former location of the Settling Pond. These locations are presented on Figure 3.14. Prior to collection of samples, a 6-inch concrete corer was employed to cut through the existing concrete. The sampler was to be driven to a depth of 1 to 2 feet below the fill material and a soil sample was to be collected.

However, the groundwater table was encountered before the bottom of the settling pond. Furthermore, a black soil/sludge was encountered that appeared to be related to the former settling pond. As stated above, this material is believed to have been excavated and moved to the East End Fill Area (SWMU 8). After discussing the findings with Delta, a decision was made to collect samples of the sludge, the material directly below the sludge, and the groundwater.

In summary, 2 sludge samples were collected (SWMU5-1 at a depth of 16 to 17 feet bgs and SWMU5-3 at a depth of 18 to 19 feet bgs); 3 soil samples were collected from beneath the sludge (SWMU5-1 at a depth of 18 to 20 feet bgs, SWMU5-3 at a depth of 21 to 22 feet bgs, and SWMU5-4 at a depth of 20 to 22 feet bgs); and 1 sample was collected above the sludge due to direct-push refusal (SWMU5-2 at a depth of 4 to 6 feet bgs). Three groundwater samples were collected (SWMU5-1, SWMU5-3, and SWMU5-4). One duplicate soil sample and one duplicate groundwater sample also were collected for quality control. All soil and groundwater samples collected at this SWMU were analyzed for volatile organic compounds (SW8260), nickel (SW6010A), chromium (SW7191) , lead (SW7421) and cyanide (SW9010/SW9012). The analytical data sheets and chain-of-custody records are presented in Appendix B.

### 3.8.3 Soil Results

The subsurface soils at SWMU 5 consist of a clay/silt mixture with some clays and mica. These soils should be the fill material placed on top of the Settling Pond. Beneath these soils, a layer of black clay exists. This layer is encountered at 9 to 15 feet bgs and ranges from 1.5 to 6 feet in thickness. This black clay has a strong hydrocarbon odor and is most likely the sludge left over from the wastewater treatment process. Beneath the black clay are variable sands and clays.

The 4 VOCs detected were chlorobenzene (ND to 172 mg/kg), total xylene (ND to 26.9 mg/kg), 1,2-dichlorobenzene (ND to 423 mg/kg), and 1,4-dichlorobenzene (ND to 136 mg/kg). Metals that were detected include chromium (10.4 J mg/kg to 3920 J mg/kg), nickel (ND to 145 mg/kg), and lead (5.10 mg/kg to 512 mg/kg). Cyanide was detected with a concentration range from ND to 2.5 mg/kg. All of the maximum inorganic concentrations are above the 2 x the maximum background concentration. The soil analytical results are presented in Table 3.15 and on Figures 3.15 and 3.16.

### 3.8.4 Groundwater Results

Groundwater was encountered at approximately 11 feet bgs. The 7 VOCs detected include:

- chlorobenzene (ND to 421 µg/L);
- chloroethane (ND to 5120 µg/L);
- 1,1-dichloroethane (30.6 µg/L to 7000 µg/L);

- 1,1-dichloroethene (ND to 594 µg/L);
- vinyl chloride (ND to 6980 µg/L);
- 1,2-dichlorobenzene (ND to 21.2 µg/L); and
- 1,4-dichlorobenzene (ND to 50.4 µg/L).

Metals that were detected include chromium (0.069 J mg/L to 0.215 J mg/L), nickel (ND to 0.078 mg/L), and lead (ND to 3.49 mg/L). Cyanide was detected with a concentration range from ND to 0.026 mg/L.

Chlorobenzene, 1,1-dichloroethane, vinyl chloride, chromium, and lead were detected above the groundwater protection standard (GPS). 1,1-Dichloroethene, and cyanide do not have a GPS but were detected above the MCL for drinking water. 1,2-Dichlorobenzene, 1,4-dichlorobenzene, and nickel do not have a GPS and were detected below the MCL. Chloroethane does not have GPS, MCL, or in-stream standard. The groundwater analytical results are presented in Table 3.16 and on Figures 3.17 and 3.18.

### 3.8.5 Potential Sources of Contaminants

The black sludge/soil remaining from activities related to the Settling Pond is a potential source of the metals contamination. The organics contamination detected in SWMU 5 groundwater is consistent with contamination reported in Delta's corrective action wells. Therefore, probable sources include groundwater originating at SWMUs 1 and 2.

## 3.9 SWMU 6 OLD PLATING SHOP FLOOR PITS

EPD deferred a requirement for further investigation of this SWMU until EPD's risk assessment guidelines were published (correspondence from David Yardumian (EPD) to David Hesterlee (Delta) dated January 30, 1996). Therefore, investigation activities for SWMU 6 were not included in the approved RFI work plan, however information about this SWMU is presented in Section 2 of the work plan.

## 3.10 SWMU 7: BAY 5 EXTENSION FUEL LEAK

### 3.10.1 SWMU Description

In June 1990, 2 to 3 inches of product was observed in an excavation associated with the construction of the Bay 5 hangar addition (Engineering-Science, 1990). The excavation was located at the northwest corner of the existing hangar. The suspected source of the product was a 2-inch fuel oil supply pipeline located under the slab within the existing Bay 5. The pipeline was reportedly abandoned in place in 1986. The location of SWMU 7 is shown in Figure 3.19.

In response to discovery of the release, Delta installed 3 sumps and 4 recovery wells in the construction area in June of 1990. The sumps were installed in the corners of the Bay 5 Extension and were dug to intercept the water table. The recovery wells (4-in diameter) were installed to an approximate depth of 30 feet. Delta removed 418 cubic yards of contaminated soil associated with the sump excavations. Approximately 4150 gallons of free product were pumped from the recovery wells and the sumps.

Delta conducted an initial site assessment in conjunction with the response activities described above. Assessment of this SWMU is documented in the Initial Site Assessment Report for the Bay 5 Hangar Addition (Engineering Science, 1990). A copy of this report is presented in Appendix F of the approved RFI work plan. Petroleum hydrocarbons were detected in soil borings near the fuel line at concentrations ranging from 13,700 mg/kg to 91,700 mg/kg. Analyses of free product samples identified the product as No. 2 fuel oil. The depth to groundwater measured in the recovery wells ranged from 10 to 12 feet. The direction of groundwater flow was estimated to be to the south-southwest. The estimated direction is based on measurements taken in the recovery wells and on topographic features that existed prior to construction of the TOC.

Free product recovery was terminated in 1990 due to concerns that the groundwater pumping was causing settling in the nearby apron and in the hangar. The sumps were backfilled with clean fill.

The four recovery wells that were installed in 1990 are located inside the aircraft hangar at TOC II, Bay 5. The wells are accessible via manholes in the floor of the hangar. Construction of a long-term product recovery system was initiated but was not completed due to concerns that pumping down of the water table was causing the hangar to settle. The 4 wells were connected with a header pipe, which was terminated and capped below the concrete slab approximately 5 feet outside the north wall of Bay 5. There is no manhole access to the end of the header pipe.

This site is now covered by the Bay 5 Hangar addition, which is an active aircraft maintenance hangar. The floor of the hangar consists of 12- to 18-inch thick concrete. Depth to groundwater is approximately 10 feet bgs. Characterization activities, results, and potential contaminant sources for SWMU 7 are presented below.

### 3.10.2 Characterization Activities

Table 3.17 summarizes the field activities that were performed at SWMU 7. The recovery wells inside Bay 5 were gauged with an oil/water interface probe to determine LNAPL thickness in the wells. A bail-down test was performed to determine the true LNAPL thickness in the aquifer. A sample of free product was collected and analyzed for diesel range organics (DRO) and gasoline range organics (GRO) both by EPA Method SW8015 Modified. The chromatogram was compared to chromatograms of known samples of gasoline and aviation fuel from Delta's stock. The specific gravity of the product also was measured by the lab so that an equivalent water table elevation can be calculated for the recovery wells. The analytical data sheets and chain-of-custody records are presented in Appendix B.

Direct push sampling was performed at 6 locations (SWMU7-1 through SWMU7-6) on the south and west sides of Bay 5 to determine if there is contamination that may be associated with the Bay 5 release. The sampling locations are presented in Figure 3.19.

At each sampling point, one soil sample was collected above the water table and one groundwater sample was collected at the water table. One duplicate soil and groundwater sample was also collected for quality control. The soil and groundwater samples were analyzed for BTEX (SW8020) and for DRO (SW8015 Modified). The analytical data sheets and chain-of-custody records are presented in Appendix B.

Some minor soil contamination was found in locations 7-1 through 7-6. As with SWMU 4H and 4I, guidance for further activities was sought from EPD in the March 12, 1997, letter from Parsons ES. An addendum to the RFI work plan was submitted to and approved by EPD. The addendum was added to the RFI work plan as Appendix G. The objectives of additional activities were to determine the extent of soil and groundwater related to the 1990 fuel release.

Soil and groundwater samples were collected at 3 additional locations with a direct-push sampling rig (SWMU7-A through SWMU7-C). These locations are shown on Figure 3.19. One soil sample (from above the water table) and 1 groundwater sample were collected from each of the 3 locations. One duplicate soil and groundwater sample was also collected for quality control. The samples were analyzed for BTEX (SW8020). The analytical data sheets and chain-of-custody records are presented in Appendix B.

Finally, a new two-inch monitoring well, MW-7-1, was installed using a hollow stem auger. The well location was determined using the results of the direct-push sampling to choose the most probable location to detect potential contaminants migrating from this SWMU. The well is screened from 4 to 24 feet bgs. During well installation, a soil sample was collected above the water table. Following well development and purging, a groundwater sample was collected. The samples were analyzed for BTEX and DRO and the depth to groundwater will be measured. The analytical data sheets and chain-of-custody records are presented in Appendix B.

### 3.10.3 Soil Results

The subsurface soils at SWMU 7 consist of a silt/clay mixture with a large amount of mica. The soil boring log for SWMU7-1 is presented in Appendix C.

Benzene was not detected in any of the soil samples. Toluene was detected at two sample locations with a concentration range of ND to 0.004 mg/kg. Ethylbenzene was detected at one location at a concentration of 0.001 mg/kg (in sample location SWMU7-3 at a depth of 8-10 feet bgs. Total xylene was detected at one location at a concentration of 0.011 mg/kg (in sample location SWMU7-3 at a depth of 8-10 feet bgs). DRO constituents were not detected in all samples analyzed. The soil analytical results are presented in Table 3.18 and on Figure 3.20.

### 3.10.4 Groundwater Results

Groundwater was encountered at 9.75 feet below the top of casing at MW-7-1. This monitoring well was completed flush to the surface, therefore groundwater is approximately 10 feet bgs. BTEX and DRO constituents were not detected in all groundwater samples collected at this SWMU. The groundwater analytical results are presented in Table 3.19 and on Figure 3.21.

### 3.10.5 LNAPL Results

LNAPL thickness in the 4 recovery wells was approximately 6 feet thick. The baildown test performed on RW-1 determined the thickness of LNAPL in the aquifer to be approximately 1 foot thick. The baildown test methods and results are presented in Appendix F.

The LNAPL sample collected from RW-3 was a 89.9 percent match to Delta's Jet-A fuel stock sample. The LNAPL was approximately a 0.7 percent match (7210 mg/kg) to Delta's gasoline stock sample. The specific gravity of the LNAPL was determined to be 0.82.

### 3.10.6 Potential Sources of Contaminants

Contaminated soil and groundwater are potential sources at this SWMU. The suspected origination of contamination is a fuel oil supply line that is in the proximity of the 4 recovery wells. The Initial Site Assessment Report for the Bay 5 Hangar Addition (Engineering Science, 1990) stated that the LNAPL was No. 2 fuel oil, however, a stock sample of No. 2 fuel oil could not be attained during this investigation. The LNAPL sample collected from this SWMU was compared to Delta's Jet-A fuel resulting in a 89.9 percent match. This near, but not exact, match indicates that the LNAPL is weathered Jet-A fuel or a fuel of similar composition such as No. 2 fuel oil.

## 3.11 SWMU 8: EAST END FILL AREA

### 3.11.1 SWMU Description

The approximate location of this SWMU is indicated on Figure 3.22. The excavated material from the Settling Pond (SWMU 5) was placed as a fill material in the East End Fill Area. The SWMU currently is paved with asphalt and is used as a storage yard for aircraft maintenance equipment. Groundwater is approximately 26 feet bgs.

The RFI focused on collection and analysis of subsurface soil and groundwater samples from the East End Fill Area. Characterization activities, results, and potential contaminant sources for SWMU 8 are presented below.

### 3.11.2 Characterization Activities

Table 3.20 summarizes the field activities that were performed at SWMU 8. Soil and groundwater samples were collected with a direct-push sampler at 6 points in the East End Fill Area. These sampling locations are presented in Figure 3.22. Prior to sampling, a 6-inch circular core was cut through the existing pavement at point SWMU8-6. Two soil samples were collected from each sampling point except SWMU8-6 which had direct-push refusal at 12.5 feet bgs. At the other five locations 1 sample was collected approximately 2 feet below the bottom of the fill, and one sample was collected approximately 2 feet above the water table. A groundwater sample was collected at sampling points SWMU8-

1 through SWMU8-5. One duplicate soil and groundwater sample was also collected for quality control. The bottom of the fill was determined by visual observation of soil composition. The soil and groundwater samples were analyzed for VOCs (SW8260), nickel (SW6010), chromium (SW7191), cyanide (SW9010/SW9012), and lead (SW7421). The analytical data sheets and chain-of-custody records are presented in Appendix B.

### 3.11.3 Soil Results

The subsurface soil at SWMU 8 consists of alternating clays and silts with variable amounts of gravel and mica. A layer of black clay was encountered at depths ranging from 2 feet bgs (SWMU8-2) to 9 feet bgs and was approximately 4 feet thick. This black clay has a strong hydrocarbon odor and is most likely the sludge excavated from the SWMU 5 Settling Pond.

No VOCs were detected. Metals that were detected include chromium (1.49 J mg/kg to 76.5 mg/kg), nickel (ND to 18.8 mg/kg), and lead (2.61 mg/kg to 10.4 mg/kg). Cyanide was detected with a concentration range from ND to 0.2 mg/kg. Only the maximum chromium concentration is above the 2 x the maximum background concentration. The soil analytical results are presented in Table 3.21 and on Figures 3.23 and 3.24.

### 3.11.4 Groundwater Results

Groundwater was encountered at approximately 26 feet bgs. Chlorobenzene and cis-1,2-dichloroethene were each detected in one sample -- 10.2 µg/L at SWMU8-2 for chlorobenzene and 65.8 µg/L at SWMU8-3 for cis-1,2-dichloroethene. Metals that were detected include chromium (ND to 0.258 J mg/L), nickel (ND to 0.0067 mg/L), and lead (ND to 0.096 mg/L). Cyanide was detected at location SWMU8-3 only at a concentration of 0.008 mg/L.

Chlorobenzene, chromium, and lead were detected above the GPS. Cis-1,2-dichloroethene, nickel, and cyanide do not have a GPS but were detected below the MCL for drinking water. The groundwater analytical results are presented in Table 3.22 and on Figures 3.25 and 3.26.

Ground water protection standard

GPS

Maximum Contamin. Limit

MCL

### 3.11.5 Potential Sources of Contaminants

The sludge/soil excavated from the SWMU 5 Settling Pond and used as fill at SWMU 8 is a probable source of contamination.

## 3.12 SUMMARY OF RESULTS

This section summarizes soil contamination, groundwater contamination, contaminant sources, and the nature and extent of contamination. Maximum contaminant concentrations are presented for each of the SWMUs.

### 3.12.1 Soil Contamination

The maximum contaminant levels detected in soil at each SWMU are presented in Table 3.23. A comparison level for inorganic compounds is 2 x the maximum of the inorganic concentrations found in the facility background samples. Concentrations of inorganics that exceed 2 x the maximum background concentration are enclosed by a box.

### 3.12.2 Groundwater Contamination

The maximum contaminant levels detected in groundwater at each SWMU are presented in Table 3.24. The criteria for comparison is the groundwater protection standard (GPS) listed in Delta's hazardous waste facility permit. If there is no GPS for a constituent, it is compared to an alternate reference level. Alternative reference levels are the maximum contaminant level (MCL) for drinking water and the Georgia in-stream standards. Contaminants detected above the GPS or contaminants that are detected and do not have a GPS are identified in Table 3.24 by concentrations that are enclosed in a box.

### 3.12.3 Contaminant Sources

Contaminant sources are identified for the purposes of evaluating pathways and receptors in the next section. For the purposes of this report, a medium (soil or groundwater) is considered to be a contaminant source if it contains a contaminant for soil or groundwater as discussed above. Table 3.25 identifies the contaminant sources at the individual SWMUs, which are indicated by a "yes" in the respective SWMU column.

The following contaminants were identified in soil:

- SWMU 3 - inorganics, volatile organics, and semi-volatile organics;
- SWMU 4H and 4I - volatile organics;
- SWMU 4J - volatile organics;
- SWMU 5 - inorganics and volatile organics;
- SWMU 7 - volatile organics; and
- SWMU 8 - inorganics.

The following contaminants were identified in groundwater:

- SWMU 4H and 4I - volatile organics and LNAPL ;
- SWMU 4J - no contaminants identified;
- SWMU 5 - inorganics and volatile organics;
- SWMU 7 - LNAPL; and
- SWMU 8 - inorganics and volatile organics.

Note that groundwater was not sampled at SWMU 3. LNAPL was measured/sampled at SWMU 4H and 4I and at SWMU 7 only. Based on direct-push sampling, LNAPL did not appear to be present at the other SWMUs but this cannot be confirmed since no wells were installed at these other SWMUs.

### 3.12.4 Extent of Contamination

**SWMU 3.** Volatiles and semi-volatiles were detected in soil at location 1 in the shallow sample. Inorganics were detected in soil at both of the sampling locations at the shallow sampling depth and at location 1 in the deeper sample. Therefore, the extent of contamination has not been fully defined.

**SWMU 4.** Organics were detected in soil in only the central sampling point of SWMU 4H and 4I. Therefore, the extent of soil contamination appears to have been adequately defined. However, dissolved BTEX compounds were detected in groundwater in the central and the 2 southern temporary wells. Therefore, the extent of the dissolved BTEX plume has not been adequately defined and may extend farther to the south. Xylenes were detected in the western temporary well at a level below the GPS. LNAPL was found only in the central temporary well so it's extent was adequately determined.

BTEX compounds were detected in soil above the reference level in only the central sampling location at SWMU 4J. Therefore, the extent of soil contamination appears to have been adequately defined. Dissolved xylenes were detected in groundwater at the northern sampling point of SWMU 4J, so the extent of groundwater contamination may not have been determined. However the concentration of xylenes in this sample was very low (1.75 µg/L) and is below the GPS.

**SWMU 5.** Inorganics and volatile organics were detected in the sludge layer at SWMU 5 at high concentrations. The concentrations of the contaminants in the sludge layer are much greater than in the underlying soil. This is strong evidence that the sludge is the source of the inorganic contamination and possibly the source of the organic contamination. However, the high concentrations of organics in the sludge could be due to partitioning from surrounding contaminated groundwater to solid organic matter in the sludge. As previously mentioned, organic contamination at this SWMU is consistent with contamination found in nearby wells that are part of the corrective action system for SWMUs 1 and 2. Assuming that the sludge is the contaminant source, then the horizontal extent of sludge/soil contamination is probably defined by the boundaries of the former settling pond (see Appendix E).

Inorganics and volatile organics were detected above the groundwater protection standard in groundwater samples from SWMU 5. Based on sampling results from this RFI and from Delta's Corrective Action System Performance Report dated June 30, 1997, the extent of groundwater contamination is not defined.

**SWMU 7.** BTEX compounds (toluene, ethylbenzene and xylenes) were detected in soil at SWMU 7 at very low levels. These detections were on the west side of the SWMU 7 sampling area and therefore indicate that the horizontal extent of contamination may not be defined. However, the concentrations very low and do not indicate the presence of a contaminant source related to the Bay 5 Extension Fuel Leak.

BTEX compounds were not detected in groundwater at SWMU 7. The presence of LNAPL was confirmed in all 4 of the SWMU 7 recovery wells, which are located inside

Bay 5 (see Figure 3.21). Based on groundwater sampling performed on the south and west sides of TOC-2, neither dissolved BTEX nor LNAPL appears to extend beyond the south wall of TOC-2. Based on the probable groundwater flow direction to the southwest, the extent of dissolved BTEX and of LNAPL is defined.

**SWMU 8.** Organics were ND in soil at SWMU 8. Chromium was detected above 2 x the maximum background concentration in interior sampling location ( shallow sample from location 2) and in one exterior sampling location (deep sample from location 3). Therefore, the vertical and horizontal extent of chromium contamination in soil has not been fully defined.

Volatile organics and inorganics were detected above the groundwater protection standard in groundwater samples from SWMU 8. Chlorobenzene was detected in only location 2, the center location, so the extent of chlorobenzene contamination is defined and lies inside the perimeter sampling locations. Cis-1,2-dichloroethene, which is not included in Delta's list of groundwater protection standards, was detected at location 3. Therefore, the horizontal extent of cis-1,2-dichloroethene contamination in groundwater has not been fully defined. Inorganics (chromium and lead) were detected at sampling locations 2, 4, and 5 in excess of 2 x the maximum background concentration. Therefore, the horizontal extent of inorganic contamination in groundwater has not been fully defined.

# Table 3.1
# Summary of RFI Field Activities for Facility Background
# Delta Air Lines, Technical Operations Center

| Objectives of RFI | Field Activities | Sample Matrix | Analyses | Samples | Dup. | Blk. | MS/ MSD |
|---|---|---|---|---|---|---|---|
| • Identify soil background concentrations for TOC | • Drove sampler to depth just above water table at 3 points east of background well<br>• Collected three soil samples from depth of 0-12 inches; collected three soil samples just above the water table<br>• Used soil sample collected from SWMU 4HI-3 to measure nickel background concentration | Soil | Volatile Organics (SW8260) | 6 | 1 |  | 1 |
|  |  |  | Semivolatile Organics (SW8270) | 6 | 1 |  | 1 |
|  |  |  | RCRA metals (SW6010/SW7421) | 6 | 1 |  | 1 |
|  |  |  | Cyanide (SW9012) | 6 | 1 |  | 1 |
|  |  |  | Nickel (SW6010) | 1 |  |  |  |

Notes:
Samples = number of environmental samples
Dup. = number of field duplicates
Blk. = number of blanks -- includes trip, field and rinseate blanks
MS/MSD = number of matrix spike/ matrix spike duplicate pairs

## Table 3.2. Analytical Results for Facility Background Soils
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Depth<br>Date Sampled<br>Duplicate of | FB1<br>(0-1')<br>2/10/97<br>NA | FB1<br>(3-5')<br>2/10/97<br>NA | FB2<br>(0-1')<br>2/10/97<br>NA | FB2<br>(3-5')<br>2/10/97<br>NA | FB3<br>(0-1')<br>2/10/97<br>NA | FB3<br>(2-5')<br>2/10/97<br>NA | FBA<br>(2-5')<br>2/10/97<br>FB3(2-5') | SWMU4HI-3<br>(4-5')<br>5/22/97<br>NA | Maximum Detection (mg/kg) | 2 X Maximum Background Conc. (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| **<u>Volatile Organics - SW8260 (mg/kg)</u>** | | | | | | | | | | |
| Dilution Factor | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| Acrylonitrile | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | NA | ND | NA |
| Benzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Bromoform | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Carbon tetrachloride | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Chlorobenzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Chlorodibromomethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Chloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Chloroform | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Dichlorobromomethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| 1,1-Dichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| 1,2-Dichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| 1,1-Dichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| 1,2-Dichloropropane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| cis-1,3-Dichloropropene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Ethylbenzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Bromomethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Chloromethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Methylene chloride | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | NA | ND | NA |
| 1,1,2,2-Tetrachloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Tetrachloroethylene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Toluene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| 1,1,1-Trichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| 1,1,2-Trichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Trichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Trichlorofluoromethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Vinyl chloride | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |

## Table 3.2. Analytical Results for Facility Background Soils (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Depth<br>Date Sampled<br>Duplicate of | FB1<br>(0-1')<br>2/10/97<br>NA | FB1<br>(3-5')<br>2/10/97<br>NA | FB2<br>(0-1')<br>2/10/97<br>NA | FB2<br>(3-5')<br>2/10/97<br>NA | FB3<br>(0-1')<br>2/10/97<br>NA | FB3<br>(2-5')<br>2/10/97<br>NA | FBA<br>(2-5')<br>2/10/97<br>FB3(2-5') | SWMU4HI-3<br>(4-5')<br>5/22/97<br>NA | Maximum Detection (mg/kg) | 2 X Maximum Background Conc. (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| Styrene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Total Xylene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| trans-1,3-Dichloropropene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| 1,2-Dichlorobenzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| 1,4-Dichlorobenzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| trans-1,2-Dichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Carbon disulfide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Methyl ethyl ketone | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | NA | ND | NA |
| 1,1,1,2-Tetrachloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Acetone | **0.071** | <0.05 | <0.05 | <0.05 | **0.064** | <0.05 | <0.05 | NA | 0.071 | NA |
| Vinyl Acetate | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| 2-Hexanone | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| 4-Methyl-2-pentanone | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Ethylene dibromide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| 1,2-Dibromo-3-chloropropane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| trans-1,4-Dichloro-2-butene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Methylene bromide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Methyl iodide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| 1,2,3-Trichloropropane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| Bromochloromethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| cis-1,2-Dichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | NA | ND | NA |
| **Semivolatile Organics - SW8270 (mg/kg)** | | | | | | | | | | |
| Dilution Factor | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Acenaphthene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Acenaphthylene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Anthracene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Benzidine | <0.132 | <0.132 | <0.132 | <0.132 | <0.132 | <0.132 | <0.132 | NA | ND | NA |

## Table 3.2. Analytical Results for Facility Background Soils (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location | FB1 | FB1 | FB2 | FB2 | FB3 | FB3 | FBA | SWMU4HI-3 | Maximum Detection (mg/kg) | 2 X Maximum Background Conc. (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| Depth | (0-1') | (3-5') | (0-1') | (3-5') | (0-1') | (2-5') | (2-5') | (4-5') | | |
| Date Sampled | 2/10/97 | 2/10/97 | 2/10/97 | 2/10/97 | 2/10/97 | 2/10/97 | 2/10/97 | 5/22/97 | | |
| Duplicate of | NA | NA | NA | NA | NA | NA | FB3(2-5') | NA | | |
| Benzo (a) anthracene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Benzo (a) pyrene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Benzo (b) fluoranthene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Benzo (ghi) perylene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Benzo (k) fluoranthene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| bis (2-Chloroethoxy) methane | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| bis (2-Chloroethyl) ether | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| bis (2-Chloroisopropyl) ether | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| bis (2-Ethylhexyl) phthalate | **0.59** | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | 0.59 | NA |
| 4-Bromophenyl phenyl ether | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Butyl benzyl phthalate | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 2-Chloronaphthalene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 4-Chlorophenyl phenyl ether | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Chrysene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Dibenzo (a,h) anthracene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 1,2-Dichlorobenzene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 1,3-Dichlorobenzene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 1,4-Dichlorobenzene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 3,3'-Dichlorobenzidine | <0.66 | <0.66 | <0.66 | <0.66 | <0.66 | <0.66 | <0.66 | NA | ND | NA |
| Diethyl phthalate | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Dimethyl phthalate | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Di-n-butyl phthalate | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 2,4-Dinitrotoluene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 2,6-Dinitrotoluene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Di-n-octyl phthalate | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 1,2-Diphenylhydrazine | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Fluoranthene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Fluorene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |

## Table 3.2. Analytical Results for Facility Background Soils (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Depth<br>Date Sampled<br>Duplicate of | FB1<br>(0-1')<br>2/10/97<br>NA | FB1<br>(3-5')<br>2/10/97<br>NA | FB2<br>(0-1')<br>2/10/97<br>NA | FB2<br>(3-5')<br>2/10/97<br>NA | FB3<br>(0-1')<br>2/10/97<br>NA | FB3<br>(2-5')<br>2/10/97<br>NA | FBA<br>(2-5')<br>2/10/97<br>FB3(2-5') | SWMU4HI-3<br>(4-5')<br>5/22/97<br>NA | Maximum Detection (mg/kg) | 2 X Maximum Background Conc. (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| Hexachlorobenzene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Hexachlorobutadiene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Hexachlorocyclopentadiene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Hexachloroethane | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Indeno (1,2,3-c,d) pyrene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Isophorone | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Naphthalene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Nitrobenzene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| N-Nitrosodimethylamine | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| N-Nitrosodi-n-propylamine | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| N-Nitrosodiphenylamine | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Phenanthrene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Pyrene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 1,2,4-Trichlorobenzene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 2-Chlorophenol | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 2,4-Dichlorophenol | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 2,4-Dimethylphenol | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 4,6-Dinitro-o-cresol | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | NA | ND | NA |
| 2,4-Dinitrophenol | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | NA | ND | NA |
| 2-Nitrophenol | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 4-Nitrophenol | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | NA | ND | NA |
| p-Chloro-m-cresol | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| Pentachlorophenol | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | NA | ND | NA |
| Phenol | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |
| 2,4,6-Trichlorophenol | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | NA | ND | NA |

## Table 3.2. Analytical Results for Facility Background Soils (Continued)
## Delta Air Lines, Technical Operations Center

| **Sample Location** | **FB1** | **FB1** | **FB2** | **FB2** | **FB3** | **FB3** | **FBA** | **SWMU4HI-3** | **Maximum Detection (mg/kg)** | **2 X Maximum Background Conc. (mg/kg)** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Depth** | **(0-1')** | **(3-5')** | **(0-1')** | **(3-5')** | **(0-1')** | **(2-5')** | **(2-5')** | **(4-5')** | | |
| **Date Sampled** | **2/10/97** | **2/10/97** | **2/10/97** | **2/10/97** | **2/10/97** | **2/10/97** | **2/10/97** | **5/22/97** | | |
| **Duplicate of** | NA | NA | NA | NA | NA | NA | FB3(2-5') | NA | | |
| **Metals - SW6010A/SW7060A/SW7191/SW7421/ SW7471A/SW7740/(mg/kg)** | | | | | | | | | | |
| Silver | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | NA | ND | 0.8 |
| Arsenic | **0.427** | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | NA | 0.427 | 0.85 |
| Barium | **79.4** | **36.0** | **116** | **11.9** | **48.8** | **67.7** | **71.5** | NA | 116 | 232.00 |
| Cadmium | **1.20** | **0.492** | **1.26** | <0.4 | <0.4 | <0.4 | <0.4 | NA | 1.26 | 2.52 |
| Chromium | **25.4 J** | **2.82 J** | **22.7 J** | **3.39 J** | **2.28 J** | **5.28 J** | **2.39 J** | NA | 25.4 J | 50.80 |
| Mercury | <0.053 | <0.048 | <0.05 | <0.05 | <0.05 | <0.05 | <0.053 | NA | ND | 0.11 |
| Nickel | NA | NA | NA | NA | NA | NA | NA | **11.3** | 11.3 | 22.60 |
| Lead | **20.4 J** | **5.68 J** | **16.9 J** | **2.63 J** | **2.85 J** | **2.83 J** | **2.36 J** | NA | 20.4 J | 40.80 |
| Selenium | **0.130** | <0.08 | <0.08 | <0.08 | <0.08 | <0.08 | <0.08 | NA | 0.130 | 0.26 |
| **Cyanide - SW9012 (mg/kg)** | <0.1 | <0.1 | **0.2** | <0.1 | <0.1 | <0.1 | <0.1 | NA | 0.2 | 0.40 |

Notes:

mg/kg = milligrams per kilogram

<# = Compund analyzed for, but not detected above #

J = Indicates non-compliant field duplicate result for cadmium and a non-compliant matrix spike/ matrix spike duplicate result for lead

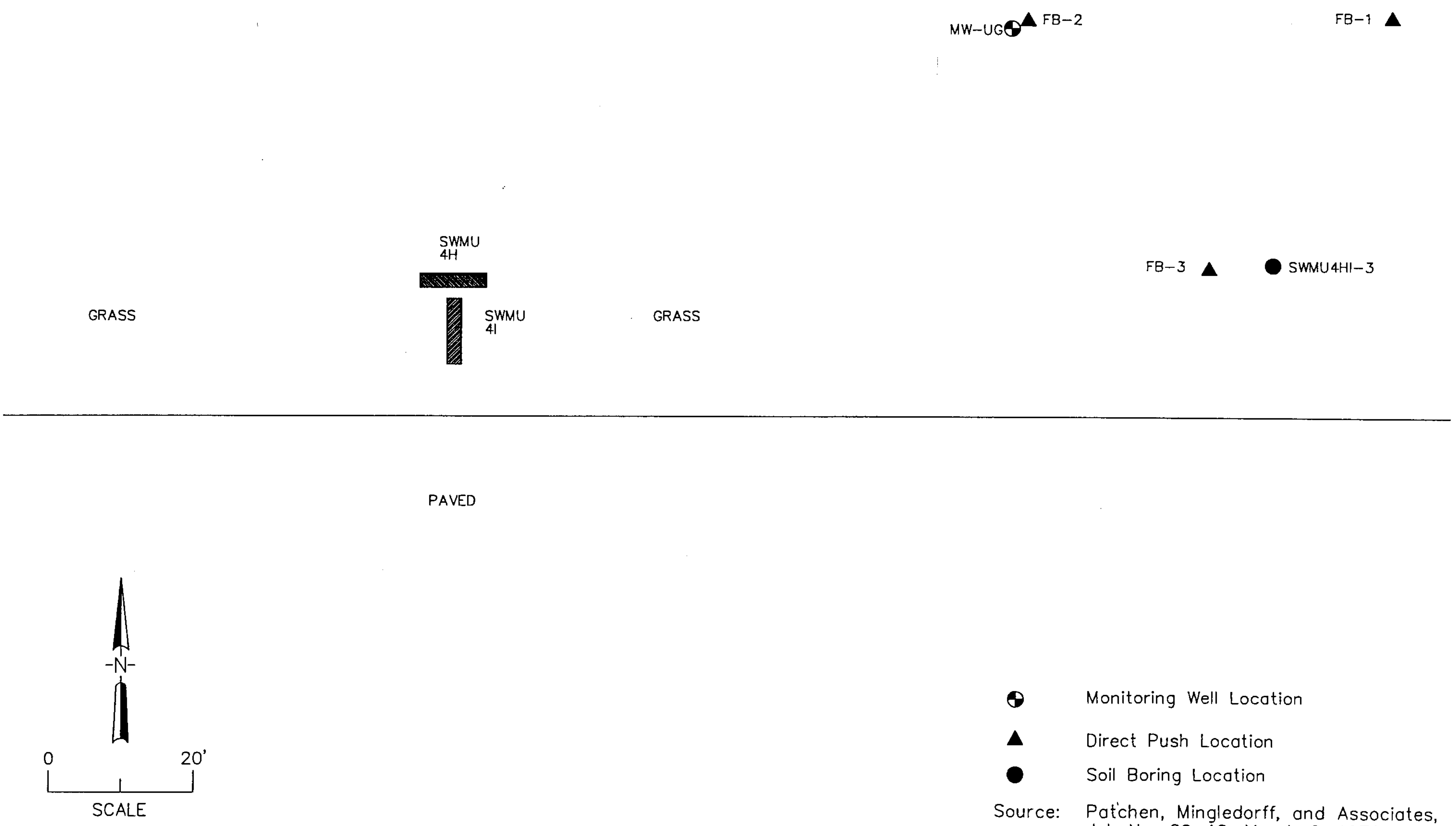
ND = Not detected

Only the nickel analysis from sample SWMU4HI-3 is considered facility background as discussed in Section 3.1

2 x maximum background concentration calculated for inorganic constituents only as discussed in Section 3.1

# SAMPLING LOCATIONS FOR FACILITY BACKGROUND SOIL SAMPLES

## Delta Air Lines, Technical Operations Center



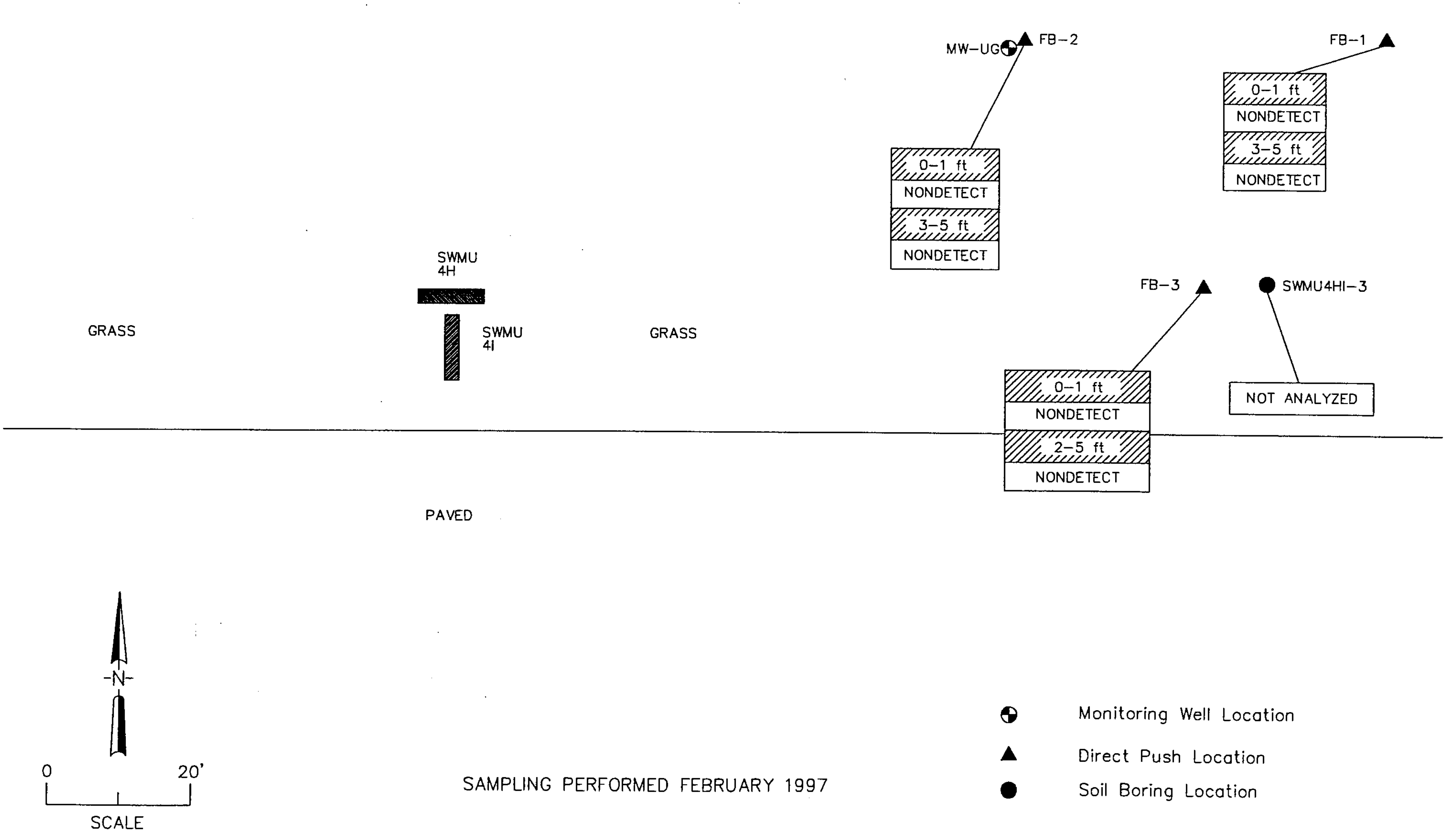
Source: Patchen, Mingledorff, and Associates, Job No. 69-16, March 2, 1970

C:\Jobs\730657\BCKGRND, 06/11/97 at 11:16

**PARSONS ENGINEERING SCIENCE, INC.**

Figure 3.1

# ORGANICS DETECTED IN SOIL (mg/kg)
# FACILITY BACKGROUND SOIL SAMPLES
## Delta Air Lines, Technical Operations Center



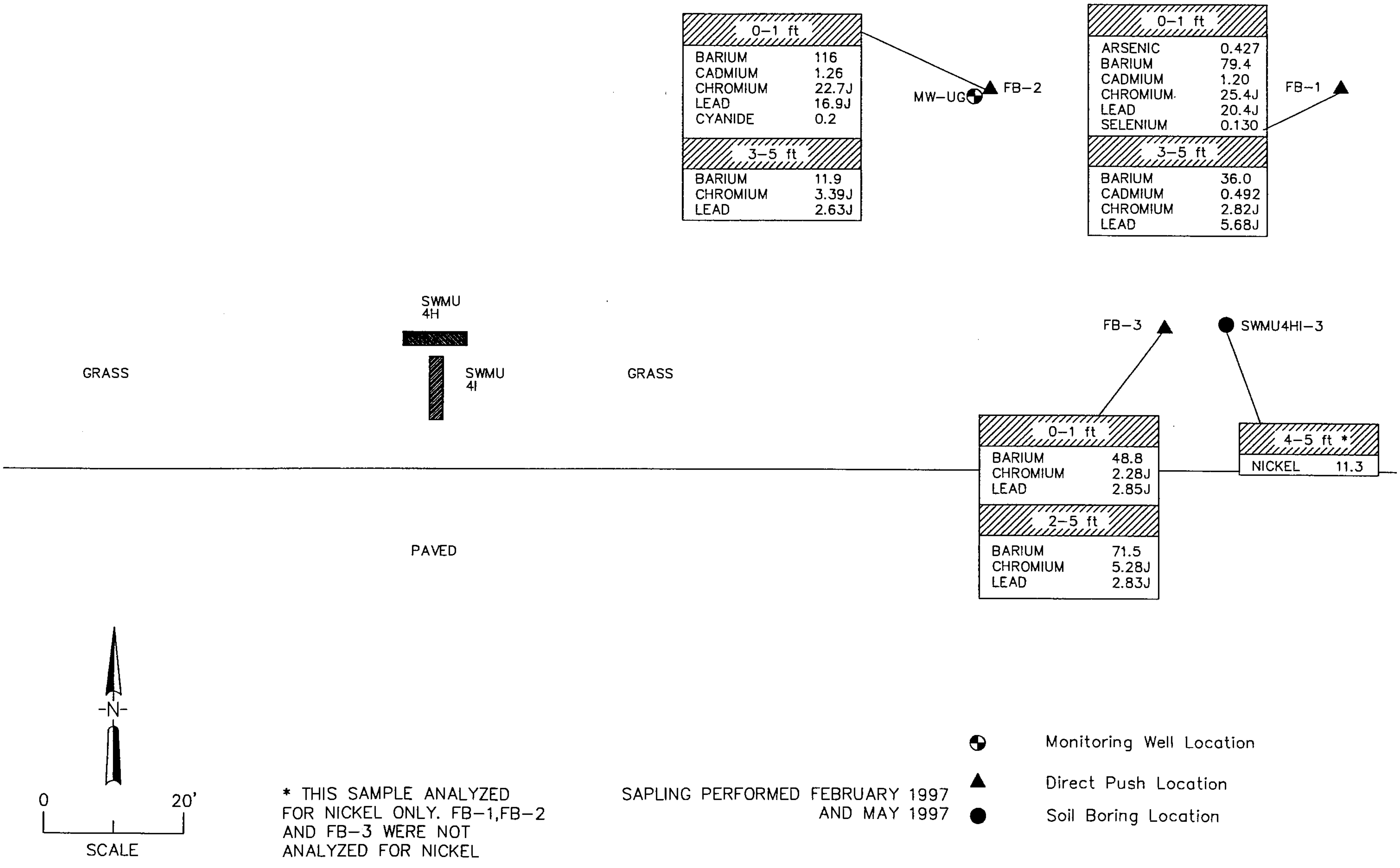
SAMPLING PERFORMED FEBRUARY 1997

C:\BGRNDOS, 06/27/97 at 13:25

**PARSONS ENGINEERING SCIENCE, INC.**

Figure 3.2

# INORGANICS DETECTED IN SOIL (mg/kg)
# FACILITY BACKGROUND SOIL SAMPLES
## Delta Air Lines, Technical Operations Center



* THIS SAMPLE ANALYZED FOR NICKEL ONLY. FB–1,FB–2 AND FB–3 WERE NOT ANALYZED FOR NICKEL

SAPLING PERFORMED FEBRUARY 1997 AND MAY 1997

C:\BGRNDIS, 06/27/97 at 13:58

**PARSONS ENGINEERING SCIENCE, INC.**

Figure 3.3

# Table 3.3
# Summary of RFI Field Activities for SWMU 3 (Scum Pits)
# Delta Air Lines, Technical Operations Center

| Objectives of RFI | Field Activities | Sample Matrix | Analyses | Samples | Dup. | Blk. | MS/ MSD |
|---|---|---|---|---|---|---|---|
| Identify contaminant release to soil above the water table | • Pumped out contents of two scum pits; inspected walls and floor for visible cracks; took photographs<br>• Drove sampler to depth just above water table<br>• Collected two soil samples from depth of 0-12 inches; collected two soil samples just above water table | Soil | Volatile Organics (SW(8260) | 4 | 1 | | |
| | | | Semivolatile Organics (SW8270) | 4 | 1 | | |
| | | | RCRA Metals | 4 | 1 | | |
| | | | (SW60/120/SW7421) | 4 | 1 | | |
| | | | Cyanide (SW9012) | | | | |

Notes:
Samples = number of environmental samples
Dup. = number of field duplicates
Blk. = number of blanks -- includes trip, field and rinseate blanks
MS/MSD = number of matrix spike/ matrix spike duplicate pairs

## Table 3.4. Analytical Results for SWMU 3 Soils
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Depth<br>Date Sampled<br>Duplicate of | SWMU3-1<br>(0-1')<br>2/14/97<br>NA | SWMU3-1<br>(8-9')<br>2/14/97<br>NA | SWMU3-2<br>(0-1')<br>2/14/97<br>NA | SWMU3-2<br>(8-8.5')<br>2/14/97<br>NA | SWMU3-3<br>(0-1')<br>2/14/97<br>3-1(0-1') | Maximum Detection (mg/kg) | 2 X Maximum Background Conc. (mg/kg) |
|---|---|---|---|---|---|---|---|
| **Volatile Organics - SW8260 (mg/kg)** | | | | | | | |
| Dilution Factor | 2 | 2 | 2 | 2 | 2 | | |
| Acrylonitrile | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | ND | NA |
| Benzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Bromoform | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Carbon tetrachloride | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Chlorobenzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Chlorodibromomethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Chloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Chloroform | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Dichlorobromomethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,1-Dichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,2-Dichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,1-Dichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,2-Dichloropropane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| cis-1,3-Dichloropropene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Ethylbenzene | **0.0216** | <0.01 | <0.01 | <0.01 | <0.01 | 0.0216 | NA |
| Bromomethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Chloromethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Methylene chloride | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | ND | NA |
| 1,1,2,2-Tetrachloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Tetrachloroethylene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Toluene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,1,1-Trichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,1,2-Trichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Trichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Trichlorofluoromethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |

## Table 3.4. Analytical Results for SWMU 3 Soils (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Depth<br>Date Sampled<br>Duplicate of | SWMU3-1<br>(0-1')<br>2/14/97<br>NA | SWMU3-1<br>(8-9')<br>2/14/97<br>NA | SWMU3-2<br>(0-1')<br>2/14/97<br>NA | SWMU3-2<br>(8-8.5')<br>2/14/97<br>NA | SWMU3-3<br>(0-1')<br>2/14/97<br>3-1(0-1') | Maximum Detection (mg/kg) | 2 X Maximum Background Conc. (mg/kg) |
|---|---|---|---|---|---|---|---|
| Vinyl chloride | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Styrene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Total Xylene | **0.155** | <0.01 | <0.01 | <0.01 | <0.01 | 0.155 | NA |
| trans-1,3-Dichloropropene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,2-Dichlorobenzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,4-Dichlorobenzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| trans-1,2-Dichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Carbon disulfide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Methyl ethyl ketone | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | ND | NA |
| 1,1,1,2-Tetrachloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Acetone | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | ND | NA |
| Vinyl Acetate | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| 2-Hexanone | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| 4-Methyl-2-pentanone | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Ethylene dibromide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,2-Dibromo-3-chloropropane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| trans-1,4-Dichloro-2-butene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Methylene bromide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Methyl iodide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,2,3-Trichloropropane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| Bromochloromethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| cis-1,2-Dichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | ND | NA |
| **Semivolatile Organics - SW8270 (mg/kg)** | | | | | | | |
| Dilution Factor | 40 | 2 | 40 | 2 | 2 | | |
| Acenaphthene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Acenaphthylene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Anthracene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |

## Table 3.4. Analytical Results for SWMU 3 Soils (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location | SWMU3-1 | SWMU3-1 | SWMU3-2 | SWMU3-2 | SWMU3-3 | Maximum Detection (mg/kg) | 2 X Maximum Background Conc. (mg/kg) |
|---|---|---|---|---|---|---|---|
| Depth | (0-1') | (8-9') | (0-1') | (8-8.5') | (0-1') | | |
| Date Sampled | 2/14/97 | 2/14/97 | 2/14/97 | 2/14/97 | 2/14/97 | | |
| Duplicate of | NA | NA | NA | NA | 3-1(0-1') | | |
| Benzidine | <52.8 | <2.64 | <52.8 | <2.64 | <2.64 | ND | NA |
| Benzo (a) anthracene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Benzo (a) pyrene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Benzo (b) fluoranthene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Benzo (ghi) perylene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Benzo (k) fluoranthene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| bis (2-Chloroethoxy) methane | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| bis (2-Chloroethyl) ether | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| bis (2-Chloroisopropyl) ether | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| bis (2-Ethylhexyl) phthalate | **18.1 J** | <0.66 J | <13.2 J | <0.66 J | **4.86 J** | 18.1 J | NA |
| 4-Bromophenyl phenyl ether | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Butyl benzyl phthalate | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 2-Chloronaphthalene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 4-Chlorophenyl phenyl ether | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Chrysene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Dibenzo (a,h) anthracene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 1,2-Dichlorobenzene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 1,3-Dichlorobenzene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 1,4-Dichlorobenzene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 3,3'-Dichlorobenzidine | <26.4 | <1.32 | <26.4 | <1.32 | <1.32 | ND | NA |
| Diethyl phthalate | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Dimethyl phthalate | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Di-n-butyl phthalate | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 2,4-Dinitrotoluene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 2,6-Dinitrotoluene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Di-n-octyl phthalate | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 1,2-Diphenylhydrazine | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Fluoranthene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |

## Table 3.4. Analytical Results for SWMU 3 Soils (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location | SWMU3-1 | SWMU3-1 | SWMU3-2 | SWMU3-2 | SWMU3-3 | Maximum Detection (mg/kg) | 2 X Maximum Background Conc. (mg/kg) |
|---|---|---|---|---|---|---|---|
| Depth | (0-1') | (8-9') | (0-1') | (8-8.5') | (0-1') | | |
| Date Sampled | 2/14/97 | 2/14/97 | 2/14/97 | 2/14/97 | 2/14/97 | | |
| Duplicate of | NA | NA | NA | NA | 3-1(0-1') | | |
| Fluorene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Hexachlorobenzene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Hexachlorobutadiene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Hexachlorocyclopentadiene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Hexachloroethane | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Indeno (1,2,3-c,d) pyrene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Isophorone | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Naphthalene | <13.2 | <0.66 | <13.2 | <0.66 | **0.705** | 0.705 | NA |
| Nitrobenzene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| N-Nitrosodimethylamine | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| N-Nitrosodi-n-propylamine | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| N-Nitrosodiphenylamine | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Phenanthrene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Pyrene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 1,2,4-Trichlorobenzene | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 2-Chlorophenol | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 2,4-Dichlorophenol | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 2,4-Dimethylphenol | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 4,6-Dinitro-o-cresol | <66 | <3.3 | <66 | <3.3 | <3.3 | ND | NA |
| 2,4-Dinitrophenol | <66 | <3.3 | <66 | <3.3 | <3.3 | ND | NA |
| 2-Nitrophenol | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 4-Nitrophenol | <66 | <3.3 | <66 | <3.3 | <3.3 | ND | NA |
| p-Chloro-m-cresol | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| Pentachlorophenol | <66 | <3.3 | <66 | <3.3 | <3.3 | ND | NA |
| Phenol | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |
| 2,4,6-Trichlorophenol | <13.2 | <0.66 | <13.2 | <0.66 | <0.66 | ND | NA |

## Table 3.4. Analytical Results for SWMU 3 Soils (Continued)
## Delta Air Lines, Technical Operations Center

| **Sample Location** | **SWMU3-1** | **SWMU3-1** | **SWMU3-2** | **SWMU3-2** | **SWMU3-3** | **Maximum Detection (mg/kg)** | **2 X Maximum Background Conc. (mg/kg)** |
|---|---|---|---|---|---|---|---|
| **Depth** | **(0-1')** | **(8-9')** | **(0-1')** | **(8-8.5')** | **(0-1')** | | |
| **Date Sampled** | **2/14/97** | **2/14/97** | **2/14/97** | **2/14/97** | **2/14/97** | | |
| **Duplicate of** | NA | NA | NA | NA | 3-1(0-1') | | |
| **Metals - SW6010A/SW7060A/SW7191/SW7421/ SW7471A/SW7740/(mg/kg)** | | | | | | | |
| Silver | **3.23** | **0.484** | **0.691** | <0.4 | <0.518 | 3.23 | 0.8 |
| Arsenic | **0.500** | <0.4 | <0.4 | <2 | <0.4 | 0.500 | 0.85 |
| Barium | **135** | **83** | **129** | **130** | **142** | 142 | 232.00 |
| Cadmium | **6.44 J** | **1.71 J** | **4.14 J** | **0.864 J** | **1.67 J** | 6.44 | 2.52 |
| Chromium | **104 J** | **27.6 J** | **93.0 J** | **39.8 J** | **44.4 J** | 104 J | 50.80 |
| Mercury | **0.468** | <0.05 | **0.242** | <0.05 | <0.05 | 0.468 | 0.11 |
| Lead | **33.5** | **56.8** | **23.9** | **16.3** | **22.8** | 56.8 | 40.80 |
| Selenium | **0.218** | **0.132** | <0.08 | <0.08 | **0.085** | 0.218 | 0.260 |
| **Cyanide - SW9012 (mg/kg)** | **0.4** | <0.1 | **0.1** | <0.1 | **0.4** | 0.4 | 0.4 |

Notes:

mg/kg = milligrams per kilogram

<# = Compund analyzed for, but not detected above #

J = Indicates a non-compliant field duplicate result for bis (2-Ethylhexyl) phthalate, cadmium and chromium

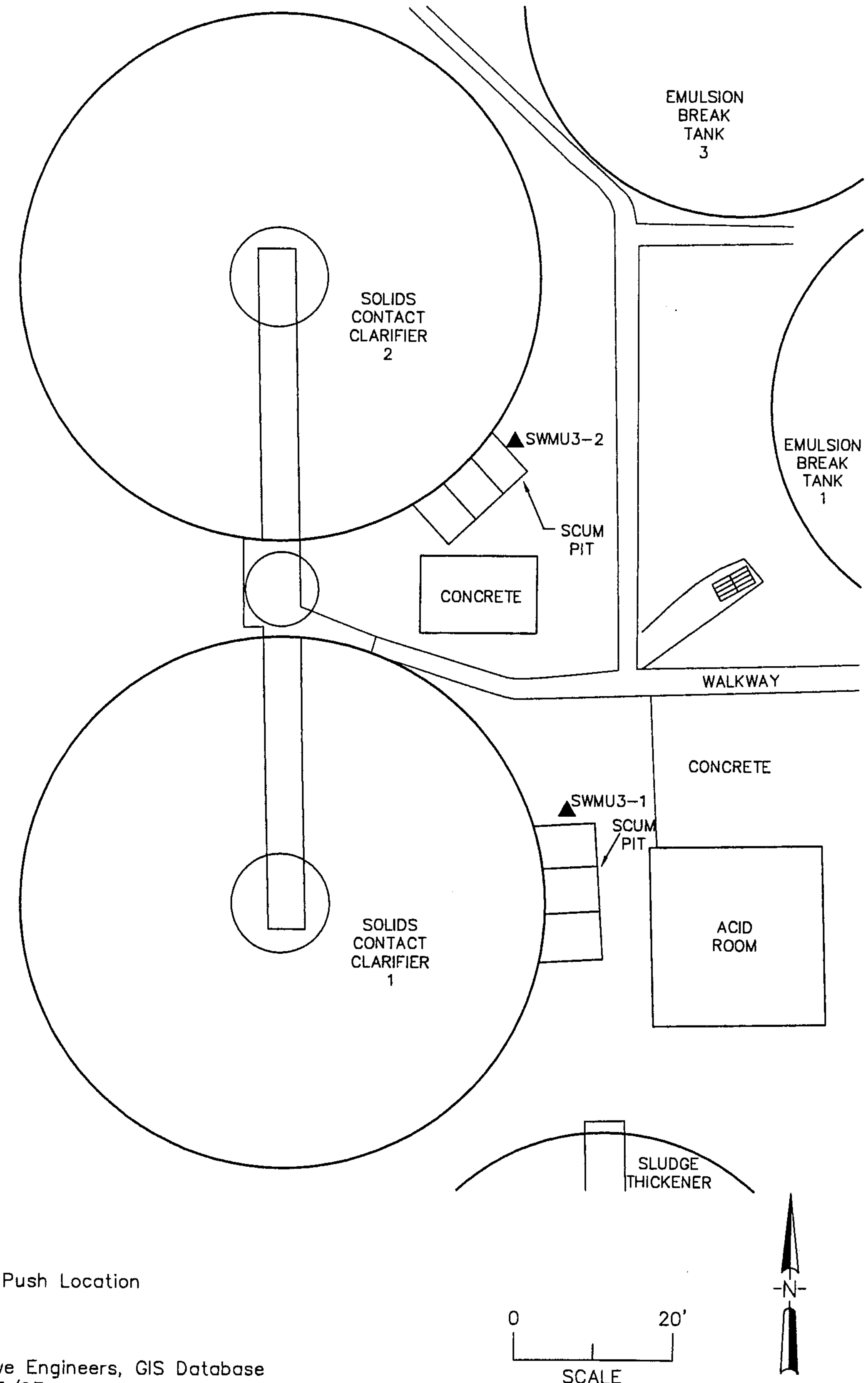
ND = Not detected

NA = Not applicable for organic constituents.

Figure 3.4

# SAMPLING LOCATIONS
# FOR SWMU 3 (SCUM PITS)

## Delta Air Lines, Technical Operations Center



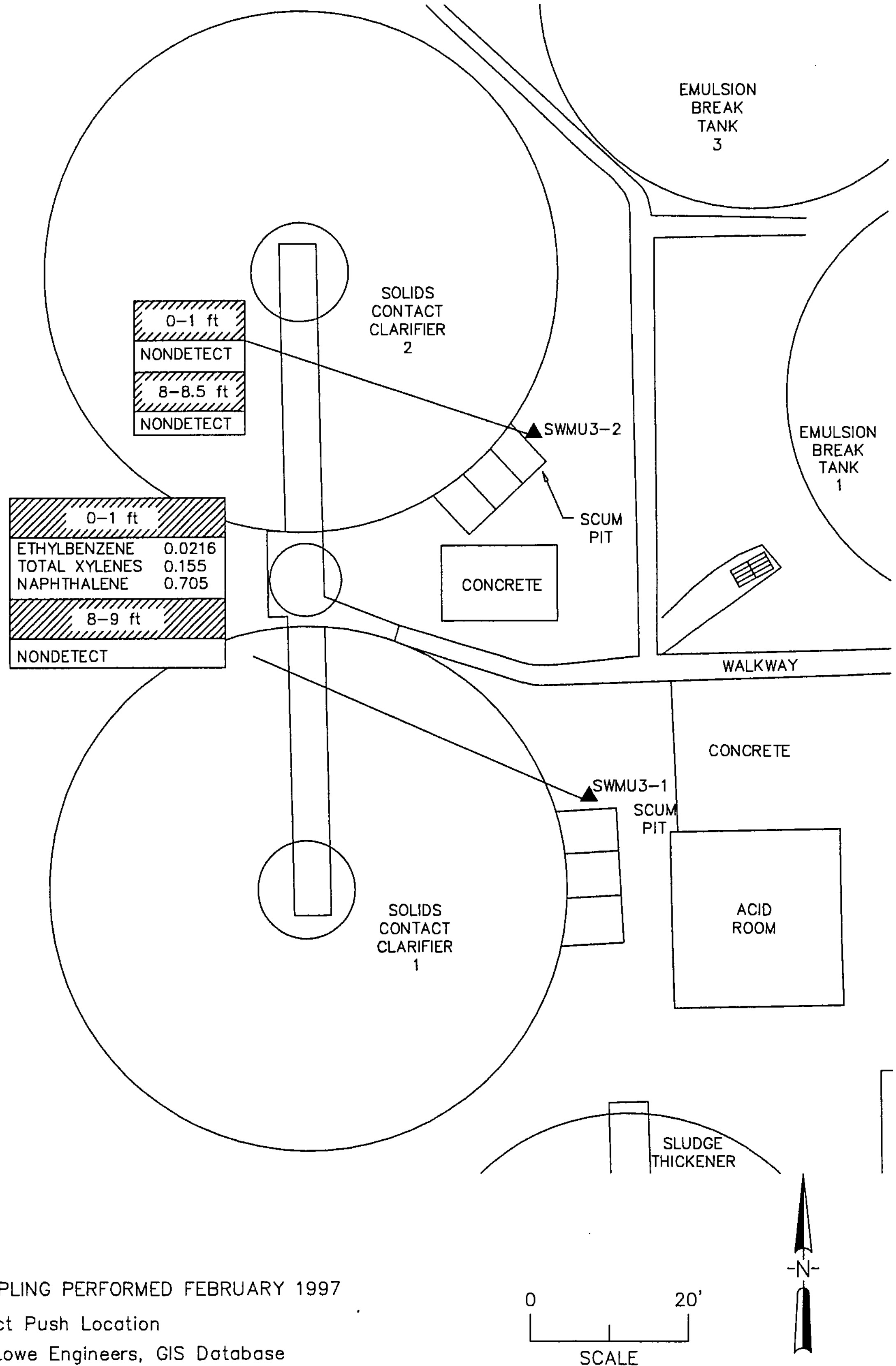
▲ Direct Push Location

Source: Lowe Engineers, GIS Database
3/5/93

C:\Jobs\730657\SWMU3, 06/06/97 at 14:51

**PARSONS ENGINEERING SCIENCE, INC.**

# ORGANICS DETECTED IN SOIL (mg/kg)
# SWMU 3 (SCUM PITS)
## Delta Air Lines, Technical Operations Center



SAMPLING PERFORMED FEBRUARY 1997

▲ Direct Push Location

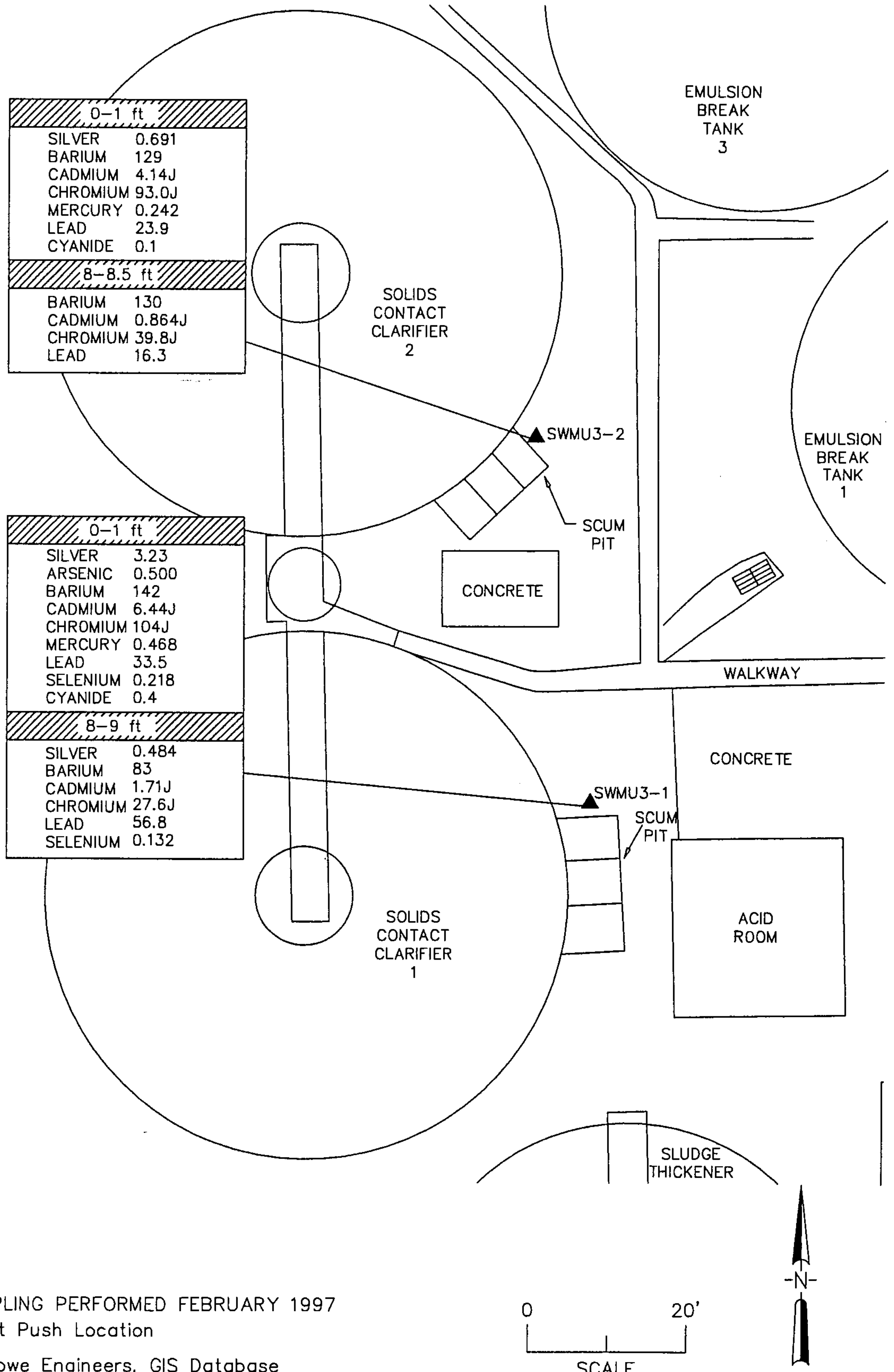
Source: Lowe Engineers, GIS Database
3/5/93

\\RLYNN\Ryan\Jobs\730657\SWMU30, 06/26/97 at 13:43

**PARSONS ENGINEERING SCIENCE, INC.**

Figure 3.6

# INORGANICS DETECTED IN SOIL (mg/kg)
# SWMU 3 (SCUM PITS)
## Delta Air Lines, Technical Operations Center



SAMPLING PERFORMED FEBRUARY 1997

▲ Direct Push Location

Source: Lowe Engineers, GIS Database 3/5/93

C:\Jobs\730657\SWMU3I, 06/24/97 at 08:19

**PARSONS ENGINEERING SCIENCE, INC.**

## Table 3.5
## Summary of RFI Field Activities for SWMUS 4A - 4G
## Delta Air Lines, Technical Operations Center

| Objectives of RFI | Field Activities | Sample Matrix | Analyses | Samples | Dup. | Blk. | MS/ MSD |
|---|---|---|---|---|---|---|---|
| • Collect and sample pit debris for disposal purposes<br>• Identify contaminant releases, if any, to soil below any of the drain pipes<br>• Prevent future releases by filling pits with concrete | • Cleaned out each fueling-defueling pit and containerized debris in 55-gallon drums<br>• Collected three composite samples of debris<br>• Attempted video survey of three-inch pipe fed by floor drain<br>• Attempted video survey of six/eight-inch industrial waste line from junction with three-inch line to north wall of hangar<br>• Filled fueling-defueling pits with concrete | Debris | TCLP Volatiles (SW1311/SW8260) | 2 | | | |
| | | | TCLP Metals (SW1311/SW6010/SW7421) | 3 | | | |

Notes:

Samples = number of environmental samples
Dup. = number of field duplicates
Blk. = number of blanks -- includes trip, field and rinseate blanks
MS/MSD = number of matrix spike/ matrix spike duplicate pairs

## Table 3.6. Analytical Results for SWMU 4A-4G Debris
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Sample Type<br>Sample Date | 4A, 4B<br>Composite<br>1/15/97 | 4C, 4D, 4F, 4G<br>Composite<br>2/4/97 | 4E<br>Composite<br>2/19/97 | Regulatory Limit (mg/L) | Exceeds Regulatory Limit? |
|---|---|---|---|---|---|
| **TCLP Metals - SW6010/7470/7760 (mg/L)** | | | | | |
| Arsenic | <0.2 | <0.2 | <0.2 | 5 | No |
| Barium | <0.1 | <0.1 | <0.5 | 100 | No |
| Cadmium | **5.58** | **3.03** | **4.33** | 1 | **Yes** |
| Chromium | <0.05 | **0.074** | <0.05 | 5 | No |
| Lead | <0.1 | <0.1 | <0.1 | 5 | No |
| Mercury | **0.0004** | **0.0071** | <0.0 | 0.2 | No |
| Silver | <0.01 | <0.01 | <0.01 | 5 | No |
| Selenium | <0.2 | <0.2 | <0.2 | 1 | No |
| **TCLP Volatiles - SW8260 (mg/L)** | ND[1] | NA[2] | NA | -- | No |
| **TCLP Volatiles - SW8240 (mg/L)** | NA | NA | ND[1] | -- | No |

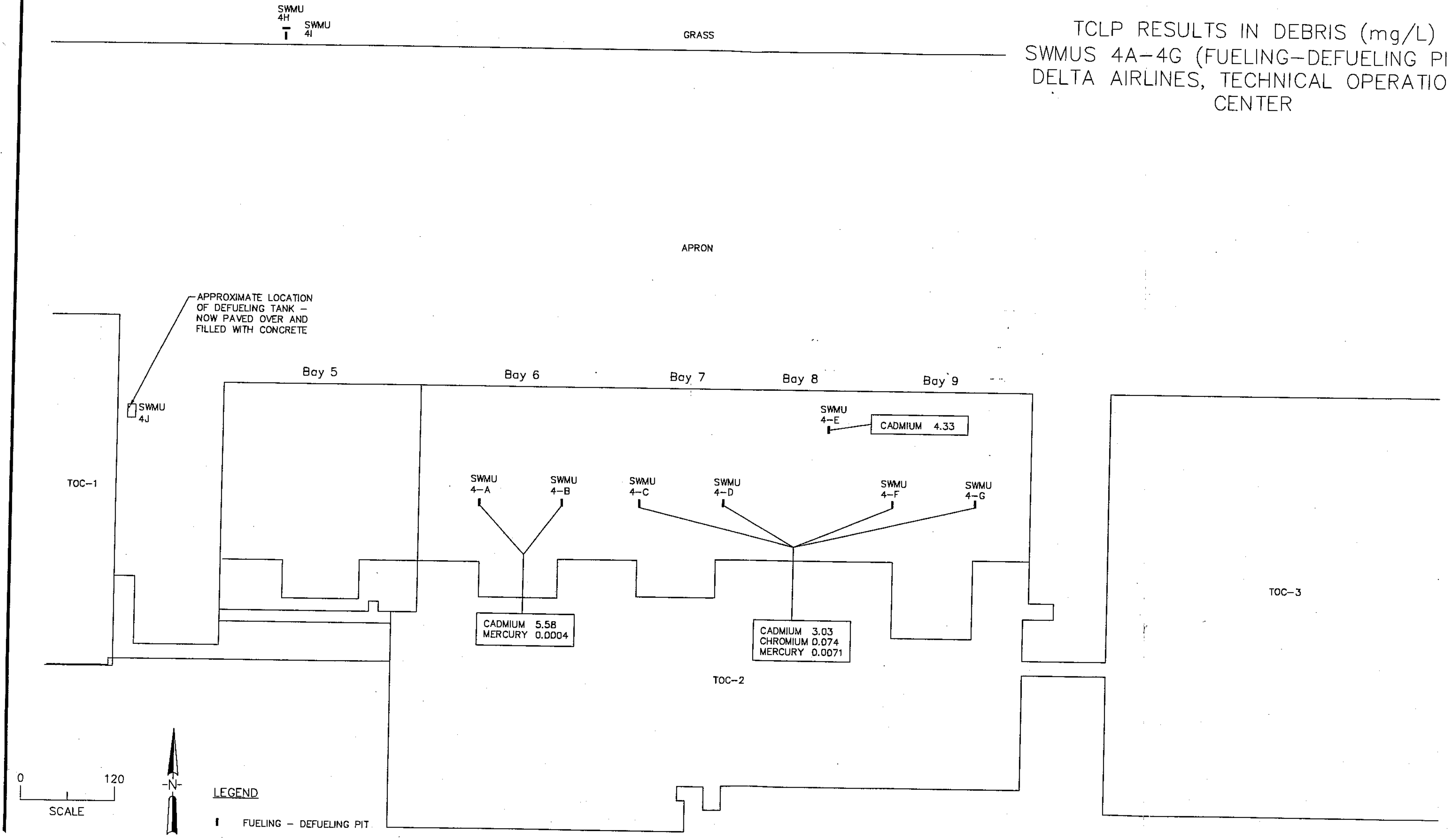
Notes:

(1) All analytes were nondetect (ND).

(2) NA - Not analyzed

Figure 3.7

# TCLP RESULTS IN DEBRIS (mg/L)
# SWMUS 4A–4G (FUELING–DEFUELING PITS)
# DELTA AIRLINES, TECHNICAL OPERATIONS CENTER



Source: Patchen, Mingledorff, and Associates, Job No. 69–16, March 2, 1970

\\rlynn\Ryan\Jobs\730657\smwu4ag, 07/03/97 at 09:20

PARSONS ENGINEERING SCIENCE, INC.

## Table 3.7
## Summary of RFI Field Activities for SWMUS 4H - 4I
## Delta Air Lines, Technical Operations Center

| Objectives of RFI | Field Activities | Sample Matrix | Analyses | Samples | Dup. | Blk. | MS/ MSD |
|---|---|---|---|---|---|---|---|
| • Verify existence of gravel drain pit<br>• Identify contaminant release to soil above the water table | • Excavated with backhoe, discovered LNAPL, photographed excavation | Soil | Volatile Organics (SW8260) | 9 | 1 |  | 1 |
|  |  |  | Semivolatile Organics (SW8270) | 9 | 1 |  | 1 |
|  | • Drove sampler at two points to depth just through water table to gain more information on extent of free product | Groundwater | Volatile Organics (SW8260) | 9 | 1 |  | 1 |
|  |  |  | Semivolatile Organics (SW8270) | 9 | 1 |  | 1 |
|  | • Advanced nine soil borings with hollow stem auger to delineate extent of free product; collected one soil sample per boring<br>• Completed soil borings as seven temporary and two permanent monitoring wells; collected nine groundwater samples and one LNAPL sample | LNAPL | LNAPL ID (SW8015 MOD) | 1 |  |  |  |

Notes:

LNAPL = light non-aqueous phase liquid

Samples = number of environmental samples

Dup. = number of field duplicates

Blk. = number of blanks -- includes trip, field and rinseate blanks

MS/MSD = number of matrix spike/ matrix spike duplicate pairs

## Table 3.8. Analytical Results for SWMU 4H-4I Soils
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Depth<br>Date Sampled<br>Duplicate of | SWMU4HI-3<br>(4-5')<br>5/22/97<br>NA | SWMU4HI-4<br>(1-3')<br>5/22/97<br>NA | SWMU4HI-5<br>(4-5')<br>5/22/97<br>NA | SWMU4HI-6<br>(4-5')<br>5/22/97<br>NA | SWMU4HI-7<br>(3-5')<br>5/22/97<br>NA | SWMU4HI-8<br>(1-3')<br>5/22/97<br>NA | SWMU4HI-9<br>(1-3')<br>5/22/97<br>NA |
|---|---|---|---|---|---|---|---|
| **Volatile Organics - SW8260 (mg/kg)** | | | | | | | |
| Dilution Factor | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Acrylonitrile | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Benzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Bromoform | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Carbon tetrachloride | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Chlorobenzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Chlorodibromomethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Chloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Chloroform | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Dichlorobromomethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,1-Dichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,2-Dichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,1-Dichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,2-Dichloropropane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| cis-1,3-Dichloropropene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Ethylbenzene | <0.01 J | <0.01 J | <0.01 J | <0.01 J | <0.01 J | <0.01 J | <0.01 J |
| Bromomethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Chloromethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Methylene chloride | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| 1,1,2,2-Tetrachloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Tetrachloroethylene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Toluene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,1,1-Trichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,1,2-Trichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Trichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Trichlorofluoromethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Vinyl chloride | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |

## Table 3.8. Analytical Results for SWMU 4H-4I Soils (Continued)
## Delta Air Lines, Technical Operations Center

| **Sample Location** | **SWMU4HI-10** | **SWMU4HI-11** | **SWMU4HI-12** | **Maximum Detection (mg/kg)** |
|---|---|---|---|---|
| **Depth** | **(1-3')** | **(1-3')** | **(1-3')** | |
| **Date Sampled** | **5/22/97** | **5/22/97** | **5/22/97** | |
| **Duplicate of** | NA | NA | 4HI-11(1-3') | |
| **Volatile Organics - SW8260 (mg/kg)** | | | | |
| Dilution Factor | 2 | 2 | 2 | |
| Acrylonitrile | <0.05 | <0.05 | <0.05 | ND |
| Benzene | <0.01 | <0.01 | <0.01 | ND |
| Bromoform | <0.01 | <0.01 | <0.01 | ND |
| Carbon tetrachloride | <0.01 | <0.01 | <0.01 | ND |
| Chlorobenzene | <0.01 | <0.01 | <0.01 | ND |
| Chlorodibromomethane | <0.01 | <0.01 | <0.01 | ND |
| Chloroethane | <0.01 | <0.01 | <0.01 | ND |
| Chloroform | <0.01 | <0.01 | <0.01 | ND |
| Dichlorobromomethane | <0.01 | <0.01 | <0.01 | ND |
| 1,1-Dichloroethane | <0.01 | <0.01 | <0.01 | ND |
| 1,2-Dichloroethane | <0.01 | <0.01 | <0.01 | ND |
| 1,1-Dichloroethene | <0.01 | <0.01 | <0.01 | ND |
| 1,2-Dichloropropane | <0.01 | <0.01 | <0.01 | ND |
| cis-1,3-Dichloropropene | <0.01 | <0.01 | <0.01 | ND |
| Ethylbenzene | <0.01 J | **0.108 J** | **0.0216 J** | 0.108 J |
| Bromomethane | <0.01 | <0.01 | <0.01 | ND |
| Chloromethane | <0.01 | <0.01 | <0.01 | ND |
| Methylene chloride | <0.02 | <0.02 | <0.02 | ND |
| 1,1,2,2-Tetrachloroethane | <0.01 | <0.01 | <0.01 | ND |
| Tetrachloroethylene | <0.01 | <0.01 | <0.01 | ND |
| Toluene | <0.01 | **0.018** | <0.01 | 0.018 |
| 1,1,1-Trichloroethane | <0.01 | <0.01 | <0.01 | ND |
| 1,1,2-Trichloroethane | <0.01 | <0.01 | <0.01 | ND |
| Trichloroethene | <0.01 | <0.01 | <0.01 | ND |
| Trichlorofluoromethane | <0.01 | <0.01 | <0.01 | ND |
| Vinyl chloride | <0.01 | <0.01 | <0.01 | ND |

## Table 3.8. Analytical Results for SWMU 4H-4I Soils (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Depth<br>Date Sampled<br>Duplicate of | SWMU4HI-3<br>(4-5')<br>5/22/97<br>NA | SWMU4HI-4<br>(1-3')<br>5/22/97<br>NA | SWMU4HI-5<br>(4-5')<br>5/22/97<br>NA | SWMU4HI-6<br>(4-5')<br>5/22/97<br>NA | SWMU4HI-7<br>(3-5')<br>5/22/97<br>NA | SWMU4HI-8<br>(1-3')<br>5/22/97<br>NA | SWMU4HI-9<br>(1-3')<br>5/22/97<br>NA |
|---|---|---|---|---|---|---|---|
| Styrene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Total Xylene | <0.01 J | <0.01 J | <0.01 J | <0.01 J | <0.01 J | <0.01 J | <0.01 J |
| trans-1,3-Dichloropropene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,2-Dichlorobenzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,4-Dichlorobenzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| trans-1,2-Dichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Carbon disulfide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Methyl ethyl ketone | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 1,1,1,2-Tetrachloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Acetone | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Vinyl Acetate | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 2-Hexanone | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 4-Methyl-2-pentanone | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Ethylene dibromide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,2-Dibromo-3-chloropropane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| trans-1,4-Dichloro-2-butene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Methylene bromide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Methyl iodide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,2,3-Trichloropropane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Bromochloromethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| cis-1,2-Dichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Semivolatile Organics - SW8270 (mg/kg)** | | | | | | | |
| Dilution Factor | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Acenaphthene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Acenaphthylene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Anthracene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Benzidine | <0.132 | <0.132 | <0.132 | <0.132 | <0.132 | <0.132 | <0.132 |

## Table 3.8. Analytical Results for SWMU 4H-4I Soils (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Depth<br>Date Sampled<br>Duplicate of | SWMU4HI-10<br>(1-3')<br>5/22/97<br>NA | SWMU4HI-11<br>(1-3')<br>5/22/97<br>NA | SWMU4HI-12<br>(1-3')<br>5/22/97<br>4HI-11(1-3') | Maximum Detection (mg/kg) |
|---|---|---|---|---|
| Styrene | <0.01 | <0.01 | <0.01 | ND |
| Total Xylene | <0.01 J | **0.4 J** | **0.0885 J** | 0.4 J |
| trans-1,3-Dichloropropene | <0.01 | <0.01 | <0.01 | ND |
| 1,2-Dichlorobenzene | <0.01 | <0.01 | <0.01 | ND |
| 1,4-Dichlorobenzene | <0.01 | <0.01 | <0.01 | ND |
| trans-1,2-Dichloroethene | <0.01 | <0.01 | <0.01 | ND |
| Carbon disulfide | <0.01 | <0.01 | <0.01 | ND |
| Methyl ethyl ketone | <0.05 | <0.05 | <0.05 | ND |
| 1,1,1,2-Tetrachloroethane | <0.01 | <0.01 | <0.01 | ND |
| Acetone | <0.05 | <0.05 | <0.05 | ND |
| Vinyl Acetate | <0.01 | <0.01 | <0.01 | ND |
| 2-Hexanone | <0.01 | <0.01 | <0.01 | ND |
| 4-Methyl-2-pentanone | <0.01 | <0.01 | <0.01 | ND |
| Ethylene dibromide | <0.01 | <0.01 | <0.01 | ND |
| 1,2-Dibromo-3-chloropropane | <0.01 | <0.01 | <0.01 | ND |
| trans-1,4-Dichloro-2-butene | <0.01 | <0.01 | <0.01 | ND |
| Methylene bromide | <0.01 | <0.01 | <0.01 | ND |
| Methyl iodide | <0.01 | <0.01 | <0.01 | ND |
| 1,2,3-Trichloropropane | <0.01 | <0.01 | <0.01 | ND |
| Bromochloromethane | <0.01 | <0.01 | <0.01 | ND |
| cis-1,2-Dichloroethene | <0.01 | <0.01 | <0.01 | ND |
| **Semivolatile Organics - SW8270 (mg/kg)** | | | | |
| Dilution Factor | 1 | 1 | 1 | |
| Acenaphthene | <0.33 | <0.33 | <0.33 | ND |
| Acenaphthylene | <0.33 | <0.33 | <0.33 | ND |
| Anthracene | <0.33 | <0.33 | <0.33 | ND |
| Benzidine | <0.132 | <0.132 | <0.132 | ND |

## Table 3.8. Analytical Results for SWMU 4H-4I Soils (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location | SWMU4HI-3 | SWMU4HI-4 | SWMU4HI-5 | SWMU4HI-6 | SWMU4HI-7 | SWMU4HI-8 | SWMU4HI-9 |
|---|---|---|---|---|---|---|---|
| Depth | (4-5') | (1-3') | (4-5') | (4-5') | (3-5') | (1-3') | (1-3') |
| Date Sampled | 5/22/97 | 5/22/97 | 5/22/97 | 5/22/97 | 5/22/97 | 5/22/97 | 5/22/97 |
| Duplicate of | NA | NA | NA | NA | NA | NA | NA |
| Benzo (a) anthracene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Benzo (a) pyrene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Benzo (b) fluoranthene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Benzo (ghi) perylene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Benzo (k) fluoranthene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| bis (2-Chloroethoxy) methane | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| bis (2-Chloroethyl) ether | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| bis (2-Chloroisopropyl) ether | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| bis (2-Ethylhexyl) phthalate | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 4-Bromophenyl phenyl ether | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Butyl benzyl phthalate | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 2-Chloronaphthalene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 4-Chlorophenyl phenyl ether | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Chrysene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Dibenzo (a,h) anthracene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 1,2-Dichlorobenzene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 1,3-Dichlorobenzene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 1,4-Dichlorobenzene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 3,3'-Dichlorobenzidine | <0.66 | <0.66 | <0.66 | <0.66 | <0.66 | <0.66 | <0.66 |
| Diethyl phthalate | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Dimethyl phthalate | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Di-n-butyl phthalate | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 2,4-Dinitrotoluene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 2,6-Dinitrotoluene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Di-n-octyl phthalate | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 1,2-Diphenylhydrazine | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Fluoranthene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Fluorene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |

## Table 3.8. Analytical Results for SWMU 4H-4I Soils (Continued)
## Delta Air Lines, Technical Operations Center

| **Sample Location**<br>**Depth**<br>**Date Sampled**<br>**Duplicate of** | **SWMU4HI-10**<br>**(1-3')**<br>**5/22/97**<br>NA | **SWMU4HI-11**<br>**(1-3')**<br>**5/22/97**<br>NA | **SWMU4HI-12**<br>**(1-3')**<br>**5/22/97**<br>4HI-11(1-3') | **Maximum Detection (mg/kg)** |
|---|---|---|---|---|
| Benzo (a) anthracene | <0.33 | <0.33 | <0.33 | ND |
| Benzo (a) pyrene | <0.33 | <0.33 | <0.33 | ND |
| Benzo (b) fluoranthene | <0.33 | <0.33 | <0.33 | ND |
| Benzo (ghi) perylene | <0.33 | <0.33 | <0.33 | ND |
| Benzo (k) fluoranthene | <0.33 | <0.33 | <0.33 | ND |
| bis (2-Chloroethoxy) methane | <0.33 | <0.33 | <0.33 | ND |
| bis (2-Chloroethyl) ether | <0.33 | <0.33 | <0.33 | ND |
| bis (2-Chloroisopropyl) ether | <0.33 | <0.33 | <0.33 | ND |
| bis (2-Ethylhexyl) phthalate | <0.33 | <0.33 | <0.33 | ND |
| 4-Bromophenyl phenyl ether | <0.33 | <0.33 | <0.33 | ND |
| Butyl benzyl phthalate | <0.33 | <0.33 | <0.33 | ND |
| 2-Chloronaphthalene | <0.33 | <0.33 | <0.33 | ND |
| 4-Chlorophenyl phenyl ether | <0.33 | <0.33 | <0.33 | ND |
| Chrysene | <0.33 | <0.33 | <0.33 | ND |
| Dibenzo (a,h) anthracene | <0.33 | <0.33 | <0.33 | ND |
| 1,2-Dichlorobenzene | <0.33 | <0.33 | <0.33 | ND |
| 1,3-Dichlorobenzene | <0.33 | <0.33 | <0.33 | ND |
| 1,4-Dichlorobenzene | <0.33 | <0.33 | <0.33 | ND |
| 3,3'-Dichlorobenzidine | <0.66 | <0.66 | <0.66 | ND |
| Diethyl phthalate | <0.33 | <0.33 | <0.33 | ND |
| Dimethyl phthalate | <0.33 | <0.33 | <0.33 | ND |
| Di-n-butyl phthalate | <0.33 | <0.33 | <0.33 | ND |
| 2,4-Dinitrotoluene | <0.33 | <0.33 | <0.33 | ND |
| 2,6-Dinitrotoluene | <0.33 | <0.33 | <0.33 | ND |
| Di-n-octyl phthalate | <0.33 | <0.33 | <0.33 | ND |
| 1,2-Diphenylhydrazine | <0.33 | <0.33 | <0.33 | ND |
| Fluoranthene | <0.33 | <0.33 | <0.33 | ND |
| Fluorene | <0.33 | <0.33 | <0.33 | ND |

## Table 3.8. Analytical Results for SWMU 4H-4I Soils (Continued)
## Delta Air Lines, Technical Operations Center

| **Sample Location** | **SWMU4HI-3** | **SWMU4HI-4** | **SWMU4HI-5** | **SWMU4HI-6** | **SWMU4HI-7** | **SWMU4HI-8** | **SWMU4HI-9** |
|---|---|---|---|---|---|---|---|
| **Depth** | **(4-5')** | **(1-3')** | **(4-5')** | **(4-5')** | **(3-5')** | **(1-3')** | **(1-3')** |
| **Date Sampled** | **5/22/97** | **5/22/97** | **5/22/97** | **5/22/97** | **5/22/97** | **5/22/97** | **5/22/97** |
| **Duplicate of** | NA | NA | NA | NA | NA | NA | NA |
| Hexachlorobenzene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Hexachlorobutadiene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Hexachlorocyclopentadiene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Hexachloroethane | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Indeno (1,2,3-c,d) pyrene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Isophorone | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Naphthalene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Nitrobenzene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| N-Nitrosodimethylamine | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| N-Nitrosodi-n-propylamine | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| N-Nitrosodiphenylamine | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Phenanthrene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Pyrene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 1,2,4-Trichlorobenzene | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 2-Chlorophenol | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 2,4-Dichlorophenol | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 2,4-Dimethylphenol | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 4,6-Dinitro-o-cresol | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 |
| 2,4-Dinitrophenol | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 |
| 2-Nitrophenol | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 4-Nitrophenol | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 |
| p-Chloro-m-cresol | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| Pentachlorophenol | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 | <1.65 |
| Phenol | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |
| 2,4,6-Trichlorophenol | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 | <0.33 |

## Table 3.8. Analytical Results for SWMU 4H-4I Soils (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Depth<br>Date Sampled<br>Duplicate of | SWMU4HI-10<br>(1-3')<br>5/22/97<br>NA | SWMU4HI-11<br>(1-3')<br>5/22/97<br>NA | SWMU4HI-12<br>(1-3')<br>5/22/97<br>4HI-11(1-3') | Maximum Detection (mg/kg) |
|---|---|---|---|---|
| Hexachlorobenzene | <0.33 | <0.33 | <0.33 | ND |
| Hexachlorobutadiene | <0.33 | <0.33 | <0.33 | ND |
| Hexachlorocyclopentadiene | <0.33 | <0.33 | <0.33 | ND |
| Hexachloroethane | <0.33 | <0.33 | <0.33 | ND |
| Indeno (1,2,3-c,d) pyrene | <0.33 | <0.33 | <0.33 | ND |
| Isophorone | <0.33 | <0.33 | <0.33 | ND |
| Naphthalene | <0.33 | <0.33 | <0.33 | ND |
| Nitrobenzene | <0.33 | <0.33 | <0.33 | ND |
| N-Nitrosodimethylamine | <0.33 | <0.33 | <0.33 | ND |
| N-Nitrosodi-n-propylamine | <0.33 | <0.33 | <0.33 | ND |
| N-Nitrosodiphenylamine | <0.33 | <0.33 | <0.33 | ND |
| Phenanthrene | <0.33 | <0.33 | <0.33 | ND |
| Pyrene | <0.33 | <0.33 | <0.33 | ND |
| 1,2,4-Trichlorobenzene | <0.33 | <0.33 | <0.33 | ND |
| 2-Chlorophenol | <0.33 | <0.33 | <0.33 | ND |
| 2,4-Dichlorophenol | <0.33 | <0.33 | <0.33 | ND |
| 2,4-Dimethylphenol | <0.33 | <0.33 | <0.33 | ND |
| 4,6-Dinitro-o-cresol | <1.65 | <1.65 | <1.65 | ND |
| 2,4-Dinitrophenol | <1.65 | <1.65 | <1.65 | ND |
| 2-Nitrophenol | <0.33 | <0.33 | <0.33 | ND |
| 4-Nitrophenol | <1.65 | <1.65 | <1.65 | ND |
| p-Chloro-m-cresol | <0.33 | <0.33 | <0.33 | ND |
| Pentachlorophenol | <1.65 | <1.65 | <1.65 | ND |
| Phenol | <0.33 | <0.33 | <0.33 | ND |
| 2,4,6-Trichlorophenol | <0.33 | <0.33 | <0.33 | ND |

Notes:

mg/kg = milligrams per kilogram

<# = Compund analyzed for, but not detected above #

J = Indicates non-compliant field duplicate result for ethylbenzene and total xylene

ND = Not detected

## TABLE 3.9. WELL GAUGING DATA FOR SWMU 4H-4I

### MAY 28, 1997

### Delta Air Lines, Inc.

### Atlanta, Georgia

| Well Identification | Top of Casing Elevation (feet msl) | Depth to LNAPL (feet) | Depth to Groundwater (feet) | LNAPL Thickness (feet) | Corrected Depth to Groundwater (feet) | Groundwater Elevation (feet msl) |
|---|---|---|---|---|---|---|
| MW-4HI-1 | 952.53 | NA | 6.45 | NA | NA | 946.08 |
| MW-4HI-2 | 952.33 | NA | 6.04 | NA | NA | 946.29 |
| TW-4HI-A | 952.57 | NA | 6.30 | NA | NA | 946.27 |
| TW-4HI-B | 952.36 | NA | 6.26 | NA | NA | 946.10 |
| TW-4HI-C | 952.32 | NA | 5.03 | NA | NA | 947.29 |
| TW-4HI-D | 952.32 | NA | 5.66 | NA | NA | 946.66 |
| TW-4HI-E | 952.10 | NA | 6.52 | NA | NA | 945.58 |
| TW-4HI-F | 952.47 | NA | 6.54 | NA | NA | 945.93 |
| TW-4HI-G | 952.63 | 6.33 | 6.96 | 0.63 | 6.46 | 946.17 |
| MW-UG | 952.38 | NA | 5.67 | NA | NA | 946.71 |
| MW-D2 | 952.44 | 9.37 | 16.5 | 7.13 | 10.80 | 941.64 |

Notes:

LNAPL = light non-aqueous phase liquid

feet msl = feet above mean sea level

Corrected groundwater elevation calculated by the depth to groundwater subtracted by LNAPL thickness times the specific gravity of the LNAPL [DTW-(LNAPL*SG)].

LNAPL specific gravity was 0.80.

## Table 3.10. Analytical Results for SWMU 4H-4I Groundwater
## Delta Air Lines, Technical Operations Center

| Sample Location | MW-4HI-1 | MW-4HI-2 | TW-4HI-A | TW-4HI-B | TW-4HI-C | TW-4HI-D | TW-4HI-E |
|---|---|---|---|---|---|---|---|
| Date Sampled | 5/28/97 | 5/28/97 | 5/28/97 | 5/28/97 | 5/28/97 | 5/28/97 | 5/28/97 |
| Duplicate of | NA | NA | NA | NA | NA | NA | NA |
| **Volatile Organics - SW8260 (µg/L)** | | | | | | | |
| Dilution Factor | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Acrylonitrile | <25 | <25 | <25 | <25 | <25 | <25 | <25 |
| Benzene | <5 | <5 | <5 | <5 | <5 | <5 | **25.6** |
| Bromoform | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Carbon tetrachloride | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Chlorobenzene | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Chlorodibromomethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Chloroethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Chloroform | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Dichlorobromomethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,1-Dichloroethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,2-Dichloroethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,1-Dichloroethene | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,2-Dichloropropane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| cis-1,3-Dichloropropene | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Ethylbenzene | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Bromomethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Chloromethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Methylene chloride | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 1,1,2,2-Tetrachloroethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Tetrachloroethylene | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Toluene | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,1,1-Trichloroethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,1,2-Trichloroethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Trichloroethene | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Trichlorofluoromethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Vinyl chloride | <5 | <5 | <5 | <5 | <5 | <5 | <5 |

## Table 3.10. Analytical Results for SWMU 4H-4I Groundwater (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Date Sampled<br>Duplicate of | TW-4HI-F<br>5/28/97<br>NA | TW-4HI-G<br>5/28/97<br>NA | TW-4HI-H<br>5/28/97<br>TW-4HI-F | Maximum Detection | Groundwater Protection Std.$^{(1)(2)}$ | MCL$^{(2)}$ |
|---|---|---|---|---|---|---|
| **Volatile Organics - SW8260 (µg/L)** | | | | | | |
| Dilution Factor | 1 | 2 | 1 | | | |
| Acrylonitrile | <25 | <50 | <25 | ND | | |
| Benzene | **107** | **291** | **107** | 291 | 5 | 5 |
| Bromoform | <5 | <10 | <5 | ND | | |
| Carbon tetrachloride | <5 | <10 | <5 | ND | | |
| Chlorobenzene | <5 | <10 | <5 | ND | BG | 100 |
| Chlorodibromomethane | <5 | <10 | <5 | ND | | |
| Chloroethane | <5 | <10 | <5 | ND | | |
| Chloroform | <5 | <10 | <5 | ND | | |
| Dichlorobromomethane | <5 | <10 | <5 | ND | | |
| 1,1-Dichloroethane | <5 | <10 | <5 | ND | 7 | |
| 1,2-Dichloroethane | <5 | <10 | <5 | ND | | |
| 1,1-Dichloroethene | <5 | <10 | <5 | ND | | 7 |
| 1,2-Dichloropropane | <5 | <10 | <5 | ND | | |
| cis-1,3-Dichloropropene | <5 | <10 | <5 | ND | | |
| Ethylbenzene | **17.0** | **132** | **19.8** | 132 | BG | 700 |
| Bromomethane | <5 | <10 | <5 | ND | | |
| Chloromethane | <5 | <10 | <5 | ND | | |
| Methylene chloride | <10 | <20 | <10 | ND | | |
| 1,1,2,2-Tetrachloroethane | <5 | <10 | <5 | ND | | |
| Tetrachloroethylene | **6.51** | <10 | <5 | 6.51 | 5 | 5 |
| Toluene | <5 | **55.5** | <5 | 55.5 | BG | 1000 |
| 1,1,1-Trichloroethane | <5 | <10 | <5 | ND | | |
| 1,1,2-Trichloroethane | <5 | <10 | <5 | ND | | |
| Trichloroethene | **6.90** | <10 | <5 | 6.90 | 5 | 5 |
| Trichlorofluoromethane | <5 | <10 | <5 | ND | | |
| Vinyl chloride | <5 | <10 | <5 | ND | 2 | 2 |

## Table 3.10. Analytical Results for SWMU 4H-4I Groundwater (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location | MW-4HI-1 | MW-4HI-2 | TW-4HI-A | TW-4HI-B | TW-4HI-C | TW-4HI-D | TW-4HI-E |
|---|---|---|---|---|---|---|---|
| Date Sampled | 5/28/97 | 5/28/97 | 5/28/97 | 5/28/97 | 5/28/97 | 5/28/97 | 5/28/97 |
| Duplicate of | NA | NA | NA | NA | NA | NA | NA |
| Styrene | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Total Xylene | <5 | <5 | <5 | **7.97** | <5 | <5 | **33.5** |
| trans-1,3-Dichloropropene | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,2-Dichlorobenzene | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,4-Dichlorobenzene | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| trans-1,2-Dichloroethene | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Carbon disulfide | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Methyl ethyl ketone | <25 | <25 | <25 | <25 | <25 | <25 | <25 |
| 1,1,1,2-Tetrachloroethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Acetone | <25 | <25 | <25 | **37.3** | <25 | <25 | <25 |
| Vinyl Acetate | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 2-Hexanone | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 4-Methyl-2-pentanone | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Ethylene dibromide | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,2-Dibromo-3-chloropropane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| trans-1,4-Dichloro-2-butene | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Methylene bromide | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Methyl iodide | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 1,2,3-Trichloropropane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Bromochloromethane | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| cis-1,2-Dichloroethene | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| <u>Semivolatile Organics - SW8270 (µg/L)</u> | | | | | | | |
| Dilution Factor | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Acenaphthene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Acenaphthylene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Anthracene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Benzidine | <40 | <40 | <40 | <40 | <40 | <40 | <40 |

## Table 3.10. Analytical Results for SWMU 4H-4I Groundwater (Continued)
## Delta Air Lines, Technical Operations Center

| **Sample Location** | **TW-4HI-F** | **TW-4HI-G** | **TW-4HI-H** | **Maximum Detection** | **Groundwater Protection Std.[(1)(2)]** | **MCL[(2)]** |
|---|---|---|---|---|---|---|
| **Date Sampled** | **5/28/97** | **5/28/97** | **5/28/97** | | | |
| **Duplicate of** | NA | NA | TW-4HI-F | | | |
| Styrene | <5 | <10 | <5 | ND | | |
| Total Xylene | **166** | **542** | **179** | 542 | 100 | 10,000 |
| trans-1,3-Dichloropropene | <5 | <10 | <5 | ND | | |
| 1,2-Dichlorobenzene | <5 | <10 | <5 | ND | | 600 |
| 1,4-Dichlorobenzene | <5 | <10 | <5 | ND | | 75 |
| trans-1,2-Dichloroethene | <5 | <10 | <5 | ND | | |
| Carbon disulfide | <5 | <10 | <5 | ND | | |
| Methyl ethyl ketone | <25 | <50 | <25 | ND | | |
| 1,1,1,2-Tetrachloroethane | <5 | <10 | <5 | ND | | |
| Acetone | **34.3** | <50 | **34.7** | 37.3 | | |
| Vinyl Acetate | <5 | <10 | <5 | ND | | |
| 2-Hexanone | <5 | <10 | <5 | ND | | |
| 4-Methyl-2-pentanone | <5 | <10 | <5 | ND | | |
| Ethylene dibromide | <5 | <10 | <5 | ND | | |
| 1,2-Dibromo-3-chloropropane | <5 | <10 | <5 | ND | | |
| trans-1,4-Dichloro-2-butene | <5 | <10 | <5 | ND | | |
| Methylene bromide | <5 | <10 | <5 | ND | | |
| Methyl iodide | <5 | <10 | <5 | ND | | |
| 1,2,3-Trichloropropane | <5 | <10 | <5 | ND | | |
| Bromochloromethane | <5 | <10 | <5 | ND | | |
| cis-1,2-Dichloroethene | <5 | <10 | <5 | ND | | 70 |
| **Semivolatile Organics - SW8270 (µg/L)** | | | | | | |
| Dilution Factor | 1 | 5 | 1 | | | |
| Acenaphthene | <10 | <50 | <10 | ND | | |
| Acenaphthylene | <10 | <50 | <10 | ND | | |
| Anthracene | <10 | <50 | <10 | ND | | |
| Benzidine | <40 | <200 | <40 | ND | | |

## Table 3.10. Analytical Results for SWMU 4H-4I Groundwater (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Date Sampled<br>Duplicate of | MW-4HI-1<br>5/28/97<br>NA | MW-4HI-2<br>5/28/97<br>NA | TW-4HI-A<br>5/28/97<br>NA | TW-4HI-B<br>5/28/97<br>NA | TW-4HI-C<br>5/28/97<br>NA | TW-4HI-D<br>5/28/97<br>NA | TW-4HI-E<br>5/28/97<br>NA |
|---|---|---|---|---|---|---|---|
| Benzo (a) anthracene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Benzo (a) pyrene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Benzo (b) fluoranthene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Benzo (ghi) perylene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Benzo (k) fluoranthene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| bis (2-Chloroethoxy) methane | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| bis (2-Chloroethyl) ether | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| bis (2-Chloroisopropyl) ether | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| bis (2-Ethylhexyl) phthalate | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 4-Bromophenyl phenyl ether | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Butyl benzyl phthalate | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 2-Chloronaphthalene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 4-Chlorophenyl phenyl ether | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Chrysene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Dibenzo (a,h) anthracene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 1,2-Dichlorobenzene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 1,3-Dichlorobenzene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 1,4-Dichlorobenzene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 3,3'-Dichlorobenzidine | <20 | <20 | <20 | <20 | <20 | <20 | <20 |
| Diethyl phthalate | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Dimethyl phthalate | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Di-n-butyl phthalate | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 2,4-Dinitrotoluene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 2,6-Dinitrotoluene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Di-n-octyl phthalate | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 1,2-Diphenylhydrazine | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Fluoranthene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Fluorene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |

## Table 3.10. Analytical Results for SWMU 4H-4I Groundwater (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Date Sampled<br>Duplicate of | TW-4HI-F<br>5/28/97<br>NA | TW-4HI-G<br>5/28/97<br>NA | TW-4HI-H<br>5/28/97<br>TW-4HI-F | Maximum Detection | Groundwater Protection Std.(1)(2) | MCL(2) |
|---|---|---|---|---|---|---|
| Benzo (a) anthracene | <10 | <50 | <10 | ND | | |
| Benzo (a) pyrene | <10 | <50 | <10 | ND | | |
| Benzo (b) fluoranthene | <10 | <50 | <10 | ND | | |
| Benzo (ghi) perylene | <10 | <50 | <10 | ND | | |
| Benzo (k) fluoranthene | <10 | <50 | <10 | ND | | |
| bis (2-Chloroethoxy) methane | <10 | <50 | <10 | ND | | |
| bis (2-Chloroethyl) ether | <10 | <50 | <10 | ND | | |
| bis (2-Chloroisopropyl) ether | <10 | <50 | <10 | ND | | |
| bis (2-Ethylhexyl) phthalate | <10 | <50 | <10 | ND | | |
| 4-Bromophenyl phenyl ether | <10 | <50 | <10 | ND | | |
| Butyl benzyl phthalate | <10 | <50 | <10 | ND | | |
| 2-Chloronaphthalene | <10 | <50 | <10 | ND | | |
| 4-Chlorophenyl phenyl ether | <10 | <50 | <10 | ND | | |
| Chrysene | <10 | <50 | <10 | ND | | |
| Dibenzo (a,h) anthracene | <10 | <50 | <10 | ND | | |
| 1,2-Dichlorobenzene | <10 | <50 | <10 | ND | | |
| 1,3-Dichlorobenzene | <10 | <50 | <10 | ND | | |
| 1,4-Dichlorobenzene | <10 | <50 | <10 | ND | | |
| 3,3'-Dichlorobenzidine | <20 | <100 | <20 | ND | | |
| Diethyl phthalate | <10 | <50 | <10 | ND | | |
| Dimethyl phthalate | <10 | <50 | <10 | ND | | |
| Di-n-butyl phthalate | <10 | <50 | <10 | ND | | |
| 2,4-Dinitrotoluene | <10 | <50 | <10 | ND | | |
| 2,6-Dinitrotoluene | <10 | <50 | <10 | ND | | |
| Di-n-octyl phthalate | <10 | <50 | <10 | ND | | |
| 1,2-Diphenylhydrazine | <10 | <50 | <10 | ND | | |
| Fluoranthene | <10 | <50 | <10 | ND | | |
| Fluorene | <10 | <50 | <10 | ND | | |

## Table 3.10. Analytical Results for SWMU 4H-4I Groundwater (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Date Sampled<br>Duplicate of | MW-4HI-1<br>5/28/97<br>NA | MW-4HI-2<br>5/28/97<br>NA | TW-4HI-A<br>5/28/97<br>NA | TW-4HI-B<br>5/28/97<br>NA | TW-4HI-C<br>5/28/97<br>NA | TW-4HI-D<br>5/28/97<br>NA | TW-4HI-E<br>5/28/97<br>NA |
|---|---|---|---|---|---|---|---|
| Hexachlorobenzene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Hexachlorobutadiene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Hexachlorocyclopentadiene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Hexachloroethane | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Indeno (1,2,3-c,d) pyrene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Isophorone | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Naphthalene | <10 J | <10 J | <10 J | <10 J | <10 J | <10 J | **13.2 J** |
| Nitrobenzene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| N-Nitrosodimethylamine | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| N-Nitrosodi-n-propylamine | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| N-Nitrosodiphenylamine | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Phenanthrene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Pyrene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 1,2,4-Trichlorobenzene | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 2-Chlorophenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 2,4-Dichlorophenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 2,4-Dimethylphenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 4,6-Dinitro-o-cresol | <50 | <50 | <50 | <50 | <50 | <50 | <50 |
| 2,4-Dinitrophenol | <50 | <50 | <50 | <50 | <50 | <50 | <50 |
| 2-Nitrophenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 4-Nitrophenol | <50 | <50 | <50 | <50 | <50 | <50 | <50 |
| p-Chloro-m-cresol | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Pentachlorophenol | <50 | <50 | <50 | <50 | <50 | <50 | <50 |
| Phenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 2,4,6-Trichlorophenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 |

## Table 3.10. Analytical Results for SWMU 4H-4I Groundwater (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Date Sampled<br>Duplicate of | TW-4HI-F<br>5/28/97<br>NA | TW-4HI-G<br>5/28/97<br>NA | TW-4HI-H<br>5/28/97<br>TW-4HI-F | Maximum Detection | Groundwater Protection Std.(1)(2) | MCL(2) |
|---|---|---|---|---|---|---|
| Hexachlorobenzene | <10 | <50 | <10 | ND | | |
| Hexachlorobutadiene | <10 | <50 | <10 | ND | | |
| Hexachlorocyclopentadiene | <10 | <50 | <10 | ND | | |
| Hexachloroethane | <10 | <50 | <10 | ND | | |
| Indeno (1,2,3-c,d) pyrene | <10 | <50 | <10 | ND | | |
| Isophorone | <10 | <50 | <10 | ND | | |
| Naphthalene | **88.4 J** | **250 J** | **29.0 J** | 250 J | | |
| Nitrobenzene | <10 | <50 | <10 | ND | | |
| N-Nitrosodimethylamine | <10 | <50 | <10 | ND | | |
| N-Nitrosodi-n-propylamine | <10 | <50 | <10 | ND | | |
| N-Nitrosodiphenylamine | <10 | <50 | <10 | ND | | |
| Phenanthrene | <10 | <50 | <10 | ND | | |
| Pyrene | <10 | <50 | <10 | ND | | |
| 1,2,4-Trichlorobenzene | <10 | <50 | <10 | ND | | |
| 2-Chlorophenol | <10 | <50 | <10 | ND | | |
| 2,4-Dichlorophenol | <10 | <50 | <10 | ND | | |
| 2,4-Dimethylphenol | <10 | <50 | <10 | ND | | |
| 4,6-Dinitro-o-cresol | <50 | <250 | <50 | ND | | |
| 2,4-Dinitrophenol | <50 | <250 | <50 | ND | | |
| 2-Nitrophenol | <10 | <50 | <10 | ND | | |
| 4-Nitrophenol | <50 | <250 | <50 | ND | | |
| p-Chloro-m-cresol | <10 | <50 | <10 | ND | | |
| Pentachlorophenol | <50 | <250 | <50 | ND | | |
| Phenol | <10 | <50 | <10 | ND | | |
| 2,4,6-Trichlorophenol | <10 | <50 | <10 | ND | | |

Notes:

µg/L = micrograms per liter

<# = Compund analyzed for, but not detected above #

J = Indicates non-compliant field duplicate result for naphthalene

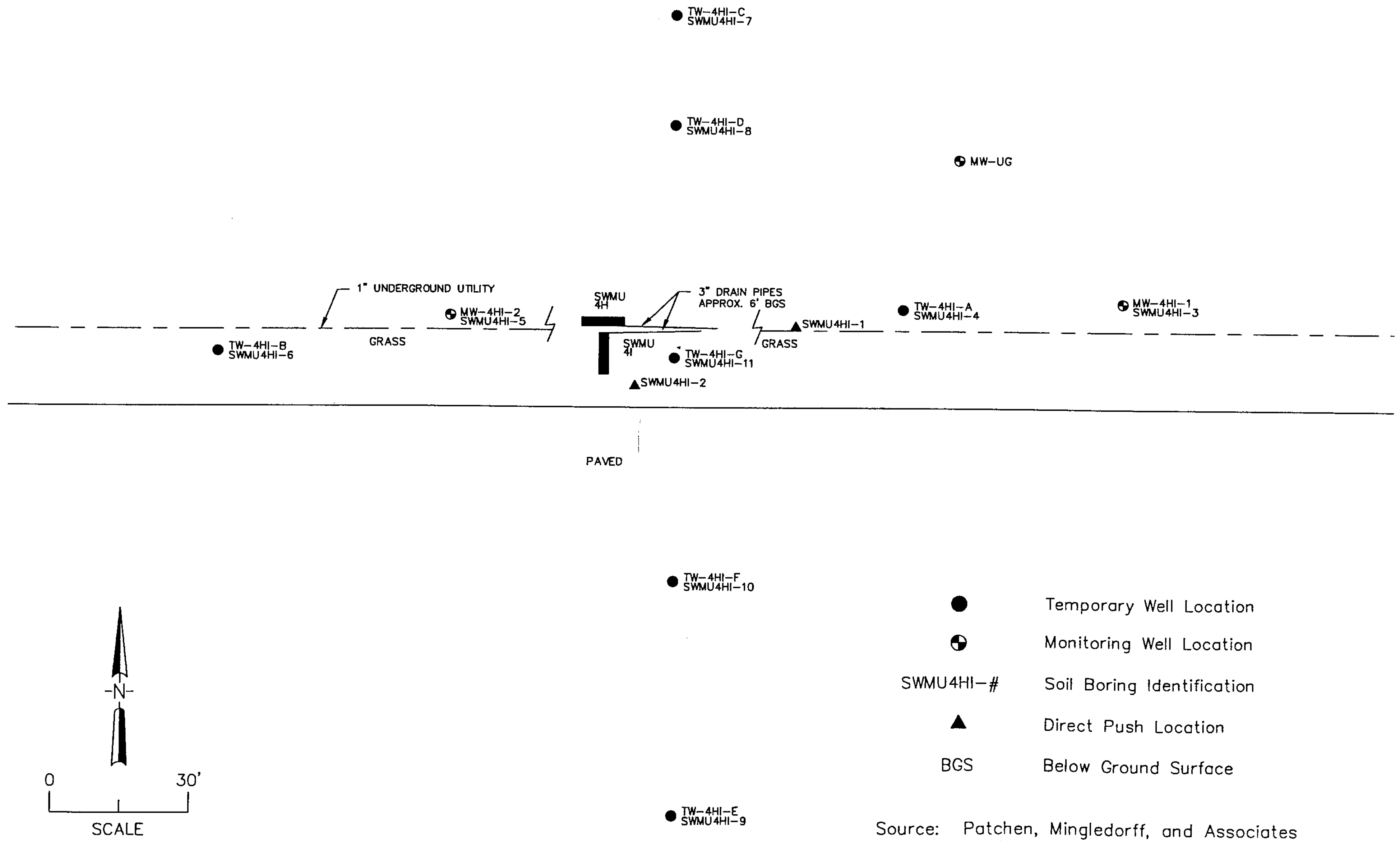
ND = Not detected

BG - Background

(1) = Groundwater Protection Standard as written in Hazardous Waste Permit Number HW-036(S&T)-2 dated September 8, 1994

(2) = A Groundwater Protection Standard and/or MCL is noted only if one exists and if a compound is detected

# SAMPLING LOCATIONS
# SWMUs 4H & 4I (FUELING – DEFUELING PITS)
## Delta Air Lines, Technical Operations Center



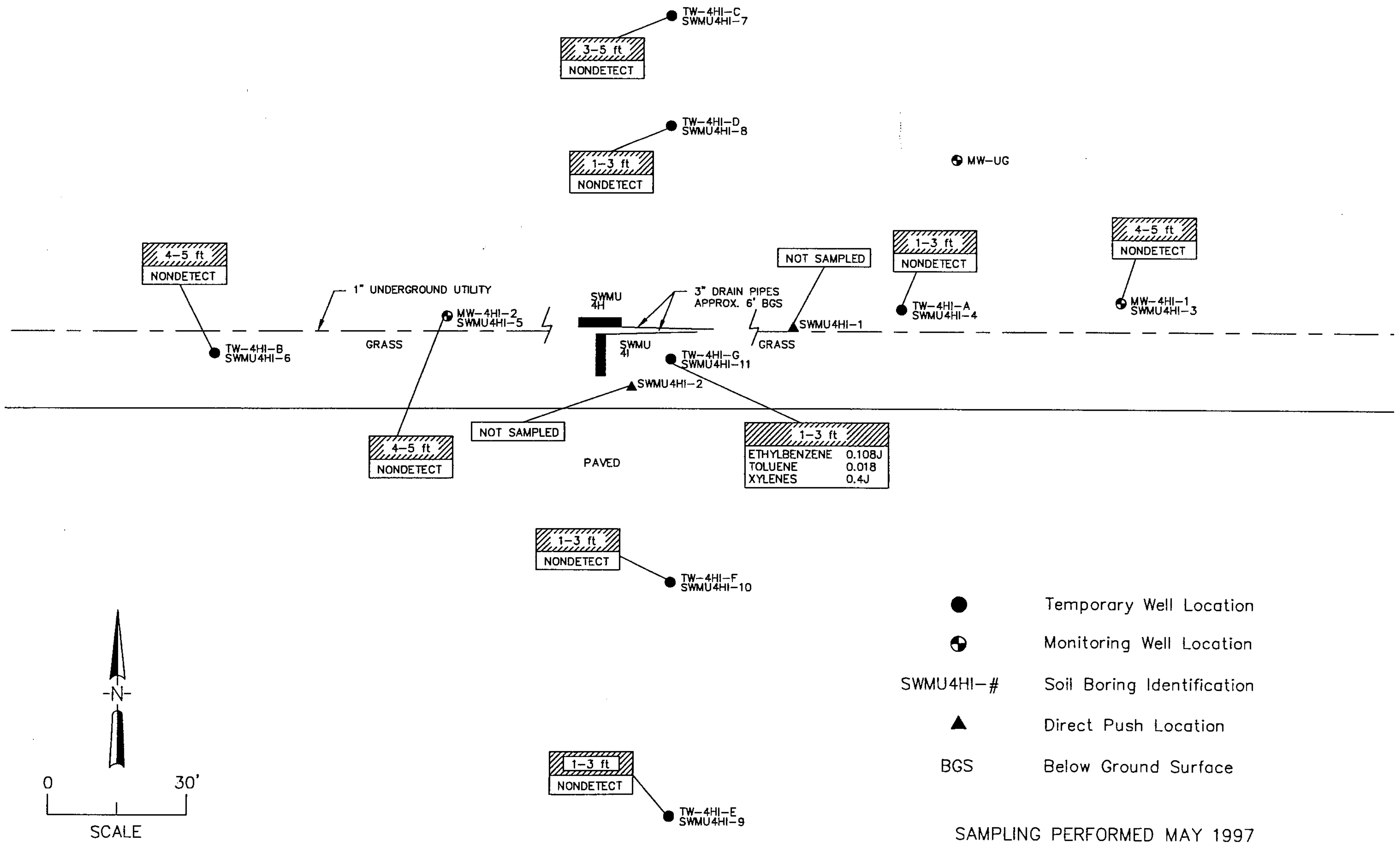
Source: Patchen, Mingledorff, and Associates
Job No. 69–16, March 2, 1970

C:\JOBS\730657\SMWU4HI, 06/18/97 at 14:45

**PARSONS ENGINEERING SCIENCE, INC.**

Figure 3.8

# ORGANICS DETECTED IN SOIL (mg/kg)
# SWMUs 4H & 4I (FUELING – DEFUELING PITS)
## Delta Air Lines, Technical Operations Center



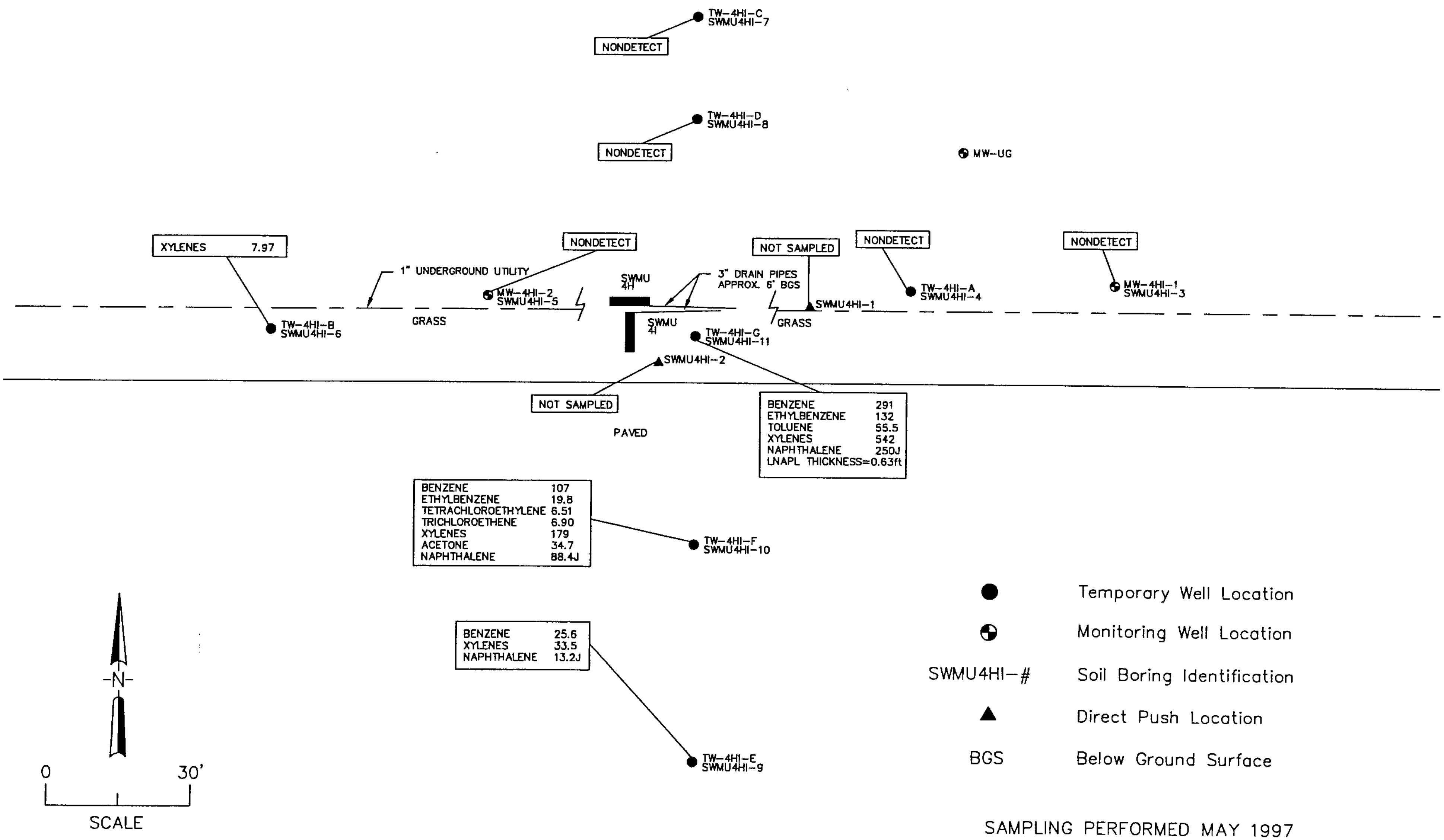
SAMPLING PERFORMED MAY 1997

\\RLYNN\Ryan\Jobs\730657\SMWU4HIOS, 06/27/97 at 15:04

**PARSONS ENGINEERING SCIENCE, INC.**

Figure 3.9

# ORGANICS DETECTED IN GROUNDWATER ($\mu g/L$)
# SWMUs 4H & 4I (FUELING – DEFUELING PITS)
## Delta Air Lines, Technical Operations Center



SAMPLING PERFORMED MAY 1997

Figure 3.10

\\RLYNN\Ryan\Jobs\730657\SMWU4HIOG, 06/27/97 at 15:21

**PARSONS ENGINEERING SCIENCE, INC.**

## Table 3.11
## Summary of RFI Field Activities for SWMU 4J
## Delta Air Lines, Technical Operations Center

| Objectives of RFI | Field Activities | Sample Matrix | Analyses | Samples | Dup. | Blk. | MS/ MSD |
|---|---|---|---|---|---|---|---|
| • Identify contaminant release to soil above the water table and to groundwater | • Drilled three 6-inch diameter cores through concrete<br>• Drove sampler to depth just above water table<br>• Collected three soil samples<br>• Collected two groundwater samples | Soil | Aromatic Volatile Organics (SW5030/SW8020) | 3 | 1 | | |
| | | Groundwater | Aromatic Volatile Organics (SW5030/SW8020) | 2 | | | |

Notes:

Samples = number of environmental samples
Dup. = number of field duplicates
Blk. = number of blanks -- includes trip, field and rinseate blanks
MS/MSD = number of matrix spike/ matrix spike duplicate pairs

## Table 3.12. Analytical Results for SWMU 4J Soils
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Depth<br>Date Sampled<br>Duplicate of | SWMU4J-1<br>(8-9')<br>2/13/97<br>NA | SWMU4J-2<br>(8-9')<br>2/13/97<br>NA | SWMU4J-3<br>(8-9')<br>2/13/97<br>NA | SWMU4J-4<br>(8-9')<br>2/13/97<br>4J-2(8-9') | Maximum Detection (mg/kg) |
|---|---|---|---|---|---|
| **Aromatic Volatile Organics - SW8020 (mg/kg)** | | | | | |
| Dilution Factor | 1 | 125 | 1 | 125 | |
| Benzene | <0.001 | <01.25 | <0.001 | <01.25 | ND |
| Toluene | **0.001** | <01.25 | <0.001 | <01.25 | 0.001 |
| Ethylbenzene | <0.001 | **0.286** | <0.001 | **0.320** | 0.320 |
| Total Xylene | **0.003** | **5.29** | <0.001 | **4.64** | 5.29 |

Notes:

mg/kg = milligrams per kilogram

<# = Compund analyzed for, but not detected above #

ND = Not detected

## Table 3.13. Analytical Results for SWMU 4J Groundwater
## Delta Air Lines, Technical Operations Center

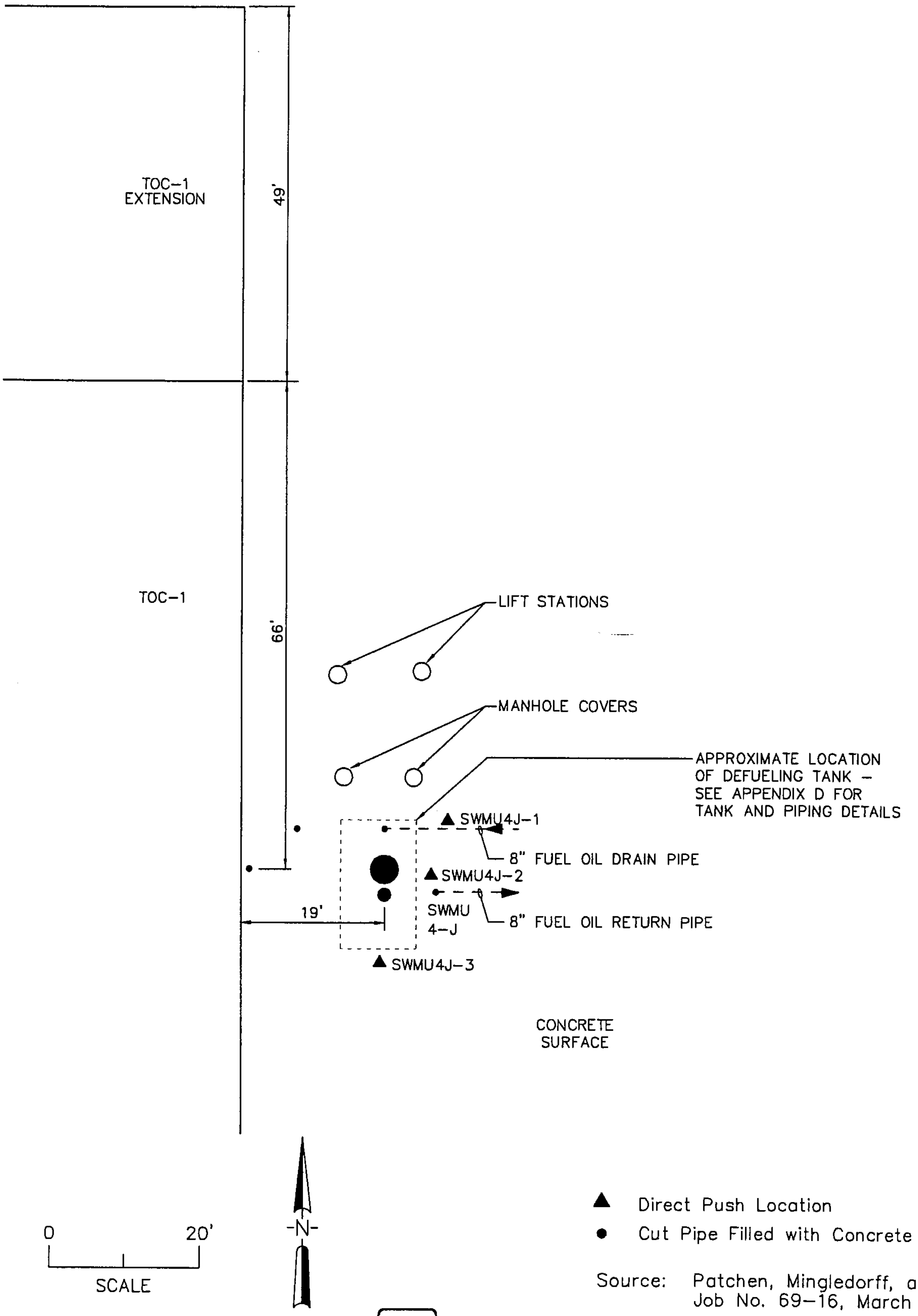
| Sample Location<br>Date Sampled<br>Duplicate of | SWMU4J-1<br>2/13/97<br>NA | SWMU4J-3<br>2/13/97<br>NA | Maximum Detection | Groundwater Protection Std.(1) | MCL |
|---|---|---|---|---|---|
| **Aromatic Volatile Organics - SW8020 (µg/L)** | | | | | |
| Dilution Factor | 1 | 1 | | | |
| Benzene | <1 | <1 | ND | 5 | 5 |
| Toluene | <1 | <1 | ND | BG | 1,000 |
| Ethylbenzene | <1 | <1 | ND | BG | 700 |
| Total Xylene | **1.75** | <1 | 1.75 | 100 | 10,000 |

Notes:
- µg/L = micrograms per liter
- <# = Compund analyzed for, but not detected above #
- ND = Not detected
- BG = Background
- (1) = Groundwater Protection Standard as written in Hazardous Waste Permit Number HW-036(S&T)-2 dated September 8, 1994

**Figure 3.11**

# SAMPLING LOCATIONS FOR SWMU 4J (DEFUELING TANK)

## Delta Air Lines, Technical Operations Center

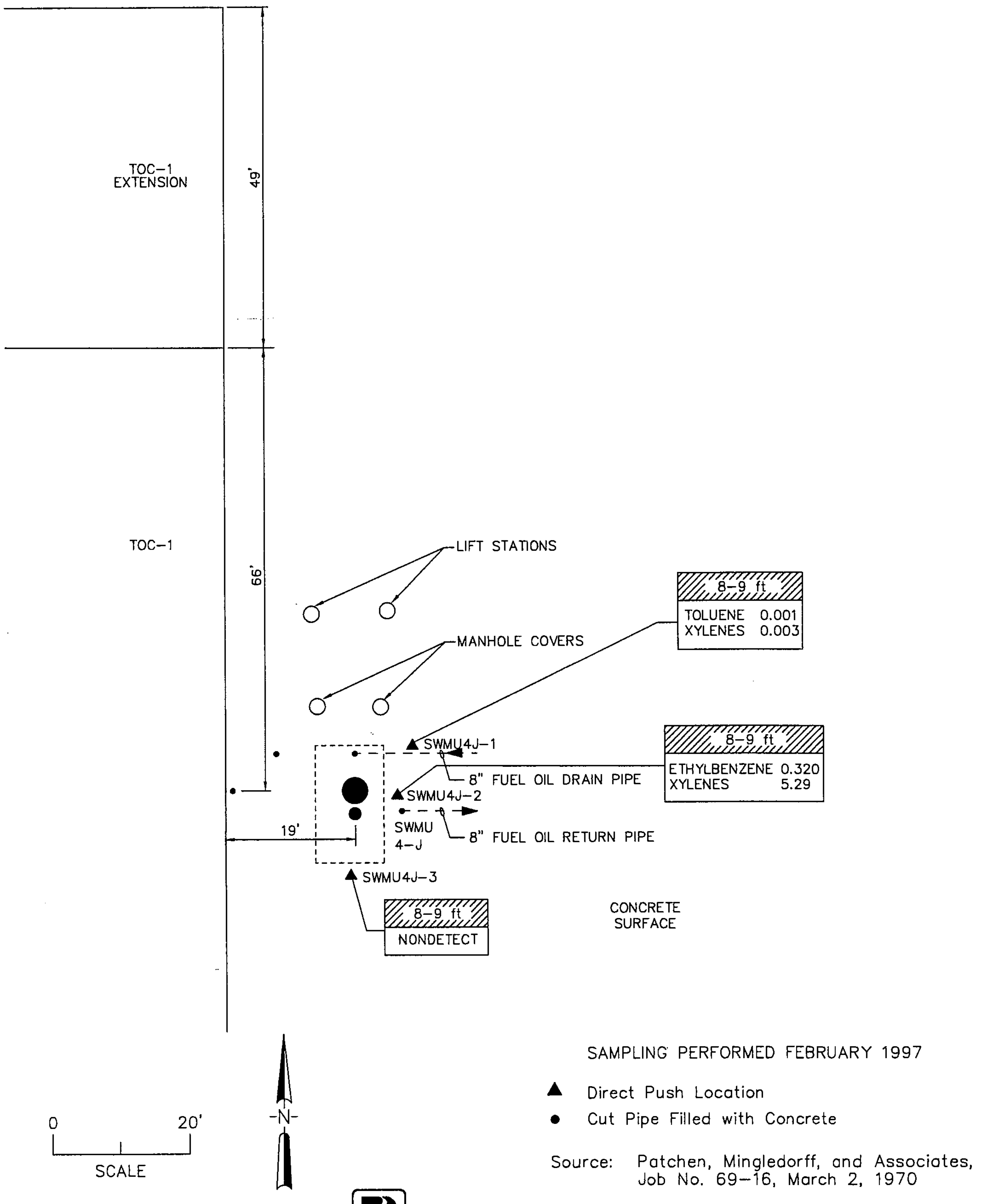


Source: Patchen, Mingledorff, and Associates, Job No. 69-16, March 2, 1970

\\PLTHR\Ryan\Jobs\730657\SMWU4J, 06/23/97 at 12:13

**PARSONS ENGINEERING SCIENCE, INC.**

# BTEX DETECTED IN SOIL (mg/kg)
# SWMU 4J (DEFUELING TANK)
## Delta Air Lines, Technical Operations Center



SAMPLING PERFORMED FEBRUARY 1997

▲ Direct Push Location

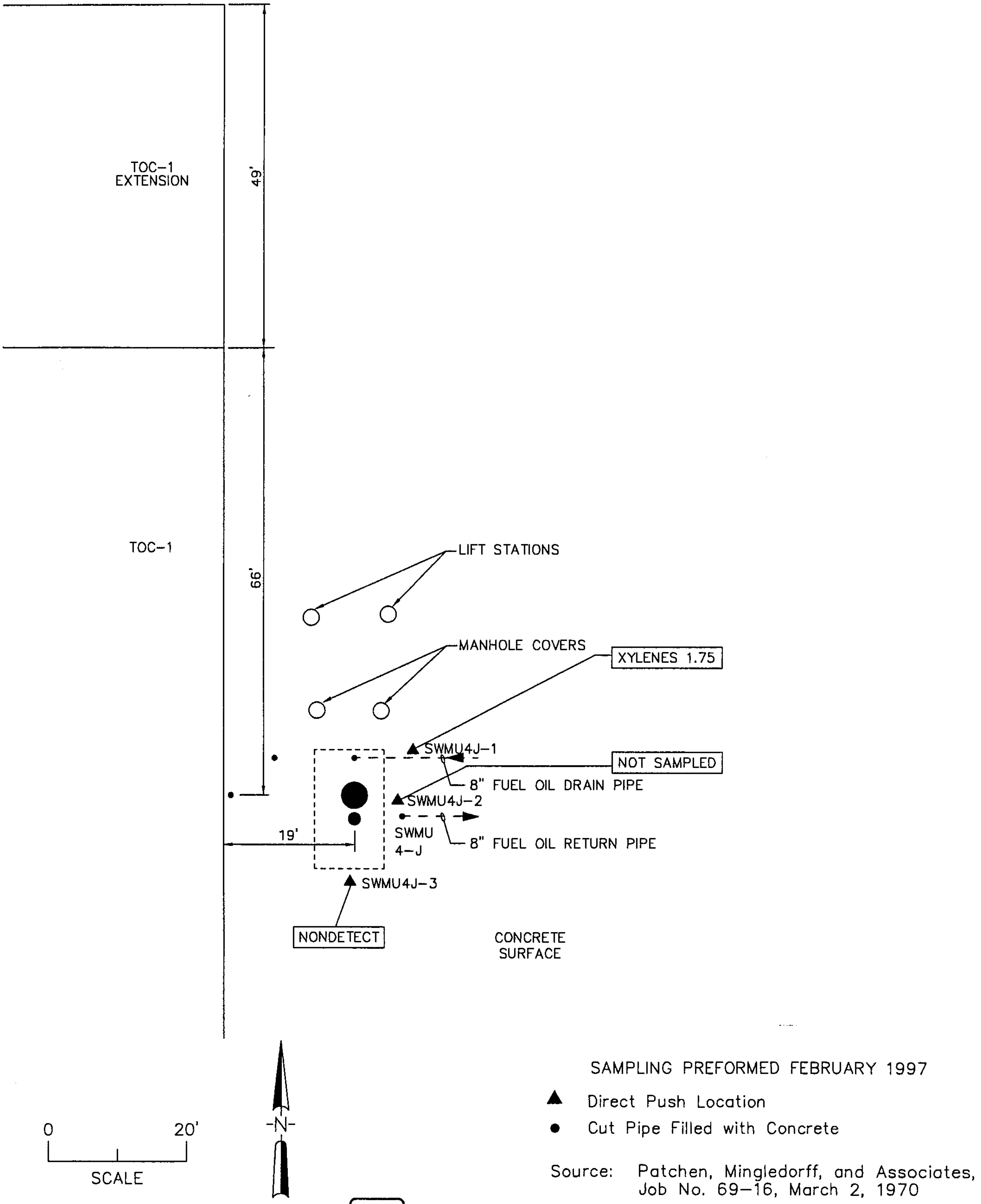
● Cut Pipe Filled with Concrete

Source: Patchen, Mingledorff, and Associates,
Job No. 69-16, March 2, 1970

C:\Jobs\730657\SMWU4Js, 06/19/97 at 14:46

**PARSONS ENGINEERING SCIENCE, INC.**

# BTEX DETECTED IN GROUNDWATER ($\mu$g/L)
## SWMU 4J (DEFUELING TANK)
### Delta Air Lines, Technical Operations Center



SAMPLING PREFORMED FEBRUARY 1997

▲ Direct Push Location

● Cut Pipe Filled with Concrete

Source: Patchen, Mingledorff, and Associates,
Job No. 69-16, March 2, 1970

C:\Jobs\730657\SMWU4JG, 06/27/97 at 09:20

**PARSONS ENGINEERING SCIENCE, INC.**

# Table 3.14
# Summary of RFI Field Activities for SWMU 5
# Delta Air Lines, Technical Operations Center

| Objectives of RFI | Field Activities | Sample Matrix | Analyses | Samples | Dup. | Blk. | MS/ MSD |
|---|---|---|---|---|---|---|---|
| • Identify contaminant release to soil below fill and above the water table<br>• Identify contaminant release to groundwater | • Cut four cores through 12" concrete and repaired with grout<br>• Drove sampler below the fill at 3 sampling points; a fourth point met refusal above fill<br>• Collected six soil samples and one duplicate – three samples at depth of 1 to 2 feet below bottom of fill; two samples of residual sludge; and one at auger refusal, which was probably above bottom of fill<br>• Collected 3 groundwater samples and one duplicate<br>• Visual analysis to determine bottom of fill; took photographs | Soil | Volatile Organics (SW8260) | 6 | 1 | | |
| | | | Nickel (SW3050/SW6010) | 6 | 1 | | |
| | | | Chromium (SW3050/ SW7191) | 6 | 1 | | |
| | | | Lead (SW3050/SW7421) | 6 | 1 | | |
| | | | Cyanide (SW9012) | 6 | 1 | | |
| | | Ground-water | Volatile Organics (SW8260) | 3 | 1 | 1 | |
| | | | Nickel (SW3050/SW6010) | 3 | 1 | | |
| | | | Chromium (SW3050/ SW7191) | 3 | 1 | | |
| | | | Lead (SW3050/SW7421) | 3 | 1 | | |
| | | | Cyanide (SW9010) | 3 | 1 | | |

Notes:

Samples = number of environmental samples
Dup. = number of field duplicates
Blk. = number of blanks -- includes trip, field and rinseate blanks
MS/MSD = number of matrix spike/ matrix spike duplicate pairs

## Table 3.15. Analytical Results for SWMU 5 Soils
## Delta Air Lines, Technical Operations Center

| Sample Location | SWMU5-1 | SWMU5-1 | SWMU5-2 | SWMU5-3 | SWMU5-3 | SWMU5-4 | SWMU5-6 | Maximum Detection (mg/kg) | 2 x Maximum Background Conc. (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|
| Depth | (16-17') | (18-20') | (4-6') | (18-19') | (21-22') | (20-22') | (20-22') | | |
| Date Sampled | 2/13/97 | 2/13/97 | 2/13/97 | 2/13/97 | 2/13/97 | 2/14/97 | 2/13/97 | | |
| Duplicate of | NA | NA | NA | NA | NA | NA | 5-4(20-22') | | |
| **Volatile Organics - SW8260 (mg/kg)** | | | | | | | | | |
| Dilution Factor | 500 | 2 | 2 | 2500 | 2 | 2 | 2 | | |
| Acrylonitrile | <12.5 | <0.05 | <0.05 | <62.5 | <0.05 | <0.05 | <0.05 | ND | NA |
| Benzene | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.05 | ND | NA |
| Bromoform | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Carbon tetrachloride | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Chlorobenzene | **24.6** | **0.021** | <0.01 | **172** | **0.0213** | <0.01 | <0.01 | 172 | NA |
| Chlorodibromomethane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Chloroethane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Chloroform | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Dichlorobromomethane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,1-Dichloroethane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,2-Dichloroethane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,1-Dichloroethene | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,2-Dichloropropane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| cis-1,3-Dichloropropene | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Ethylbenzene | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Bromomethane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Chloromethane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Methylene chloride | <5 | <0.02 | <0.02 | <25 | <0.02 | <0.02 | <0.02 | ND | NA |
| 1,1,2,2-Tetrachloroethane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Tetrachloroethylene | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Toluene | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,1,1-Trichloroethane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,1,2-Trichloroethane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Trichloroethene | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Trichlorofluoromethane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Vinyl chloride | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Styrene | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Total Xylene | **6.20** | <0.01 | <0.01 | **26.9** | <0.01 | <0.01 | <0.01 | 26.9 | NA |
| trans-1,3-Dichloropropene | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |

## Table 3.15. Analytical Results for SWMU 5 Soils (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Depth<br>Date Sampled<br>Duplicate of | SWMU5-1<br>(16-17')<br>2/13/97<br>NA | SWMU5-1<br>(18-20')<br>2/13/97<br>NA | SWMU5-2<br>(4-6')<br>2/13/97<br>NA | SWMU5-3<br>(18-19')<br>2/13/97<br>NA | SWMU5-3<br>(21-22')<br>2/13/97<br>NA | SWMU5-4<br>(20-22')<br>2/14/97<br>NA | SWMU5-6<br>(20-22')<br>2/13/97<br>5-4(20-22') | Maximum Detection (mg/kg) | 2 x Maximum Background Conc. (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichlorobenzene | **60.2** | <0.01 | <0.01 | **423** | **0.0116** | <0.01 | <0.01 | 423 | NA |
| 1,4-Dichlorobenzene | **45.9** | **0.101** | <0.01 | **136** | <0.01 | <0.01 | <0.01 | 136 | NA |
| trans-1,2-Dichloroethene | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Carbon disulfide | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Methyl ethyl ketone | <12.5 | <0.05 | <0.05 | <62.5 | <0.05 | <0.05 | <0.05 | ND | NA |
| 1,1,1,2-Tetrachloroethane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Acetone | <12.5 | <0.05 | <0.05 | <62.5 | <0.01 | <0.05 | <0.05 | ND | NA |
| Vinyl Acetate | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| 2-Hexanone | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| 4-Methyl-2-pentanone | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Ethylene dibromide | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,2-Dibromo-3-chloropropane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| trans-1,4-Dichloro-2-butene | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Methylene bromide | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Methyl iodide | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| 1,2,3-Trichloropropane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| Bromochloromethane | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| cis-1,2-Dichloroethene | <2.5 | <0.01 | <0.01 | <12.5 | <0.01 | <0.01 | <0.01 | ND | NA |
| **Metals - SW6010A/SW7191/SW7421 (mg/kg)** | | | | | | | | | |
| Chromium | **3920J** | **14.8J** | **262J** | **526J** | **10.4J** | **50.2J** | **7.05J** | 3920J | 50.80 |
| Nickel | **34.6** | **5.29** | **34.0** | **145** | <2 | < 2 | <2 | 145 | 22.60 |
| Lead | **131** | **2.18** | **41.0** | **512** | **5.10** | **6.10** | **5.37** | 512 | 40.80 |
| **Cyanide - SW9012 (mg/kg)** | **2.5** | **0.1** | **0.4** | **1.4** | <0.1 | <0.1 | <0.1 | 2.5 | 0.40 |

Notes:

mg/kg = milligrams per kilogram

<# = Compund analyzed for, but not detected above #

ND = Not detected

## Table 3.16. Analytical Results for SWMU 5 Groundwater
## Delta Air Lines, Technical Operations Center

| Sample Location | SWMU5-1 | SWMU5-3 | SWMU5-4 | SWMU5-5 | Maximum Detection | Groundwater Protection Std.$^{(1)(2)}$ | MCL$^{(2)}$ |
|---|---|---|---|---|---|---|---|
| **Date Sampled** | 2/13/97 | 2/13/97 | 2/14/97 | 2/13/97 | | | |
| **Duplicate of** | NA | NA | NA | SWMU5-3 | | | |
| **Volatile Organics - SW8260 (µg/L)** | | | | | | | |
| Dilution Factor | 2 | 1 | 50 | 1 | | | |
| Acrylonitrile | <50 | <25 | <1250 | <25 | ND | | |
| Benzene | <10 | <5 | <250 | <5 | ND | 5 | 5 |
| Bromoform | <10 | <5 | <250 | <5 | ND | | |
| Carbon tetrachloride | <10 | <5 | <250 | <5 | ND | | |
| Chlorobenzene | **421** | **104** | <250 | **98.1** | 421 | BG | 100 |
| Chlorodibromomethane | <10 | <5 | <250 | <5 | ND | | |
| Chloroethane | <10 | <5 | **5120** | <5 | 5120 | | |
| Chloroform | <10 | <5 | <250 | <5 | ND | | |
| Dichlorobromomethane | <10 | <5 | <250 | <5 | ND | | |
| 1,1-Dichloroethane | **30.6** | **30.7** | **7000** | **28.8** | 7000 | 7 | |
| 1,2-Dichloroethane | <10 | <5 | <250 | <5 | ND | | |
| 1,1-Dichloroethene | <10 | <5 | **594** | <5 | 594 | | 7 |
| 1,2-Dichloropropane | <10 | <5 | <250 | <5 | ND | | |
| cis-1,3-Dichloropropene | <10 | <5 | <250 | <5 | ND | | |
| Ethylbenzene | <10 | <5 | <250 | <5 | ND | BG | 700 |
| Bromomethane | <10 | <5 | <250 | <5 | ND | | |
| Chloromethane | <10 | <5 | <250 | <5 | ND | | |
| Methylene chloride | <10 | <10 | <500 | <10 | ND | | |
| 1,1,2,2-Tetrachloroethane | <10 | <5 | <250 | <5 | ND | | |
| Tetrachloroethylene | <10 | <5 | <250 | <5 | ND | 5 | 5 |
| Toluene | <10 | <5 | <250 | <5 | ND | BG | 1000 |
| 1,1,1-Trichloroethane | <10 | <5 | <250 | <5 | ND | | |
| 1,1,2-Trichloroethane | <10 | <5 | <250 | <5 | ND | | |
| Trichloroethene | <10 | <5 | <250 | <5 | ND | 5 | 5 |
| Trichlorofluoromethane | <10 | <5 | <250 | <5 | ND | | |
| Vinyl chloride | <10 | **6.44** | **6980** | <5 | 6980 | 2 | 2 |

## Table 3.16. Analytical Results for SWMU 5 Groundwater (Continued)
### Delta Air Lines, Technical Operations Center

| Sample Location | SWMU5-1 | SWMU5-3 | SWMU5-4 | SWMU5-5 | Maximum Detection | Groundwater Protection Std.$^{(1)(2)}$ | MCL$^{(2)}$ |
|---|---|---|---|---|---|---|---|
| Date Sampled | 2/13/97 | 2/13/97 | 2/14/97 | 2/13/97 | | | |
| Duplicate of | NA | NA | NA | SWMU5-3 | | | |
| Styrene | <10 | <5 | <250 | <5 | ND | | |
| Total Xylene | <10 | <5 | <250 | <5 | ND | 100 | 10,000 |
| trans-1,3-Dichloropropene | <10 | <5 | <250 | <5 | ND | | |
| 1,2-Dichlorobenzene | **17.8** | **21.2** | <250 | **19.0** | 21.2 | | 600 |
| 1,4-Dichlorobenzene | **50.4** | **18.2** | <250 | **16.3** | 50.4 | | 75 |
| trans-1,2-Dichloroethene | <10 | <5 | <250 | <5 | ND | | |
| Carbon disulfide | <10 | <5 | <250 | <5 | ND | | |
| Methyl ethyl ketone | <50 | <25 | <1250 | <25 | ND | | |
| 1,1,1,2-Tetrachloroethane | <10 | <5 | <250 | <5 | ND | | |
| Acetone | <50 | <25 | <1250 | <25 | ND | | |
| Vinyl Acetate | <10 | <5 | <250 | <5 | ND | | |
| 2-Hexanone | <10 | <5 | <250 | <5 | ND | | |
| 4-Methyl-2-pentanone | <10 | <5 | <250 | <5 | ND | | |
| Ethylene dibromide | <10 | <5 | <250 | <5 | ND | | |
| 1,2-Dibromo-3-chloropropane | <10 | <5 | <250 | <5 | ND | | |
| trans-1,4-Dichloro-2-butene | <10 | <5 | <250 | <5 | ND | | |
| Methylene bromide | <10 | <5 | <250 | <5 | ND | | |
| Methyl iodide | <10 | <5 | <250 | <5 | ND | | |
| 1,2,3-Trichloropropane | <10 | <5 | <250 | <5 | ND | | |
| Bromochloromethane | <10 | <5 | <250 | <5 | ND | | |
| cis-1,2-Dichloroethene | <10 | <5 | <250 | <5 | ND | | 70 |

## Table 3.16. Analytical Results for SWMU 5 Groundwater (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Date Sampled<br>Duplicate of | SWMU5-1<br>2/13/97<br>NA | SWMU5-3<br>2/13/97<br>NA | SWMU5-4<br>2/14/97<br>NA | SWMU5-5<br>2/13/97<br>SWMU5-3 | Maximum Detection | Groundwater Protection Std.$^{(1)(2)}$ | MCL$^{(2)}$ |
|---|---|---|---|---|---|---|---|
| **Metals - SW6010A/SW7191/SW7421 (mg/L)** | | | | | | | |
| Chromium | **0.215 J** | **0.069 J** | **0.165 J** | **0.314 J** | 0.215 J | 0.05 | 0.1 |
| Nickel | <0.05 | <0.05 | <0.05 | **0.078** | 0.078 | | 0.1 |
| Lead | <0.005 | **3.49** | **0.025** | **0.021** | 3.49 | 0.015 | 0.015 |
| **Cyanide - SW9010 (mg/L)** | <0.004 | **0.006** | **0.026** | **0.012** | 0.026 | | 0.2 |

Notes:

µg/L = micrograms per liter

mg/L = milligrams per liter

<# = Compund analyzed for, but not detected above #

J = Indicates non-compliant field duplicate result for chromium

ND = Not detected

(1) = Groundwater Protection Standard as written in Hazardous Waste Permit
Number HW-036(S&T)-2 dated September 8, 1994

(2) = A Groundwater Protection Standard and/or MCL is noted only if one exists and if a compound is detected

# Table 3.17
# Summary of RFI Field Activities for SWMU 7
# Delta Air Lines, Technical Operations Center

| Objectives of RFI | Field Activities | Sample Matrix | Analyses | Samples | Dup. | Blk. | MS/ MSD |
|---|---|---|---|---|---|---|---|
| • Determine presence, thickness, identity, and extent of free product<br>• Identify contaminant release to soil or groundwater<br>• Determine direction of groundwater flow | • Measured free product thickness and depth of product/water interface in existing recovery wells<br>• Collected one free product sample from existing recovery well<br>• Cut 1 core through 12" concrete, 9 cores through 6-inch asphalt, and repair with grout or asphalt patch<br>• Drove sampler to water table at nine direct push sampling points;<br>• Advanced one soil boring to 24 feet below ground surface. Installed two-inch monitoring well<br>• Collected 10 soil samples and 2 duplicates above water table<br>• Collected 10 groundwater samples and 2 duplicates at water table | Soil | BTEX (SW5030/SW8020) | 10 | 2 | | 1 |
| | | | Diesel Range Organics (SW8015MOD(CAL/DHS)) | 7 | 1 | | 1 |
| | | Groundwater | BTEX (SW5030/SW8020) | 10 | 2 | 3 | 1 |
| | | | Diesel Range Organics (SW8015MOD(CAL/DHS)) | 7 | 1 | | 1 |
| | | LNAPL | LNAPL ID (SW8015 MOD) | 1 | | | |

Notes:

LNAPL = light non-aqueous phase liquid
Samples = number of environmental samples
Dup. = number of field duplicates
Blk. = number of blanks -- includes trip, field and rinseate blanks
MS/MSD = number of matrix spike/ matrix spike duplicate pairs

## Table 3.18. Analytical Results for SWMU 7 Soils
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Depth<br>Date Sampled<br>Duplicate of | SWMU7-1<br>(7-8')<br>2/12/97<br>NA | SWMU7-2<br>(8-10')<br>2/12/97<br>NA | SWMU7-3<br>(8-10')<br>2/12/97<br>NA | SWMU7-4<br>(9-10')<br>2/12/97<br>NA | SWMU7-5<br>(8-9')<br>2/12/97<br>NA | SWMU7-6<br>(8-10')<br>2/12/97<br>NA | SWMU7-7<br>(8-10')<br>2/12/97<br>7-2(8-10') |
|---|---|---|---|---|---|---|---|
| **Aromatic Volatile Organics - SW8020 (mg/kg)** | | | | | | | |
| Dilution Factor | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Benzene | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Toluene | **0.004** | <0.001 | **0.002** | <0.001 | <0.001 | <0.001 | <0.001 |
| Ethylbenzene | <0.001 | <0.001 | **0.001** | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Xylene | <0.001 | <0.001 | **0.011** | <0.001 | <0.001 | <0.001 | <0.001 |
| **Diesel Range Organics - SW8015 Modified (mg/kg)** | | | | | | | |
| Dilution Factor | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Diesel Range Organics | <4 | <4 | <4 | <4 | <4 | <4 | <4 |

Notes:

mg/kg = milligrams per kilogram
<# = Compund analyzed for, but not detected above #
ND = Not detected
NA = Not applicable

## Table 3.18. Analytical Results for SWMU 7 Soils (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Depth<br>Date Sampled<br>Duplicate of | SWMU7-A<br>(5-7')<br>5/21/97<br>NA | SWMU7-B<br>(5-7')<br>5/21/97<br>NA | SWMU7-C<br>(5-7')<br>5/21/97<br>NA | SWMU7-D<br>(5-7')<br>5/21/97<br>7-A(5-7') | SWMU7-SB1<br>(10-12')<br>5/29/97<br>NA | Maximum Detection (mg/kg) |
|---|---|---|---|---|---|---|
| **Aromatic Volatile Organics - SW8020 (mg/kg)** | | | | | | |
| Dilution Factor | 1 | 1 | 1 | 1 | 1 | |
| Benzene | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | ND |
| Toluene | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.004 |
| Ethylbenzene | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 |
| Total Xylene | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.011 |
| **Diesel Range Organics - SW8015 Modified (mg/kg)** | | | | | | |
| Dilution Factor | | | | | 1 | |
| Diesel Range Organics | NA | NA | NA | NA | <4 | ND |

Notes:

mg/kg = milligrams per kilogram

<# = Compund analyzed for, but not detected above #

ND = Not detected

NA = Not applicable

## Table 3.19. Analytical Results for SWMU 7 Groundwater
## Delta Air Lines, Technical Operations Center

| Sample Location | SWMU7-1 | SWMU7-2 | SWMU7-3 | SWMU7-4 | SWMU7-5 | SWMU7-6 | SWMU7-7 |
|---|---|---|---|---|---|---|---|
| Date Sampled | 2/12/97 | 2/12/97 | 2/12/97 | 2/12/97 | 2/12/97 | 2/12/97 | 2/12/97 |
| Duplicate of | NA | NA | NA | NA | NA | NA | 7-2 |
| **Aromatic Volatile Organics - SW8020 (µg/L)** | | | | | | | |
| Dilution Factor | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Benzene | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Toluene | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Ethylbenzene | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Total Xylene | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| **Diesel Range Organics - SW8015 Modified (µg/L)** | | | | | | | |
| Dilution Factor | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 |
| Diesel Range Organics | <444 | <444 | <444 | <444 | <444 | <444 | <444 |

Notes:
µg/L = micrograms per liter
<# = Compund analyzed for, but not detected above #
ND = Not detected
NA = Not applicable
(1) = Groundwater Protection Standard as written in Hazardous Waste Permit Number HW-036(S&T)-2 dated September 8, 1994

## Table 3.19. Analytical Results for SWMU 7 Groundwater (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Date Sampled<br>Duplicate of | SWMU7-A<br>5/21/97<br>NA | SWMU7-B<br>5/21/97<br>NA | SWMU7-C<br>5/21/97<br>NA | SWMU7-D<br>5/21/97<br>7-B | MW-7-1<br>5/30/97<br>NA | Maximum Detection (µg/L) | Groundwater Protection Std.[1] | MCL |
|---|---|---|---|---|---|---|---|---|
| **Aromatic Volatile Organics - SW8020 (µg/L)** | | | | | | | | |
| Dilution Factor | 1 | 1 | 1 | 1 | 1 | | | |
| Benzene | <1 | <1 | <1 | <1 | <1 | ND | 5 | 5 |
| Toluene | <1 | <1 | <1 | <1 | <1 | ND | BG | 1,000 |
| Ethylbenzene | <1 | <1 | <1 | <1 | <1 | ND | BG | 700 |
| Total Xylene | <1 | <1 | <1 | <1 | <1 | ND | 100 | 10,000 |
| **Diesel Range Organics - SW8015 Modified (µg/L)** | | | | | | | | |
| Dilution Factor | | | | | 1.04 | | | |
| Diesel Range Organics | NA | NA | NA | NA | <416 | ND | NA | NA |

Notes:

µg/L = micrograms per liter

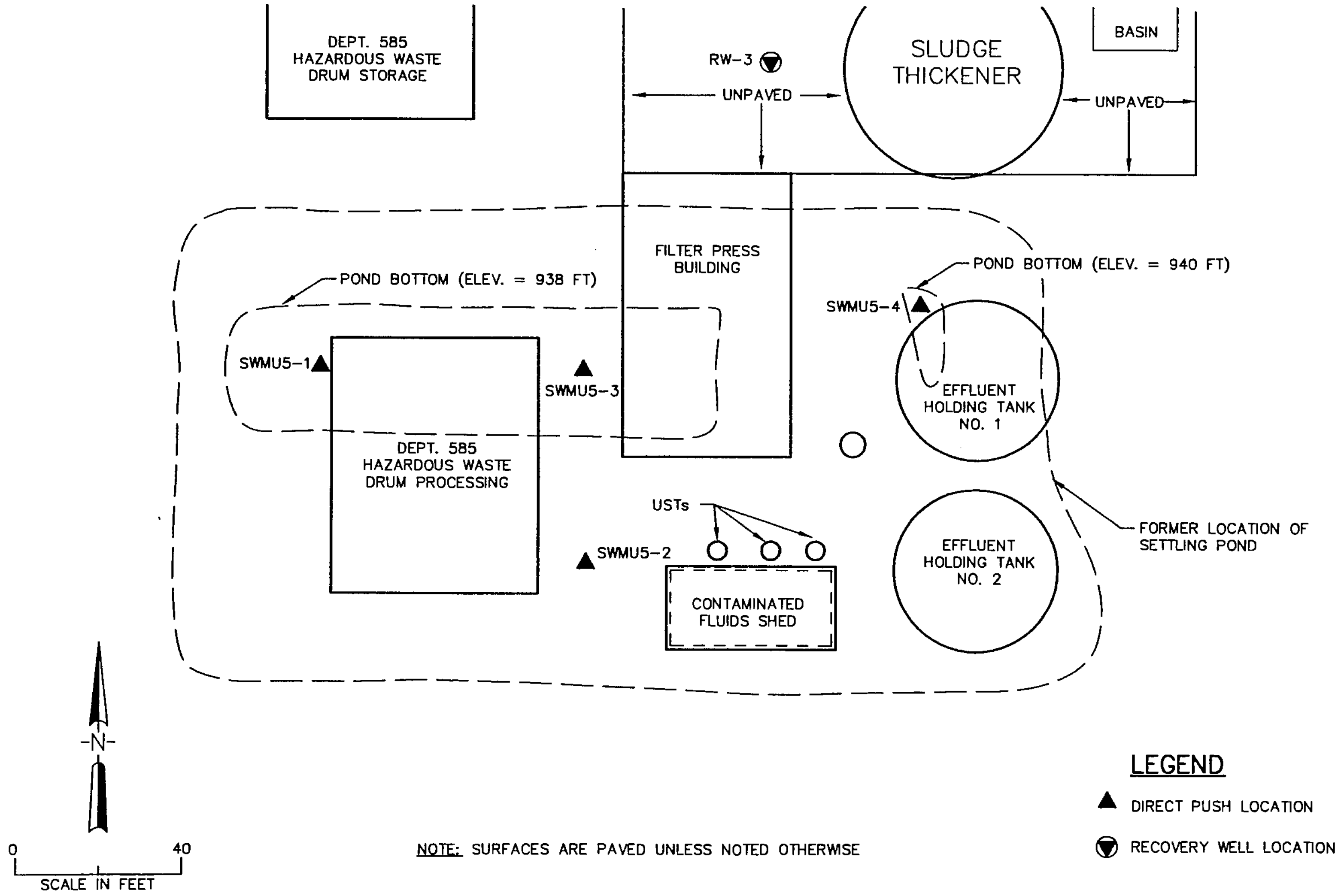
<# = Compund analyzed for, but not detected above #

ND = Not detected

NA = Not applicable

(1) = Groundwater Protection Standard as written in Hazardous Waste Permit Number HW-036(S&T)-2 dated September 8, 1994

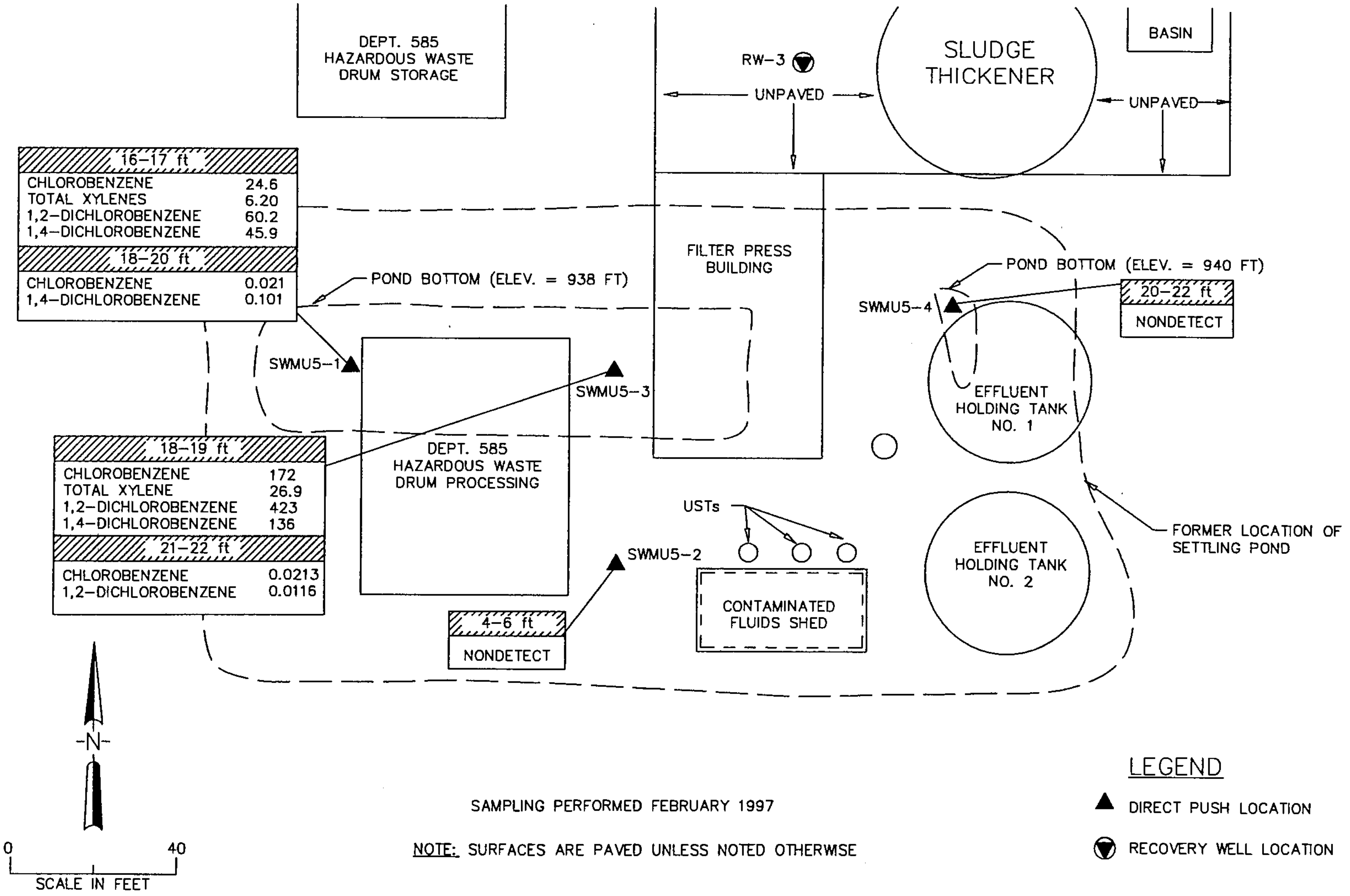
# SAMPLING LOCATIONS
# FOR SWMU 5
# (SETTLING POND)
## Delta Air Lines, Technical Operations Center



NOTE: SURFACES ARE PAVED UNLESS NOTED OTHERWISE

Figure 3.14

# ORGANICS DETECTED IN SOIL (mg/kg)
# SWMU 5 (SETTLING POND)
## Delta Air Lines, Technical Operations Center



SAMPLING PERFORMED FEBRUARY 1997

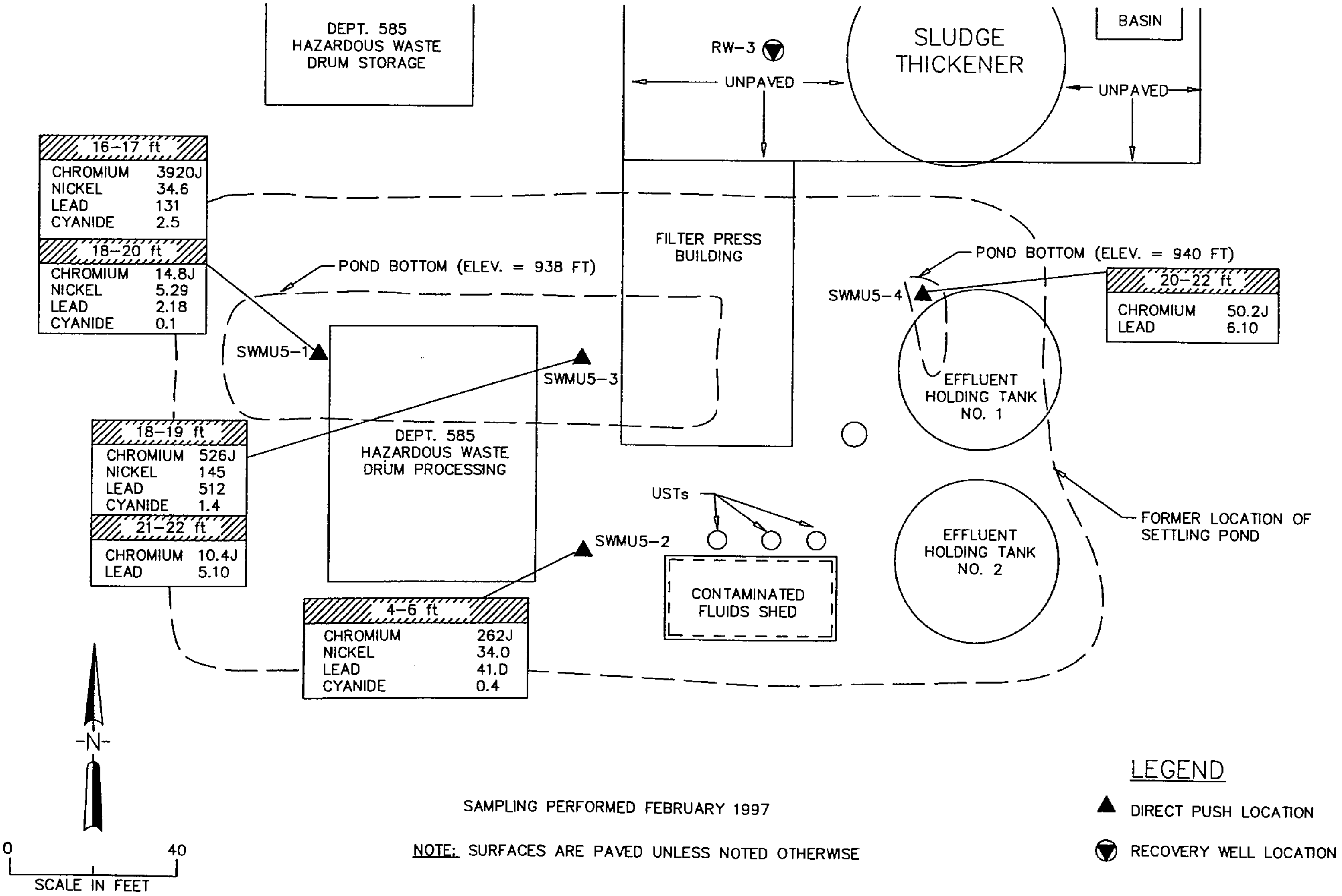
NOTE: SURFACES ARE PAVED UNLESS NOTED OTHERWISE

Figure 3.15

C:\Jobs\730657\SWMU5OS, 06/24/97 at 09:06

**PARSONS ENGINEERING SCIENCE, INC.**

# INORGANICS DETECTED IN SOIL (mg/kg)
# SWMU 5 (SETTLING POND)
## Delta Air Lines, Technical Operations Center



SAMPLING PERFORMED FEBRUARY 1997

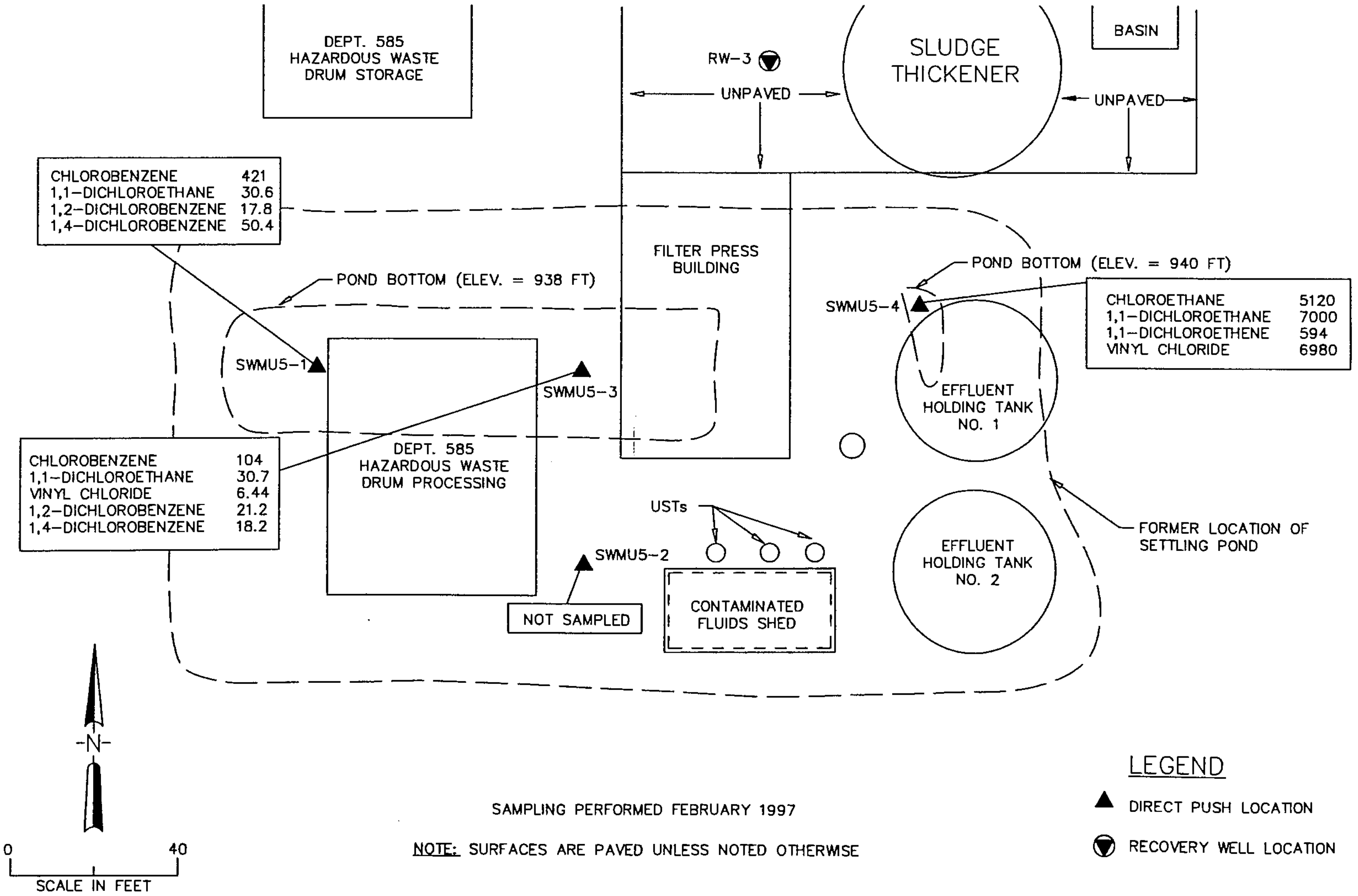
NOTE: SURFACES ARE PAVED UNLESS NOTED OTHERWISE

Figure 3.16

C:\Jobs\730657\SWMU5IS, 06/27/97 at 11:35

**PARSONS ENGINEERING SCIENCE, INC.**

# ORGANICS DETECTED IN GROUNDWATER ($\mu g/L$)
## SWMU 5 (SETTLING POND)
### Delta Air Lines, Technical Operations Center

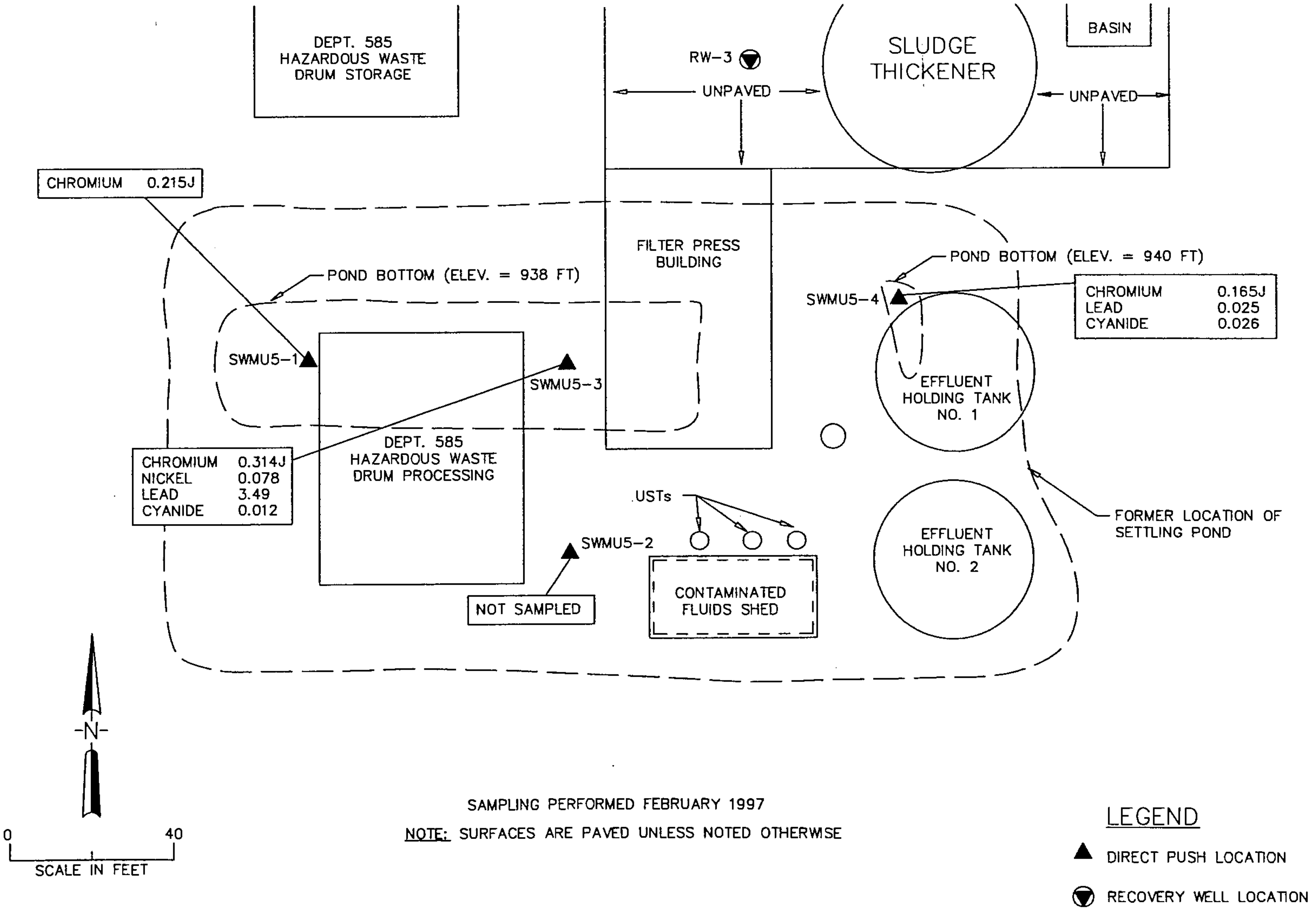


SAMPLING PERFORMED FEBRUARY 1997

NOTE: SURFACES ARE PAVED UNLESS NOTED OTHERWISE

Figure 3.17

# INORGANICS DETECTED IN GROUNDWATER (mg/L)
# SWMU 5 (SETTLING POND)
## Delta Air Lines, Technical Operations Center



SAMPLING PERFORMED FEBRUARY 1997

NOTE: SURFACES ARE PAVED UNLESS NOTED OTHERWISE

C:\Jobs\730657\SWMU5I, 06/27/97 at 09:34

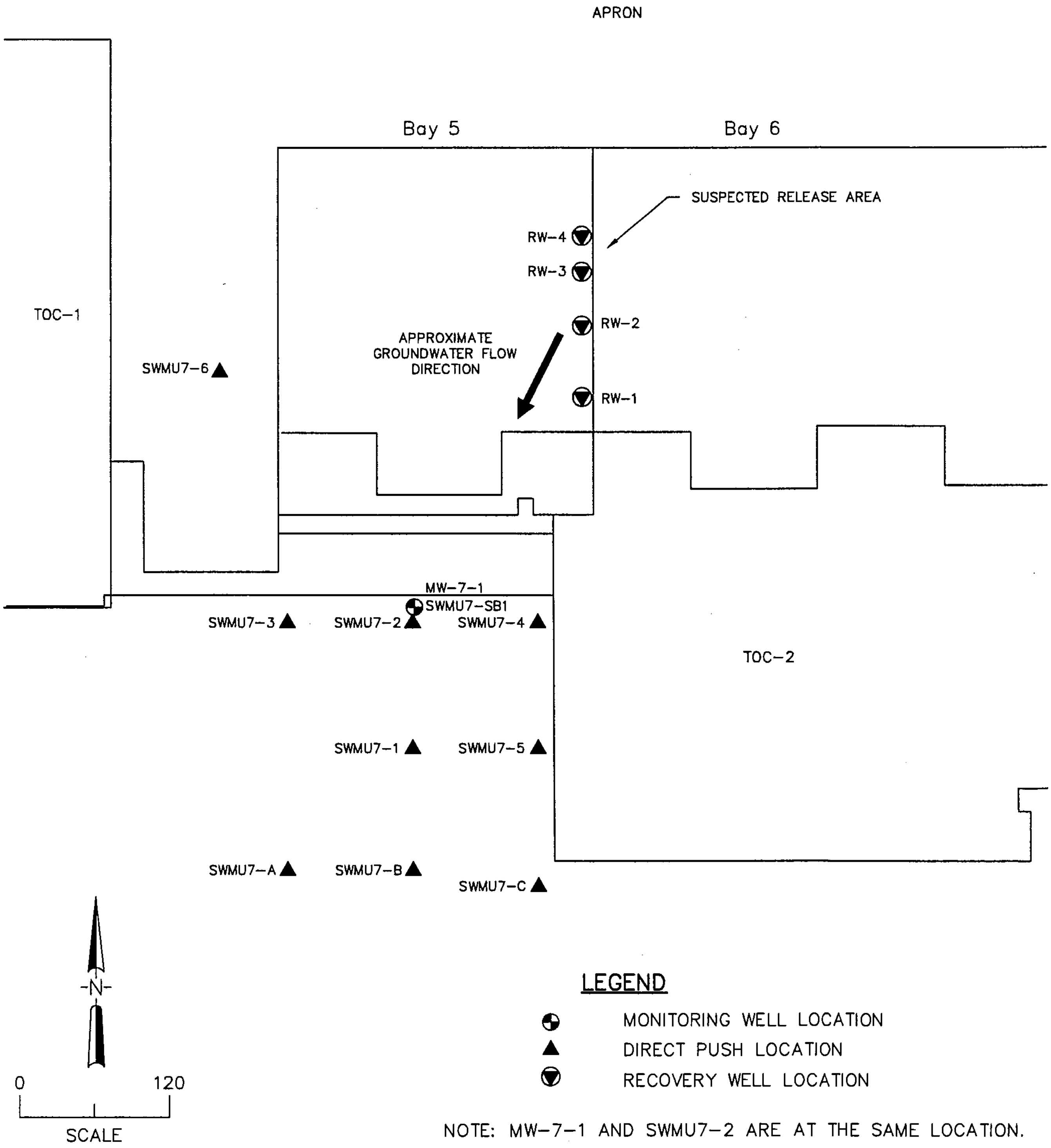
**PARSONS ENGINEERING SCIENCE, INC.**

Figure 3.18

Figure 3.19

# SAMPLING LOCATIONS
# FOR SWMU 7 (BAY 5 EXTENSION FUEL LEAK)

Delta Air Lines, Technical Operations Center



NOTE: MW-7-1 AND SWMU7-2 ARE AT THE SAME LOCATION.

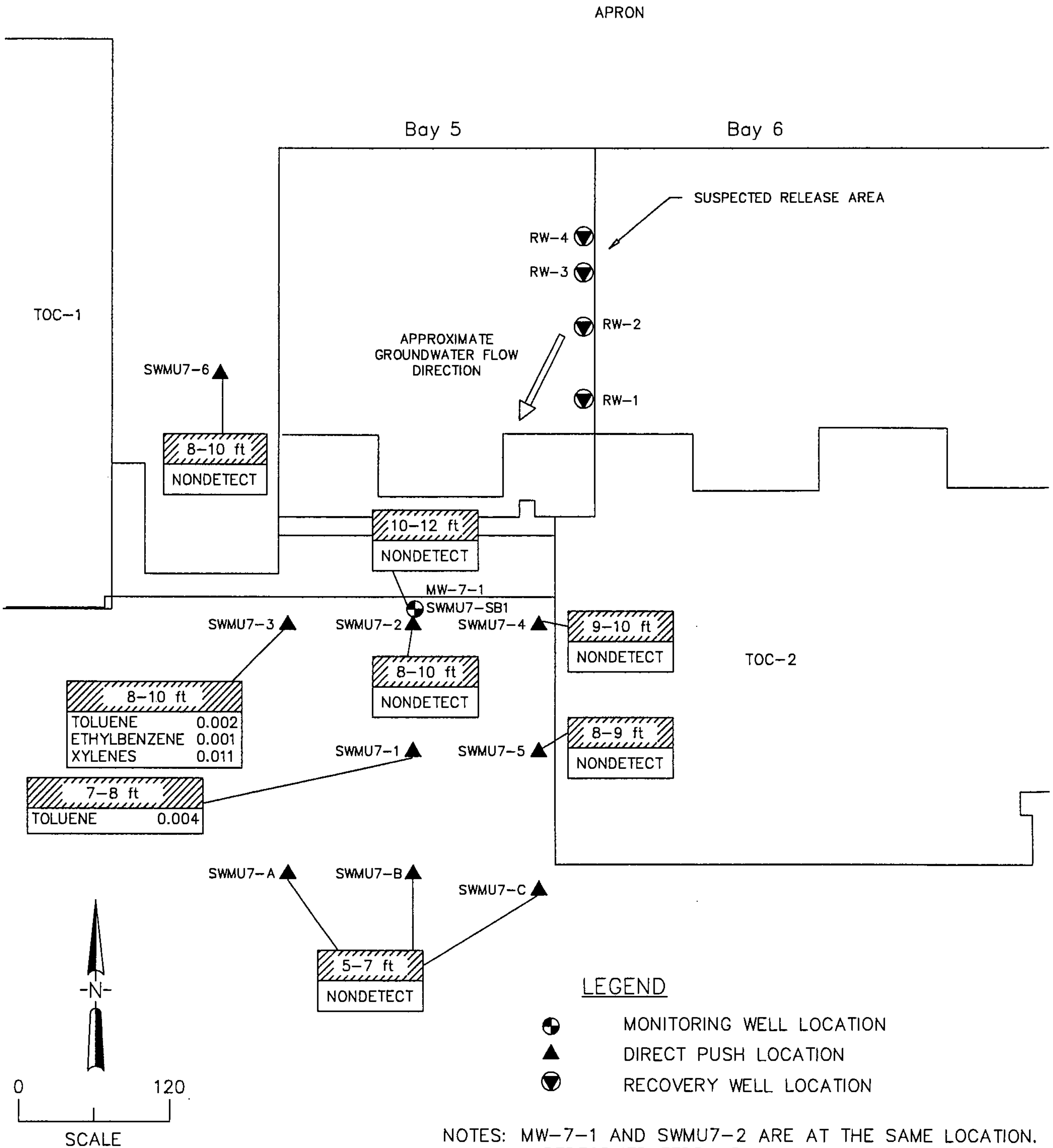
C:\Jobs\730657\SWMU7, 06/06/97 at 15:55

**PARSONS ENGINEERING SCIENCE, INC.**

**Figure 3.20**

# BTEX DETECTED IN SOIL (mg/kg) FOR SWMU 7 (BAY 5 EXTENSION FUEL LEAK)

## Delta Air Lines, Technical Operations Center



NOTES: MW-7-1 AND SWMU7-2 ARE AT THE SAME LOCATION.
SAMPLING PERFORMED FEBRUARY AND MAY, 1997

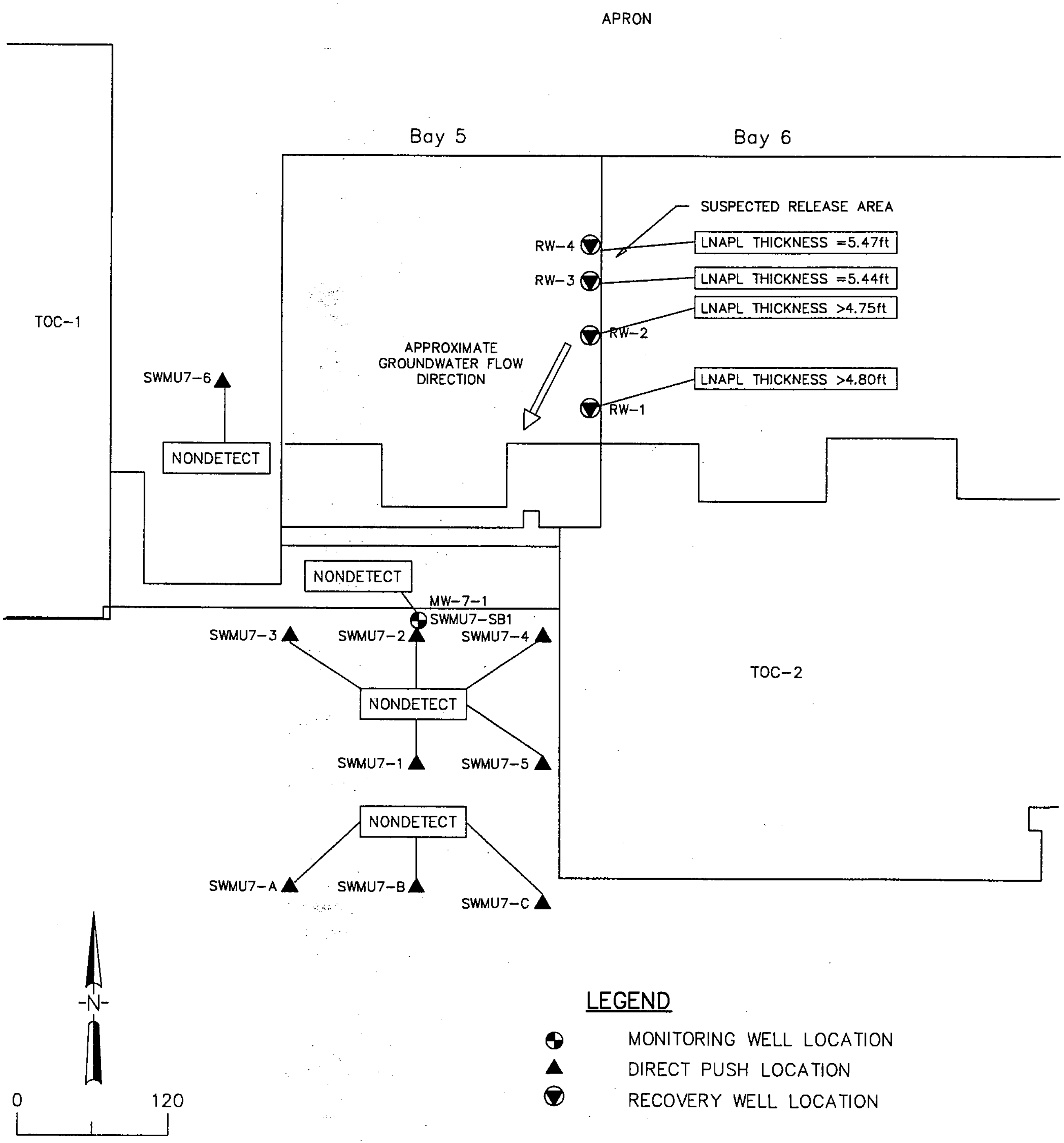
\\RLYNN\Ryan\Jobs\730657\SWMU7S, 06/27/97 at 16:06

**PARSONS ENGINEERING SCIENCE, INC.**

Figure 3.21

# BTEX DETECTED IN GROUNDWATER ($\mu g/L$) FOR SWMU 7 (BAY 5 EXTENSION FUEL LEAK)

Delta Air Lines, Technical Operations Center



NOTE: MW-7-1 AND SWMU7-2 ARE AT THE SAME LOCATION.
SAMPLING PERFORMED IN JANUARY, FEBRUARY AND MAY, 1997

\\Rlynn\Ryan\Jobs\730657\SWMU7G, 07/03/97 at 09:58

**PARSONS ENGINEERING SCIENCE, INC.**

# Table 3.20
# Summary of RFI Field Activities for SWMU 8
# Delta Air Lines, Technical Operations Center

| Objectives of RFI | Field Activities | Sample Matrix | Analyses | Samples | Dup. | Blk. | MS/ MSD |
|---|---|---|---|---|---|---|---|
| • Identify contaminant release to soil below fill and above the water table<br>• Identify contaminant release to groundwater | • Cut 1 core through 18" concrete, 5 cores through 6-inch asphalt, and repaired with grout or asphalt patch<br>• Six direct push sampling points; drove sampler to water table<br>• Visual analysis to determine bottom of fill, took photographs<br>• Collected six soil samples and one duplicate 2 ft below fill<br>• Collected five soil samples approximately 2 ft above water table<br>• Collected five groundwater samples and one duplicate | Soil | Volatile Organics (SW8260) | 11 | 1 | | |
| | | | Nickel (SW3050/SW6010) | 11 | 1 | | |
| | | | Chromium (SW3050/ SW7191) | 11 | 1 | | |
| | | | Lead (SW3050/SW7421) | 11 | 1 | | |
| | | | Cyanide (SW9010) | 11 | 1 | | |
| | | Groundwater | Volatile Organics (SW8260) | 5 | 1 | | 1 |
| | | | Nickel (SW3050/SW6010) | 5 | 1 | | 1 |
| | | | Chromium (SW3050/ SW7191) | 5 | 1 | | 1 |
| | | | Lead (SW3050/SW7421) | 5 | 1 | | 1 |
| | | | Cyanide (SW9012) | 5 | 1 | | 1 |

Notes:

Samples = number of environmental samples

Dup. = number of field duplicates

Blk. = number of blanks -- includes trip, field and rinseate blanks

MS/MSD = number of matrix spike/ matrix spike duplicate pairs

## Table 3.21. Analytical Results for SWMU 8 Soils
## Delta Air Lines, Technical Operations Center

| Sample Location | SWMU8-1 | SWMU8-1 | SWMU8-2 | SWMU8-2 | SWMU8-3 | SWMU8-3 | SWMU8-4 | SWMU8-4 | SWMU8-5 |
|---|---|---|---|---|---|---|---|---|---|
| **Depth** | **(5-6')** | **(23-24')** | **(8-9')** | **(25-26')** | **(16-17')** | **(26-27')** | **(12-14')** | **(25-26')** | **(10-12')** |
| **Date Sampled** | **2/10/97** | **2/10/97** | **2/11/97** | **2/11/97** | **2/11/97** | **2/11/97** | **2/11/97** | **2/11/97** | **2/11/97** |
| **Duplicate of** | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Volatile Organics - SW8260 (mg/kg)** | | | | | | | | | |
| Dilution Factor | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Acrylonitrile | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Benzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Bromoform | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Carbon tetrachloride | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Chlorobenzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Chlorodibromomethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Chloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Chloroform | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Dichlorobromomethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,1-Dichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,2-Dichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,1-Dichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,2-Dichloropropane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| cis-1,3-Dichloropropene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Ethylbenzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Bromomethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Chloromethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Methylene chloride | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 |
| 1,1,2,2-Tetrachloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Tetrachloroethylene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Toluene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,1,1-Trichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,1,2-Trichloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Trichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Trichlorofluoromethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Vinyl chloride | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Styrene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Total Xylene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| trans-1,3-Dichloropropene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |

## Table 3.21. Analytical Results for SWMU 8 Soils (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Depth<br>Date Sampled<br>Duplicate of | SWMU8-5<br>(24-25')<br>2/11/97<br>NA | SWMU8-6<br>(10-12')<br>2/12/97<br>NA | SWMU8-7<br>(16-17')<br>2/11/97<br>8-3(16-17') | Maximum Detection (mg/kg) | 2 x Maximum Background Conc. (mg/kg) |
|---|---|---|---|---|---|
| **Volatile Organics - SW8260 (mg/kg)** | | | | | |
| Dilution Factor | 2 | 2 | 5 | | |
| Acrylonitrile | <0.05 | <0.05 | <0.125 | ND | NA |
| Benzene | <0.01 | <0.01 | <0.025 | ND | NA |
| Bromoform | <0.01 | <0.01 | <0.025 | ND | NA |
| Carbon tetrachloride | <0.01 | <0.01 | <0.025 | ND | NA |
| Chlorobenzene | <0.01 | <0.01 | <0.025 | ND | NA |
| Chlorodibromomethane | <0.01 | <0.01 | <0.025 | ND | NA |
| Chloroethane | <0.01 | <0.01 | <0.025 | ND | NA |
| Chloroform | <0.01 | <0.01 | <0.025 | ND | NA |
| Dichlorobromomethane | <0.01 | <0.01 | <0.025 | ND | NA |
| 1,1-Dichloroethane | <0.01 | <0.01 | <0.025 | ND | NA |
| 1,2-Dichloroethane | <0.01 | <0.01 | <0.025 | ND | NA |
| 1,1-Dichloroethene | <0.01 | <0.01 | <0.025 | ND | NA |
| 1,2-Dichloropropane | <0.01 | <0.01 | <0.025 | ND | NA |
| cis-1,3-Dichloropropene | <0.01 | <0.01 | <0.025 | ND | NA |
| Ethylbenzene | <0.01 | <0.01 | <0.025 | ND | NA |
| Bromomethane | <0.01 | <0.01 | <0.025 | ND | NA |
| Chloromethane | <0.01 | <0.01 | <0.025 | ND | NA |
| Methylene chloride | <0.02 | <0.02 | <0.05 | ND | NA |
| 1,1,2,2-Tetrachloroethane | <0.01 | <0.01 | <0.025 | ND | NA |
| Tetrachloroethylene | <0.01 | <0.01 | <0.025 | ND | NA |
| Toluene | <0.01 | <0.01 | <0.025 | ND | NA |
| 1,1,1-Trichloroethane | <0.01 | <0.01 | <0.025 | ND | NA |
| 1,1,2-Trichloroethane | <0.01 | <0.01 | <0.025 | ND | NA |
| Trichloroethene | <0.01 | <0.01 | <0.025 | ND | NA |
| Trichlorofluoromethane | <0.01 | <0.01 | <0.025 | ND | NA |
| Vinyl chloride | <0.01 | <0.01 | <0.025 | ND | NA |
| Styrene | <0.01 | <0.01 | <0.025 | ND | NA |
| Total Xylene | <0.01 | <0.01 | <0.025 | ND | NA |
| trans-1,3-Dichloropropene | <0.01 | <0.01 | <0.025 | ND | NA |

## Table 3.21. Analytical Results for SWMU 8 Soils (Continued)
## Delta Air Lines, Technical Operations Center

| **Sample Location** | **SWMU8-1** | **SWMU8-1** | **SWMU8-2** | **SWMU8-2** | **SWMU8-3** | **SWMU8-3** | **SWMU8-4** | **SWMU8-4** | **SWMU8-5** |
|---|---|---|---|---|---|---|---|---|---|
| **Depth** | **(5-6')** | **(23-24')** | **(8-9')** | **(25-26')** | **(16-17')** | **(26-27')** | **(12-14')** | **(25-26')** | **(10-12')** |
| **Date Sampled** | **2/10/97** | **2/10/97** | **2/11/97** | **2/11/97** | **2/11/97** | **2/11/97** | **2/11/97** | **2/11/97** | **2/11/97** |
| **Duplicate of** | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 1,2-Dichlorobenzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,4-Dichlorobenzene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| trans-1,2-Dichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Carbon disulfide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Methyl ethyl ketone | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| 1,1,1,2-Tetrachloroethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Acetone | <0.05 | <0.05 | <0.05 | **0.057** | **0.061** | <0.05 | <0.05 | **0.081** | <0.05 |
| Vinyl Acetate | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 2-Hexanone | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 4-Methyl-2-pentanone | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Ethylene dibromide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,2-Dibromo-3-chloropropane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| trans-1,4-Dichloro-2-butene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Methylene bromide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Methyl iodide | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 1,2,3-Trichloropropane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Bromochloromethane | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| cis-1,2-Dichloroethene | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Metals - SW6010A/SW7191/SW7421 (mg/kg)** | | | | | | | | | |
| Chromium | **15.6 J** | **15.3 J** | **71.8 J** | **21.3 J** | **1.49 J** | **76.5 J** | **1.20 J** | **11.5 J** | **14.0 J** |
| Nickel | **7.88** | **4.16** | **18.8** | **2.29** | **2.42** | < 20 | **2.46** | **2.95** | **4.69** |
| Lead | **5.88** | **7.89** | **6.46** | **5.94** | **8.81** | **10.4** | **7.64** | **6.44** | **7.40** |
| **Cyanide - SW9012 (mg/kg)** | **0.02** | <0.1 | <0.1 | <0.1 | <0.1 | **0.2** | <0.1 | <0.1 | <0.1 |

Notes:

mg/kg = milligrams per kilogram

<# = Compund analyzed for, but not detected above #

ND = Not detected

J = Indicates non-compliant field duplicate result for Chromium

### Table 3.21. Analytical Results for SWMU 8 Soils (Continued)
### Delta Air Lines, Technical Operations Center

| Sample Location | SWMU8-5 | SWMU8-6 | SWMU8-7 | Maximum Detection (mg/kg) | 2 x Maximum Background Conc. (mg/kg) |
|---|---|---|---|---|---|
| Depth | (24-25') | (10-12') | (16-17') | | |
| Date Sampled | 2/11/97 | 2/12/97 | 2/11/97 | | |
| Duplicate of | NA | NA | 8-3(16-17') | | |
| 1,2-Dichlorobenzene | <0.01 | <0.01 | <0.025 | ND | NA |
| 1,4-Dichlorobenzene | <0.01 | <0.01 | <0.025 | ND | NA |
| trans-1,2-Dichloroethene | <0.01 | <0.01 | <0.025 | ND | NA |
| Carbon disulfide | <0.01 | <0.01 | <0.025 | ND | NA |
| Methyl ethyl ketone | <0.05 | <0.05 | <0.125 | ND | NA |
| 1,1,1,2-Tetrachloroethane | <0.01 | <0.01 | <0.025 | ND | NA |
| Acetone | <0.05 | <0.05 | <0.125 | 0.081 | NA |
| Vinyl Acetate | <0.01 | <0.01 | <0.025 | ND | NA |
| 2-Hexanone | <0.01 | <0.01 | <0.025 | ND | NA |
| 4-Methyl-2-pentanone | <0.01 | <0.01 | <0.025 | ND | NA |
| Ethylene dibromide | <0.01 | <0.01 | <0.025 | ND | NA |
| 1,2-Dibromo-3-chloropropane | <0.01 | <0.01 | <0.025 | ND | NA |
| trans-1,4-Dichloro-2-butene | <0.01 | <0.01 | <0.025 | ND | NA |
| Methylene bromide | <0.01 | <0.01 | <0.025 | ND | NA |
| Methyl iodide | <0.01 | <0.01 | <0.025 | ND | NA |
| 1,2,3-Trichloropropane | <0.01 | <0.01 | <0.025 | ND | NA |
| Bromochloromethane | <0.01 | <0.01 | <0.025 | ND | NA |
| cis-1,2-Dichloroethene | <0.01 | <0.01 | <0.025 | ND | NA |
| **Metals - SW6010A/SW7191/SW7421 (mg/kg)** | | | | | |
| Chromium | **26.6 J** | **8.18 J** | **11.4 J** | 76.5 | 50.80 |
| Nickel | **5.25** | **2.84** | **3.00** | 18.8 | 22.60 |
| Lead | **2.61** | **9.15** | **9.37** | 10.4 | 40.80 |
| **Cyanide - SW9012 (mg/kg)** | **0.1** | **0.1** | <0.1 | 0.2 | 0.40 |

Notes:

mg/kg = milligrams per kilogram

<# = Compund analyzed for, but not detected above #

ND = Not detected

J = Indicates non-compliant field duplicate result for Chromium

## Table 3.22. Analytical Results for SWMU 8 Groundwater
## Delta Air Lines, Technical Operations Center

| Sample Location | SWMU8-1 | SWMU8-2 | SWMU8-3 | SWMU8-4 | SWMU8-5 | SWMU8-7 | Maximum | Groundwater | |
|---|---|---|---|---|---|---|---|---|---|
| **Date Sampled** | **2/10/97** | **2/11/97** | **2/11/97** | **2/11/97** | **2/11/97** | **2/11/97** | **Detection** | **Protection Std.$^{(1)(2)}$** | **MCL$^{(2)}$** |
| **Duplicate of** | NA | NA | NA | NA | NA | SWMU8-4 | | | |
| **Volatile Organics - SW8260 (µg/L)** | | | | | | | | | |
| Dilution Factor | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Acrylonitrile | <25 | <25 | <25 | <25 | <25 | <25 | ND | | |
| Benzene | <5 | <5 | <5 | <5 | <5 | <5 | ND | 5 | 5 |
| Bromoform | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Carbon tetrachloride | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Chlorobenzene | <5 | **10.2** | <5 | <5 | <5 | <5 | 10.2 | BG | 100 |
| Chlorodibromomethane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Chloroethane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Chloroform | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Dichlorobromomethane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| 1,1-Dichloroethane | <5 | <5 | <5 | <5 | <5 | <5 | ND | 7 | |
| 1,2-Dichloroethane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| 1,1-Dichloroethene | <5 | <5 | <5 | <5 | <5 | <5 | ND | | 7 |
| 1,2-Dichloropropane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| cis-1,3-Dichloropropene | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Ethylbenzene | <5 | <5 | <5 | <5 | <5 | <5 | ND | BG | 700 |
| Bromomethane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Chloromethane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Methylene chloride | <10 | <10 | <10 | <10 | <10 | <10 | ND | | |
| 1,1,2,2-Tetrachloroethane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Tetrachloroethylene | <5 | <5 | <5 | <5 | <5 | <5 | ND | 5 | 5 |
| Toluene | <5 | <5 | <5 | <5 | <5 | <5 | ND | BG | 1000 |
| 1,1,1-Trichloroethane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| 1,1,2-Trichloroethane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Trichloroethene | <5 | <5 | <5 | <5 | <5 | <5 | ND | 5 | 5 |
| Trichlorofluoromethane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Vinyl chloride | <5 | <5 | <5 | <5 | <5 | <5 | ND | 2 | 2 |

## Table 3.22. Analytical Results for SWMU 8 Groundwater (Continued)
## Delta Air Lines, Technical Operations Center

| Sample Location<br>Date Sampled<br>Duplicate of | SWMU8-1<br>2/10/97<br>NA | SWMU8-2<br>2/11/97<br>NA | SWMU8-3<br>2/11/97<br>NA | SWMU8-4<br>2/11/97<br>NA | SWMU8-5<br>2/11/97<br>NA | SWMU8-7<br>2/11/97<br>SWMU8-4 | Maximum Detection | Groundwater Protection Std.(1)(2) | MCL(2) |
|---|---|---|---|---|---|---|---|---|---|
| Styrene | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Total Xylene | <5 | <5 | <5 | <5 | <5 | <5 | ND | 100 | 10,000 |
| trans-1,3-Dichloropropene | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| 1,2-Dichlorobenzene | <5 | <5 | <5 | <5 | <5 | <5 | ND | | 600 |
| 1,4-Dichlorobenzene | <5 | <5 | <5 | <5 | <5 | <5 | ND | | 75 |
| trans-1,2-Dichloroethene | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Carbon disulfide | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Methyl ethyl ketone | <25 | <25 | <25 | <25 | <25 | <25 | ND | | |
| 1,1,1,2-Tetrachloroethane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Acetone | <25 | <25 | <25 | <25 | <25 | <25 | ND | | |
| Vinyl Acetate | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| 2-Hexanone | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| 4-Methyl-2-pentanone | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Ethylene dibromide | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| 1,2-Dibromo-3-chloropropane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| trans-1,4-Dichloro-2-butene | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Methylene bromide | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Methyl iodide | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| 1,2,3-Trichloropropane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| Bromochloromethane | <5 | <5 | <5 | <5 | <5 | <5 | ND | | |
| cis-1,2-Dichloroethene | <5 | <5 | **65.8** | <5 | <5 | <5 | 65.8 | | 70 |

## Table 3.22. Analytical Results for SWMU 8 Groundwater (Continued)
## Delta Air Lines, Technical Operations Center

| **Sample Location**<br>**Date Sampled**<br>**Duplicate of** | **SWMU8-1**<br>**2/10/97**<br>NA | **SWMU8-2**<br>**2/11/97**<br>NA | **SWMU8-3**<br>**2/11/97**<br>NA | **SWMU8-4**<br>**2/11/97**<br>NA | **SWMU8-5**<br>**2/11/97**<br>NA | **SWMU8-7**<br>**2/11/97**<br>SWMU8-4 | **Maximum Detection** | **Groundwater Protection Std.$^{(1)(2)}$** | **MCL$^{(2)}$** |
|---|---|---|---|---|---|---|---|---|---|
| **Metals - SW6010A/SW7191/SW7421 (mg/L)** | | | | | | | | | |
| Chromium | <0.01 J | **0.200 J** | **0.038 J** | **0.210 J** | **0.258 J** | **0.247 J** | 0.258 J | 0.05 | 0.1 |
| Nickel | <0.05 | <0.05 | <0.05 | **0.059** | <0.05 | **0.067** | 0.0067 | | 0.1 |
| Lead | <0.005 | **0.096** | **0.006** | **0.014** | **0.015** | **0.017** | 0.096 | 0.015 | 0.015 |
| **Cyanide - SW9010 (mg/L)** | <0.005 | <0.005 | **0.008** | <0.005 | <0.005 | <0.005 | 0.008 | | 0.2 |

Notes:

µg/L = micrograms per liter

mg/L = milligrams per liter

<# = Compund analyzed for, but not detected above #

J = Indicates non-compliant field duplicate result for Chromium

ND = Not detected

BG = Background

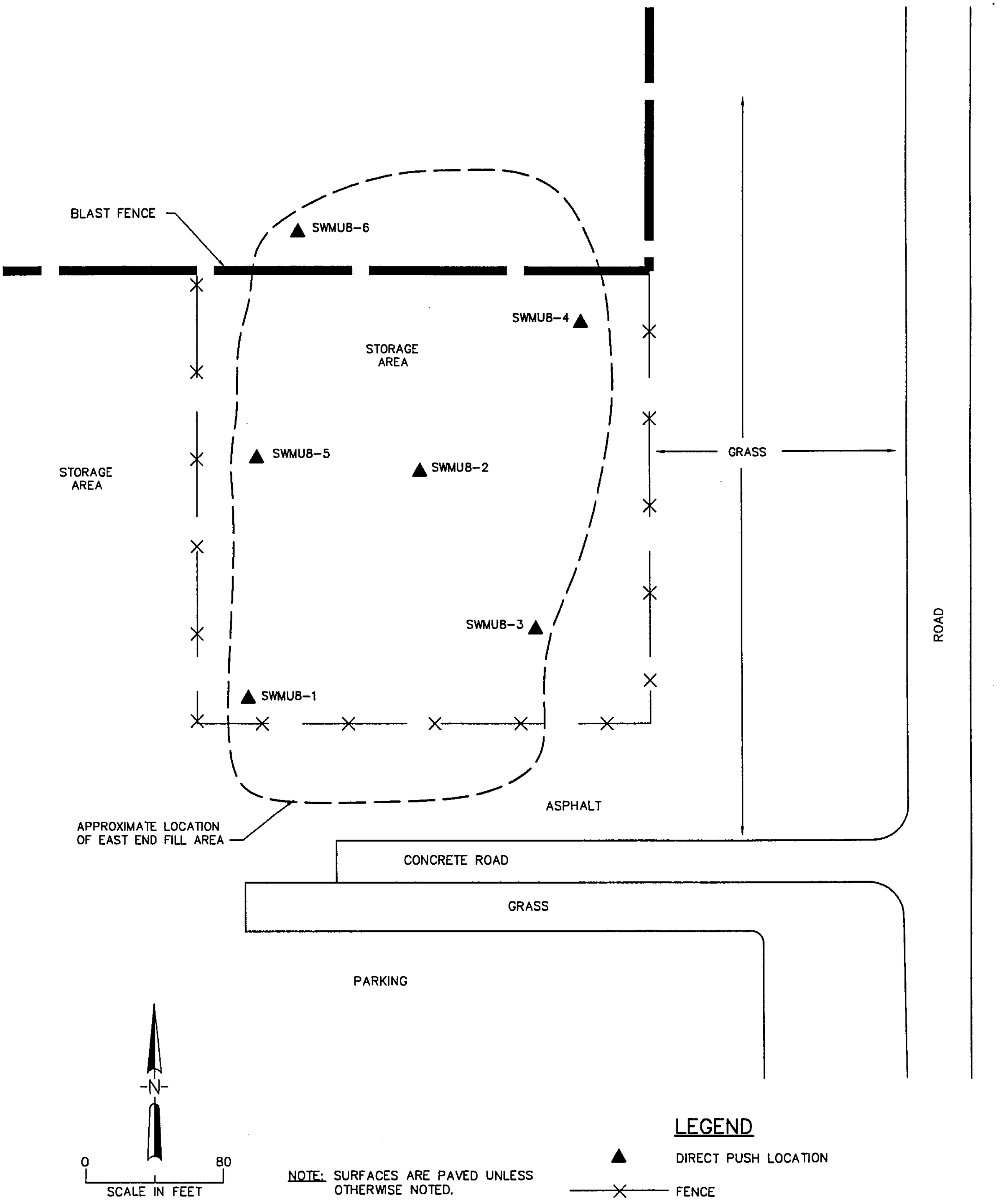
(1) = Groundwater Protection Standard as written in Hazardous Waste Permit Number HW-036(S&T)-2 dated September 8, 1994

(2) = A Groundwater Protection Standard and/or MCL is noted only if one exists and if a compound is detected

**Figure 3.22**

# SAMPLING LOCATIONS FOR SWMU 8 (EAST END FILL AREA)

## Delta Air Lines, Technical Operations Center



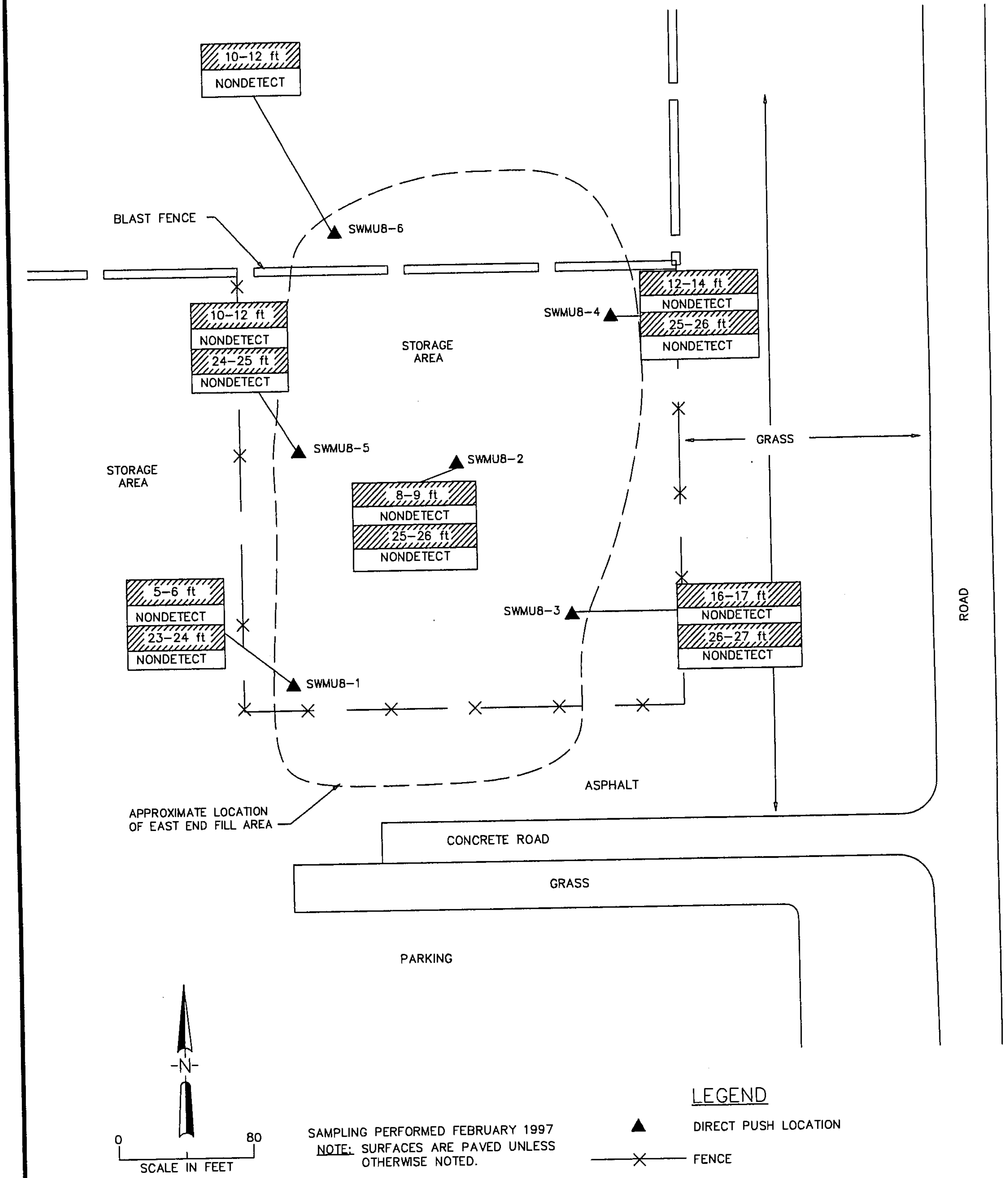
NOTE: SURFACES ARE PAVED UNLESS OTHERWISE NOTED.

C:\Jobs\730657\SWMU8, 06/06/97 at 14:58

**PARSONS ENGINEERING SCIENCE, INC.**

Figure 3.23

# ORGANICS DETECTED IN SOIL (mg/kg)
# SWMU 8 (EAST END FILL AREA)
## Delta Air Lines, Technical Operations Center



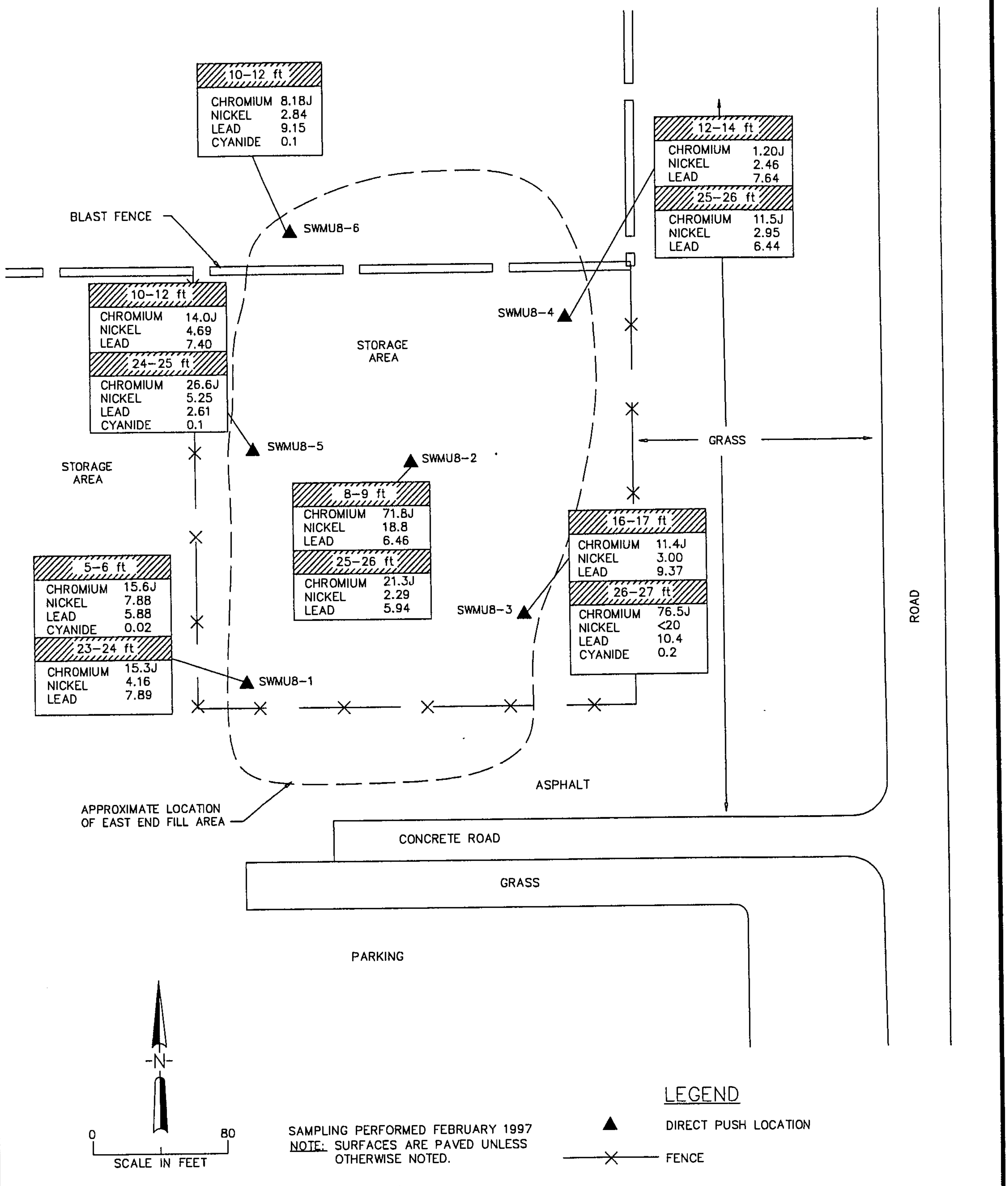
SAMPLING PERFORMED FEBRUARY 1997
NOTE: SURFACES ARE PAVED UNLESS OTHERWISE NOTED.

C:\Jobs\730657\SWMU8OS, 06/27/97 at 10:39

**PARSONS ENGINEERING SCIENCE, INC.**

Figure 3.24

## INORGANICS DETECTED IN SOIL (mg/kg)
## SWMU 8 (EAST END FILL AREA)
### Delta Air Lines, Technical Operations Center

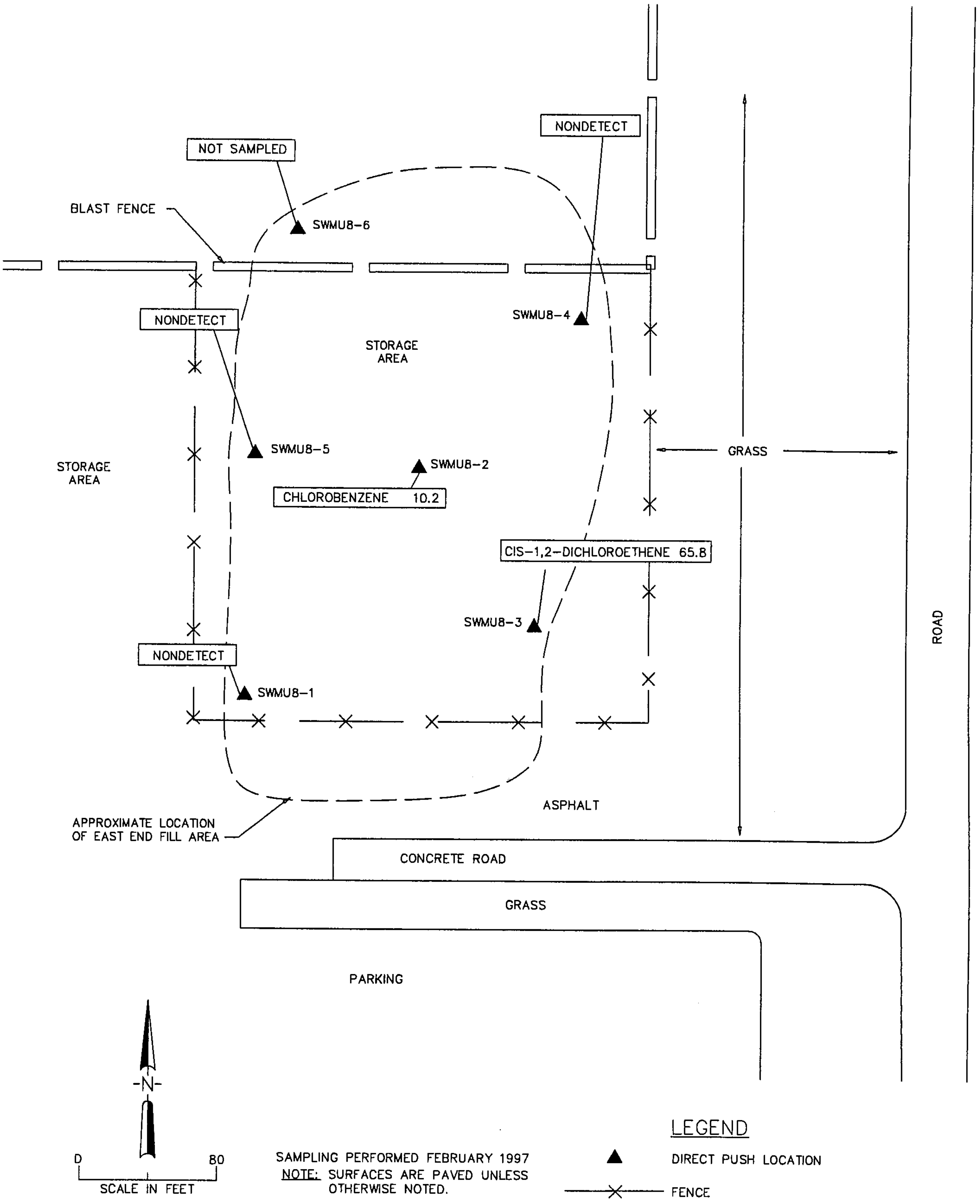


SAMPLING PERFORMED FEBRUARY 1997
NOTE: SURFACES ARE PAVED UNLESS OTHERWISE NOTED.

\\RLYNN\Ryan\Jobs\730657\SWMU8IS, 06/26/97 at 15:28

**PARSONS ENGINEERING SCIENCE, INC.**

# ORGANICS DETECTED IN GROUNDWATER (μg/L)
# SWMU 8 (EAST END FILL AREA)
## Delta Air Lines, Technical Operations Center



SAMPLING PERFORMED FEBRUARY 1997
NOTE: SURFACES ARE PAVED UNLESS OTHERWISE NOTED.

LEGEND

▲ DIRECT PUSH LOCATION

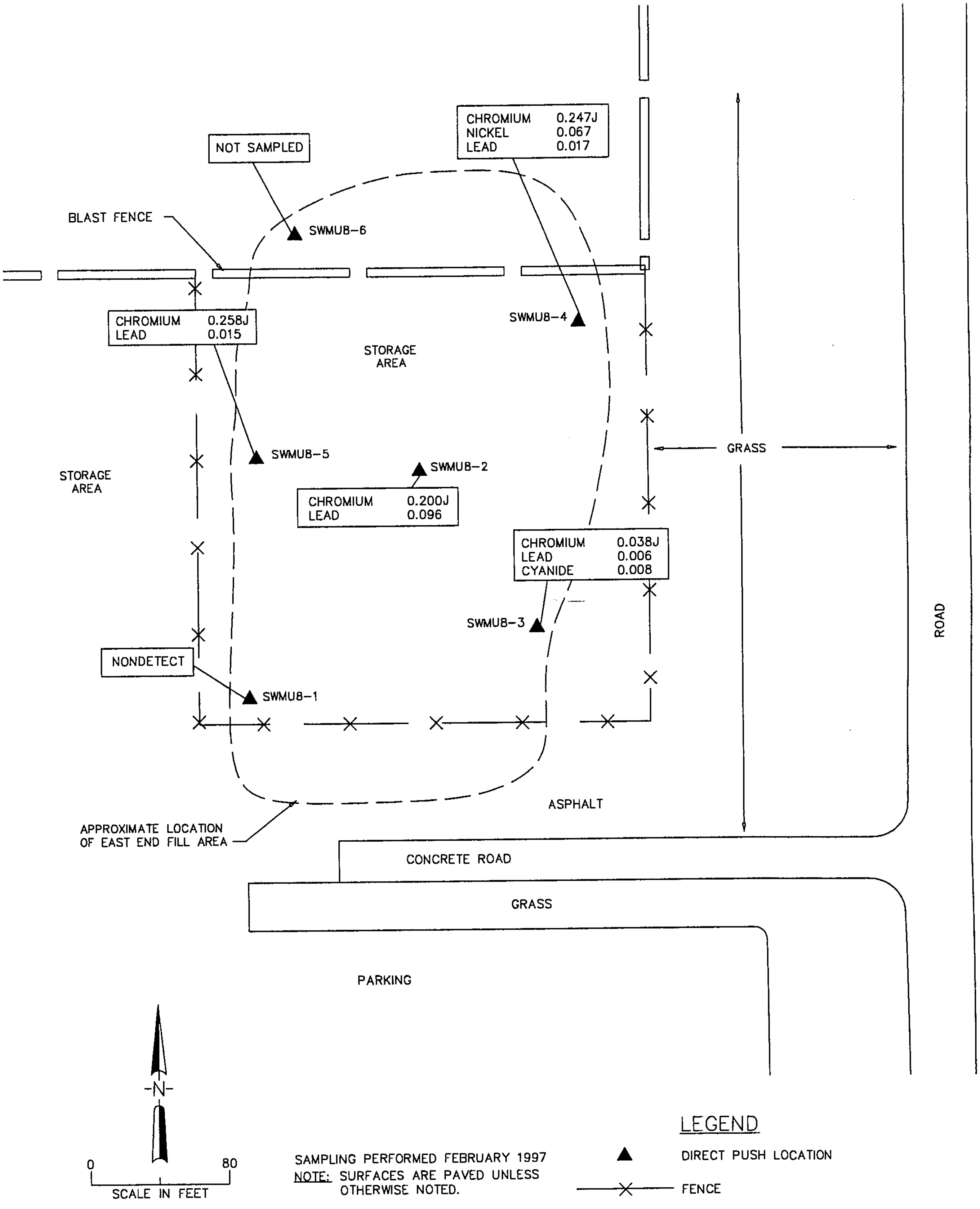
—×— FENCE

C:\Jobs\730657\SWMU8OG, 06/24/97 at 10:48

**PARSONS ENGINEERING SCIENCE, INC.**

Figure 3.26

# INORGANICS DETECTED IN GROUNDWATER (mg/L)
# SWMU 8 (EAST END FILL AREA)
## Delta Air Lines, Technical Operations Center



SAMPLING PERFORMED FEBRUARY 1997
NOTE: SURFACES ARE PAVED UNLESS OTHERWISE NOTED.

C:\Jobs\730657\SWMU8IG, 06/27/97 at 09:59

**PARSONS ENGINEERING SCIENCE, INC.**

## Table 3.23
## Maximum Contaminant Levels Detected in Soil
## Delta Air Lines, Technical Operations Center

| Parameter | SWMU 3 | SWMU 4H-4I | SWMU 4J | SWMU 5 | SWMU 7 | SWMU 8 | 2X Maximum Background Conc. (mg/Kg) |
|---|---|---|---|---|---|---|---|
| **Volatile Organics - SW8260 (mg/kg)** | | | | | | | |
| Chlorobenzene | ND | ND | | 172 | | ND | NA |
| Ethylbenzene | 0.0216 | 0.108 J | | ND | | ND | NA |
| Toluene | ND | 0.018 | | ND | | ND | NA |
| Total Xylene | 0.155 | 0.4 J | | 26.9 | | ND | NA |
| 1,2-Dichlorobenzene | ND | ND | | 423 | | ND | NA |
| 1,4-Dichlorobenzene | ND | ND | | 136 | | ND | NA |
| **Semivolatile Organics - SW8270 (mg/kg)** | | | | | | | |
| Dilution Factor | | | | | | | |
| Naphthalene | 0.705 | ND | | | | | NA |
| **Aromatic Volatile Organics - SW8020 (mg/kg)** | | | | | | | |
| Toluene | | | 0.001 | | 0.004 | | NA |
| Ethylbenzene | | | 0.32 | | 0.001 | | NA |
| Total Xylene | | | 5.29 | | 0.011 | | NA |
| **Diesel Range Organics - SW8015 Modified (mg/kg)** | | | | | | | |
| Diesel Range Organics | | | | | ND | | |
| **Metals - SW6010A/SW7080A/SW7191/ SW7421/SW7471A/SW7740 (mg/kg)** | | | | | | | |
| Silver | 3.23 | | | | | | 0.8 |
| Arsenic | 0.500 | | | | | | 0.85 |
| Barium | 142 | | | | | | 232 |
| Cadmium | 6.44 | | | | | | 2.52 |
| Chromium | 104 J | | | 3920 | | 76.5 | 50.8 |
| Mercury | 0.468 | | | | | | 0.11 |
| Nickel | | | | 145 | | 18.8 | 22.6 |
| Lead | 56.8 | | | 512 | | 10.4 | 40.8 |
| Selenium | 0.218 | | | | | | 0.26 |
| **Cyanide - SW9012 (mg/kg)** | 0.4 | | | 2.5 | | 0.2 | 0.4 |

Note:

Boxed concentration indicates a detection for organics and that concentration matches or exceeds 2x maximum background for inorganics.

## Table 3.24
## Maximum Contaminant Levels Detected in Groundwater
## Delta Air Lines, Technical Operations Center

| Parameter | SWMU 4H-4I | SWMU 4J | SWMU 5 | SWMU 7 | SWMU 8 | Groundwater Protect. Std. | MCL | In-Stream Standard |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organics - SW8260 (µg/L)** | | | | | | | | |
| Benzene | 291 | | ND | | ND | 5 | 5 | 71.28 |
| Chlorobenzene | ND | | 421 | | 10.2 | BG$^1$ | 100 | 21,000 |
| Chloroethane | ND | | 5120 | | ND | | | |
| 1,1-Dichloroethane | ND | | 7000 | | ND | 7 | | |
| 1,1-Dichloroethene | ND | | 594 | | ND | | 7 | 3.2 |
| Ethylbenzene | 132 | | ND | | ND | BG$^1$ | 700 | 28,718 |
| Tetrachloroethylene | 6.51 | | ND | | ND | 5 | 5 | 8.85 |
| Toluene | 55.5 | | ND | | ND | BG$^1$ | 1000 | 200,000 |
| Trichloroethene | 6.90 | | ND | | ND | 5 | 5 | 41.99 |
| Vinyl chloride | ND | | 6980 | | ND | 2 | 2 | 525 |
| Total Xylene | 542 | | ND | | ND | 100 | 10,000 | NA |
| 1,2-Dichlorobenzene | ND | | 21.2 | | ND | | 600 | 17,000 |
| 1,4-Dichlorobenzene | ND | | 50.4 | | ND | | 75 | 2,600 |
| cis-1,2-dichloroethene | | | | | 65.8 | | 70 | |
| **Semivolatile Organics - SW8270 (µg/L)** | | | | | | | | |
| Naphthalene | 250 J | | | | | | | |
| **Aromatic Volatile Organics - SW8020 (µg/L)** | | | | | | | | |
| Total Xylene | | 1.75 | | ND | | 100 | 10,000 | NA |
| **Diesel Range Organics - SW8015 Modified (µg/L)** | | | | | | | | |
| Diesel Range Organics | | | | ND | | | | |
| **Metals - SW6010A/SW7191/SW7421 (mg/L)** | | | | | | | | |
| Chromium | | | 0.215 J | | 0.258 J | 0.05 | 0.1 | Hardness$^2$ |
| Nickel | | | 0.078 | | 0.0067 | | 0.1 | Hardness$^2$ |
| Lead | | | 3.49 | | 0.096 | 0.015 | 0.015 | Hardness$^2$ |
| **Cyanide - SW9010 (mg/L)** | | | 0.026 | | 0.008 | | 0.2 | 0.0052 |

(1) For purposes of this report, background is assumed to be the detection limit. Therefore, a detection of any of these analytes indicates that the groundwater protection standard has been exceeded.

(2) Standard depends on groundwater hardness.

(3) Boxed concentrations indicate constituent detected above the groundwater protection standard or, if no GPS exists, boxes indicate that constituent is detected.

## Table 3.25. Summary of Nature and Extent of Contamination
## Delta Air Lines, Technical Operations Center

| Medium/Constituent | SWMU 3 | SWMU 4 H/I | SWMU 4J | SWMU 5 | SWMU 7 | SWMU 8 |
|---|---|---|---|---|---|---|
| **Soil** | | | | | | |
| Inorganics > 2x Max. Bgd[1] | Yes | NS[3] | NS | Yes | NS | Yes |
| Volatile Organics Detected | Yes | Yes | Yes | Yes | Yes | No |
| Semi-Volatile Organics Detected | Yes | No | NS | NS | NS | No |
| Extent Defined | No | Yes | Yes | Yes | No | No |
| **Groundwater** | | | | | | |
| Inorganics > G.P.S.[2] | NS | NS | NS | Yes | NS | Yes |
| Volatile Organics > G.P.S. | NS | Yes | No | Yes | No | Yes |
| Semi-Volatile Organics > G.P.S. | NS | Yes | NS | NS | NS | NS |
| Extent Defined | -- | No | No | No | Yes | No |
| **LNAPL Present** | NS | Yes | NS | NS | Yes | NS |
| Extent Defined | -- | Yes | -- | -- | Yes | -- |

Notes:

(1) 2x Max Bgd = 2 x maximum of soil background detections

(2) GPS = Groundwater protection standard.

(3) NS = Not sampled

# 4

# Section Four

# SECTION 4
# PATHWAYS AND RECEPTORS

This section identifies and evaluates the potential pathways and receptors for contamination associated with SWMUs at the TOC. In addition, the general environmental setting for the TOC is presented.

## 4.1 ENVIRONMENTAL SETTING

Elements of the environmental setting that are pertinent to evaluation of contaminant pathways and receptors include climate, current and future land use, paving of land surfaces, surface water drainage, and groundwater characteristics and uses. These factors are discussed in the following paragraphs.

### 4.1.1 Climate

The Delta operating facilities are located in Clayton County. The average winter and summer temperatures are 7.5°C (45.5°F) and 25.8°C (78.5°F), respectively. The rainfall reaches its peak in winter and summer and the average annual rainfall is approximately 125 centimeters (49 inches).

### 4.1.2 Surrounding Land Use

The Delta TOC is located within the Hartsfield Atlanta International Airport complex (see Figure 1.1). The TOC property is leased by Delta from the City of Atlanta; therefore, the land surrounding the SWMUs is deemed as commercial property. Airport taxiways and runways are located on the north side of the TOC. Undeveloped land is located on the east side of the facility. Facilities located south of the TOC, across Aviation Boulevard, include air cargo facilities operated by Delta and Continental, flight kitchen facilities operated by Delta and Dobbs, and the U.S. Post Office. Hartsfield Airport's Concourse E, located west of the TOC, was completed in 1995. Further development of the Hartsfield Atlanta International Airport complex may be envisioned as a future use of the surrounding property.

### 4.1.3 Land Surfaces

The majority of the surfaces at the TOC are paved. Paved surfaces prevent direct contact with contaminants in surface soil and also prevent percolation of precipitation through the soil and potential leaching of contaminants to groundwater. Small areas of unpaved surfaces are present at SWMU 3 (scum pits) and at SWMU 4H/I (fueling-defueling pits). Surfaces are paved at the other SWMUs. The topography at the TOC is essentially flat.

### 4.1.4 Surface Water Drainage

Storm water at the TOC is collected by area drains that feed an underground storm sewer system. The western half of the facility drains to the Flint River culvert and the eastern half drains to Mud Creek, which passes the TOC to the east. The drainage divide runs north to south and passes through TOC-2. The storm water system is a potential pathway for migration of groundwater contamination to surface water if the pipes are located below groundwater. Delta believes that the pipes are above the water table.

The Flint River flows from north to south at the west boundary of the TOC. Delta Air Lines has encased this section of the river in an underground 18-foot concrete culvert. The backfill material consists of Class "B" bedding material and select granular backfill (sheet 11 of 20, Flint River Enclosure plans and specs, Robert and Company Associates et al). Based on the above plans, the Class "B" material surrounds the bottom half of the culvert and extends approximately one foot on either side of the culvert and approximately one foot below the culvert bottom. The select granular material, specified for 92 % compaction in six-inch lifts, is probably sand or natural soil and extends above the culvert and to either side.

The river emerges to the land surface in a former quarry area on airport property, approximately 0.6 miles south of the TOC. It then passes under Loop Road and I-285 and reemerges on the south side of I-285. From this point, approximately 1 mile south of the TOC, it flows away from the airport complex to the south/southeast.

### 4.1.5 Groundwater

ERM, Inc. conducted an assessment of the groundwater beneath the Delta TOC in 1990. In the Phase II Groundwater Assessment Report ERM reported the following regarding groundwater at the west side of the TOC:

- a shallow water-bearing zone is present beneath the TOC;
- the water table is approximately 15 feet below the ground surface;
- the groundwater flow directions were towards the west and southwest;
- the hydraulic conductivities of soils were in the range from 1.3 x $10^{-3}$ to 1 x $10^{-4}$ centimeters per second; and
- the estimated average linear velocity of groundwater beneath the TOC is approximately 1.20 meters per year (4.2 feet per year).

The water table in the vicinity of the Flint River culvert is believed to intercept the fill material that surrounds the culvert and the fill may therefore provide a preferential path for groundwater flow. However, there is no known evidence of infiltration into the culvert or fill associated with potential contaminants in groundwater below the TOC.

In 1990, Delta conducted a survey of public drinking water wells and found that no public wells were present within a 3-mile radius of the TOC (Engineering-Science, 1990). Available documents from state agencies were reviewed and telephone calls were made to the City of Atlanta, East Point, College Park, Hapeville, Clayton County, and

Fulton County water authorities. All of the area surrounding the TOC is serviced by public water supplies. The airport authority reported that there are no drinking water wells within the airport boundaries.

## 4.2 PATHWAYS AND RECEPTORS

This subsection evaluates potential pathways and receptors for the individual SWMUs.

### 4.2.1 SWMU 3: Wastewater Treatment Scum Pits

#### 4.2.1.1 Surface Soil

Constituents detected in surface soil (0 - 1 ft bgs) adjacent to the scum pit for clarifier 1 include volatile organics, semi-volatile organics, and inorganics. Constituents detected in surface soil adjacent to the scum pit for clarifier 2 include inorganics. This is an unpaved area and therefore surface soil is exposed. The pathways/receptors that may be associated with surface soil contamination include the following:

- inhalation of airborne dust by facility workers;
- direct contact with surface soil by facility workers;
- transport of surface soil to storm water drains and ultimately to the Flint River; and
- leaching of contaminants to groundwater and ultimately to surface water discharges.

#### 4.2.1.2 Subsurface Soil

Constituents in subsurface soil (8 - 9 ft bgs) adjacent to the scum pits for clarifiers 1 and 2 include inorganics. The pathways/receptors that may be associated with subsurface soil contamination at this unpaved area include the following:

- leaching of contaminants to groundwater and ultimately to surface water discharges; and
- direct contact with subsurface soil by workers during excavation/construction activities.

#### 4.2.1.3 Groundwater

Groundwater was not investigated at SWMU 3.

### 4.2.2 SWMUs 4A-4G: Fueling-Defueling Pits Inside TOC-2

Based on the results of the RFI, there are no sources of contamination associated with SWMUs 4A through 4G. Therefore, a discussion of pathways and receptors is not applicable.

### 4.2.3 SWMUs 4H and 4I: Fueling-Defueling Pits North of Apron

#### 4.2.3.1 Soil

Constituents detected in soil at SWMUs 4H and 4I include volatile organics. Furthermore, LNAPL was encountered in the soils at these SWMUs. The pathways/receptors that may be associated with soil contamination include the following:

- leaching of contaminants to groundwater and ultimately to surface water discharges;
- direct contact with soil by workers during excavation/construction activities; and
- volatilization of LNAPL components.

#### 4.2.3.2 Groundwater

Constituents detected in groundwater at SWMUs 4H and 4I include volatile and semi-volatile organics. Furthermore, LNAPL was encountered at these SWMUs. The pathways/receptors that may be associated with groundwater contamination include migration of contaminants in groundwater and ultimately to surface water discharges.

### 4.2.4 SWMU 4J: Defueling Tank

#### 4.2.4.1 Soil

Constituents detected in soil at SWMU 4J include volatile organics. The pathways/receptors that may be associated with soil contamination include the following:

- leaching of contaminants to groundwater and ultimately to surface water discharges; and
- direct contact with soil by workers during excavation/construction activities.

#### 4.2.4.2 Groundwater

No constituents were detected in groundwater at SWMU 4J. Since groundwater is not a source of contamination, a discussion of pathways and receptors is not applicable.

### 4.2.5 SWMU 5: Settling Pond

#### 4.2.5.1 Soil and Groundwater

As described in Section 3.8, soil was sampled below the groundwater table. Therefore, the pathways and receptors for these two mediums are discussed together. Constituents detected in soil and groundwater at SWMU 5 include volatile organics and inorganics. The pathways/receptors that may be associated with this contamination include the following:

- direct contact with inorganics and organics by workers during excavation/construction activities;

- partitioning of volatile organics and inorganics from soil to groundwater and ultimately to surface water discharges; and
- migration of dissolved volatile organics and inorganics in groundwater to surface water discharges.

Based on groundwater contours presented in Delta's June 1997 Semi-annual Corrective Action System Performance Effectiveness Report, groundwater at SWMU 5 does not appear to be within the zone of influence of the corrective action recovery wells.

### 4.2.6 SWMU 7: Bay 5 Extension Fuel Leak

#### 4.2.6.1 Soil

Constituents detected in soil at SWMU 7 include volatile organics. Furthermore, LNAPL was encountered in the soils at these SWMUs. The pathways/receptors that may be associated with soil contamination include the following:

- leaching of contaminants to groundwater and ultimately to surface water discharges; and
- direct contact with soil by workers during excavation/construction activities.

#### 4.2.6.2 Groundwater

No constituents were detected in groundwater sampled south and west of TOC-2. However, LNAPL was encountered in the recovery wells located inside Bay 5 of TOC-2. The pathways/receptors that may be associated with groundwater contamination include the following:

- migration of contaminants in groundwater and ultimately to surface water discharges; and
- volatilization of LNAPL constituents into the TOC-2 building and subsequent inhalation by workers in the building.

### 4.2.7 SWMU 8: East End Fill Area

#### 4.2.7.1 Soil

Constituents detected in soil at SWMU 8 include inorganics. The pathways/receptors that may be associated with soil contamination include the following:

- leaching of contaminants to groundwater and ultimately to surface water discharges; and
- direct contact with soil by workers during excavation/construction activities.

#### 4.2.7.2 Groundwater

Constituents detected in groundwater at SWMU 8 include volatile organics and inorganics. The pathways/receptors that may be associated with groundwater contamination include migration of contaminants in groundwater and ultimately to surface water discharges.

# 5

# Section Five

# SECTION 5
# SUMMARY AND RECOMMENDATIONS

This section summarizes the RFI results and presents recommendations for further activities related to SWMUs 3-8. SWMUs 1 and 2 are being addressed by Delta's existing corrective action program. EPD will make the final determination of the need for corrective action at any SWMU.

## 5.1 SWMU 3: WASTEWATER TREATMENT SCUM PITS

### 5.1.1 Soil

Volatile organics detected in soil consisted of ethylbenzene and xylenes and naphthalene was the only semivolatile organic detected. Silver, cadmium, chromium, mercury, lead, and cyanide exceeded 2 x the maximum concentration.

### 5.1.2 Groundwater

Groundwater was not investigated at SWMU 3.

### 5.1.3 Recommendations

The recommendation for SWMU 3 is to repair the level switches in the scum pits to prevent future overflows from the pits. No further action is recommended for soils due to the low concentrations of contaminants (Table 3.23) and the small source area.

## 5.2 SWMUS 4A-4G: FUELING-DEFUELING PITS INSIDE TOC-2

Based on the activities and results of the RFI, there are no sources of contamination associated with SWMUs 4A through 4G. Therefore, no further action is recommended.

## 5.3 SWMUS 4H AND 4I: FUELING-DEFUELING PITS NORTH OF APRON

### 5.3.1 Soil

The following volatile organics were detected in soil: ethylbenzene, toluene, and xylenes.

### 5.3.2 Groundwater

The following volatile organics were detected in groundwater: benzene, ethylbenzene, tetrachloroethylene, toluene, trichloroethene, and xylenes. All 6 of these compounds were detected at levels greater than the GPS. Naphthalene was the only semivolatile organic detected in groundwater, and no regulatory comparison criteria were identified for this compound. LNAPL was found in one temporary well located east of the defueling pits. The chromatogram of the LNAPL is a 99 percent match with a chromatogram from Delta's jet-A fuel stock.

### 5.3.3 Recommendations

The following measures are recommended:

- remove LNAPL located east of the defueling pits;
- conduct additional groundwater investigation in the area to determine the extent of contamination dissolved in groundwater; and
- perform a risk-based assessment after successful removal of LNAPL.

## 5.4 SWMU 4J: DEFUELING TANK

### 5.4.1 Soil

The following volatile organics were detected in soil: ethylbenzene, toluene, and xylenes.

### 5.4.2 Groundwater

Xylenes were detected in groundwater below the GPS.

### 5.4.3 Recommendations

No further action is recommended for this SWMU due to the low concentrations of constituents detected in soil and groundwater (see Tables 3.23 and 3.24).

## 5.5 SWMU 5: SETTLING POND

### 5.5.1 Soil

The following volatile organics were detected in soil/sludge residing below the water table: chlorobenzene, xylenes, 1,2-dichlorobenzene, and 1,4-dichlorobenzene. Chromium, lead, nickel, and cyanide were detected above 2 x the maximum background concentration.

### 5.5.2 Groundwater

The following volatile organics were detected in groundwater above the GPS: chlorobenzene, 1,1-dichloroethane, and vinyl chloride. Other volatile organics detected included chloroethane, 1,1-dichloroethene, 1,2-dichlorobenzene, and 1,4-dichlorobenzene - no GPS is listed for these compounds in Delta's permit. Chromium and lead were detected above the GPS. Nickel and cyanide were also detected but there is no GPS for these constituents.

### 5.5.3 Recommendations

The recommendation for SWMU 5 is to conduct further investigations to support a risk assessment and a corrective measures study.

## 5.6 SWMU 6: OLD PLATING SHOP FLOOR PITS

### 5.6.1 Soil

The Old Plating Shop was decommissioned in the fall of 1991 (see Section 2 of the RFI Work Plan for SWMUs 1 - 8). During the decommissioning, six borings were advanced through the shop floor to depths from 6 to 114 inches. Samples were analyzed for total cyanide and TCLP. Cyanide was detected in one borehole at 24.1 mg/kg and in a duplicate sample at 23.5 mg/kg. These levels are above 2 x the maximum background concentration determined during the RFI. The 2 x background value is 0.4 mg/kg. The results of all TCLP analyses were below the TCLP limits established in 40CFR261.

### 5.6.2 Groundwater

Water samples were collected from 2 of the boreholes. Cyanide was nondetect and all TCLP results were below TCLP limits in both boreholes.

### 5.6.3 Recommendations

The soil in which cyanide was detected lies below TOC-1. Direct contact with the soil or leaching to groundwater are therefore unlikely. No further action is recommended.

## 5.7 SWMU 7: BAY 5 EXTENSION FUEL LEAK

### 5.7.1 Soil

The following volatile organics were identified in soil at low levels (Table 3.23): ethylbenzene, toluene, and xylenes.

### 5.7.2 Groundwater

No constituents were detected in groundwater samples collected south and west of TOC-2. However, the presence of LNAPL (probably Jet-A fuel or diesel fuel) was confirmed in 4 recovery wells inside Bay 5 of TOC-2.

### 5.7.3 Recommendations

The following measures are recommended:

- perform air sampling inside TOC-2 to determine if the air pathway is complete;
- remove LNAPL from below Bay 5 using the existing recovery wells; and
- perform a risk assessment after removal of LNAPL and conduct a corrective measures study (or prepare a Corrective Action Plan) for the remaining petroleum hydrocarbons in soil and groundwater.

## 5.8 SWMU 8: EAST END FILL AREA

### 5.8.1 Soil

Chromium was the only inorganic constituent detected in soil above 2 x the maximum background concentration.

### 5.8.2 Groundwater

Chlorobenzene, chromium, and lead were detected in groundwater above the GPS. Cis-1,2-dichloroethene, nickel, and cyanide were also detected but there is no GPS for these constituents.

### 5.8.3 Recommendations

The recommendation for SWMU 8 is to conduct additional investigations to support a risk assessment, and, if necessary, a corrective measures study.

# Appendix A

# APPENDIX A
# PERMIT NUMBER HW-036 (S&T)-2, SECTION V

3. Wastes to be stored are limited to Waste Stream 1081 and those compatible with Waste Stream 1081. No wastes exhibiting the characteristic of corrosivity (EPA Waste Code D002) or reactivity (EPA Waste Code D003) are permitted to be stored at the Tank Storage Area.

## C. Design and Maintenance of Tanks

1. The Permittee shall maintain and operate all tanks as required by 40 CFR Subpart J, as amended, and specified by the plans and specifications in Section D of the permit application.

2. The Permittee shall maintain secondary containment that meets the requirements of 40 CFR Subpart J, as amended, for all tanks and ancillary equipment in hazardous waste service.

## SECTION V. CORRECTIVE ACTION FOR RELEASES FROM SOLID WASTE MANAGEMENT UNITS AND OTHER RELEASES

For the purposes of this permit, the need to conduct corrective action shall be determined for any releases into the environment of hazardous waste, hazardous waste constituents, or hazardous constituents, including releases beyond the Permittee's property boundary. Corrective action is required for any releases of hazardous waste, hazardous waste constituents, or hazardous constituents regardless of whether or not the releases were from a solid waste management unit.

## A. RCRA Facility Assessment (RFA) Investigation Plan

1. The conditions of this Section apply to the solid waste management units listed below, as identified in the "Information Regarding Potential Releases from Solid Waste Management Units" questionnaire dated September 26, 1986, and during the RCRA Facility Assessment (RFA) Investigation, and any additional solid waste management units (SWMUs) or areas of concern (AOCs) discovered during the course of future ground water monitoring, ongoing field investigations, environmental audits, or other means:

| Number | Description of SWMU |
|---|---|
| 1 | Underground Storage Tanks A, B, C, D, E, F. |
| 2 | Varsol Reclaim Tank |
| 3 | Wastewater treatment unit and appurtenances used in waste management |
| 4 | Fuel storage and defueling tanks adjacent to TOC-I, II, and III |
| 5 | Settling Pond |
| 6 | Old plating shop floor pits |
| 7 | Bay 5 extension fuel leak |
| 8 | East end fill area |

The following SWMUs previously identified have been investigated and no further remedial action is proposed under 40 CFR 264 Subpart F:

| Number | Description of SWMU |
|---|---|
| 9 | Ground Support Equipment Shop UST |
| 10 | Flight Kitchen UST |

The following AOCs will be subject to notification pursuant to Section V.A.2.(b) below if during any investigation it is determined that hazardous constituents not attributable to petroleum fuels have been released:

| Number | Description of AOC |
|---|---|
| 11 | All Remaining Underground Fuel Storage Tanks at the Delta Facility. |

2. The Permittee shall prepare a solid waste management unit assessment plan and proposed schedule for implementation and completion of the following:

   (a) Each solid waste management unit noted in Section V.A.1. for which an assessment plan has not yet been prepared which is known or suspected to have releases of hazardous waste, hazardous waste constituents, or hazardous constituents into the environment.

   (b) Any additional solid waste management units discovered subsequent to issuance of this permit which are known or suspected to have releases of hazardous waste, hazardous waste constituents, or hazardous constituents into the environment.

   (c) The Permittee shall notify the EPD of the discovery of any SWMU pursuant to Section V.A.2.(b) by telephone as soon as practicable after discovery, and in writing within fifteen (15) days of the date of discovery. This notification shall contain a brief description of the location of the suspected SWMU and the date and circumstances of its discovery.

3. The plans of Section V.A.2 shall include methods and specific actions as necessary to determine whether a prior or continuing release of hazardous waste, hazardous constituents or hazardous waste constituents has occurred at each solid waste management unit. The plan must also include, at a minimum, the following information for each unit:

   (a) Type of unit.
   (b) Location of each unit on a topographic map of appropriate scale.
   (c) General dimensions and capacities.
   (d) Function of unit.
   (e) Dates that the unit was operated.
   (f) Description of the wastes that were placed in the unit.
   (g) Description of any known releases or spills (to include ground water data, soil analyses, and surface water data).

4. The assessment plan shall be submitted within sixty (60) days of issuance of this permit for those solid waste management units covered under Section V.A.1. and V.A.2.(a), and shall be submitted within sixty (60) days of discovery for any solid waste management units under Section V.A.2.(b).

B. RCRA Facility Investigation (RFI)

1. The Permittee shall complete and submit an RFI plan for those units or releases referenced in Section V.A. not later than six (6) months after the effective date of this permit except that units referenced in Section V.A.2. shall submit an RFI Plan not later than ninety (90) days of EPD approval of the Solid Waste Management Unit Assessment Plan required in Section V.A.2. The plan shall include a schedule of implementation and a description of the specific actions necessary

to determine the nature and extent of releases identified by the RFA report and solid waste management units investigation report, including potential migration pathways for those releases (i.e. air, land, surface water, and ground water), actual or potential receptors and applicable background concentrations. The Permittee must provide sufficient justification that migration through a potential pathway is not likely if such pathway associated with a release is not included in the plan. Such deletions are subject to the approval of the Director.

2. Upon approval by the Director of plan(s) required by Sections V B.1., the Permittee shall conduct the RFI in accordance with the schedule contained in the approved plan.

3. The Permittee shall complete and submit an RFI report in accordance with the schedule contained in the plan required by Section V.B.1. The report shall provide a summary of all activities undertaken during the RFI to implement the approved plan. The report shall provide a complete description of the nature and extent of all releases identified during the RFI including sources, migration pathways, actual or potential receptors and applicable background concentrations. The RFI report shall address all releases which extend beyond the facility property boundary unless the Permittee demonstrates to the Director's satisfaction that, despite the Permittee's best efforts, the Permittee was unable to obtain permission to undertake actions required by the plan(s), or such action is not necessary to protect public health or the environment.

C. Corrective Action Plan: General

1. The Director shall review the RFI reports required by Section V.B.3, and upon determination that the report is complete notify the Permittee of the need for further investigative actions and/or the need for corrective action as required under §264.101(a).

2. Upon determination by the Director that corrective action is needed, the Permittee shall submit a corrective action plan in accordance with a schedule to be determined by the Director. The corrective action plan must include a description of the corrective measures to be taken with regard to those releases identified by the RFI Report required by Section V.B.1 and shall include, a schedule of implementation and completion, and a cost estimate for completion of corrective action.

3. Upon approval by the director of any plan required by Section V.C.1., the Permittee shall implement any required corrective action in accordance with the schedule in the approved plan.

D. Interim Measures

1. The Permittee may conduct interim measures to contain, remove of treat contamination resulting from the release of hazardous constituents from a SWMU or release in order to protect human health and the environment, upon approval by the Director. Such interim measures may be conducted concurrently with investigations required under the terms of this permit.

2. The Permittee shall notify the Director of any proposed interim measures at least thirty (30) days prior to implementation. The notice shall include a description and a schedule of implementation of any proposed interim measures.

3. The Permittee shall give notice to the Director as soon as possible of any planned changes, reduction or additions to the interim measures.

4. Incorporation of interim measures into the corrective action plan shall be done in accordance with Section V.C.2.

5. Upon completion of interim measures, the Permittee shall complete and submit an interim measures report. The report shall provide the following information:

   (a) A description of interim measures implemented:
   (b) A summary of all data or other information obtained during implementation of interim measures; and
   (c) A summary of the effectiveness of the interim measures in achieving the objective of Section V.D.1.

E. Schedules of Compliance

1. If the Permittee at any time determines that any plan or report required under Section V.A., B., C., D., or E. no longer satisfies the requirements of §264.101 or this permit for prior or continuing releases of hazardous waste, hazardous constituents or hazardous waste constituents he must submit an amended plan or report to the Director within ninety (90) days of such determination.

2. All plans and schedules shall be subject to approval by the Director prior to implementation. The Permittee shall revise all submittals as specified by the Director.

3. If the time required to complete any interim activity is more than one year, the schedule shall specify interim dates for the submission of reports of progress toward satisfaction of the interim requirements.

4. The results of all plans and reports shall be submitted in accordance with the approved schedule. Extensions of the due date for submittals may be granted by the Director based on the Permittee's demonstration that sufficient justification for the extension exists.

5. Upon approval by the Director all plans and schedules shall be enforceable as conditions of this permit.

## SECTION VI. CORRECTIVE ACTION PLAN AND GROUND WATER PROTECTION STANDARD FOR EXISTING SOLID WASTE MANAGEMENT UNITS

A. Purpose and Scope

1. The purpose of this Corrective Action Plan (CAP) and ground water protection standard is to:

   (a) Establish and maintain a hydraulic barrier to the movement of ground water to the Flint River;
   (b) Remove any free product constituents in contact with the water table surface; and

# Appendix B

# Appendix C

# APPENDIX C
# BORING LOGS AND WELL COMPLETION DIAGRAMS

# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

Client Delta Air Lines, Inc.
Site Hartsfield Airport
Boring I.D. FB-1
Geologist/Engineer B. Lewis
Drilling Method Direct Push
Sampling Method Split-Spoon
Date Started 2/10/97
Date Completed 2/10/97
Driller TEG
Borehole Diameter (in) 2.25"
Depth Drilled (ft) 8
Ground Elevation (ft) NA
Depth to Water (ft) NA
Date Measured NA

Project I.D. 730657
Well I.D. NA
Date Installed NA
Date Grouted NA
Casing Material NA
Screen Material NA
Casing Interval (ft) NA
Screened Interval (ft) NA
Sump Installed? NA
Well Depth (ft) NA
TOC Elevation (ft) NA
Water Level (ft) NA
Date Measured NA

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNU/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS | GRAPHIC LOG | WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| 0 | ■ | NA | 100 | NA | CLAY, with silt, red-brown, tight, dry, no odor | CL | | |
| | ☒ | NA | 100 | 45 | SILT, with partially weathered rock, orange/white/pink, dry, no odor | ML | | |
| | ☒ | NA | 90 | 45 | | | | |
| | ■ | NA | 90 | NA | Top 4" = SAME AS ABOVE. Bottom 6" = SILT, heavy mica, red with partially weathered rock, dry, no odor. | | | |
| | ■ | NA | 100 | NA | SAME AS ABOVE | | | |
| 5 | ☒ | NA | 100 | NA | SAME AS ABOVE | | | |
| | | | | | SAME AS ABOVE, except wet | | | |
| | ☒ | NA | 20 | NA | SAME AS ABOVE, except very wet -- very little recovery | | | |
| | | | | | BORING TERMINATED AT 8 FEET BGS | | | |
| 10 | | | | | | | | |
| 15 | | | | | | | | |
| 20 | | | | | | | | |
| 25 | | | | | | | | |
| 30 | | | | | | | | |

WRAP

# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

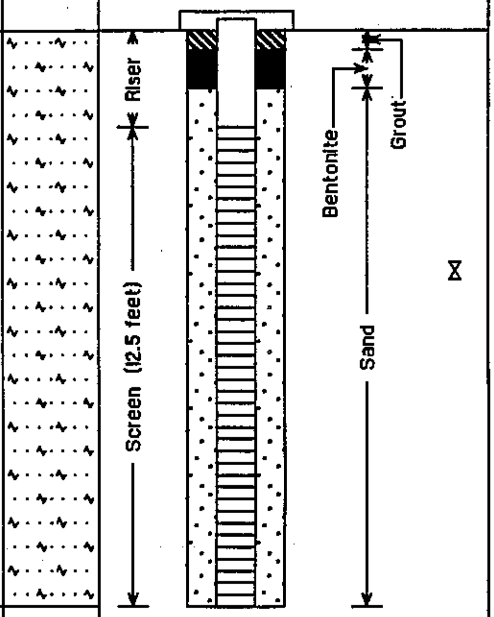
Client Delta Airlines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 4HI-3
Geologist/Engineer B. Lewis
Drilling Method 3-1/4 ID Hollow Stem Augers
Sampling Method Split-Spoon
Date Started 22-May-97
Date Completed 22-May-97
Driller Kilman Bros.
Borehole Diameter (in) 7
Depth Drilled (ft) 15
Ground Elevation (ft) NA
Depth to Water (ft) 6.45
Date Measured 28-May-97

Project I.D. 730657
Well I.D. MW-4HI-1
Date Installed 22-May-97
Date Grouted 29-May-97
Casing Material 2" PVC SCH 40
Screen Material 2" PVC SCH 40; 0.010 slot
Casing Interval (ft) 0-2.5
Screened Interval (ft) 2.5-15
Sump Installed? No
Well Depth (ft) 15
TOC Elevation (ft) 952.53
Water Level (ft) 946.08
Date Measured 28-May-97

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS |
|---|---|---|---|---|---|---|
| 0 | | | | | | ML |
| | ☒ | NA | 100 | 22.5 | CLAY/SILT, red-brown, micaceous, dry | |
| 5 | ■<br>☒ | 2,2<br>2,2 | 100 | 32.1 | SILT/CLAY, brow-red, micaceous, water at approximately 5' | |
| 10 | ☒ | 2,1,<br>1,2 | 80 | 26.2 | SAME, with remnant foliation - pink to white bands, wet | |
| | | | | | SAME AS ABOVE | |
| 15 | ☒ | 1,1,<br>2,2 | 80 | 21.1 | | |
| | | | | | BORING TERMINATED AT 15 FEET BGS | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |

GRAPHIC LOG

WELL DIAGRAM



WRAP

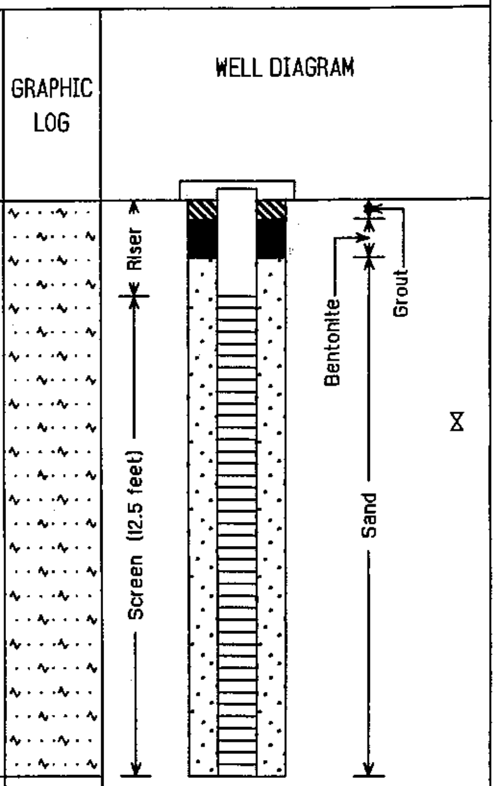
# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

Client Delta Airlines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 4HI-5
Geologist/Engineer B. Lewis
Drilling Method 3-1/4 ID Hollow Stem Augers
Sampling Method Split-Spoon
Date Started 22-May-97
Date Completed 22-May-97
Driller Kilman Bros.
Borehole Diameter (in) 7
Depth Drilled (ft) 15
Ground Elevation (ft) NA
Depth to Water (ft) 6.04
Date Measured 28-May-97

Project I.D. 730657
Well I.D. MW-4HI-2
Date Installed 22-May-97
Date Grouted 29-May-97
Casing Material 2" PVC SCH 40
Screen Material 2" PVC SCH 40; 0.010 slot
Casing Interval (ft) 0-2.5
Screened Interval (ft) 2.5-15
Sump Installed? No
Well Depth (ft) 15
TOC Elevation (ft) 952.33
Water Level (ft) 946.29
Date Measured 28-May-97

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS |
|---|---|---|---|---|---|---|
| 0 | | | | | | ML |
| | ☒ | 3,4,<br>4,5 | 100 | 3.5 | SILT/CLAY, micaceous, dry, | |
| 5 | ■<br>☒ | 3,3<br>3,3 | 100 | 4.1 | SAME, with remnant foliation, wet between 5-6' | |
| 10 | ☒ | 2,2,<br>2,2 | 80 | NA | SAME, except wet | |
| | | | | | CLAY/SILT, red-brown to gray-brown, heavy mica, wet | |
| 15 | ☒ | 1,1,<br>1,1 | 40 | NA | | |
| | | | | | BORING TERMINATED AT 15 FEET BGS | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |



WRAP

# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

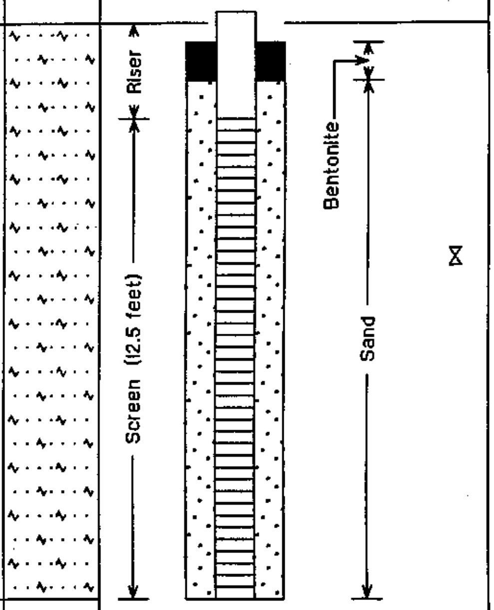
Client Delta Airlines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 4HI-4
Geologist/Engineer B. Lewis
Drilling Method 3-1/4 ID Hollow Stem Augers
Sampling Method Split-Spoon
Date Started 22-May-97
Date Completed 22-May-97
Driller Kilman Bros.
Borehole Diameter (in) 7
Depth Drilled (ft) 15
Ground Elevation (ft) NA
Depth to Water (ft) 6.30
Date Measured 28-May-97

Project I.D. 730657
Well I.D. TW-4HI-A
Date Installed 22-May-97
Date Grouted NA
Casing Material 2" PVC SCH 40
Screen Material 2" PVC SCH 40; 0.010 slot
Casing Interval (ft) 0-2.5
Screened Interval (ft) 2.5-15
Sump Installed? No
Well Depth (ft) 15
TOC Elevation (ft) 952.57
Water Level (ft) 946.27
Date Measured 28-May-97

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS |
|---|---|---|---|---|---|---|
| 0 | | | | | | ML |
| | | 2,2,<br>5,6 | 100 | 9.6 | SILT/CLAY, red-brown, micaceous, dry | |
| 5 | | 4,2<br>2,1 | 90 | 8.2 | SAME, except 4.5-5 feet is wet | |
| 10 | | 3,2,<br>2,1 | 80 | NA | SAME, with remnant foliation, wet | |
| | | | | | SAME, trending to brown-gray with heavy mica | |
| 15 | | 1,1,<br>2,2 | 80 | NA | | |
| | | | | | BORING TERMINATED AT 15 FEET BGS | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |

GRAPHIC LOG

WELL DIAGRAM



WRAP

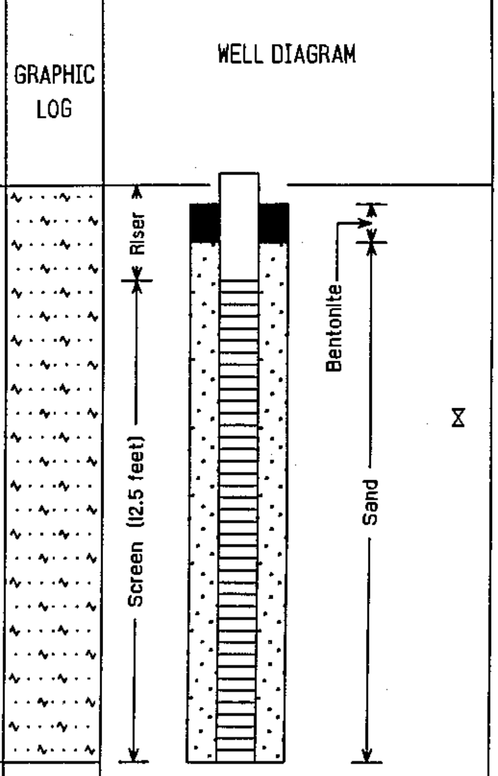
# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

Client Delta Airlines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 4HI-6
Geologist/Engineer B. Lewis
Drilling Method 3-1/4 ID Hollow Stem Augers
Sampling Method Split-Spoon
Date Started 22-May-97
Date Completed 22-May-97
Driller Kilman Bros.
Borehole Diameter (in) 7
Depth Drilled (ft) 15
Ground Elevation (ft) NA
Depth to Water (ft) 6.26
Date Measured 28-May-97

Project I.D. 730657
Well I.D. TW-4HI-B
Date Installed 22-May-97
Date Grouted NA
Casing Material 2" PVC SCH 40
Screen Material 2" PVC SCH 40; 0.010 slot
Casing Interval (ft) 0-2.5
Screened Interval (ft) 2.5-15
Sump Installed? No
Well Depth (ft) 15
TOC Elevation (ft) 952.36
Water Level (ft) 946.10
Date Measured 28-May-97

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS |
|---|---|---|---|---|---|---|
| 0 | | | | | | ML |
| | ☒ | 2,1,<br>2,1 | 90 | 0.2 | SILT/CLAY, red-brown, micaceous, dry, | |
| 5 | ■<br>☒ | 3,3<br>2,1 | 50 | 4.2 | SAME, except 4.5-5 feet is moist to wet | |
| 10 | ☒ | 1,1,<br>1,1 | 50 | NA | SILT/CLAY, gray-brown with white bands, wet | |
| | | | | | SAME | |
| 15 | ☒ | NA | 80 | NA | | |
| | | | | | BORING TERMINATED AT 15 FEET BGS | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |



WRAP

# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

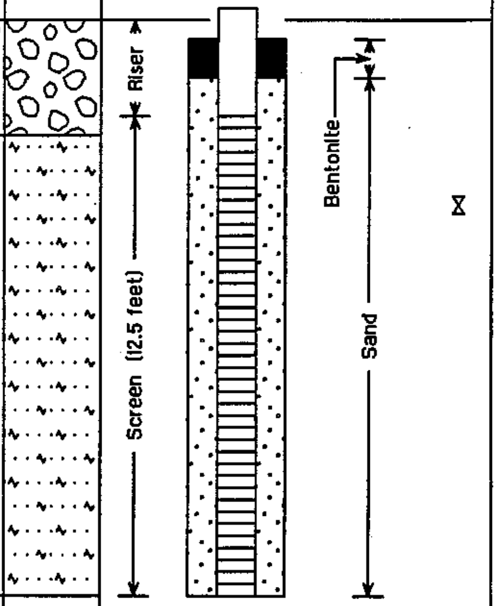
Client Delta Airlines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 4HI-7
Geologist/Engineer B. Lewis
Drilling Method 3-1/4 ID Hollow Stem Augers
Sampling Method Split-Spoon
Date Started 22-May-97
Date Completed 22-May-97
Driller Kilman Bros.
Borehole Diameter (in) 7
Depth Drilled (ft) 15
Ground Elevation (ft) NA
Depth to Water (ft) 5.03
Date Measured 28-May-97

Project I.D. 730657
Well I.D. TW-4HI-C
Date Installed 22-May-97
Date Grouted NA
Casing Material 2" PVC SCH 40
Screen Material 2" PVC SCH 40; 0.010 slot
Casing Interval (ft) 0-2.5
Screened Interval (ft) 2.5-15
Sump Installed? No
Well Depth (ft) 15
TOC Elevation (ft) 952.32
Water Level (ft) 947.29
Date Measured 28-May-97

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS |
|---|---|---|---|---|---|---|
| 0 | | | | | Not able to drive split spoon due to large gravel in subsurface | GW |
| | ■ | 3,2<br>1,1 | 30 | 1.6 | SILT/CLAY, pink-red, mica, moist to wet at 5' | ML |
| 5 | | | | | | |
| | ☒ | 3,2,<br>2,3 | 80 | NA | SILT/CLAY, orange and brown with remnant foliation, trending to pink-red and brown, mica, wet | |
| 10 | | | | | | |
| | ☒ | 2,2,<br>2,3 | 0 | NA | NO RECOVERY | |
| 15 | | | | | BORING TERMINATED AT 15 FEET BGS | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |

GRAPHIC LOG

WELL DIAGRAM



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# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

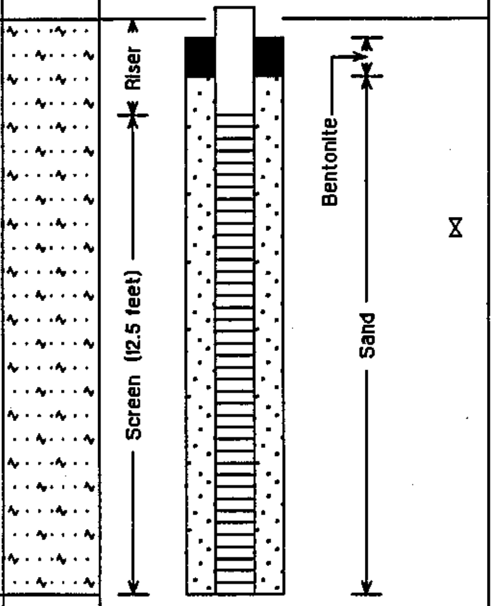
Client Delta Airlines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 4HI-8
Geologist/Engineer B. Lewis
Drilling Method 3-1/4 ID Hollow Stem Augers
Sampling Method Split-Spoon
Date Started 22-May-97
Date Completed 22-May-97
Driller Kilman Bros.
Borehole Diameter (in) 7
Depth Drilled (ft) 15
Ground Elevation (ft) NA
Depth to Water (ft) 5.66
Date Measured 28-May-97

Project I.D. 730657
Well I.D. TW-4HI-D
Date Installed 22-May-97
Date Grouted NA
Casing Material 2" PVC SCH 40
Screen Material 2" PVC SCH 40; 0.010 slot
Casing Interval (ft) 0-2.5
Screened Interval (ft) 2.5-15
Sump Installed? No
Well Depth (ft) 15
TOC Elevation (ft) 952.32
Water Level (ft) 946.66
Date Measured 28-May-97

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS |
|---|---|---|---|---|---|---|
| 0 | | | | | | ML |
| | | 4,4,<br>4,4 | 100 | 2.9 | SILT/CLAY, red-pink and brown, micaceous, dry, tight | |
| | | 3,5<br>6,3 | 0 | NA | NO RECOVERY | |
| 5 | | | | | | |
| | | 5,2,<br>2,4 | 50 | NA | SAME, with strong foliation, banded red-pink and black, wet | |
| 10 | | | | | | |
| | | 2,2,<br>3,4 | 80 | NA | SAME, foliations range from orange to black to white, wet | |
| 15 | | | | | BORING TERMINATED AT 15 FEET BGS | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |

GRAPHIC LOG

WELL DIAGRAM



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# PARSONS ENGINEERING SCIENCE

## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

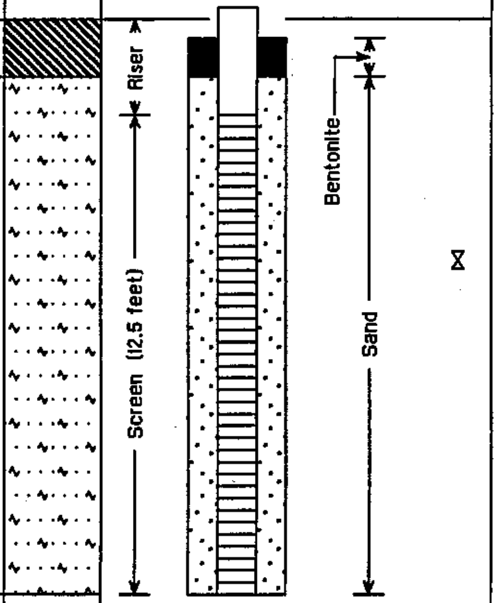
Client Delta Airlines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 4HI-9
Geologist/Engineer B. Lewis
Drilling Method 3-1/4 ID Hollow Stem Augers
Sampling Method Split-Spoon
Date Started 22-May-97
Date Completed 22-May-97
Driller Kilman Bros.
Borehole Diameter (in) 7
Depth Drilled (ft) 15
Ground Elevation (ft) NA
Depth to Water (ft) 6.52
Date Measured 28-May-97

Project I.D. 730657
Well I.D. TW-4HI-E
Date Installed 22-May-97
Date Grouted NA
Casing Material 2" PVC SCH 40
Screen Material 2" PVC SCH 40; 0.010 slot
Casing Interval (ft) 0-2.5
Screened Interval (ft) 2.5-15
Sump Installed? No
Well Depth (ft) 15
TOC Elevation (ft) 952.10
Water Level (ft) 945.58
Date Measured 28-May-97

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS |
|---|---|---|---|---|---|---|
| 0 | | | | | Top 16" are concrete | |
| | ■ | 12,11,<br>3,6 | 75 | 2.7 | Top 1' = GRAVEL/SILT/CLAY, gray, from concrete. Bottom 6" = SILT/CLAY, yellow-brown, micaceous, dry. | ML |
| | ☒ | 22,8<br>6,4 | 0 | NA | NO RECOVERY | |
| 5 | | | | | | |
| | ☒ | 2,1,<br>2,1 | 30 | NA | SILT/CLAY, pink, white, and brown specks throughout, wet | |
| 10 | | | | | | |
| | ☒ | 1,2,<br>1,2 | 90 | NA | SAME, brown foliations throughout, wet | |
| 15 | | | | | BORING TERMINATED AT 15 FEET BGS | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |

GRAPHIC LOG

WELL DIAGRAM



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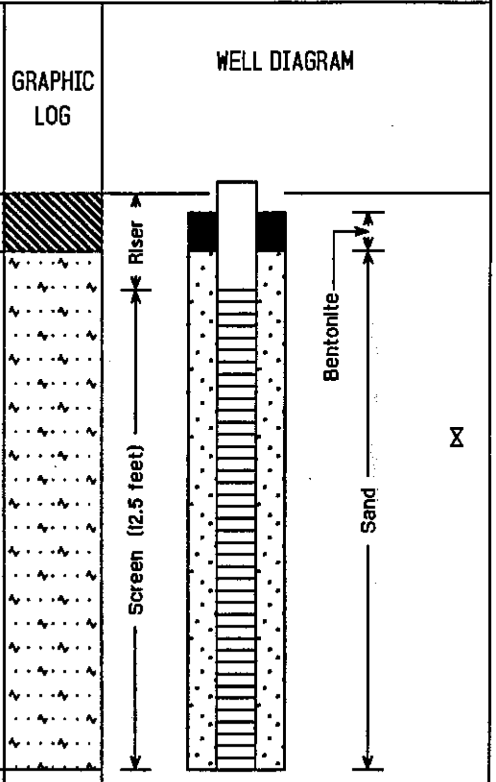
# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

Client Delta Airlines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 4HI-10
Geologist/Engineer B. Lewis
Drilling Method 3-1/4 ID Hollow Stem Augers
Sampling Method Split-Spoon
Date Started 22-May-97
Date Completed 22-May-97
Driller Kilman Bros.
Borehole Diameter (in) 7
Depth Drilled (ft) 15
Ground Elevation (ft) NA
Depth to Water (ft) 6.54
Date Measured 28-May-97

Project I.D. 730657
Well I.D. TW-4HI-F
Date Installed 22-May-97
Date Grouted NA
Casing Material 2" PVC SCH 40
Screen Material 2" PVC SCH 40; 0.010 slot
Casing Interval (ft) 0-2.5
Screened Interval (ft) 2.5-15
Sump Installed? No
Well Depth (ft) 15
TOC Elevation (ft) 952.47
Water Level (ft) 945.93
Date Measured 28-May-97

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS |
|---|---|---|---|---|---|---|
| 0 | | | | | | |
| | | | | | Top 16" are concrete | |
| | ■ | 22,18<br>10,8 | 40 | 2.9 | Top 1' = GRAVEL/SILT/CLAY, gray, from concrete<br>Bottom 6" = SILT/CLAY, yellow-brown, micaceous, dry | ML |
| | ☒ | 10,4<br>3,3 | 0 | NA | NO RECOVERY | |
| 5 | | | | | | |
| | ☒ | 3,1,<br>2,1 | 100 | NA | CLAY/SILT, yellow, pink and white bands, mica, wet | |
| 10 | | | | | | |
| | ☒ | 1,2,<br>2,3 | 80 | NA | SAME, trending to all brown, wet | |
| 15 | | | | | | |
| | | | | | BORING TERMINATED AT 15 FEET BGS | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |



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# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

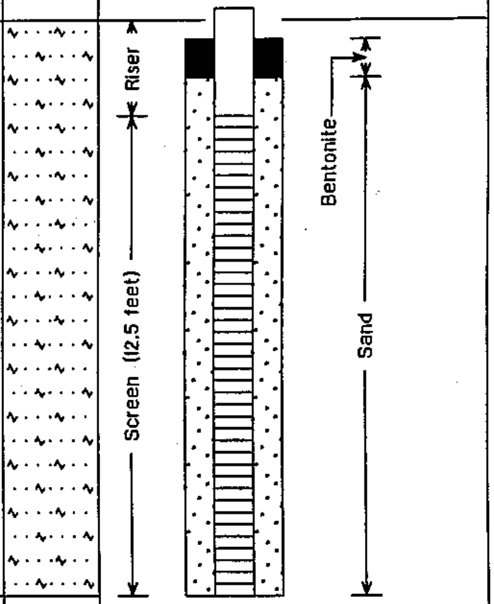
Client Delta Airlines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 4HI-11
Geologist/Engineer B. Lewis
Drilling Method 3-1/4 ID Hollow Stem Augers
Sampling Method Split-Spoon
Date Started 22-May-97
Date Completed 22-May-97
Driller Kilman Bros.
Borehole Diameter (in) 7
Depth Drilled (ft) 15
Ground Elevation (ft) NA
Depth to Water (ft) 6.96 DTP=6.33
Date Measured 28-May-97

Project I.D. 730657
Well I.D. TW-4HI-G
Date Installed 22-May-97
Date Grouted NA
Casing Material 2" PVC SCH 40
Screen Material 2" PVC SCH 40; 0.010 slot
Casing Interval (ft) 0-2.5
Screened Interval (ft) 2.5-15
Sump Installed? No
Well Depth (ft) 15
TOC Elevation (ft) 952.63
Water Level (ft) 946.71 (corrected for LNAPL)
Date Measured 28-May-97

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS |
|---|---|---|---|---|---|---|
| 0 | | | | | | ML |
| | ■ | 6,4,<br>4,5 | 80 | 65.7 | SILT/CLAY, red-brown bands, micaceous, dry, hydrocarbon odor | |
| | ☒ | 4,2<br>1,1 | 10 | 1.7 | SAME, however, low recovery and low PID reading may indicate that the sample is not representative of this depth | |
| 5 | | | | | | |
| | ☒ | 1,1,<br>2,2 | 80 | NA | SILT/CLAY, banded yellow to black, heavy mica, wet, strong odor | |
| 10 | | | | | | |
| | ☒ | 1,1,<br>2,1 | 5 | NA | SAME AS ABOVE | |
| 15 | | | | | BORING TERMINATED AT 15 FEET BGS | |
| 20 | | | | | | |
| 25 | | | | | | |
| 30 | | | | | | |

GRAPHIC LOG

WELL DIAGRAM



WRAP

# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

Client Delta Air Lines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 4J-1
Geologist/Engineer B. Lewis
Drilling Method Direct Push
Sampling Method Split-Spoon
Date Started 2/13/97
Date Completed 2/13/97
Driller TEG
Borehole Diameter (in) 2.25"
Depth Drilled (ft) 14
Ground Elevation (ft) NA
Depth to Water (ft) NA
Date Measured NA

Project I.D. 730657
Well I.D. NA
Date Installed NA
Date Grouted NA
Casing Material NA
Screen Material NA
Casing Interval (ft) NA
Screened Interval (ft) NA
Sump Installed? NA
Well Depth (ft) NA
TOC Elevation (ft) NA
Water Level (ft) NA
Date Measured NA

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS | GRAPHIC LOG | WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | ML | | |
| 5 | | | | | | | | |
| | | NA | 100 | 55 | Top half = SILT/CLAY mixture, red to brown, micaceous, tight, dry. Bottom half = SILT/CLAY mixture, brown with blue and gray bands, mica, dry. | | | |
| 10 | | NA | 40 | 15 | SAME, with layer of granite gravel, slight odor?, moist to wet | | | |
| | | NA | 80 | 4.0 | SAME, except wet | | | |
| 15 | | | | | BORING TERMINATED AT 14 FEET BGS | | | |
| 20 | | | | | | | | |
| 25 | | | | | | | | |
| 30 | | | | | | | | |

WRAP

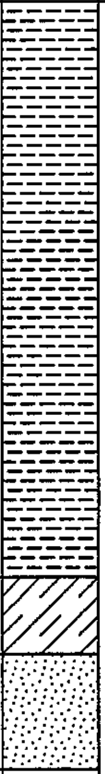
# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

Client Delta Air Lines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 5-1
Geologist/Engineer B. Lewis
Drilling Method Direct Push
Sampling Method Split-Spoon
Date Started 2/13/97
Date Completed 2/13/97
Driller TEG
Borehole Diameter (in) 2.25"
Depth Drilled (ft) 20
Ground Elevation (ft) NA
Depth to Water (ft) NA
Date Measured NA

Project I.D. 730657
Well I.D. NA
Date Installed NA
Date Grouted NA
Casing Material NA
Screen Material NA
Casing Interval (ft) NA
Screened Interval (ft) NA
Sump Installed? NA
Well Depth (ft) NA
TOC Elevation (ft) NA
Water Level (ft) NA
Date Measured NA

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS | GRAPHIC LOG | WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | CL | | |
| 5 | | | | | | | | |
| | ☒ | NA | 60 | 0.8 | Top 1" = CLAY/SILT mixture, red, mica, tight, dry. Bottom = CLAY/SILT mixture, brown, micaceous, dry, slight odor. | | | |
| 10 | ☒ | NA | 5 | 0.2 | SAME AS ABOVE, very little recovery | | | |
| | ☒ | NA | 0 | NA | NO RECOVERY | | | |
| 15 | ☒ | NA | 75 | 4.5 | Top 1.5' = CLAY/SILT mixture, brown, micaceous, wet. Bottom 2" = CLAY, fine, black, strong odor, sludge from settling pond, wet. | OH | | |
| | ■<br>☒ | NA | 100 | 200 | Top half = SAME AS ABOVE. Bottom half = SAND, gray, stong odor, wet. | SP | | |
| | ■ | NA | 60 | NA | SAME AS ABOVE, trending to silt in top foot, then intermingled sand and silt. | | | |
| 20 | | | | | BORING TERMINATED AT 20 FEET BGS | | | |
| 25 | | | | | | | | |
| 30 | | | | | | | | |



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# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

Client Delta Air Lines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 5-3
Geologist/Engineer B. Lewis
Drilling Method Direct Push
Sampling Method Split-Spoon
Date Started 2/13/97
Date Completed 2/13/97
Driller TEG
Borehole Diameter (in) 2.25"
Depth Drilled (ft) 22
Ground Elevation (ft) NA
Depth to Water (ft) NA
Date Measured NA

Project I.D. 730657
Well I.D. NA
Date Installed NA
Date Grouted NA
Casing Material NA
Screen Material NA
Casing Interval (ft) NA
Screened Interval (ft) NA
Sump Installed? NA
Well Depth (ft) NA
TOC Elevation (ft) NA
Water Level (ft) NA
Date Measured NA

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS | GRAPHIC LOG | WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | ML | | |
| 5 | | | | | | | | |
| | ☒ | NA | 100 | 0.2 | SILT/CLAY mixture, trends from red to blue-gray to gray-brown, mica, tight, dry, no odor | | | |
| | ☒ | NA | 80 | 0.2 | Top 12" = SILT/CLAY, with gravel, red to brown. Next 1" = sandstone pieces, friable. Bottom 6" = CLAY, brown with organics (roots), moist. | | | |
| 10 | ☒ | NA | 80 | 0.0 | CLAY/SILT mixture, brown-gray with red bands, micaceous, moist to wet, no odor. | | | |
| | ☒ | NA | 50 | 2.5 | Top 2" = CLAY/SILT matrix with asphalt pieces. Bottom 10" = CLAY, with silt, brown to red to blue-gray, no odor, wet. | | | |
| 15 | ☒ | NA | 5 | NA | Little recovery, GRAVEL, black w/ black clay, strong odor, wet | OH | | |
| | ☒ | NA | 60 | 150 | CLAY, fine, black, wet, sludge from settling pond | | | |
| | ■ ☒ | NA | 90 | NA | Top 12" = SAME AS ABOVE. Bottom 6" = SILT/CLAY mixture, yellow to orange, strong odor, wet, tight. | ML | | |
| 20 | ☒ ■ | NA | 100 | 2.8 | CLAY, with silt, orange to yellow with white and red clumps, wet, tight, slight to no odor | | | |
| | | | | | BORING TERMINATED AT 22 FEET BGS | | | |
| 25 | | | | | | | | |
| 30 | | | | | | | | |

WRAP

# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

Client Delta Air Lines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 5-4
Geologist/Engineer B. Lewis
Drilling Method Direct Push
Sampling Method Split-Spoon
Date Started 2/14/97
Date Completed 2/14/97
Driller TEG
Borehole Diameter (in) 2.25"
Depth Drilled (ft) 22
Ground Elevation (ft) NA
Depth to Water (ft) NA
Date Measured NA

Project I.D. 730657
Well I.D. NA
Date Installed NA
Date Grouted NA
Casing Material NA
Screen Material NA
Casing Interval (ft) NA
Screened Interval (ft) NA
Sump Installed? NA
Well Depth (ft) NA
TOC Elevation (ft) NA
Water Level (ft) NA
Date Measured NA

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS | GRAPHIC LOG | WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | CL | ▤ | |
| 5 | | | | | | | ▤ | |
| | ☒ | NA | 60 | 1.4 | CLAY/SILT mixture, red to brown, mica, tight, dry, no odor | | ▤ | |
| | ☒ | NA | 80 | 45 | Top half = SAME AS ABOVE. Bottom half = CLAY, black, strong odor, dry, sludge from settling pond. | OH | ▨ | |
| 10 | ☒ | NA | 75 | 120 | SAME AS ABOVE, except moist | | ▨ | |
| | ☒ | NA | 80 | 130 | SAME AS ABOVE, except wet | | ▨ | |
| 15 | ☒ | NA | 80 | NA | Top half = SAME AS ABOVE. Bottom half = SAND, gray to brown, strong odor, wet. | SW | ⠿ | |
| | ☒ | NA | 75 | NA | SAME AS ABOVE | | ⠿ | |
| | ☒ | NA | 30 | NA | Top 6" = SAME AS ABOVE. Bottom 2" = CLAY/SILT mixture, gray to green to brown, heavy mica, wet, slight odor. | CL | ▤ | |
| 20 | ■ | NA | 90 | 4.8 | SAME AS ABOVE | | ▤ | |
| | | | | | BORING TERMINATED AT 22 FEET BGS | | | |
| 25 | | | | | | | | |
| 30 | | | | | | | | |

WRAP

# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

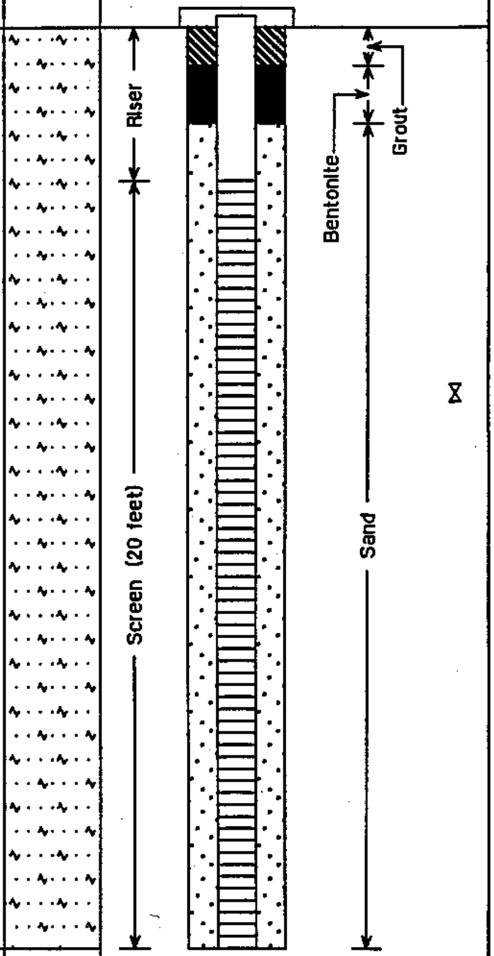
Client Delta Airlines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 7-SB1
Geologist/Engineer B. Lewis
Drilling Method 3-1/4 ID Hollow Stem Augers
Sampling Method Split-Spoon
Date Started 29-May-97
Date Completed 29-May-97
Driller Kilman Bros.
Borehole Diameter (in) 7
Depth Drilled (ft) 24
Ground Elevation (ft) NA
Depth to Water (ft) 9.75
Date Measured 5/30/97

Project I.D. 730657
Well I.D. MW-7-1
Date Installed 29-May-97
Date Grouted 29-May-97
Casing Material 2" PVC SCH 40
Screen Material 2" PVC SCH 40; 0.010 slot
Casing Interval (ft) 0-4
Screened Interval (ft) 4-24
Sump Installed? No
Well Depth (ft) 24
TOC Elevation (ft) NA
Water Level (ft) NA
Date Measured NA

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS |
|---|---|---|---|---|---|---|
| 0 | | | | | | ML |
| 5 | ☒ | 2,2,<br>2,1 | 100 | NA | Bentonite backfill from Strataprobe point SWMU 7-2 | |
| 10 | ■ | 8,8<br>3,4 | 50 | 0.0 | SILT/CLAY, gray-brown, heavy mica, dry | |
| 15 | ☒ | 2,50+ | 30 | NA | Top 4" = SAME except moist to wet. Bottom 4" = SILT, with sand white-tan, micaceous, dry. | |
| 20 | ☒ | 4,15<br>50+ | 50 | NA | Top 4" = SAME except wet. Next 2" = SILT, with sand, white, very tight (saprolite). Bottom 6" = Silt, orange-brown, mica, tight, wet. | |
| 25 | | | | | BORING TERMINATED AT 24 FEET BGS | |
| 30 | | | | | | |

GRAPHIC LOG

WELL DIAGRAM



WRAP

# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

Client Delta Air Lines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 7-1
Geologist/Engineer B. Lewis
Drilling Method Direct Push
Sampling Method Split-Spoon
Date Started 2/12/97
Date Completed 2/12/97
Driller TEG
Borehole Diameter (in) 2.25"
Depth Drilled (ft) 14
Ground Elevation (ft) NA
Depth to Water (ft) NA
Date Measured NA

Project I.D. 730657
Well I.D. NA
Date Installed NA
Date Grouted NA
Casing Material NA
Screen Material NA
Casing Interval (ft) NA
Screened Interval (ft) NA
Sump Installed? NA
Well Depth (ft) NA
TOC Elevation (ft) NA
Water Level (ft) NA
Date Measured NA

| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS | GRAPHIC LOG | WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | ML | | |
| 5 | | NA | 75 | 0.8 | SILT/CLAY mixture, brown to gray, heavy mica, moist, no odor | | | |
| | | NA | 40 | 0.8 | SAME AS ABOVE | | | |
| | | NA | 100 | 0.8 | SAME AS ABOVE, moist to wet | | | |
| 10 | | NA | 90 | NA | SAME AS ABOVE, with some light brown bands from 11 to 12' BGS, wet | | | |
| | | NA | 100 | NA | SAME AS ABOVE | | | |
| 15 | | | | | BORING TERMINATED AT 14 FEET BGS | | | |
| 20 | | | | | | | | |
| 25 | | | | | | | | |
| 30 | | | | | | | | |

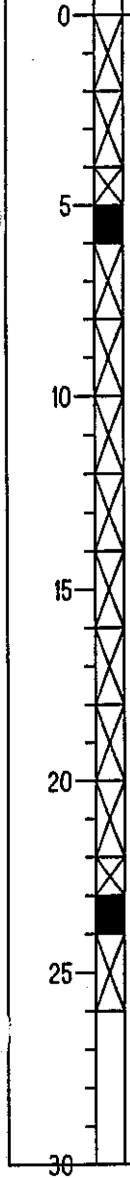
WRAP

# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

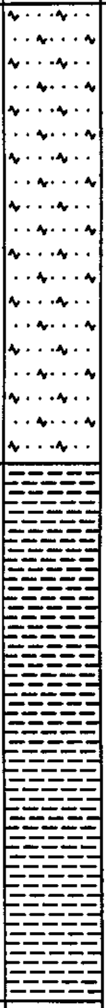
Page 1 of 1

Client Delta Air Lines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 8-1
Geologist/Engineer B. Lewis
Drilling Method Direct Push
Sampling Method Split-Spoon
Date Started 2/10/97
Date Completed 2/10/97
Driller TEG
Borehole Diameter (in) 2.25"
Depth Drilled (ft) 26
Ground Elevation (ft) NA
Depth to Water (ft) NA
Date Measured NA

Project I.D. 730657
Well I.D. NA
Date Installed NA
Date Grouted NA
Casing Material NA
Screen Material NA
Casing Interval (ft) NA
Screened Interval (ft) NA
Sump Installed? NA
Well Depth (ft) NA
TOC Elevation (ft) NA
Water Level (ft) NA
Date Measured NA



| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS | GRAPHIC LOG | WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| 0 | | NA | 50 | NA | CLAY/SILT mixture, red-brown, micaceous, with black dots, dry, no odor | ML | | |
| | | NA | 90 | NA | Top 2" = SAME AS ABOVE. Next 1" = SAND, with gravel, gray, dry. Bottom = SAME AS 0-2'. | | | |
| 5 | | NA | 80 | NA | Top half= SAME AS ABOVE. Bottom half = SAME, except color change to red with visible banding, no odor. | | | |
| | | NA | 50 | NA | Top 3/4 = SAME AS 0-2'. Bottom 1/4 = CLAY/SILT mixture, red, dry, micaceous, tight. | | | |
| | | NA | 100 | NA | CLAY, with silt and partailly weathered rock, red-brown, micaceous, dry, tight, no odor, banding apparent | | | |
| 10 | | NA | 75 | NA | SILT, with large gravel, banded red to brown, micaceous, tight, dry, no odor | | | |
| | | NA | 100 | NA | SAME AS ABOVE, trending to clay | CL | | |
| 15 | | NA | 100 | NA | CLAY, with silt, red to brown, micaceous, moist, tight, no odor. | | | |
| | | NA | 100 | NA | SAME AS ABOVE | | | |
| | | NA | 100 | NA | SAME AS ABOVE | | | |
| 20 | | NA | 100 | NA | Top 1/4 = SAME AS ABOVE. Bottom 3/4 = CLAY, with silt, brown, organic smell, plant fiber and blackened wood chips apparent, moist | | | |
| | | NA | 100 | NA | Top 2" = SAME AS ABOVE. Bottom = CLAY, with silt, red, some mica, moist. | | | |
| 25 | | NA | 100 | NA | Top 1' = CLAY with silt, blue/gray, tight, moist. Bottom 1' = Clay, with some silt, red, micaceous, tight, moist to wet. | | | |
| | | | | | BORING TERMINATED AT 26 FEET BGS | | | |
| 30 | | | | | | | | |



WRAP

# PARSONS ENGINEERING SCIENCE
## SOIL BORING LOG AND PIEZOMETER CONSTRUCTION RECORD

Page 1 of 1

Client Delta Air Lines, Inc.
Site Hartsfield Airport
Boring I.D. SWMU 8-2
Geologist/Engineer B. Lewis
Drilling Method Direct Push
Sampling Method Split-Spoon
Date Started 2/11/97
Date Completed 2/11/97
Driller TEG
Borehole Diameter (in) 2.25"
Depth Drilled (ft) 28
Ground Elevation (ft) NA
Depth to Water (ft) NA
Date Measured NA

Project I.D. 730657
Well I.D. NA
Date Installed NA
Date Grouted NA
Casing Material NA
Screen Material NA
Casing Interval (ft) NA
Screened Interval (ft) NA
Sump Installed? NA
Well Depth (ft) NA
TOC Elevation (ft) NA
Water Level (ft) NA
Date Measured NA

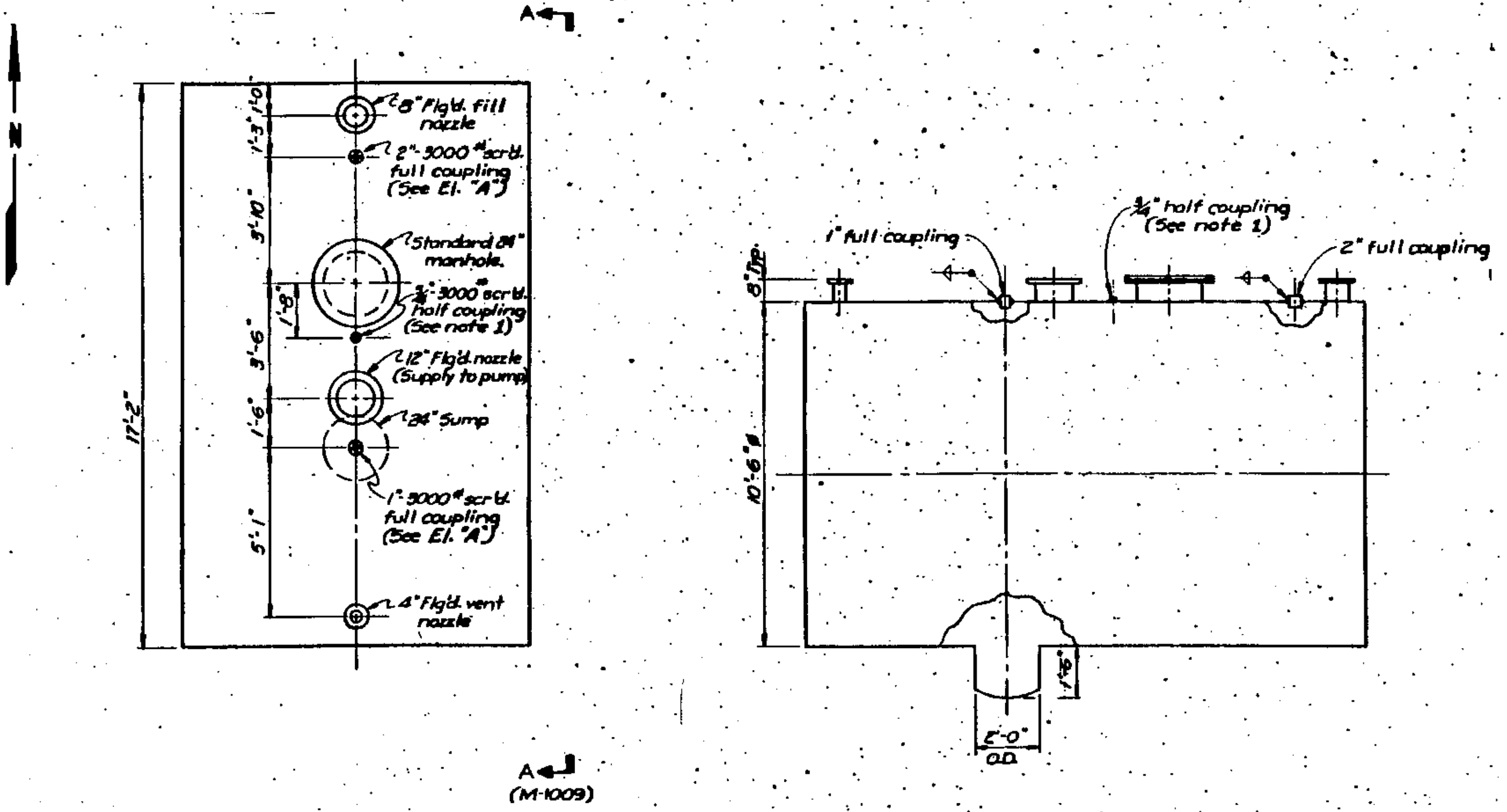
| DEPTH (feet) | SAMPLE | BLOWS/6 IN | % REC. | HNu/OVA (ppm) | LITHOLOGIC DESCRIPTION | SOIL CLASS | GRAPHIC LOG | WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| 0 | ☒ | NA | 60 | 16 | CLAY/SILT mixture, red to brown, micaceous, dry, no odor | CL | | |
| | ☒ | NA | 60 | 220 | CLAY, black, strong odor, potentially sludge from SWMU 5 settling pond | OH | | |
| 5 | ☒ | NA | 100 | 180 | SAME AS ABOVE, with red and brown bands | | | |
| | ☒ | NA | 100 | 22 | Top 6" = SAME AS ABOVE. Bottom 1.5' = CLAY/SILT mixture, red to brown, micaceous, dry tight. | CL | | |
| | ■<br>☒ | NA | 60 | 11 | SAME AS ABOVE | | | |
| 10 | ☒ | NA | 75 | 9 | SAME AS ABOVE, with yellow and pink bands | | | |
| 15 | | | | | | | | |
| 20 | ☒ | NA | 100 | 0.0 | CLAY/SILT mixture, red to brown, micaceous, tight, moist. Bottom 1" = CLAY, brown with organics, roots apparent. | | | |
| | ☒ | NA | 80 | 0.0 | CLAY/SILT mixture, red, micaceous, some organic layers, moist | | | |
| 25 | ☒<br>■ | NA | 40 | 0.8 | CLAY, blue/gray, micaceous, layer of quartz gravel tight, moist, no odor | | | |
| | ☒ | NA | 100 | 0.2 | SAME AS ABOVE, trending to red to orange, soft, moist to wet | | | |
| 30 | | | | | BORING TERMINATED AT 28 FEET BGS | | | |

WRAP

# Appendix D

# APPENDIX D
# DEFUELING TANK DETAILS AND PIPING (SWMU 4J)

# DEFUELING TANK STRUCTURAL DETAIL



PLAN

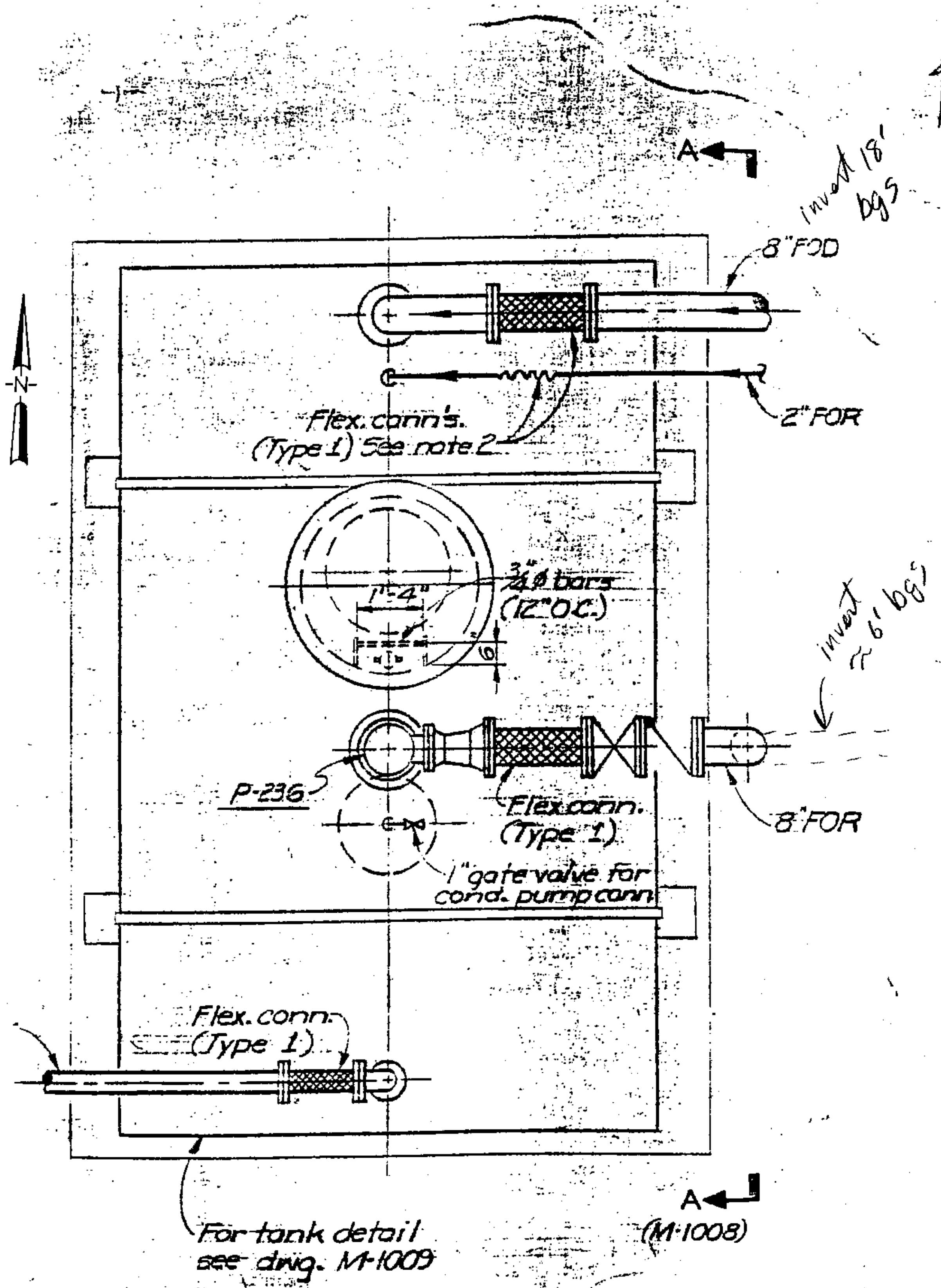
ELEVATION A

DEFUELING TANK

SCALE: 3/8"=1'-0" (M-1005)

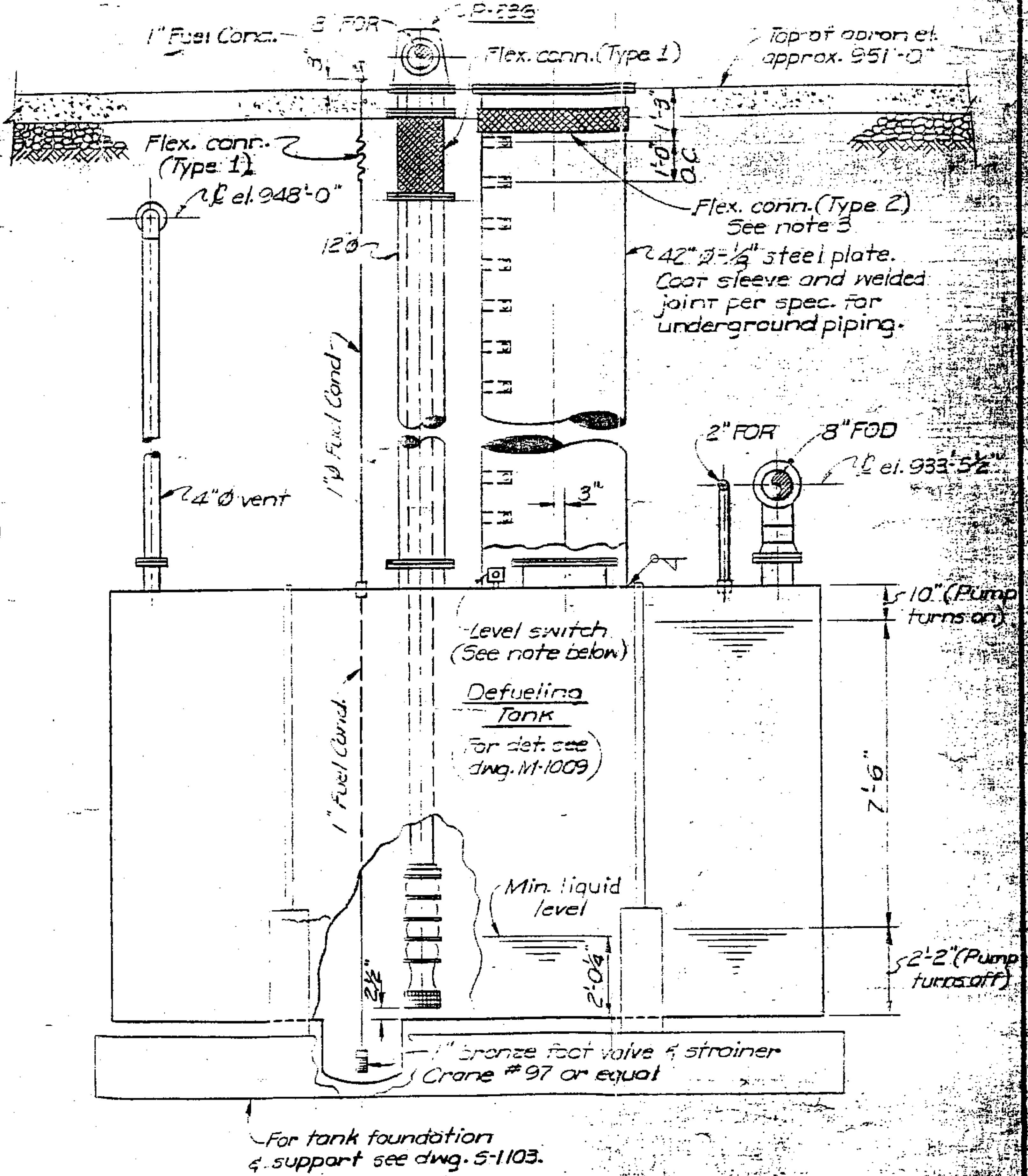
Source: Patchen, Mingledorff, and Associates,
Job No. 69—16, March 2, 1970

# DEFUELING TANK PIPING DETAIL



For location see dwg. M-1005

PART PLAN – DEFUELING TANK



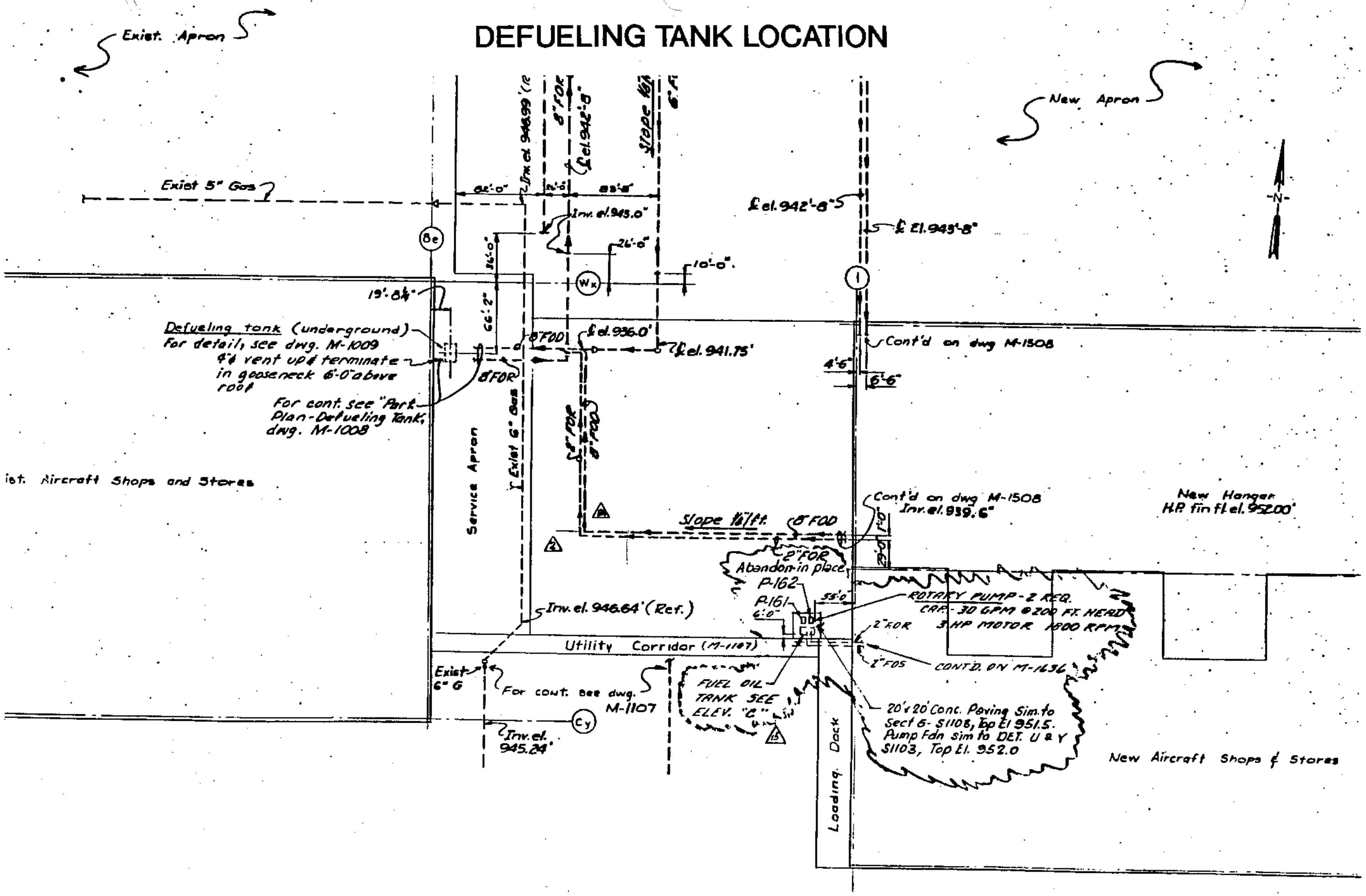
SECTION A

SCALE: 3/8"=1'-0" (M-1008)

Source: Patchen, Mingledorff, and Associates, Job No. 69–16, March 2, 1970

NOTE: THIS IS A REDUCED PHOTOCOPY.

# DEFUELING TANK LOCATION

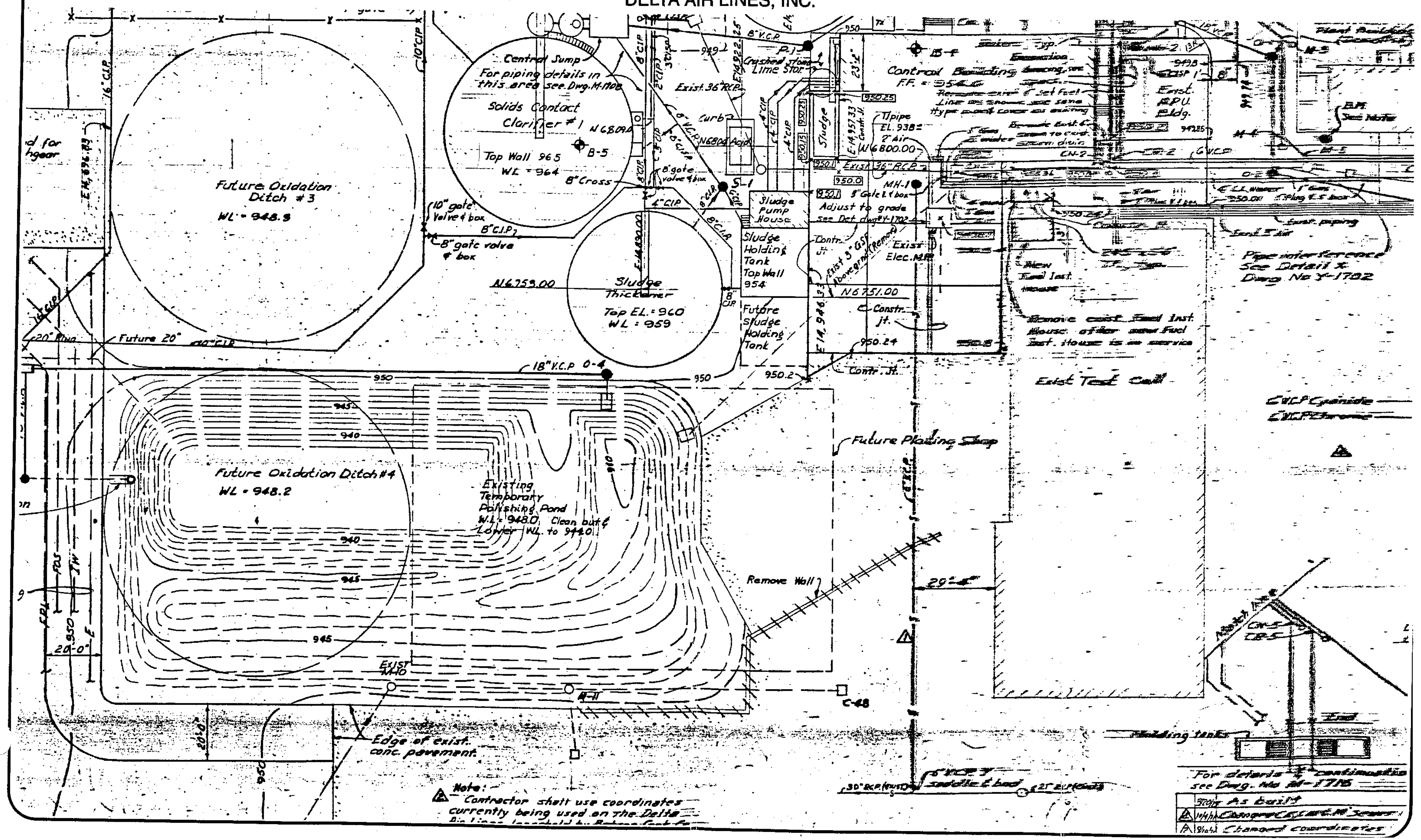


Source: Potchen, Mingledorff, and Associates,
Job No. 69–16, March 2, 1970

# Appendix E

# APPENDIX E
# FORMER SETTLING POND DETAIL (SWMU 5)

# FORMER SETTLING POND DETAIL (SWMU 5)
## DELTA AIR LINES, INC.



# APPENDIX F
# BAILDOWN TEST METHODS AND RESULTS

# APPENDIX F
# BAILDOWN TEST METHODS AND RESULTS

It is well documented that LNAPL thickness measurements taken in groundwater monitoring wells are not indicative of actual LNAPL thicknesses in the formation (Blake and Hall, 1984; Hall *et al.*, 1984; Hughes *et al.*, 1988). Measured LNAPL thickness in wells can be 2 to 10 times greater than the actual LNAPL thickness in the formation. One method of determining actual LNAPL thickness is the baildown test.

A baildown test was performed on February 19, 1997 at SWMU 7. The purpose of the test was to determine LNAPL thickness in the formation surrounding recovery well RW-4, which is located in Bay 5 of TOC-2 (Figure 3.19). RW-4 was gauged and a corrected potentiometric surface elevation was determined. Using a disposable bailer, the LNAPL was rapidly removed from the well and containerized in a 55 gallon drum. Once the thickness of the LNAPL was acceptable (0.1 to 1 foot), the corrected potentiometric surface was calculated again. The calculated value should be within 0.005 feet of the first calculation before continuing. Due to slow recharge and time constraints, the test was started before the calculated values matched.

Using an oil/water interface probe the top of the LNAPL surface and the top of the water surface was recorded for 62.5 minutes (Table F.1). Then these data were plotted versus time (Figure F.1). The true thickness of the LNAPL layer is picked directly off the plot by identifying an inflection point. This inflection point occurs at approximately 15 minutes. True thickness is the distance from the inflection point to the top of the LNAPL under static conditions. In this case, true thickness is approximately 1 foot.

**REFERENCES:**

Blake, S. B. and R. A. Hall, 1984. "Monitoring Petroleum Spills with Wells: Some Problems and Solutions." Fourth National Symposium and Exposition on Aquifer Restoration and Ground Water Monitoring: May 23-15, 1984, p.305-310.

Hall, R. A., S.B. Blake and S.C. Champlin Jr., 1984. "Determination of Hydrocarbon Thickness in Sediments Using Borehole Data." Fourth National Symposium and Exposition on Aquifer Restoration and Ground Water Monitoring: May 23-15, 1984, p.300-304.

Hughes, J.P., Sullivan, C.R., and Zinner, R.E., 1988, Two techniques for determining the true hydrocarbon thickness in an unconfined sandy aquifer: In Proceedings of the Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection, and Restoration Conference: NWWA/API, p.291-314.

# Table F.1. Baildown Test Results for RW-4, SWMU 7

## February 19, 1997

### Delta Air Lines, Technical Operations Center

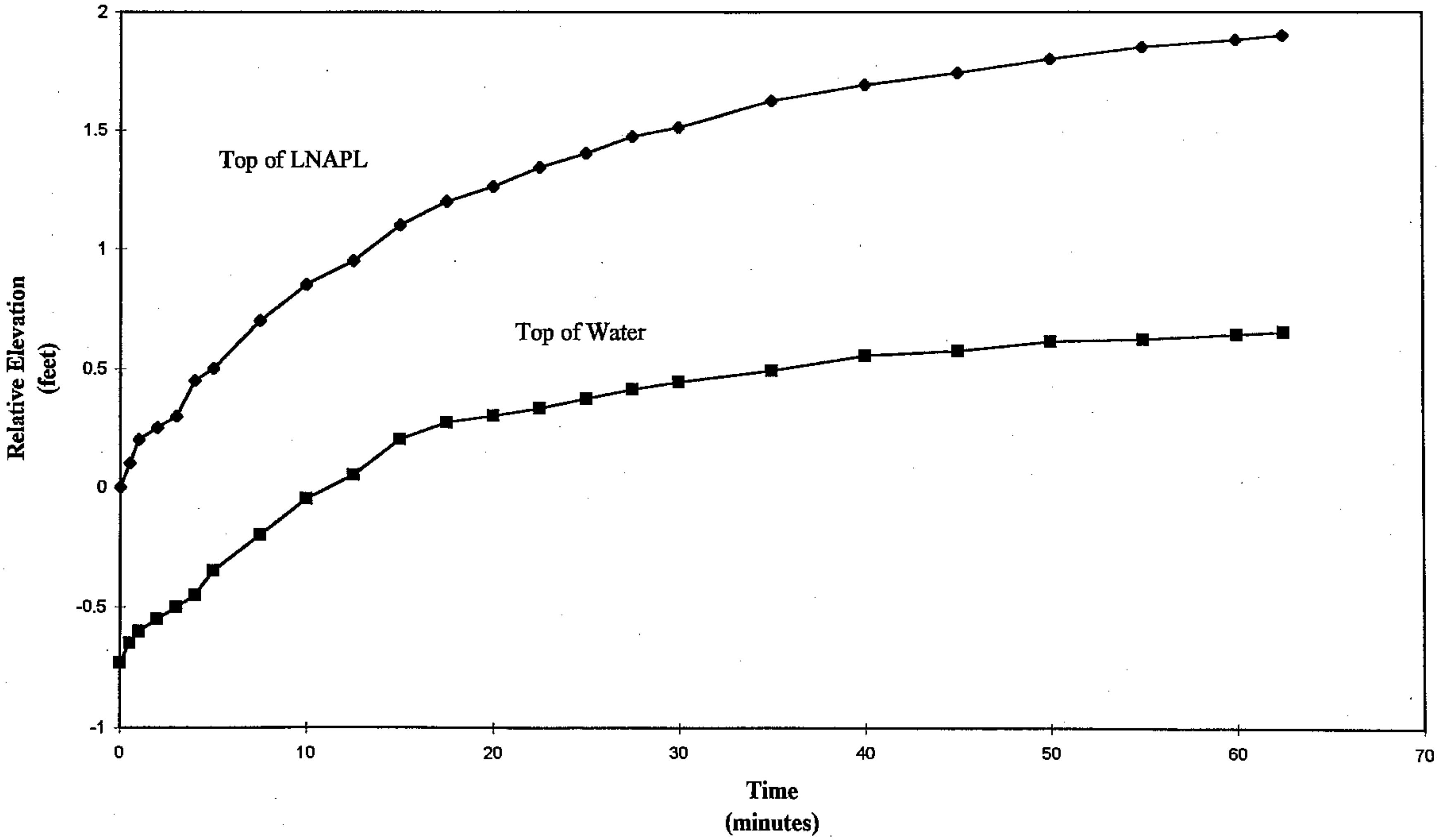
| Time (minutes) | Depth to LNAPL (ft) | Depth to Water (ft) | LNAPL Thickness (ft) | Top of LNAPL Elev. (ft)[1] | Top of Water Elev. (ft)[1] |
|---|---|---|---|---|---|
| 0 | 10.4 | 11.13 | 0.73 | 0 | -0.73 |
| 0.5 | 10.3 | 11.05 | 0.75 | 0.1 | -0.65 |
| 1 | 10.2 | 11 | 0.8 | 0.2 | -0.6 |
| 2 | 10.15 | 10.95 | 0.8 | 0.25 | -0.55 |
| 3 | 10.1 | 10.9 | 0.8 | 0.3 | -0.5 |
| 4 | 9.95 | 10.85 | 0.9 | 0.45 | -0.45 |
| 5 | 9.9 | 10.75 | 0.85 | 0.5 | -0.35 |
| 7.5 | 9.7 | 10.6 | 0.9 | 0.7 | -0.2 |
| 10 | 9.55 | 10.45 | 0.9 | 0.85 | -0.05 |
| 12.5 | 9.45 | 10.35 | 0.9 | 0.95 | 0.05 |
| 15 | 9.3 | 10.2 | 0.9 | 1.1 | 0.2 |
| 17.5 | 9.2 | 10.13 | 0.93 | 1.2 | 0.27 |
| 20 | 9.14 | 10.1 | 0.96 | 1.26 | 0.3 |
| 22.5 | 9.06 | 10.07 | 1.01 | 1.34 | 0.33 |
| 25 | 9 | 10.03 | 1.03 | 1.4 | 0.37 |
| 27.5 | 8.93 | 9.99 | 1.06 | 1.47 | 0.41 |
| 30 | 8.89 | 9.96 | 1.07 | 1.51 | 0.44 |
| 35 | 8.78 | 9.91 | 1.13 | 1.62 | 0.49 |
| 40 | 8.71 | 9.85 | 1.14 | 1.69 | 0.55 |
| 45 | 8.66 | 9.83 | 1.17 | 1.74 | 0.57 |
| 50 | 8.6 | 9.79 | 1.19 | 1.8 | 0.61 |
| 55 | 8.55 | 9.78 | 1.23 | 1.85 | 0.62 |
| 60 | 8.52 | 9.76 | 1.24 | 1.88 | 0.64 |
| 62.5 | 8.5 | 9.75 | 1.25 | 1.9 | 0.65 |

Notes:

(1) Assumes arbitrary top of product elevation = 0 ft
at time = 0 minutes

Figure F.1

# BAILDOWN TEST AT RW-4, SWMU 7
# TOP OF LNAPL AND TOP OF WATER VERSUS TIME
## Delta Air Lines, Technical Operations Center



I:\730657\REPORT\TABLES\BAILDOWN.XLS

# ATTACHMENT B-5

# CERTIFICATE OF INSURANCE

# CERTIFICATE OF INSURANCE FOR CORRECTIVE ACTION AND POST-CLOSURE CARE

Named and Address of Insurer (herein called the "Insurer"): **Aero Assurance Ltd., 76 St. Paul Street, Suite 500, Burlington, VT 05401-4477**

Named and Address of Insured (herein called the "Insured"): **Delta Air Lines, Inc., 1030 Delta Blvd, Atlanta, GA 30320**

Facilities Covered: **EPA ID #GAD006924872 – Delta Technical Operations, 1775 Aviation Blvd., Atlanta, GA, $10,000,000 Corrective Action and Post-Closure Care**

Face Amount: **$10,000,000**

Policy Number: **AER-10016-00**

Effective Date: **June 15, 2000**

The Insurer hereby certifies that it has issued to the Insured the policy of insurance identified above to provide financial assurance for corrective action and post-closure care for the facility identified above. The insurer further warrants that such policy conforms in all respects with the requirements paragraph 391-3-11-.05 of the Rules of Georgia Department of Natural Resources, Environmental Protection Division, as applicable and as such regulations were constituted on the date shown immediately below. It is agreed that any provision of the policy inconsistent with such regulations is hereby amended to eliminate such inconsistency.

Whenever requested by the Director of the Environmental Protection Division, Department of Natural Resources, State of Georgia, the Insurer agrees to furnish to the EPD Director a duplicate original of the policy listed above, including all endorsements thereon.

I hereby certify that the wording of this certificate is substantially the same as the wording specified in paragraph 391-3-11-.05 of the Rules of Georgia Department of Natural Resources, Environmental Protection Division as such regulations were constituted on the date shown immediately below.

Aero Assurance Ltd.

Scott Levick, Authorized Representative

Attest:

Jeff Koch, Notary Public

Date: 4/13/2022

Jeffrey Gerard Koch
Notary Public, State of Vermont
Commission No. 157.0014529
My Commission Expires January 31, 2025

# ATTACHMENT B-6

# PART B CERTIFICATION

## PART B CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

DATE: 6-23-23

SIGNATURE OF OPERATOR:

NAME: Alison Lathrop

TITLE: Managing Director of Corporate Environmental and Regulatory Compliance