Attachment C
Preliminary Site Development Plan and TMP

Preliminary Site Development Plan
and
TENORM Management Plan

310 Ship Canal Parkway
Buffalo, New York, 14218

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For

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List of Acronyms

COC	Chain of Custody
DOL	Department of Labor
ELAP	Environmental Laboratory Approval Program
ISOCS	In-Situ Object Counting System
LDR	Land Disposal Restriction
NORM	Naturally Occurring Radioactive Material
NYSDEC	New York State Department of Environmental Conservation
NYSRML	New York State Radioactive Materials License
PE	Professional Engineer
PM-10	Particulate Matter (10 micrometers)
PPC	Personal Protective Clothing
PPE	Personal Protective Equipment
RCC	Radioactive Contamination Criteria
RCRA	Resource Conservation and Recovery Act
RCS	Radiological Control Supervisor
RCT	Radiological Control Technician
RPM	Radiological Project Manager
TBD	To Be Determined
TENORM	Technologically Enhanced Naturally Occurring Radioactive Material
TMP	TENORM Management Plan
TSD	Transport Storage and Disposal
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency

Table of Contents

List of Figures

List of Tables

List of Attachments

Attachment A – Grading and Excavation Plan

- Attachment A1 – Site Grading and Excavation Plan
- Attachment A2 – Depth to Slag Report

Attachment B – Radiological Site Data

- Attachment B1 - Gamma Walkover Survey Report
- Attachment B2 - Soil Sample Analytical Results

Attachment C - TENORM Field Monitoring and Safety Plan

Attachment D – Remedial Investigation / Alternatives Analysis / Remedial Work Plan

1.0 Introduction

This Preliminary Site Development Plan (PSD) identifies site grading and excavation details together with the Technically Enhanced Naturally Occurring Radioactive Materials (TENORM) Management Plan requirements to be utilized during Site development at the Brown Field Cleanup Program (BCP) site located at 310 Ship Canal Parkway, Parcel 4. All Brownfield Cleanup Program procedures, guidelines, and requirements will be followed. The approved Remedial Investigation (RI), Alternatives Analysis (AA), and Remedial Work Plan (RWP) are located in Attachment D, Brownfield Cleanup Program Documents

The site is approximately 5.1 acres in size and the ground cover includes a mixture of grasses, brush, and sparsely vegetated open spaces, over surface soils ranging in depth from 6-inches to 2-feet. The entire site is underlain with slag materials containing TENORM extending from between 7 and 14 feet below grade. Laborers Way, LLC has included this parcel in the newly proposed Buffalo Lakeside Commerce Park development in Buffalo, New York. The TENORM Management Plan (TMP) requirements, presented in this document, will be applied during all intrusive site activities and following the generation of potentially impacted grading or excavation spoils.

The site grading plan (Attachment A, Figure A1), consists primarily of fill placement over most of the site but will require areas to be lowered in elevation i.e., cut, from 0-1 feet below ground surface (bgs) elevation outside an area designated for a wet pond. In the wet pond area, cut depths will range from 1-4 feet bgs and will intersect and include TENORM slag materials. Although the grading in cut locations outside the wet pond are anticipated to intersect primarily with surface soils, there is a potential for subsurface TENORM slag to be intersected. Therefore, grading operations will include the TMP protocols described in Sections 2, 3 and 5 below. Figure A2 shows the estimated depths to slag (DTS) identified from test pit excavations and monitoring well installation. Additional information for DTS has been extracted from boring logs for locations not labeled in Figure A2.

The site excavation plan (**Attachment A**, Figure A1) identifies the location and depth of excavation required for building support footers and utility installation trenches. Excavation activities will remove TENORM slag and therefore will always be associated with the TMP requirements identified in this document.

As a result of grading and excavation activities, the estimated total volume of excavated material is 2600 cubic yards.

1.1 Radiological Characterization Information

In May 2022, Advanced Construction Services (ACS) completed a GPS-Enabled Gamma Walkover Survey of Parcel 4. Following the gamma walk-over survey, four slag samples were collected from test pits excavated at biased locations reflecting the range of gamma count rates observed during the walkover survey. The sample location count rates and sample depths are shown in Table 1. Figure 1, below, shows the location of the gamma walkover data and sampling locations. The gamma walkover survey collected 28,255 geolocated gamma readings with gamma count rates that ranged from 5,589 cpm to over 18,500 cpm, with a mean count rate of 9,932 cpm. The background average count rate for Parcel 4 was 5,378 cpm, with an upper tolerance limit of 6,586 cpm. The gamma walkover survey concluded that most of the site appears to be above twice average background gamma count rates.

Soil samples from Parcel 4 were analysis using gamma spectroscopy method EPA 901.1 after a 21-day ingrowth period. The summary sample location and count rate data is shown in Table 1. and sample analytical results are shown in Table 2. The sample results indicated that the naturally occurring radioactive materials (NORM) in the slag had been technically enhanced with concentrations of radium-226 ranging from 13.376 to 17.221 pCi/g while thorium-232 progeny (radium-228) were at or near typical background levels ranging from 0.783 to 1.635

pCi/g. Additionally, although the samples were collected from varying depths at locations with significantly different surface scan readings, the sample concentrations and material composition were similar.

The Gamma Walk-over Report and a Letter Report of Findings prepared by Austin Masters (AM), summarizing the results of the survey and sample data, are included in **Attachment B**.

Figure 1. 310 Ship Canal Parkway Gamma walkover survey and soil sample locations.

Table 1. Parcel 4 Soil Sample Location Gamma Count Rates and Depths

Sample	Gamma Count Rate (cpm)	Sample Depth
CC-R-01	8,179	0-6"
CC-R-02	16,028	0-6"
CC-R-03	27,885	1-1.5'
CC-R-04	34,967	1.5-2'

Table 2. Parcel 4 Soil Sample Analytical Results

Radionuclide	CC-R-01		CC-R-02		CC-R-03		CC-R-04		Average	Average
	Concentration (pCi/g)	Uncertainty (MDC)	Concentration (pCi/g)	Uncertainty (MDC)	Concentration (pCi/g)	Uncertainty (MDC)	Concentration (pCi/g)	Uncertainty (MDC)	Concentration (pCi/g)	Uncertainty (MDC)
Radium-226	13.930	3.107	13.376	2.991	16.866	4.196	17.221	3.608	15.348	3.476
Radium-228	0.783	0.328	1.258	0.390	1.635	0.402	1.514	0.397	1.298	0.379
Thorium-230	2.912	34.382	10.318	18.546	17.485	28.782	7.778	27.519	9.623	27.307
Uranium-234	2.825	3.250	3.452	1.656	3.277	1.976	3.721	1.712	3.319	2.149

1.2 Radiation Licensing and Controls

All relevant project activities including radiation monitoring, detection, and safety functions will be conducted by MJW Corporation under the auspices of the New York State Radioactive Materials License (NYSRML) C2538, and in in compliance with applicable license requirements, regulations, and the project specific TENORM Field Monitoring and Safety Plan, Attachment C.

2.0 Summary of TENORM Management Process

The Radiological Project Manager (RPM), operating under a NYSRML, will be responsible for overseeing the radiological aspects of the project including radiation monitoring (detection), radiation safety, compliance with radiation regulations, TENORM sampling, review of characterization data and determinations. A Radiological Control Supervisor (RCS) will supervise day to day activities of Radiological Control Technicians (RCT's) performing radiation monitoring during field activities. The RCS and RCTs will perform the necessary radiation monitoring required to identify suspect TENORM materials and facilitate required materials management and radiation safety actions.

The Site Contractor will be responsible for excavation of TENORM subject to relevant controls, transport, temporary storage, loading, and arranging for final disposition as required by regulatory agencies.

Radiation monitoring, excavation, transport, and staging will, to the extent practicable be conducted in a manner supportive of continued excavation and segregation of TENORM from other soils or waste streams.

The RSC and RCT will document all excavation activities within field logbooks or similar. Information such as, material type (i.e., soil, concrete, gravel, slag, etc.), location, visual observations (i.e., odors, debris, staining), lift depth, waste stream, etc. shall be documented. The RCS will be responsible foroversight of the segregation, staging, testing, and management of all excavated contaminated materials at the site. See Section 3 regarding details of waste screening and segregation.

Potentially contaminated equipment will be surveyed, and if necessary, decontaminated to background levels before return to unrestricted use. The management of excavated materials will utilize procedures to promote material segregation and minimize contact between potentially contaminated and clean material. These procedures will ensure that any potentially contaminated materials do not migrate off site including adjacent properties and roadways. All potentially contaminated equipment (i.e., excavator, bulldozer, etc.), that is determined to be contaminated will be decontaminated prior to leaving the site in accordance with procedures presented in Section 8 of this plan.

Excavation equipment will remove materials in specified lifts during which the materials will be screened or scanned and moved directly to the TENORM material staging area. The contractor will be responsible for maintaining the segregation of TENORM material while moving by using shipping containers, haul trucks or other equivalent isolating and secure transport. Alternatively, material may need to be temporarily laid down and stockpiled to facilitate screening such as during grading operations. This will require precautions as determined by the RPM to prevent cross contamination of non-contaminated materials and surfaces (This could include for example using tarps, plywood etc. to protect the ground or pavement). Excavation will continue in specified lifts until excavation design locations are attained and contaminated, slag-like materials are removed. Staged materials will then be scanned and segregated by radioactive content prior to sampling to determine final disposition either through off-site disposal at an approved landfill facility or by re-internment after meeting NYSDEC variance requirements.

3.0 Field Screening

Prior to grading or excavation activities, all control, staging, frisking, and haul locations will be established, including areas of suspected contamination based off data from previous radiological investigations. Due to the limitations of overland gamma surveys, it should be noted that contamination may be found in any area of grading below surface elevations or excavations, since the presence of TENORM may be masked by the depth of the material or intervening shielding materials such as concrete or blacktop. As excavated materials are removed, radiological surveys will be performed using scaler/ratemeters such as the Ludlum 2241-2 with 44-10 NaI detector, or similar as determined by the RPM or RCS. The frequency with which excavated areas and lift sequences are surveyed and the effective use of visual inspection will help to locate radiological contamination as excavation progresses. Accordingly, it is anticipated that surveys may occur based on professional judgement by the RPM and RCS on excavated material (e.g., stockpiled at excavation face, in heavy equipment buckets, etc.) and in-situ material prior to, and subsequent to each grading cut or excavated lift, as needed.

Since this project is a material segregation activity where the presence of NORM or TENORM isknown to exist and not a remedial cleanup project, development of a site-specific risk or dose assessment to establish a cleanup criterion is not required. Proper material segregation and the determination of whether excavated material should be dispositioned as TENORM waste will be based upon the NYSDEC regulation for radioactive contamination criteria (RCC) and the professional judgment of project radiological staff and laboratory results. Material exceeding the RCC will be removed, staged, sampled, containerized, and dispositioned separately of those materials below the approved screening level. Should radioactive material be encountered of a type or concentration that is not anticipated by characterization data, or if area exposure rates exceed 1 mrem/hr at any location, the RPM and RCS will institute a contingency plan for additional waste segregation, sampling, safety, storage, and disposal.

The suggested instruments listed above are used for low-level, wide energy gamma detection andare effective at more than an order of magnitude below the anticipated background readings in Western New York Region.

4.0 Field Documentation

All excavation activities (i.e., excavation, soil staging, visual observations, sampling, etc.) will be documented in a field logbook or similar. At a minimum, the following information shouldbe included in the field logbook:

- Project personnel
- Date
- Visual observation
- Volume Excavated
- Location (nearest station number) of excavated area within the site
- Samples collected (including sample ID and time of sampling)
- Radiological Control Technician name
- Training activities
- Instrument serial numbers
- Background and check source responses
- Sample/Surveyor signature
- Issues/Concerns
- Radiological screening parameters of sample taken

This documentation will provide a daily summary of activities as well as an inventory of field sampling activities.

5.0 Segregation and Storage

Material determined to exceed the RCC by the RPM or RCS or designee, shall be segregated from non-radioactive material and staged pending waste characterization (sampling and analysis)and determination of disposition either through a regulatory variance for re-internment or off-site disposal at an approved landfill facility. Material staging areas will be constructed for temporary storage of materials to be separated and sampled prior to removal and disposal. The segregation and storage area will be located on the parcel at a location designated by the contractor and meeting segregation, topographic and access requirements.

The Contractor will notify the RPM immediately if material is discovered that appears to containunknown contaminants or material that varies significantly from the type of contamination identified during site characterization. In the event that unexpected conditions occur (unusual soil coloration, etc.), all work in the area potentially impacted by the suspect materials, will be stopped until a thorough evaluation (i.e., soil analysis) has been completed. The Contractor and RPM/RCS in consultation with NYSDEC oversight staff will determine the preliminary regulatory classification of suspect material, concentration levels for determination of contamination, and how the materials are to be managed.

The staged material will be covered daily or during precipitation events. The covered material will be secured during inclement weather and during periods of inactivity. Silt fencing/hay bales,and berms with sumps (or similar) will be utilized in staging areas to mitigate contaminated run- off. In addition, the staging area will be identified and/or secured (i.e., roped, posted, fenced, etc.) as required by BCP and radiological regulatory requirements. The area will also be labeled appropriately (i.e., signage).

Contaminated material meeting Resource Conservation and Recovery Act (RCRA) hazardous waste definitions will not be stored for more than 90 calendar days, with the time limit beginning the first day the material is placed in a stockpile, truck-bed, or disposal container. If additional storage time is required for material determined to be RCRA regulated hazardous waste, approval will be obtained from NYSDEC. Contaminated material may be placed in stockpiles, trucks, or disposal containers (i.e., roll-offs, intermodal, etc.).

6.0 Stockpiles

Contractor will prepare and maintain stockpiles as follows:

1. Preparation of Stockpile Areas

    - The area will be graded to provide positive drainage away from intended stockpile locations.
    - All stones, roots, debris, and other objects that may puncture polyethylene ground protection will be removed.
    - The ground surface where material will be stockpiled will be covered with a minimum of 0.25-millimeter (10-mil) or 2 layers of 0.15-millimeter (6-mil) polyethylene sheeting, or an equivalent material. All seams will be overlapped and sealed to prevent the leaching of contaminants.
    - Asphalt or concrete staging areas with berms and sumps may be used as needed in place of polyethylene.

2. Stockpile Protection

- At the end of each workday, contaminated material stockpiles will be completely covered with a minimum of 0.25-millimeter (10-mil) or 2 layers of 0.15-millimeter (6-mil) polyethylene sheeting, or an equivalent material. All seams will be overlapped and sealed to prevent the leaching of contaminants.

- Stockpile covers will be weighted or secured by appropriate means to prevent tearing or removal by weather conditions.

3. Maintenance

- Stockpile covers, site grading, signing and security measures shall be properly maintained for the duration of storage. Damaged covers and other protections will be repaired or replaced as necessary.

6.1 Trucks or Disposal Containers

Contractor will prepare and maintain trucks and roll-off containers as follows:

- The interior of truck-beds and disposal containers will be lined with 0.25-millimeter (10-mil) or 2 layers of 0.15-millimeter (6-mil) polyethylene sheeting, or an equivalent material. All seams shall be overlapped and sealed to prevent the leaching of contaminants.

- At the end of each workday, trucks and disposal containers storingmaterial will be completely covered with waterproof tarpaulins or hard cover tops. Tarpaulins will be placed over the top of the truckbed or container (rather than over the material inside) and shall extend over the sides to prevent water accumulation and the evaporation of contaminants.

- Tarpaulins will be weighted or secured by appropriate means to prevent tearing or removal by climatic conditions.

- Trucks and disposal containers will be labeled, signed, fenced, or otherwise secured (as needed) at the end of each workday.

- Trucks, disposal containers and tarpaulins shall be properly maintained for the duration of material storage.

- Damaged tarpaulins or disposal containers shall be repaired or replaced by the Contractor within 24 hours after notification. If this work is not satisfactorily completed within 24 hours, no further material storage shall be allowed until such work is completed.

7.0 TENORM Sampling

This section presents a description of materials sampling activities that will be performed to properly characterize excavated TENORM materials for determination of compliance with NYSDEC re-internment variance requirements, if applicable, or alternatively, prior to off-site transportation and disposal.

Samples will be collected according to this plan and will include chain-of-custody (COC) procedures. The frequency of sample collection for laboratory analyses is typically one composite sample per 500 cubic yards (1 aliquot for every 100 cubic yards to generate 1 composite sample every 500 cubic yards) of excavated TENORM materials. However, the sample frequency may be adjusted due to volumes accumulated, regulatory requirements, or disposal facility waste acceptance criteria. The sampling will be conducted under the direction of the Contractor Project Manager, the RPM and RCS. Sample and Document Custody procedures, including sample identification criteria, labeling, and COC, are specified below. In-Situ characterizations such as In-Situ Object Counting System (ISOCS) analysis may be utilized as an augmentation, or substitute method of characterization, if such methods are accepted by the regulator and/or disposal facility to which the material will be sent.

Samples will be submitted for analysis to an Environmental Laboratory Approval Program (ELAP) approved radio chemistry laboratory, as applicable. The sample turnaround time for the project, from receipt of samples at the laboratory,is dependent on the field activities and urgency of the data. However, typically tum-around- times will be 30 business days to account of isotopic equilibrium. All TENORM samples will be analyzed using approved United States Environmental Protection Agency (USEPA) methodologies and appropriate radiological parameters (e.g., gamma spectroscopy, and uranium and thorium, by alpha spectroscopy).

7.1 Sampling Equipment and Materials

All necessary equipment and materials will be assembled prior to initiating sampling activities. The following documentation materials will accompany the field team during the sampling activities:

- Preliminary Site Development Plan and TENORM Management Plan (This document)
- Chain of Custody forms
- Sample Labels
- Field logbook

Logs and forms will be completed during and/or immediately after sample collection. The following is a list of sampling equipment and material required for sample collection:

- Disposable or washable sampling equipment
- Laboratory supplied sample containers or new plastic bags
- Sample container labels
- Sample coolers or similar for shipment
- Pen (indelible ink)
- Disposable gloves
- Scoop or trowel

Each sample will be uniquely identified in such a manner that the sample number identifies the location of the sample collection point and type of sample. This system will apply to samples collected during the excavation activities, which are to be transmitted to the analytical laboratory.

7.2 Sample Containers and Preservation

Appropriate sample containers, and laboratory holding times shall be maintained as appropriate. No sample preservatives or holding times are typically required.

7.3 Sample Labeling

All sample labels shall be completed legibly with indelible ink, affixed to the sample container, and covered with clear tape, as appropriate. Sample identification will include:

- Project name and number
- Unique sample number
- Sample location
- Sampling date and time
- Initials of the collector
- Designation as "composite" samples
- Parameter analysis

Labels will be placed on all sample containers prior to or immediately after sample collection.

7.4 Chain of Custody Forms

Documentation of the sample Chain of Custody (COC) is provided by the use of forms which record the sampling location, the type of samples collected, requested analyses, the date and time of sample collection, the name(s) of the person(s) responsible for sample collection, the date and time of all custody transfers, the signature of the person relinquishing and accepting sample custody, and other pertinent information.

A COC record will be initiated in the field and will accompany each group of samples during shipment to the laboratory. Each time custody of the sample changes, the new custodian will sign the record and indicate the dates of transfer. The COC forms will be completed, signed, and distributed as follows:

- One copy will be retained by the field personnel for inclusion in the project files

- The original will be sent to the analytical laboratory with the sample shipment andwill be returned with the analytical report to be included in the project file.

8.0 Equipment Decontamination

To the extent practicable, equipment decontamination will be accomplished atthe active TENORM work site, in a separate area established for decontamination. The RCS will advise the contractor regarding the establishment of an exit survey location and appropriate contamination control methods. The decontamination process will be guided by readings taken by the RCS or RCT's and will carried out until levels are As Low As Reasonably Achievable (ALARA) or non-detectable.

8.1 Disposable Contaminated PPE

Disposable PPC and PPE that is contaminated will be collected in polyethylene bags or an equivalent material and kept sealed. Avoid placing sharp or pointed materials into the bag to prevent tearing and puncture of the bags. The bags will be characterized, labeled, and disposed along with the excavated contaminated material following the same procedures.

If the survey of used PPE determines that contamination is not present, the PPE and materials will be disposed

of as regular trash in accordance with applicable provisions of Chapter One, Part 16 of the New York State Sanitary Code.

9.0 Worker Contamination Prevention

TENORM materials will be managed to avoid the spread of contamination from the site. Measures to do so will typically include:

- Work practices will focus on keeping TENORM material off workers and their personal clothing by using appropriate protective clothing as determined by the radioactive materials licensee (for example, Tyvek suits, latex booties, gloves, etc.). This may not be necessary if work processes are planned and implemented to avoid direct contract with TENORM. For example, by using methods that do not require workers to even enter TENORM areas.

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth contact is strictly prohibited within areas designated by the radioactive materials licensee.

- Washing/wiping the hands and face after exiting designated areas, and before eating, drinking, chewing, or smoking.

- Personal protective equipment and clothing must be worn by all personnel entering restricted areas in accordance with the project radiation safety plan or as otherwise designated by the RPM.

- Contact with surfaces/materials either suspected or known to be TENORM contaminated will be avoided to minimize the potential for transfer to personnel, cross contamination and need for decontamination.

- Personnel and equipment in the TENORM area shall be minimized, consistent with effective site operations.

All equipment leaving restricted areas will be radiologically surveyed and decontaminated, as needed, to prevent the mitigation or contamination off-site.

10.0 Fugitive Dust Control

This section addresses standard and contingent fugitive dust suppression measures to be implemented as an integral component of the project. The components of fugitive dust control include the following:

- Identification of fugitive dust sources; and

- Baseline dust suppression measures.

10.1 Dust Sources and Control

This section identifies potential fugitive dust sources and control techniques associated with excavation activities.

The potential sources include those associated with typical construction projects, such as excavation, material staging, handling and transport, and material placement and grading. This section addresses fugitive dust control associated with handling of TENORM contaminated materials to prevent visible particulates from migrating thereby potentially causing a public nuisance or health and safety issue. The following potential dust sources have been identified for this project:

Excavation and soil handling - The primary contributing factors to fugitive dust emissions at the point of excavation are material properties (moisture and PM-10 content), geometry of the excavation face, bucket capacity, drop heights, excavation rate, and meteorological conditions, including wind speed and precipitation. Excavation and handling of soils can potentially result in fugitive dust emissions.

Vehicular traffic - The primary source of fugitive dust from vehicular traffic is a result of contact between the vehicle wheels and ground surface. Fugitive dust emissions associated with movement of vehicles on-site will be a function of vehicle speed, vehicle weight, number of wheels, silt content of the road material, moisture content of the road material, and frequency of precipitation events. Of these factors, control of moisture content and vehicle speeds for on-site areas will be implemented as the primary fugitive dust control measures.

Material stockpiles - Material stockpiles include the working piles and clean fill. Fugitive dust emissions associated with stockpiles will be generated during the transfer of material onto and off the piles and wind erosion. Significant contributing factors include silt content, moisture content, stockpile dimensions/alignment, wind speed/direction, and the general stockpile activity.

Dust control will be implemented in areas of active construction and material handling activities as designated by the radioactive materials licensee.

Dust control will be achieved primarily through application of water or an approved dust palliative. Water for dust abatement will not be appropriated from surface waters. Application rates for the dust palliative will follow the manufacturer's recommendations. All dust palliatives used will be biodegradable.

Based on this guidance the following techniques may be employed to mitigate the generation and migration of fugitive dust during construction:

- applying water on the right of way, stockpiles, trenches, and othersurfaces which may give rise to airborne dust
- spraying water on temporary roads at the end of the work shift to form a thin crust
- misting equipment and excavation faces
- spraying water on buckets during excavation and dumping
- watering of any visibly dry disturbed soil surface areas of operation
- covering, when in motion, open-bodied vehicles transporting materialslikely to crease air pollution
- restricting vehicle traffic
- reducing the size of any open excavation

If the dust suppression techniques are ineffective, the specific task generating the fugitive dust may be suspended until appropriate corrective measures are identified and implemented to remedy the situation.

More specific provisions related to dust control for the purpose of compliance with applicable radiation protection requirements are provided in the Project Radiation SafetyPlan.

10.2 Control of Disturbed Areas On-Site

All areas disturbed by construction will be re-vegetated or covered with impervious services (i.e., asphalt, concrete, etc.) or vegetation at job completion in accordance withthe contract documents.

Attachments

Attachment A – Grading and Excavation Plan

- Attachment A1 – Site Grading and Excavation Plan
- Attachment A2 – Depth to Slag Report

Attachment B – Radiological Site Data

- Attachment B1 - Gamma Walkover Survey Report
- Attachment B2 - Soil Sample Analytical Results

Attachment C - TENORM Field Monitoring and Safety Plan

Attachment D – Remedial Investigation / Alternatives Analysis /

Remedial Work Plan

Attachment A – Grading and Excavation Plan

- **Attachment A1 – Site Grading and Excavation Plan**
- **Attachment A2 – Depth to Slag Report**

Attachment A1 – Site Grading and Excavation Plan

FUTURE SUBSTATION

BLDG FFE: 588.40

BLDG FFE: 588.40

Elevations Table			
Number	Cut/Fill Depth (ft)	Cut/Fill Depth (ft)	Color
1	-5.000	-4.000	
2	-4.000	-3.000	
3	-3.000	-2.000	
4	-2.000	-1.000	
5	-1.000	0.000	
6	0.000	1.000	
7	1.000	2.000	
8	2.000	3.000	
9	3.000	4.000	
10	4.000	5.000	
11	5.000	6.000	
12	6.000	7.000	

NOTES:

1. VOLUME ANALYSIS WAS PERFORMED USING THE EXISTING GRADE SURFACE AND PROPOSED SUBGRADE SURFACES. PROPOSED SUBGRADE SURFACES ARE RELATIVE TO THE PROPOSED SURFACE SHOWN ON C-102 "GRADING PLAN" AS FOLLOWS:
   - 1.1. GRASS/ 1' COVER SYSTEM SUBGRADE: 1.00' LOWER THAN PG
   - 1.2. STANDARD ASPHALT SUBGRADE: 1.33' LOWER THAN PG
   - 1.3. HEAVY DUTY ASPHALT SUBGRADE: 1.58' LOWER THAN PG
   - 1.4. BLDG SLAB CUBGRADE: 1.75' LOWER THAN PG
   - 1.5. BIORETENTION SUBGRADE: 2.75' LOWER THAN PG
   - 1.6. SIDEWALK SUBGRADE: 0.66' LOWER THAN PG
   - 1.7. DUMPSTER PAD SUBGRADE: 1.00' LOWER THAN PG
2. CONTOURS DISPLAYED ARE THE PROPOSED GRADE SURFACE SHOWN ON C-102 "GRADING PLAN".

LEGEND

585 — EXISTING CONTOUR

590 — PROPOSED CONTOUR

PLAN NORTH

0 30' 60'

C&S COMPANIES

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310 SHIP CANAL PARKWAY DEVELOPMENT
LABORERS WAY, LLC
BUFFALO, NEW YORK

MARK	DATE	DESCRIPTION
		REVISIONS

PROJECT NO:	Y28.001.001
DATE:	FEBRUARY 15, 2022
DRAWN BY:	MRO
DESIGNED BY:	MRO
CHECKED BY:	VJO

VOLUME ANALYSIS PLAN

-

Oct 17, 2022 – 10:11am
F:\Project\Y28 – Laborers Way 1\Y28001001–BLCP Development\Design\CADD\Civil 3D\310 Ship Canal Pkwy – REVS\VOL ANALYSIS – 5.dwg

Attachment A2 – Depth to Slag Report

C&S COMPANIES®

Figure 2

Sample Location Map

Legend

- BCP
- Monitoring Wells -
- Test Pits -
- Soil Borings -
- Soil Borings/Well -
- Building Footprint

N

0 37.5 75 150 Feet

1 inch = 75 feet
When printed at 11 in. by 17 in.

310 Ship Canal Parkway BCP

Sources: . Created by C&S Engineers, Inc.

C&S Engineers, Inc.
141 Elm Street
Buffalo, New York 14203
Phone: 716-847-1630
Fax: 716-847-1454

BORING LOG

Boring No.	**MW-03**
Sheet 1 of:	1
Project No.:	
Surface Elev.:	
Datum:	
Start Date:	7/16/22
Finish Date:	7/16/22
Inspector:	M. Wittman

Project Name:	310 Ship Canal Pkwy.
Location:	310 Ship Canal Pkwy., Buffalo, NY
Client:	Laborers Way, LLC
Drilling Firm:	Matrix Environmental Technologies

Groundwater	Depth	Date & Time
While Drilling:	9.5	
Before Casing Removal:		
After Casing Removal:		

Drill Rig:	6620-DT - Geoprobe		
Casing:		**Rock Core:**	**Undist:**
Sampler:	5' acetate liner	**Other:**	PID - Mini Rae 3000
Hammer:	Geoprobe		

(N -- No. of blows to drive sampler 12" w/140 lb. hammer falling 30" ASTM D-1586, Standard Penetration Test)

c - coarse
m - medium
f - fine

a - and - 35-50%
s - some - 20-35%
l - little - 10-20%
t - trace - 0-10%

S - Sand, $ - Silt, G - Gravel, C - Clay, cly - clayey

Depth (ft)	Sample No.	Symbol	Blows on Sampler per 6"	MATERIAL DESCRIPTION	COMMENTS (e.g., N-value, recovery, relative moisture, core run, RQD, % recovered)
1	S-1		NA	Brown f/c Sand and Slag, tr. Cinders, moist (FILL)	S-1: 0-5'
					4' recovery
					PID - ND
2				Brown Clayey Silt, some f/c Sand and Gravel Sized Slag, moist (FILL)	
3					
4					
				Grey f/c Sand and Gravel Sized Slag (FILL)	
5					
6	S-2				S-2: 5-10'
					3.5' recovery
					PID - ND
7					
8				Grades to:…wet @ 8' bg	
9					
				Grades to:…saturated @ 9.5 ' bg	
10					
11	S-3			Grey Gravel and f/c Sand Sized Slag (FILL)	S-3: 5-15'
					4' recovery
					PID - ND
12					
13					
14					
15					
16				Bottom of Boring at 15 feet bg	
17					
18					
19					
20					
21					
22					
23					

C&S Engineers, Inc.
141 Elm Street
Buffalo, New York 14203
Phone: 716-847-1630
Fax: 716-847-1454
www.cscos.com

TEST PIT

Test Pit No.	**TP-08**
Sheet 1 of:	
Project No.:	
Start Date:	7/12/22
Finish Date:	7/12/22
Inspector:	Alex Brennen

Project Name:	310 Ship Canal Parkway		
Location:	310 Ship Canal Parkway, Buffalo, NY	***Operator:***	NW Contracting
Client:		***Equipment:***	Mini Excavator

Depth (ft)	Sample No.	Symbol	Exc. Depth	MATERIAL DESCRIPTION (c - coarse, m - medium, f - fine; a - and - 35-50%, s - some - 20-35%, l - little - 10-20%, t - trace - 0-10%; S - Sand, $ - Silt, G - Gravel, C - Clay, cly - clayey)	COMMENTS (e.g., caving of sidewalls, excavation difficulties, PID readings)
	X		0	Brown sandy silts, some brick and concrete, some F-C gravel, some larger round rock	0.0 ppm
1					0.0 ppm
2				SAA	0.0 ppm
3					0.0 ppm
			3'	LT Brown/Orange sands some medium gravel, slag	
4					0.0 ppm
			4'	End at 4' bgs	
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-140**

Project: **Buffalo Lakeside Commercial Park**	Client: **NYSDEC**	Regulatory Case #: **Site No. 915322**
Address: **Laborers Way & Ship Canal Pkwy, Buffalo, NY**		Regulatory Case Mgr: **Jenelle Gaylord**
County: **Erie**	GES Job #: **0901752**	GES Project Mgr: **Eric D. Popken**
Logged By: **P. Colern/D. Zordan**	Date Drilled: **10-18-2018**	Sample Tool Diameter: **NA**
Drilling Company: **Cascade Drilling**	Completion Date: **10-18-2018**	Sample Tool Length: **10 ft.**
Drill Operator: **Arlen Little**	Drilling Method: **Sonic Rig**	Soil Classification System: **Modified Burmister**
Drill Rig Type: **Sonic**	Sampling Method: **Sonic Tube**	Field Screening: **MiniRae3000 10.6 eV**
Latitude: **NA**	Longitude: **NA**	Top of Bentonite Seal: **NA**
TOC Elevation: **NA**	Borehole Diameter: **4.5 in.**	Type of Seal: **NA**
Total Depth: **20 fbgs.**	Well Diameter: **NA**	Top of Sand: **NA**
Refusal Depth: **Not Encountered**	Riser Length: **NA**	Sand Type: **NA**
Initial Depth to Water: **NA**	Screen Slot Size: **NA**	Well Material Type: **NA**
Static Depth to Water: **NA**	Screen Length: **NA**	Top of Grout: **NA**

Depth (fbgs)	Sample Interval (feet)	Recovery (ft/ft)	Field Screen (ppm) 0 25	Geologic Description	Comments	Completion Detail
0	0-2	8/10	0.0	TOPSOIL and SLAG debris, dark brown, moist	SB-140-A @ 0-2'	
	2-5		0.0	FILL, CLAY, some SLAG debris, dark brown, moist		
5	5-7		0.0	FILL, fine SAND, some fine to coarse GRAVEL, trace SLAG debris, tan, dry		
	7-10		0.0	FILL, SLAG debris, light gray/blue, wet		
10	10-15	-	0.0	FILL, SLAG debris, light gray/blue, wet		Backfilled with cuttings
15	15-17		3.5	PEAT, little interbedded CLAY, trace SLAG debris, dark brown/black, moist	SB-140-B @ 15-17'	
	17-19		19.2	Organic CLAY, tan/gray, moist	Boring ended at 20 fbgs.	
20	19-20		0.0	PEAT, little interbedded CLAY, trace SLAG debris, dark brown/black, moist	SB-140-C @ 17-19'	

Proportions Used:

Trace =	<5%
Little =	6-15%
Few =	16-30%
Some =	31-49%
And =	>50%

Notes:

NA = not available; fbgs. = feet below ground surface
in. = inches; ft.= feet; ppm.= parts per million
Soil Lithologies based on field observations only.
famsl. = feet above mean sea level
btoc = below top-of-casing; ftag = feet above grade
eV = electron volt; PVC = polyvinyl chloride

Blow Count Pentration Resistance:

Consistency (M&C)		Density (G&S)	
<2 =	Very Soft	0-4 =	Very Loose
2-4 =	Soft	4-10 =	Loose
4-8 =	Medium	10-30 =	Medium
8-15 =	Stiff	30-50 =	Dense
15-30 =	Very Stiff	>50 =	Very Dense
>30 =	Hard		

Symbol Legend

Static Water Level

Lab Sample Location

Soil Boring

Groundwater & Environmental Services, Inc.

ID NO. **SB-141**

Project: **Buffalo Lakeside Commercial Park**	Client: **NYSDEC**	Regulatory Case #: **Site No. 915322**
Address: **Laborers Way & Ship Canal Pkwy, Buffalo, NY**		Regulatory Case Mgr: **Jenelle Gaylord**
County: **Erie**	GES Job #: **0901752**	GES Project Mgr: **Eric D. Popken**
Logged By: **P. Colern/D. Zordan**	Date Drilled: **10-18-2018**	Sample Tool Diameter: **NA**
Drilling Company: **Cascade Drilling**	Completion Date: **10-18-2018**	Sample Tool Length: **10 ft.**
Drill Operator: **Arlen Little**	Drilling Method: **Sonic Rig**	Soil Classification System: **Modified Burmister**
Drill Rig Type: **Sonic**	Sampling Method: **Sonic Tube**	Field Screening: **MiniRae3000 10.6 eV**
Latitude: **NA**	Longitude: **NA**	Top of Bentonite Seal: **NA**
TOC Elevation: **NA**	Borehole Diameter: **4.5 in.**	Type of Seal: **NA**
Total Depth: **20 fbgs.**	Well Diameter: **NA**	Top of Sand: **NA**
Refusal Depth: **Not Encountered**	Riser Length: **NA**	Sand Type: **NA**
Initial Depth to Water: **NA**	Screen Slot Size: **NA**	Well Material Type: **NA**
Static Depth to Water: **NA**	Screen Length: **NA**	Top of Grout: **NA**

Depth (fbgs)	Sample Interval (feet)	Recovery (ft/ft)	Field Screen (ppm) 0 5	Geologic Description	Comments	Completion Detail
0	0-2	10/10	0.0	TOPSOIL and fine to coarse GRAVEL, moist	SB-141-A @ 0-2'	
	2-5		0.0	FILL, SLAG debris, gray-blueish, moist		
5	5-10		0.0	FILL, SLAG debris, gray-blueish, wet	SB-141-B @ 5-7'	
				FILL, SLAG debris, gray-blueish, saturated		
10	10-16	-	0.0	FILL, SLAG debris, gray-blueish, saturated		Backfilled with cuttings
15	16-18		2.8	PEAT, little interbedded CLAY, dark brown/black, moist	Boring ended at 20 fbgs.	
	18-20		0.5	Organic CLAY, tan/light brown, very moist	SB-141-C @ 18-20'	
20						

Proportions Used:

Trace =	<5%
Little =	6-15%
Few =	16-30%
Some =	31-49%
And =	>50%

Notes:

NA = not available; fbgs. = feet below ground surface
in. = inches; ft.= feet; ppm.= parts per million
Soil Lithologies based on field observations only.
famsl. = feet above mean sea level
btoc = below top-of-casing; ftag = feet above grade
eV = electron volt; PVC = polyvinyl chloride

Blow Count Pentration Resistance:

Consistency (M&C)		Density (G&S)	
<2 =	Very Soft	0-4 =	Very Loose
2-4 =	Soft	4-10 =	Loose
4-8 =	Medium	10-30 =	Medium
8-15 =	Stiff	30-50 =	Dense
15-30 =	Very Stiff	>50 =	Very Dense
>30 =	Hard		

Symbol Legend

Static Water Level

Lab Sample Location

C&S Engineers, Inc.
141 Elm Street
Buffalo, New York 14203
Phone: 716-847-1630
Fax: 716-847-1454
www.cscos.com

TEST PIT

Test Pit No.	**TP-08**
Sheet 1 of:	
Project No.:	
Start Date:	7/12/22
Finish Date:	7/12/22
Inspector:	Alex Brennen

Project Name:	310 Ship Canal Parkway		
Location:	310 Ship Canal Parkway, Buffalo, NY	***Operator:***	NW Contracting
Client:		***Equipment:***	Mini Excavator

Depth (ft)	Sample No.	Symbol	Exc. Depth	MATERIAL DESCRIPTION (c - coarse, m - medium, f - fine; a - and - 35-50%, s - some - 20-35%, l - little - 10-20%, t - trace - 0-10%; S - Sand, $ - Silt, G - Gravel, C - Clay, cly - clayey)	COMMENTS (e.g., caving of sidewalls, excavation difficulties, PID readings)
	X		0	Brown sandy silts, some brick and concrete, some F-C gravel, some larger round rock	0.0 ppm
1					0.0 ppm
2				SAA	0.0 ppm
3					0.0 ppm
			3'	LT Brown/Orange sands some medium gravel, slag	
4					0.0 ppm
			4'	End at 4' bgs	
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

Attachment B – Radiological Site Data

- **Attachment B1 - Gamma Walkover Survey Report**
- **Attachment B2 - Soil Sample Analytical Results**

Attachment B1 - Gamma Walkover Survey Report

May 27, 2022

Ryan Herrell
Laborers Way, LLC
700 Second Street
Encinitas, California 92024
rherrell@zephyrpartners.com

Re: **Radiological Gamma Walkover Survey**
310 Ship Canal Parkway Development – Subplot 4

Dear Mr. Herrell:

Laborers Way, LLC has requested that C&S Engineers provide environmental investigation and consulting services related to the 310 Ship Canal Parkway Development (Site or Subplot 4), which is a part of the newly proposed Buffalo Lakeside Commerce Park in Buffalo, New York. The parcel is currently vacant and is approximately 5.1 acres in size. A survey of the property and the current defined BCP boundary can be seen on **Figure 1**.

BACKGROUND

Laborers Way, LLC is in the early stages of redeveloping Subplot 4 into a commercial use facility and intends to enter the parcel in the Brownfield Cleanup Program (BCP). Recent correspondence with the New York State Department of Environmental Conservation (NYSDEC) has raised concerns regarding the potential existence of radiological impacted material at the Site due to similar contamination found at nearby developments. The NYSDEC has requested a screening and assessment of radiological impacts on the Site. Laborers Way, LLC does not currently intend to remove any soils from the Site as a part of development nor is disposal of radiologically impacted material planned as a part of their current budget.

Due to the potential financial burdens of the management and possible disposal of radiologically impacted material, Laborers Way, LLC has opted to complete a Radiological Survey of the parcel to preliminarily assess the presence and magnitude of radiologically impacted material at the Site.

METHODOLOGY

Advanced Construction Services, Inc. (ACS), a qualified radiological consulting firm, performed an area specific radiological survey across the entire 5.1-acre BCP parcel on May 5 through May 18, 2022. A radiological technician from ACS completed a gamma walkover survey of any accessible areas within the Site Boundary to evaluate these areas for elevated radiation. A Ludlum Model 2221 ratemeter with a 44-10 probe (sodium iodide) was utilized to facilitate identification of areas of elevated radiation, which were then recorded on a map of the site. A known limitation of this approach is that the scan assesses conditions from the surface to depths up to 18 inches, below which any radiation is shielded by the overlying materials.

Following the field survey. Austin Master Services (AMS) was contracted to map and interpret the cumulative scan data collected by ACS in the field. **Attachment A** contains AMS' letter report of findings: *Surface Scan Measurements for 310 Ship Canal Parkway Site*. **Figures 2** and **3** have been pulled from Attachment A and are presented for discussion purposes.

FINDINGS

A summarization of ACS' and AMS' findings have been described below:

- Surface soils on the property were noted as a mixture of grass bearing soils and material noted as resembling slag.

- Background counts were collected in a grass area approximately 50 yards away from the Site each day. The daily background average was found to be 4425 counts per minute (cpm).

- ACS' instrumentation logged over 28,000 readings and geolocated the readings onto aerial photographs, which are attached as **Figures 2** and **3.** The majority of the radiological readings collected during the gamma walkover survey ranged from approximately 5,000 cpm to over 18,500 cpm.

- AMS derived an Upper Tolerance Level (UTL) of 7,868 cpm. The was UTL used to delineate where contamination at concentrations greater than background were likely to be found. Most of the readings taken on the Site were above the UTL.

- Based upon the readings, AMS concluded that the Site has a relatively consistent and extensive layer of radiological impacted material at the surface. However, further interpreting the data as shown on **Figure 3** indicates that a majority of the Site appears to be at or just above two times the background level, which is the typical threshold used to evaluate the significance of radiological impacts.

- **Figure 3** depicts the areas shown to be greater than three times background in yellow and red. These areas are located in the south western and southeastern corners of the Site.

RECOMMENDATIONS

Review of the findings presented by AMS in **Attachment A** details the presence of radiologically impacted material across the Site. The presence of radiologically impacted material is not uncommon on sites which are known to contain slag material from former steel operations. Given the site history and noted slag material on the property at depths of up to 10 feet, the readings collected by ACS during their gamma walkover survey are not surprising.

The proposed redevelopment for 310 Ship Canal Parkway is a commercial/warehouse use. Review of the grading plans (also generated by C&S, Engineers) details that redevelopment grading will be balanced onsite and no material is planned to be hauled offsite. Additionally, redevelopment plans indicate that over 95% of the new redevelopment will be capped with competent hardscape or newly poured concrete building foundations. These areas as designed are expected to provide at least 18 inches of shielding through imported subbase, pavement, concrete, etc. Given this information and considering the relatively low levels of surface radiological impacts (below 19,000 cpm), C&S' expects that the future use and required engineering controls (capping) of the BCP will adequately shield workers and visitors on the Site from elevated radiological levels.

It is assumed that proper dust monitoring and suppression techniques will be used during ground intrusive activities on the Site. This should actively mitigate exposure to construction workers and those near the Site at the time of construction from migrating dust.

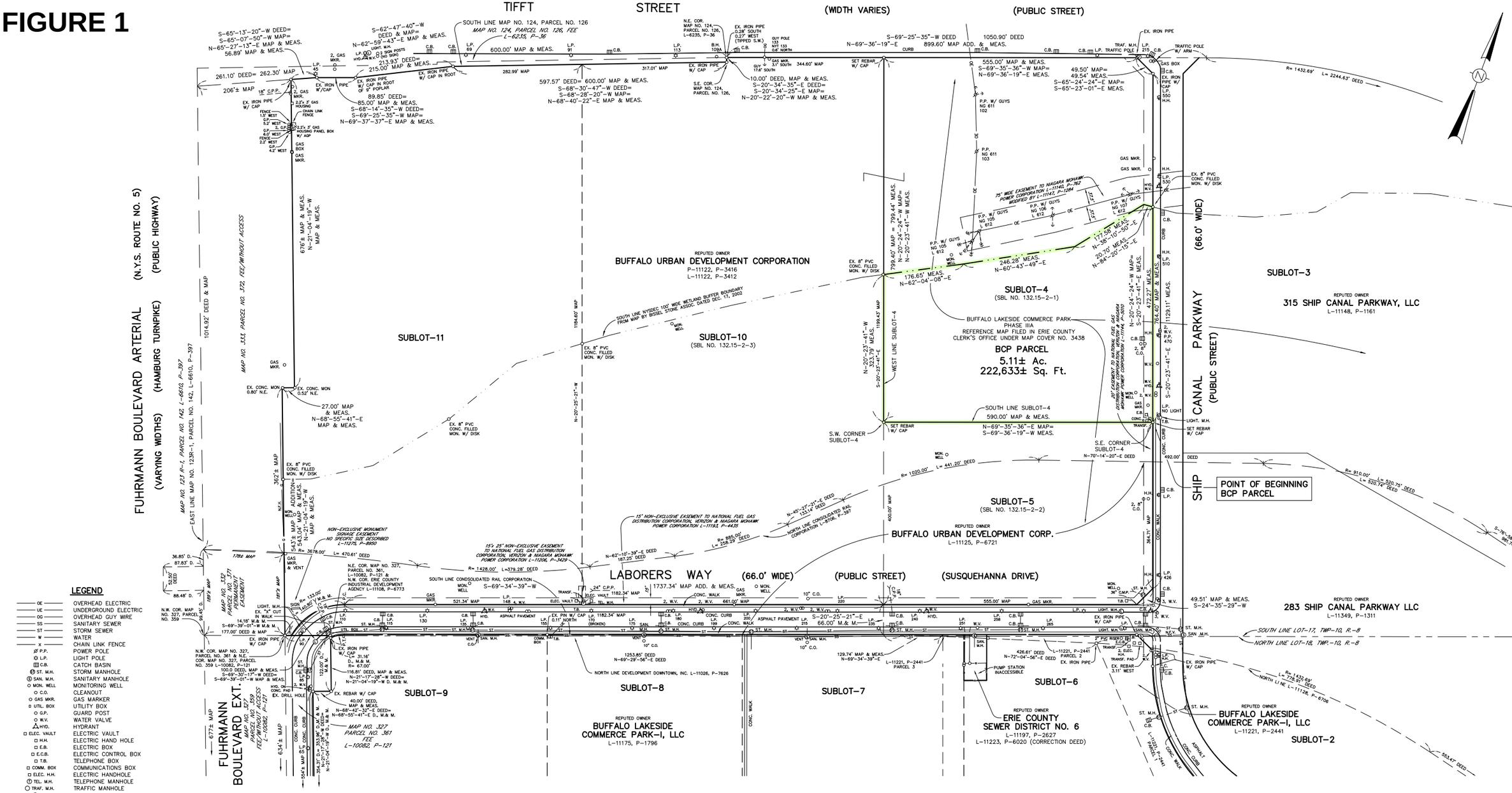
Because this investigation only included a surficial gamma walkover survey, C&S recommends the onsite monitoring be completed by a qualified radiological technician during all excavation work planned at depths deeper than 18 inches (i.e., foundation and utility line excavation).

Sincerely,

C&S Engineers, INC.

Daniel E. Riker, P.G.
Department Manager – Environmental Services

FIGURE 1



LEGEND

OE	OVERHEAD ELECTRIC
UE	UNDERGROUND ELECTRIC
OG	OVERHEAD GUY WIRE
SS	SANITARY SEWER
ST	STORM SEWER
W	WATER
X	CHAIN LINK FENCE
⌀ P.P.	POWER POLE
☼ L.P.	LIGHT POLE
C.B.	CATCH BASIN
ST. M.H.	STORM MANHOLE
S SAN. M.H.	SANITARY MANHOLE
O MON. WELL	MONITORING WELL
O C.O.	CLEANOUT
O GAS MKR.	GAS MARKER
O UTIL. BOX	UTILITY BOX
O G.P.	GUARD POST
O W.V.	WATER VALVE
HYD.	HYDRANT
ELEC. VAULT	ELECTRIC VAULT
H.H.	ELECTRIC HAND HOLE
E.B.	ELECTRIC BOX
E.C.B.	ELECTRIC CONTROL BOX
T.B.	TELEPHONE BOX
COMM. BOX	COMMUNICATIONS BOX
ELEC. H.H.	ELECTRIC HANDHOLE
T TEL. M.H.	TELEPHONE MANHOLE
TRAF. M.H.	TRAFFIC MANHOLE
M.H.	MANHOLE
	SIGN
TRANSF.	TRANSFORMER
D.D.	DUB DOWN
AGP	ABOVE GROUND PIPE
N.F.V.	NOT FIELD VERIFIED
D., M.& M.	DEED, MAP & MEASURE
D., M.A.& M.	DEED, MAP ADDITION & MEASURE
	BCP BOUNDARY

GRAPHIC SCALE

(IN METERS)

47.5 0 22.5 27.5 47.5 72.5 95 120

1 : 1200

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)

1 inch = 100 ft.

NOTES

1) BEARINGS SHOWN REFER TO LANDS APPROPRIATED BY THE PEOPLE OF THE STATE OF NEW YORK FOR CITY OF BUFFALO ARTERIAL ROUTE, FUHRMANN BOULEVARD–HAMBURG TURNPIKE MAP NO. 333, PARCEL NO. 372 & MAP NO. 327, PARCEL NO'S 356–362, 366, 374 & 375.
2) SBL: CITY OF BUFFALO TAX MAP NO. 132.15–2–1
3) REFERENCE MAP: ALTA/NSPS LAND TITLE SURVEY PREPARED BY McINTOSH & McINTOSH, P.C. DATED APRIL 20, 2012, LAST RESURVEYED RESURVEYED NOVEMBER 4, 2021 AND IDENTIFIED AS JOB NO. 7948–C

NYSDEC BCP DESCRIPTION
310 SHIP CANAL PARKWAY
NYSDEC BCP SITE NO. ?

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Buffalo, County of Erie, State of New York and being part of Lot 17, Township 10, Range 8, of the Ogden Gore Tract, bounded and described as follows:
BEGINNING AT A POINT on the west line of Ship Canal Parkway at the southeast corner of Sublot 4 as shown on a map for Buffalo Lakeside Commerce Park, Phase III A as filed in the Erie County Clerk's Office under Cover Map No. 3438;
RUNNING THENCE: S–69°–36'–19"–W, along the south line of said Sublot 4, a distance of 590.00 feet to the southwest corner thereof;
RUNNING THENCE: N–20°–23'–41"–W, along the west line of said Sublot 4, a distance of 323.79 feet to a point on the south line of a New York State Department of Environmental Conservation 100 foot wide wetland buffer boundary;
RUNNING THENCE: The following four (4) courses and distances along the south line of said wetland buffer boundary:
1. N–62°–04'–08"–E, a distance of 176.65 feet to a point;
2. N–60°–43'–49"–E, a distance of 246.28 feet to a point;
3. N–38°–10'–50"–E, a distance of 177.58 feet to a point;
4. N–84°–20'–15"–E, a distance of 20.70 feet to a point on the west line of Ship Canal parkway;

RUNNING THENCE: S–20°–23'–41"–E, along the west line of Ship Canal Parkway, a distance of 472.27 feet to the POINT OF PLACE OF BEGINNING, containing 5.11 Acres, be the same, more or less.
SUBJECT TO easements, rights of way and restrictions of record.
BEING AND INTENDED TO BE a portion of lands conveyed to Buffalo Urban Development Corporation by deeds recorded in the Erie County Clerk's Office in Liber 11122 of Deeds at Page 3412 and in Liber 11122 of Deeds at Page 3416.

ALSO BEING SUBLOT–4, BUFFALO LAKESIDE COMMERCE PARK, PHASE IIIA &

NYS DEC BCP SITE NO. ?
SITE ADDRESS: 310 SHIP CANAL PARKWAY

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH.

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

RESURVEY	REVISION

McINTOSH & McINTOSH, P.C.
CONSULTING ENGINEERS, LAND SURVEYORS, PLANNERS
429 PINE STREET, LOCKPORT, NEW YORK 14094
PHONE 433–2535 PHONE 625–8360

SURVEY OF PART OF LOT–17, TWP.–10, R.–8 OF THE OGDEN GORE TRACT
LOCATION CITY OF BUFFALO, ERIE COUNTY, NEW YORK
REFERENCE MAPS FILED IN E.C.C.O. UNDER MAP COVER NO. 3438

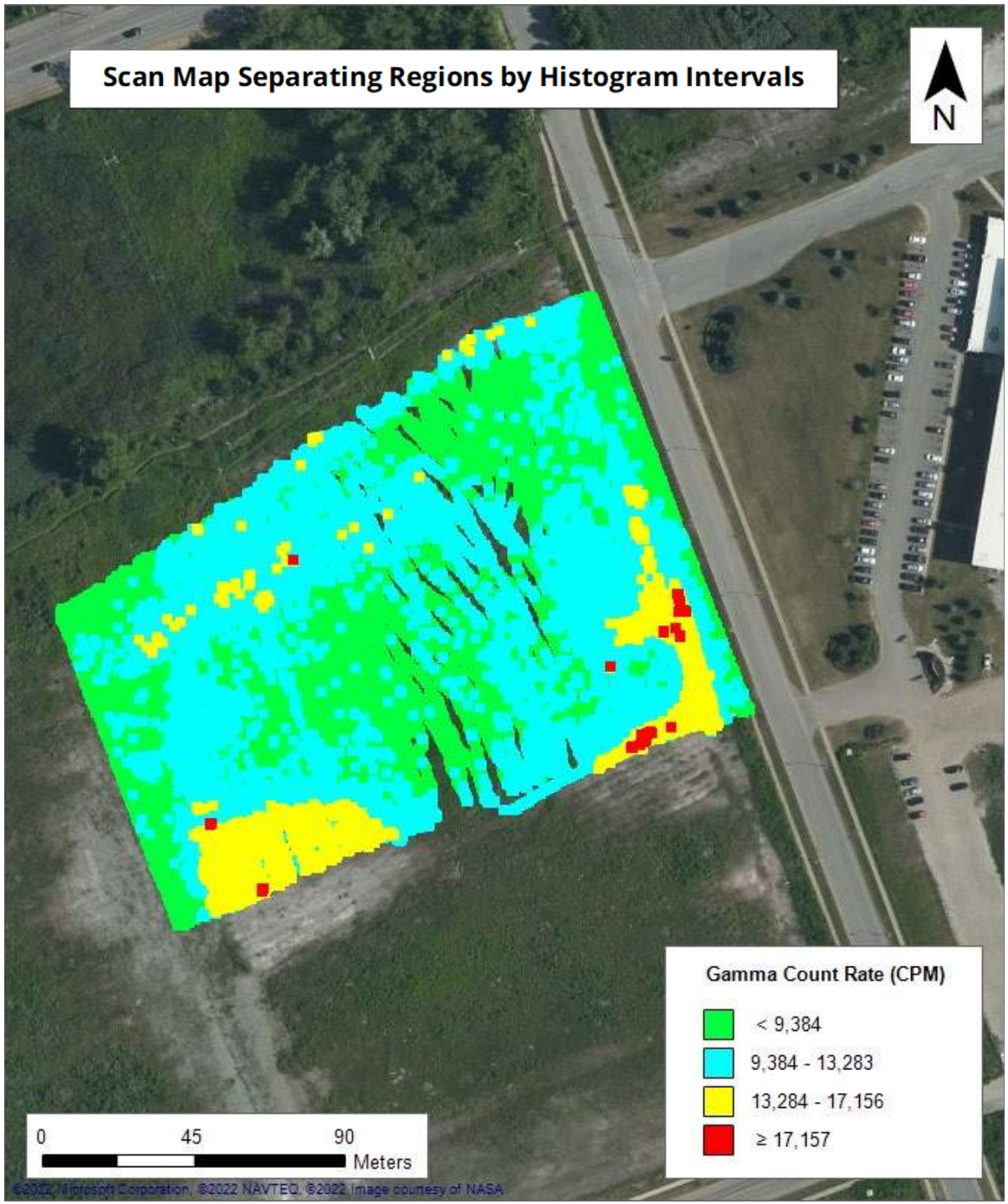
JOB No. 7948–4–EE	SCALE: 1"= 100'	DATE: NOVEMBER 4, 2021	DRAWN: MAS	COMP. JEM, III	DESC.

CADFILE 7948–4–EE.DWG

FIGURE 2


Scan Map Using the Background UTL and Six Sigma plus the Background Mean to Establish Area Intervals
N
Gamma Count Rate (CPM)
< 5,378
5,378 - 6,585
6,586 - 7,867
≥ 7,868
0
20
40
Meters

FIGURE 3


Scan Map Separating Regions by Histogram Intervals
N
Gamma Count Rate (CPM)
< 9,384
9,384 - 13,283
13,284 - 17,156
≥ 17,157
0
45
90
Meters
©2022 Microsoft Corporation, ©2022 NAVTEQ, ©2022 Image courtesy of NASA

Austin Master Services
Letter Report of Findings

Surface Scan Measurements of 310 Ship Canal Parkway Site

Austin Master Services
801 N 1st St
Martins Ferry, OH
740-609-3806 Main Number

5/27/2022

Raj Chopra
ACS, Inc.
PO Box 986
Grand Island NY 14072

Re: **Surface Scan Measurements for 310 Canal Parkway Site**

Dear Mr. Chopra:

In May of 2022, ACS was contracted to perform surface radiological scans of one property located at 310 Ship Canal, Buffalo (Lackawanna), NY. The data was forwarded to Austin Master Services, LLC (AMS) Certified Health Physicist for review and assessment. This report provides a summary of the results of that scan assessment.

Prior to scanning the 310 Ship Canal site, background count rate data for the 2"x 2" NaI detector being used for the scans was obtained. This background data is shown in Attachment 2 to this report. EPA's ProUCL, a statistical software program, was used assess the quality of the background data collected. The data was normally distributed and considered to be of sufficient quality to use as background count rate data for comparison with the scan data.

For the gamma "walk over" survey a Ludlum 2221 ratemeter and Ludlum 44-10 sodium iodide detector (the same detector used for the background measurements) were placed in data logging mode and connected to ERG's proprietary GPS system to allow simultaneous logging of gamma count rates and the easting and northing coordinates.

The "walk-over" process involves scanning the surface at a rate of 0.5 m/s with the detector to ground surface distance of 10 cm. The scan rate is an industry standard in keeping with EPA/NRC guidance in their Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)[1].During scanning the data logger will log both the location count rate but also the GPS UTM easting and northing coordinates.

The results were then transferred to an aerial photograph of the site and exhibited as colors based on use of background data to develop "bins" of count rate data. The first scan map shown in Attachment 1 was coded by using intervals related to the Upper Tolerance Level (UTL) of the background and the six sigma value above the background mean.

[1] NUREG-1575, Rev. 1 EPA 402-R-97-016, Rev. 1 DOE/EH-0624, Rev. 1 (August 2000)

Austin Master Services
801 N 1st St
Martins Ferry, OH
740-609-3806 Main Number

In Attachment 1 the first scan map figure shown indicates the site has a fairly extensive cover that contains radioactive materials greater than normal background concentrations. The Upper Tolerance Level (UTL) was used to delineate where contamination at concentrations greater than background were likely to be found. This is in keeping with use of the UTL as a measure when a contaminant is found to occur naturally in the soil and a means is needed to distinguish between natural background radioactivity and that occurring due to human activity.

Because the site was known to contain radiological contaminants from steel slag used as fill, ACS's client also requested a map that would provide a better delineation of the areas significant levels of contamination. Intervals were then established using the Histogram data shown in Attachment 2 and a second map focusing on higher count rate values was created. The second scan map shown Attachment 1 has several sub areas (those in yellow and red) within the scan footprint that are greater than three times the background count rate.

After review of the data, AMS notes the following regarding scan uncertainties, conclusions, and recommendations:

Uncertainties:

1. If contaminants are present at depths greater than 18 inches or under an asphalt surface the scan data may result in a false-negative conclusion relative to whether contamination is present.
2. If the contaminants present, do not decay by emission of a gamma photon then detection of those contaminants is not possible. This is an unlikely scenario in that most of the historical contamination from steel slag in the Lackawanna area is the result of uranium, thorium and their decay progeny being present, and those decay chains all have significant photon emissions.

Please call or email me with any questions or concerns.

Respectfully,

Peter Collopy

Peter Collopy, CHP, CIH, CSP

AMS Radiation Safety Officer

Austin Master Services
801 N 1st St
Martins Ferry, OH
740-609-3806 Main Number

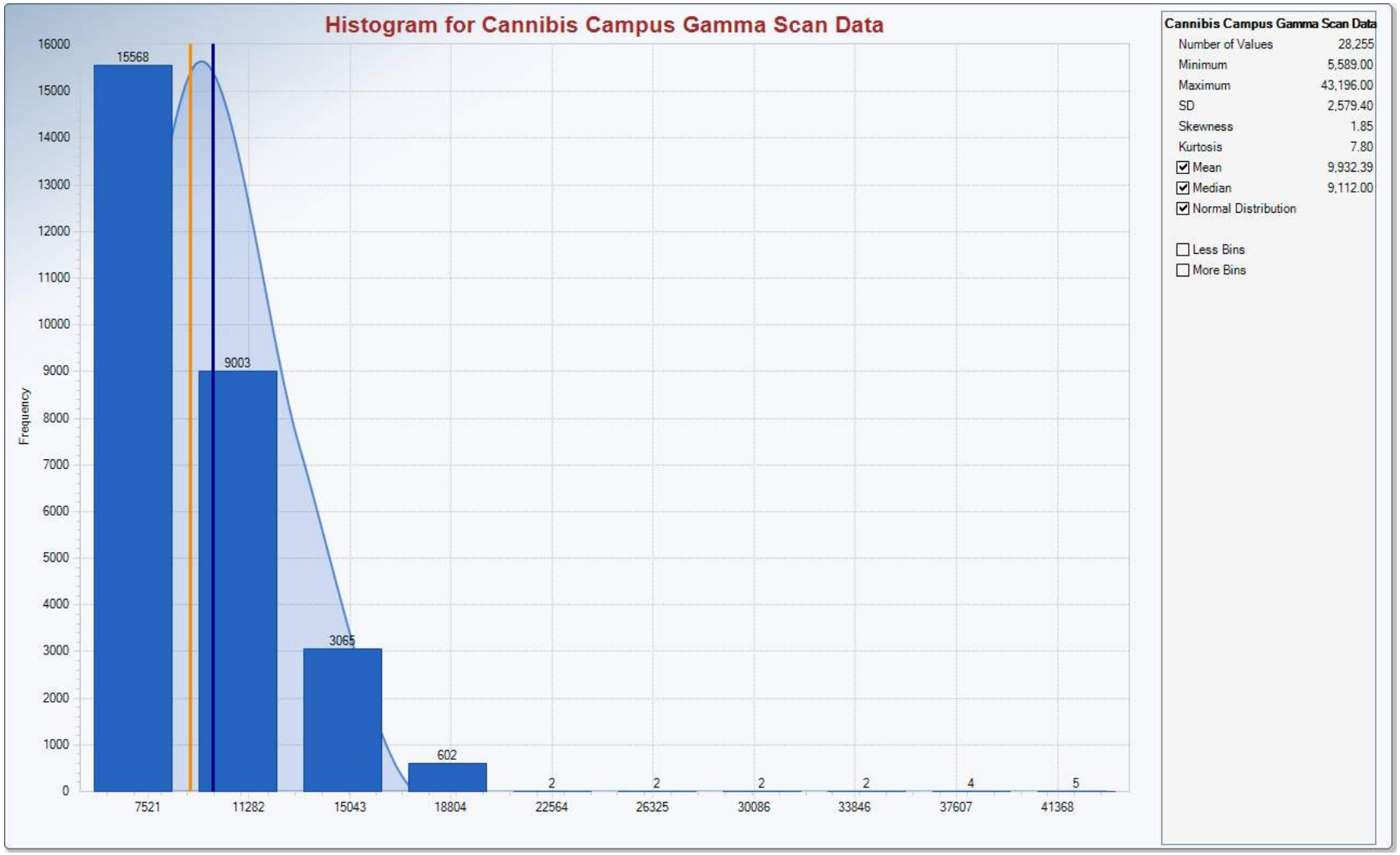
Enclosures:

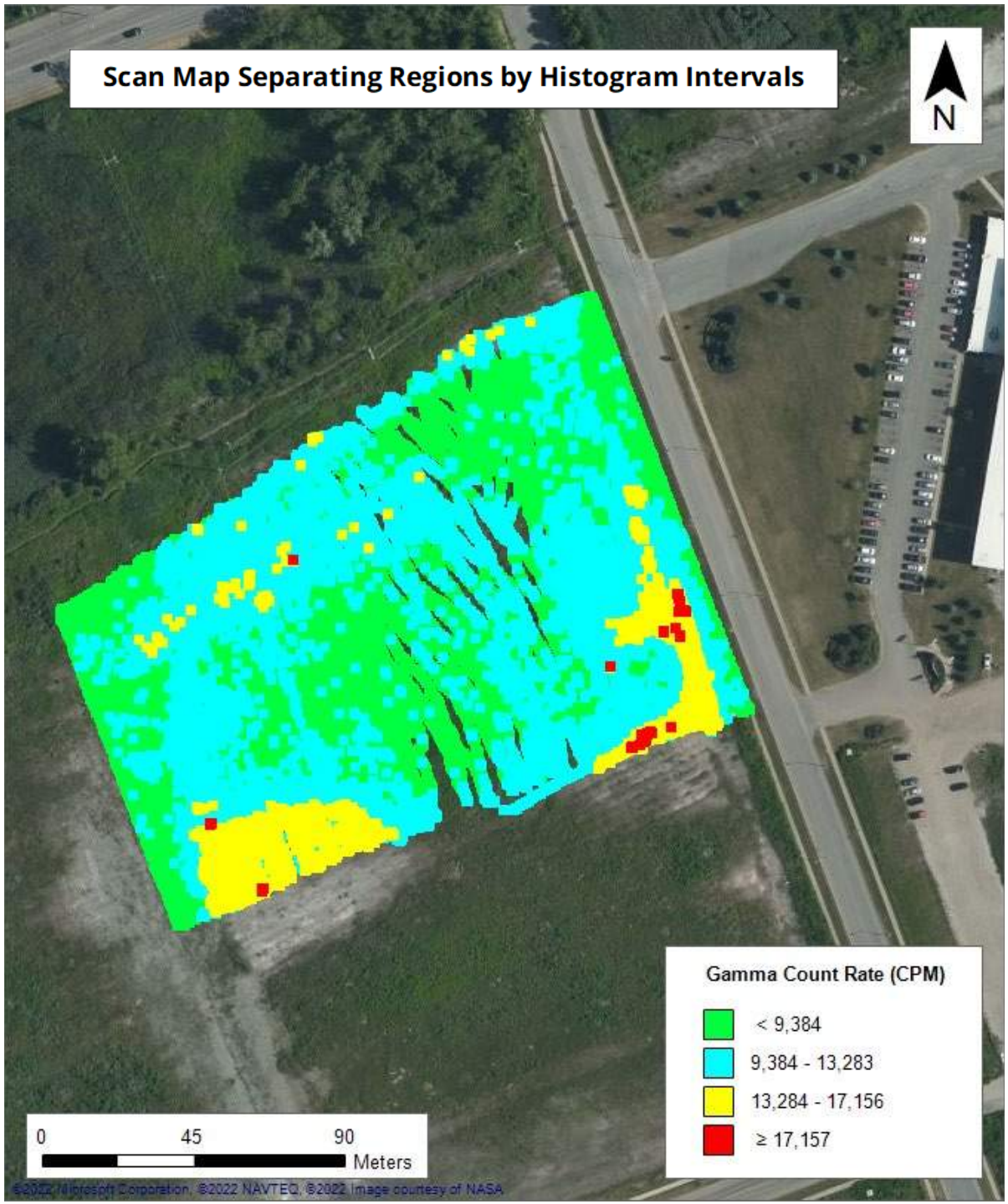
Attachment 1: Surface Scan Measurements Map and Histogram
Attachment 2: Background Measurements and Calculations
Attachment 3: Instrument Quality Assurance Data

cc: Patrick Horkman, NRRPT

Attachment 1
310 Canal Parkway Gamma Scan Map and Data Histogram


Scan Map Using the Background UTL and Six Sigma plus the Background Mean to Establish Area Intervals
N
Gamma Count Rate (CPM)
< 5,378
5,378 - 6,585
6,586 - 7,867
≥ 7,868
0
20
40
Meters


Histogram for Cannibis Campus Gamma Scan Data
Frequency
16000
15000
14000
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
15568
9003
3065
602
2
2
2
2
4
5
7521
11282
15043
18804
22564
26325
30086
33846
37607
41368
Cannibis Campus Gamma Scan Data
Number of Values 28,255
Minimum 5,589.00
Maximum 43,196.00
SD 2,579.40
Skewness 1.85
Kurtosis 7.80
Mean 9,932.39
Median 9,112.00
Normal Distribution
Less Bins
More Bins


Scan Map Separating Regions by Histogram Intervals
N
Gamma Count Rate (CPM)
< 9,384
9,384 - 13,283
13,284 - 17,156
≥ 17,157
0
45
90
Meters
©2022 Microsoft Corporation, ©2022 NAVTEQ, ©2022 Image courtesy of NASA

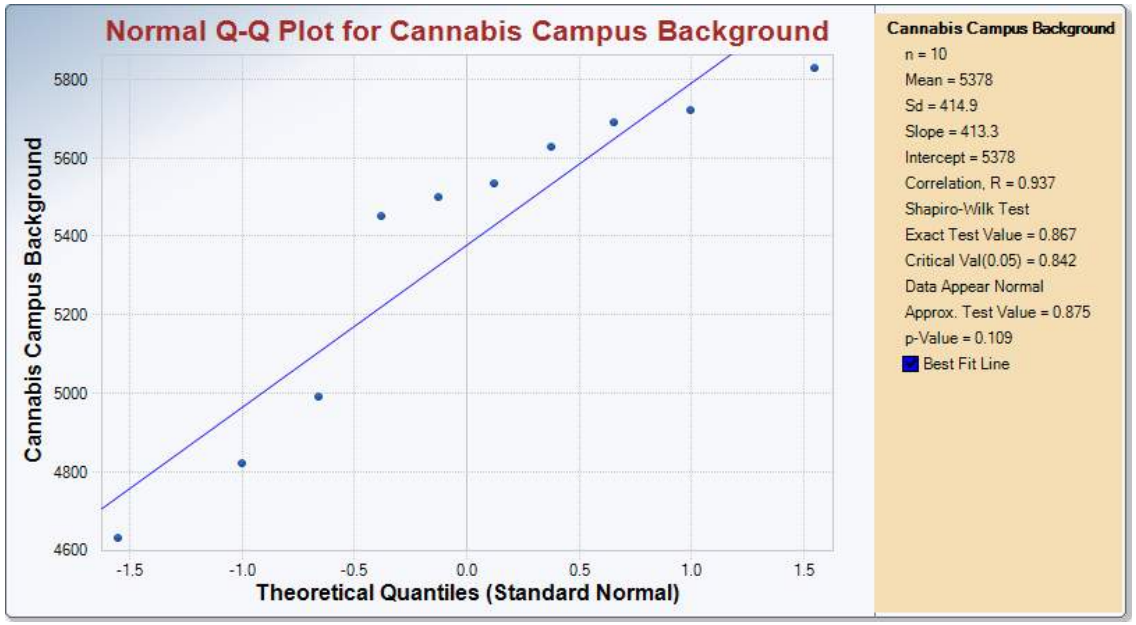
Attachment 2
Background Data and Calculations

50% gravel/50%grass

Background for Cannabis Campus

1 minut reading (cpm)

#1	5721
#2	5533
#3	4628
#4	5688
#5	5829
#6	5499
#7	4818
#8	5450
#9	5627
#10	4990
Mean (υ)	5378
S_D (σ)	415
UTL	6586
υ + 6 σ	7868



Cannabis Campus Background — **ProUCL Calculation for Background UTL**

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
Minimum	4628	First Quartile	5105
Second Largest	5721	Median	5516
Maximum	5829	Third Quartile	5673
Mean	5378	SD	414.9
Coefficient of Variation	0.0772	Skewness	-0.922
Mean of logged Data	8.587	SD of logged Data	0.0797

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	2.911	d2max (for USL)	2.176

Normal GOF Test

Shapiro Wilk Test Statistic	0.867	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.269	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Normal at 5% Significance Level	

Data appear Approximate Normal at 5% Significance Level

Background Statistics Assuming Normal Distribution

95% UTL with 95% Coverage	6586	90% Percentile (z)	5910
95% UPL (t)	6176	95% Percentile (z)	6061
95% USL	6281	99% Percentile (z)	6344

Attachment 3
Instrument Quality Assurance Information

Inst.# 271429/PR373560		
QC Daily Source		
Date	Result (cpm)	P/F
5/5/2022	4219	Pass
5/6/2022	4332	Pass
5/7/2022	4406	Pass
5/9/2022	4391	Pass
5/10/2022	4287	Pass
5/11/2022	4351	Pass
5/12/2022	4309	Pass
5/13/2022	4406	Pass
5/14/2022	4228	Pass
5/16/2022	4289	Pass
5/17/2022	4173	Pass
5/18/2022	4246	Pass

Inst.# 271429/PR373560	Source Ser. #	BKG
Initial Source Readings	Nuclide	N/A
Date	Result (cpm)	
5/5/2022	4247	
5/5/2022	4448	
5/5/2022	4563	
5/5/2022	4664	
5/5/2022	4322	
5/5/2022	4636	
5/5/2022	4293	
5/5/2022	4411	
5/5/2022	4348	
5/5/2022	4318	
	Average	
	4425	

Inst.# 271429/PR373560		
QC Daily Source		
Date	Result (cpm)	P/F
5/5/2022	105989	Pass
5/6/2022	104323	Pass
5/7/2022	104989	Pass
5/9/2022	105237	Pass
5/10/2022	105129	Pass
5/11/2022	104993	Pass
5/12/2022	105884	Pass
5/13/2022	106256	Pass
5/14/2022	105439	Pass
5/16/2022	105129	Pass
5/17/2022	105883	Pass
5/18/2022	109217	Pass

Inst.# 271429/PR373560	Source Ser. #	May-91
Initial Source Readings	Nuclide	Cs-137
Date	Result (cpm)	
5/5/2022	111969	
5/5/2022	109881	
5/5/2022	108167	
5/5/2022	113940	
5/5/2022	103649	
5/5/2022	99840	
5/5/2022	104553	
5/5/2022	106887	
5/5/2022	102914	
5/5/2022	108419	
	Average	
	107022	

Certificate of Calibration

Calibration and Voltage Plateau

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite #150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

Meter: Manufacturer:	Ludlum	Model Number:	2221	Serial Number:	271429
Detector: Manufacturer:	Ludlum	Model Number:	44-10	Serial Number:	PR373560

☑ Mechanical Check ☑ THR/WIN Operation
☑ F/S Response Check ☑ Reset Check
☑ Geotropism ☑ Audio Check
☑ Meter Zeroed ☑ Battery Check

HV Check (+/- 2.5%): ☑ 500 V ☑ 1000 V ☑ 1500 V
Cable Length: ☐ 39-inch ☑ 60-inch ☐ Other:

Source Distance: ☐ Contact ☑ 6 inches ☐ Other:
Source Geometry: ☑ Side ☐ Below ☐ Other:

Threshold: 10 mV
Window:

Barometric Pressure: 24.36 inches Hg
Temperature: 74 °F
Relative Humidity: 20 %

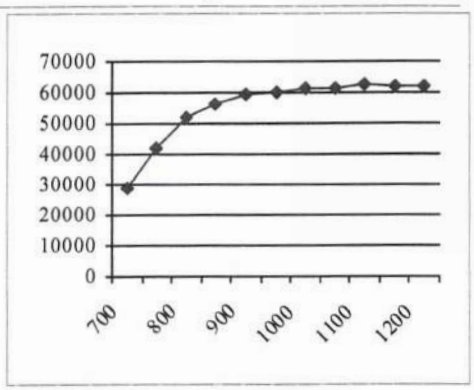
Pulser: Ludlum 500-1 sn 201932 Multimeter: n/a Instrument found within tolerance: ☑ Yes ☐ No

Range/Multiplier	Reference Setting	"As Found Reading"	Meter Reading	Integrated 1-Min. Count	Log Scale Count
x 1000	400	400	400	400650	400
x 1000	100	100	100		100
x 100	400	400	400	40065	400
x 100	100	100	100		100
x 10	400	400	400	4007	400
x 10	100	100	100		100
x 1	400	400	400	400	400
x 1	100	100	100		100

Count Time (min): 1.0

High Voltage	Source Counts	Background Counts	Net Counts
700	28445	2051	26394
750	42113	3995	38118
800	51749	6355	45394
850	56311	8044	48267
900	59179	8807	50372
950	60157	8854	51303
1000	60958	9084	51874
1050	61470	9240	52230
1100	62211	9265	52946
1150	61840	9258	52582
1200	62137	9295	52842

Voltage Plateau



Recommended HV (VDC): 1,100

Additional Comments:

Source 1 Cs-137 sn:4097-03 5.2µCi (1/4/12) button — Total Efficiency: n/a — 4π Efficiency: n/a

Source 2 — Total Efficiency: n/a — 4π Efficiency: n/a

NOTE: The total efficiency provided is calculated per ISO-7503/NUREG 1575 (MARSSIM): Total Efficiency = Instrument Efficiency × Source Efficiency; where Instrument Efficiency is calculated as net counts ÷ source 2π emission rate. The 4π efficiency is calculated as net counts ÷ source 4π activity. The provided efficiencies are radionuclide specific and are calculated using source counts and background counts at the recommended operating HV. The provided efficiencies are for general information purposes only and are not intended to replace user efficiency calculation method or results.

Calibrated By: _____ Calibration Date: 4/26/22 Calibration Due: 4/26/23

Reviewed By: _____ Date: 4/28/22

Attachment B2 - Soil Sample Analytical Results

ACS, Inc.

July 24, 2022

Alexander Brennen
C&S Companies
141 Elm Street
Buffalo NY 14203

RE: 310 Ship Canal Parkway– Method 901.1 sample analysis – Pace Lab Report 30506774

Dear Alex,

This letter has been prepared to provide the results of recent radiological sampling at the 310 Ship Canal Parkway. Four samples were collected at the 310 Ship Canal Parkway site on July 12,2022 with varied gamma readings. The table below depicts the sample number, gamma reading at time of sampling and sample depth.

ACS obtain radiological samples from 310 Ship Canal Parkway for the purpose of waste characterization of technologically enhanced naturally occurring radiological material (TENORM). NW Excavation Services excavated test trenches to obtain the samples. The samples taken were biased to reflect four different gamma values recorded during the prior walkover surveys.

Sample #	Count Rate (CPM)	Sample Depth
CC-R-01	8,179	Surface-6”
CC-R-02	16,028	Surface-6”
CC-R-03	27,885	1’-1’6”
CC-R-04	34,967	1’6”-2’

The analytical results show that thee TENORM is present onsite. Additionally, the TENORM materials identified are relatively consistent in gamma activity and composition, despite the variation of the gamma readings found at the four sample locations.

The attached figure depicts the sample locations. The samples were analyzed for EPA Method 901.1 Gamma Radionuclides by Pace Analytical Services, LLC of Greensburg, Pennsylvania. The results are attached to this report.

Based upon the results, any TENORM that is identified outside the footprint of any excavation that will not be disturbed may remain in place. Given the relatively low concentrations of radiological activity within the samples, the NYSDEC may grant a variance to allow low level TENORM materials to remain onsite if covered with cover material such as asphalt, concrete or a minimum on-foot clay cover. If you have any questions, please contact me at (716) 480-2125.

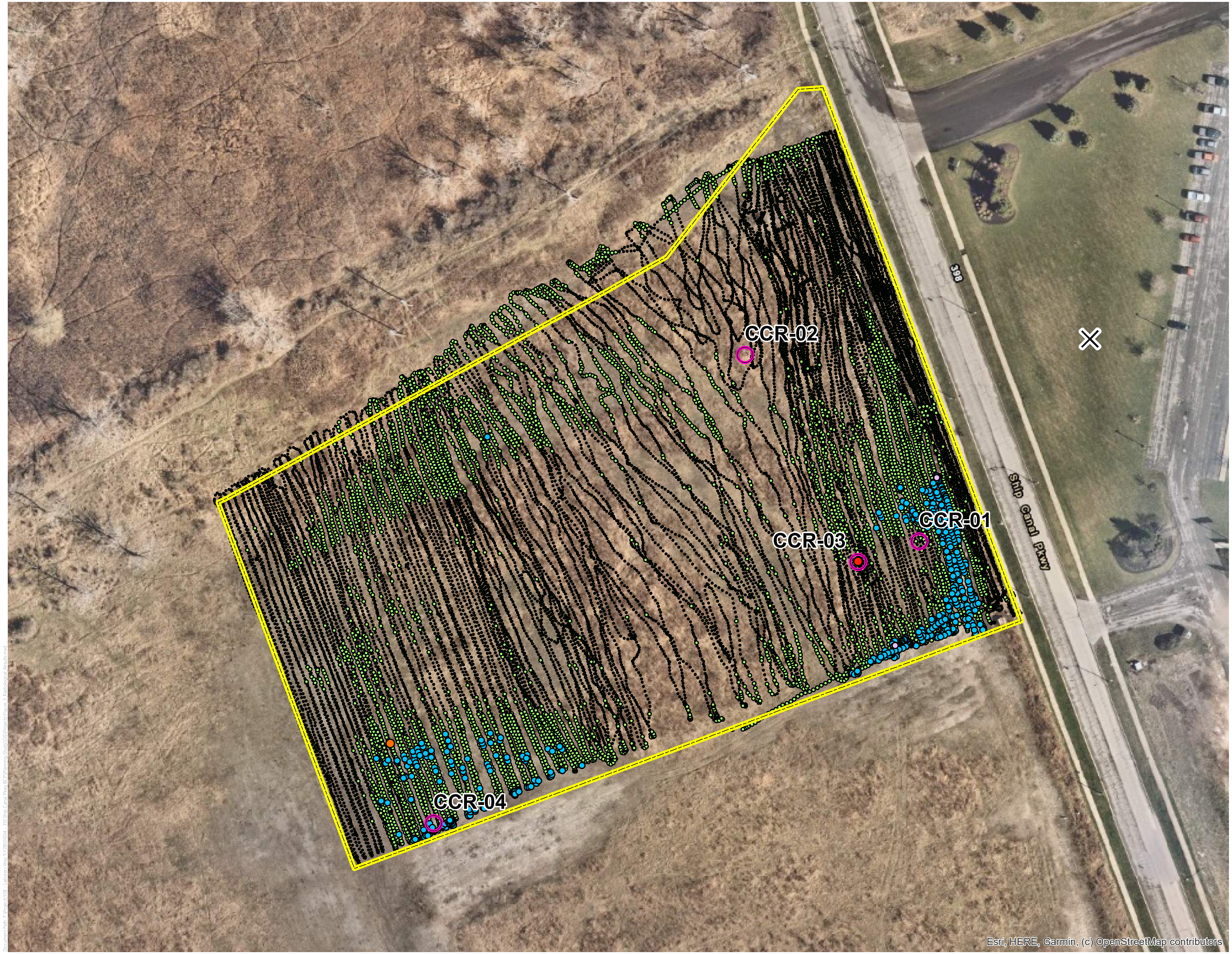
PO Box 986. Grand Island NY 14072 (716) 480-2125 phone email: *rschopra@@yahoo.com*

ACS, Inc.

Sincerely,

Raj Chopra

Raj Chopra
rschopra@yahoo.com



C&S COMPANIES®

Figure 1

Legend

- BCP Boundary
- Radiological Sample Location (July 2022)
- Background Measurement Location (June 2022)

Gamma Rate (June 2022)

- 5,000 - 10,000
- 10,001 - 15,000
- 15,001 - 20,000
- 20,001 - 25,000
- 25,001 - 30,000
- 30,001 - 35,000
- 35,001 - 40,000
- 40,001 - 45,000

N

0 37.5 75 150 Feet

1 inch = 75 feet
When printed at 11 in. by 17 in.

310 Ship Canal Parkway BCP

Sources: . Created by C&S Engineers, Inc.

ACS, Inc.

310 Ship Canal Sampling 7-14-22 -Site Sampling Field Notes

Instrumentation: Ludlum m-2221 w/44-10 Probe
S# 228808. S# pr391728
Calibration due 9-20-22
1 Min Background: 5908 cpm

Sample #: CC-R-001
Surface Count: 6,600-10,200 cpm
Composition of soil 50% soil and 50% tenorm
Sample Collected: 8179 cpm
Depth: At surface

Depth	CPM
0-1’	7k-12k
1-2’	11k-17k
2-3”	14k-22k

Sample #: CC-R-002
Surface Count: 10,500 -16,400 cpm
Composition of soil 60% soil 20% gravel, and 20% tenorm
Sample Collected: 16,028 cpm
Depth: At surface

Depth	CPM
0-1’	10k-16k
1-2’	10k-16k
2-3”	14k-17k

Sample #: CC-R-003
Surface Count: 10,500 -16,400 cpm
Composition of soil 80% soil, 20% tenorm
Sample Collected: 27,885cpm
Depth: 1’-1’6”

Depth	CPM
0-1’	18k-30k
1-2’	18k-30k

Sample CC-R-03 was 60’ west of sample CC-R-01 (no test pit)

PO Box 986. Grand Island NY 14072 (716) 480-2125 phone email: *rschopra@@yahoo.com*

ACS, Inc.

Sample #: CC-R-004
Surface Count: 10,500 -16,400 cpm
Composition of soil 60% soil, 20% gravel and 20% tenorm
Sample Collected: 34,967 cpm
Depth: 1'6"-2'

Depth	CPM
0-1'	18k-30k
1-2'	18k-30k

Sample CC-R-04 was Southwest boundary between test pits 5-6 (no test pit)

PO Box 986. Grand Island NY 14072 (716) 480-2125 phone email: *rschopra@@yahoo.com*

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

July 25, 2022

Raj Chopra
Advanced Contracting Services
250 N 5th Street
Lewiston, NY 14092

RE: Project: 310 Ship Canal Pkwy-Revised Report
Pace Project No.: 30506774

Dear Raj Chopra:

Enclosed are the analytical results for sample(s) received by the laboratory on July 14, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

(Greensburg, PA) - Revision 1 - This report replaces the July 22, 2022 report. This project was revised on July 25, 2022 to change the project name.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Amber D. Carr

Amber D. Carr
amber.carr@pacelabs.com
(724)850-5600
Project Manager

Enclosures

cc: Stuart Pryce, Advanced Contracting Services

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 310 Ship Canal Pkwy-Revised Report
Pace Project No.: 30506774

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 310 Ship Canal Pkwy-Revised Report
Pace Project No.: 30506774

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30506774001	**CC-R-01**	Solid	07/12/22 10:00	07/14/22 10:20
30506774002	**CC-R-02**	Solid	07/12/22 10:30	07/14/22 10:20
30506774003	**CC-R-03**	Solid	07/12/22 12:15	07/14/22 10:20
30506774004	**CC-R-04**	Solid	07/12/22 12:45	07/14/22 10:20

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 310 Ship Canal Pkwy-Revised Report
Pace Project No.: 30506774

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30506774001	**CC-R-01**	EPA 901.1	MAH	4	PASI-PA
30506774002	**CC-R-02**	EPA 901.1	MAH	4	PASI-PA
30506774003	**CC-R-03**	EPA 901.1	MAH	4	PASI-PA
30506774004	**CC-R-04**	EPA 901.1	MAH	4	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 310 Ship Canal Pkwy-Revised Report
Pace Project No.: 30506774

Sample: CC-R-01 **Lab ID: 30506774001** Collected: 07/12/22 10:00 Received: 07/14/22 10:20 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis
Comments: • The preservative type is not listed on the COC.
• Sample matrix was not listed on COC.
• The COC was not relinquished.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 901.1	**13.930 ± 3.107 (2.040) C:NA T:NA**	pCi/g	07/20/22 14:48	13982-63-3	RA
Radium-228	EPA 901.1	**0.783 ± 0.328 (0.310) C:NA T:NA**	pCi/g	07/20/22 14:48	15262-20-1	
Thorium-230	EPA 901.1	**2.912 ± 34.382 (42.040) C:NA T:NA**	pCi/g	07/20/22 14:48	14269-63-7	
Uranium-234	EPA 901.1	**2.825 ± 3.250 (3.874) C:NA T:NA**	pCi/g	07/20/22 14:48	13966-29-5	

Sample: CC-R-02 **Lab ID: 30506774002** Collected: 07/12/22 10:30 Received: 07/14/22 10:20 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis
Comments: • Sample matrix was not listed on COC.
• The preservative type is not listed on the COC.
• The COC was not relinquished.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 901.1	**13.376 ± 2.991 (2.277) C:NA T:NA**	pCi/g	07/20/22 14:58	13982-63-3	RA
Radium-228	EPA 901.1	**1.258 ± 0.390 (0.294) C:NA T:NA**	pCi/g	07/20/22 14:58	15262-20-1	
Thorium-230	EPA 901.1	**10.318 ± 18.546 (30.690) C:NA T:NA**	pCi/g	07/20/22 14:58	14269-63-7	
Uranium-234	EPA 901.1	**3.452 ± 1.656 (2.462) C:NA T:NA**	pCi/g	07/20/22 14:58	13966-29-5	

Sample: CC-R-03 **Lab ID: 30506774003** Collected: 07/12/22 12:15 Received: 07/14/22 10:20 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis
Comments: • The preservative type is not listed on the COC.
• The COC was not relinquished.
• Sample matrix was not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 901.1	**16.866 ± 4.196 (3.153) C:NA T:NA**	pCi/g	07/20/22 15:30	13982-63-3	RA
Radium-228	EPA 901.1	**1.635 ± 0.402 (0.312) C:NA T:NA**	pCi/g	07/20/22 15:30	15262-20-1	
Thorium-230	EPA 901.1	**17.485 ± 28.782 (33.220) C:NA T:NA**	pCi/g	07/20/22 15:30	14269-63-7	
Uranium-234	EPA 901.1	**3.277 ± 1.976 (3.065) C:NA T:NA**	pCi/g	07/20/22 15:30	13966-29-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 310 Ship Canal Pkwy-Revised Report
Pace Project No.: 30506774

Sample: CC-R-04 **Lab ID: 30506774004** Collected: 07/12/22 12:45 Received: 07/14/22 10:20 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis
Comments:
- The preservative type is not listed on the COC.
- The COC was not relinquished.
- Sample matrix was not listed on COC.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Radium-226	EPA 901.1	**17.221 ± 3.608 (2.452) C:NA T:NA**	pCi/g	07/20/22 16:02	13982-63-3	RA
Radium-228	EPA 901.1	**1.514 ± 0.397 (0.322) C:NA T:NA**	pCi/g	07/20/22 16:02	15262-20-1	
Thorium-230	EPA 901.1	**7.778 ± 27.519 (32.090) C:NA T:NA**	pCi/g	07/20/22 16:02	14269-63-7	
Uranium-234	EPA 901.1	**3.721 ± 1.712 (2.533) C:NA T:NA**	pCi/g	07/20/22 16:02	13966-29-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 310 Ship Canal Pkwy-Revised Report
Pace Project No.: 30506774

QC Batch: 520076
QC Batch Method: EPA 901.1
Analysis Method: EPA 901.1
Analysis Description: 901.1 Gamma Spec
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30506774001, 30506774002, 30506774003, 30506774004

METHOD BLANK: 2521336 Matrix: Solid
Associated Lab Samples: 30506774001, 30506774002, 30506774003, 30506774004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.191 (1.012) C:NA T:NA	pCi/g	07/20/22 14:27	RA
Radium-228	0.000 ± 0.026 (0.239) C:NA T:NA	pCi/g	07/20/22 14:27	
Thorium-230	0.000 ± 1.797 (7.087) C:NA T:NA	pCi/g	07/20/22 14:27	
Uranium-234	0.000 ± 0.232 (0.661) C:NA T:NA	pCi/g	07/20/22 14:27	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 310 Ship Canal Pkwy-Revised Report
Pace Project No.: 30506774

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

RA	The reported Ra-226 results were determined using a direct gamma emission (186 keV) shared by both Ra-226 and naturally-occurring U-235. The reported Ra-226 results were determined assuming the shared energy peak is attributable exclusively to Ra-226. Reported results for Ra-226 may be biased high if U-235 is present in the sample.

REPORT OF LABORATORY ANALYSIS

WO# : 30506774

30506774

CHAIN OF CUSTODY

ACS

REPORT TO:		INVOICE TO:		LAB PROJECT ID
CLIENT:	ACS	CLIENT:	Same	
ADDRESS:	P.O. Box 986	ADDRESS:		
CITY:	Grand Island STATE: NY ZIP: 14072	CITY:	STATE: ZIP:	Quotation #:
PHONE:	716-480-2125	PHONE:		Email:
ATTN:	Raj Chopra	ATTN:		rschopra@yahoo.com

PROJECT REFERENCE: Cannabis Camp

Matrix Codes:
AQ - Aqueous Liquid; NQ - Non-Aqueous Liquid; WA - Water; WG - Groundwater; DW - Drinking Water; WW - Wastewater; SO - Soil; SL - Sludge; SD - Solid; PT - Paint; WP - Wipe; CK - Caulk; OL - Oil; AR - Air

REQUESTED ANALYSIS

DATE COLLECTED	TIME COLLECTED	COMPOSITE	GRAB	SAMPLE IDENTIFIER	MATRIX CODES	NUMBER OF CONTAINERS	REMARKS	PARADIGM LAB SAMPLE NUMBER	
							Analyze		
7-13	10			CC-R-01					— qpm 8179
7-13	10 30			CC-R-02			Gamma Spec 901.1		— 16,026
7-13	12 15			CC-R-03					— 27,885
7-13	12 45			CC-R-04					— 34,867
							RA-226, 228		
							TH-230		
							U-234		

Turnaround Time		Report Supplements			
Availability contingent upon lab approval; additional fees may apply.					
Standard 5 day	☑	Batch QC	☐	Basic EDD	☐
Rush 3 day	☐	Category A	☐	NYSDEC EDD	☐
Rush 2 day	☐	Category B	☐		
Rush 1 day	☐				
Other please indicate:	☐	Other please indicate:	☐	Other EDD please indicate:	☐

Sampled By: _____ Date/Time: _____

Relinquished By: _____ Date/Time: _____

Received By: _____ Date/Time: 7-14-22 10:20

Received @ Lab By: _____ Date/Time: _____

Total Cost: ☐

P.I.F. ☐

See additional page for sample conditions.

WO# : 30506774

PM: ADC Due Date: 07/21/22

CLIENT: CEM

CHAIN OF CUSTODY

ACS

REPORT TO:		INVOICE TO:	
CLIENT:	ACS	CLIENT:	Same
ADDRESS:	P.O. Box 986	ADDRESS:	
CITY:	Grand Island STATE: NY ZIP: 14072	CITY: STATE: ZIP:	
PHONE:	716-480-2125	PHONE:	
ATTN:	Raj Chopra	ATTN:	

Quotation #:

Email: rschopra@yahoo.com

PROJECT REFERENCE

Canada Company

Matrix Codes:
AQ - Aqueous Liquid, **NQ** - Non-Aqueous Liquid, **WA** - Water, **WG** - Groundwater, **DW** - Drinking Water, **WW** - Wastewater, **SO** - Soil, **SL** - Sludge, **SD** - Solid, **PT** - Paint, **WP** - Wipe, **CK** - Caulk, **OL** - Oil, **AR** - Air

REQUESTED ANALYSIS

DATE COLLECTED	TIME COLLECTED	COMPOSITE	GRAB	SAMPLE IDENTIFIER	MATRIX CODES	NUMBER OF CONTAINERS	REMARKS	PARADIGM LAB SAMPLE NUMBER
7-12								
7-12								
7-12								
7-12								

CPH

Turnaround Time

Availability contingent upon lab approval; additional fees may apply.

- Standard 5 day ☐
- Rush 3 day ☐
- Rush 2 day ☐
- Rush 1 day ☐
- Other please indicate: ☐

Report Supplements

- Batch QC ☐
- Category A ☐
- Category B ☐
- Other please indicate: ☐

- Basic EDD ☐
- NYSDEC EDD ☐
- Other EDD please indicate: ☐

Sampled By Date/Time

Relinquished By Date/Time

Received By Date/Time 7-14-22 10:20

Received @ Lab By Date/Time

Total Cost:

P.I.F.

See additional page for sample conditions.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: ACS Project #

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Label 2a
LIMS Login UPInc

Tracking #: 2755 0394 4375

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Thermometer Used — Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot# n/a Date and Initials of person examining contents: 7-18-22 JR

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:		✓		2. No container preservative type on COC
Chain of Custody Relinquished:		✓		3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: SL	✓			5. no matrix on COC
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, (Non-aqueous matrix)	✓			16.
All containers meet method preservation requirements.	✓			Initial when completed JR Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: 2a Date: 7-18-22 Survey Meter SN: 1503

WO#: 30506774
PM: ADC Due Date: 07/21/22
CLIENT: CEM

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Pace Analytical®

Greensburg Lab -Sample Container Count

WO#: 30506774

PM: ADC Due Date: 07/21/22

CLIENT: CEM

Client CEM. Inc

Site Cannibus Camper

Profile Number 5392

Notes

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1T	BP1	BF	B	I	BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	
1	SL																											1	
2	SL																											1	
3	SL																											1	
4	SL																											1	
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

Container Codes

Glass

GJN	1 Gallon Jug with HNO3	DG9S	40mL amber VOA vial H2SO4
AG5U	100mL amber glass unprserved	VG9U	40mL clear VOA vial
AG5T	100mL amber glass Na Thiosulfate	VG9T	40mL clear VOA vial Na Thiosul
GJN	1 Gallon Jug	VG9H	40mL clear VOA vial HCl
AG1S	1L amber glass H2SO4	JGFU	4oz amber wide jar
AG1H	1L amber glass HCl	WGFU	4oz wide jar unpreserved
AG1T	1L amber glass Na Thiosulfate	BG2U	500mL clear glass unpreserved
BG1U	1L clear glass unpreserved	AG2U	500mL amber glass unpreserve
AG3S	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
AG3U	250mL amber glass unpreserved		

Plastic / Misc.

GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250ml plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit for Volatile Solid
I	Wipe/Swab
ZPLC	Ziploc Bag

WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

WO# : 30506774

30506774

CHAIN OF CUSTODY

ACS

REPORT TO:		INVOICE TO:	
CLIENT:	ACS	CLIENT:	Same
ADDRESS:	P.O. Box 986	ADDRESS:	
CITY:	Grand Island STATE: NY ZIP: 14072	CITY: STATE: ZIP:	
PHONE:	716-480-2125	PHONE:	
ATTN:	Raj Chopra	ATTN:	

LAB PROJECT ID

Quotation #:

Email: rschopra@yahoo.com

PROJECT REFERENCE

Cannibus Campus

Matrix Codes:

AQ - Aqueous Liquid; NQ - Non-Aqueous Liquid; WA - Water; WG - Groundwater; DW - Drinking Water; WW - Wastewater; SO - Soil; SL - Sludge; SD - Solid; PT - Paint; WP - Wipe; CK - Caulk; OL - Oil; AR - Air

REQUESTED ANALYSIS

DATE COLLECTED	TIME COLLECTED	COMPOSITE	GRAB	SAMPLE IDENTIFIER	MATRIX CODES	NUMBER OF CONTAINERS	REMARKS	PARADIGM LAB SAMPLE NUMBER	
7-13	10			CC-R-01			Analyze		— opm 8179
7-13	10 30			CC-R-02			Gamma Spec 901.1		— 16,026
7-13	12 15			CC-R-03					— 27,885
7-13	12 45			CC-R-04					— 34,867
							RA-226, 228		
							TH-230		
							U-234		

Turnaround Time		Report Supplements			
Availability contingent upon lab approval; additional fees may apply.					
Standard 5 day	☑	Batch QC	☐	Basic EDD	☐
Rush 3 day	☐	Category A	☐	NYSDEC EDD	☐
Rush 2 day	☐	Category B	☐		
Rush 1 day	☐				
Other please indicate:	☐	Other please indicate	☐	Other EDD please indicate	☐

Sampled By _____ Date/Time _____

Relinquished By _____ Date/Time _____

Received By _____ Date/Time 7-14-22 10:20

Received @ Lab By _____ Date/Time _____

Total Cost

P.I.F.

See additional page for sample conditions.

WO# : 30506774

PM: ADC Due Date: 07/21/22

CLIENT: CEM

CHAIN OF CUSTODY

ACS

REPORT TO:		INVOICE TO:	
CLIENT:	ACS	CLIENT:	Same
ADDRESS:	P.O. Box 986	ADDRESS:	
CITY:	Grand Island STATE: NY ZIP: 14072	CITY: STATE: ZIP:	
PHONE:	716-480-2125	PHONE:	
ATTN:	Raj Chopra	ATTN:	

Quotation #:

Email: rschopra@yahoo.com

PROJECT REFERENCE

Cannabis Company

Matrix Codes:

AQ - Aqueous Liquid **NQ** - Non-Aqueous Liquid **WA** - Water **WG** - Groundwater **DW** - Drinking Water **WW** - Wastewater **SO** - Soil **SL** - Sludge **SD** - Solid **PT** - Paint **WP** - Wipe **CK** - Caulk **OL** - Oil **AR** - Air

REQUESTED ANALYSIS

DATE COLLECTED	TIME COLLECTED	COMPOSITE	GRAB	SAMPLE IDENTIFIER	MATRIX CODES	NUMBER OF CONTAINERS											REMARKS	PARADIGM LAB SAMPLE NUMBER	
7-[illegible]																			
7-12-[illegible]																			
7-12-[illegible]																			
7-12-[illegible]																			

CPM

[illegible] 179

[illegible] 028

[illegible] 885

[illegible] 907

Turnaround Time	Report Supplements	
Availability contingent upon lab approval; additional fees may apply.		
Standard 5 day ☐	Batch QC ☐	Basic EDD ☐
Rush 3 day ☐	Category A ☐	NYSDEC EDD ☐
Rush 2 day ☐	Category B ☐	
Rush 1 day ☐		
Other ☐ please indicate: _____	Other ☐ please indicate: _____	Other EDD ☐ please indicate: _____

Sampled By Date/Time

Relinquished By Date/Time

Received By 7-14-22 10:20 Date/Time

Received @ Lab By Date/Time

Total Cost:

P.I.F.

See additional page for sample conditions.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: ACS Project #

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Label: JA
LIMS Login: UPINC

Tracking #: 2755 0394 4375

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Thermometer Used Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp °C Correction Factor: °C Final Temp: °C

Temp should be above freezing to 6°C

pH paper Lot# n/a Date and Initials of person examining contents: 7-16-22 JA

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:		✓		2. No container preservative type on COC
Chain of Custody Relinquished:		✓		3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: SL	✓			5. no matrix on COC
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, (Non-aqueous matrix)	✓			16.
All containers meet method preservation requirements.	✓			Initial when completed: JR Date/time of preservation: Lot # of added preservative:
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: JA Date: 7-16-22 Survey Meter SN: 1563

WO#: 30506774
PM: ADC
CLIENT: CEM
Due Date: 07/21/22

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Pace Analytical®

Greensburg Lab -Sample Container Count

WO#: 30506774

PM: ADC Due Date: 07/21/22

CLIENT: CEM

Client CEM. Inc

Site Cannibus Camper

Profile Number 5392

Notes

Sample Line Item	Matrix	AG1H	AG1S	AG1T	AG2U	AG3S	AG3U	AG5U	AG5T	BG1U	BG2U	BP1T	BP1	BF	B		BP3N	BP3S	BP3U	DG9S	GCUB	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	
1	SL																											1	
2	SL																											1	
3	SL																											1	
4	SL																											1	
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

Container Codes

Glass

GJN	1 Gallon Jug with HNO3	DG9S	40mL amber VOA vial H2SO4
AG5U	100mL amber glass unprserved	VG9U	40mL clear VOA vial
AG5T	100mL amber glass Na Thiosulfate	VG9T	40mL clear VOA vial Na Thiosul
GJN	1 Gallon Jug	VG9H	40mL clear VOA vial HCl
AG1S	1L amber glass H2SO4	JGFU	4oz amber wide jar
AG1H	1L amber glass HCl	WGFU	4oz wide jar unpreserved
AG1T	1L amber glass Na Thiosulfate	BG2U	500mL clear glass unpreserved
BG1U	1L clear glass unpreserved	AG2U	500mL amber glass unpreserve
AG3S	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
AG3U	250mL amber glass unpreserved		

Plastic / Misc.

GCUB	1 Gallon Cubitainer
12GN	1/2 Gallon Cubitainer
SP5T	120mL Coliform Na Thiosulfate
BP1N	1L plastic HNO3
BP1U	1L plastic unpreserved
BP3S	250mL plastic H2SO4
BP3N	250mL plastic HNO3
BP3U	250mL plastic unpreserved
BP3C	250ml plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
VOAK	Kit for Volatile Solid
1	Wipe/Swab
ZPLC	Ziploc Bag

WT	Water
SL	Solid
OL	Non-aqueous liquid
WP	Wipe

Attachment C – TENORM Field Monitoring and Safety Plan

TENORM Field Monitoring and Safety Plan

310 Ship Canal Parkway
Buffalo, New York, 14218

Prepared by

MJW Corporation Inc.
15 Hazelwood Drive, Suite 112
Amherst, NY 14228

For

C and S Engineering
141 Elm Street
Buffalo, NY 14203

TABLE OF CONTENTS

DEFINITIONS

Technologically Enhanced Naturally Occurring Radioactive Material (TENORM)

Naturally Occurring Radioactive Materials that have been concentrated or exposed to the accessible environment, as a result of human activities such as manufacturing, mineral extraction, mechanical, thermal, or chemical processing.

TENORM typically contains isotopes of potassium, uranium, thorium, or radium and their radioactive "daughter" isotopes.

TENORM Slag

A specific form of TENORM commonly encountered in the Niagara Frontier region is a cinder or fused product separated during the reduction of metals from ore. It may be granular, gravel, or stone-like in nature, and on occasion can be slightly friable. Typically, the gamma radiation levels from TENORM slag are two to three times background or higher as measured using a gamma ray detection instrument such as a Sodium Iodide (NaI) detector. TENORM materials cannot be identified on physical appearance alone however, when a particular lens or layer of TENORM is otherwise identified, its physical appearance can prove helpful in facilitating the identification of contiguous TENORM material.

TENORM Workers – personnel who are directly involved with or in proximity to operations invasive to TENORM as described in section 4.5 of this Plan.

TENORM Work Area – a physical area, where the excavation, loading, handling, sorting, or staging of TENORM materials (or similar activities) are in process.

TENORM Storage Area – a physical area where TENORM or materials presumptively identified as TENORM are stored pending disposal either in stockpiles, vehicles, or containers. When TENORM is being handled (such as loading, unloading operations) the TENORM Storage Area is also a TENORM Work Area.

1.0 BACKGROUND

The Radioactive Materials Licensee (RML) will provide radiological support services for the subject project which will include excavation for utilities installation, pond installation, and site grading at the 310 Ship Canal Parkway, Parcel 4 site, Buffalo, New York. This project will be conducted by a construction contractor (hereinafter the Contractor) on behalf of C and S Engineering.

TENORM is known to be present in some areas where excavation operations will occur. This monitoring & safety plan and other supporting specifications and documents were developed to ensure that workers, the public, and the environment are adequately protected from risks due to the radioactive content of the TENORM.

2.0 PURPOSE

This Field Monitoring and Safety Plan (TFMSP) establishes the radiological protection and control requirements during construction and material handling activities for the project and is intended to supplement relevant general Health and Safety Plans (HASPS) related to the project. For the purposes of this TFMSP, the "Site" is currently defined as the areas actually or potentially containing TENORM where excavation, demolition, handling, staging, or storage operations are conducted. The requirements and guidelines in this TFMSP are designed to meet New York State Department of Health (DOH) radiological safety requirements and facilitate compliance with applicable New York State Department of Environmental Conservation (DEC) environmental and disposal requirements.

All aspects of the project will be conducted in conformance with the ALARA Principal to keep radiation exposures to workers and the public As Low As Reasonably Achievable.

3.0 SCOPE

The radiological control requirements in this document apply to work activities (primarily excavation, removal, loading, local transport, and temporary storage) where TENORM slag is known, or reasonably suspected to be present. The presence of TENORM, will be determined using appropriate radiological instrumentation in concert with other indicators such as physical appearance. Prior to execution of this TFMSP, a radiological site investigation was conducted to identify known and suspect areas. However, the investigation could not completely predict the presence of TENORM at depth or below shielding materials such as pavement and concrete or in proximity to underground infrastructure where subsurface investigation borings could not be located. Therefore, during excavation operations, the presence of TENORM will be assumed, until determined not to be present, down to the planned depth of excavation. The provisions of this document do NOT apply to the presence of Naturally Occurring Radioactive Materials (NORM) such as clay tile, or granite curbing, or to the use of licensed radioactive materials by other contractors (such as Moisture Density Gage sources).

4.0 REFERENCES

- 6 NYCRR 380 Prevention and Control of Environmental Pollution by Radioactive Materials
- 10 NYCRR Part 16, Standards for Protection Against Radiation
- DOT 49 CFR 171-177, Transportation – Hazardous Materials Regulations.

5.0 RESPONSIBLITIES

The RML bears overall authority and responsibility for radiation protection and compliance with applicable radiation protection regulations. All organizations involved including but not limited to the Contractor, any subcontractors or agents thereto are required to cooperate and comply with the provisions and requirements of this TFMSP, and any direction provided by the RML related to radiation safety and compliance.

Each person at the Site with assigned responsibilities related to TENORM, will similarly cooperate, and comply with the provisions of the TFMSP and any direction by the RML related to radiation safety and compliance. Under this TFMSP, all Site personnel have the authority and responsibility to stop work in the event that unsafe conditions arise during the execution of the work.

5.1 Radiological Project Manager

The Radiological Project Manager (RPM), employed by the RML, is responsible for:

- Overseeing the project activities to ensure radiological safety of the public and workers is maintained.
- Reviewing daily work plans and activities to identify potential radiological risks and hazards.
- Designating a Radiological Field Supervisor and arranging for employees on the project to receive appropriate radiation safety training.
- Supervisory interpretation of radiological conditions, requirements, and criteria.

5.2 Radiological Field Supervisor

The Radiological Field Supervisor (RFS), employed by the RML, is responsible for:

- Ensuring on site compliance with the radiation protection and monitoring requirements of this TFMSP, and the execution of operations in accordance with applicable radiological project specifications.

- Providing radiological training/briefings as specified by this TFMSP.

- Ensuring radiological instrumentation is in functional order, within calibration, and is operated by competent individuals in accordance with procedure requirements.

- Maintaining awareness to possible radiological conditions or events which are outside the anticipated parameters of the project and notifying the RPM should such conditions occur.

- Maintaining communications with the RPM, and requesting assistance as required to ensure compliance with this TFMSP, applicable radiological regulations, and project radiological specifications.

5.3 Radiological Control Technicians

Radiological Control Technicians (RCT's), employed by the RML, will work under the supervision of the RFS, and will operate and interpret radiological instrumentation and otherwise observe work operations to ensure compliance with applicable radiological safety requirements. RCT's will alert to RFS to unusual or unexpected radiological conditions or prohibited actions.

5.4 Supervisors

Supervisors from all organizations involved with field operations are responsible for ensuring their employees follow the instructions provided by the RPM, RFS, RCTs and project specifications when performing work at the Site.

5.5 TENORM Workers

TENORM Workers are personnel not otherwise specified above who are engaged in intrusive activities where they will contact/disturb TENORM Slag or are directly adjacent to work when disturbance of slag is occurring. This would include but not be limited to excavation equipment operators, haulers, and general laborers who work in proximity or within TENORM areas. TENORM Workers are required to:

- Follow the requirements specified by supervisors, RCTs, the RFS or the RPM and notify either the RCT, RFS or Supervisor of any potential problems they identify during work at the Site.
- Enter areas to which entry is restricted due to the presence of TENORM, only when authorized, and only to perform authorized activities.

5.6 General Workers

General workers are on-site workers not otherwise described above. General Workers are prohibited from entering areas where entry is restricted because of the presence of TENORM unless they are escorted by an RCT, or other trained persons designated by the RPM or RFS.

6.0 TRAINING

Training is required for all Supervisors and TENORM Workers and will be provided by the RML.

6.1 General Workers

General Workers will be informed regarding signage related to TENORM slag and areas for which access is restricted due to the presence of TENORM slag.

6.2 TENORM Workers

TENORM Workers will receive to an extent commensurate with their duties, training that includes the following:

- Radioactive materials and radiation fundamentals
- Biological effects of radiation
- Risks of occupational exposure
- Exposure limits
- Radiological hazards at the Site and preventive measures
- Radiological hazard communication
- Description of monitoring and other measures to determine efficacy of worker protection
- Radiological Worker responsibilities and rights

If Personal Protective Clothing such as disposable coveralls and gloves are worn, effected workers will be trained in proper donning and doffing methodologies.

6.3 Frequency

Training will be provided before each worker commences on site operations and will be repeated annually.

7.0 RADIOLOGICAL SURVEYS

The TENORM Slag is relatively well characterized with concentrations of naturally occurring isotope concentrations (U-238, Ra-226, Th-232, etc.) expected to be between background and 75 pCi/g. Exposure rate measurements taken at one meter above the ground surface within the project

area ranged from 5 to 20 microrem/hr. Because of the consistency of the material, the radiological surveillance program is designed to identify areas TENORM is present at detectable levels, and where the excavation, handling, storage, and transport of TENORM materials could conceivably cause external exposure rates to exceed designated action levels. In addition, measures will be taken to ensure the intake of airborne radioactivity are well below the allowable airborne concentrations specified in applicable regulations.

7.1 Direct Radiation Surveys

- Prior to excavation or surface material removal in a specific area a radiation survey will be performed using a 2"x2" NaI detector or equivalent exposure rate meter. Monitoring will be repeated after each excavation lift.

- If count rates from the NaI detector exceed 60,000 CPM, readings will be collected using a tissue equivalent instrument such as the Bicron MicroRem or similar. Results will be reported to the RPM, who may institute additional radiological controls if appropriate. In addition, if the anticipated duration of operations in the area/radiation field are expected to exceed 8 hours, the RPM and RFS will consider and implement ALARA actions as appropriate.

- RCT's and/or the RFS will be present and near all work conducted around or in TENORM materials areas and will wear whole body dosimeters (Landaur Luxel OSD's or similar) provided by an NVLAP accredited vendor. Due to their anticipated proximity to TENORM activities, these badges will be considered sentinel to estimate the maximum credible exposures to other TENORM workers. Utilizing the maximum combined dose of Ra-226 and Ra-228 from the composite pile sampling (7.642 pCi/g) and the 15 cm soil contamination value in table III.6 from Federal Guidance Report 12 to reflect the six inch lifts, it has been determined that the anticipated exposure from TENORM activities for a 6 week operation is 5 µRem.

- Roll-offs, containers, vehicles, or similar, containing TENORM Slag will be monitored daily until full. The monitoring will be performed at waist height and 12"' from the accessible container surfaces.

If exposure rates exceed 200 µR/hr, then the RFS or RCT will require a perimeter to be established at a distance where the exposure rate is less than 100 µR/hr using rope or similar boundary delineation with restricted access signage posted. The signage and perimeter delineation will remain until the container is transferred to a secured (e.g., fenced) storage area. Continuous direct observation by a designated individual(s) may serve as a temporary substitute for physical barriers and signs.

7.2 Airborne Contamination Surveys

As described further in section 11.2 measures will be taken to minimize the dispersion of airborne dusts during TENORM excavation and hauling operations. Airborne contamination surveys are not routinely required, however if TENORM at higher-than-expected concentrations is encountered then additional engineering controls and/or monitoring may be appropriate, as determined by the RPM.

If implemented TENORM airborne contamination monitoring may be performed using particulate air samplers and in-field or lab radiological counting. Surrogate, dynamic total

dust monitoring may also be employed if isotopic concentrations are adequately characterized.

7.3 Personnel, Equipment, And Materials Surface Contamination Surveys

During intrusive work where the TENORM Slag is disturbed or otherwise potentially dispersed, the following types of surface contamination surveys will be performed:

7.3.A Personnel and Anti-Contamination Clothing

Disposable clothing such as coveralls, boots, hoods, and gloves (if worn for the purpose of radiation protection), will be frisked using a 100 cm^2 alpha scintillation detector with an appropriate rate meter. At the discretion of the RCT or RFS the clothing may be surveyed either before or after doffing. After doffing, workers will be surveyed at minimum over their hands, and areas of exposed skin and hair, and more extensively at the discretion of the RCT. If contamination is detected wipe samples may collected, at the discretion of the RFS, to further characterize the contamination. Any contamination of skin or personnel items will be isolated and reported to the RFS promptly. Any contamination detections will be documented.

7.3.B Major Equipment

Major Equipment such as excavators and TENORM conveyance vehicles will be surveyed before release to unrestricted use. The surveys will be conducted using as appropriate a combination of 100 cm2 alpha detectors, 2”x2” NaI gamma detectors, or pancake GM detectors, at the discretion of the RFS. The survey will encompass as appropriate areas such as steering and foot controls, seats, excavator buckets, truck beds, tailgates, wheels, and tires.

7.3.C Minor Equipment

Minor equipment such as shovels and other hand tools will be surveyed if additional radiological controls have been implemented in accordance with section 6.1, using the same methodologies as outlined under Major Equipment above.

8.0 CONTAMINATION RELEASE LEVELS

Contamination release levels for equipment to be released for unconditional use will be at or below detection levels (not identified). Contamination levels below those specified in New York State Sanitary Code, Chapter 1, Part 16, Table 7. (Attachment 1) can be used for release of materials and equipment if the owner is made aware of the presence of contamination and it is demonstrated that decontamination efforts have reduced levels to ALARA. Corrective actions including but not limited to decontamination, isolation, and encapsulation/containerization will be employed to mitigate contamination before releasing the items.

9.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

9.1 General PPE

General PPE will be worn as specified in applicable project or organizational Health and Safety Plans (HASPS). This typically includes work boots, long sleeves, work gloves, safety glasses, hard hat, and hi-vis apparel.

9.2 Radiological PPE

Unless higher than expected concentrations of TENORM are encountered, no additional PPE will be required for purpose of radiological protection.

If higher than expected concentrations of TENORM are encountered the RPM may specify (Per Section 7.1) additional PPE commensurate with the TENORM concentrations, the physical characteristics of the TENORM (such as readily or not readily dispersible, moisture content, etc.), and the actual work evolutions being conducted.

Such additional PPE may include but not be limited to disposable coveralls, disposable gloves, or shoe covers. Any such PPE will be donned and doffed in accordance with RCT/RFS instructions and retained in clear bags for subsequent radiological survey and/or disposal.

10.0 TENORM ACCESS CONTROL AND POSTINGS

As discussed above, access restrictions will be imposed for TENORM work areas and TENORM Storage areas.

10.1 TENORM Work Area Access Control and Posting

If unattended, TENORM work areas will be roped or taped off and signage posted to warn workers and the public of the presence of TENORM Slag. Work activities should be implemented in a manner that minimizes the existence of areas where TENORM Slag is physically exposed during non-operational periods (such as overnight and weekends). This can be accomplished for example by excavating in areas small enough in cross section, that TENORM excavation can be completed before conclusion of the workday. In addition, any exposed TENORM Slag should be temporally covered during non-operational hours using tarps, plastic sheeting, plywood, etc. Covers should be adequately secured to meet anticipated conditions.

While TENORM operations are being conducted, direct surveillance by the RCT or other appointed individual, may be substituted for above posting and access controls.

10.2 TENORM Storage Area Access Control and Posting.

TENORM Storage Areas will be secured as required by regulatory oversight and will include and worker entry and signage will be present on all sides of the area containment as required.

The storage area signage will convey that TENORM is present, and that entry is for authorized individuals only. Any person who must work within the area must be Radiologically Trained (e.g., a TENORM Worker, RCS, or RPM) or must be directly escorted by an RCT, the RFS, or RPM)

11.0 MATERIAL CONTROL

11.1 General Requirements

When potential TENORM is excavated, the material will be screened using radiation instruments and either cleared (e.g., not TENORM), or identified as TENORM slag pending additional analysis. All such material will remain within designated TENORM Storage areas, until the RPM authorizes removal from the area, after samples have been analyzed at a radiological laboratory.

If excavated material is not designated as TENORM, this does not imply that the material is not otherwise hazardous. In addition, such materials are not "certified" to be non-hazardous, or not radioactive.

If TENORM slag is determined to otherwise be hazardous (for example chemically contaminated), the RPM will work with a qualified expert to develop suitable work and storage controls that are necessary for the purpose of safety and compliance with hazardous materials regulations. Such materials will be segregated from other TENORM slag.

11.2 Airborne and Surface Contamination Control

Airborne and surface contamination will be controlled utilizing appropriate engineering controls. **The most essential ALARA techniques to be employed will be personal hygiene (e.g., hand washing), and dust suppression**.

Specific measures that may be used to reduces the impacts of surface and airborne contamination issues include:

- Where exposed TENORM is likely to be encountered, steps to reduce direct contact with the skin will be implemented. This may include wearing work gloves and boots. Workers should only enter TENORM excavations when required.

- To the maximum practicable extent, excavations should be performed remotely (e.g., with an excavator or similar). If worker entry is required light sprinkling with water should be considered unless the TENORM slag is inherently moist.

- If unexpectedly high concentrations or TENORM are encountered additional PPE should be used per Section 7.1 to protect workers from skin and clothing exposures.

- Temporary laydown areas if required, will use protective barriers such as plastic sheeting or plywood to prevent TENORM slag from contacting non-impacted soil and surfaces. Similarly load surfaces of containers or trucks used to covey TENORM slag from point of excavation to point of storage should include protective barriers.

- Gentle rinsing of equipment (such as excavator buckets) that has been in contact with the TENORM slag with moderate amounts of water. This should be performed directly over the excavation.

- Dust suppression controls should be used to suppress any visible dust. These controls may include:

    - Lightly wetting each excavation lift
    - Use of water spray to suppress dust
    - Plan the most invasive, dust generating work for rainy days.

12.0 RECORDS

Various records will be generated as part of the radiological monitoring and control program. The following provides guidance on the records that will be generated:

- All records will be retained in accordance with 10 NYCRR 16.14

- Records may be stored electronically

Attachment 1

New York State Sanitary Code

Chapter One - Part 16A

Table 7

Application	***Alpha (dpm/100cm²)***		***Beta/Gamma***[1]	
	Total	***Removable***	***Total (mR/hr)***	***Removable (dpm/100cm²)***
Controlled area				
Basic guide	25,000 Max. 5,000 Av.	500	1.0	5,000
Clean area	1,000	100	0.5	1,000
Non-controlled area				
Skin, personal clothing	500	N.D.[2]	0.1	N.D.[2]
Release of material or facilities	2,500 (Max.) 500 (Av.)	100	0.2	1,000

[1] Measured at 1 cm from the surface.
[2] N.D.—non-detectable.

Attachment D – Remedial Investigation / Alternatives Analysis / Remedial Work Plan

Note: Attachment D is included in a separate electronic transmission due to document file size.