**FIELD SAMPLING PLAN TEMPLATE**

When excavation and off-site disposal of soils and/or dewatering is required during construction, and NYCDDC’s Standard Specification for Handling, Transportation, and Disposal of Potential and Identified Contaminated and Hazardous Materials (Section 8.01 C2-Sampling and Testing of Contaminated/Potentially Hazardous Soil for Disposal Purposes) has been included in the Contract, the New York City Department of Design and Construction (NYCDDC) requires Contractors to retain an independent Environmental Consultant (hereafter identified as “Consultant”) to prepare a Field Sampling Plan (FSP) which will serve to characterize soils and/or groundwater to be excavated/removed, based on parameters typically requested by disposal facilities. Regarding soils, the data will be utilized to determine if the soil to be excavated is suitable for reuse or needs to be transported off-site for disposal as non-hazardous contaminated or hazardous soil. Regarding groundwater, the data will be utilized to determine proper disposal methods (either in the New York City sewer system or off-site) for groundwater and/or decontamination water generated during site investigation activities.

The FSP shall be submitted to the NYCDDC Office of Environmental and Hazmat Services (OEHS) [formerly referred to as Office of Environmental and Geotechnical Services (OEGS)] for review and acceptance prior to performing any field sampling activities. This FSP Template is meant to be a guide to help Consultants with the development of an FSP that is compliant with NYCDDC rules and regulations.

This FSP shall be completed in accordance with NYCDDC’s Standard Specification for Handling, Transportation, and Disposal of Potential and Identified Contaminated and Hazardous Materials (Section 8.01 C2-Sampling and Testing of Contaminated/Potentially Hazardous Soil for Disposal Purposes).

**INSTRUCTIONS FOR USING THE FSP TEMPLATE**

Each section of this FSP Template includes instructions and fillable text fields denoted in blue. Read the instructions for each section before completing that section. The blue text indicates information to include in each text field. Click on the blue text and start typing. This FSP Template is an editable document file that you can add tables and additional text. For sections of the FSP that do not apply, insert “Not Applicable” in the text field, and check the “Not Applicable” box where available. Any edits to black text should be completed using track changes.

**REGULATORY REFERENCES**

The following State and Local rules and regulations noted below are offered as references that can be viewed to assist with the completion of the FSP Template. The list, along with hyperlinks to the regulatory references, is not all-inclusive but offers some general guidance.

* NYSDEC Spill Guidance Manual
  + https://www.dec.ny.gov/regulations/2634.html
* NYSDEC CP-51 – Soil Cleanup Guidance Policy
  + https://www.dec.ny.gov/docs/remediation\_hudson\_pdf/cpsoil.pdf
* NYSDEC Spills Technology and Remediation Series (STARS) Guidance Documents
  + https://www.dec.ny.gov/regulations/2393.html
* NYSDEC DER-10 – Technical Guidance for Site Investigation and Remediation
  + https://www.dec.ny.gov/regulations/67386.html
* NYSDEC Soil Cleanup Objectives (SCOs)
  + https://www.dec.ny.gov/docs/remediation\_hudson\_pdf/part375.pdf
* NYSDEC Groundwater Quality Standards (GWQS)
  + https://www.dec.ny.gov/docs/water\_pdf/togs111.pdf
* NYCDEP Limitations for Effluent to Sanitary and Combined Sewers
* https://www1.nyc.gov/assets/dep/downloads/pdf/about/water-and-sewer-forms/dewatering-wastewater-quality-control-application-for-discharges-over-10000-gallons-per-day.pdf
* NYC CEQR Technical Manual – Chapter 12 Hazardous Materials
  + <https://www1.nyc.gov/site/oec/environmental-quality-review/technical-manual.page>

While the NYCDDC has made every effort to ensure the accuracy of all instructions contained in this FSP Template, it is the Rules and Regulations of the City and State of New York, not the template, that govern your obligations with respect to the preparation of the FSP and performance and documentation of the proposed field sampling activities.

**Field Sampling Plan**

**FSP Prepared for:**

Insert Project Name

Insert Capital Project ID Number

Insert Project/Site Address/Location

Insert Project/Site Phone Number



New York City Department of Design and Construction

30-30 Thomson Ave, Queens, New York 11101

Insert Contractor Name

Insert Address, City, State, Zip Code

**FSP Prepared By:**

Insert Company or Organization Name

Insert Contact Name

Insert Address, City, State, Zip Code

Insert Phone Number

Insert Fax/Email

**FSP Preparation Date:**

Insert Date

**FSP Revision Date:**

Insert Date

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Figure 2 Aerial View Map

Figure 3 Sample Location Map

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**Tables**

Table 1 Sampling Summary

**Appendices**

Appendix A Investigation Health and Safety Plan

Appendix B Laboratory Qualifications

Appendix C Field Instrumentation Specifications

Appendix D Laboratory Chain of Custody Form

Appendix E Proof of Training, Education, and Experience

Acronyms

The following acronyms are referenced in this FSP template. Any additional acronyms included in the FSP should be added to the table below.

| **Item** | **Description** |
| --- | --- |
| AOC | Area of Concern |
| BWT | Bureau of Wastewater Treatment |
| CGAs | Combustible gas analyzers |
| COC | Chain-of-custody |
| ELAP | Environmental Laboratory Approval Program |
| EPH | Extractable Petroleum Hydrocarbons |
| FIDs | Flame ionization detectors |
| FSP | Field Sampling Plan |
| FSSR | Field Sampling Summary Report |
| GWQS | Groundwater Quality Standards |
| HSC | Health and Safety Coordinator |
| HSGs | Hydrologic soil groups |
| HSO | Health and Safety Officer |
| HASP | Health and Safety Plan |
| IHASP | Investigation Health and Safety Plan |
| NYCDDC | New York City Department of Design and Construction |
| NYCDEP | New York City Department of Environmental Protection |
| NYSDEC | New York State Department of Environmental Conservation |
| NYSDOH | New York State Department of Health |
| OEHS | NYCDDC Office of Environmental and Hazmat Services |
| OSHA | Occupational Safety and Health Administration |
| PCBs | Polychlorinated Biphenyls |
| PID | Photoionization Detector |
| QAPP | Quality Assurance Project Plan |
| QA/QC | Quality Assurance/Quality Control |
| RCRA | Resource Conservation and Recovery Act |
| SCOs | Soil Cleanup Objectives |
| STARS | Spills Technology and Remediation Series |
| SVOCs | Semi-Volatile Organic Compounds |
| TAL | Target Analyte List |
| TAT | Turn-around time |
| TCLP | Toxicity Characteristic Leaching Procedure |
| USGS | U.S. Geological Survey |
| VOC | Volatile Organic Compound |
| WHP | Water Handling Plan |

Revision Log

The following revision log should be completed with the initial submission and subsequent revisions. The Revision Number should offer revision number with two digits (i.e., 00, 01, 02, 03 – noting 00 as the initial submission) with FSP as the descriptor (i.e., FSP-00, FSP-01, FSP-02). Revision Description column should contain a brief description of changes and/or initial submission.

|  |  |  |
| --- | --- | --- |
| **Date** | **Revision Number** | **Description** |
| 00/00/0000 | FSP-00 | Initial submission for NYCDDC for review |
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Certification Statement

FSP Certification by Insert Company or Organization Name

Environmental Consultant working on behalf of Insert Company Name of Contractor

1. Insert Company or Organization Name certifies that this document dated Insert Date and all information included is true, accurate, and complete to the best of my professional knowledge and judgement; and
2. This FSP has been prepared in accordance with all applicable statutes and regulations; and
3. This FSP has been prepared in conformance with NYCDDC Specifications for Handling, Transporting, and Disposal of Potential and Identified Contaminated and Hazardous Materials (Section 8.01)

Insert Author’s Signature

Insert Author’s Name / Affiliation / Date

# INTRODUCTION

## Project Area and Description

Instructions*:*

1. *In this section, compile basic site information. When completing this section make sure to confirm site location information. For corridor projects that include multiple street segments, please list all.*
2. *Following this section is an 8 ½ “ by 11” portrait border template to be utilized for the preparation of Figures 1 and 2.*

**Project Name and Location**

Project/ Site Name: Insert Text Here

Capital Project ID Number: Insert Text Here

Project Street(s)/ Location: Insert Text Here

City: Insert Text Here

State: New York

Zip Code: Insert Text Here

Borough: Insert Text Here

Block(s) and Lot(s) (If Applicable): Insert Tax Lot/Block Parcel Designation

DEC Region: 2

**General Site Description**

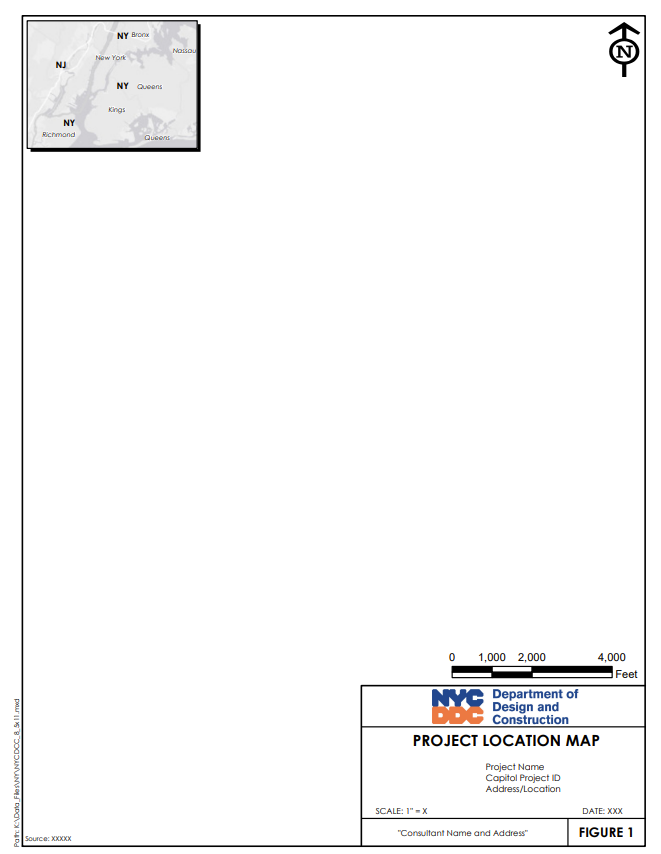
Insert Brief description of Site

**Size of Construction Site**

|  |  |
| --- | --- |
| Area of Property or Corridor Length | Insert Area of Property (in acres) or insert corridor length (in feet) |

A Project Location Map is included as **Figure 1**. An Aerial View Map is included as **Figure 2**.

**INSERT NEW FIGURE 1 CONTAINING THE PROJECT NAME, CAPITAL PROJECT ID AND ADDRESS**



**INSERT NEW FIGURE 2 CONTAINING THE PROJECT NAME, CAPITAL PROJECT ID AND ADDRESS** A white background with black text

Description automatically generated

## Proposed Construction Activities

**Instructions:**

*a. In this section, summarize the nature of the construction activities to be performed (i.e. Is it roadway work/ utility work? Will there be stormwater management practices, outfall, etc.)?*

*b. If historic sources are acquired and contain soil and/or groundwater analytical data pertinent to the subject field sampling scope of work, those sources should be included in* ***Appendix A****.*

Insert Text Here

## Field Sampling Scope of Work

Instructions:

*Provide a general description of the field sampling activities to be performed at the site.*

1. *How many soil samples will be collected?*
2. *How many cubic yards does each sample represent? (typically 500 CY)*
3. *How will soil samples be collected? (hand tools, geo-probe, etc.)*
4. *How many groundwater samples will be collected?*
5. *How will groundwater samples be collected?*

Insert Text Here

**INSERT NEW FIGURE 3 CONTAINING THE PROJECT NAME, CAPITAL PROJECT ID AND ADDRESS**

**A close-up of a white board

Description automatically generated**

## Soil Sampling Methodology and Analytes (if applicable)

Instructions:

1. *In this section, describe the soil sampling methodology, including whether soils will be sampled in-situ, or from excavated stockpiles. Choose the content below for either in-situ (via soil borings) or ex-situ, via stockpile sampling.*
2. *The number and frequency of soil samples required for waste characterization purposes is determined by the selected, off-site disposal facility. The proposed methodology assumes a conservative sampling frequency of one soil sample for every 500 cubic yards (750 tons) of soil to be excavated/stockpiled. Modify this frequency, as necessary, based on known disposal facility requirements.*
3. *The anticipated field sample locations (both soil and groundwater) shall be referenced and shown on* ***Figure 3*** *and summarized on* ***Table 1****.*
4. *Sample analytes requirements are determined by the selected disposal facility. The analyte list below is intended as a guide based on typical required waste disposal parameters. Modify the analyte list accordingly based on anticipated/selected disposal facility. If a disposal facility is not yet known, indicate as such and state that additional analytes may be required based on selected disposal facility requirements.*
5. *Following this section is an 11 “ by 17” landscape border template to be utilized for the preparation of* ***Figure 3****.*

*(Check all that apply)***:**

Soil Sampling Will Be Performed

Groundwater Sampling Will Be Performed

**In-Situ Soil Sampling (Soil Borings)**

All waste characterization soil sampling will be performed in accordance with NYSDEC sampling guidelines and protocols and NYCDDC Specification Item 8.01 C2.1.

A total of Insert Text Here cubic yards of soil are anticipated to be excavated and transported off-site for reuse/disposal. Insert Number of Samples Here soil samples (one per boring) will be collected at a rate of one sample for every 500 cubic yards. The borings (identified as Insert Text Here) will be installed within the planned area of excavation (and at the indicated depths) as shown on **Figure 3** (Sample Location Map). Waste Characterization grid lines are also shown on **Figure 3**. *If required due to ex-situ waste characterization sampling, a* ***Figure 3a*** *shall be created to show where stockpiled soil originated prior to excavation.*

Borings will be installed to a depth of Insert Depth Here based on the planned depth of excavation. Each boring will be screened with a photoionization detector (PID) for potential signs of volatile contamination. One discrete sample will be collected from the 6-inch interval within the depth of the soil boring exhibiting the highest PID reading and or visual/olfactory evidence of potential contamination for volatile organic compound (VOC) analysis (USEPA Method 624/8260C). If no signs of potential contamination are observed, the discrete VOC sample will be collected from the 6-inch interval above the bottom of the proposed excavation or the 6-inch interval above the water table, if encountered. A composite sample from the remaining boring depth will be collected and analyzed for the remaining analytes listed below:

* Semi-Volatile Organic Compounds (SVOCs) (USEPA Method 625/8270D)
* Pesticides (USEPA Method 8081B)
* Herbicides (USEPA Method 8151A)
* Polychlorinated Biphenyls (PCBs) (USEPA Method 8082A)
* Extractable Petroleum Hydrocarbons (EPH) (USEPA Method 8015B)
* Target Analyte List (TAL) Metals (including Hexavalent Chromium and Cyanide) (USEPA Method 200.7/6010C/245.1/7470A/7471B)
* Resource Conservation and Recovery Act (RCRA) characteristics (including ignitability, corrosivity, reactivity (sulfide and cyanide) (USEPA Method 9045C/1030/9014/9034)
* Full Toxicity Characteristic Leaching Procedure (TCLP) analysis including VOCs, SVOCs, pesticides, herbicides, and metals (USEPA Method – See Above)

A summary of the sample analyses to be performed (including location, frequency, and analytical methods) is included as **Table 1**.

Further In-situ Composite Sampling Instructions:

1. *If the planned depth of excavation is six feet or less, the composite sample collected will be a composite of the entire remaining soil column once the discrete VOC sample is collected. If the depth of excavation is greater than six feet, each composite will be generated from five, six-inch intervals collected from various depths throughout the depth of each boring.*
2. *If the planned excavation depth is greater than six feet, modify the sampling language above accordingly.*

Insert Contractor Name has prepared an Investigation Health and Safety Plan (IHASP) that will be followed during the performance of the subject soil sampling activities (**Appendix A**). The proposed soil sampling activities will not commence until FSP and IHASP acceptances are issued by NYCDDC OEHS.

All sample containers will be marked and identified with legible sample labels including project name, sample location, sample number, date and time of sampling, preservation method, and other information that may be useful in determining the sample characteristics. Chain-of-custody (COC) procedures will be followed from laboratory issuance of the sample containers through laboratory receipt of the samples.

All sampling procedures and observations will be recorded in a bound logbook. Access to the field book and/or its content will be made available to NYCDDC or its representative at all times. The field book will be turned over to Resident Engineer in good condition upon completion of the work. The following information will be recorded in the field book:

* Sample identification number
* Sample location
* Field observations
* Sample type
* Required analyses
* Date/time of sample collection
* Collector’s name
* Sampling procedures and equipment utilized
* Date sent to laboratory and name of laboratory

Only dedicated sampling equipment will be used to collect the samples. All sampling equipment will be decontaminated before being brought to the site and properly disposed of after use. Please see Section 1.6 for further discussion of sampling equipment decontamination procedures.

**Ex-Situ (Stockpile Samples) (if applicable)**

Waste characterization soil sampling will be performed in accordance with NYSDEC sampling guidelines and protocols and NYCDDC Specification Item 8.01 C2.1.

A total of Insert Quantity Here cubic yards of soil has been excavated and stockpiled requiring characterization for off-site reuse/disposal. Insert Number Here composite soil samples will be collected at a rate of one sample for every 500 cubic yards from the stockpile(s). Each composite sample will consist of five (5) grab samples collected from various locations and depths throughout the stockpile, at least two feet below the stockpile surface. The location of each discrete, grab sample (including naming convention to identify each parent composite sample), and the waste characterization grids lines, are shown on **Figure 3** and the location(s) of where the stockpiled soil originated is shown on **Figure 3a**.

Each discrete grab sample collected will be screened with a PID for potential signs of contamination with volatile organic compounds. The discrete grab sample exhibiting the highest PID reading and/or visual/olfactory evidence of potential contamination used to generate each composite will be analyzed for VOC analysis. If no signs of potential contamination are observed, the discrete VOC sample will be randomly selected. Each composite sample will also be analyzed for the remaining analytes listed below:

* Semi-Volatile Organic Compounds (SVOCs) (USEPA Method 625/8270D)
* Pesticides (USEPA Method 8081B)
* Herbicides (USEPA Method 8151A)
* Polychlorinated Biphenyls (PCBs) (USEPA Method 8082A)
* Extractable Petroleum Hydrocarbons (EPH) (USEPA Method 8015B)
* Target Analyte List (TAL) Metals (including Hexavalent Chromium and Cyanide) (USEPA Method 200.7/6010C/245.1/7470A/7471B)
* Resource Conservation and Recovery Act (RCRA) characteristics (including ignitability, corrosivity, reactivity (sulfide and cyanide) (USEPA Method 9045C/1030/9014/9034)
* Full Toxicity Characteristic Leaching Procedure (TCLP) analysis including VOCs, SVOCs, pesticides, herbicides, and metals (USEPA Method – See Above)

A summary of the sample analyses to be performed (including location, frequency, analytical methods, and SCOs being compared to) is included as **Table 1**.

For drummed soils, if the need arises during construction for generation of additional drummed soil requiring disposal (soil not previously characterized), one (1) composite sample will be collected for every 10 drums of excavated soil (assuming 55-gallon drum size). One discrete drum sample will be collected for VOC analysis. A composite sample will be generated from discrete samples collected from each drum and analyzed for the remaining analytes listed above.

Add to this section accordingly if drummed soils are being characterized.

Insert for Contractor Name has prepared an IHASP that will be followed during the performance of the subject soil sampling activities (**Appendix A**). The proposed soil sampling activities will not commence until this FSP and corresponding IHASP have been accepted in writing by NYCDDC. The IHASP shall identify actual and potential hazards associated with the proposed field sampling activities and stipulate appropriate health and safety procedures, to minimize field personnel exposures to physical, biological, and chemical hazards that may be present in site soils. The requirements and content of the IHASP are further discussed in Section 3.0.

## Groundwater Sampling Methodology and Analytes

Instructions:

1. *Describe the groundwater sampling methodology (where and when groundwater samples shall be collected).*
2. *Describe contingent requirements for groundwater characterization/sampling if groundwater (not previously anticipated) is encountered during construction requiring disposal.*
3. *The most cost-effective disposal method and the preference of NYCDDC is to discharge accumulated groundwater and decontamination water directly to the City’s storm or combined storm/sanitary sewer system. The text below assumes this disposal method. Written approval from NYCDDC is required for any other off-site disposal option. All waste disposal options shall be presented to NYCDDC in a Waste Handling Plan (WHP) to be prepared under separate cover.*
4. *If another off-site disposal method is chosen, replace the below text/groundwater sampling methodology with that required by the selected disposal method/facility.*

*(Check one that applies)***:**

Groundwater sampling is anticipated to be performed

Not Anticipated

Groundwater will be sampled and analyzed to evaluate if it is suitable for discharge to the City’s storm or combined storm/sanitary sewer system. If determined to be suitable for discharge to the City’s sewer system, periodic effluent sampling will be required to confirm that the groundwater discharge remains in compliance with NYCDEP Sewer Effluent Limitations. If discharge to the sewer system is approved, discharge flow rates, periodic effluent sampling, and other discharge requirements will be conveyed in a Sewer Discharge Permit to be issued by NYCDEP. Insert Contractor Name will retain a Dewatering/Water Treatment Specialist and laboratory to conduct continued testing as required by the Sewer Discharge Permit to be issued.

Describe groundwater sample locations, quantity, and method of collection

Groundwater sample locations are shown on **Figure 3**. Groundwater samples will be collected to assist in determining discharge/disposal requirements for the groundwater and/or decontamination water generated during the proposed construction activities. The groundwater sample(s) collected will be analyzed for New York City Department of Environmental Protection (NYCDEP) Bureau of Wastewater Treatment (BWT) Sanitary/Combined Sewer Effluent Limitation Parameters including the following:

**Parameter Analytical Method**

VOCs EPA 624

SVOCs EPA 625

PCB 608 EPA 608

SGT-HEM (Non-Polar Material) EPA 1664B

Flash Point EPA 1010

Mercury 245.1 rev3.0

Metals-Five (Cd,Pb,Ni,Cu,Zn) 200.7

Cr (Hexavalent-24 hr) SM 3500-Cr B

Total Suspended Solids SM2540D-11

Carbonaceous BOD-5 Day SM5210 B-11

Chloride 300.0 rev2.1

Total Kjeldahl Nitrogen EPA 351

Nitrite-N 300.0 rev2.1

Nitrate-N 300.o rev2.1

Total Solids SM2540B-11

pH SM4500-H+B11

As the planned disposal method of the groundwater and/or decontamination water will be direct discharge to the City’s sanitary/combined sewer system, detected analyte concentrations will be compared to the NYSDEC Groundwater Quality Standards (GWQS) and NYCDEP BWT Daily Effluent Limits (last updated May 1, 2005, or most recent Limits as applicable). A summary of the sample analyses to be performed (including location, frequency, and analytical methods) is included as **Table 1**.

Insert Contractor Name has prepared an IHASP that will be followed during the performance of the subject groundwater sampling activities. The IHASP has been prepared and submitted to NYCDDC under separate heading. The proposed groundwater sampling activities will not commence until this FSP and corresponding IHASP have been accepted in writing by NYCDDC. The IHASP identifies actual and potential hazards associated with the proposed field sampling activities and stipulates appropriate health and safety procedures, to minimize field personnel exposures to physical, biological, and chemical hazards that may be present in site soils. The requirements and content of the IHASP are further discussed in Section 3.0.

**Water and Soil Sample Container Procedures**

All sample containers will be marked and identified with legible sample labels including project name, sample location, sample number, date and time of sampling, preservation method, and other information that may be useful in determining the sample characteristics. COC procedures will be followed from laboratory issuance of the sample containers through laboratory receipt of the samples.

All sampling procedures and observations will be recorded in a bound logbook. Access to the field book and/or its content will be made available to NYCDDC or its representative at all times. The field book will be turned over to the Resident Engineer in good condition upon completion of the work. The following information will be recorded in the field book:

* Sample identification number
* Sample location
* Field observations
* Sample type
* Required analyses
* Date/time of sample collection
* Collector’s name
* Sampling procedures and equipment utilized
* Date sent to laboratory and name of laboratory

Only dedicated sampling equipment will be used to collect the samples. All sampling equipment will be decontaminated before being brought to the site and properly disposed of after use. Please see Section 1.6 for further discussion of sampling equipment decontamination procedures.

## Decontamination of Field Equipment

Instructions:

*In this section, describe the field equipment decontamination procedure to be provided (both for soil and groundwater). The standard field equipment decontamination procedures shall (at a minimum) include an alconox and DI water rinse between borings.*

Decontaminated equipment will be custody sealed and information concerning decontamination methodology, date, time, and personnel will be recorded in the field logbook.

Other equipment and materials such as drill rigs, well casings, auger flights, and backhoes represent potential sources of interference and cross-contamination for environmental samples and should be cleaned by manual scrubbing with non-phosphate soap solution followed by a thorough water rinse.

## Analytical Laboratory

Instructions:

1. *In this section, describe the analytical laboratory selected to analyze the soil and/or groundwater samples to be collected. Include the laboratory name, address, and contact name and phone number.*
2. *The selected laboratory must be certified by the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP).*
3. *Also include description of laboratory protocols, planned analytical suite (referencing Section 1.5), and laboratory turn-around time (TAT). Modify the below language as necessary based on the selected analytical laboratory.*

Soil and/or groundwater samples will be analyzed by Insert Laboratory Name.

Their contact information is as follows:

Laboratory Name: Insert Text Here

Laboratory Address: Insert Text Here

Laboratory NYSDOH ELAP Number: Insert Text Here

Laboratory Contact Name: Insert Text Here

Laboratory Contact Phone Number: Insert Text Here

Copies of Insert Laboratory Name laboratory certifications are included in **Appendix B** for reference.

The laboratory will perform the analyses as summarized in Section 1.5 in order to satisfy the analytical requirements of the selected soil and/or groundwater disposal facility.

Insert Laboratory Name will provide analytical results in a Insert approved TAT turn-around time (TAT). The analytical data reports will be summarized and included in the Field Sampling Summary Report (FSSR) to be prepared following completion of the field sampling activities (further discussed in Section 1.8). Initial copies of the analytical data reports will be forwarded to NYCDDC immediately following receipt and review.

## Field Sampling Summary Report

Instructions:

*Modify the Table of Contents (TOC) in this template, and the sections below based on the scope of work. The TOC and content of the FSSR will need to be modified accordingly based on media to be sampled (soil, groundwater, both) and specific site characteristics/constraints.*

An FSSR will be prepared following receipt of the analytical data. The FSSR will include tabulated analytical results that compare the data to the applicable NYSDEC Part 375.6 Soil Cleanup Objectives, and TCLP for Hazardous Waste published in RCRA and 6 NYCRR Part 371, or 40 CFR Section 261, as well as all field notes and information gathered during the field sampling activities as well as legible copies of daily logs, COC forms, visual observations, and photographs. The FSSR will follow the format of the FSSR Template.

The FSSR, with the tabulated tables and laboratory analytical data, must be submitted to OEHS for review and acceptance prior to any soil reuse or disposal activities.

# QUALITY ASSURANCE PROJECT PLAN

Instructions:

*This section of the FSP presents the Quality Assurance Project Plan (QAPP) objectives of the project. Typical, stand-alone QAPP components (including project description, sampling procedures, chosen analytical laboratory, etc.) have already been presented in Section 1.0 of this FSP. Each of the below sections, if applicable, should reference the prior report section where this data was previously presented. If additional information and/or QAPP procedures pertinent to the subject investigation scope of work are applicable, add as necessary to each of the sections, below.*

## Project Organization and Responsibilities

Prior to the start of the project, the overall responsibilities for project personnel and subcontractors will be established, including the chain of command. The personnel and organizations critical to the planned site investigation activities at the site and their respective responsibilities are listed below.

Instructions:

*If additional personnel and organizations critical to the planned site investigation activities are anticipated (including additional subcontractors, laboratories, etc.), please include additional rows in the table, below.*

|  |  |
| --- | --- |
| **Environmental Project Manager/Compliance Officer** - The Project Manager will have the overall responsibility of coordinating the project and will be responsible for assigning qualified field personnel, including the project support staff such as the Health and Safety Coordinator. | Project Manager Name, Company  Address  Phone Number  E-mail |
| **Contractor** | Representative Name, Company  Representative Title  Role in project  Address  Phone Number  E-mail |
| **Resident Engineer** | Representative Name, Company  Address  Phone Number  E-mail |
| **DDC Construction EIC** | NYCDDC Construction EIC Name  Address  Phone Number  E-mail |
| Health and Safety Coordinator | HSC Name, Company  Title  Address  Phone Number  E-mail |
| Health and Safety Officer | HSO Name, Company  Title  Address  Phone Number  E-mail |
| **Field Staff –** List all potential Sampling Staff (geologists, technicians, etc.) separately. | Field Staff Name, Company  Title  Address  Phone Number  E-mail |
| **Soil Boring Subcontractor** – If in-situ soil borings are to be installed, the boring contractor and contact shall be identified. | Soil Boring Subcontractor Name, Company  Title  Address  Phone Number  E-mail |
| **Analytical Laboratory Subcontractor** – If in-situ soil samples are collected, the analytical laboratory contractor and contact shall be identified. | Laboratory Name, Company  Address  Contact Name and Title  Phone Number  E-mail |

## Training and Experience of Field Sampling Personnel

Instructions:

*In this section, summarize the training required for the performance of the subject site investigation/characterization activities. The standard training language below shall be followed by additional, site-specific training that may be required (e.g., track training, tunnel safety, etc.).*

Consistent with Occupational Safety and Health Administration’s (OSHA’s) 29 CFR 1910.120 standard covering Hazardous Waste Operations and Emergency Response, all personnel who will be engaged in subsurface activities at the site must be trained in accordance with the standard.

At a minimum a sampler should have the following:

Current HAZWOPER 40 and/or 8-Hr Refresher Training

BA/BS or higher in a physical science, natural science, math, or engineering.

A certificate in environmental sampling methods from an accredited higher educational institution or recognized professional society for individuals who for whatever reason don’t have one of the degrees outlined above.

In addition, all personnel must participate in a medical surveillance program (see IHASP, **Appendix A**).

Documentation of the training and experience (resumes) of the intended/potential sampling staff is included in **Appendix E**.

**Hazardous Waste Operations – 40 Hour Training**

All project personnel who may be required to perform any work defined as “Hazardous Waste Operation” as per OSHA rules governing “Hazardous Waste Operations and Emergency Response” (29 CFR 1910.120), must have completed the 40-hour training. If the 40-hour training was completed more than 12 months prior to the project start-up date, then an additional 8-hour refresher training will be provided to such employees.

**Site Supervisor Training**

Consistent with OSHA 29 CFR 1910.120 paragraph (e) (8), individuals designated as site supervisors require an additional 8 hours of specialized training.

**Project-Specific Information and Training**

All project personnel, including contractors and subcontractors, will be informed about the project specific health and safety hazards which may be encountered during the project work. This may be accomplished by reviewing this Health and Safety Plan (HASP). Specifically, all project personnel will be required to participate in a pre-project training session. This training will include:

* Review of potential health and safety hazards associated with the various tasks which will be performed during this project.
* The correct procedures to use personal protective equipment required for the job.
* Personal hygiene and decontamination.
* Emergency procedures and first aid.

Insert Additional Site-Specific Training That May Be Required

The Company Name personnel listed in Section 2.2 have completed the suggested training for this project.

## QA Precision, Accuracy, Completeness, Representativeness, and Comparability

Instructions:

*The section below includes standard QA precision, accuracy, completeness, representativeness, and comparability procedures to be followed during site investigation/characterization activities. The standard language below shall be followed by additional, site-specific QA procedure that may be required.*

**Field Quality Control**

Sample containers will be handled to minimize the introduction of foreign matter. Field quality control (QC) for instruments, such as photoionization detectors (PIDs), combustible gas analyzers (CGAs), and flame ionizations detectors (FIDs) include routine calibration and maintenance as specified in their respective operation manuals. PIDs and FIDs will be field calibrated daily with isobutylene. Field equipment will be calibrated before work begins each day and at least twice daily thereafter. All field instruments will be calibrated in accordance with the manufacturer’s specifications. Please include the front cover page of each applicable specification only in **Appendix C**.

Insert the Make and Model of the Vapor Monitoring Device

**Calibration Procedures and Frequency**

Field Instruments and measuring equipment will be calibrated prior to use. Instruments and equipment used to gather, generate, or measure environmental data will be validated with sufficient frequency and in such a manner that accuracy and reproducibility of results are consistent with the manufacturer’s specifications. When an internally calibrated field instrument fails to meet calibration limits, it will be taken out of service and replaced.

Field sampling equipment will be examined to assure that it is in operating condition. Field sampling personnel will recalibrate an instrument that is not operating properly. Repair notes from prior sampling events will be reviewed so that prior equipment problems are not overlooked and to assure that necessary repairs have been made.

**Accuracy, Precision, and Sensitivity**

All field equipment will be tested regularly for accuracy and precision based on manufacturer specifications. Accuracy and precision tests will be conducted after each instrument has been calibrated. Comparing readings to known standards will best measure instrument accuracy. Precision will be measured by taking repetitive measurements of the sample standard/sample.

The accuracy of vapor readings (e.g., from a PID, etc.) will be determined by comparing meter readings to the vapor level of an isobutylene calibration gas. The precision of vapor readings will be determined by taking repetitive readings. All precision and accuracy data for each instrument used in the field will be recorded in the field book.

**Completeness, Representation. and Comparability**

Completeness will be evaluated by comparing project objectives with the field sampling activities performed and the resulting data gaps (if any) in the acquired data. Completeness is a qualitative measure of the valid data compared to the data that was to be collected in accordance with the project plan. An evaluation of data completeness includes an evaluation of the percentage of field samples collected versus the number of field samples proposed in the project plan and an evaluation of the laboratory data deliverables. One-hundred percent completeness is generally the goal, with lesser completion goals dependent on unplanned field variation from the scope of work.

Representation should be considered a qualitative objective rather than a characteristic which can be described in quantitative terms. Representation is the degree to which the data accurately and precisely represents the investigated characteristics. Representation will be evaluated based on whether the analytical results adequately characterize the sample and whether the samples adequately characterize the media.

Comparability is a measure of the confidence with which a data set can be compared to another. The extent to which the analytical data are comparable depends on the consistency of sampling and analytical methods. Standard methods will be used to analyze all samples so that analytical procedures can be duplicated.

Insert Additional Site-Specific QA Procedures That May Be Required

## Laboratory Qualifications

A summary of the selected analytical laboratory/s qualifications is included in **Appendix B**.

## Sampling Procedures

A summary of the sampling procedures for the subject scope of work is included in Sections 1.3, 1.4, and 1.5.

## Sample Handling, Preservation and Custody

Instructions:

*The section below includes typical sample handling, preservation, and custody procedures to be followed during site investigation/characterization activities. Modify this language as necessary to suit the subject scope of work.*

**Sample Handling**

The laboratory performing the analysis will provide the sample containers, labels, and preservatives. Labels will be affixed to the sample containers and filled out prior to or immediately after sample collection. The following information will be included on the sample labels:

* Sample ID
* Sample name
* Date and time of sample collection
* Sample location preservation method
* Analysis required

**Record Keeping**

All information related to the field sampling scope of work will be recorded in a bound field book with numbered pages. At a minimum, daily entries in the field book will include the following:

* Weather conditions
* Preservation
* Field personnel names
* Date
* Time
* Sample IDs and locations (including sample location sketches and dimensions)
* Sample type

**Sample Shipment and Chain of Custody**

Samples will be transported to the analytical laboratory under proper COC procedures by hand or overnight courier, such as Federal Express. The laboratory will provide the shipping container/cooler. Individual sample containers/jars will be wrapped and padded to prevent breakage. Shipping containers/coolers will be iced to assure that the samples remain at approximately 4oC during shipment.

A laboratory COC form will be completed by field personnel and will accompany every sample shipment to the laboratory to document sample possession from the time the samples were collected until the samples are received by the laboratory. The following typical information is included on laboratory COCs:

* Laboratory name, address, and contact information
* Sampler name
* Site address
* Sample IDs
* Date and time of sample collection
* Sample matrix
* Sample location and method
* Filtered/Fixed/Preservation
* Number of containers per sample
* Required analyses and method number
* Project name
* Name of individual to send results
* Name of individual/company to receive invoice
* Signature of sampler
* Signature of each individual who has had custody of the samples.
* Date and time that sample custody was relinquished by all that have custody.

A sample is considered under a person’s custody if 1) it is in the person’s physical possession; 2) it is in view of the person after he has taken possession; 3) it is secured by that person in a way than no one can tamper with the sample; or 4) it is secured by that person in an area which is restricted to authorized personnel. Samples are considered to be in possession of a shipping company (e.g., Federal Express) when custody seals are placed on the sample containers prior to shipment. COC forms will be placed inside the sealed cooler used for shipment.

A copy of Insert Selected Laboratory Name standard COC form is included as **Appendix D** for reference.

## Data Reduction, Validation and Reporting

Instructions:

*The section below includes typical data reduction, validation, and reporting procedures to be followed during site investigation/characterization activities. Modify this language as necessary to suit the subject scope of work.*

**Validation and Reporting**

The laboratory-produced analytical data package will be reviewed by the Project Manager for completeness and accuracy. The Project Manager will also check the field books weekly to assure that they are properly maintained and updated. The data validation procedures will include an evaluation of all field data. Data validation checklists will be utilized as guides in evaluating sample collection methods, field records, and analytical performance. A summary of the validation procedures and findings will be included in the FSSR that will be prepared following completion of the site investigation/characterization activities.

## Internal Quality Control, Performance, and System Audits

Instructions:

*The section below includes typical internal quality control (QC), performance, and system audit procedures to be followed during site investigation/characterization activities. Modify/add additional language as necessary to suit the subject scope of work.*

Company Name’s Project Manager/Compliance Officer shall review the FSP for accuracy prior to submittal to the NYCDDC.

## Corrective Action

Instructions:

*The section below includes typical corrective action procedures to be followed during site investigation/characterization activities. Modify this language (add additional corrective action procedures) as necessary to suit the subject scope of work.*

Company Name will initiate corrective action in the event of the following:

* Failure to calibrate field equipment.
* Failure of data to fall within required QC limits, as defined by the laboratory’s QC limits.

The corrective action procedures to enact will include the following:

* Repair or replace field equipment.
* Follow calibration/trouble shooting procedures recommended by equipment manufacturer.
* Laboratory checks for sample interferences.
* Laboratory checks for calibration.
* Resampling if necessary.

**FIGURES**

Instructions:

1. *The Consultant shall include the following three figures in the Field Sampling Report:*

* ***Figure 1*** *Project Location Map*
* ***Figure 2*** *Aerial View Map*
* ***Figure 3*** *Sample Location Map*
* ***Figure 3a*** *Stockpiled Soil Origination Location(s) Map, if required*

1. *Utilize the border templates included in Sections 1.1 and 1.4.*
2. *Each of the figures shall include the Project Name and Project Address.*
3. ***Figure 1*** *shall include the most recently published U.S. Geological Survey (USGS) Topographic Map (the name and date of which to be included in the title block) centered on the project site.*
4. ***Figure 2*** *shall include an aerial photograph centered on the subject site showing current site conditions. The site boundary shall be shown on the aerial photograph along with a north arrow and applicable scale.*
5. ***Figure 3*** *shall show the entire site (within the same site boundary as shown on Figure 2), along with a north arrow and applicable scale. All proposed sample locations (both soil and/or groundwater) and soil characterization grid lines shall be shown along with corresponding sample IDs.*
6. ***Figure 3a****, if required due to ex-situ waste characterization sampling, shall show the entire site (within the same site boundary as shown on Figure 2), along with a north arrow and applicable scale. The location(s) where stockpiled soil originated prior to excavation shall be shown.*

*NOTE: If required, Figure 3a should be appended to this document.*

**TABLE 1**

**Sampling Summary**

**AOC Name**

**Site Name**

**Site Address (If Applicable)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **AOC** | **Boring ID** | **Location On Property** | **Sample ID** | **Sample Depth (ft)** | **Parameter (Methodology)** |
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**Appendix A**

**Investigation Health and Safety Plan**

**Appendix B**

**Laboratory Qualifications**

**Appendix C**

**Field Instrumentation Specifications**

**Appendix D**

**Laboratory Chain of Custody Form**

**Appendix E**

**Proof of Training, Education, and Experience**