Interim Remedial Measure (IRM) Work Plan for Concrete Pad for New HVAC Capital Improvement Project

Passenger Terminal HVAC-1 and HVAC-2 Upgrades

Westchester County Airport

Site No. C360174

West Harrison, New York

June 27, 2025 | Terracon Project No. J2257015

Prepared for:

County of Westchester
148 Martine Avenue
White Plains, New York 10601

Prepared by:

Terracon Consultants-NY, Inc.
Rochester, New York

Nationwide
Terracon.com

- Facilities
- Environmental
- Geotechnical
- Materials

CERTIFICATION

I, Michele Patterson-Wittman, certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Interim Remedial Measure was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and Green Remediation (DER-31).

Michele M. Wittman
____
Michele Patterson-Wittman
P.G. No. 1776

06/27/2025
____
Date

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APPENDICES

1.0 PROJECT BACKGROUND

Terracon Consultants – NY, Inc. (Terracon) has prepared this Interim Remedial Measure (IRM) Work Plan (Work Plan) for the installation of a new concrete pad associated with a capital improvement project to include the Passenger Terminal Heating, Ventilation and Air Conditioning (HVAC) units HVAC-1 and HVAC-2 Upgrades project (HVAC Project) located within the Westchester County Airport (the "Airport" or "Site"). The Site is located at 240 Airport Road in West Harrison, Westchester County, New York (**Exhibit 1 in Appendix A**).

The Site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP) as Site No. C360174, which is administered by New York State Department of Environmental Conservation (NYSDEC or Department). This IRM Work Plan will be implemented in general accordance with the Interim Site Management Plan (ISMP) for the Site, a draft of which was submitted to NYSDEC on March 19, 2025 and is undergoing NYSDEC review concurrently with this IRM Work Plan.

The HVAC Project includes installation of a new concrete pad and will be located outside and adjacent to Passenger Terminal, as shown on the Site Diagram on **Exhibit 2**. The approximate limits of the IRM activities and construction activities are located near Passenger Terminal, as shown on **Exhibit 3**.

Based on our discussion with the Airport and review of the available HVAC Project information, a new structural concrete slab will be constructed to support the new HVAC units. To construct the new concrete pad, the following activities are planned:

- Existing area surfacing (asphalt pavement) will be demolished and removed.
- An approximate 20 foot by 20 foot by 3-foot-deep excavation will be completed.
- Backfill of the excavated area with a combination of sand, gravel and crushed stone.
- Pouring concrete to complete the pad construction.

The structural foundation engineering plans are included in **Appendix B**.

1.1 Site Description and History

The Site is located in a mixed-use area of commercial and residential parcels and is further illustrated on the United States Geological Survey (USG S) 7.5-minute Quadrangle (Glenville NY Topographic Quadrangle, 1967, Photo revised 1981) Map provided as **Exhibit 1**. The Site is approximately 700 acres, with about a third of the Airport located in the Kensico watershed. The topography at the Airport is generally flat and slopes gently to the south.

The New York Air National Guard (NYANG) was a tenant at the Airport from 1947 to 1983. As part of its operations, the NYANG performed aircraft firefighting training operations on a regular basis. These firefighting exercises and training activities were performed at a "Burn Pit" that was located near the NYANG's former hanger (hereafter referred to as the "NYANG Burn Pit") on County property adjacent to the NYANG's leasehold.

The NYANG conducted these exercises from as early as 1968 until 1983 when they vacated the Airport. The NYANG, as part of its firefighting exercises, used Aqueous Film-Forming Foam (AFFF), which historically contained compounds referred to as per- and polyfluoroalkyl substances (PFAS). The duration of AFFF use at the NYANG Burn Pit and the fact that the NYANG Burn Pit likely has resulted in groundwater at this location exhibiting the highest concentrations of PFAS impacts at the Site.

1.2 Conditions Warranting Interim Remedial Measures

A site-wide Remedial Investigation (RI) has not yet been completed for the Site, and previous investigations were not completed within the HVAC Project limits.

The proposed construction activities will be performed as an IRM and in accordance with the best practices and management plans outlined in the ISMP, including the Excavation Work Plan.

1.3 Work Plan Objectives

The purpose of this IRM Work Plan is to evaluate soils within the HVAC Project limits that will be excavated and managed by HPN's contractors. This IRM Work Plan will be the basis for a Beneficial Use Determination (BUD) for the HVAC Project soils. Based on the approximately 20 feet by 20 feet area of disturbance and an excavation depth ranging from three to five feet below ground surface (bgs), Terracon estimates that approximately 45 to 60 cubic yards (CY) of excess soils will be generated from the HVAC Project activities.

Terracon proposes evaluating HVAC Project soils for PFAS and other potential contaminants of concern (COCs) including volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). As part of the BUD requirements, metals, herbicides, pesticides and polychlorinated biphenyls (PCBs) will also be included within the laboratory analysis, and for use in determining soil re-use options.

The soil analytical results will also provide relevant environmental quality data in soils for worker exposure considerations and health and safety plan (HASP) preparation, if applicable.

1.4 Regulatory Criteria

NYSDEC has applicable standards, criteria and guidance (SCG) values that will be used for this project, which are included within the Draft ISMP. Samples selected for laboratory analysis will be submitted to a NYSDOH Environmental Laboratory Accreditation Program (ELAP) Contract Laboratory Protocol (CLP) certified laboratory.

As identified in the Draft ISMP, soil samples for PFAS analysis will be collected in general accordance with NYSDEC's guidance document titled *Sampling, Analysis, and Assessment of Per- and Polyfluoralkyl substances (PFAS)* dated April 2023.

2.0 IRM SCOPE OF WORK

The following sections provide Terracon's approach to evaluate HVAC Project soils slated for excavation.

2.1 Field Investigation Activities

Terracon and our drilling subcontractors will contact Dig Safely New York, a minimum of three business days prior to the commencement of the field work. In addition, Terracon will complete a private utility to mark/clear identifiable utilities in the HVAC Project work zone, and to clear the proposed drilling locations. Terracon's proposed field procedures are summarized below:

- ❖ Discrete soil samples will be collected utilizing a direct push drilling rig. Soil borings will be advanced to an approximate depth of 4-feet bgs. One of the two soil borings will be advanced to the water table interface, estimated to be approximately 5ft bgs (**Appendix C**).
- ❖ Soil samples will be field screened with a calibrated organic vapor meter (OVM) equipped with a photoionization detector (PID).
- ❖ OVM results and soil descriptions will be recorded in the field. Soil boring logs will be included in the technical report, or presented during our Monthly Status Reports at NYSDEC's request.
- ❖ Samples will be collected in accordance with the Draft ISMP for the Site, per DER-10 and the PFAS Sampling and Analysis guidance document.

As included in the Draft ISMP, when sampling for PFAS, sampling equipment components and sample containers should not come in contact with aluminum foil, low density polyethylene (LDPE), glass or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer. Standard two-step decontamination using detergent and clean water rinse will be performed for equipment that does come in contact with perfluorinated chemical (PFC) materials. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFC materials will be avoided. Many food and drink packaging materials and "plumbers thread seal tape" contain PFCs.

Clothing worn by sampling personnel must have been laundered multiple times. The sampler must wear nitrile gloves while filling and sealing the sample bottles.

Pre-cleaned sample bottles with closures, coolers, ice, sample labels and a chain-of-custody form will be provided by the laboratory.

2.2 Field Specific Quality Assurance/Quality Control Sampling

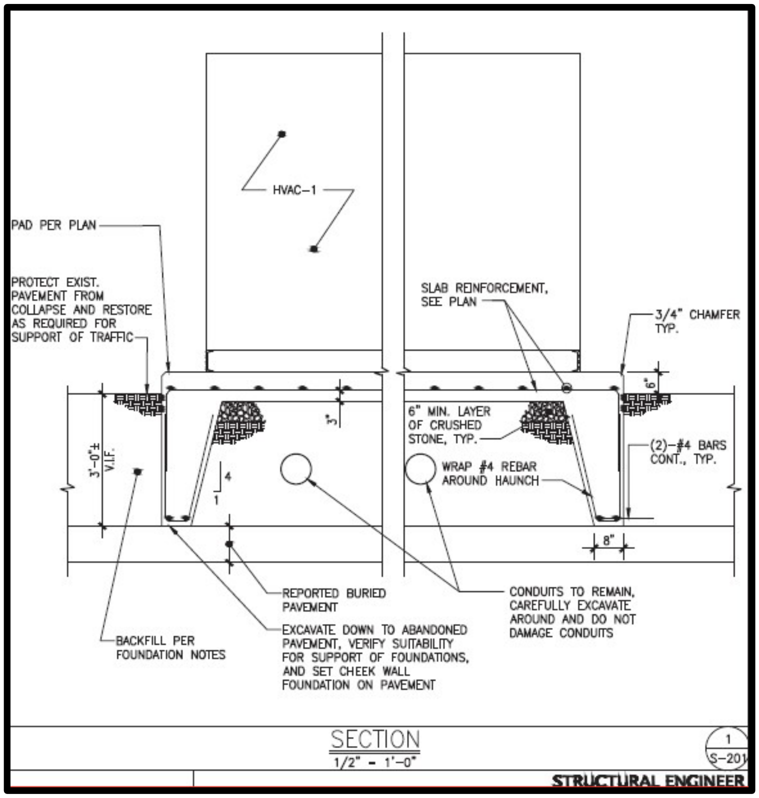
Based on the objective of this IRM Work Plan to evaluate soils for beneficial reuse, field-specific quality assurance/quality control (QA/QC) samples are not included in this scope of work.

2.3 Soil Sampling and Analysis

Based on Terracon's review of the HVAC Project construction documents and our conversations with Airport personnel, we are proposing the following scope of work:

- Advancing two soil borings within the proposed concrete pad area as shown on **Exhibit 4**.
- One soil boring will be advanced until the water table interface is reached, with the other advanced to a depth of approximately 4-feet bgs.
- One discrete grab soil sample will be collected for volatile organic compounds (VOC) analysis from the soil depth exhibiting the highest PID results. If no PID results are detected above background, the discrete sample will be collected from areas of visual/olfactory concerns, above the groundwater depth, or based on site conditions at the time of sample collection.
- At least one sample collected will be analyzed for the full suite of COCs, as listed below. This sample will be collected where the highest level of field contamination exists, or at the interval right above the water surface.
- Soil samples will be collected from below the asphalt surface to the bottom of the soil boring, expected to be at least four feet below grade. One composite sample will be collected from 0.5-to-4-foot from each of the two soil borings. Additionally, discrete soils samples will be collected for PFAS analysis, specifically from 0.5-12 inches and 12-24 inches bgs. As the surface at the soil boring locations is asphalt, soil samples will be collected below the asphalt.

- The proposed sampling intervals will generate soil information throughout the depth of the proposed excavation. Please see detail below from the HVAC Project engineering plans for reference.



Bid Document Detail No. 1: Section view of the proposed backfill area and concrete pad for the new HVAC units.

The discrete grab soil samples will be analyzed for the following COCs:

- Target Compound List (TCL) VOCs by EPA Method 8260.

The composite sample will be analyzed for the following COCs:

- PFAS by EPA Method 1633.
- TCL SVOCs by EPA Method 8270.
- Target Analyte List (TAL) Metals (arsenic, barium, beryllium, cadmium, hexavalent and trivalent chromium, copper, total cyanide, lead, manganese, total mercury, nickel, selenium, silver and zinc) by EPA Methods 6000/7000.
- PCBs by EPA Method 8082.
- Pesticides by EPA Method 8081.

- Herbicides by EPA Method 8151.

The PFAS soil analytical data will be compared to the NYSDEC Protection of Groundwater Guidance values for PFAS:

- PFOA - 0.8 parts per billion (ppb) or micrograms per kilogram (µg/kg).
- PFOS – 1.0 ppb or µg/kg.

Analytical testing results will be compared to the Soil Cleanup Objectives (SCOs) for Protection of Groundwater, Unrestricted or Restricted use per 6 NYCRR Part 375. If the composite sample identifies impacts above commercial or protection of groundwater SCOs, the remedial excavation extent will be evaluated, and may continue to the water table. Additional confirmatory soil samples will be collected, as required, at the extent of excavation.

Based on analytical results, additional groundwater investigation evaluation will be completed, and further sampling be done, if required, under a separate work plan.

Groundwater sampling will not be completed; however one soil boring will be advanced to the water table interface. Based on the anticipated depth to groundwater in the IRM work area and the proposed excavation depth of approximately four feet, no groundwater will be encountered. Historical data from April 2025 indicates MW-59S, located approximately 500 ft south of the work area, has a water table depth of approximately 5 feet (**Exhibit 3**). MW-59S has been evaluated for PFAS contamination in 2020, 2021 and 2022 from the WSP voluntary groundwater sampling effort. The last round of groundwater sampling for PFAS analysis at MW-59S was completed in October 2022 (**Appendix C**). We anticipate encountering groundwater at approximately 4-5 ft below grade.

2.4 Soil Handling and Reuse-Disposal Management

HPN's construction schedule requires the concrete pad to be constructed in late Summer 2025. Excavation for the concrete pad is planned to begin August 1, 2025. Existing asphalt pavement removed during construction activities will be removed by the Project contractors and transported offsite for recycling/reuse.

Soil generated during the excavation activities for the HVAC Project will be temporarily placed on and covered with poly sheeting on a paved surface. Terracon anticipates the analytical testing results of the soil samples will meet criteria for Unrestricted Use, and therefore the excavated materials can be deemed eligible for on-site reuse, or for beneficial reuse at a suitable off-site location as unregulated material. Approval for on-site reuse will be requested from the NYSDEC Project Manager.

If analytical testing results exceed SCOs for Unrestricted Use, then the material will be disposed offsite at a suitable location or licensed solid waste facility.

2.5 Reporting to NYSDEC

Terracon will communicate with NYSDEC and the Airport on the desired project communication schedule upon approval of the Workplan herein, including providing the results of this IRM Work Plan effort in our monthly updates to NYSDEC.

Terracon will compare the soil analytical results to the SCOs (and guidance values for PFAS) to evaluate the appropriate soil management options for the approximately 45 to 60 CY of HVAC Project soils. Terracon will discuss the soil analytical results with the Airport and NYSDEC to determine the appropriate soil management options for the Project that are in compliance with the Site's BCP requirements. As noted above, approval for on-site reuse will be requested from the NYSDEC Project Manager.

At the conclusion of the HVAC Project including final re-use and/or disposal of generated soils, Terracon will prepare an IRM Completion Report summarizing the field activities, analytical laboratory results and soil management documentation.

2.6 Health and Safety / Community Air Monitoring Plan (CAMP)

Terracon is committed to the safety of all its employees. As such, and in accordance with our *Incident and Injury Free (IIF)®* safety goals, Terracon will conduct fieldwork under a site-specific HASP, which is included in the Draft ISMP submitted to NYSDEC on March 19, 2025. To safeguard and protect workers and the community, air monitoring as described in the CAMP in the Draft ISMP will be performed during the ground-intrusive activities described in **Section 2.3** of this IRM Work Plan, and during subsequent soil loading/hauling activities for either on-site reuse or off-site beneficial reuse/disposal.

3.0 SCHEDULE

Terracon and its subcontractor team are prepared to mobilize to the Site upon receipt of NYSDEC approval of this IRM Work Plan. The anticipated schedule is presented below. The NYSDEC will be given a 45-day review period.

Date	IRM Work Plan Task
5/16/2025	Submit IRM Work Plan for HVAC Project to NYSDEC
6/16/2025	IRM Work Plan received with comments from NYSDEC
6/18/2025	IRM Work Plan re-submittal
6/26/2025	IRM Work Plan approval by NYSDEC

6/30/2025	Mobilize for soil sample collection
7/11/2025	Receive Analytical results and soil re-use determination
8/1/2025 through 8/15/2025	Construction of Concrete Pad and Bollards
9/15/2025	IRM Completion Report

4.0 STANDARD OF CARE

Terracon's services will be performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations from the work. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report.

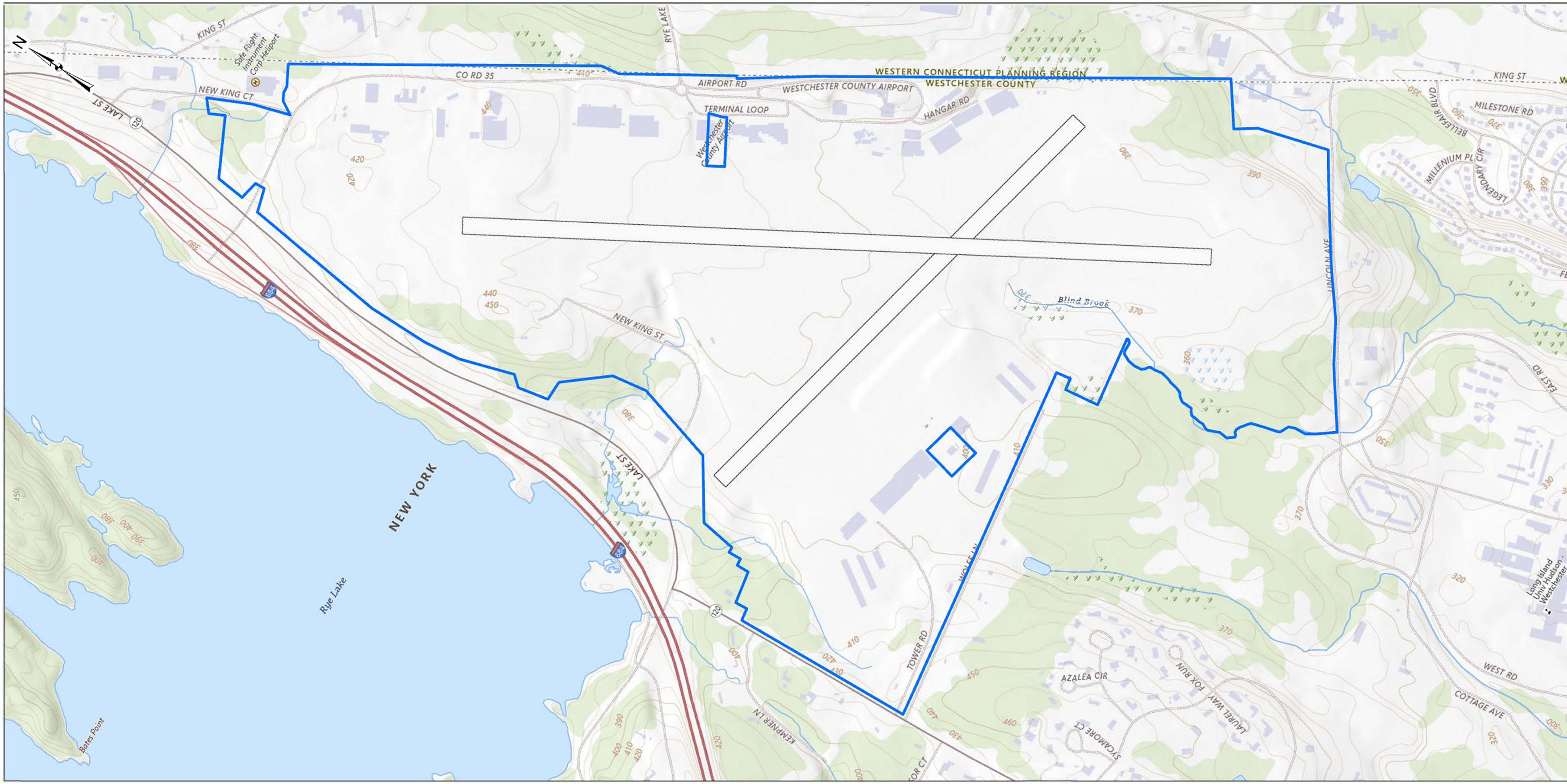
APPENDIX A

EXHIBIT 1: TOPOGRAPHIC MAP

EXHIBIT 2: SITE DIAGRAM

EXHIBIT 3: LIMITS OF IRM WORK AREA

EXHIBIT 4: HVAC UPGRADES WORK AREA – PROPOSED SOIL BORING



Legend

BCP Site Boundary

DATA SOURCES:
ESRI Basemaps
Westchester County GeoHub
New York DEC - Remediation Site Boundaries

Feet
0 500 1,000 2,000

Project No.:	JA257006
Date:	May 2025
Drawn By:	HPM
Reviewed By:	

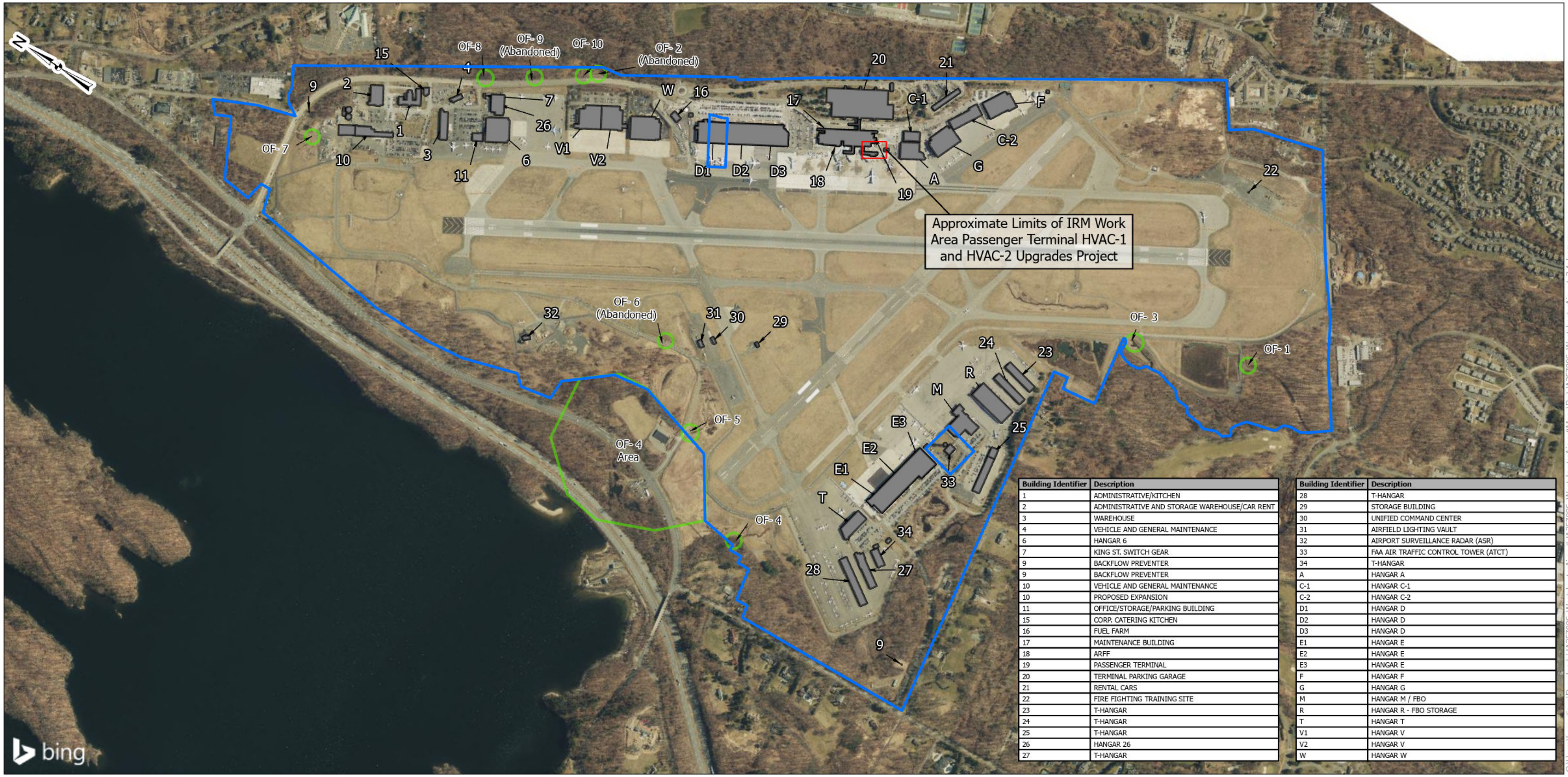
Terracon
70 Vantage Point Dr, Ste 1
Rochester, NY
PH. 585-247-3471 terracon.com

Topographic Map

Westchester County Airport
West Harrison, New York

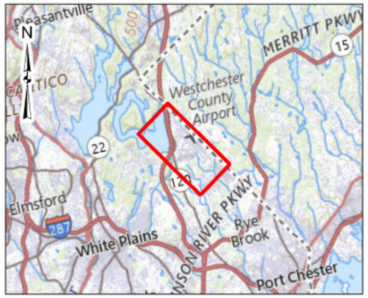
Exhibit

1



Building Identifier	Description
1	ADMINISTRATIVE/KITCHEN
2	ADMINISTRATIVE AND STORAGE WAREHOUSE/CAR RENT
3	WAREHOUSE
4	VEHICLE AND GENERAL MAINTENANCE
6	HANGAR 6
7	KING ST. SWITCH GEAR
9	BACKFLOW PREVENTER
9	BACKFLOW PREVENTER
10	VEHICLE AND GENERAL MAINTENANCE
10	PROPOSED EXPANSION
11	OFFICE/STORAGE/PARKING BUILDING
15	CORP. CATERING KITCHEN
16	FUEL FARM
17	MAINTENANCE BUILDING
18	ARFF
19	PASSENGER TERMINAL
20	TERMINAL PARKING GARAGE
21	RENTAL CARS
22	FIRE FIGHTING TRAINING SITE
23	T-HANGAR
24	T-HANGAR
25	T-HANGAR
26	HANGAR 26
27	T-HANGAR

Building Identifier	Description
28	T-HANGAR
29	STORAGE BUILDING
30	UNIFIED COMMAND CENTER
31	AIRFIELD LIGHTING VAULT
32	AIRPORT SURVEILLANCE RADAR (ASR)
33	FAA AIR TRAFFIC CONTROL TOWER (ATCT)
34	T-HANGAR
A	HANGAR A
C-1	HANGAR C-1
C-2	HANGAR C-2
D1	HANGAR D
D2	HANGAR D
D3	HANGAR D
E1	HANGAR E
E2	HANGAR E
E3	HANGAR E
F	HANGAR F
G	HANGAR G
M	HANGAR M / FBO
R	HANGAR R - FBO STORAGE
T	HANGAR T
V1	HANGAR V
V2	HANGAR V
W	HANGAR W



Legend

- BCP Site Boundary
- SPDES Outfall
- Buildings

DATA SOURCES:
Westchester County GeoHub
NYSDEC - BCP Site Boundary

Feet
0 500 1,000 2,000

Project No.:	JA257006
Date:	May 2025
Drawn By:	HPM
Reviewed By:	LBG

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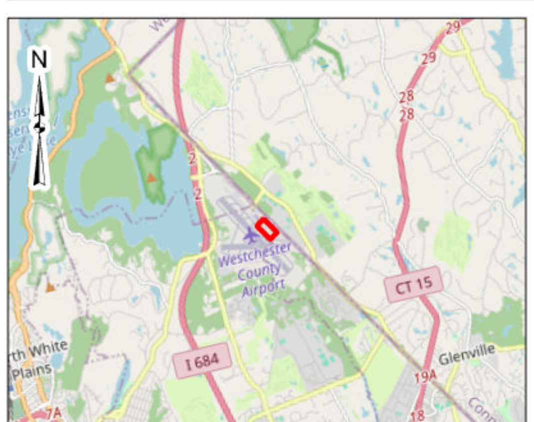
PH. 585-247-3471 terracon.com

Site Diagram

Westchester County Airport
West Harrison, New York

Figure

2



Legend

- HVAC Project Area
- Buildings
- Monitoring Well

DATA SOURCES:
Westchester County GeoHub
NYSDEC - BCP Site Boundary

Feet
0 100 200

Project No.:	JA257006
Date:	Jun 2025
Drawn By:	HPM
Reviewed By:	

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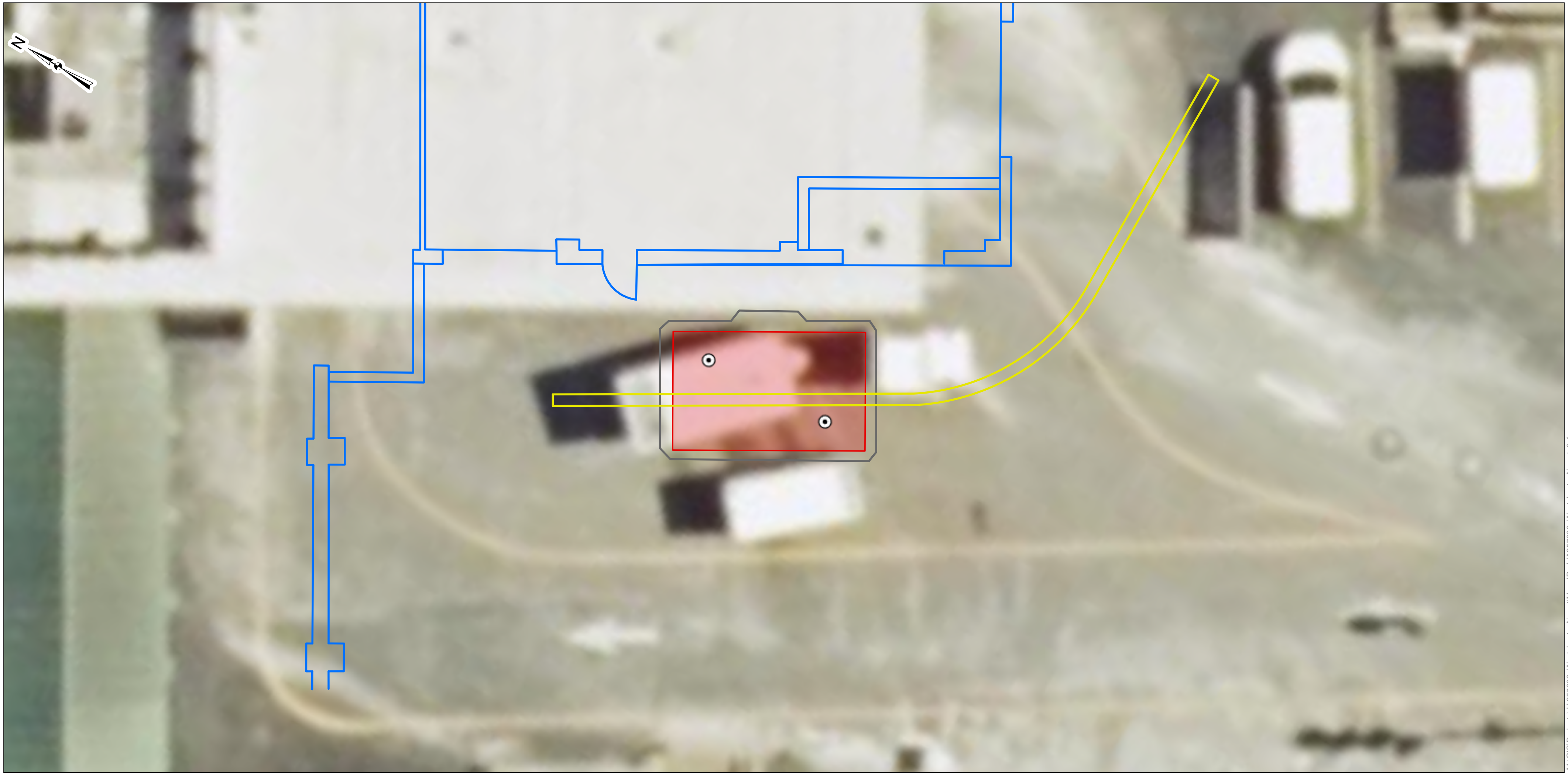
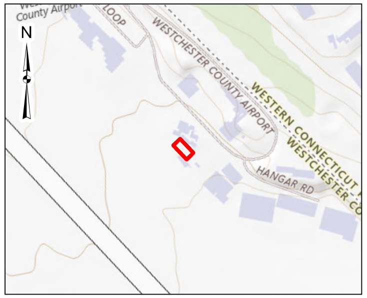
Limits of IRM Work Area

Westchester County Airport
West Harrison, New York

Figure

3





Legend

- Proposed Soil Borings
- AHU Unit
- Structure
- Mechanical Equipment Foundation
- Buried Electrical Conduit

DATA SOURCES:
ESRI Basemaps
Westchester County GeoHub

Feet
0 5 10 20

Project No.:	JA257006
Date:	May 2025
Drawn By:	RS
Reviewed By:	

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PH. 585-247-3471 terracon.com

HVAC Upgrades Work Area – Proposed Soil Borings

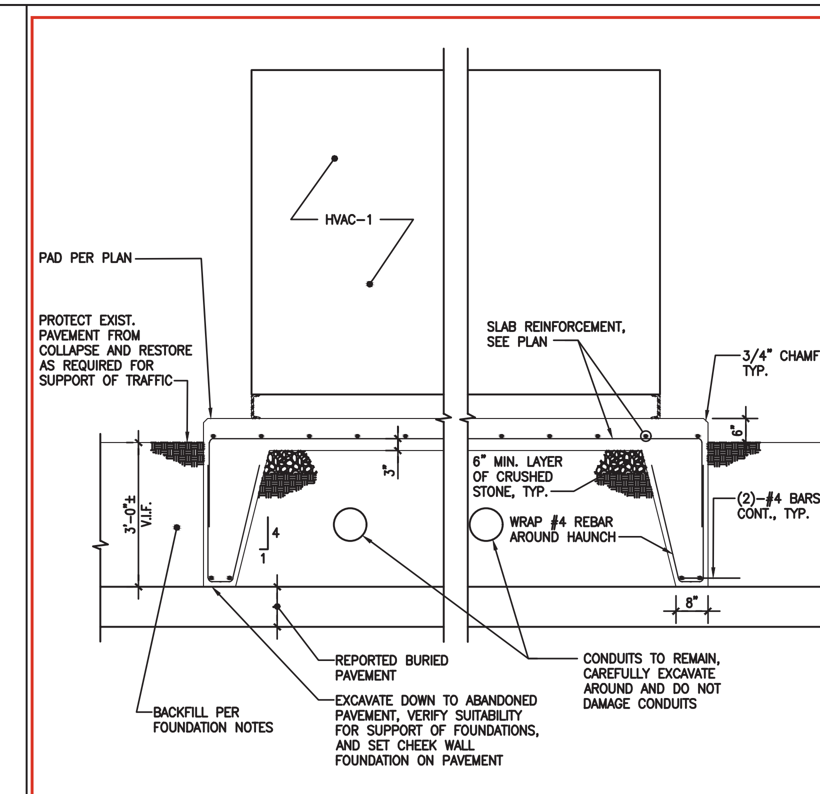
Westchester County Airport
West Harrison, New York

Figure

4

APPENDIX B

Passenger Terminal HVAC-1 and HVAC-2 Upgrades Construction Documents



SECTION
1/2" = 1'-0"
1 S-201

STRUCTURAL ENGINEER

CONLON ENGINEERING, LLC
246 FEDERAL ROAD, SUITE B23
BROOKFIELD, CONNECTICUT 06804
203-740-0990

MEP ENGINEER

OLA Consulting Engineers

50 Broadway,
Hawthorne, NY 10532
914.747.2800

8 West 38th Street,
Suite 900
New York, NY 10018
646.849.4110

olace.com

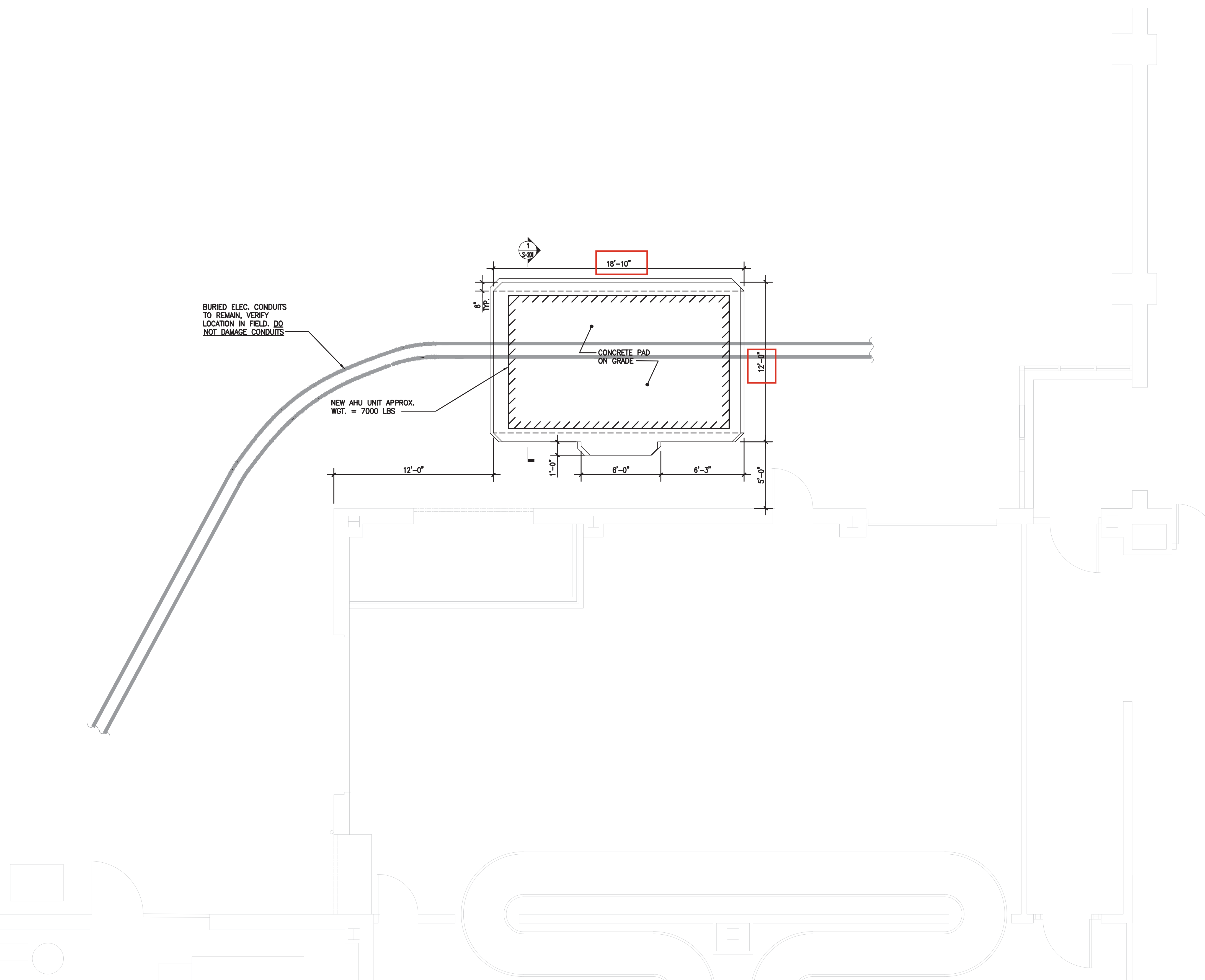
PROJECT NORTH

REVISION NUMBER	DATE	MADE BY	APP'D BY	REVISION

RECORD DRAWING CERTIFICATION

☐ AS BUILT – CHANGES AS NOTED
☐ AS BUILT – NO CHANGES

CONTRACTOR	PROJECT COORDINATOR
NAME	NAME
SIGNATURE	SIGNATURE
TITLE DATE	TITLE DATE



MECHANICAL EQUIP. FOUNDATION PLAN
1/4" = 1'-0"

- DO NOT SCALE THIS DRAWING, ALL DIMENSIONS AND ELEVATIONS SHALL BE V.I.F.
- NEW EQUIPMENT PAD CONSTRUCTION: 8" CONCRETE SLAB REINFORCED WITH #4 AT 18"o.c. EACH WAY.

IN CHARGE OF PATRICK CONLON
CHECKED BY PATRICK CONLON
MADE BY LEANDRO CARVALHO

WESTCHESTER COUNTY, NEW YORK
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
DIVISION OF ENGINEERING

TERMINAL BUILDING HVAC-1 AND HVAC-2 UPGRADES
WESTCHESTER COUNTY AIRPORT
TOWNS OF HARRISON, NORTH CASTLE & VILLAGE OF RYE BROOK, NEW YORK
STRUCTURAL FLOOR PLAN

CONTRACT NUMBER	SHEET NUMBER
23-532-Rev.	S-201

SHEET NO. 2 OF 19
SCALE: AS SHOWN
DATE: 10/29/24
DPW FILE NO. 48-15-S-875
REV. NO. 0

GENERAL NOTES:

1. THE PURPOSE OF THESE DRAWINGS IS TO SHOW THE STRUCTURAL WORK ASSOCIATED WITH EQUIPMENT PAD ON GRADE AT WESTCHESTER COUNTY AIRPORT WHITE PLAINS, NY.
2. THE STRUCTURAL COMPONENTS HAVE BEEN DESIGNED FOR THE FOLLOWING LOADS:
   A. EQUIPMENT PAD LIVE LOAD:
      EQUIPMENT WEIGHT — SEE PLAN
      EQUIPMENT ACCESS — 60 PSF
   B. WIND DESIGN DATA:
      WIND LOADS HAVE BEEN DETERMINED BASED ON SECTION 1609.6, SIMPLIFIED PROVISIONS FOR LOW RISE BUILDINGS SECTION 1609.1.1 IN ACCORDANCE WITH ASCE 7-16, CHAPTER 27 (DIRECTIONAL PROCEDURE)
      RISK CATEGORY — II
      BASIC (ULTIMATE) WIND SPEED (3-SECOND GUST) — 115 MPH
      EXPOSURE — C
   C. EARTHQUAKE DESIGN DATA:
      RISK CATEGORY — II
      MAPPED SHORT PERIOD SPECTRAL RESPONSE ACCELERATIONS, SS: — 0.28 g
      MAPPED 1 SECOND PERIOD SPECTRAL RESPONSE ACCELERATIONS, S1: — 0.06 g
      SITE CLASS: — D
      DESIGN SHORT PERIOD SPECTRAL RESPONSE ACCELERATIONS, SDS: — 0.29 g
      DESIGN 1 SECOND PERIOD SPECTRAL RESPONSE ACCELERATIONS, SD1: — 0.097 g
      SEISMIC DESIGN CATEGORY: — B
   D. EXISTING BUILDINGS:
      THE PROPOSED ADDITIONS AND ALTERATIONS DO NOT INCREASE THE FORCE IN ANY STRUCTURAL ELEMENT BY MORE THAN 5 PERCENT NOR DO THEY DECREASE THE STRENGTH OF ANY STRUCTURAL ELEMENT TO LESS THAN REQUIRED BY THE BUILDING CODE FOR NEW STRUCTURES.
3. THIS STRUCTURE HAS BEEN DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE WORK SHOWN ON THESE DRAWINGS HAS BEEN COMPLETED. THE STABILITY OF THE STRUCTURE PRIOR TO COMPLETION IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR. THIS RESPONSIBILITY EXTENDS TO ALL RELATED ASPECTS OF THE CONSTRUCTION ACTIVITY INCLUDING, BUT NOT LIMITED TO, ERECTION METHODS, ERECTION SEQUENCE, TEMPORARY BRACING, FORMS, SHORING, USE OF EQUIPMENT, AND SIMILAR CONSTRUCTION PROCEDURES. REVIEW OF THE CONSTRUCTION BY THE ENGINEER IS FOR CONFORMANCE WITH DESIGN ASPECTS ONLY, NOT TO REVIEW THE CONTRACTOR'S CONSTRUCTION PROCEDURES. LACK OF COMMENT ON THE PART OF THE ENGINEER WITH REGARD TO CONSTRUCTION PROCEDURES IS NOT TO BE INTERPRETED AS APPROVAL OF THOSE PROCEDURES.
4. JOBSITE SAFETY AND CONSTRUCTION PROCEDURES ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR. REVIEW OF THE CONSTRUCTION BY THE ENGINEER IS FOR CONFORMANCE WITH DESIGN ASPECTS ONLY, NOT TO REVIEW THE CONTRACTOR'S PROVISIONS FOR JOB SITE SAFETY. LACK OF COMMENT BY THE ENGINEER IS NOT TO BE INTERPRETED AS APPROVAL OF THOSE ASPECTS OF WORK.
5. ONE BLACKLINE PRINT OF ALL ERECTION AND DETAIL SHOP DRAWINGS FOR STEEL REINFORCING BARS (CONCRETECONSTRUCTION) INDICATING THE FABRICATOR, MANUFACTURER, FINISH, LAYOUT, AND ALL ACCESSORIES MUST BE SUBMITTED TO AND BE CHECKED BY THE CONTRACTOR AND SUBCONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE SUBMISSION TO THE ARCHITECT FOR REVIEW PRIOR TO FABRICATION.
6. TESTING AND INSPECTION OF CONCRETE STEEL REINFORCING BARS (CONCRETE CONSTRUCTION) AND OTHER WORK IS DESCRIBED IN THE QUALITY CONTROL SECTION OF THESE NOTES. THE CONTRACTOR SHALL REVIEW THE QUALITY CONTROL SECTION AND COORDINATE THE SCHEDULING OF INSPECTIONS WITH THE TESTING AND INSPECTIONS AGENCY AND THE ENGINEER. UNINSPECTED WORK THAT REQUIRED INSPECTIONS MAY BE REJECTED SOLELY ON THAT BASIS.
7. IF FAULTY CONSTRUCTION PROCEDURES, OR MATERIAL, RESULT IN DEFECTIVE WORK THAT REQUIRES ADDITIONAL ENGINEERING TIME TO DEVISE CORRECTIVE MEASURES, PROFESSIONAL FEES MAY BE CHARGED TO THE CONTRACTOR AT THE STANDARD HOURLY RATE OF ADDITIONAL SERVICES. SUCH FEES MAY BE WITHHELD FROM THE GENERAL CONTRACTOR'S PAYMENT.
8. LOADS OPENINGS AND STRUCTURE IN ANY WAY RELATED TO REQUIREMENTS OF OTHER (NON-STRUCTURAL) DISCIPLINES ARE SHOWN FOR BIDDING PURPOSES ONLY. HOWEVER, THESE PLANS DO NOT SHOW THE FULL SCOPE OF OPENINGS, IN ROOFS, FLOORS AND WALLS. FOR SIZE AND LOCATION OF ALL OPENINGS, SEE MECHANICAL DRAWINGS. DO NOT SCALE OPENINGS. THE CONTRACTOR SHALL OBTAIN FROM THE HEATING AND VENTILATING, ELECTRICAL, PLUMBING AND OTHER TRADES THE FINAL APPROVED SIZE AND LOCATION OF ALL OPENINGS, EQUIPMENT AND WORK TO BE PROVIDED FOR THEIR TRADE FOR ROOFS, FLOORS AND WALLS, WHETHER SHOWN OR NOT SHOWN ON STRUCTURAL DRAWINGS. EXCESS COST RELATED TO VARIATION IN REQUIREMENTS OR EQUIPMENT ARE NOT TO BE BORNE BY THE OWNER.
9. MECHANICAL EQUIPMENT WEIGHTS USED IN DESIGN OF SUPPORTING ELEMENTS ARE INDICATED ON THE DRAWINGS. CONTRACTOR SHALL NOTIFY THE MECHANICAL ENGINEER PRIOR TO INSTALLATION OF EQUIPMENT IF ACTUAL WEIGHT EXCEEDS WEIGHT SHOWN ON DRAWINGS.
10. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND ANGLES WITH MECHANIACAL DRAWINGS AND EXISTING CONDITIONS BEFORE PROCEEDING WITH ANY WORK.
11. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE PROCEEDING WITH ANY WORK. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS NOTED "±" THAT ARE INDICATED ON THE DRAWINGS.
12. WORK SHOWN AS "TYPICAL DETAILS" APPLY THROUGHOUT THE PROJECT AS REQUIRED. WORK SHOWN AS "SECTIONS" SHALL BE CONSIDERED TO APPLY FOR THE SAME AND SIMILAR CONDITIONS IN THE BUILDING.
13. SOME DETAILS OF THE WORK ARE SHOWN ON THE MECHANICAL DRAWINGS. A CAREFUL REVIEW AND STUDY OF THESE DETAILS ARE NECESSARY BEFORE THE FULL SCOPE OF THE WORK CAN BE COMPREHENDED.
14. DO NOT SCALE DRAWINGS.

FOUNDATION NOTES:

1. THE FOUNDATIONS HAVE BEEN DESIGNED TO REST ON INORGANIC, UNDISTURBED SOIL OR COMPACTED GRANULAR FILL HAVING A PRESUMPTIVE BEARING VALUE OF 3000 PSF SUCH BEARING STRATA IS ANTICIPATED AT THE BOTTOM OF FOOTING ELEVATIONS NOTED ON THE FOUNDATION PLAN. ALL BEARING STRATA SHALL BE REVIEWED BY THE ENGINEER PRIOR TO PLACING CONCRETE IN ORDER TO VERIFY THE PRESUMPTIVE BEARING VALUE.
2. IN AREAS REQUIRING FILL, THE FILL MATERIAL SHALL BE A UNIFORMLY GRADED MIXTURE OF SAND AND GRAVEL WEIGHING NO LESS THAN 120 PCF DRY DENSITY AFTER COMPACTION IN PLACE. THIS MIXTURE SHALL BE UNIFORMLY GRADED HAVING NO STONE GREATER THAN 3 INCHES IN ANY ONE DIMENSION, WITH NO MORE THAN 90 PERCENT BY WEIGHT PASSING A 1-1/2-INCH SIEVE, AND WITH LESS THAN 12 PERCENT BY WEIGHT, PASSING A NO. 200 SIEVE. A SOILS TESTING LAB, HIRED BY THE OWNER, SHALL TEST ON-SITE OR BORROW SOIL MATERIAL PROPOSED FOR BACKFILL FOR CLASSIFICATION ACCORDING TO ASTM D 2487 AND FOR LABORATORY COMPACTION CURVE ACCORDING TO ASTM D 1557. UNIFORMLY MOISTEN OR AERATE SUBGRADE AND EACH BACKFILL LAYER BEFORE COMPACTION TO WITHIN 2 PERCENT OF OPTIMUM MOISTURE CONTENT. THE FILL MATERIAL SHALL BE PLACED IN MAXIMUM LIFTS OF 8 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT, AND IN MAXIMUM LIFTS OF 4 INCHES LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND-OPERATED TAMPERS. EACH LIFT SHALL BE COMPACTED WITH APPROPRIATE EQUIPMENT TO A MINIMUM OF 95 PERCENT OF ITS MAXIMUM DENSITY AT OR NEAR OPTIMUM MOISTURE. NO WORK SHALL BE PLACED WHEN WEATHER CONDITIONS ARE SUCH THAT THE MOISTURE CONTENT OF THE FILL CANNOT BE PROPERLY CONTROLLED. IN PLACING AND COMPACTING FILL AND BACKFILL MATERIAL, DO NOT DAMAGE NOR DISPLACE CONCRETE WORK ALREADY IN PLACE BY CONTACT FROM COMPACTION MACHINERY, BY SUBJECTING IT TO OVERTURNING FROM HEAVY COMPACTING LOADINGS, OR ANY OTHER CAUSE. PLACE FILL AGAINST SUCH CONCRETE AT THE SAME RATE AS THE REMAINDER OF FILL, COMPACTING UNIFORMLY ON BOTH SIDES USING HAND - OPERATED TAMPERS. A SOILS TESTING LAB, HIRED BY THE OWNER, SHALL TEST COMPACTION OF SOILS IN PLACE ACCORDING TO ASTM D 1556, ASTM D 2167, ASTM D 2922, AND ASTM D 2937 AS APPLICABLE. WHEN TEST REPORTS INDICATE THAT BACKFILLS HAVE NOT ACHIEVED THE DEGREE OF COMPACTION SPECIFIED, SCARIFY AND MOISTEN OR AERATE, OR REMOVE AND REPLACE SOIL TO DEPTH REQUIRED; RECOMPACT AND RETEST UNTIL SPECIFIED COMPACTION IS OBTAINED.
3. THE SLAB-ON-GRADE SUB-BASE SHALL BE A CRUSHER RUN STONE FREE FROM SOFT DISINTEGRATED PIECES, MUD, DIRT, OR OTHER INJURIOUS MATERIAL. THE MATERIAL SHALL HAVE NO STONE GREATER THAN 2 INCHES IN ANY ONE DIMENSION AND WITH LESS THAN 10 PERCENT BY WEIGHT PASSING A NO. 100 SIEVE.
4. ALL SOIL SURROUNDING AND UNDER FOOTINGS SHALL BE PROTECTED FROM FREEZING AND FROST ACTION DURING THE COURSE OF CONSTRUCTION.
5. KEEP FOUNDATION EXCAVATIONS FREE OF WATER AT ALL TIMES.
6. USE LEAN CONCRETE (f'c=1500 PSI) OR CONTROLLED COMPACTED FILL FOR OVER-EXCAVATION OF FOOTINGS.
7. EXISTING UTILITIES: LOCATE EXISTING UNDERGROUND UTILITIES IN AREAS OF EXCAVATION WORK. PROVIDE ADEQUATE MEANS OF SUPPORT AND PROTECTION DURING EARTHWORK OPERATIONS.
8. WHERE FOOTINGS ARE IN CLOSE PROXIMITY OF SUB-SURFACE PIPING, BOTTOM OF FOOTINGS SHALL BE AT LEAST 8" BELOW ELEVATION OF PIPING, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
9. SUBMITTALS TO THE ENGINEER ARE REQUIRED FOR STRUCTURAL FILL, AND SLAB SUB-BASE AND FINE-GRADED GRANULAR MATERIAL.

CONCRETE NOTES:

1. CONCRETE SHALL BE THE SPECIFIED WEIGHT AND DEVELOP A MINIMUM STRENGTH IN 28 DAYS AS FOLLOWS:

LOCATION	WEIGHT	MINIMUM STRENGTH	MAXIMUM WATER/CEMENTITIOUS RATIO (OR SLUMP WHERE INDICATED)
EQUIP. PAD	NORMAL	4,500 PSI	0.40

2. ALL DETAILING FABRICATION, AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED, MUST FOLLOW THE LATEST ACI CODE AND THE LATEST ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES".
3. CONCRETE DESIGN MIX SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW, TOGETHER WITH LABORATORY REPORTS ATTESTING THAT THE MIXES CAN ATTAIN THE MINIMUM STRENGTH REQUIRED IN ACCORDANCE WITH ACI 301.
4. PORTLAND CEMENT SHALL BE TYPE I OR TYPE II AND CONFORM TO ASTM C150.
5. OTHER CEMENTITIOUS MATERIAL SUCH AS FLYASH OR GROUND GRANULATED BLAST- FURNACE SLAG MAY BE BLENDED WITH CEMENT FOR USE IN THE CONCRETE MIX. FLYASH SHALL CONFORM TO ASTM C618 AND MAY REPLACE CEMENT IF THE FOLLOWING RANGES FOR THE 2 CLASSES OF FLYASH; CLASS C, 20 TO 35%; CLASS F, 15 TO 25%. GROUND GRANULATED BLAST- FURNACE SLAG SHALL CONFORM TO ASTM C989 AND MAY NOT EXCEED 50% OF TOTAL WEIGHT OF CEMENTITIOUS MATERIALS.
6. COARSE AGGREGATE SHALL BE 3/4" AND CONFORM TO ASTM C33.
7. NO ADMIXTURES ARE PERMITTED WITHOUT THE ENGINEERS WRITTEN PERMISSION OTHER THAN ENTRAINED AIR. ALL LIGHTWEIGHT CONCRETE AND CONCRETE EXPOSED TO THE WEATHER, SUCH AS THAT USED IN FOUNDATION WALLS, SHALL CONTAIN 5% ± 1% ENTRAINED AIR. DO NOT USE AIR ENTRAINMENT ADMIXTURE FOR INTERIOR NORMALWEIGHT CONCRETE SLABS.
8. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60.
9. THE FOLLOWING CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:

LOCATION	COVER (INCHES)
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3

10. THE CONVEYANCE, PLACEMENT AND PROTECTION OF THE CONCRETE SHALL CONFORM TO ACI 318 PER "REFERENCE STANDARD TABLE". MECHANICAL VIBRATORS ARE TO BE USED TO CONSOLIDATE THE FRESHLY CAST CONCRETE AROUND THE REINFORCING AND AGAINST FORM SURFACES AND TO PREVENT THE FORMATION OF AIR OR STONE POCKETS, HONEYCOMBING, PITTING OR PLANES OF WEAKNESS. HOWEVER, CARE MUST BE USED TO AVOID OVER VIBRATION THAT CAN LEAD TO AGGREGATE SEGREGATION.
11. NO WELDING OF REINFORCING WILL BE PERMITTED.
12. ALL LAP SPLICES SHALL BE CLASS B, IN ACCORDANCE WITH ACI 318 INDICATED IN THE "REFERENCE STANDARD TABLE".
13. THE INSTALLATION OF SLABS SHALL CONFORM TO THE REQUIREMENTS OF ACI 302.1R. INTERIOR FINISH SLAB SURFACES ARE TO HAVE A STEEL TROWEL FINISH. SURFACES OF SLABS FORMING THE SUBSTRATE FOR MUD JOBS ARE TO HAVE A CLEAN TEXTURED (SCRATCHED) SURFACE. EXTERIOR SLAB SURFACES ARE TO HAVE A BROOM FINISH UNLESS SPECIFIED ON THE ARCHITECTURAL DRAWINGS.
14. THE CURING AND PROTECTION OF CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF ACI 318 INDICATED IN THE "REFERENCE STANDARD TABLE". CONCRETE SLABS SHALL BE PROTECTED FROM LOSS OF SURFACE MOISTURE FOR NOT LESS THAN 7 DAYS USING A CURING COMPOUND CONFORMING TO ASTM C309 OR CONSTANTLY WETTED BURLAP. CURING COMPOUNDS SHALL BE COMPATIBLE WITH ANY INTENDED FLOORING OVERLAY. DO NOT INSTALL FINISH FLOORING UNTIL SLAB HAS ADEQUATELY DRIED PER THE FLOORING MANUFACTURER'S SPECIFICATIONS.
15. COLD WEATHER CONCRETE PLACEMENT: IF COLD WEATHER CONCRETING CONDITIONS EXIST AS DEFINED BY A PERIOD OF MORE THAN THREE DAYS WHEN THE AVERAGE OUTDOOR TEMPERATURE, (HIGH + LOW)/2, IS LESS THAN 40 DEG. F. THE PROCEDURES OUTLINED IN ACI 306.1 STANDARD SPECIFICATION FOR "COLD WEATHER CONCRETING" SHALL BE UTILIZED.
16. HOT WEATHER CONCRETE PLACEMENT: MAINTAIN CONCRETE TEMPERATURE BELOW 90 DEG. F. AT TIME OF PLACEMENT AND COMPLY WITH ACI 301.
17. ACCURATELY POSITION, SUPPORT, AND SECURE REINFORCEMENT AGAINST DISPLACEMENT. LOCATE AND SUPPORT REINFORCEMENT WITH BAR SUPPORTS TO MAINTAIN MINIMUM CONCRETE COVER. DO NOT TACK WELD CROSSING REINFORCING BARS. PROVIDE BAR SUPPORTS AS FOLLOWS:

    BOLSTERS, CHAIRS, SPACERS, AND OTHER DEVICES FOR SPACING, SUPPORTING, AND FASTENING REINFORCING BARS AND WELDED WIRE REINFORCEMENT IN PLACE. MANUFACTURE BAR SUPPORTS FROM STEEL WIRE, PLASTIC, OR PRECAST CONCRETE ACCORDING TO CRSI'S "MANUAL OF STANDARD PRACTICE," OF GREATER COMPRESSIVE STRENGTH THAN CONCRETE
18. THE FOLLOWING SUBMITTALS ARE TO BE MADE TO AND APPROVED BY THE ENGINEER PRIOR TO COMMENCING ANY WORK:
    A. CONCRETE DESIGN MIX FOR EACH STRENGTH OF CONCRETE REQUIRED ATTESTING THAT THE MIXES CAN ATTAIN THE MINIMUM REQUIRED STRENGTHS IN ACCORDANCE WITH ACI 318.
    B. CERTIFICATES OF COMPLIANCE FOR CEMENT, AGGREGATES, AND ADDITIVES.
    C. SHOP DRAWINGS WITH PLANS, ELEVATIONS, SECTIONS AND BENDING SCHEDULES INDICATING ALL REINFORCING AND ACCESSORIES NEEDED IN ADDITION TO ALL PROPOSED CONSTRUCTION JOINTS LOCATIONS.

    FABRICATION AND/ OR DELIVERY TO THE SITE OF THESE MATERIALS PRIOR TO RECEIPT OF AND APPROVAL OF THESE SUBMITTALS IS AT THE CONTRACTOR'S OWN RISK.

QUALITY CONTROL:

1. GENERAL:
   A. THE OWNER SHALL EMPLOY AN INDEPENDENT TESTING AND INSPECTION AGENCY TO PERFORM THE TESTS AND INSPECTIONS INDICATED UNDER THIS QUALITY CONTROL SECTION. REPORTS SHALL BE SUBMITTED TO THE ARCHITECT, ENGINEER AND OWNER IN A TIMELY MANNER.
   B. THE CONTRACTOR SHALL NOTIFY IN A TIMELY MANNER THE TESTING AND INSPECTION AGENCY AND THE ENGINEER TO SCHEDULE FIELD INSPECTIONS.
2. SOILS AND FOUNDATIONS:
   A. PRIOR TO PLACEMENT OF PREPARED FILL, THE TESTING AGENCY'S PROFESSIONAL GEOTECHNICAL ENGINEER SHALL DETERMINE THAT THE SITE HAS BEEN PREPARED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. INSPECT SOILS BELOW FOOTINGS FOR ADEQUATE BEARING CAPACITY AND CONSISTENCY WITH THE CONTRACT DOCUMENTS.
   B. DURING PLACEMENT AND COMPACTION OF FILL MATERIAL, THE TESTING AGENCY'S PROFESSIONAL GEOTECHNICAL ENGINEER SHALL DETERMINE THAT THE MATERIAL BEING USED AND THE MAXIMUM LIFT THICKNESS COMPLY WITH THE CONTRACT DOCUMENTS. VERIFY EXTENT AND SLOPE OF FILL PLACEMENT.
   C. PERFORM SIEVE TESTS AND MODIFIED PROCTOR TESTS OF EACH SOURCE OF FILL MATERIAL. THROUGH TESTING, VERIFY THAT THE COMPACTED FILL TO BE USED UNDER FOOTINGS AND SLABS COMPLIES WITH THE CONTRACT DOCUMENTS.
   D. REVIEW THAT THE IN-PLACE DENSITY OF THE COMPACTED FILL COMPLIES WITH CONTRACT DOCUMENTS.
3. CONCRETE:
   A. REINFORCING: INSPECT 50% OF INSTALLED REINFORCING BARS.
   B. CAST-IN-PLACE ANCHORS: INSPECT 50% OF ANCHORS FOR MATERIALS, SIZE, POSITIONING, SPACING, EDGE DISTANCE AND EMBEDMENT.
   C. POST-INSTALLED MECHANICAL AND ADHESIVE ANCHORS AND DOWELS: INSPECT 100% OF MECHANICAL ANCHORS AND 75% OF ADHESIVE ANCHOR FOR MATERIALS, SIZE, POSITIONING, SPACING, EDGE DISTANCE AND EMBEDMENT. INSPECT DRILLED HOLES (FOR PROPER PREPARATION, SIZE, DEPTH AND CLEANING) AND ANCHOR AND DOWEL INSTALLATION FOR COMPLIANCE WITH MANUFACTURER'S REQUIREMENTS.
   D. CONDUCT STRENGTH TESTS IN ACCORDANCE WITH THE FOLLOWING PROCEDURES: (A STRENGTH TEST CONSISTS OF FOUR CONCRETE CYLINDERS.)
      a. MAKE ONE STRENGTH TEST FOR EACH 50 CUBIC YARDS OR FRACTION THEREOF FROM EACH MIX DESIGN OF CONCRETE PLACED IN ANY ONE DAY, EXCEPT THAT IN NO CASE SHALL A GIVEN MIX DESIGN BE REPRESENTED BY LESS THAN FIVE TESTS.
      b. SECURE COMPOSITE SAMPLES IN ACCORDANCE WITH "METHOD OF SAMPLING FRESH CONCRETE" (ASTM C 172). EACH STRENGTH TEST SHALL BE OBTAINED FROM A DIFFERENT BATCH OF CONCRETE ON A REPRESENTATIVE, TRULY RANDOM BASIS. WHEN PUMPING OR PNEUMATIC EQUIPMENT IS USED, SAMPLES SHALL BE TAKEN AT THE DISCHARGE END.
      c. MOLD FOUR SPECIMENS FROM EACH SAMPLE IN ACCORDANCE WITH "METHOD OF MAKING AND CURING CONCRETE COMPRESSION AND FLEXURE SPECIMENS IN THE FIELD" (ASTM C 31), AND CURE UNDER STANDARD MOISTURE AND TEMPERATURE CONDITIONS, IN ACCORDANCE WITH SECTION 7(A) AND 7(B) OF THE ABOVE ASTM METHOD.
      d. DETERMINE SLUMP OF THE CONCRETE SAMPLE FOR EACH STRENGTH TEST AND WHENEVER CONSISTENCY OF CONCRETE APPEARS TO VARY USING "METHOD OF TEST OF SLUMP OF PORTLAND CEMENT CONCRETE" (ASTM C 143).
      e. DETERMINE AIR CONTENT OF NORMAL WEIGHT CONCRETE SAMPLE FOR EACH STRENGTH TEST IN ACCORDANCE WITH EITHER "METHOD OF TEST FOR AIR CONTENT OF FRESHLY MIXED CONCRETE BY PRESSURE METHOD" (ASTM C 231), "METHOD OF TEST FOR AIR CONTENT OF FRESHLY MIXED CONCRETE BY THE VOLUMETRIC METHOD" (ASTM C 173).
      f. TEST THREE SPECIMENS: ONE AT SEVEN DAYS, AND TWO AT 28 DAYS IN ACCORDANCE WITH "METHOD OF TEST FOR COMPRESSIVE STRENGTH OF MOLDED CONCRETE CYLINDERS" (ASTM C 39). THE 28 DAY TEST RESULT SHALL BE THE AVERAGE OF THE TWO SPECIMENS. IF THE AVERAGE OF THE TWO SPECIMENS IS LESS THAN THE REQUIRED STRENGTH, TEST THE FOURTH SPECIMEN AT 45 DAYS. WHEN HIGH EARLY STRENGTH IS REQUIRED, TWO SPECIMENS SHALL BE TESTED AT SEVEN DAYS.
   E. CURING AND PROTECTION: PERIODICALLY REVIEW CURING TEMPERATURES AND PROTECTION TECHNIQUES. ALSO INSPECT HOT AND COLD WEATHER PROCEDURES AS APPLICABLE TO BE IN ACCORDANCE WITH ACI 305R (HOT WEATHER) AND ACI 306.1 (COLD WEATHER)

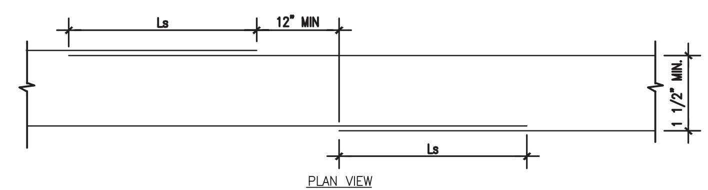
2020 BUILDING CODE OF NEW YORK STATE — ALL CONSTRUCTION MATERIAL SHALL COMPLY WITH REFERENCE STANDARD AS INDICATED BELOW	
ITEM	REFERENCE STANDARD
INTERNATIONAL BUILDING CODE	2018
STRUCTURAL CONCRETE	ACI 318-14

IN CHARGE OF: PATRICK CONLON
CHECKED BY: PATRICK CONLON
MADE BY: LEANDRO CARVALHO

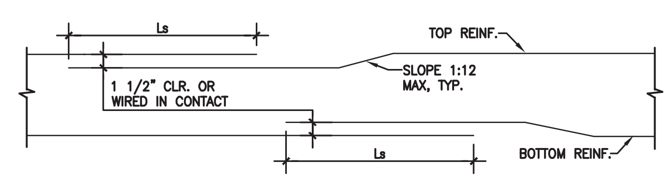
ACI 318-14 REINFORCING BAR SPLICE AND DEVELOPMENT LENGTH (INCHES)

NORMAL WT. CONCRETE f'c (PSI)	0.375" #3 T	0.375" #3 B	0.500" #4 T	0.500" #4 B	0.625" #5 T	0.625" #5 B	0.750" #6 T	0.750" #6 B	0.875" #7 T	0.875" #7 B	1.000" #8 T	1.000" #8 B	1.128" #9 T	1.128" #9 B	1.270" #10 T	1.270" #10 B	1.410" #11 T	1.410" #11 B
	"CLASS B" TENSION LAP SPLICE "Ls" SCHEDULE																	
3000	28	22	38	29	47	36	56	43	81	63	93	72	105	81	116	90	128	98
4000	25	19	33	25	41	31	49	37	71	54	81	62	91	70	101	78	111	85
5000	22	17	29	23	36	28	44	34	63	49	72	56	81	63	90	69	99	76
6000	20	16	27	21	33	26	40	31	58	45	66	51	74	57	82	63	90	70
	TENSION DEVELOPMENT LENGTH "Ld" SCHEDULE																	
3000	22	17	29	22	36	28	43	33	63	48	72	55	81	62	90	69	98	76
4000	19	15	25	19	31	24	37	29	54	42	62	48	70	54	78	60	85	66
5000	17	13	23	17	28	22	34	26	49	38	56	43	63	48	69	54	76	59
6000	16	12	21	16	26	20	31	24	45	34	51	39	57	44	63	49	70	54

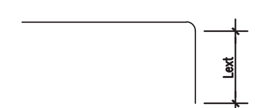
NORMAL WT. CONCRETE f'c (PSI)	0.375" #3	0.500" #4	0.625" #5	0.750" #6	0.875" #7	1.000" #8	1.128" #9	1.270" #10	1.410" #11
	COMPRESSION LAP SPLICE SCHEDULE								
--	12	15	19	23	27	30	34	39	43
	COMPRESSION DEVELOPMENT LENGTH "Ld" SCHEDULE								
3000	9	11	14	17	20	22	25	28	31
4000	8	10	12	15	17	19	22	25	27
5000	8	9	12	14	16	18	21	23	26
6000	8	9	12	14	16	18	21	23	26
	TENSION 90° AND 180° HOOKED BAR DEVELOPMENT LENGTH "Ldh" SCHEDULE								
3000	9	11	14	17	20	22	25	28	31
4000	8	10	12	15	17	19	22	25	27
5000	7	9	11	13	15	17	20	22	24
6000	6	8	10	12	14	16	18	20	22
	90° HOOKED BAR EXTENSION LENGTH "Lext" SCHEDULE								
--	5	6	8	9	11	12	14	16	17
	180° HOOKED BAR EXTENSION LENGTH "Lext" SCHEDULE								
--	3	3	3	3	4	4	5	6	6



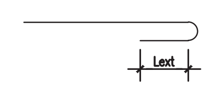
PLAN VIEW



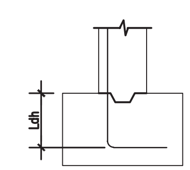
ELEVATION VIEW



90° HOOK EXTENSION LENGTH



180° HOOK EXTENSION LENGTH

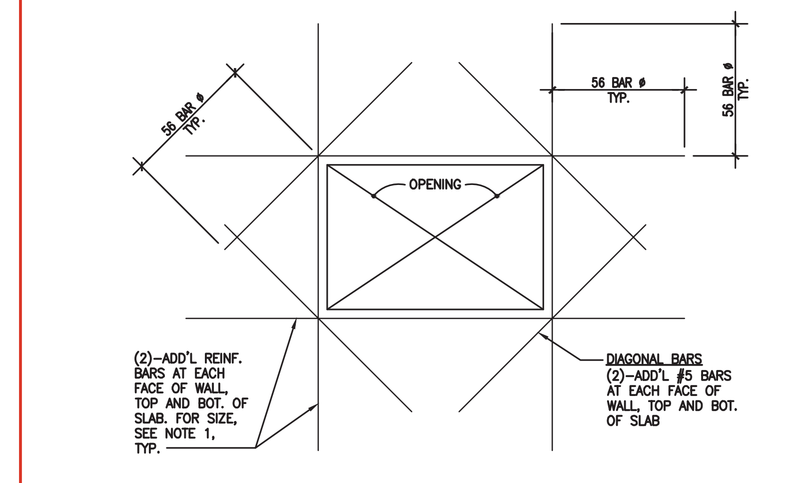


HOOKED BAR DEVELOPMENT LENGTH

NOTES:

1. SCHEDULE APPLIES TO UNCOATED GRADE 60 REINFORCING BARS IN NORMAL WEIGHT CONCRETE.
2. FOR LIGHTWEIGHT CONCRETE MULTIPLY LENGTH IN SCHEDULE BY 1.3.
3. ALL SPLICES SHALL BE CLASS B SPLICES UNLESS INDICATED OTHERWISE.
4. TOP BARS (INDICATED WITH "T" IN SCHEDULE) ARE HORIZONTAL TOP BARS WITH MORE THAN 12" OF CONCRETE CAST BELOW THE BARS.
5. BOTTOM BARS (INDICATED WITH "B" IN SCHEDULE) ARE ALL VERTICAL BARS AND HORIZONTAL BARS WITH LESS THAN 12" OF CONCRETE CAST BELOW HORIZONTAL BARS.
6. ALL HORIZONTAL SPLICES SHALL BE STAGGERED AS SHOWN. IF MORE THAN 50% OF VERTICAL REINFORCING IS LAP SPLICED WITHIN THE REQUIRED LAP SLICE LENGTH, THE LAP SPLICE LENGTH SHALL BE INCREASED BY 33%.
7. LAP SPLICES LISTED IN THE SCHEDULE ARE CLASS B LAPS, FOR CLASS A LAPS REDUCE LENGTH BY 25%.

SCHEDULE OF EMBEDMENT AND SPLICE LENGTH (1 / S-300)
NO SCALE



NOTES:

1. AT WALLS, ADDITIONAL REINFORCING SIZE SHALL MATCH HORIZONTAL AND VERTICAL REINFORCING. AT SLABS USE #5 BARS.
2. THIS DETAIL APPLIES AT ALL OPENINGS 12"x12" AND LARGER. DETAIL IS SIMILAR AT ALL CIRCULAR OPENINGS 12" AND LARGER.
3. COORDINATE ALL OPENING SIZES AND LOCATIONS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.

TYPICAL SLAB PENETRATION REINFORCING DETAIL (2 / S-300)
NO SCALE

STRUCTURAL ENGINEER

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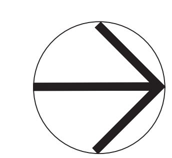

PROJECT NORTH

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED ARCHITECT OR PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

REVISION NUMBER	DATE	MADE BY	APP'D BY	REVISION

RECORD DRAWING CERTIFICATION

☐ AS BUILT – CHANGES AS NOTED
☐ AS BUILT – NO CHANGES

CONTRACTOR	PROJECT COORDINATOR
NAME	NAME
SIGNATURE	SIGNATURE
TITLE / DATE	TITLE / DATE

WESTCHESTER COUNTY, NEW YORK
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
DIVISION OF ENGINEERING

TERMINAL BUILDING HVAC-1 AND HVAC-2 UPGRADES
WESTCHESTER COUNTY AIRPORT
TOWNS OF HARRISON, NORTH CASTLE & VILLAGE OF RYE BROOK, NEW YORK
STRUCTURAL DETAILS AND NOTES

CONTRACT NUMBER: 23-532-Rev.
SHEET NUMBER: S-300
SHEET NO. 3 OF 19
SCALE: AS SHOWN
DATE: 10/29/24
DPW FILE NO.: 48-15-S-876
REV. NO.: 0

APPENDIX C

October 2022 WSP Westchester County Airport Semi-Annual Groundwater Sampling Report

December 14, 2022

John M. Nonna Esq.
Westchester County Attorney
148 Martine Avenue, 6th Floor
White Plains, NY 10601

Via Electronic Transmission

RE: Westchester County Airport
October 2022 Groundwater Sampling Results

Dear Mr. Nonna:

This letter presents results for the second semi-annual groundwater sampling event of 2022 at the Westchester County Airport, which was completed between October 10th and 14th. The sampling is part of a groundwater monitoring program reinstated by the County in August 2018; the previous program ran from 2001 – 2011. The monitoring program was reinstated in response to a November 2017 sampling event that confirmed the presence of per and polyfluoroalkyl substances (PFAS) in several airport monitor wells. PFAS are components of Class B Aqueous Film Forming Foams (AFFF). Different types of these foams including legacy PFOS (perfluorooctanesulfonic acid) based AFFF and fluorotelomer AFFF, have been used at the airport over a period of years during fire training activities. These activities were first conducted by the Air National Guard (ANG), a former tenant who left the site in 1983, and later by the airport in compliance with FAA regulations. PFAS are considered an emerging contaminant and they are being found at sites, including airports, across the country.

The October 2022 sampling event included a total of 41 wells of which 39 were sampled for PFAS. In addition, samples from selected wells were analyzed for volatile organic compounds (VOCs), 1,4-dioxane and glycols (ethylene and propylene glycol). VOCs and glycols are related to ongoing airport operations and were analyzed as part of the previous groundwater monitoring program. 1,4-Dioxane is also an emerging contaminant, most commonly associated with solvent releases. Table 1 lists the sampled wells and associated analytes for each well. Beginning in October 2021, 15 new wells were added to the sampling program. These wells were installed in 2020 as part of a site characterization investigation and they have replaced some of the older, previously sampled wells. Wells removed from the program were either damaged or are located in close proximity to other wells resulting in redundant data. These wells still physically exist and can be added back into the program, if needed.

The sampling results, which are described in detail below, show the presence of PFAS in all 39 samples. The highest concentrations were detected in the northern part of the site, in the vicinity of the former ANG fire training area (burn pit), which is the suspected primary PFAS source area. Other PFAS source areas have been identified onsite including Hangar E in the southern part of the site and the current fire training area in the southeastern corner of the property. 1,4-Dioxane was detected in wells in and around Hangars D and E. VOC and glycol results are generally consistent with historical data and known onsite release areas. In response to the PFAS detections and pursuant to a consent order between Westchester County and the New York State Department of Environmental Conservation (NYSDEC), a site-wide investigation was completed in 2020 and implementation of interim remedial measures are currently in progress. In April 2020, the airport was accepted into the NYS Brownfield Cleanup Program. Additional site investigation and remediation work will continue under this program.

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SAMPLING RESULTS

The sampled wells include wells completed in the shallow unconsolidated aquifer and the underlying bedrock aquifer. Wells in the shallow aquifer range between 6 and 60 feet deep while the bedrock wells are between 25 and 96 feet deep. All wells were sampled with dedicated, disposable, HDPE (PFAS free) bailers. Prior to sampling, the wells were purged of three standing volumes of water, or until dry, using either HDPE bailers or a PFAS-free submersible pump with dedicated HDPE tubing. The samples were collected in laboratory-prepared containers and were kept cold until delivery to the laboratory. The samples were analyzed by York Analytical Laboratories of Stratford, CT, a New York State certified laboratory. The analytical results are summarized on Tables 2 through 8 and Figures 1 through 3. Copies of the laboratory reports are attached in the Appendix of the electronic version of this report. Category B, ASP deliverables were prepared for each report and are available upon request. Water-level measurements were made in each well prior to sampling. These data were used to calculate groundwater elevations and prepare groundwater contour maps, which are presented on Table 9 and Figures 4 and 5.

Per and Polyfluoroalkyl Substances (PFAS)

PFAS were analyzed by EPA Method 537-M which currently includes 21 individual substances. Two of those substances, perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) were common components of legacy, PFOS based AFFF and are contaminants of concern at sites where legacy AFFF was used. As of 2002, these foams are no longer manufactured in the United States due to the toxicity of PFOS and PFOA and their persistence in the environment. Promulgated Federal water-quality standards applicable to PFAS-impacted groundwater do not currently exist. An EPA lifetime health advisory level (guidance value) for drinking water of 70 ppt (parts per trillion, equivalent to nanograms per liter (ng/l)) was published in 2016 for the combined concentration of PFOA and PFOS. As of June 2022, EPA issued interim updated drinking water health advisories for PFOA and PFOS of 0.004 and 0.02 ppt respectively. In 2020, New York State promulgated Maximum Contaminant Levels (MCLs) for PFOA and PFOS in public drinking water supplies of 10 ng/l each.

PFAS results are presented on Tables 2 through 4 and Figures 1 and 2. The highest concentrations of total PFAS (includes all detected PFAS) were detected in wells FMW-6 (105,450 ng/l) and MW-63 (53,835 ng/l) (Table 3). The highest concentrations of PFOS and PFOA were detected in the same wells and ranged between 5,020 and 25,100 ng/l. The high percentage of PFOS in these wells, relative to the total PFAS concentration, is consistent with a legacy PFOS based AFFF.

Wells FMW-6 and MW-63 are located in the shallow aquifer in the northern part of the airport near the former ANG burn pit, which is the suspected primary PFAS source area for the site (Figure 1). Wells in this area have had highest PFAS concentrations since the first sampling event in 2018 (Tables 3 and 4). The total PFAS concentration of 105,450 ng/l detected in FMW-6 this round is the highest concentration detected to date in any well onsite (Table 4). To confirm this detection, FMW-6 was resampled on November 3, 2022; the results show a total PFAS concentration of 85,642 ng/l. While this result is lower than the original result, it is still higher than any other prior to October 2022. A possible cause for this increase is discussed in a later paragraph on the following page.

In general, PFAS concentrations decrease across the site from north to south. Exceptions to this include two other source areas in the southern part of the property, the current fire training area and Hangar E. Well MW-58D is one of the new wells installed in 2020. This well is located at the current fire training area in the southeastern corner of the property (Figure 1). The concentration of total PFAS detected in this well (31,357 ng/l) in comparison to upgradient wells (FMW-39, MW-59S and 59D), indicates a secondary PFAS source area that is not related to the former Burn Pit. Additionally, the predominant substances detected in MW-58D (making up 68 percent of the total) are PFPeA

(Perfluoropentanoic acid) and 6:2 FTS (1H,1H,2H,2H-Perfluorooctanesulfonic acid) (see laboratory Report 22J0611 in the Appendix).

The predominance of PFPeA and 6:2 FTS is consistent with a fluorotelomer type AFFF, which is different from the PFOS based AFFF associated with the former ANG Burn Pit. Fluorotelomer foams replaced legacy PFOS based foams and, while they are considered less toxic and less persistent in the environment, they still contain PFAS including low levels of PFOS and PFOA. The sample from MW-58D contained 482 ng/l of PFOS and 998 ng/l of PFOA (Table 2). FAA regulations require regular testing of the airports firefighting apparatus. In the past, this involved spraying foam from the fire trucks so it could be tested to ensure compliance with required specifications. This practice took place at the current fire training area. Changes in equipment and testing methods have eliminated the need to release foam to the environment during testing.

Similar to well MW-58D, results for Hangar E Wells MW-1 and MW-4, at the southern end of the airport, support a separate source area in the immediate vicinity of the Hangar. As shown on Figure 1, total PFAS concentrations in the Hangar E wells were significantly higher in comparison to other wells in this area (FMW-24, FMW-25, FMW-26 and MW-57). The predominant substances detected in the Hangar E wells include PFPeA and 6:2 FTS indicating a fluorotelomer type AFFF as the source (see laboratory Report 22J0686 in the Appendix). Reportedly, an accidental discharge of foam from a tenant owned fire suppression system occurred inside Hangar E sometime in 1999 or 2000.

Figure 2 presents graphs of total PFAS concentrations over time for select wells from August 2018 through October 2022. As shown on the graphs, PFAS concentrations in individual wells tend to fluctuate within a defined range. In some wells, concentrations fluctuate in conjunction with seasonal groundwater level changes (FMW-15, FMW-31, FMW-26). Concentrations in bedrock wells (labeled BR) tend to show more stable trends in comparison to wells in the unconsolidated, shallow aquifer. Several wells show total PFAS concentrations decreasing over time (FMW-17, FMW-23, FMW-14). This is consistent with the fact that use of the Burn Pit ceased in the late 1990s and approximately 2,800 tons of soil were excavated from that area in 2000. Several wells including FMW-6, FMW-15 and FMW-31 show concentration increases between April and October 2022. The cause of these increases is uncertain at this time. These wells are located in the northern end of the site in the vicinity of the former burn pit where groundwater levels and PFAS concentrations are highest. Recent soil disturbance in this area associated with the OF-7 storm drain replacement activities, in combination with high groundwater levels, is one possible cause. However, additional data are needed before any definitive conclusions can be reached. Replacement of the OF-7 storm drain system was a remedial measure designed to address PFAS impacts to surface water.

The New York State Department of Environmental Conservation (NYSDEC) has issued guidance for the assessment of PFAS at sites where investigations are required pursuant to a State remedial program. The most recent draft version is dated June 2022. The guidance states that PFOS and PFOA should be considered potential contaminants of concern if either is detected in a groundwater or surface water sample at or above 10 ng/l and the source is determined to be attributable to the site. As stated previously, a site-wide investigation was completed in 2020 and implementation of remedial measures are currently in progress in response to onsite PFAS detections. Additional site investigation and remediation work will continue during 2023 under the NYS Brownfield Cleanup Program.

1,4-Dioxane

1,4-Dioxane is an emerging contaminant and there are no known current or historical activities at the airport that would have involved the use of this chemical. However, 1,4-dioxane is used as a stabilizer in the manufacturing of chlorinated solvents and is commonly found at sites with solvent contamination. There are two areas of solvent contamination at the airport associated with historical tenant releases in

Hangars D and E. Sampling results from August 2018 to the current round, which are summarized on Table 5 and Figure 3, confirm the presence of 1,4-dioxane in groundwater at both locations.

During October 2022, four wells were analyzed for 1,4-dioxane and it was detected in all four. Two of those wells are located in and around Hangar D (MW-7S, XDDMW-11) and two are located in Hangar E (MW-1 & MW-4). As shown on Table 5, 1,4-dioxane concentrations in these wells range from 6.67 to 2,860 ug/l (micrograms per liter).

As shown on Figure 3, the presence of 1,4-dioxane at the site appears to be isolated to these two locations, both with historical solvent releases related to former tenants and both currently being remediated. Results for 37 other wells sampled at different locations all around the airport show no detections of 1,4-dioxane (Figure 3). Promulgated Federal or State water-quality standards for 1,4-dioxane in groundwater do not currently exist. In 2020, New York State promulgated a MCL of 1.0 ug/l for public drinking water supplies.

Volatile Organic Compounds (VOCs)

VOCs are a class of chemicals that include petroleum constituents and chlorinated solvents. These chemicals were analyzed as part of the 2001-2011 groundwater monitoring program resulting in a 10-year baseline of data. Based on this historical data, several areas on the airport are known to have, or have had, VOC or solvent related impacts. These areas include Hangars D and E, the former Air National Guard (ANG) site and the former Hangar B site.

Hangars D and E have groundwater-related solvent problems associated with historical tenant releases. Solvents detected above groundwater standards at these sites include trichloroethylene (TCE), tetrachloroethylene (PCE) and their various degradation products (1,1-dichloroethane, 1,2-dichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene and vinyl chloride). Both of these sites have active remediation systems in place.

The former ANG site is located in the northern part of the airport in the vicinity of Hangar 6 (NetJets). The solvents cis-1,2-dichloroethylene, trans-1,2-dichloroethylene and vinyl chloride (degradation products of TCE and PCE) had a history of detections above groundwater standards in one well in this area, FMW-34R. Site investigations in 2003 and 2004, completed under New York States Voluntary Cleanup program (Site No. V00499) found no source area that could be linked to these detections. FMW-34R is believed to have been destroyed, however, several other wells in this area are included in the current sampling program; DPWMW-3, FMW-31 and FMW-40. The noted solvents have been below groundwater standards or non-detectable in these wells since 2018 when the monitoring program was reinstated. Data for the last two years are included on Table 6.

The former Hangar B site is located in the mid-western part of the airport (Figure 1). This site was remediated in 2005 under the State's Voluntary Cleanup program (Site No. V00611) for solvents, including TCE and 1,1-dichloroethane. The wells in this area (MWs 42 – 49) were incorporated into the 2001 - 2011 groundwater monitoring program for post-remediation monitoring and, lingering detections of MTBE associated with closed NYSDEC Spill No. 98-11689. Due to a lack of solvent detections since the remediation, MW-43 is the only Hangar B well still monitored for VOCs. Results for MW-43 (Table 6) show MTBE continues to be detected in this well, below the water-quality standard of 10 ug/l. Results for October 2022 show a concentration of 3.8 ug/l.

As part of the October 2022 sampling round, 18 wells were analyzed for VOCs (Table 1). Some of these wells are located in the areas noted above that have histories of VOC detections. Other wells are located in downgradient areas around the airport perimeter to monitor groundwater quality leaving the site. VOCs were detected in samples from 15 wells of which 5 contained concentrations above groundwater standards (Table 6). Of those five wells, one is located in Hangar D (MW-7S), and one is located in Hangar E (MW-1). As noted above, Hangars D and E have historical solvent problems which are undergoing remediation. The remaining three wells include DPWMW-3, FMW-23 and MW-64, none of which are considered perimeter wells.

DPWMW-3 is 14 feet deep and is part of the former ANG site discussed above. Eleven (11) petroleum-related compounds were detected in this well above standards at concentrations ranging between 2.4 and 290 ug/l; most of these have not been previously detected in this well. To confirm these results this well was resampled on November 3, 2022 and, only one compound (toluene) was detected above standards. All others previously detected above standards were not detected in the resample (Table 6). This well is located in an active roadway and completed flush to grade. An inspection in 2018 showed that the well casing is cracked at the surface, as is the surrounding concrete pad and asphalt pavement, making the well susceptible to infiltration of surface-water runoff from the adjacent roadway. This is the most likely source of the petroleum-related detections. This well should be abandoned or replaced as the deteriorating condition of the well and surrounding pavement affect reliability of the data from this well.

FMW-23 is a 43-foot-deep bedrock well located in the northern part of the airport (Figure 1). The solvent cis-1,2-dichloroethylene has been detected above the groundwater standard of 5 ug/l since the monitoring program restarted in 2018, with concentrations ranging between 89 and 250 ug/l. This well has a history of cis-1,2-dichloroethylene and vinyl chloride detections dating back to 2001 and both were detected above standards in the current round. These compounds are degradation products of the solvents TCE and PCE. The source of these detections is unknown; however as noted above, these compounds are present in wells located in and around nearby Hangar D.

MW-64 is a 15-foot-deep well that was installed in 2020 and is located in the northern corner of the airport (Figure 1). In addition to the current round, it was sampled one other time in June 2020. The compounds 1,2-dichloroethane and vinyl chloride were detected above standards in both rounds at concentrations ranging from 1.3 to 5.5 ug/l. These compounds are degradation products of the solvent cis-1,2-dichloroethylene which has a history of detections in nearby well FMW-23.

Glycols

Ethylene and propylene glycol (glycols) are associated with deicing fluid. Samples from seven wells were selected to be analyzed for glycols because the wells are located near areas where deicing fluid is used or stored (Table 1). Glycols were not detected in any of the sampled wells (Table 2).

In April 2021, Propylene glycol was detected in groundwater for the first time in a sample from FMW-25. This well is located in the southwestern corner of the airport near Outfall No. 4 and Hangar T (Figure 1). The detected concentration was 25.6 mg/l (milligrams per liter). Currently, a standard or guidance value for propylene glycol in groundwater does not exist. Due to the fact that this was a first-time detection, the well was resampled in May 2021 for confirmation and propylene glycol was not detected; nor has it been detected in any of the three regular sampling rounds since.

Quality Assurance/Quality Control

As part of the sampling protocol, duplicates, field blanks, trip blanks, matrix spike and matrix spike duplicate samples (MS/MSD) were collected. Field blanks were collected daily, and trip blanks were collected whenever VOC samples were collected. All others were collected at a rate of 1 for every 20 samples per analyte class. Results for the duplicates and blanks are summarized on Tables 7 and 8. Results for the MS/MSD samples are included with the laboratory reports in the Appendix.

Table 7 presents results for duplicate samples. Duplicates are a second sample collected from a single location, submitted to the laboratory with a different sample identification number to check laboratory accuracy. While some variability is expected, results for the original and duplicate samples should be similar. Results for the duplicate samples presented on Table 7 show good correlation, with a few minor exceptions that are not considered significant.

Table 8 summarizes results for field and trip blanks. Field blanks are used to monitor the sampling process and are prepared onsite during sampling with laboratory provided deionized water. A field blank detection indicates there was potential cross-contamination during sampling, transportation or the analytical process. Trip blanks are prepared by the laboratory; they follow the sample bottles from the laboratory to the site and back again, to monitor the potential for VOC contamination from sources outside of the sampling process.

A low concentration of one PFAS was detected in the October 12th field blank. Perfluoro-1-octanesulfonamide (FOSA) was detected at 8.76 ng/l (Table 8). Consequently, any detections of this compound in site samples collected October 12th, at similar or lower concentrations, may not be accurate. Hangar E Well MW-4 (MW-4 HE) had a detection of FOSA at 3.83 ng/l (see laboratory Report 22J0686 in the Appendix). The total PFAS concentration detected in this well was 8,163 ng/l. At 3.83 ng/l, FOSA was not a significant PFAS component in this sample. As a result, ignoring that FOSA detection does not significantly alter the results for that sample or any associated conclusions.

Methylene chloride was detected in all the field and trip blanks and there were also two detections of acetone. The concentrations ranged between 1.0 and 3.7 ug/l. Methylene chloride and acetone are common laboratory contaminants and could have been present in the laboratory water used to make the blanks or were introduced to the samples in the laboratory. As a result, any methylene chloride or acetone detections in site samples, at similar or lower concentrations, may not be related to the site.

Three other site related compounds (1,2,4-trimethylbenzene, tert-butyl alcohol and 1,4-dioxane) were detected in one or more of the blank samples as shown on Table 8. The detected concentrations are low ranging between 0.48 and 1.14 ug/l and do not have any significant implications with respect to site sample results.

Groundwater Flow

Groundwater elevation data are presented on Table 9 and Figures 4 and 5. Groundwater elevations across the site in the shallow, unconsolidated aquifer ranged from a high of 428.87 ft msl (feet above mean sea level) in the northern part of the site at DPWMW-3, to a low of 348.18 ft msl in the southeastern part of the site at MW-58D. In the bedrock aquifer, elevations ranged from a high of 423.62 ft msl at FMW-23 (north) to a low of 381.10 ft msl in MW-56D (west).

The direction of groundwater flow across the site varies as a result of a major drainage basin divide that runs through the property. Approximately three quarters of the site lie within the Blind Brook Drainage Basin which drains to the south. The remainder lies in the Rye Lake sub-basin which drains westerly towards Rye Lake located approximately 600 feet west of the airport. Groundwater flow in the Blind Brook Basin is primarily south to southeast. Groundwater flow within the Rye Lake basin flows primarily northwest to southwest (Figures 4 and 5).

The direction of groundwater flow and the observed elevations measured during October 2022 are consistent with historical data showing little change over time outside of normal seasonal variations. Typically, water levels are highest in the spring and lowest in the fall. However, two wells in the northern part of the site (FMW-6 and FMW-17) show higher than normal water levels for October, which is believed to be related to the OF-7 storm drain replacement. The old storm drain system leaked allowing groundwater to enter the drain which affectively lowered water levels in the vicinity. Replacement of the storm drain has consequently resulted in higher groundwater water levels in the area.

The next semi-annual sampling round will be scheduled in April 2023. If you have any questions, please feel free to contact me at (914) 461-2961.

Kind regards,

WSP USA

John Benvegna, PG(NY), CPG
Assistant Vice President

JB:cmm
Enclosures
cc: Hugh J. Greechan, Jr., PE
John Inserra
Scott Green

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TABLES

TABLE 1
WESTCHESTER COUNTY AIRPORT
Sample Analyte List - October 2022

Well (BR) = Bedrock Well	PFAS	Volatile Organics	1,4-Dioxane	Glycols	Well Depth (ft btoc)
DPW-2	X	X			11.30
DPWMW-3	X	X		X	14.00
FMW-2R	X				11.80
FMW-3	X				15.10
FMW-6	X				11.20
FMW-8	X	X			11.00
FMW-14	X	X			15.45
FMW-15	X				14.90
FMW-16	X	X			15.80
FMW-17	X				9.48
FMW-23 (BR)	X	X			42.30
FMW-24	X			X	8.50
FMW-25	X	X		X	12.80
FMW-26	X				15.80
FMW-31	X	X			19.65
FMW-35 (BR)	X				57.50
FMW-37				X	13.40
FMW-39	X	X		X	6.30
FMW-40	X	X			12.70
MW-3	**WATER LEVEL ONLY**				17.50
MW-7S (BR)	X	X	X		24.65
MW-43 (BR)	X	X			67.22
MW-44	X				18.10
MW-51 (BR)	X				52.00
MW-52 (BR)	X				72.00
MW-53 (BR)	**WELL NOT ACCESSIBLE - NO SAMPLE**				96.00
MW-54 S	X				12.85
MW-54 D (BR)	X				80.00
MW-55 S	X				18.00
MW-55 D (BR)	X				50.80
MW-56 S	X				12.80
MW-56 D (BR)	X				83.90
MW-57 (BR)	X				81.70
MW-58 S	**WELL DRY - NO SAMPLE**				21.50
MW-58 D	X				60.00
MW-59 S	X	X			14.40
MW-59 D (BR)	X	X			81.60
MW-60 (BR)	X				80.00
MW-61	**WATER LEVEL ONLY**				12.00
MW-63	X				15.00
MW-64	X	X			15.00
XDDMW-10 (BR)		X			60.00
XDDMW-11 (BR)	X		X	X	41.30
Hangar E MW-1	X	X	X	X	20.00
Hangar E MW-4	X	X	X		20.00

(ft btoc) - Feet Below Top of Casing

TABLE 2

WESTCHESTER COUNTY AIRPORT

Sampling Results Summary - October 2022

(see table 6 for volatile organics)

Well (BR) = Bedrock	Total PFAS (ng/L)	PFOS (ng/L)	PFOA (ng/L)	1,4-Dioxane (ug/L)	Glycols (mg/L)	Well Depth (ft btoc)
DPW-2	140	8	8	**	**	11.30
DPWMW-3	35	7	2	**	ND	14.00
FMW-2R	18	3	4	**	**	11.80
FMW-3	43	21	2	**	**	15.10
FMW-6	105,450	25,100	5,020	**	**	11.20
FMW-6 (re-sample)*	87,242	17,400	3,450	**	**	11.20
FMW-8	2,976	1,540	247	**	**	11.00
FMW-14	144	30	57	**	**	15.45
FMW-15	1,271	134	94	**	**	14.90
FMW-16	938	197	44	**	**	15.80
FMW-17	1,229	732	54	**	**	9.48
FMW-23 (BR)	1,365	325	90	**	**	42.30
FMW-24	42	7	14	**	ND	8.50
FMW-25	26	7	11	**	ND	12.80
FMW-26	80	31	19	**	**	15.80
FMW-31	11,029	8,320	173	**	**	19.65
FMW-35 (BR)	234	115	17	**	**	57.50
FMW-37	**	**	**	**	ND	13.40
FMW-39	31	10	2	**	ND	6.30
FMW-40	1,903	892	59	**	**	12.70
MW-3	**	**	**	**	**	17.50
MW-7S (BR)	290	120	20	30	**	24.65
MW-43 (BR)	580	167	50	**	**	67.22
MW-44	509	133	65	**	**	18.10
MW-51 (BR)	634	95	36	**	**	52.00
MW-52 (BR)	17	ND	2	**	**	72.00
MW-53 (BR)	**	**	**	**	**	96.00
MW-54 S	155	4	2	**	**	12.85
MW-54 D (BR)	3,687	248	111	**	**	80.00
MW-55 S	3,183	1,290	48	**	**	18.00
MW-55 D (BR)	1,190	423	20	**	**	50.80
MW-56 S	944	220	145	**	**	12.80
MW-56 D (BR)	7	2	2	**	**	83.90
MW-57 (BR)	5	3	2	**	**	81.70
MW-58 S	**	**	**	**	**	21.50
MW-58 D	31,357	482	998	**	**	60.00
MW-59 S	49	ND	9	**	**	14.40
MW-59 D (BR)	30	6	ND	**	**	81.60
MW-60 (BR)	4,585	272	131	**	**	80.00
MW-63	53,835	11,400	24,600	**	**	15.00
MW-64	15,977	6,460	2,940	**	**	15.00
XDDMW-10 (BR)	**	**	**	**	**	60.00
XDDMW-11 (BR)	456	53	31	6.67	ND	41.30
Hangar E MW-1	6,714	8	199	2,860	ND	20.00
Hangar E MW-4	8,163	116	445	17	**	20.00

(ng/L) - nanograms per liter (equivalent to parts per trillion)

(ug/L) - micrograms per liter (equivalent to parts per billion)

(mg/L) - milligrams per liter (equivalent to parts per million)

(ft btoc) - Feet Below Top of Casing

* FMW-6 was re-sampled on November 3, 2022 to confirm October results.

** - Not Analyzed

ND - Not Detected (see Appendix for detection limits)

TABLE 3
WESTCHESTER COUNTY AIRPORT
Historical Results by Total PFAS Concentration

OCTOBER 2021

Total PFAS (ng/L)	PFOS (ng/L)	PFOA (ng/L)	Well (BR) = Bedrock	Well Depth (ft btoc)
73,450	20,500	1,980	FMW-6	12.00
32,369	669	595	MW-58 D	60.00
18,603	5,800	768	FMW-7	12.00
8,139	5,150	194	FMW-31	21.50
5,374	6	185	Hangar E MW-1	15.92
5,074	65	469	Hangar E MW-4	15.80
3,759	1,540	367	FMW-8	12.00
3,439	167	107	MW-60 (BR)	80.00
2,737	276	83	MW-54 D (BR)	80.00
2,611	797	52	MW-55 S	18.00
2,068	1,480	26	FMW-17	12.00
1,480	448	80	FMW-23 (BR)	43.00
1,474	553	69	FMW-40	12.70
1,150	376	13	MW-55 D (BR)	50.80
1,125	377	54	MW-53 (BR)	96.00
1,076	256	252	MW-56 S	12.80
1,070	544	48	FMW-16	15.77
658	69	42	FMW-15	14.87
587	162	45	MW-43 (BR)	67.90
430	60	28	XDDMW-11 (BR)	40.00
280	98	19	MW-7S (BR)	25.00
279	71	47	FMW-14	15.45
265	125	19	FMW-35 (BR)	57.50
239	18	13	DPW-2	12.25
224	9	7	MW-52 (BR)	72.00
221	41	26	MW-51 (BR)	52.00
144	75	3	FMW-39	6.30
132	62	8	FMW-3	14.40
125	9	3	MW-54 S	12.85
82	6	7	MW-59 S	14.40
45	7	19	FMW-24	9.00
37	13	6	MW-59 D (BR)	81.60
36	13	8	FMW-26	16.20
34	11	2	DPWMW-3	14.00
34	7	8	FMW-25	16.00
24	6	6	FMW-2R	12.00
6	2	2	MW-56 D (BR)	83.90
5	3	ND	MW-57 (BR)	81.70

APRIL 2022

Total PFAS (ng/L)	PFOS (ng/L)	PFOA (ng/L)	Well (BR) = Bedrock	Well Depth (ft btoc)
27,344	15,200	636	FMW-7	9.55
21,368	10,800	1,730	MW-63	15.00
21,366	5,160	1,130	FMW-6	11.20
12,317	88	582	Hangar E MW-4	20.00
10,339	268	354	MW-58 D	60.00
6,141	4,460	80	FMW-31	19.65
5,890	13	294	Hangar E MW-1	20.00
4,575	261	117	MW-60 (BR)	80.00
4,100	248	97	MW-54 D (BR)	80.00
3,824	1,510	52	MW-55 S	18.00
3,497	1,610	271	FMW-8	11.00
2,047	938	82	FMW-40	12.70
1,680	495	20	MW-55 D (BR)	50.80
1,671	328	84	FMW-23 (BR)	42.30
791	463	31	FMW-17	9.48
736	304	42	MW-53 (BR)	96.00
710	329	41	FMW-16	15.80
680	201	56	MW-43 (BR)	67.22
579	75	36.5	MW-51 (BR)	52.00
530	83	63	MW-44	18.10
458	65	29	XDDMW-11 (BR)	41.30
353	100	66	MW-56 S	12.80
324	103	50	MW-7S (BR)	24.65
314	93	51	FMW-14	15.45
246	127	19	FMW-35 (BR)	57.50
148	69	11	MW-61	12.00
130	19	8	FMW-15	14.90
101	10	30	FMW-24	8.50
97	18	11	MW-59 D (BR)	81.60
60	5	4	MW-59 S	14.40
32	9	9	FMW-26	15.80
30	ND	3	MW-52 (BR)	72.00
29	2	3	DPW-2	11.30
26	6	10	FMW-25	12.80
24	5	4	FMW-2R	11.80
23	13	ND	FMW-3	15.10
13	ND	ND	DPWMW-3	14.00
6	4	2	MW-57 (BR)	81.70
5	ND	2	MW-56 D (BR)	83.90
4	ND	ND	MW-54 S	12.85
ND	ND	ND	FMW-39	6.30

OCTOBER 2022

Total PFAS (ng/L)	PFOS (ng/L)	PFOA (ng/L)	Well (BR) = Bedrock	Well Depth (ft btoc)
105,450	25,100	5,020	FMW-6	11.20
87,242	17,400	3,450	FMW-6 (re-sample)	11.20
53,835	11,400	24,600	MW-63	15.00
31,357	482	998	MW-58 D	60.00
15,977	6,460	2,940	MW-64	15.00
11,029	8,320	173	FMW-31	19.65
8,163	116	445	Hangar E MW-4	20.00
6,714	8	199	Hangar E MW-1	20.00
4,585	272	131	MW-60 (BR)	80.00
3,687	248	111	MW-54 D (BR)	80.00
3,183	1,290	48	MW-55 S	18.00
2,976	1,540	247	FMW-8	11.00
1,903	892	59	FMW-40	12.70
1,365	325	90	FMW-23 (BR)	42.30
1,271	134	94	FMW-15	14.90
1,229	732	54	FMW-17	9.48
1,190	423	20	MW-55 D (BR)	50.80
944	220	145	MW-56 S	12.80
938	197	44	FMW-16	15.80
634	95	36	MW-51 (BR)	52.00
580	167	50	MW-43 (BR)	67.22
509	133	65	MW-44	18.10
456	53	31	XDDMW-11 (BR)	41.30
290	120	20	MW-7S (BR)	24.65
234	115	17	FMW-35 (BR)	57.50
155	4	2	MW-54 S	12.85
144	30	57	FMW-14	15.45
140	8	8	DPW-2	11.30
80	31	19	FMW-26	15.80
49	ND	9	MW-59 S	14.40
43	21	2	FMW-3	15.10
42	7	14	FMW-24	8.50
35	7	2	DPWMW-3	14.00
31	10	2	FMW-39	6.30
30	6	ND	MW-59 D (BR)	81.60
26	7	11	FMW-25	12.80
18	3	4	FMW-2R	11.80
17	ND	2	MW-52 (BR)	72.00
7	2	2	MW-56 D (BR)	83.90
5	3	2	MW-57 (BR)	81.70

(ft btoc) feet below top of casing
ND - Not Detected (see lab report for detection limits)
(ng/L) - nanograms per liter (equivalent to parts per trillion)

TABLE 4
WESTCHESTER COUNTY AIRPORT
Historical PFAS Results by Well

Well (BR) = Bedrock	Total PFAS (ng/L)									Well Depth (ft btoc)
	Aug. 2018	March 2019	Oct. 2019	April May 2020	Oct. 2020	April 2021	Oct. 2021	April 2022	Oct. 2022	
DPW-2	275	198	387	74	238	299	239	29	140	12.25
DPWMW-3	37	35	6.0	21	2.0	11	34	13	35	14.00
FMW-2R	35	23	31	40	3	42	24	24	18	12.00
FMW-3	128	223	123	113	78	82	132	23	43	14.40
FMW-6 (see note)	57,390	44,228	37,229	36,094	29,068	46,629	73,450	21,366	105,450	11.85
FMW-7	31,983	28,424	34,645	14,993	10,115	13,947	18,603	27,344	**	12.00
FMW-8	3,104	5,223	3,998	4,713	2,498	3,368	3,759	3,497	2,976	12.00
FMW-14	346	492	350	298	198	278	279	314	144	15.45
FMW-15	305	103	373	179	497	218	658	130	1,271	14.87
FMW-16	899	769	624	843	950	806	1,070	710	938	15.77
FMW-17	7,407	4,412	3,753	4,369	2,197	630	2,068	791	1,229	12.00
FMW-23 (BR)	1,735	1,843	2,066	1,838	1,680	1,807	1,480	1,671	1,365	43.00
FMW-24	77	79	75	52	39	47	45	101	42	9.00
FMW-25	36	42	29	27	23	18	34	26	26	16.00
FMW-26	25	28	94	21	62	11	36	32	80	16.20
FMW-31	9,519	10,544	8,063	8,768	9,545	6,988	8,139	6,141	11,029	21.50
FMW-35 (BR)	178	242	327	312	234	220	265	246	234	57.50
FMW-39	38	8	11	4	ND	19	144	ND	31	6.30
FMW-40	1,337	2,124	2,167	1,864	1,922	1,834	1,474	2,047	1,903	12.70
MW-7S (BR)	294	362	325	221	**	**	280	324	290	25.00
MW-43 (BR)	569	596	870	787	673	500	587	680	580	67.90
MW-44	508	450	544	440	586	**	**	530	509	18.10
MW-51	**	**	**	239	**	**	221	579	634	52.00
MW-52 (BR)	**	**	**	236	**	**	224	30	17	72.00
MW-53 (BR)	**	**	**	1,909	**	**	1,125	736	**	96.00
MW-54 S	**	**	**	18	**	**	125	4	155	12.85
MW-54 D (BR)	**	**	**	2,800	**	**	2,737	4,100	3,687	80.00
MW-55 S	**	**	**	2,123	**	**	2,611	3,824	3,183	18.00
MW-55 D (BR)	**	**	**	609	**	**	1,150	1,680	1,190	50.80
MW-56 S	**	**	**	947	**	**	1,076	353	944	12.80
MW-56 D (BR)	**	**	**	11	**	**	6	5	7	83.90
MW-57 (BR)	**	**	**	19	**	**	5	6	5	81.70
MW-58 S	**	**	**	Dry	**	**	Dry	Dry	Dry	21.50
MW-58 D	**	**	**	30,946	**	**	32,369	10,339	31,357	60.00
MW-59 S	**	**	**	31	**	**	82	60	49	14.40
MW-59 D (BR)	**	**	**	58	**	**	37	97	30	81.60
MW-60 (BR)	**	**	**	4,168	**	**	3,439	4,575	4,585	80.00
MW-61	**	**	**	139	**	**	**	148	**	12.00
MW-63	**	**	**	65,880	**	**	**	21,368	53,835	15.00
MW-64	**	**	**	23,791	**	**	**	**	15,977	15.00
XDDMW-11 (BR)	1,283	544	272	455	410	503	430	458	456	40.00
Hangar E MW-1	**	**	6,283	5,010	4,075	4,603	5,374	5,890	6,714	15.92
Hangar E MW-3	**	**	2,949	1,778	**	**	**	**	**	17.31
Hangar E MW-4	**	**	**	5,985	3,632	4,117	5,074	12,317	8,163	15.80

Note: FMW-6 was re-sampled on November 3, 2022 to confirm October 2022 results. The resample results were 87,242 ng/l.

(ng/L) - nanograms per liter (equivalent to parts per trillion)

(ft btoc) Feet Below Top of Casing

** PFAS not analyzed or well not sampled

TABLE 5
WESTCHESTER COUNTY AIRPORT
1,4-Dioxane Results [1/]

Well (BR) = Bedrock Well	1,4-Dioxane (ug/L)									Well Depth (ft btoc)
	Aug. 2018	March 2019	Oct. 2019	April 2020	Oct. 2020	April 2021	Oct. 2021	April. 2022	Oct. 2022	
FMW-16	**	**	**	0.68	ND	ND	**	**	**	15.77
MW-3	**	**	**	0.42	9.33	**	**	**	**	17.50
MW-7S (BR)	**	32	32.4	30.3	11.4	22	55	18	30.4	25.00
MW-10D (BR)	**	5	6.58	**	**	**	**	**	**	55.00
MW-10S (BR)	**	8.4	9.72	9.38	6.94	**	**	**	**	37.00
XDDMW-10 (BR)	**	2.5	2.0	**	**	**	**	**	**	60.00
XDDMW-11 (BR)	4.5	3.82	2.0	4.44	4.22	5.6*	4.0	5.17	6.67	40.00
Hangar E MW-1	**	**	1,940	470	2,590	580	1,750	920	2,860	15.92
Hangar E MW-2	**	**	263	420	440	889	**	**	**	15.60
Hangar E MW-3	**	**	17.2	42.6	**	**	**	**	**	17.31
Hangar E MW-4	**	**	28.3	27.7	13.1	32	17.4	25.2	17.3	15.80

1/ See Figure 3 for identification and location of all tested wells.

(ug/L) - micrograms per liter (equivalent to parts per billion)

(ft btoc) Feet Below Top of Casing

ND - Not Detected (see Appendix for detection limits)

** Not Analyzed

* Data are from 5/20/21. The well was re-sampled due to anomalous results.

TABLE 6
WESTCHESTER COUNTY AIRPORT
Volatile Organics Results

Sample ID	NYSDEC TOGS	DPW-2				DPWMW-3 (ANG well)					FMW-8				FMW-12 (ANG well)				FMW-14				FMW-16			
Compound		April 2021	Oct. 2021	April 2022	Oct. 2022	April 2021	Oct. 2021	April 2022	Oct. 2022	Nov. 2022	April 2021	Oct. 2021	April 2022	Oct. 2022	Oct. 2019	April 2020	Oct. 2020	April 2021	April 2021	Oct. 2021	April 2022	Oct. 2022	April 2021	Oct. 2021	April 2022	Oct. 2022
Volatile Organics, 8260	**ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1,1,1-Trichloroethane	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	**3**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	**0.6**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	**5**	ND	ND	ND	ND	ND	ND	ND	**250**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	**3**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.22 J**	ND	ND	ND	ND	ND	ND	ND
2-Butanone	**50***	ND	ND	**0.21 J**	ND	ND	ND	ND	ND	**1.8**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	**~**	ND	ND	ND	ND	ND	ND	ND	ND	**3.0**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	**50***	ND	ND	**2.20 B**	ND	**3.2**	**1.3 J**	**3.3 J**	ND	**6.2**	ND	ND	ND	ND	**1.8 J**	ND	**18 B**	ND	ND	ND	ND	ND	ND	ND	**1.1 JB**	ND
Benzene	**1**	ND	ND	ND	ND	ND	ND	ND	**2.4 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**1.40**	**0.36 J**	ND	ND	ND	ND	ND	ND
Bromomethane	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	**60***	ND	ND	ND	ND	ND	ND	ND	**1.1 J**	**1.3**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**31**	**10**	**10**	**4.7**	ND	ND	ND	ND
Chloroethane	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.60**	**1.50**	**0.50**	**0.46 J**	ND	ND	ND	ND	ND	ND	**0.27 J**	ND	ND	ND	ND	ND
Cyclohexane	**~**	ND	ND	ND	ND	ND	ND	ND	**2.60**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl Benzene	**5**	ND	ND	ND	ND	ND	ND	ND	**110**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	**5**	ND	ND	ND	ND	ND	ND	ND	**49**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether	**10***	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylcyclohexane	**~**	ND	ND	ND	ND	ND	ND	ND	**15**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	**5**	ND	ND	ND	ND	ND	ND	**2.9 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	**5**	ND	ND	ND	ND	ND	ND	ND	**95**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	**5**	ND	ND	ND	ND	ND	ND	ND	**120**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	**5**	ND	ND	ND	ND	ND	ND	ND	**290**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	**5**	ND	ND	ND	ND	ND	ND	ND	**45**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	**5**	ND	ND	ND	ND	ND	ND	ND	**51**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	**5**	ND	ND	ND	ND	ND	ND	ND	**9.80**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl alcohol (TBA)	**~**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	**5**	ND	ND	ND	ND	ND	ND	ND	**1.8 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	**5**	ND	**0.23 J**	ND	ND	ND	ND	ND	**73**	**12**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.40 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	**2**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes, Total	**5**	ND	ND	ND	ND	ND	ND	ND	**780**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NYSDEC TOGS - State groundwater standards and guidence values.

Exceeds Standard or Guidence

ug/L micrograms per liter (parts per billion)

ND - Not Detected (see Appendix for detection limits).

** - Not Analyzed

* - indicates a guidence value (not a standard).

~ - indicates that no regulatory limit established.

J - Detected below the Reporting Limit but above the Method Detection Limit

B - analyte found in the analysis batch blank indicating laboratory cross contamination.

TABLE 6
WESTCHESTER COUNTY AIRPORT
Volatile Organics Results

Sample ID	NYSDEC TOGS	FMW-23				FMW-25				FMW-31 (ANG well)				FMW-39				FMW-40 (ANG well)				MW-1 (Hangar E)			
Compound		April 2021	Oct. 2021	April 2022	Oct. 2022	April 2021	Oct. 2021	April 2022	Oct. 2022	April 2021	Oct. 2021	April 2022	Oct. 2022	April 2021	Oct. 2021	April 2022	Oct. 2022	April 2021	Oct. 2021	April 2022	Oct. 2022	April 2021	Oct. 2021	April 2022	Oct. 2022
Volatile Organics, 8260	**ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1,1,1-Trichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	24	18	17	4.4
1,1-Dichloroethylene	5	ND	0.35 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11	ND	ND	ND	ND	ND	ND	ND	67	88	37	19
1,2,4-Trimethylbenzene	5	ND	ND	ND	0.32 J	ND	ND	ND	ND	5.3	1.3	4.6	3.1	ND	ND	ND	ND	ND	ND	ND	ND	0.57	ND	ND	ND
1,2-Dichlorobenzene	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.25 J	0.29 J	0.20 J
1,2-Dichloroethane	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.9	ND	5.5
1,3,5-Trimethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	3.9	2.7	2.7	0.88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	50*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.61	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	~	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	50*	ND	ND	ND	ND	ND	ND	1.4 JB	ND	3.4	2.0	4.0	3.2	2.6	1.20 J	ND	1.8 J	ND	1.2 J	1.5 J	1.8 J	ND	1.4 J	ND	1.5 J
Benzene	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.64	1.0	0.56	0.67
Bromomethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	60*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	5	ND	ND	ND	0.21 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	42	30	40	15
cis-1,2-Dichloroethylene	5	190	250	89	140	ND	ND	ND	ND	0.88	0.95	0.3	0.76	ND	ND	ND	ND	ND	ND	ND	ND	9.2	9.2	4.7	3.3
Cyclohexane	~	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.40 J	0.38 J	ND
Ethyl Benzene	5	ND	ND	ND	ND	ND	ND	ND	ND	0.57	0.64	0.53	0.52	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.21 J	ND
Isopropylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	1.7	2.0	1.6	1.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.38 J	ND
Methyl tert-butyl ether	10*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.23 J	ND	ND
Methylcyclohexane	~	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.65	ND	0.39 J
Methylene chloride	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1 J	ND	ND
n-Butylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	2.5	3.0	1.8	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	5	ND	ND	ND	0.20 J	ND	ND	ND	ND	0.30 J	0.2 J	0.23 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.45 J	0.84	1.70	0.29 J
p-Isopropyltoluene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53	ND	0.24 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.33 J	0.36 J	0.22 J
Styrene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl alcohol (TBA)	~	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.10	ND	11
tert-Butylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.68	ND	0.53	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.21 J	0.26 J	ND
Tetrachloroethylene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	5	ND	ND	ND	0.35 J	ND	ND	ND	ND	ND	ND	ND	ND	25	0.72	ND	ND	ND	ND	ND	ND	ND	0.29 J	0.35 J	ND
trans-1,2-Dichloroethylene	5	0.94	10	0.62	0.84	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.21 J	ND	ND
Trichloroethylene	5	0.99	1.1	0.60	0.76	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.0	0.83	0.70	ND
Vinyl Chloride	2	ND	55	ND	18	ND	ND	ND	ND	0.49 J	ND	ND	0.54	ND	ND	ND	ND	ND	ND	ND	ND	64	130	88	120
Xylenes, Total	5	ND	ND	ND	0.74 J	ND	ND	ND	ND	0.86 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.68 J	1.0 J	2.0	ND

NYSDEC TOGS - State groundwater standards and guidence values.

Exceeds Standard or Guidence

ug/L micrograms per liter (parts per billion)

ND - Not Detected (see Appendix for detection limits).

** - Not Analyzed

* - indicates a guidence value (not a standard).

~ - indicates that no regulatory limit established.

J - Detected below the Reporting Limit but above the Method Detection Limit

B - analyte found in the analysis batch blank indicating laboratory cross contamination.

TABLE 6
WESTCHESTER COUNTY AIRPORT
Volatile Organics Results

Sample ID	NYSDEC TOGS	MW-4 (Hangar E)				MW-7S (Hangar D)				MW-43 (Former Hangar B)				MW-59S			MW-59D				MW-64		XDDMW-10			
Compound		April 2021	Oct. 2021	April 2022	Oct. 2022	April 2021	Oct. 2021	April 2022	Oct. 2022	April 2021	Oct. 2021	April 2022	Oct. 2022	May 2020	Oct. 2021	Oct. 2022	May 2020	Oct. 2021	April 2022	Oct. 2022	June 2020	Oct. 2022	April 2021	Oct. 2021	April 2022	Oct. 2022
Volatile Organics, 8260	**ug/L**	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1,1,1-Trichloroethane	5	ND	ND	ND	ND	**3.4**	**4.1**	**2.0**	**2.6**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	**0.59**	**0.49 J**	**0.38 J**	**0.23 J**	**56**	**72**	**33**	**35**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**2.8**	**3.5**	**2.3**	**1.5**
1,1-Dichloroethylene	5	**0.41 J**	**0.46 J**	**0.34 J**	**0.32 J**	**15**	**15**	**6.7**	**7.6**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.25 J**	ND	ND	**0.53**	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**5.50**	**1.30**	ND	ND	ND	ND
1,3,5-Trimethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	50*	ND	ND	ND	ND	ND	ND	**20**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**1.0**	ND	ND	ND	ND	ND	ND
2-Hexanone		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	~	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.40 J**	ND	ND	ND	ND	ND	ND
Acetone	50*	ND	ND	ND	**1.4 J**	**2.8**	**4.9**	**2,600**	**23**	ND	ND	ND	ND	**6.20**	ND	**2.10**	ND	**3.40**	**1.6 J**	**7.0**	ND	ND	ND	ND	ND	ND
Benzene	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**2.70**	ND	ND	ND	ND	**0.22 J**	ND	ND	ND	ND
Bromomethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	60*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.67**	**0.32 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	5	**0.43 J**	**0.44 J**	**0.37 J**	**0.26 J**	**33**	**44**	**19**	**26**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.77**	ND	**1.20**	**0.61**	**2.3**	**3.4**	**1.9**	**2.1**
Cyclohexane	~	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**12**	ND	ND	ND	ND
Ethyl Benzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.28 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether	10*	ND	ND	ND	ND	ND	ND	ND	ND	**5.90**	**4.90**	**3.20**	**3.80**	ND	ND	ND	ND	ND	**0.26 J**	ND	**1.30**	**1.20**	ND	ND	ND	ND
Methylcyclohexane	~	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.42 J**	ND	ND	ND	ND
Methylene chloride	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.35**	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.31 J**	ND	ND	ND	ND
Styrene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl alcohol (TBA)	~	ND	ND	ND	ND	ND	ND	ND	**4.6**	**1.60**	ND	ND	ND	ND	ND	**0.90 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.43 J**	ND	ND	ND	ND
Tetrachloroethylene	5	ND	ND	ND	ND	**11**	**13**	**1.1**	**6.5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**2.0**	**3.0**	**0.42 J**	**0.80**	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	5	ND	ND	ND	ND	**0.36 J**	**0.51**	**0.24 J**	**0.26 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.31 J**	ND	**0.23 J**	ND
Trichloroethylene	5	ND	ND	ND	ND	**13**	**11**	**8.8**	**6.6**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	ND	ND	ND	ND	**6.2**	**7.7**	**5.3**	**6.1**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**3.30**	**3.40**	ND	ND	ND	ND
Xylenes, Total	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**4.90**	ND	ND	**5.60**	ND	ND	ND	ND	ND	ND	ND	ND	ND

NYSDEC TOGS - State groundwater standards and guidence values.

Exceeds Standard or Guidence

ug/L micrograms per liter (parts per billion)

ND - Not Detected (see Appendix for detection limits).

** - Not Analyzed

* - indicates a guidence value (not a standard).

~ - indicates that no regulatory limit established.

J - Detected below the Reporting Limit but above the Method Detection Limit

B - analyte found in the analysis batch blank indicating laboratory cross contamination.

TABLE 7
WESTCHESTER COUNTY AIRPORT
Field Duplicate Results

Date	10/12/22		10/12/22	
Sample ID	**MW-1 HE (Hangar E)**	**Duplicate**	**MW-63**	**Duplicate**
PFAS EPA 537	ng/L	ng/L	ng/L	ng/L
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	**19.7**	ND	ND	ND
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	**529**	**556**	**995**	**1,430**
N-EtFOSAA	ND	ND	ND	ND
N-MeFOSAA	ND	ND	ND	ND
Perfluoro-1-decanesulfonic acid (PFDS)	ND	ND	ND	ND
Perfluoro-1-heptanesulfonic acid (PFHpS)	ND	ND	**582**	**627**
Perfluoro-1-octanesulfonamide (FOSA)	ND	ND	**74**	**1,220**
Perfluorobutanesulfonic acid (PFBS)	ND	ND	**367**	**411**
Perfluorodecanoic acid (PFDA)	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND
Perfluoroheptanoic acid (PFHpA)	**404**	**348**	**492**	**585**
Perfluorohexanesulfonic acid (PFHxS)	**7.31**	ND	**12,500**	**12,200**
Perfluorohexanoic acid (PFHxA)	**1,100**	**1,100**	**1,850**	**2,020**
Perfluoro-n-butanoic acid (PFBA)	**492**	**512**	**227**	**278**
Perfluorononanoic acid (PFNA)	**14.6**	ND	**70**	**81**
Perfluorooctanesulfonic acid (PFOS)	**8.16**	ND	**11,400**	**13,100**
Perfluorooctanoic acid (PFOA)	**199**	**212**	**24,600**	**26,000**
Perfluoropentanoic acid (PFPeA)	**3,940**	**3,460**	**678**	**669**
Perfluorotetradecanoic acid (PFTA)	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTrDA)	ND	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND
TOTAL PFAS	**6,714**	**6,188**	**53,835**	**58,621**

Date	10/12/22	
Sample ID	**MW-1 HE (Hangar E)**	**Duplicate**
Volatile Organics, 8260	ug/L	ug/L
1,1,1-Trichloroethane	ND	ND
1,1-Dichloroethane	**4.4**	**4.6**
1,1-Dichloroethylene	**19**	**19**
1,2,4-Trimethylbenzene	ND	ND
1,2-Dichlorobenzene	**0.20 J**	**0.21 J**
1,2-Dichloroethane	**5.5**	**5.2**
1,3,5-Trimethylbenzene	ND	ND
2-Hexanone	**1.3**	**1.4**
Acetone	**1.5 J**	**2.1**
Benzene	**0.67**	**0.65**
Chloroethane	**15**	**14**
cis-1,2-Dichloroethylene	**3.3**	**3.2**
Ethyl Benzene	ND	ND
Isopropylbenzene	ND	ND
Methylcyclohexane	**0.39 J**	**0.36 J**
Methylene chloride	ND	ND
n-Propylbenzene	ND	ND
o-Xylene	**0.29 J**	**0.30 J**
sec-Butylbenzene	**0.22 J**	**0.25 J**
tert-Butyl alcohol (TBA)	**11**	**12**
tert-Butylbenzene	ND	ND
Tetrachloroethylene	ND	ND
trans-1,2-Dichloroethylene	ND	ND
Trichloroethylene	ND	ND
Vinyl Chloride	**120**	**110**
Semi-Volatiles 8270 SIM	ug/l	ug/l
1,4-Dioxane	**2,860**	**2,720**

ND - analyte not detected (see Appendix for detection limits).
ng/L = nanograms per liter or parts per trillion.
ug/L = micrograms per liter or parts per billion.
J - analyte detected at or above the method detection limit but below the reporting limit - data is estimated.

TABLE 8

WESTCHESTER COUNTY AIRPORT

Field & Trip Blank Summary

(see lab reports for full blank analyte lists)

Date	Units	10/10/22		10/11/22		10/12/22		10/13/22		10/14/22	
Sample ID		Field	Trip	Field	Trip	Field	Trip	Field	Trip	Field	Trip
PFAS (all compounds)	ng/L	ND	NA	ND	NA	**8.76***	NA	ND	NA	ND	NA
Acetone	ug/L	ND	ND	ND	**1.0 J**	ND	ND	ND	ND	**1.1 J**	ND
Carbon disulfide	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	ug/L	**3.40**	**1.5 J**	**3.70**	**2.2**	**3.40**	**1.1 J**	**3.20**	**1.4 J**	**3.2**	**1.3 J**
1,2,4-Trimethylbenzene	ug/L	**0.48 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butyl alcohol (TBA)	ug/L	ND	ND	ND	ND	ND	ND	ND	**0.62 J**	ND	ND
1,4-Dioxane	ug/L	----	NA	----	NA	**1.14**	NA	**0.608**	NA	----	NA
Glycols	mg/L	----	NA	----	NA	ND	NA	----	NA	----	NA

* this detection was of the compound Perfluoro-1-octanesulfonamide (FOSA)

(ng/L) - nanograms per liter (equivalent to parts per trillion)

(ug/L) - micrograms per liter (equivalent to parts per billion)

(mg/L) - milligrams per liter (equivalent to parts per million)

B - analyte found in the analysis batch blank indicating laboratory cross contamination.

J - analyte detected at or above the method detection limit but below the reporting limit - data is estimated.

ND - not detected (see Appendix for detection limits)

NA - not applicable, trip blanks are only analyzed for volatile organics.

----- analyte not tested on this day, blank analyses not required.

TABLE 9
WESTCHESTER COUNTY AIRPORT
Groundwater Level Measurements - October 2022

Well (BR) = Bedrock Well	Date	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft btoc)	Groundwater Elevation (ft msl)	Well Depth (ft btoc)
DPW-2	10/11	NA	5.34	NA	12.25
DPWMW-3	10/10	435.02	6.15	428.87	14.00
FMW-2R	10/13	398.60	3.90	394.70	12.00
FMW-3	10/11	428.42	9.25	419.17	14.40
FMW-6	10/14	424.75	1.49	423.26	11.85
FMW-8	10/12	423.40	0.10	423.30	12.00
FMW-14	10/11	404.69	7.35	397.34	15.45
FMW-15	10/14	415.29	9.13	406.16	14.87
FMW-16	10/10	416.20	5.53	410.67	15.77
FMW-17	10/10	422.37	1.30	421.07	12.00
FMW-23 (BR)	10/14	423.72	0.10	423.62	43.00
FMW-24	10/13	394.21	2.80	391.41	9.00
FMW-25	10/11	375.35	6.47	368.88	16.00
FMW-26	10/11	404.79	7.68	397.11	16.20
FMW-31	10/12	428.37	11.04	417.33	21.50
FMW-35 (BR)	10/12	440.53	19.23	421.30	57.50
FMW-37	10/12	425.71	7.44	418.27	13.40
FMW-39	10/13	388.77	4.39	384.38	6.30
FMW-40	10/12	428.93	9.36	419.57	12.70
MW-3	10/12	409.54	11.10	398.44	17.50
MW-7S (BR)	10/12	409.16	8.90	400.26	25.00
MW-43 (BR)	10/13	417.08	5.90	411.18	67.90
MW-44	10/13	417.66	6.91	410.75	18.00
MW-51 (BR)	10/10	421.83	8.20	413.63	52.00
MW-52 (BR)	10/11	414.60	16.65	397.95	72.00
MW-53 (BR)	10/14	423.48	8.29	415.19	96.00
MW-54 S	10/14	425.14	10.46	414.68	12.85
MW-54 D (BR)	10/14	419.66	16.38	403.28	80.00
MW-55 S	10/14	407.75	8.99	398.76	18.00
MW-55 D (BR)	10/14	411.68	17.00	394.68	50.80
MW-56 S	10/11	406.02	7.98	398.04	12.80
MW-56 D (BR)	10/14	387.55	6.45	381.10	83.90
MW-57 (BR)	10/11	401.44	7.71	393.73	81.70
MW-58 S	10/11	386.98	Dry	<365.48	21.50
MW-58 D	10/11	386.53	38.35	348.18	60.00
MW-59 S	10/13	387.12	5.35	381.77	14.40
MW-59 D (BR)	10/13	387.84	4.12	383.72	81.60
MW-60 (BR)	10/10	415.67	12.15	403.52	80.00
MW-61	10/14	426.27	2.85	423.42	11.33
MW-63	10/12	420.80	1.81	418.99	15.00
MW-64	10/10	418.77	1.90	416.87	15.00
XDDMW-10 (BR)	10/13	409.69	20.14	389.55	60.00
XDDMW-11 (BR)	10/13	409.19	19.19	390.00	40.00
Hangar E MW-1	10/12	396.36	11.06	385.30	15.92
Hangar E MW-4	10/12	396.53	11.05	385.48	15.80

(ft msl) - feet above mean sea level
(ft btoc) - feet below top of casing
NA - Not Available
NM - Not Measured

FIGURES

LEGEND

PROPERTY BOUNDARY

FMW-10 MONITORING WELL - OVERBURDEN

FMW-23 MONITORING WELL - BEDROCK

TOTAL PFAS CONCENTRATIONS IN PARTS PER TRILLION (PPT)

NO COLOR — WELL NOT SAMPLED FOR PFAS

NOT DETECTED

2 to 100

101 to 1,000

1,001 to 10,000

10,001 to maximum (105,450)

SOURCE:
DY CONSULTANTS TEAM "EXISTING AIRPORT LAYOUT DRAWING", DATED ISSUED DEC 2017, SHEET 3 OF 16.

B

wsp

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Suite 450
Valhalla, New York 10595
(914) 694-5711

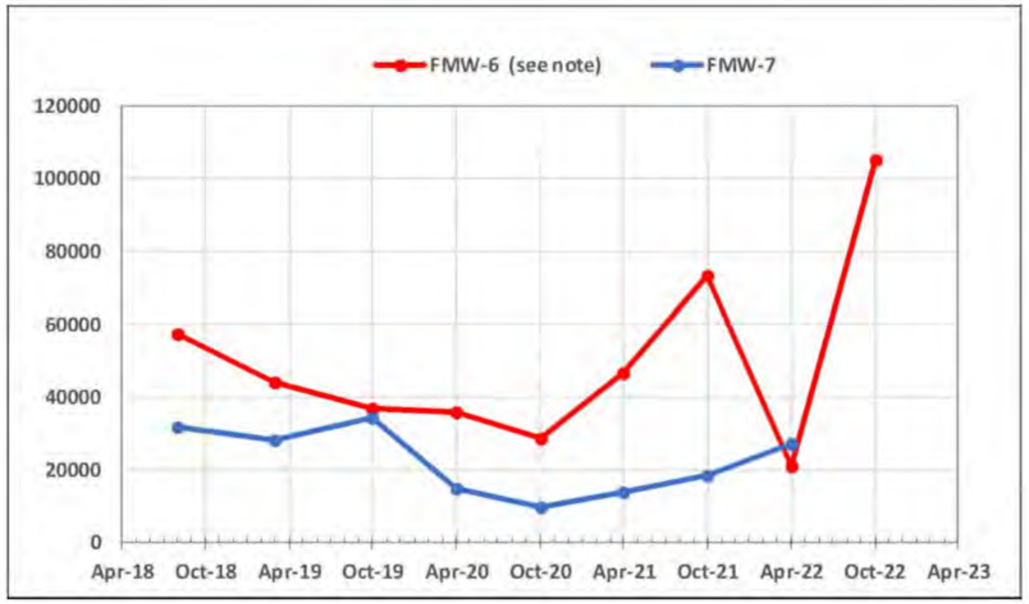
Drawn By:	RAC
Checked:	JB
Approved:	JB
DWG Date:	11/08/22

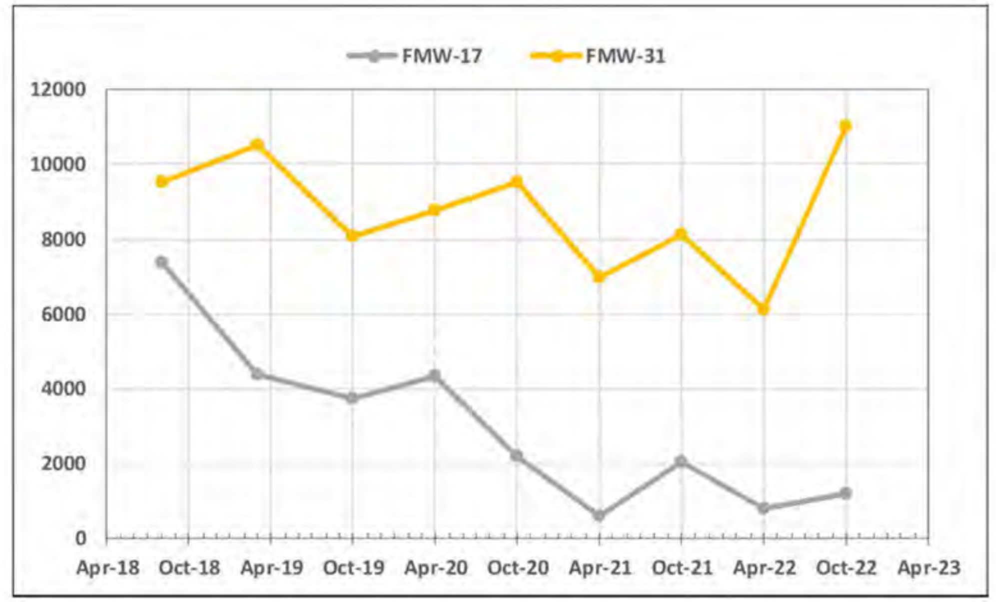
Westchester County Airport
White Plains, New York

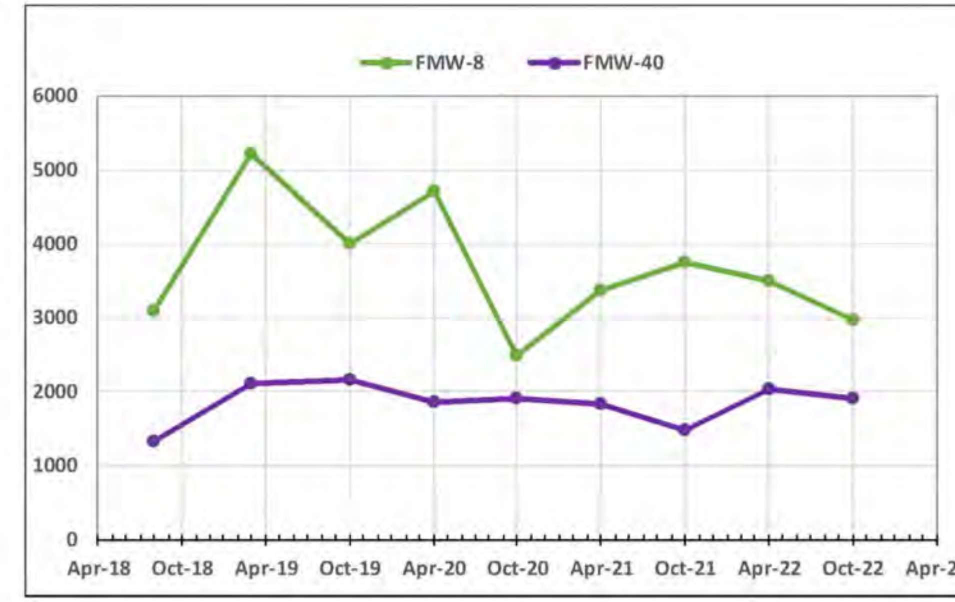
TOTAL PFAS CONCENTRATIONS - OCTOBER 2022

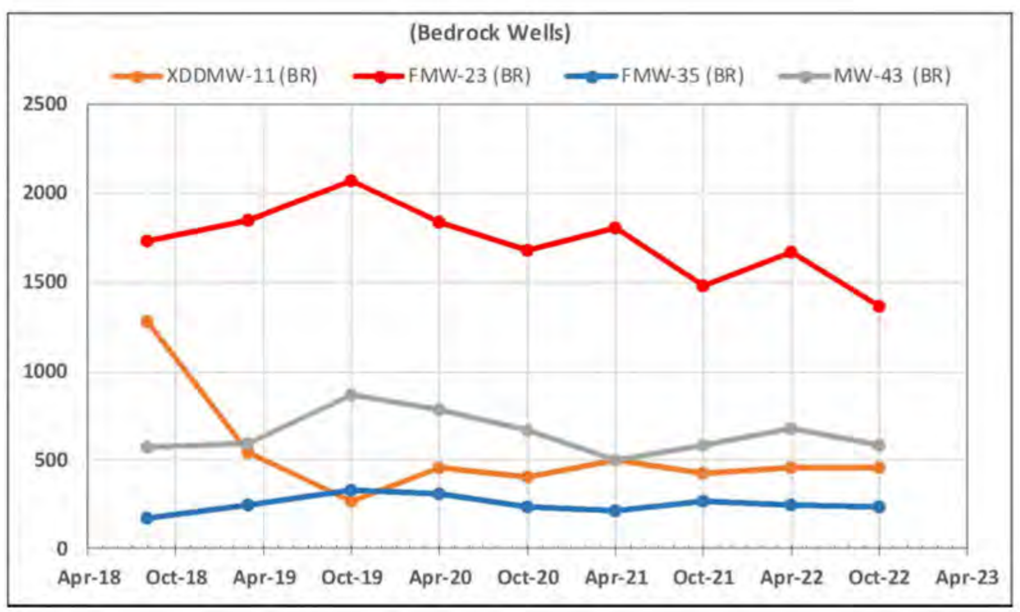
FIGURE 1

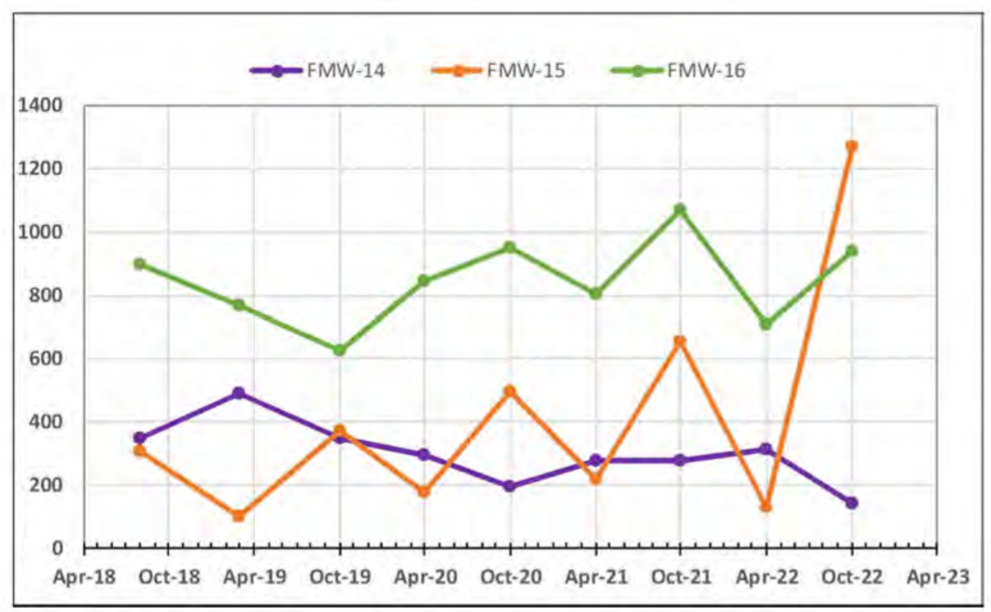
O:\DWG\Westchester County Airport\2022\F1_TotalPFAS_Oct2022.dwg, Layout1, 11/8/2022 2:32:30 PM, DWG To PDF.pc3

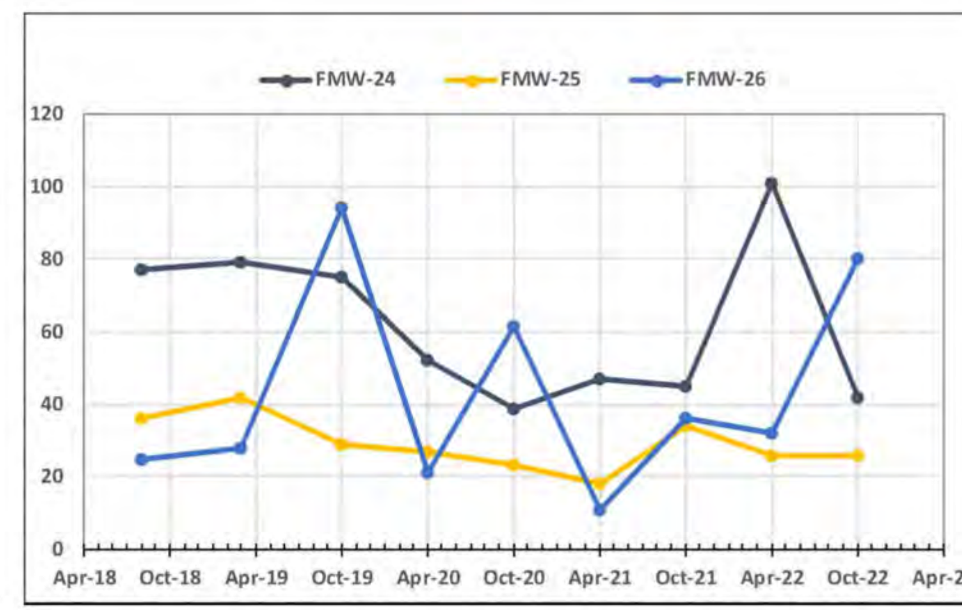












LEGEND:

X-AXIS UNITS ARE MONTH AND YEAR

Y-AXIS UNITS ARE PARTS PER TRILLION

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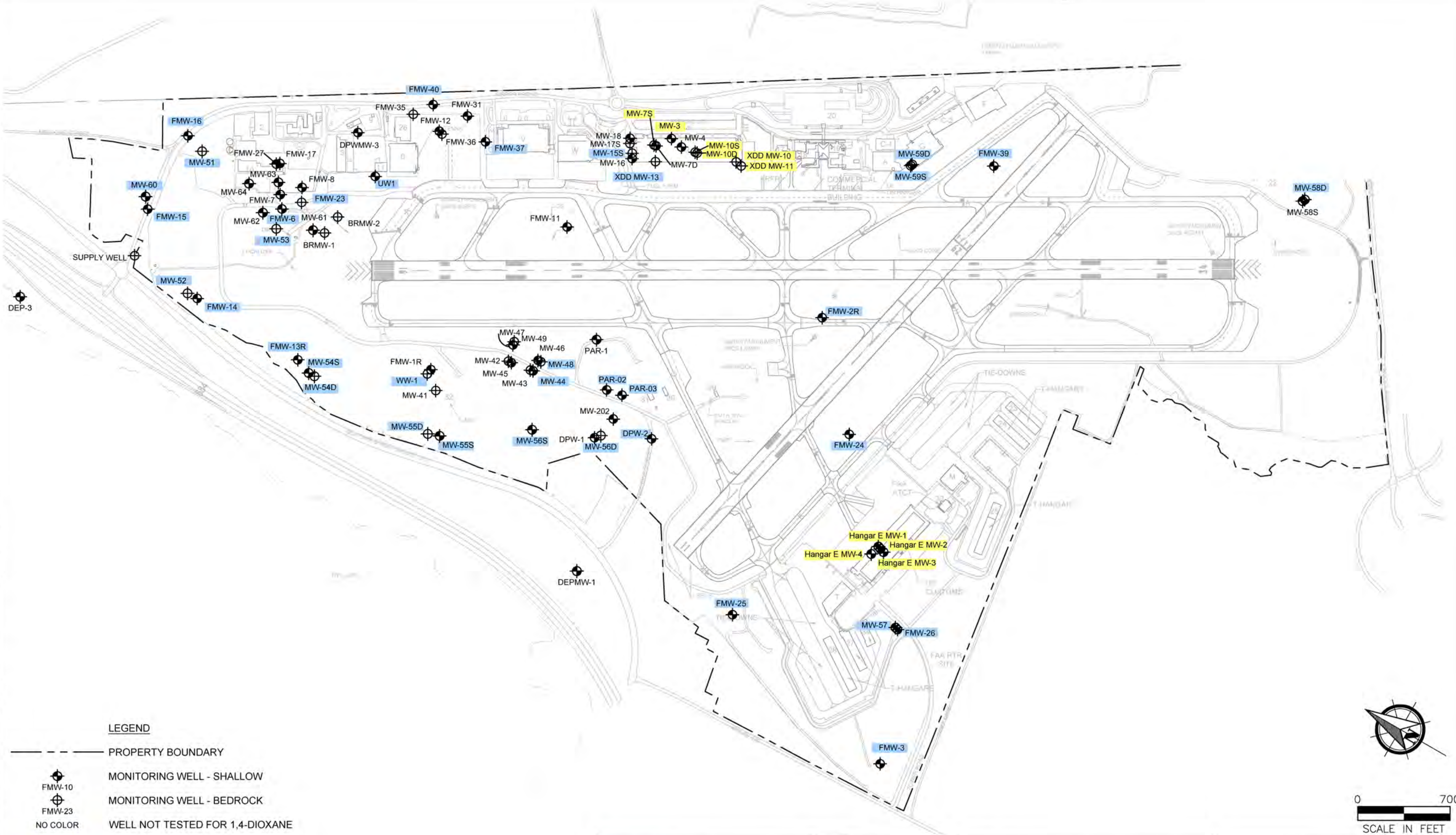
White Plains, New York

TOTAL PFAS CONCENTRATIONS OVER TIME

FIGURE 2

B



LEGEND

PROPERTY BOUNDARY

FMW-10 — MONITORING WELL - SHALLOW

FMW-23 — MONITORING WELL - BEDROCK

NO COLOR — WELL NOT TESTED FOR 1,4-DIOXANE

1,4-DIOXANE DETECTED

1,4-DIOXANE NOT DETECTED

SOURCE:
DY CONSULTANTS TEAM "EXISTING AIRPORT LAYOUT DRAWING", DATED ISSUED DEC 2017, SHEET 3 OF 16.

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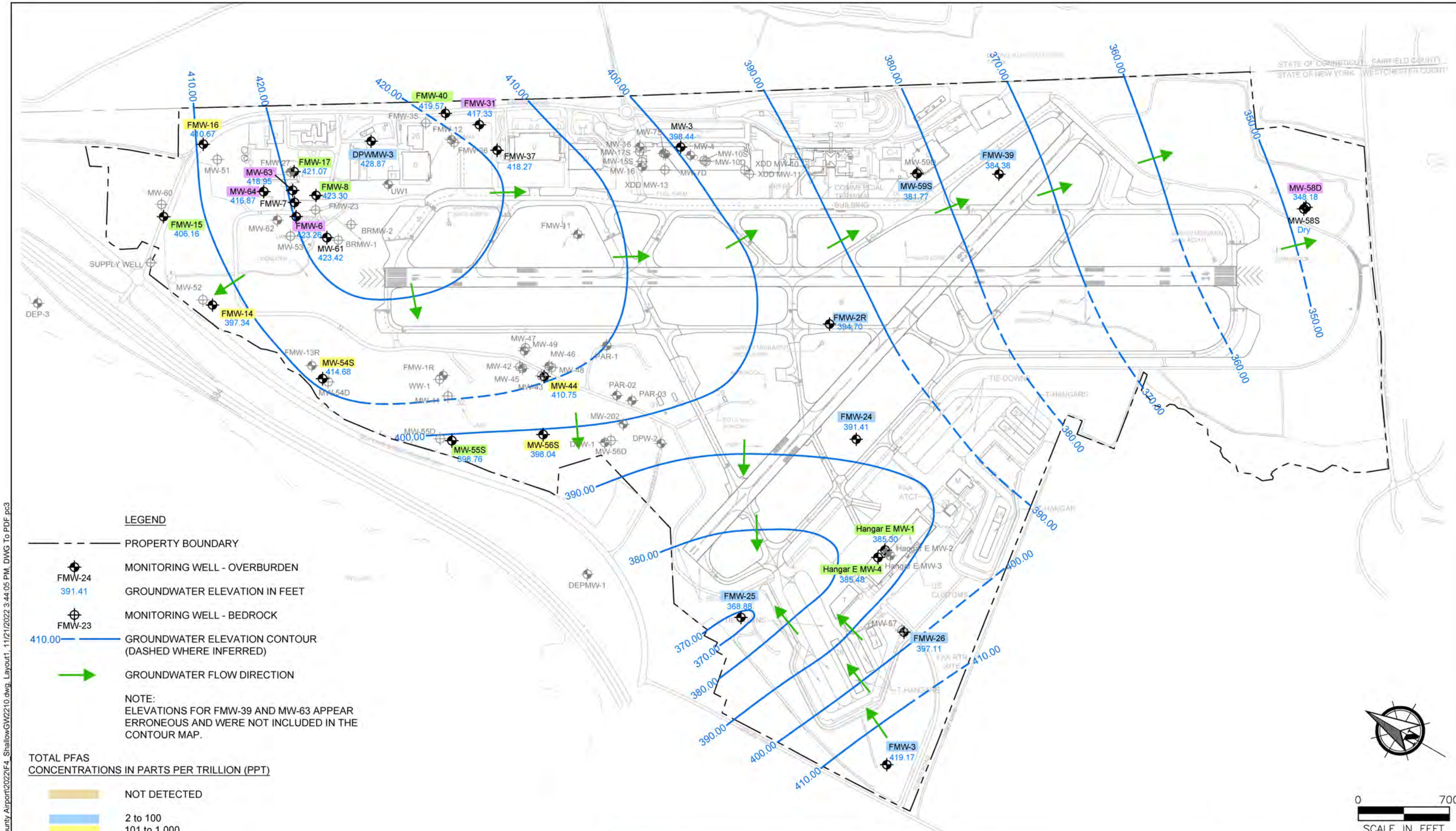
Westchester County Airport
White Plains, New York

WELLS SAMPLED FOR 1,4-DIOXANE
2018 - 2022

FIGURE 3



O:\DWG\Westchester County Airport\2022\F4_ShallowGW2210.dwg, Layout1, 11/21/2022 3:44:05 PM, DWG To PDF.pc3

B

SOURCE:
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SHALLOW AQUIFER GROUNDWATER CONTOUR MAP - OCTOBER 2022

FIGURE 4

B

SOURCE:
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BEDROCK AQUIFER GROUNDWATER CONTOUR MAP - OCTOBER 2022

FIGURE 5

O:\DWG\Westchester County Airport\2022\F5_BedrockGW2210.dwg, Layout1, 11/21/2022 3:41:55 PM, DWG To PDF.pc3