





Purchasing Division
Finance Department
Room 120
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Duluth, Minnesota 55802

 218-730-5340
 purchasing@duluthmn.gov

Addendum 1
Solicitation 21-99578
DPD Impound Lot

This addendum serves to notify all bidders of the following changes to the solicitation documents:

1. The pre-bid meeting sign-in sheet has been posted to the BidExpress solicitation and the City's Purchasing web page.
2. The Bid form has been revised in the attached documents, and in the BidExpress solicitation.
3. Please see the attached plans and specs pages for additional information or changes to the original documents.

Please acknowledge receipt of this Addendum by checking the acknowledgment box within the www.bidexpress.com solicitation or by initialing and dating next to Addendum 2 on the paper bid form (bid forms must be requested five (5) business days prior to the bid opening).

Posted: **8.2.21**

002 - ADDENDUM #1

	NOTES	MnDOT SPEC NO	DESCRIPTION	UNIT	IMPOUND LOT BASE BID	PARKS LOT	Paving Alternate	Privacy Fence Alt.
1	12	2013.609	HAUL & DISPOSE OF NON-HAZARDOUSE WASTE	TON	16			
2		2021.501	MOBILIZATION	LS	1			
3		2101.505	CLEARING	ACRE	0.2			
4		2101.505	GRUBBING	ACRE	0.2			
5		2104.503	REMOVE TEMP PRECAST CONCRETE BARRIER	Linear Foot	62.0			
6		2104.503	SAWING BIT PAVEMENT (FULL DEPTH) (P)	Linear Foot	660			
7	11	2104.503	REMOVE CHAINLINK FENCE	Linear Foot	799			
8		2104.504	REMOVE BITUMINOUS PAVEMENT (P)	Square Yard	278			
9		2105.504	GEOTEXTILE FABRIC TYPE 7	Square Yard	1020			
10		2105.507	SELECT GRANULAR BORROW (CV)	Cubic Yard	340			
11		2105.507	COMMON EXCAVATION (P)	Cubic Yard	680			
12		2105.523	COMMON BORROW (CV)(P)	Cubic Yard	170			
13	1	2105.535	SALVAGE TOPSOIL (P)	Cubic Yard	153			
14		2211.507	AGGREGATE BASE (CV) CLASS 5 (P)	Cubic Yard	242			
15	2	2360.509	TYPE SP 12.5 WEAR COURSE MIX (3,C)	Ton			123	
16	2	2360.509	TYPE SP 12.5 NON WEAR COURSE MIX (3,C)	Ton			123	
17		2503.602	CONNECT TO EXISTING DRAINAGE STRUCTURE	Each	1			
18		2056.502	CASTING ASSEMBLY	Each	1			
19		2501.503	12" CP PIPE CULVERT	Linear Foot	50			
20	3	2506.502	CONSTRUCT DRAINAGE STRUCTURE DES 60 - 4020	Each	1			
21		2531.503	CONCRETE CURB & GUTTER DESIGN B624	Linear Foot	375		34	
22	5	2531.504	8" CONCRETE DRIVEWAY PAVEMENT	Square Yard			36	
23		2545.503	DIRECT BURIED LIGHTING CABLE 4 COND 2 AWG (P)	Linear Foot	866			
24	6	2545.502	LUMINAIRE	Each	3			
25	7	2545.601	ELECTRICAL SERVICE	Lump Sum	4			
26		2557.502	PEDESTRIAN GATE DESIGN SPECIAL	EACH	1			
27	8	2557.602	VEHICULAR GATE SPECIAL	Each	2			
28	10	2557.603	CHAIN LINK SAFETY FENCE W/ HDPE SLATS	Linear Foot	875			
29	10	2557.603	CHAIN LINK SAFETY FENCE W/ PRIVACY MESH	Linear Foot				875
30	10	2557.603	CHAIN LINK SAFETY FENCE	Linear Foot		465		
31		2563.601	TRAFFIC CONTROL	Lump Sum	1			
32		2571.524	CONIFEROUS TREE 6' HT B&B	Tree	5			
33		2571.524	DECIDUOUS TREE 6' HT CONT	Tree	5			
34		2573.503	SEDIMENT CONTROL LOG TYPE COMPOST	Linear Foot	30			
35	9	2574.507	COMMON TOPSOIL BORROW (SALVAGED)	Cubic Yard	252			
36		2575.502	SEED MIXTURE 25-141 (P)	Pound	33			
37		2575.505	SEEDING (P)	Acre	0.6			
38		2575.604	ROLLED EROSION PREVENTION CATEGORY 15 (P)	Square Yard	2264			

PLOT DATE: Aug 02, 2021 - 12:51pm
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DESIGNED	WDD		
DRAWN	JSG		
CHECKED	WDD		
NO.	DATE	BY	DESCRIPTION OF REVISIONS
002	8/2/21	WDD	ADDENDUM #1
001	7/22/21	WDD	ISSUED FOR BID

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 SIGNATURE: *Will Derocher* DATE: 07/21/21
 PRINTED NAME: WILL DEROCHE LIC. NO.: 54757



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STATEMENT OF ESTIMATED QUANTITIES

PROJ. NO.	17823.000
DRAWING NO.	C002

CONSTRUCTION NOTES:

002

1. SALVAGE TOPSOIL PAY ITEM SHALL INCLUDE ALL EQUIPMENT, MATERIALS AND LABOR NECESSARY TO SALVAGE TOPSOIL FROM DISTURBED AREAS FOR RE-USE IN ESTABLISHING GRASSED BACKSLOPES. BACKSLOPE FROM NEW PARKING AREA TO BE 1:5 OR LESS, 6" OF SALVAGED TOPSOIL, SEEDED AND BLANKETED AS A MOWABLE AREA.
2. BITUMINOUS PAVING IS INCLUDED AS A PROJECT ALTERNATE.
3. DRAINAGE STRUCTURE PAY ITEM SHALL INCLUDE ALL EQUIPMENT, LABOR AND MATERIALS NECESSARY TO FURNISH AND INSTALL A 60" DIAMETER STRUCTURE, BASE, COVER AND INVERTED OUTLET PER DETAIL 2/C006 - DETAILS. CONTRACTOR SHALL CONSIDER GRADING, BASE MATERIAL AND STABILIZATION OF THE ADJACENT AREA AS INCIDENTAL TO THE DRAINAGE STRUCTURE PAY ITEM. STRUCTURE IS INTENDED TO SEPARATE TRASH & OIL FROM THE FLOW. CONTRACTOR SHALL CONSIDER FITTINGS AND BENT PORTION OF STRUCTURE OUTLET INCIDENTAL TO THE STRUCTURE PAY ITEM.
4. RANDOM RIP SHALL BE INSTALLED AROUND THE RAIN TURRET TO PROTECT THE OUTLET FROM EROSION.
5. CONCRETE DRIVEWAY PAVEMENT HAS BEEN INCLUDED AS A PROJECT ALTERNATE.
6. LUMINAIRE PAY ITEM SHALL INCLUDE ALL EQUIPMENT, LABOR AND MATERIALS NECESSARY TO FURNISH INSTALL LUMINAIRE. POLE, BASE AND HEAD SHALL BE CONSIDERED INCIDENTAL TO THE PAY ITEM. CONTRACTOR SHALL CONSIDER SAW CUTTING, EXCAVATION, FOUNDATION, BASE, CONTROLLER AND WIRING INCIDENTAL TO PAY ITEM. LUMINAIRES TO CONNECT TO THE CITY OF DULUTH ECHELON LIGHTING SYSTEM, COORDINATE ECHELON CONNECTION WITH THE CITY OF DULUTH.
7. PAY ITEM SHALL INCLUDE ALL EQUIPMENT, LABOR AND MATERIALS NECESSARY TO UPGRADE EXISTING ELECTRICAL SERVICE FOR LOT LUMINAIRE, SECURITY SYSTEM AND FUTURE COLD STORAGE BUILDING. CONDUITS SHALL BE APPROPRIATELY SIZED AND INSTALLED IN PREPARATION OF COLD STORAGE ELECTRICAL CONNECTION.
8. VEHICLE GATE SPECIAL PAY ITEM SHALL INCLUDE ALL EQUIPMENT, MATERIALS AND LABOR NECESSARY TO INSTALL AUTOMATED GATE, ELECTRICAL & COMMUNICATION CONNECTIONS. CONTRACTOR TO COORDINATE GATE & COMMUNICATIONS WITH CITY OF DULUTH INFORMATION TECHNOLOGIES DEPT. TO ENSURE COMPATIBILITY WITH EXISTING NETWORK. A SINGLE ACCESS PANEL (CARD READER/ KEY PAD) SHALL BE FURNISHED AND INSTALLED ON THE INBOUND SIDE OF THE LOT AND A SINGLE ACCESS PANNEL TO BE FURNISHED AND INSTALLED OUTBOUND SIDES OF THE GATE. A FREE OUT LOOP IS NOT ALLOWED.
9. CONTRACTOR TO SUPPLY ALL EQUIPMENT, LABOR AND MATERIALS NECESSARY TO RE-SPREAD SALVAGED TOPSOIL ADJACENT TO EXPANDED LOT AREA. CONTRACTOR TO SUPPLY SUPPLEMENTAL TOPSOIL IF NECESSARY TO ACHIEVE 6" OF TOPSOIL IN SEEDED AREAS.
10. CHAIN LINK FENCING TO HAVE PRIVACY SLATS INSTALLED - INCIDENTAL TO FENCING PAY ITEM. CONTRACTOR TO PROVIDE SAMPLES TO OWNER FOR APPROVAL. CHAIN LINK SAFETY FENCE WITH PRIVACY MESH IS TO BE A REPLACEMENT CHAIN LINK SAFETY FENCE WITH HDPE SLATS IF ALTERNATE IS SELECTED. BOTH TYPES OF FENCE WILL NOT BE INSTALLED. CHAIN LINK SAFETY FENCE (WITHOUT HDPE OR PRIVACY FENCE) TO BE INSTALLED AS PROJECT ALTERNATE ALONG THE PARKS MAINTENANCE PROPERTY. FENCE DIMENTIONS TO MATCH BUT WITHOUT SCREENING MATERIAL. DUE TO FENCE HEIGHT, CONTRACTOR TO PROVIDE ENGINEERED SHOP DRAWINGS FROM FENCE MANUFACTURER. FOR THE SAKE OF PRICING, CONTRACTOR TO ASSUME 12' TALL FENCING WITH TOP, MIDDLE AND BOTTOM BRACING AND POSTS SPACED 8' O.C. FENCE INSTALLATION WILL BE SUBJECT TO THE MANUFACTURE'S ENGINEERING REQUIREMENTS.
11. CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, LABOR AND MATERIALS NECESSARY TO RECOVER AND DISPOSE OF DISCARDED RAILROAD INFRASTRUCTURE LEFT ONSITE. PIECES OF RAIL AND TIES WERE NOTED DURING THE PHASE I ENVIRONMENTAL REVIEW AND MUST BE PROPERLY DISPOSED OF.
12. REMOVE CHAINLINK FENCE PAY ITEM SHALL INCLUDE ALL EQUIPMENT LABOR AND MATERIALS NECESSARY TO REMOVE AND DISPOSE OF FENCING, POSTS AND GATES

002

BASIS FOR PLANNED QUANTITIES	
AGGREGATE BASE	
AGGREGATE BASE (CLASS 5)	COMPACTED VOLUME IN PLACE
AGGREGATE BASE (LV) (CLASS 5)	(CV)x1.3
PLANT MIXED BITUMINOUS SURFACE	
TYPE SP 9.5 BITUMINOUS MIXTURE	120 LBS. / S.Y. / 1"
TYPE SP 12.5 BITUMINOUS MIXTURE	120 LBS. / S.Y. / 1"
BITUM. MATERIAL FOR TACK COAT	0.05 GAL. / S.Y.
SEED/ LANDSCAPING	
SEED MIXTURE 25-151	120 LB/AC
COMMERCIAL FERTILIZER ANALYSIS 22-5-10	350 LB/AC
HYDRAULIC MATRIX, TYPE FRM	3900 LB/AC

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NO.	DATE	BY	DESCRIPTION OF REVISIONS
002	8.2.21	WDD	ADDENDUM #1
001	7.22.21	WDD	ISSUED FOR BID

DESIGNED: WDD
 DRAWN: WDD
 CHECKED: JSG
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CONSTRUCTION NOTES

PROJ. NO. 17823.000
 DRAWING NO. C003

KEYNOTES:

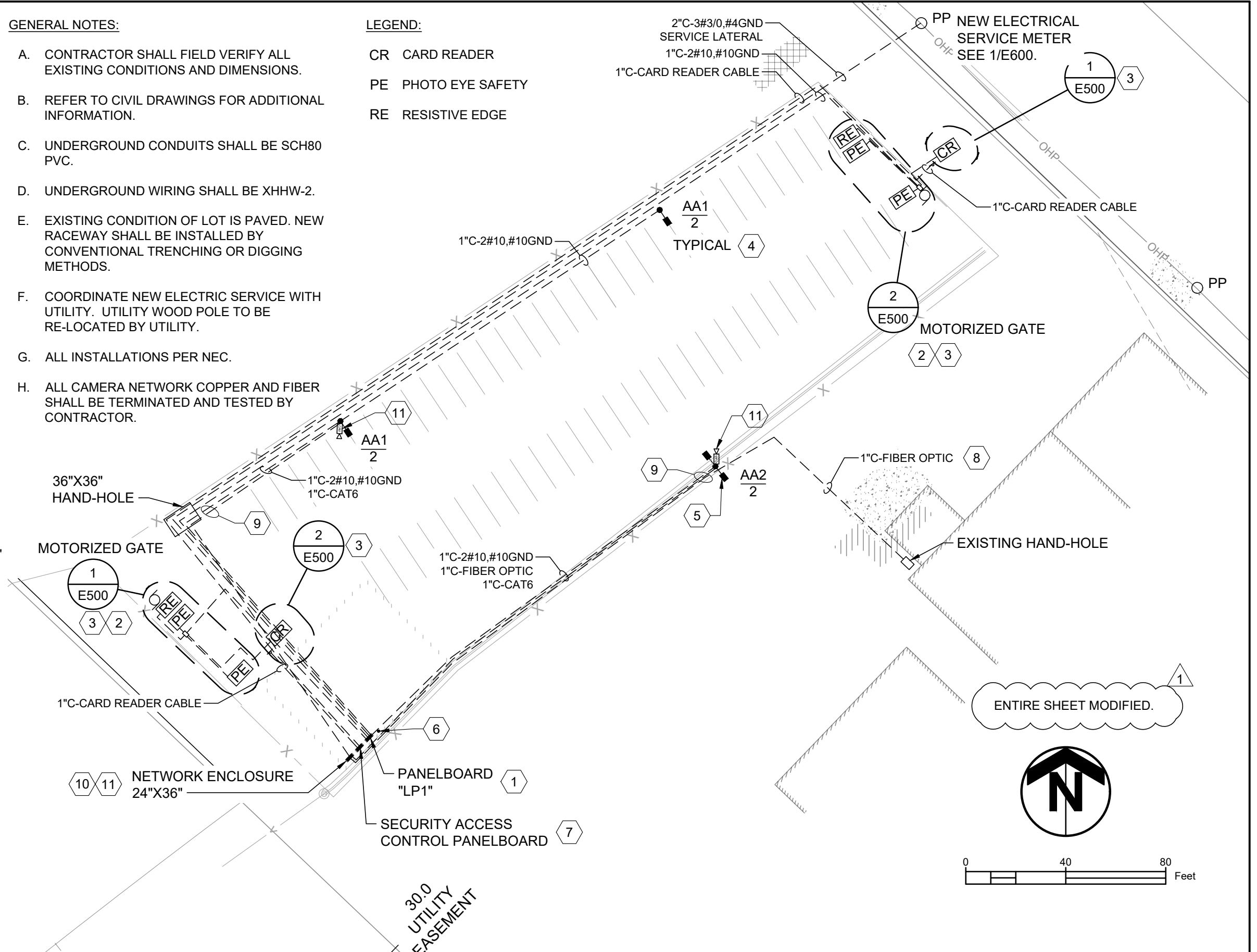
- 1 PROVIDE PANELBOARD. SEE RISER DIAGRAM AND PANELBOARD SCHEDULE. PROVIDE SERVICE LATERAL FROM UTILITY METER POLE. PROVIDE UNISTRUT AND HARDWARE FOR OUTDOOR MOUNTING AND SUPPORT.
- 2 PROVIDE CONNECTIONS TO MOTORIZED GATE OPERATOR, PHOTO EYES, AND MONITORED RESISTIVE EDGE SAFETY DEVICE. SEE DETAIL ON E500.
- 3 PROVIDE CARD READER SYSTEM AND CONNECTION TO MOTORIZED GATE OPERATOR. SEE CARD READER SUPPORT DETAIL ON E500.
- 4 PROVIDE LIGHT FIXTURE, LIGHT POLE, AND LIGHT POLE BASE. SEE DETAIL E500.
- 5 OWNER SHALL PROVIDE 7PIN ECHELON LIGHTING CONTROL AND ONE LIGHT FIXTURE; FOR SOUTH POLE. CONTRACTOR SHALL INSTALL PROVIDED 7PIN ECHELON LIGHTING CONTROL DEVICE ONTO EACH LIGHT FIXTURE.
- 6 PROVIDE EMPTY CONDUIT FOR FUTURE BUILDING. STUB UP AND CAP CONDUITS.
- 7 PROVIDE SECURITY ACCESS CONTROL PANELBOARD. SEE ELECTRICAL SPECIFICATION.
- 8 PROVIDE 1" PVC CONDUIT FROM NETWORK ENCLOSURE TO "CITY MAINTENANCE BUILDING" HAND-HOLE ADJACENT TO LOT. PROVIDE 12-STRAND SINGLE MODE FIBER OPTIC CABLE FROM HOFFMAN CABINET LOCATED IN "CITY MAINTENANCE BUILDING". RUN FIBER CABLE INSIDE BUILDING ALONG EXISTING FIBER RUN TO HAND-HOLE.
- 9 PROVIDE 1" PVC CONDUIT AND CAT6 CABLE FROM NETWORK ENCLOSURE TO (2) LIGHT POLE 12"X12" CURVED LID JUNCTION BOXES. SEE LIGHT POLE DETAIL E500.
- 10 PROVIDE 24"X36" NETWORK ENCLOSURE.
- 11 OWNER SHALL PROVIDE AND INSTALL CAMERAS ON LIGHT POLES AND EQUIPMENT NEEDED INTERNAL TO NETWORK ENCLOSURE.

GENERAL NOTES:

- A. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS.
- B. REFER TO CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.
- C. UNDERGROUND CONDUITS SHALL BE SCH80 PVC.
- D. UNDERGROUND WIRING SHALL BE XHHW-2.
- E. EXISTING CONDITION OF LOT IS PAVED. NEW RACEWAY SHALL BE INSTALLED BY CONVENTIONAL TRENCHING OR DIGGING METHODS.
- F. COORDINATE NEW ELECTRIC SERVICE WITH UTILITY. UTILITY WOOD POLE TO BE RE-LOCATED BY UTILITY.
- G. ALL INSTALLATIONS PER NEC.
- H. ALL CAMERA NETWORK COPPER AND FIBER SHALL BE TERMINATED AND TESTED BY CONTRACTOR.

LEGEND:

- CR CARD READER
- PE PHOTO EYE SAFETY
- RE RESISTIVE EDGE



PLOT DATE: Aug 02, 2021 - 1:01pm
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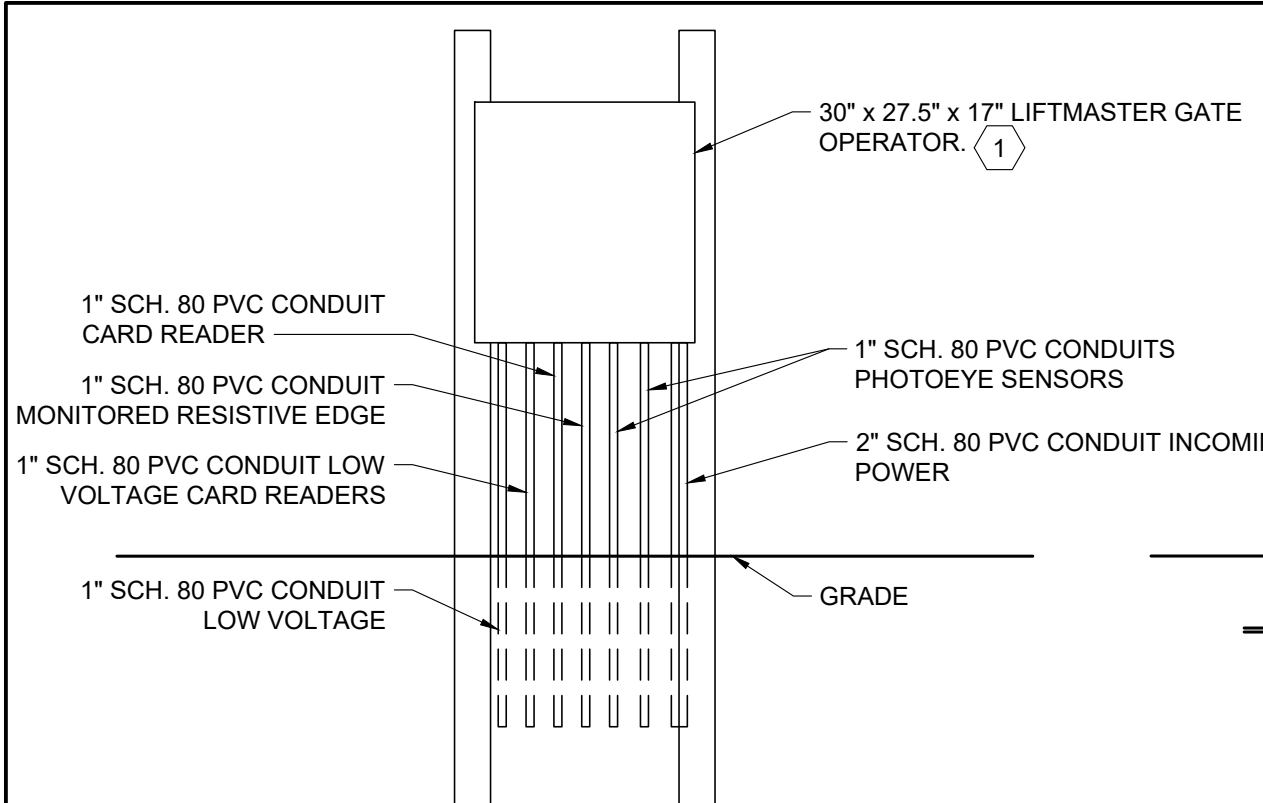
NO.	DATE	BY	DESCRIPTION OF REVISIONS
1	8/02/2021	ETV	ADDENDUM #1
0	7/21/2021	ETV	ISSUE FOR BID

DESIGNED	CDN	I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. SIGNATURE: <i>E. Todd Volkmeier</i> DATE: 8/02/2021 PRINTED NAME: E. TODD VOLKMEIER LIC. NO.: 23476
DRAWN	CDN	
CHECKED	ETV	
NO.	DATE	

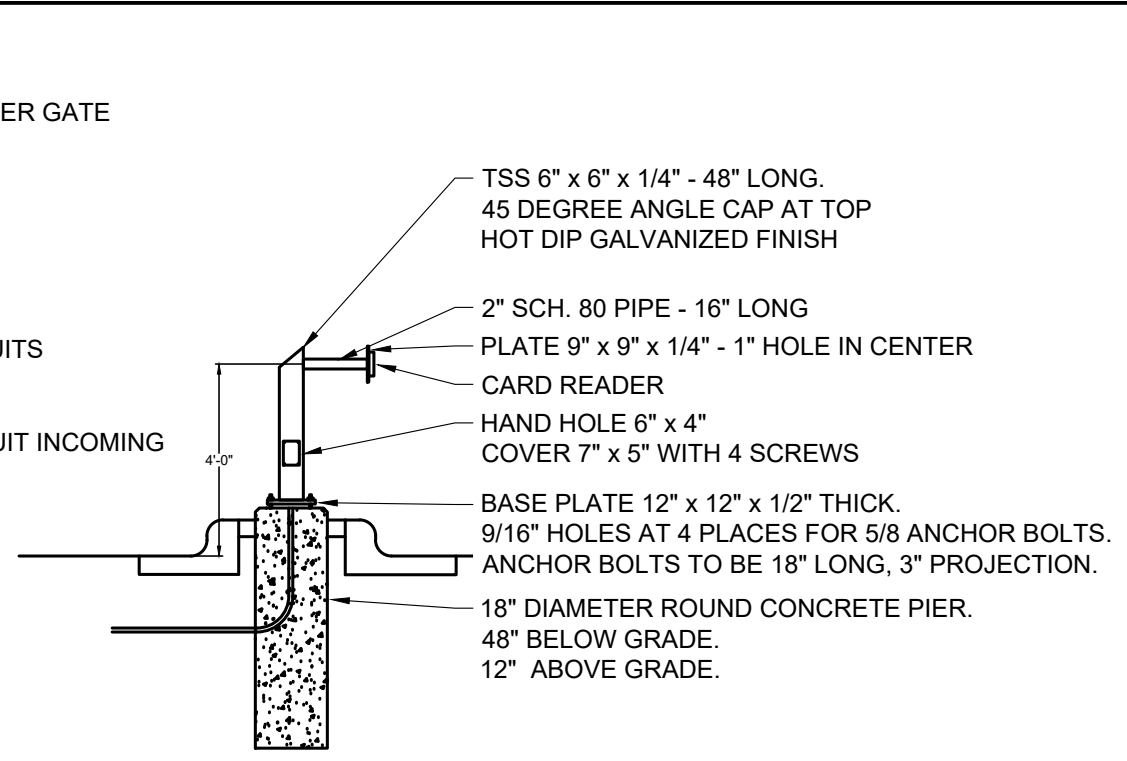

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ELECTRICAL SITE PLAN

PROJ. NO.	17823.000
DRAWING NO.	E110



1 MOTORIZED GATE OPERATOR
E500 SCALE: 1/2"=1'-0"

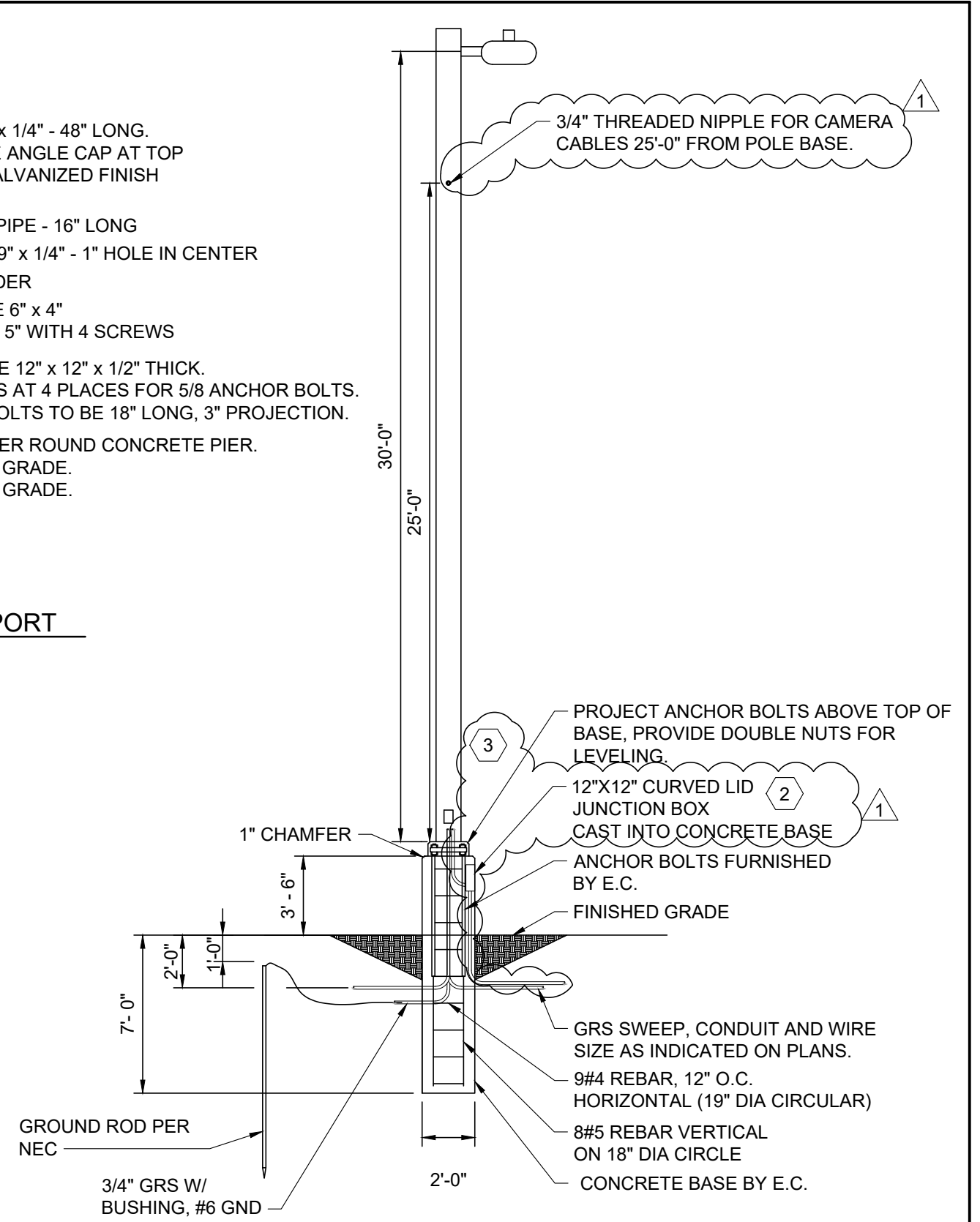


2 CARD READER SUPPORT
E500 SCALE: 1/4"=1'-0"

LUMINAIRE SCHEDULE								
TYPE	MANUFACTURE R	MODEL	VOLTS	LAMP	ARRANGEMENT	DESCRIPTION	POLE	LIGHT POLE BASE
AA1 SINGLE HEAD	AEL OR OWNER APPROVED EQUIVALENT	AUTOBAHN SERIES ATB2 ATB2-P603-MVOLT-R3-3K-BK-P7 WITH ACCESSORY: ATB2P60XR3HSS OR APPROVED EQUIVALENT	120-277V	LED, 33,062 LUMENS	SINGLE	7PIN DIMMABLE ECHOLON CONTROLLER 3000K	LITHONIA: 30' SQUARE STRAIGHT STEEL, COLOR DARK BRONZE, (SSS 30 4G DM19 NPL34/25A DDBXD) OR OWNER APPROVED EQUIVALENT	CAST IN PLACE CONCRETE BASE
AA2 DOUBLE HEAD	AEL OR OWNER APPROVED EQUIVALENT	AUTOBAHN SERIES ATB2 ATB2-P603-MVOLT-R3-3K-BK-P7 WITH ACCESSORY: ATB2P60XR3HSS OR APPROVED EQUIVALENT	120-277V	LED, 33,062 LUMENS	2 AT 180 °	7PIN DIMMABLE ECHOLON CONTROLLER 3000K	LITHONIA: 30' SQUARE STRAIGHT STEEL, COLOR DARK BRONZE, (SSS 30 4G DM28 NPL34/25A DDBXD) OR OWNER APPROVED EQUIVALENT	CAST IN PLACE CONCRETE BASE

KEYNOTES:

- 1** LIFTMASTER GATE OPERATOR AND CARD READER ELECTRONICS.
- 2** PROVIDE 1" CONDUIT TO LIGHT POLE.
- 3** FOR LIGHT POLES WITH CAMERAS, PROVIDE 3/4" LIQUID TIGHT NON-METALLIC FLEXIBLE CONDUIT UP TO CAMERA FROM J-BOX.



3 LIGHT POLE DETAIL
E500 NO SCALE

PLOT DATE: Aug 02, 2021 - 11:38am
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NO.	DATE	BY	DESCRIPTION OF REVISIONS
1	8/02/2021	ETV	ADDENDUM #1
0	7/21/2021	ETV	ISSUE FOR BID

DESIGNED: CDN
DRAWN: CDN
CHECKED: ETV
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SIGNATURE: *E. Todd Volkmeier* DATE: 8/02/2021
PRINTED NAME: E. TODD VOLKMEIER LIC. NO.: 23476

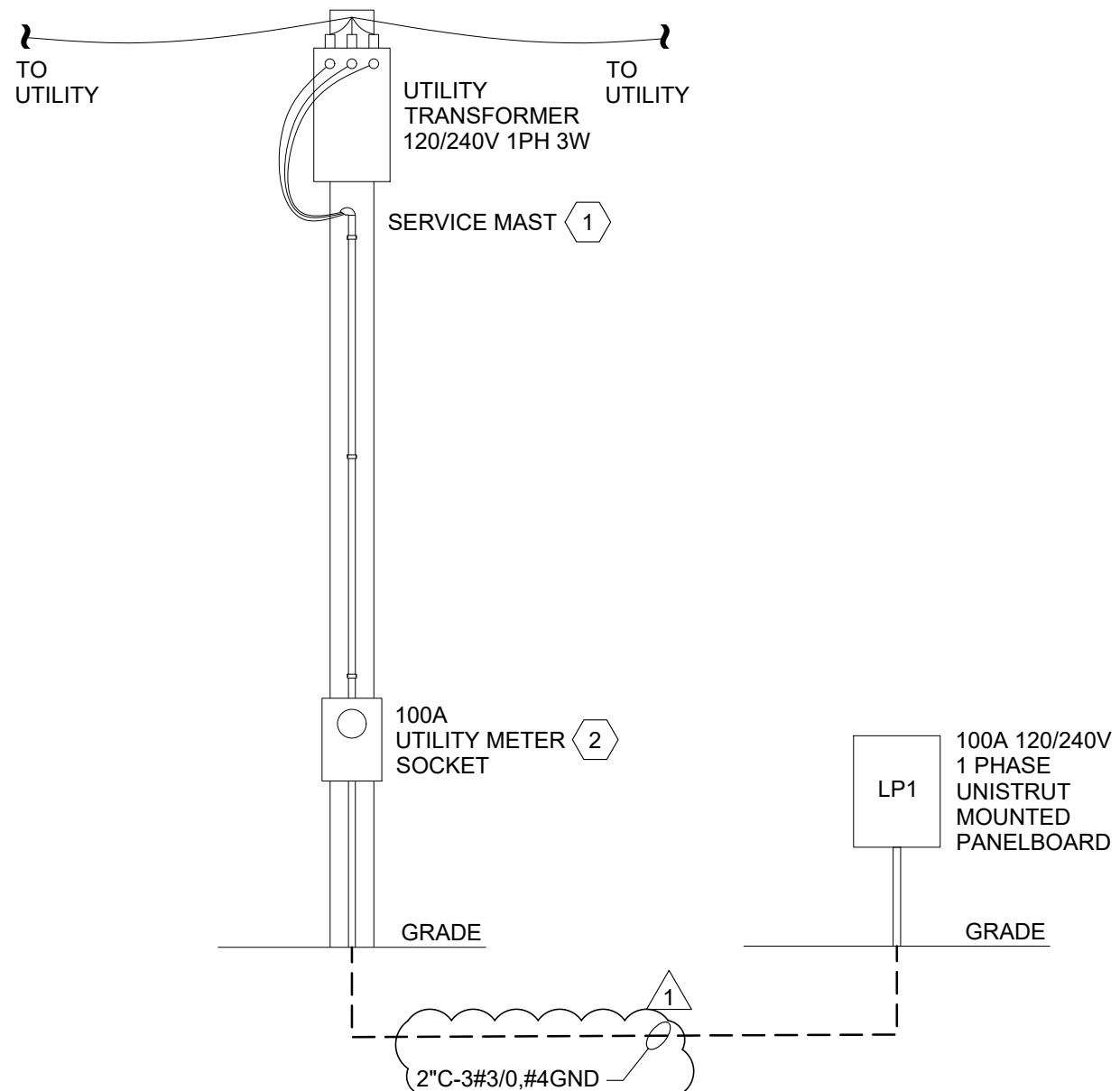
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ELECTRICAL DETAILS

PROJ. NO. 17823.000
DRAWING NO. E500

KEYNOTES:

- 1 CONTRACTOR SHALL INSTALL SERVICE MAST.
- 2 CONTRACTOR SHALL INSTALL METER SOCKET.



1 ELECTRICAL RISER DIAGRAM
E600 NO SCALE

PANELBOARD SCHEDULE										PANEL NAME LP1			
SURFACE <input checked="" type="checkbox"/> FLUSH <input type="checkbox"/>										MAIN LUGS <input type="checkbox"/> MAIN BREAKER <input checked="" type="checkbox"/>			
					MAIN BREAKER RATING = 100 AMPS					BUS AMPS	VOLTAGE	PHASE	WIRE
										100	240	1	3
<input type="checkbox"/> FEED-THRU LUGS													
CKT NO.	CIRCUIT DESIGNATION	AMPS	POLES	LOAD-KVA			POLES	AMPS	CIRCUIT DESIGNATION	CKT NO.			
1	NORTH GATE	20	2	0.8	A	1.4	1	30	LIGHT POLES	2			
3		20		0.8	B		1	20	SPARE	4			
5	SOUTH GATE	20	2	0.8	A		1	20	SPARE	6			
7		20		0.8	B		1	20	SPARE	8			
9	CARD READER PANEL	20	1	0.1	A		1	20	SPARE	10			
11	NETWORK ENCLOSURE	20	1		B		1	20	SPARE	12			
13	SPARE	20	1		A		1	20	SPARE	14			
15	SPARE	20	1		B		1	20	SPARE	16			
17	SPARE	20	1		A		1	20	SPARE	18			
19	SPARE	20	1		B		1	20	SPARE	20			
21	SPARE	20	1		A		1	20	SPARE	22			
23	SPARE	20	1		B		1	20	SPARE	24			
SUBTOTAL				A	3.1	B	1.6						
FEED THRU SUBTOTAL				A		B							
TOTAL				A	3.1	B	1.6						
TOTAL AMPS						19.6							

THE ENTIRE SYSTEM SHALL BE FULLY SERIES RATED
ENCLOSURE _____ NEMA 3R

AVAILABLE SHORT CIRCUIT CURRENT AT PANELBOARD LUGS IS _____ 10 _____ KAIC.

PLOT DATE: Aug 02, 2021 - 11:38am
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DOCUMENT 00 00 11

ADDENDUM 1

1.01 PROJECT INFORMATION

- A. Project Name: DPD Impound Lot.
- B. Owner: City of Duluth – Properties and Facilities management.
- C. Owner Project Number: 21-99578
- D. Engineer: TKDA.
- E. Engineer Project Number: 17823.000.
- F. Date of Addendum: 8/2/21.

1.02 NOTICE TO BIDDERS

- A. This Addendum is issued to all registered plan holders pursuant to the Instructions to Bidders and Conditions of the Contract. This Addendum serves to clarify, revise, and supersede information in the Project Manual, Drawings, and previously issued Addenda. Portions of the Addendum affecting the Contract Documents will be incorporated into the Contract by enumeration of the Addendum in the Owner/Contractor Agreement.
- B. The Bidder shall acknowledge receipt of this Addendum in the appropriate space on the Bid Form.
- C. The date for receipt of bids is unchanged by this Addendum, at same time and location.
 - 1. Bid Date: 8/5/21 2:00pm.

1.03 ATTACHMENTS

- A. This Addendum includes the following attached Documents and Specification Sections:
 - 1. Document Bay West EAS, dated 6/17/21, (new).
 - 2. Document DPD Impound Lot – Schedule of Unit Prices (reissued)
- B. This Addendum includes the following attached Sheets:
 - 1. Civil Sheet C002 - C003, dated 8/2/21, (reissued).
 - 2. Electrical Sheet E110, E500, E600 dated 8/2/21, (reissued).

1.04 REVISIONS TO DIVISIONS 02 - 49 SPECIFICATION SECTIONS

- A. Specification Section Special Provisions, (reissued).
- B. Specification Section
 - 1. Section 26 05 33 Raceways and boxes for Electrical Systems, (reissued).
 - 2. Section 27 05 28 Pathways for Communications Systems, (new).
 - 3. Section 27 13 00 Communication Backbone Cabling, (new).
 - 4. Section 27 15 00 Communications Horizontal Cabling, (new).
 - 5. Section 28 10 00 Access Control, (new).

END OF DOCUMENT

Division SP – Site Construction Special Provisions

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SP – 2 2503 Connect to Existing Drainage Structure 2

SP – 3 2545 Electrical Service 2

SP-4 2557 Vehicular Gate (Special) 2

SP-5 2557 Chain Link Safety Fence 3

SP-6 2563 Traffic Control 3

SP – 1

Permits

DESCRIPTION

Contractor shall be responsible to obtain all necessary construction permits through the Duluth Construction Services & Inspection office. Due to project scope, area anticipated to be disturbed fall beneath the threshold for requiring an NPDES Stormwater Construction permit, however a City of Duluth Erosion Control permit as well as fencing and electrical permits are still required.

SP – 2

2031 HAUL & DISPOSE OF NON-HAZARDOUS WASTE

DESCRIPTION

Contractor shall collect and dispose of remnant railroad infrastructure. This will require offsite landfill disposal as non-hazardous waste. Contractor shall submit weigh tickets as part of pay application.

SP – 3

2503 Connect to Existing Drainage Structure

DESCRIPTION

Contractor shall adhere to requirements of MnDOT Standard specifications as well as supplemental requirements established by the City of Duluth. All storm sewer utilities shall include trace wire per 2013 CEAM Standards.

SP – 4

2545 Electrical Service

DESCRIPTION

The electrical service pay item shall include all necessary labor, equipment, permits and materials in order provide electrical services as designed. The project intent is to provide a new electrical service to the lot for electrical supply to the newly installed light poles, electric gate systems, security system and future cold storage building. Electrical connections for the future cold storage building will be stubbed out to the proposed building location and terminated. Electrical lighting system shall be coordinated with City of Duluth Information Technologies services group to ensure lighting system is compatible with the city's existing infrastructure. See following sections 26 and 28 for project specific information.

SP-5 2557 Vehicular Gate (Special)

DESCRIPTION

Contractor shall provide all equipment, materials and labor necessary to install an automated gate system. Gate shall be a slide style gate with security credentials required to activate the automated slide gate operator. Contractor shall provide shop drawings of the gate system as well as necessary layout information for the gates installation. Contractor shall coordinate system requirements with the City of Duluth Information Technology services in order to provide a system that is compatible with existing infrastructure.

See Section 32 31 13 for additional requirements for automated gates.

SP-6 2557 Chain Link Safety Fence

DESCRIPTION

Footings and posts shall be installed per the manufacturer's recommendations. Contractor to supply necessary shop drawings for 12' height fence with privacy screening. Privacy screening shall be UV resistant and fastened on the interior side of the fence. Samples for privacy fabric shall be submitted to the Owner/Engineer for approval. Base bid for screening material shall be HDPE slats, woven into the chain link fence mesh. Project alternate provides for the option to use fabric screening material instead of HDPE slats.

See Section 32 31 13 for additional fencing requirements.

SP-7 2563 Traffic Control

DESCRIPTION

Contractor shall install and maintain necessary traffic control devices to alert drivers of construction activities. Traffic control devices shall be installed in accordance with the 2020 edition of the Minnesota Manual on Uniform Traffic Control Devices.

SECTION 26 05 33

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions, and the General Requirements apply to the Work of this Section.
- B. The following sections have been specifically referenced in this specification. Section 26 05 00 "Common Work Results for Electrical."

1.02 SCOPE

- A. This Section covers basic electrical requirements for providing labor, materials, equipment, and services necessary for the selection and installation of raceways, fittings, boxes, and accessories or a complete grounded raceway system as shown on the drawings and specified herein. In general, this consists of:
 - 1. Metal conduits, tubing, and fittings
 - 2. Nonmetal conduits, tubing, and fittings
 - 3. Metal wireways and auxiliary gutters
 - 4. Nonmetal wireways and auxiliary gutters
 - 5. Surface raceways
 - 6. Boxes, enclosures, and cabinets
 - 7. Sleeves for Raceway
 - 8. Innerduct
 - 9. Conduit Seals
 - 10. Corrosion Protective Coatings for Conduits
 - 11. Polymer concrete handholes and boxes with polymer concrete cover.

1.03 DEFINITIONS/ABBREVIATIONS

- A. No additional definitions/abbreviations provided.

1.04 SUBMITTALS

- A. Bid: Provide the following with the bid documents.
 - 1. No additional submittals required; see Specification Section 26 05 00.
- B. Manufacture: Provide the following prior to release for manufacture and/or purchase.
 - 1. Shop Drawings/Data Sheets shall be submitted for approval for the following equipment (confirm list with Engineer):
 - a. Data sheets for Surface Raceway.
 - b. Shop drawings for custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.
 - c. Floor Boxes
 - d. Data sheets for conduit seal.
 - e. Data sheets for corrosion protective coating.

2. Coordination Drawings. Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved.
 - a. Structural members in paths of conduit groups with common supports.
 - b. HVAC and plumbing items and architectural features in paths of conduit groups with common supports.
 3. No submittals required for conduit and fittings.
 4. No samples required.
 5. Submit Seismic Guides and Certification to verify that the specified equipment and installation meet all requirements to withstand potential seismic forces, where required.
 - a. Enclosures, cabinets, and conduit racks and their mounting provisions, including those for internal components, from manufacturer.
 6. See also Specification Section 26 05 00.
- C. Construction: Provide the following during construction.
1. No additional submittals required; see Specification Section 26 05 00.
- D. Closeout: Provide the following to complete the project.
1. No additional submittals required; see Specification Section 26 05 00.

1.05 QUALITY ASSURANCE

- A. Manufacturer: The equipment manufacturer shall be regularly engaged in the manufacture of raceways, fittings, boxes, and accessories of the types, capabilities, and capacities required, and whose products have been in satisfactory use in similar service for not less than ten years.
- B. Installer Qualifications: No additional qualifications specified.
- C. Codes/Standards: The products provided by this section shall comply with the latest editions of the following references:
1. ANSI C80.1 – Rigid Steel Conduit, Zinc Coated
 2. ANSI C80.3 – Electrical Metallic Tubing, Zinc Coated
 3. ANSI C80.5 – Aluminum Rigid Conduit
 4. ANSI C80.6 – Intermediate Metallic Conduit
 5. ANSI/NEMA FB-1 – Fittings and Supports for Conduit and Cable Assemblies
 6. NEMA 250 Enclosures for Electrical Equipment (1000V Maximum)
 7. NEMA OS 1 – Sheet Steel Outlet Boxes, Device Boxes, Covers and Box Supports
 8. NEMA RN-1 – PVC Externally-Coated Galvanized Rigid Steel Conduit
 9. NEMA TC2 – Electrical Plastic Tubing and Conduit
 10. NEMA TC3 – PVC Fittings for Use with Rigid PVC Conduit and Tubing
 11. UL, Building Materials Directory
 12. UL 5 – Surface Metal Raceways and Fittings
 13. UL 651 – Schedule 40 and 80 Rigid PVC Conduit
 14. UL 886 – Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations
- D. Equipment Quality: Raceway, fittings, boxes, and accessories shall be “Listed” or “Labeled” as defined in NFPA 70, Article 100, by a National Recognized Testing Laboratory acceptable to authorities having jurisdiction, and marked for the intended location and use.

PART 2 - PRODUCTS

2.01 GENERAL INFORMATION.

- A. All raceway, fittings, boxes, accessories, and materials shall be new unless otherwise specified on the plan drawings and associated notes. The type of equipment and/or material shall be approved for its planned use and environment and is so defined by NEMA/NFPA 70 standards and NRTL certifications.

2.02 ACCEPTABLE MANUFACTURERS.

- A. None Specified.

2.03 METAL CONDUITS, TUBING, AND FITTINGS

- A. Metal conduits, tubing, and fittings shall be listed or labeled, and marked for the intended location and application.
- B. GRC. Comply with ANSI C80.1 and UL 6.
- C. ARC. Comply with ANSI C80.5 and UL 6A.
- D. IMC. Comply with ANSI C80.6 and UL 1242.
- E. PVC-Coated Steel Conduit. PVC-coated Rigid Conduit.
 - 1. Comply with NEMA RN 1.
 - 2. Coating Thickness. 0.040 inch (1 mm), minimum.
- F. EMT. Comply with ANSI C80.3 and UL 797.
- G. FMC. Comply with UL 1; zinc-coated steel or aluminum.
- H. LFMC. Flexible steel conduit with PVC jacket and complying with UL 360.
- I. Fittings for Metal Conduit. Comply with NEMA FB 1 and UL 514B.
 - 1. Conduit Fittings for Hazardous (Classified) Locations. Comply with UL 886 and NFPA 70.
 - 2. Expansion Fittings. PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
 - 3. Coating for Fittings for PVC-Coated Conduit. Minimum thickness of 0.040 inch (1 mm), with overlapping sleeves protecting threaded joints.
- J. Joint Compound for IMC, GRC, or ARC. Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.04 NONMETALLIC CONDUITS, TUBING, AND FITTINGS

- A. Nonmetallic conduits, tubing, and fittings shall be listed or labeled, and marked for the intended location and application.
- B. ENT. Comply with NEMA TC 13 and UL 1653.
- C. RNC. Complying with NEMA TC 2 and UL 651 unless otherwise indicated.

- D. LFNC. Comply with UL 1660.
- E. Continuous HDPE. Comply with UL 651B.
- F. Coilable HDPE. Preassembled with conductors or cables, and complying with ASTM D 3485.
- G. Fittings for ENT and RNC. Comply with NEMA TC 3; match to conduit or tubing type and material.
- H. Fittings for LFNC. Comply with UL 514B.

2.05 FIBERGLASS CONDUIT

- A. Reinforced Thermosetting Resin (RTRC) per NEC 355. May be used for underground application. May be used for factory elbows in lieu of RMC.

2.06 METAL WIREWAYS AND AUXILIARY GUTTERS

- A. Description. Sheet metal, complying with UL 870 and NEMA 250 unless otherwise indicated, and sized according to NFPA 70. See drawings for 'Type'.
 - 1. Metal wireways installed outdoors shall be listed or labeled, and marked for intended location and application.
- B. Fittings and Accessories. Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- C. Wireways shall be provided without knockouts and shall have hinged covers.

2.07 NONMETALLIC WIREWAYS AND AUXILIARY GUTTERS

- A. Nonmetallic wireways and auxiliary gutters shall be listed or labeled, and marked for the intended location and application.
- B. Description. Fiberglass polyester, extruded and fabricated to required size and shape, without holes or knockouts. Cover shall be gasketed with oil-resistant gasket material and fastened with captive screws treated for corrosion resistance. Connections shall be flanged and have stainless-steel screws and oil-resistant gaskets.
- C. Description. PVC, extruded and fabricated to required size and shape, and having snap-on cover, mechanically coupled connections, and plastic fasteners.
- D. Fittings and Accessories. Couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings shall match and mate with wireways as required for complete system.
- E. Solvent cements and adhesive primers shall have a VOC content of 510 and 550 g/L or less, respectively, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- F. Solvent cements and adhesive primers shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers.

2.08 SURFACE RACEWAYS

- A. Surface raceways shall be listed or labeled, and marked for intended location and application.
- B. Surface Metal Raceways – Undivided
 - 1. Painted 0.040" thickness steel housing. 2 inches wide single wiring compartment.
 - 2. Snap on painted steel cover
 - 3. Receptacles installed every 24 inches.
 - 4. Factory supplied complete line of fittings, including inside corners, outside corners, vertical and horizontal conduit entry fittings,
 - 5. Factory supplied tools specifically designed to cut channel to length without damage and to punch receptacle openings without damage to painted finish.
 - 6. UL 5 listed component raceway system
 - 7. Wiremold/Legrand type V2400 series, suitable for indoor dry locations only.
- C. Surface Metal Raceway – Divided
 - 1. Galvanized and Painted 0.050" thickness steel housing (base). 4 inches wide, 1.75 inches deep, with divider for power receptacles and data jacks. Field cut to length
 - 2. Snap on galvanized and painted steel cover with pre-cut outlet openings spaced at 24" on center.
 - 3. Provide receptacles installed every 24 inches
 - 4. Factory supplied complete line of fittings, including inside corners, outside corners, vertical and horizontal conduit entry fittings.
 - 5. Factory supplied tools specifically designed to cut channel to length without damage and to punch receptacle openings without damage to painted finish.
 - 6. UL listed multi-outlet assembly
 - 7. Wiremold/Legrand the V4000 series. Suitable for indoor dry locations only.
- D. Surface Nonmetallic Raceways. Two- or three-piece construction, complying with UL 5A, and manufactured of rigid PVC. Product shall comply with UL 94 V-0 requirements for self-extinguishing characteristics.

2.09 BOXES, ENCLOSURES, AND CABINETS

- A. General Requirements for Boxes, Enclosures, and Cabinets. Boxes, enclosures, and cabinets installed in wet locations shall be labeled or listed, and marked for use in wet locations.
- B. Sheet Metal Outlet and Device Boxes. Comply with NEMA OS 1 and UL 514A.
- C. "Cast-Metal Outlet and Device Boxes" as noted below, shall be suitable for use with steel raceways in the installed environments. Use Type FD device box with extra depth, unless otherwise specified on the drawings or approved by the Engineer.
- D. Cast-Metal Outlet and Device Boxes. Comply with NEMA FB 1, non-ferrous alloy, Type FD, with gasketed cover.
- E. Nonmetallic Outlet and Device Boxes. Comply with NEMA OS 2 and UL 514C.
- F. Metal Floor Boxes:
 - 1. Listing and Labeling. Metal floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

- G. Nonmetallic Floor Boxes:
 - 1. Nonmetallic floor boxes shall be listed or labeled, and marked for intended location and application.
- H. Luminaire Outlet Boxes. Nonadjustable, designed for attachment of luminaire weighing 50 lb (23 kg). Outlet boxes designed for attachment of luminaires weighing more than 50 lb (23 kg) shall be listed or labeled, and marked for the maximum allowable weight.
- I. Paddle Fan Outlet Boxes. Nonadjustable, designed for attachment of paddle fan weighing 70 lb (32 kg).
 - 1. Paddle fan outlet boxes shall be listed or labeled, and marked for intended location and application.
- J. Small Sheet Metal Pull and Junction Boxes. NEMA OS 1.
- K. Cast-Metal Access, Pull, and Junction Boxes. Comply with NEMA FB 1 and UL 1773, with gasketed cover.
- L. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- M. Hinged-Cover Enclosures. Comply with UL 50 and NEMA 250, with continuous-hinge cover with flush latch unless otherwise indicated. Type shall be as required by drawings and / or to match existing adjacent enclosures.
 - 1. Metal Enclosures. Steel, finished inside and out with manufacturer's standard enamel.
 - 2. Interior Panels. Steel; all sides finished with manufacturer's standard enamel.
- N. Cabinets
 - 1. NEMA 250, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Type shall be as required by drawings and / or to match existing adjacent enclosures.
 - 2. Hinged door in front cover with flush latch and concealed hinge.
 - 3. Key latch to match panelboards.
 - 4. Metal barriers to separate wiring of different systems and voltage.
 - 5. Accessory feet where required for freestanding equipment.
 - 6. Nonmetallic cabinets shall be listed or labeled, and marked for intended location and application. Use permitted where noted on drawings or approved by the Engineer.

2.10 SLEEVES FOR RACEWAYS

- A. Provide sleeves for all cables passing through walls. Provide sleeves for conduits passing through floors, footings, and/or exterior walls. Provide metal pipe sleeves for conduits 1-1/4" and larger passing through walls.
- B. Provide sealing material at pipe sleeves that must be sealed against hydrostatic pressure, i.e. footing penetrations. Sleeve seals shall be furnished with EPDM sealing elements, plastic pressure plates, and carbon-steel bolts. NBR and silicone sealing elements, carbon- and stainless-steel pressure plates, and stainless-steel bolts are available for special applications.
- C. Sleeves for penetrations through fire rated walls for low voltage cables that are UL listed shall be used. Hilti CP Speed Sleeve or equal.

2.11 INNERDUCT

- A. Provide a 3-cell non-metallic plastic PET fabric mesh type inner-duct installed in all outdoor underground telecom conduits. All inner-ducts shall include a pull string rated for 1,250 lbs. pulling tension. Use MAXCELL Edge series or similar.

2.12 CONDUIT SEAL AT OUTDOOR CONDUITS

- A. Provide sealant inside conduit around conductors to prevent air movement for all conduits that penetrate exterior walls. Sealant shall be specifically identified for use for the conductor insulation per NEC 300.7; PolyWater FST or equal.

2.13 CONDUIT SEAL AT UNDERGROUND CONDUITS

- A. At all locations where underground conduits enter the building (i.e., service entrance or ductbanks) provide inflatable water and moisture seal; PolyWater ZipSeal, Raychem RDSS, or equal.

2.14 CORROSION PROTECTIVE COATING

- A. Provide corrosion protection spray applied coating to all factory of field cut conduit threads for RMC and IMC; PolyWater CG Cold-Galv spray or equal.
- B. Provide corrosion protective tape installed along all direct buried rigid metal conduits. Wrap tape using 1/3 lap spiral wrapping. Use 3M #50 or #51 corrosion protective tape.

2.15 FIRESTOPPING. Seal all openings around conduit or other electrical work penetrating fire and smoke rated partitions, floors, and ceilings. Firestop material shall comply with UL 1479, NEC 300-21, and NEC 800-3(c). 3M FireStop putty or caulk.

2.16 POLYMER CONCRETE HANDHOLES AND BOXES WITH POLYMER CONCRETE COVER

- A. Description: Molded of sand and aggregate, bound together with a polymer resin, and reinforced with steel or fiberglass or a combination of the two.
- B. Standard: Comply with SCTE 77. Comply with tier requirements in "Underground Enclosure Application" Article.
- C. Color: Gray.
- D. Configuration: Units shall be designed for flush burial and have open bottom unless otherwise indicated.
- E. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
- F. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
- G. Cover Legend: Molded lettering, "ELECTRIC."
- H. Handholes 48 INCHES X 48 INCHES X 48 INCHES DEEP. Larger may be used. Submittal required. Or two handholes may be used where a single is not large enough to handle the approaching conduits in a duct

PART 3 - EXECUTION

3.01 GENERAL INFORMATION.

- A. Provide all labor and raceways, fittings, boxes, associated equipment, and materials required to provide a complete raceway system in accordance with applicable local, state, national codes, and the manufacturers' recommendations, except where the plan set drawings, associated notes, schedules, and/or specifications are stricter.
- B. Raceways and boxes shall be installed in a neat and workmanlike manner.
 - 1. The NEIS Standard Practices for Good Workmanship in Electrical Contracting NECA 1 (latest edition) is hereby adopted to define the minimum guideline for such workmanship and the installation:
 - a. Comply with NECA 101 for steel conduit installation requirements.
 - b. Comply with NECA 102 for aluminum conduits installation requirements.
 - c. Comply with NECA 111 for non-metallic conduit installation requirements
 - 2. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors
- C. Coordinate layout and installation of raceways, boxes, and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- D. Flattened, dented, deformed, or opened conduit shall not be permitted. If damaged during installation, damaged conduit shall be replaced with new undamaged material. Prevent foreign matter from entering raceways by using temporary closure protection. Test conduits with ball mandrel. Clear any conduit which rejects the ball and mandrel
- E. Minimum size conduit run shall be 3/4 inch.
- F. Installation shall be in accordance with the NEC and as shown on the drawing
- G. Install surface raceways only where indicated on Drawings
- H. Environment:
 - 1. Consult the drawings for the required raceway types and locations. Where no selection is provided use the following minimum requirement:

a. Outdoors Exposed	RSC
b. Outdoor Buried	RSC
c. Outdoor Buried Corrosive Soils	PVC80
d. Outdoor Embedded Concrete	PVC80
e. Indoor Dry Exposed Office/Warehouse	EMT
f. Indoor Dry Exposed Factory	IMC
g. Indoor Wet Exposed	IMC
h. Indoors Concealed	EMT, Flexible Metal Conduit
i. Corrosive Area:	Coated RSC, RAS, PVC
j. Classified Areas:	RSC
 - 2. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
 - 3. Do not install nonmetallic conduit where ambient temperature exceeds 120°F.

I. Raceway Fittings

1. Compatible with raceways and suitable for use and location.
2. Rigid and Intermediate Steel Conduit. Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
3. PVC Externally Coated, Rigid Steel Conduits. Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant that is recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.

3.02 RACEWAY AND BOX INSTALLATION

A. Raceways General:

1. Conceal raceways within finished walls, ceilings, and floors, unless otherwise noted.
2. Assure that conduit installation does not encroach into the ceiling height headroom, walkways, or doorways. Align and run conduit parallel or perpendicular to the building lines and or adjacent piping. Install horizontal runs close to the ceiling or beams, and secure with conduit straps. Independently support all conduits. Do not use other supports i.e., (suspended ceilings, suspended ceiling supporting members, lighting fixtures, mechanical piping, or mechanical ducts).
3. Complete raceways installation before starting conductor installation.
4. Support all trapezes and all above ground feeder conduits from the building structure. Parallel runs of six (6) or more conduits shall be supported from the building structure. Do not support conduit with wire, nylon ties, nor perforated pipe straps. Remove wire used for temporary supports. Do not attach conduit to ceiling support wires. Do not support raceways from mechanical ductwork or equipment, except where required to connect to the equipment.
5. Run all conduit in areas with unfinished ceilings above bottom chord of joists.
6. Arrange stub-ups so curved portions of bends are not visible above finished slab.
7. Support conduit within 12 inches (300 mm) of changes in direction.
8. Support conduit within 12 inches (300 mm) of enclosures to which attached.
9. Do not run conduits in columns except to feed column mounted devices.
10. Place conduits at least 24 inches away from all hot piping and surfaces including domestic hot water lines. Do not mount conduit on mechanical equipment except where necessary to connect electrical devices mounted on the equipment. Provide 18 inches of flexible conduit in all runs "bridging" vibration mountings.
11. Do not run conduit on or directly in front of access doors, removable panels, equipment removal spaces, control devices or other spaces necessary for normal maintenance and repair of the equipment.
12. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system. Cap or plug conduit ends during construction. Cap or plug ends of conduits that are to remain empty and make watertight. Clean and swab conduits prior to pulling in conductors.
13. Uncoated metal conduits must be approved by the Engineer for installation underground. If approved the conduit shall be protected by two coats of bituminous paint (Koppers Bitumastic or equal) or by vinyl tape (3M Scotchrap #51 or equal).
14. Seal all conduits penetrations of smoke or fire rated walls or floors with intumescent type fire barriers, 3M or equal. Seal all conduits where they pass through exterior walls and where they enter exterior fixtures. Seal all conduits where temperature differential between adjacent spaces is greater than 30 degrees Fahrenheit.
15. Do not route line side and load side conductors for a VFD in the same raceway. Provide dedicated, separate line side and load side conduits and conductors for each VFD controlled motor.
16. Protect all grounding electrode conductors from physical damage using schedule 80 PVC conduit per NEC 250.64 requirements.
17. All underground transitions to above ground shall be RMC or IMC or Fiberglass. All underground elbows shall be RMC or fiberglass.

B. Raceways Embedded in Slabs:

1. Install in middle third of the slab thickness where practical and leave at least 2-inch (25 mm) concrete cover. Tie raceways to reinforcing rods or otherwise secure them to prevent sagging or shifting during concrete placement. Space raceways laterally to prevent voids in the concrete. Where nonmetallic conduit is used, raceways must be converted to rigid steel conduit or IMC before rising above floor.
2. Run conduit larger than 1-inch (27-mm) trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support. Secure raceways to reinforcement at maximum 10-foot (3-m) intervals.
3. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
4. Arrange raceways to keep a minimum of 2 inches (50 mm) of concrete cover in all directions.
5. Do not embed threadless fittings in concrete unless specifically approved by Engineer for each specific location.
6. Use of nonmetallic tubing in fire-rated slabs must be approved by the Engineer and authority having jurisdiction.

C. Stub-ups to Above Recessed Ceilings:

1. Use EMT, IMC, or RMC for raceways.
2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.

Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions.
Apply listed compound to threads of raceway and fittings before making up joints.
Follow compound manufacturer's written instructions.

- D. Coat field-cut threads on all threaded raceways with a corrosion-preventing compound. Use cold galv spray.
- E. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35-mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- F. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

G. Surface Raceways General:

1. Install surface raceway with a minimum 2-inch radius control at bend points.
2. The raceway shall be securely supported at intervals in accordance with NEC and manufacturer's installation sheets. All raceway systems shall be installed complete, including insulating bushings and inserts where required by manufacturer's installation sheets. Coordinate installation with General Contractor where raceway is installed in or above casework.
 - a. Secure surface raceway with screws or other anchor-type devices at maximum intervals not exceeding 36 inches (1200 mm) and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods

3. Provide a separate ground conductor in each section of raceway and bond to supply conduit system in an approved manner
- H. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces.
- I. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:
1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 2. Where an underground service raceway enters a building or structure.
 3. Where otherwise required by NFPA 70.
- J. Expansion-Joint Fittings:
1. Install in each run of aboveground RNC that is located where environmental temperature change may exceed 30 deg F (17 deg C) and that has straight-run length that exceeds 25 feet (7.6 m).
 2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:
 - a. Outdoor Locations Not Exposed to Direct Sunlight. 125 deg F (70 deg C) temperature change.
 - b. Outdoor Locations Exposed to Direct Sunlight. 155 deg F (86 deg C) temperature change.
 - c. Indoor Spaces Connected with Outdoors without Physical Separation. 125 deg F (70 deg C) temperature change.
 - d. Attics. 135 deg F (75 deg C) temperature change.
 3. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
 4. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.
- K. Flexible Conduit Connections. Comply with NEMA RV 3. Use a maximum of 72 inches (1830 mm) of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
1. Use LFMC in damp or wet locations subject to severe physical damage.
 2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.
- L. Boxes General:
1. Installation shall be in accordance with the NEC Article 314 and as shown on schedules on the drawings.
 2. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements.
 3. Recessed Boxes in Masonry Walls. Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a raintight connection between the box and cover plate or the supported equipment and box.
 4. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.
 5. Locate boxes so that cover or plate will not span different building finishes.

6. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
 7. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.
 8. Set metal floor boxes level and flush with finished floor surface.
 9. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.
 10. Interior outlet junction boxes shall not be mounted back-to-back in the same wall.
 11. Junction boxes shall be securely mounted and arranged so that the boxes are square with the building surfaces.
 12. Wall outlet boxes shall be plumb and accurately aligned in rows. Mount ceiling boxes symmetrical with walls, beams and/or tiles.
 13. Mount outlet boxes in exposed masonry walls with the top and one side of the box on mortar joints but not less than 15" A.F.F.
 14. Provide center mounted fixture studs in boxes for direct fixture mounting. Provide special fixture hangers and/or auxiliary supports where the weight of the fixture requires more support than the fixture stud.
 15. Thru-wall boxes shall not be used unless specifically noted.
 16. Close openings in all outlet boxes during plaster and concrete work with plain paper or slip on plastic or metal plates. Do not use newspaper.
 17. Provide pull boxes fabricated of code gauge, galvanized sheet steel with screw covers held in place by corrosion resistant screws, and located to be accessible when the building is finished. Do not locate pull boxes in finished spaces without the specific approval of the Engineer/Architect. Equip boxes requiring 4 1/2" square or smaller covers with blank covers to match switch plates. Paint 5" square or larger steel pull box covers to match electrical panel fronts.
- M. Raceways for Optical Fiber and Communications Cable. Install ferrous raceways, metallic, rigid or flexible, as follows:
1. 3/4-Inch (19-mm) Trade Size and Smaller. Install raceways in maximum lengths of 50 feet (15 m).
 2. 1-Inch (25-mm) Trade Size and Larger. Install raceways in maximum lengths of 75 feet (23 m).
 3. Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements. Provide brushed ends.

3.03 INSTALLATION OF WIREWAY

- A. Installation shall be in accordance with the NEC Article 376, 378, and 366, respectively, and as shown on the drawings.
- B. Manufacturer's suggested insulating bushings and inserts at connections to outlets and corner fittings shall be used, as required

3.04 PENETRATIONS.

- A. Where raceways pass through fire partitions, fire walls, or smoke partitions, install a fire stop that provides an effective barrier against the spread of fire, smoke, and gasses with rock wool fiber or silicone foam sealant only. Each such penetration shall be separated from all others by 2-inch clear (not center-to-center) minimum. Completely fill and seal clearances between raceways and openings with the fire-stop material. Penetrations shall meet the requirements of UL 1479.

3.05 FIRESTOPPING.

- A. Apply fire stop material to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and proposed installation procedures shall be submitted to Engineer for approval.

3.06 INSTALLATION OF SLEEVES

- A. Coordinate sleeve locations.

1. Where raceways pass through floors, floors shall be core drilled and appropriately sized sleeves shall be installed. Sleeves shall terminate not less than 3 inches above floor slabs and not less than 3 inches below the ceiling of the floor below. Completely seal clearances between the raceway and sleeve, and make watertight. Low-voltage sleeves shall be brushed.
2. Schedule 40 pipe sleeves shall have at least three (3) concrete anchors.
3. Set all sleeves true to line, grade and position and plumb or level after concrete is poured. Correct any deviation from proper position.
4. Provide galvanized steel tube sleeve 1-1/2 inches larger than O.D. of conduit. Sleeve shall have wall thickness of 0.061 inches.
5. Engineer shall approve below grade conduit seal method. Where conduits pass through exterior concrete walls below grade, provide "Link-Seal" or caulk both sides with oakum and lead wool or otherwise adequately waterproof the openings around the conduit.
6. Caulk spaces between pipe and floor sleeves inside the building with a waterproof caulking material. Spaces between pipe and exterior partition sleeves shall be caulked with fiber glass insulation.
7. Seal space outside of sleeves with grout for penetrations of concrete and masonry
8. Roof-Penetration Sleeves. Seal penetration of individual raceways with flexible boot-type flashing units applied in coordination with roofing work.
9. Aboveground, Exterior-Wall Penetrations. Seal penetrations using pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
10. Underground, Exterior-Wall Penetrations. Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway and sleeve for installing mechanical sleeve seals.

3.07 PROTECTION/CLEANING

- A. Upon completion of installation of raceways, inspect interiors of raceways; clear all blockages and remove burrs, dirt, and construction debris.
- B. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion. Remove all construction debris.
 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

3.08 GUARANTEE (WARRANTY). No additional material and/or labor warranty beyond that specified in Section 26 05 00 "Common Work Results for Electrical."

3.09 UNDERGROUND ENCLOSURE APPLICATION

A. Handholes and Boxes for 600 V and Less:

1. Units in Roadways and Other Deliberate Traffic Paths: Precast concrete. AASHTO HB 17, H-20 structural load rating.
2. Units in Driveway, Parking Lot, and Off-Roadway Locations, Subject to Occasional, Nondeliberate Loading by Heavy Vehicles: Precast concrete, AASHTO HB 17, H-20 Polymer concrete, SCTE 77, Tier 15 structural load rating.
3. Units in Sidewalk and Similar Applications with a Safety Factor for Nondeliberate Loading by Vehicles: Precast concrete, AASHTO HB 17, H-10 structural load rating.
4. Units Subject to Light-Duty Pedestrian Traffic Only: Precast concrete, AASHTO HB 17, H-10 structural load rating.
5. Cover design load shall not exceed the design load of the handhole or box.

END OF SECTION

SECTION 27 05 28

PATHWAYS FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The Drawings and the provisions of the Contract including the General and Supplementary Conditions, and the General Requirements apply to the Work of this Section.
- B. The following sections have been specifically referenced in this specification:
 - 1. Section 26 05 00 Common Work Results for Electrical Systems

1.02 SCOPE

- A. This Section covers the basic requirements for providing labor, materials, equipment, and services necessary for the selection and installation of pathways for telecommunications systems as shown on the drawings and specified herein. In general, this consists of:
 - 1. Optical-fiber-cable pathways and fittings.
 - 2. Boxes, enclosures, and cabinets.

1.03 DEFINITIONS/ABBREVIATIONS

- A. No additional definitions/abbreviations provided.

1.04 SUBMITTALS

- A. Bid: Provide the following with the bid documents.
 - 1. No additional submittals required; see Specification Section 26 05 00.
- B. Manufacture: Provide the following prior to release for manufacture and/or purchase.
 - 1. Data sheets shall be submitted for approval for the following:
 - a. Hinged-cover enclosures.
 - b. Cabinets.
 - 2. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.
- C. Construction: Provide the following during construction.
 - 1. No additional submittals required; see also Specification Section 26 05 00.
- D. Closeout: Provide the following to complete the project.
 - 1. No additional submittals required; see Specification Section 26 05 00.

1.05 QUALITY ASSURANCE

- A. Manufacturer: The equipment manufacturer shall be regularly engaged in the manufacture of raceways, fittings, boxes, and accessories of the types, capabilities, and capacities required, and whose products have been in satisfactory use in similar service for not less than ten years.
- B. Installer Qualifications. No additional qualifications specified.
- C. Codes/Standards. The products provided by this section shall comply with the following applicable references (latest edition):
 - 1. ANSI C80.1 – “Rigid Steel Conduit, Zinc Coated”
 - 2. ANSI C80.3 – “Electrical Metallic Tubing, Zinc Coated”
 - 3. ANSI C80.5 – “Aluminum Rigid Conduit”
 - 4. BICSI 568 – “Standard for Installing Commercial Building Telecommunications Cabling”
 - 5. NECA 1 – “Standard for Good Workmanship in Electrical Construction”
 - 6. NECA 101 – “Standard for Installing Steel Conduits (Rigid, IMC, EMT)”
 - 7. NECA 102 – “Standard for Installing Aluminum Rigid Metal Conduit”
 - 8. ANSI/NEMA FB-1 – “Fittings and Supports for Conduit and Cable Assemblies”
 - 9. NEMA 250 – “Enclosures for Electrical Equipment (1000V Maximum)”
 - 10. NEMA OS 1 – “Sheet Steel Outlet Boxes, Device Boxes, Covers and Box Supports”
 - 11. NEMA TC2 – “Electrical Plastic Tubing and Conduit “
 - 12. NEMA TC3 – “PVC Fittings for Use with Rigid PVC Conduit and Tubing”
 - 13. NEMA TC 14 – “Reinforced Thermosetting Resin Conduit (RTRC) and Fittings”
 - 14. NFPA 70 – “National Electrical Code”
 - 15. TIA-569-E – “Telecommunications Pathways and Spaces”
 - 16. UL, Building Materials Directory
 - 17. UL 5 – “Surface Metal Raceways and Fittings”
 - 18. UL 467 – “Grounding and Bonding Equipment”
 - 19. UL 651 – “Schedule 40 and 80 Rigid PVC Conduit”
 - 20. UL 1773 – “Standard for Termination Boxes”
 - 21. UL 2024 – “Standard for Cable Routing Assemblies and Communications Raceways”
- D. Equipment. Communication system pathways and accessories shall be “Listed” or “Labeled” as defined in NFPA 70, Article 100, by a National Recognized Testing Laboratory acceptable to authorities having jurisdiction, and marked for the intended location and use.

PART 2 - PRODUCTS

2.01 GENERAL INFORMATION

- A. All raceway, fittings, boxes, accessories, and material shall be new unless otherwise required or specified in the plan set and associated notes. The type of equipment and/or material shall be approved for its planned use and environment and is so defined by NEMA/NFPA 70 standards and NRTL certifications.

2.02 ACCEPTABLE MANUFACTURERS

- A. See individual paragraphs for specific manufacturers.

2.03 OPTIC FIBER CABLE PATHWAYS AND FITTINGS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. MaxCell 3-3 innerduct used inside PVC conduit
 - 2. Alpha Wire Company.

3. Carlon Electrical Products.
 4. Dura-Line
 5. Endot Industries Inc.
 6. IPEX.
- B. Description: Comply with UL 2024; flexible-type pathway, approved for plenum installation unless otherwise indicated.
1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 2. Comply with TIA-569-E.

2.04 BOXES, ENCLOSURES, AND CABINETS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following unless noted otherwise:
1. Chatsworth
 2. Carlon
 3. Cooper Technology
 4. Leviton
 5. Ericson Electrical Equipment
 6. Optical Cable Corporation (OCC)
 7. Hoffman
 8. O-Z Gedney
 9. Hubbell
- B. General Requirements for Boxes, Enclosures, and Cabinets:
1. Comply with TIA-569-E.
 2. Boxes, enclosures and cabinets installed in wet locations shall be listed for use in wet locations.
- C. Sheet-Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A. Boxes shall be minimum 4 inches square by 2-1/8 inches deep.
- D. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.
- E. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- G. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, cast aluminum with gasketed cover.
- H. Gangable boxes are prohibited.
- I. Nonmetallic Outlet and Device Boxes prohibited.
- J. Metal Floor Boxes:
1. Material: sheet metal.
 2. Type: Semi-adjustable with vertically-angled device faceplates inside box, 180-degree cover hinge and knockouts. Minimum 4-gang with wiring separators between line voltage and low voltage power.

3. Shape: Rectangular.
 4. Metal floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- K. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, type as identified on drawings or Type 1 indoors or Type 4X outdoor with continuous-hinge cover with flush latch unless otherwise indicated. Provide lockable hasp.
1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
 2. Nonmetallic Enclosures: Plastic or fiberglass.
 3. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.
- L. Cabinets:
1. NEMA 250 type as identified on drawings or Type 1 indoors or Type 3R outdoor, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
 2. Hinged door in front cover with flush latch and concealed hinge.
 3. Key latch to match panelboards.
 4. Metal barriers to separate wiring of different systems and voltage.
 5. Accessory feet where required for freestanding equipment.
 6. Nonmetallic cabinets shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

PART 3 - EXECUTION

3.01 GENERAL INFORMATION

- A. Provide all labor and ground rods, conductors, copper, and associated materials required for the installation of a complete and operating ground system in accordance with applicable local, state, national codes, and the manufacturers' recommendations, except where the plan set drawings, associated notes, schedules, and/or specifications are stricter

3.02 PATHWAY APPLICATION

- A. Outdoors: Apply pathway products as specified below unless otherwise indicated:
1. Exposed Conduit: GRC.
 2. Concealed Conduit, Aboveground: EMT.
 3. Underground Conduit: RNC direct buried.
 4. Boxes and Enclosures, Aboveground: NEMA 250, Type 4.
- B. Indoors: Apply pathway products as specified below unless otherwise indicated:
1. Exposed, Not Subject to Severe Physical Damage: EMT.
 2. Exposed and Subject to Severe Physical Damage: GRC.
 3. Damp or Wet Locations: GRC.
 4. Pathways for Communications Cable in Spaces Used for Environmental Air: Plenum-type, optical-fiber-cable pathway, Plenum-type, communications-cable pathway - EMT.
 5. Pathways for Communications-Cable Risers in Vertical Shafts: Riser-type, optical-fiber-cable pathway.
 6. Boxes and Enclosures: NEMA 250 Type 1, except use NEMA 250 Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.

- C. Pathway Fittings: Compatible with pathways and suitable for use and location.
 - 1. Rigid Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
 - 2. EMT: Use compression, steel fittings. Comply with NEMA FB 2.10.
- D. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
- E. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F.

3.03 INSTALLATION

- A. Comply with NECA 1, NECA 101, BICSI 568, and TIA-569-E for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum pathways. Comply with NFPA 70 limitations for types of pathways allowed in specific occupancies and number of floors.
- B. Keep pathways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal pathway runs above water and steam piping.
- C. Arrange stub-ups so curved portions of bends are not visible above finished slab.
- D. Install no more than the equivalent of two 90-degree bends in any pathway run. Support within 12 inches of changes in direction. Utilize long radius ells for all optical-fiber cables.
- E. Coat field-cut threads on PVC-coated pathway with a corrosion-preventing conductive compound prior to assembly.
- F. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install insulated bushings on conduits terminated with locknuts.
- G. Install pathways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.
- H. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.
- I. Install pull string in empty pathways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Cap underground pathways designated as spare above grade alongside pathways in use.
- J. Pathways for Optical-Fiber and Communications Cable: Install pathways as follows:
 - 1. Install with a maximum of two 90-degree bends or equivalent for each length of pathway unless Drawings show stricter requirements.
- K. Install devices to seal pathway interiors at accessible locations. Install pathway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound.
- L. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all pathways at the following points:
 - 1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 - 2. Where an underground service pathway enters a building or structure.
 - 3. Where otherwise required by NFPA 70.

M. Expansion-Joint Fittings:

1. Install in each run of aboveground RNC that is located where environmental temperature change may exceed 30 deg F, and that has straight-run length that exceeds 25 feet. Install in each run of aboveground RMC and EMT conduit that is located where environmental temperature change may exceed 100 deg F and that has straight-run length that exceeds 100 feet.
2. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change for PVC conduits. Install fitting(s) that provide expansion and contraction for at least 0.000078 inch per foot of length of straight run per deg F of temperature change for metal conduits.
3. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
4. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.

N. Mount boxes at heights indicated on Drawings in accordance with ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.

O. Proposed installation procedures shall be submitted to Engineer for approval.

3.04 PROTECTION/CLEANING

- A. Upon completion of installation of raceways, inspect interiors of raceways; clear all blockages and remove burrs, dirt, and construction debris.
- B. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion. Remove all construction debris.
 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

3.05 GUARANTEE (WARRANTY).

- A. No additional material and/or labor warranty beyond that specified in Section 26 05 00 "Common Work Results for Electrical."

END OF SECTION

SECTION 27 13 00

COMMUNICATIONS BACKBONE CABLING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions, and the General Requirements apply to the Work of this Section.
- B. The following sections have been specifically referenced in this specification:
 - 1. Section 26 05 00 "Common Work Results for Electrical"
 - 2. Section 26 05 26 "Grounding and Bonding for Electrical Systems"
 - 3. Section 26 05 53 "Identification for Electrical Systems"
 - 4. Section 27 05 28 "Pathways for Communications Systems"

1.02 SCOPE

- A. This Section covers basic requirements for providing labor, materials, equipment and services necessary for the selection and installation of an inside plan communications backbone cabling system as shown on the drawings and specified herein. In general, this consists of:
 - 1. Optical Fiber Backbone Cabling.
 - 2. Innerduct.
 - 3. Optical fiber cable connecting hardware.
 - 4. Grounding.
 - 5. Cabling identification products.

1.03 DEFINITIONS/ABBREVIATIONS

- A. No additional definitions/abbreviations provided.

1.04 SUBMITTALS

- A. Bid: Provide the following with the bid documents.
 - 1. No additional submittals required; see Specification Section 26 05 00.
- B. Manufacture: Provide the following prior to release for manufacture and/or purchase.
 - 1. Data sheets for each type of product to be used.
 - 2. Shop Drawings: Reviewed and stamped by RCDD.
 - a. System Labeling Schedules: Electronic copy of labeling schedules, in software and format selected by Owner.
 - b. Cabling administration Drawings and printouts.
 - 3. Source quality-control reports.
 - 4. Cable testing plan.
 - 5. No samples requested.
 - 6. See also Specification Section 26 05 00.

C. Construction: Provide the following during construction.

1. Test reports.
2. See also Specification Section 26 05 00.

D. Closeout: Provide the following to complete the project.

1. No additional submittals required; see Specification Section 26 05 00.

1.05 QUALITY ASSURANCE

A. Manufacturer. The equipment manufacturer shall be regularly engaged in the manufacture of copper structured cabling, fiber optic cabling, and accessories of the types, capabilities, and capacities required, and whose products have been in satisfactory use in similar service for not less than ten years.

B. Installer Qualifications. Cabling Installer must have personnel certified by BICSI on staff.

1. Layout Responsibility: Preparation of Shop Drawings, and field testing program development by an RCDD.
2. Installation Supervision: Installation shall be under the direction supervision of a Level 2 Installer, who shall be present at all times when Work of this Section is performed at Project site.

C. Codes/Standards. The products provided by this section shall comply with the following applicable references (latest edition):

1. ASTM E84 – “Standard Test Method for Surface Burning Characteristics of Building Materials”
2. ICEA S-103-701 – “Riser Cables Technical Requirements”
3. ICEA S-83-596 – “Indoor Optical Fiber Cable”
4. ICEA S-104-696 – Indoor-Outdoor Optical Fiber Cable”
5. NECA 1 – “Standard for Good Workmanship in Electrical Construction”
6. NECA -301 – “Fiber Optic Installation Standard”
7. NECA/BICSI 568 – “Standard for Installing Commercial Building Telecommunications Cabling”
8. NECA/BICSI 607 – “Telecommunications Bonding and Grounding Planning and Installation Methods for Commercial Buildings”
9. NFPA 70 – “National Electrical Code”
10. NFPA 262 – “Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces”
11. TIA-455-78 – “Measurement Methods and Test Procedures – Attenuation”
12. TIA-492AAAB – “Detail Specification for 50-µm Core Diameter/125-µm Cladding Diameter Class Ia Graded-Index Multimode Optical Fibers”
13. TIA-492AAAC – “Detail Specification for 850-nm Laser-Optimized, 50-µm Core Diameter/125-µm Cladding Diameter Class Ia Graded-Index Multimode Optical Fibers”
14. TIA-492AAAD – “Detail Specification for 850-nm Laser-Optimized, 50-µm Core Diameter/125-µm Cladding Diameter Class Ia Graded-Index Multimode Optical Fibers Suitable for Manufacturing OM4 Cabled Optical Fiber”
15. TIA-492CAAA – “Detail Specification for Class Iva Dispersion-Unshifted Single-Mode Optical Fibers”
16. TIA-492CAAB – “Detail Specification for Class Iva Dispersion-Unshifted Single-Mode Optical Fibers with Low Water Peak”
17. TIA-526-14-B – “Optical Power Loss Measurement of Installed Multimode Fiber Cable Plant”
18. TIA-568.0-D – “Generic Telecommunications Cabling for Customer Premises”
19. TIA-568.1-D – “Commercial Building Telecommunications Cabling”

20. TIA-568-C.2 – “Balanced Twisted-Pair Telecommunications Cabling and Components”
 21. TIA-568.D-3 – “Optical Fiber Cabling Components”
 22. TIA-569-E – “Telecommunications Pathways and Spaces”
 23. TIA-598-D – “Optical Fiber Cable Color Coding”
 24. TIA-604 – “Fiber Optic Connector Intermateability Standard”
 25. TIA-606-C – “Administration Standard for Telecommunications Infrastructure”
 26. TIA-607-D – “Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises”
 27. UL 969 – “Standard for Marking and Labeling Systems”
 28. UL 1666 – “Standard for Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts”
 29. UL 1685 – “Standard for Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables”
- D. Equipment. Telecommunications backbone cabling and accessories shall be “Listed” or “Labeled” as defined in NFPA 70, Article 100, by a National Recognized Testing Laboratory acceptable to authorities having jurisdiction, and marked for the intended location and use.

PART 2 - PRODUCTS

2.01 GENERAL INFORMATION

- A. All communications equipment and material shall be new unless otherwise required or specified in the plan set and associated notes. The type of equipment and/or material shall be approved for its planned use and environment and is so defined by NEMA/NFPA 70 standards and NRTL certifications.
- B. Backbone cabling system shall provide interconnections between communications equipment rooms, main terminal space, and entrance facilities in the telecommunications cabling system structure. Cabling system consists of backbone cables, patch panels, mechanical terminations, and patch cords or jumpers used for backbone-to-backbone cross-connections.
- C. Backbone cabling cross-connections may be located in communications equipment rooms or at entrance facilities. Bridged taps and splitters shall not be used as part of backbone cabling.
- D. Backbone cabling system shall comply with the transmission standards in TIA-568.1-D, when tested according to test procedures of this standard.
- E. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 1. Flame-Spread Index: 25 or less.
 2. Smoke-Developed Index: 50 or less.
- F. Telecommunications Pathways and Spaces: Comply with TIA-569-E.
- G. Grounding: Comply with TIA-607-D.

2.02 ACCEPTABLE MANUFACTURERS

- A. Belden.
- B. Berk-Tek.
- C. Corning.

- D. Draka.
- E. Essex.
- F. General Cable.
- G. OCC (Optical Cable Corporation).
- H. TE.
- I. Or approved equal.

2.03 OPTICAL FIBER BACKBONE CABLING

A. General requirements for Optical Fiber cable:

1. Fiber optic cable shall be manufactured with Corning Glass.
2. Cables shall be listed OFNP, complying with NFPA 262 for plenum applications. Cables shall be listed OFNR, complying with UL 1666 for riser applications.
3. Individual fibers shall be color-coded for identification. The optical fiber color-coding shall be in accordance with ANSI/TIA/EIA-598-D. The coloring material shall be stable over the temperature range of the cable, shall not be susceptible to migration, and shall not affect the transmission characteristics of the optical fibers. Color-coded buffered fibers shall not adhere to one another.
4. A ripcord shall be applied between the aramid yarns and the outer jacket to facilitate jacket removal.
5. The outer jacket shall be extruded over the aramid yarns for physical and environmental protection. The jacket shall be continuous, free from pinholes, splits, blisters, or other imperfections. The jacket shall have a consistent, uniform thickness. The jacket shall be smooth, as is consistent with the best commercial practice.
6. Cables shall be marked with the manufacturer name, date of manufacture, fiber type, flame rating, listing symbol, and sequential length markings every two feet. The marking shall be in contrasting color to the cable jacket. The cable jacket color shall match the color of the core optical fiber cable.
7. The fiber backbone cable shall be sized as detailed on the Contract Documents. Where not shown, provide strand counts according to the following formula: 1.5 times the strand requirements shown, rounded up to the next commonly manufactured pair count in increments of 12.
8. The fibers shall be stranded around a dielectric central member.
9. For cables containing 12-24 fibers, the fibers shall be arranged in two layers.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Belden.
2. Corning.
3. Draka
4. General Cable
5. OCC (Optical Cable Corporation).

C. 9/125 Micrometer Single-Mode, Indoor-Outdoor Optical Fiber Cable (OS1)

1. Description: Single mode, 9/125-micrometer, 48 fibers, stranded loose tube optical fiber cable.
2. Comply with TIA-492CAA for detailed specifications.
3. Comply with TIA-568.3-D for performance specifications.

4. Comply with ICEA S-104-696 for mechanical properties.
5. Maximum Attenuation: 0.5 dB/km at 1310 nm; 0.5 dB/km at 1550 nm.
6. Jacket color shall be yellow.

D. 9/125 Micrometer, Single-Mode, Indoor-Outdoor Optical Fiber Cable (OS2)

1. Description: Single mode, 9/125-micrometer, 48 fibers, stranded loose tube optical fiber cable.
2. Comply with TIA-492CAAB for detailed specifications.
3. Comply with TIA-568.3-D for performance specifications.
4. Comply with ICEA S-104-696 for mechanical properties.
5. Maximum Attenuation: 0.5 dB/km at 1310 nm; 0.5 dB/km at 1550 nm.
6. Jacket color shall be yellow.

2.04 INNERDUCT

A. Intra-building innerduct shall be 1 inch size, orange, unsplit, corrugated, with pull tape.

1. Plenum-rated: Carlon Plenum-Gard CF4x1C-nnnn.
2. Riser-rated: Carlon Riser-Gard DF4x1C-nnnn.

2.05 OPTICAL FIBER CABLE HARDWARE

A. Comply with Optical Fiber Connector Intermateability Standard specifications of the TIA-604 series.

B. Comply with TIA-568.3-D.

C. Cross-Connects and Patch Panels:

1. Modular panels housing multiple-numbered, duplex cable connectors.
2. Number of Connectors per Field: One for each fiber of cable or cables assigned to field, plus spares and blank positions adequate to suit specified expansion criteria.
3. Provide complete patch panel with blank connector panels for unused connector panel slots, strain relief, fiber connectors and fiber optic receptacle adapters.

D. Patch Cords: Factory-made, dual-fiber cables in 36-inch lengths.

E. Connector Type: Complete with fiber optic receptacle adapters where required for mounting.

1. Multimode Fiber: Type LC/APC complying with TIA-604-10-B connectors.
2. Single mode Fiber: Type SC/APC complying with TIA-604-3-B connectors.

F. Plugs and Plug Assemblies:

1. Male; color-coded modular telecommunications connector designed for termination of a single optical fiber cable.
2. Insertion loss of not more than 0.25 dB.

G. Jacks and Jack Assemblies:

1. Female; quick-connect, simplex and duplex; fixed telecommunications connector designed for termination of a single optical fiber cable.
2. Insertion loss of not more than 0.25 dB.
3. Designed to snap-in to a patch panel or faceplate.

2.06 GROUNDING

- A. Comply with requirements in Section 26 05 26 "Grounding and Bonding for Electrical Systems" for grounding conductors and connectors.
- B. Comply with TIA-607-D.

2.07 IDENTIFICATION PRODUCTS

- A. Comply with TIA-606-C and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.
- B. Comply with requirements in Section 26 05 53 "Identification for Electrical Systems" for identification products.

PART 3 - EXECUTION

3.01 GENERAL INFORMATION

- A. Provide all labor and conductors, connectors, and associated materials required for the installation of a complete and operating communications backbone system in accordance with applicable local, state, national codes, and the manufacturers' recommendations, except where the plan set drawings, associated notes, schedules, and/or specifications are stricter.

3.02 ENTRANCE FACILITIES

- A. Coordinate backbone cabling with the protectors and demarcation point provided by communications service provider.

3.03 WIRING METHODS

- A. Provide riser rated cable (CMR, OFNR) for riser locations, and locations where cable is to be installed in conduit. For cable not installed in conduit, provide plenum rated cable (CMP, OFNP).
- B. Provide cables of the same type in the same color. Multiple colors of the same cable type are not acceptable.
- C. Comply with NECA 1, NECA 301, and NECA/BICSI 568.
- D. Install cables in raceways and cable trays, except within consoles, cabinets, and except in accessible ceiling spaces, in attics, and in gypsum board partitions where unenclosed wiring method may be used. Conceal conductors and cables in accessible ceilings, walls, and floors where possible, except in unfinished spaces.
- E. Comply with requirements for pathways specified in Section 27 05 28 "Pathways for Communications Systems."
- F. Install exposed cables parallel to and perpendicular to surfaces on exposed structural members and follow surface contours where possible.
- G. Secure and support cables at intervals not exceeding 30 inches and not more than 6 inches from cabinets, boxes, fittings, outlets, racks, frames, and terminals. Install tie-wraps (Velcro or similar) in conformance with the cable manufacturer's installation recommendations.
 - 1. Attaching cables to pipes, electrical conduit, mechanical items, existing cables or the ceiling support system is not acceptable. Cables shall not rest upon acoustic ceiling grids or panels.

- H. Install lacing bars to restrain cables, prevent straining connections, and prevent bending cables to smaller radii than minimums recommended by manufacturer.
- I. Bundle, lace and train cables at racks and within enclosures. Connect to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools. Install cables parallel with or at right angles to sides and back of enclosure.
- J. Install cable in a continuous non-spliced manner, unless otherwise indicated.
- K. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation, and replace it with new cable.
- L. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used for heating.
- M. Pulling Cable: Comply with BICSI's "Information Transport Systems Installation Manual," Ch. 4, "Pulling Cable." Monitor cable pull tensions.
 - 1. Pull all cables simultaneously where more than one cable is being installed in the same raceway.
 - 2. Use pulling compound or lubricant where necessary. Use compounds that will not damage conductor or insulation (Polywater, or approved equal).
 - 3. Use pulling means, including fish tape, rope and basket-weave wire/cable grips that will not damage media or raceway. Repair or replace conduit bushings that become damaged during cable installation.
- N. Cabling at backboards: Route cable as close as possible to the ceiling, floor, sides, or corners to insure that adequate wall or backboard space is available for current and future equipment and for cable terminations. Use vertical ladder racking (securing cabling with hook-and-loop straps) and horizontal ladder racking, using the most direct route to the termination point. Route via a path that will minimize obstruction to future installation of equipment, backboards or other cables.
- O. In telecommunication rooms, lay cable neatly in tray in even bundles and loosely secure cabling to the tray at regular intervals with tie-wraps or hook-and-loop straps.
 - 1. Route cables to patch panels on racks by routing across tray above rack, then down vertical rack to patch panel.
 - 2. Wherever possible, terminate cables consecutively according to their far-end termination in intuitively occurring groups (jacks in an outlet, outlets in a room, etc.).
- P. In the communications equipment room, provide a 10-foot- long service loop on each end of cable.
- Q. Terminate all conductors and fiber strands; no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, cross-connects, and patch panels.
- R. Group connecting hardware for cables into separate logical fields.

3.04 INSTALLATION OF COPPER BACKBONE CABLES

- A. Comply with TIA-568.0-D, TIA-568.1-D, and TIA-568-C.2.
- B. Comply with BICSI's "Information Transport Systems Installation Manual," Ch. 6, "Cable Termination Practices."

- C. Install 110-style IDC termination hardware unless otherwise indicated.
- D. Do not untwist twisted pair cables more than 1/2 inch from the point of termination to maintain cable geometry.
- E. Open-Cable Installation:
 - 1. Install cabling with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.
 - 2. Suspend twisted pair cabling, not in a wireway or pathway, a minimum of 8 inches above ceilings by cable supports not more than 60 inches apart.
 - 3. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items.
- F. Installation of Cable Routed Exposed under Raised Floors:
 - 1. Install plenum-rated cable only.
 - 2. Install cabling after the flooring system has been installed in raised floor areas.
 - 3. Coil cable 6 feet long not less than 12 inches in diameter below each feed point.
- G. Separation from EMI Sources:
 - 1. Comply with recommendations from BICSI's "Telecommunications Distribution Methods Manual" and TIA-569-E for separating unshielded copper communication cable from potential EMI sources, including electrical power lines and equipment.
 - 2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches.
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches.
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches.
 - 3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment shall be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches.
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches.
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches.
 - 4. Separation between communications cables in grounded metallic raceways, power lines, and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:
 - a. Electrical Equipment Rating Less Than 2 kVA: No requirement.
 - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches.
 - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches.
 - 5. Separation between Communications Cables and Electrical Motors and Transformers, 5 kVA or HP and Larger: A minimum of 48 inches.
 - 6. Separation between Communications Cables and Fluorescent Fixtures: A minimum of 5 inches.

3.05 INSTALLATION OF OPTICAL FIBER BACKBONE CABLES

- A. Comply with TIA-568.1-D and TIA-568.3-D.
- B. Comply with BICSI ITSIMM, Ch. 6, "Cable Termination Practices."

- C. Cable may be terminated on connecting hardware that is rack or cabinet mounted.
- D. Open-Cable Installation:
 - 1. Install cabling with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.
 - 2. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items.
- E. Installation of Cable Routed Exposed under Raised Floors:
 - 1. Install plenum-rated cable only.
 - 2. Install cabling after the flooring system has been installed in raised floor areas.
 - 3. Coil cable 6 feet long not less than 12 inches in diameter below each feed point.
- F. Secure fiber optic cable with hook-and-loop straps (similar to Velcro).
- G. Innerduct is required for routing inside plant fiber optic backbone cabling through all vertical riser pathways (conduits and sleeves) that exceed 4 feet in length. Innerduct is also required for routing inside plant fiber optic backbone cabling through cable trays where larger outside plant cable shares the cable tray.
 - 1. Install fiber optic cable in innerduct per manufacturer's instructions.
 - 2. Innerduct shall terminate within 6 inches of top of each patch panel where fiber optic cable terminates.
 - 3. Secure innerduct with zip-ties at intervals not exceeding 24 inches. Do not use wire or tape.

3.06 PATCH PANEL INSTALLATION

- A. Provide rack-mount patch panels and horizontal wire management according to locations, elevations and plan views as shown on the Contract Documents.
- B. Copper patch panels: Size and install rack-mountable patch panels as shown on the Contract Documents. Use patch panels to terminate copper backbone cables.
 - 1. Termination:
 - a. Terminate 2 pairs per jack, on pins 4 & 5 and on pins 3 & 6.
 - b. The 25th pair of each binder group shall be preserved at the end of the patch panel for future use (replace damaged pair or support a 2-pair application).
 - c. Maintain pair twist ratio for exposed wires at patch panel termination.
 - 2. Horizontal Wire Management: Provide horizontal wire management as shown on the Contract Documents.
- C. Fiber patch panels: Size and install rack-mountable patch panels as shown on the Contract Documents. Mount intra-building fiber patch panel below outside plant fiber patch panel. Use fiber patch panels to terminate backbone and horizontal fiber optic cables.
 - 1. Terminate all fiber optic cabling using LC/APC or SC/APC-Duplex connectors.
 - 2. Where multiple cables terminate in a patch panel, terminate single mode fiber on the left side of patch panel, and multimode fiber on the right side.

3.07 FIRESTOPPING

- A. Comply with requirements in Section 07 84 13 "Penetration Firestopping."

- B. Comply with TIA-569-E, Annex A, "Firestopping."
- C. Comply with "Firestopping Systems" Article in BICSI's "Telecommunications Distribution Methods Manual."

3.08 GROUNDING

- A. Install grounding according to the "Grounding, Bonding, and Electrical Protection" chapter in BICSI's "Telecommunications Distribution Methods Manual."
- B. Comply with TIA-607-D and NECA/BICSI-607.
- C. Locate grounding bus bar to minimize the length of bonding conductors. Fasten to wall, allowing at least a 2-inch clearance behind the grounding bus bar. Connect grounding bus bar to suitable electrical building ground, using a minimum No. 4 AWG grounding electrode conductor.
- D. Bond metallic equipment to the grounding bus bar, using not smaller than a No. 6 AWG equipment grounding conductor.

3.09 IDENTIFICATION

- A. Identify system components, wiring, and cabling complying with TIA-606-C. Comply with requirements for identification specified in Section 26 05 53 "Identification for Electrical Systems."
 - 1. Administration Class: 2.
 - 2. Color-code cross-connect fields and apply colors to voice and data service backboards, connections, covers, and labels.
- B. Cable Schedule: Install in a prominent location in each equipment room and wiring closet. List incoming and outgoing cables and their designations, origins, and destinations. Protect with rigid frame and clear plastic cover. Furnish an electronic copy of final comprehensive schedules for Project.
- C. Cabling Administration Drawings: Show building floor plans with cabling administration-point labeling. Identify labeling convention and show labels for telecommunications closets, backbone pathways and cables, entrance pathways and cables, terminal hardware and positions, horizontal cables, work areas and workstation terminal positions, grounding buses and pathways, and equipment grounding conductors.
- D. Cable and Wire Identification:
 - 1. Label each cable within 4 inches of each termination and tap, where it is accessible in a cabinet or junction or outlet box, and elsewhere as indicated.
 - 2. Each wire connected to building-mounted devices is not required to be numbered at the device if wire color is consistent with associated wire connected and numbered within panel or cabinet.
 - 3. Exposed Cables and Cables in Cable Trays and Wire Troughs: Label each cable at intervals not exceeding 15 feet.
 - 4. Label each terminal strip, and screw terminal in each cabinet, rack, or panel.
 - a. Individually number wiring conductors connected to terminal strips, and identify each cable or wiring group, extended from a panel or cabinet to a building-mounted device, with the name and number of a particular device.
 - b. Label each unit and field within distribution racks and frames.

5. Identification within Connector Fields in Equipment Rooms and Wiring Closets: Label each connector and each discrete unit of cable-terminating and -connecting hardware. Where similar jacks and plugs are used for both voice and data communication cabling, use a different color for jacks and plugs of each service.
- E. Labels shall be preprinted or computer-printed type, with a printing area and font color that contrast with cable jacket color but still comply with TIA-606-C requirements for the following:
1. Cables use flexible vinyl or polyester that flexes as cables are bent.

3.10 ACCEPTANCE TESTING

A. Perform tests and inspections.

B. Tests and Inspections:

1. Visually inspect jacket materials for NRTL certification markings. Inspect cabling terminations in communications equipment rooms for compliance with color-coding for pin assignments, and inspect cabling connections for compliance with TIA-568.1-D.
2. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
3. Test cables on the reel upon delivery to the job site, again prior to installation, and again after installation.
4. Intrabuilding Backbone Copper Tests:
 - a. Test all cable pairs for length, shorts, opens, grounds, continuity, polarity reversals, termination order, transposition (wire map), attenuation, and the presence of AC voltage. All pairs shall demonstrate compliance to TIA/EIA-568.1-D Category 3 standards.
 - b. Test entire channel, from entrance protection to patch panel.
 - c. Use a TIA/EIA Level III testing instrument, re-calibrated within the manufacturer's recommended calibration period, with the most current software revision based upon the most current TIA/EIA testing guidelines, capable of storing and printing test records for each cable within the system.
5. Optical Fiber Cable Tests:
 - a. Test all strands using a bi-directional end-to-end optical transmission loss test instrument (such as an OTDR) trace performed per ANSI/TIA/EIA 455-78, or a bi-directional end-to-end power meter test performed per and ANSI/TIA/EIA 568-C.2. Test the polarity of each pair of strands. Record length and attenuation.
 - 1) Horizontal and multimode backbone link measurements: Test at 850 or 1300 nm in one direction according to TIA-526-14-B, Method B, One Reference Jumper.
 - 2) Attenuation test results for backbone links shall be less than 2.0 dB. Attenuation test results shall be less than those calculated according to equation in TIA-568.1-D.
6. Test instruments shall meet or exceed applicable requirements in TIA-568-C.2. Perform tests with a tester that complies with performance requirements in "Test Instruments (Normative)" Annex, complying with measurement accuracy specified in "Measurement Accuracy (Informative)" Annex. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.

- C. Data for each measurement shall be documented. Data for submittals shall be printed in a summary report that is formatted similarly to Table 10.1 in BICSI's "Telecommunications Distribution Methods Manual," or shall be transferred from the instrument to the computer, saved as text files, printed, and submitted.
- D. End-to-end cabling will be considered defective if it does not pass tests and inspections.
- E. Remove and replace cabling at no additional cost to the Owner where test results indicate that they do not comply with specified requirements. Cable repairs are not acceptable.
- F. If a cable which occupies the same innerduct or conduit as a damaged cable is damaged by the extraction and installation process, replace the cable at no additional expense to the Owner.
- G. Damaged and defective cables which are replaced shall be subject to the testing procedures of this specification.
- H. Prepare test and inspection reports.

3.11 GUARANTEE (WARRANTY)

- A. No additional material and/or labor warranty beyond that specified in Section 26 05 00 "Common Work Results for Electrical."

END OF SECTION

SECTION 27 15 00

COMMUNICATIONS HOIZONTAL CABLING

PART 1 - GENERAL

1.01 SCOPE

- A. Section describes the products and execution requirements relating to telecommunications voice and data horizontal (station) cabling and termination components.
- B. Horizontal cabling is the cabling between the work area telecommunications outlet and the Telecommunications Room (TR). Horizontal cabling is often referred to as "station cabling".

1.02 RELATED WORK

- A. Procurement and Contracting Requirements, DIVISION 00 and General Requirements, DIVISION 01 govern work under this section.

PART 2 - PRODUCTS

2.01 CATEGORY 6 HORIZONTAL COPPER CABLES

- A. All cables and equipment shall be furnished, tested, installed and wired by the Contractor.
- B. All horizontal data cables shall terminate on modular patch panels in the Telecommunications Room as specified on the Drawings.
- C. This cable shall be suitable for installation free-air, in building risers, in conduit, and/or in cable tray and shall carry CMP rating.
- D. The cable design described herein shall exceed transmission performance of Category 6 cables.
- E. Cables shall be Underwriters Laboratory (UL) listed, comply with Article 800 (Communications Circuits) of the National Electrical Code, and meet the specifications of NEMA (low loss), UL 444, and ICEA. Conductor shall also conform to the requirements for solid annealed copper wire in accordance with ASTM B 3.
- F. All cables, termination components, and support hardware shall be furnished, tested, installed, and wired by the Contractor.
- G. The jacket color shall be:
 - 1. Blue
- H. Manufacturers:
 - 1. Berk-Tek
 - 2. Belden
 - 3. Commscope
 - 4. General
 - 5. Superior Essex
 - 6. Or approved equal that meets minimum 15-year manufacturer warranty requirement

- I. Cable Type:
 - 1. Category 6 Unshielded Twisted Pair (UTP)

PART 3 - EXECUTION

3.01 STATION CABLING

- A. Information outlet cables shall be located as detailed on the Project Drawings.
- B. The Contractor shall utilize these documents in determining materials quantities and routing.
- C. Station cables shall be run to the information outlet from the Server Room serving each area in conduit, free-air above drop ceiling, in cable tray, and/or in modular furniture.
- D. The maximum station cable drop length for UTP cables shall not exceed 295 feet (90 meters) in order to meet data communications performance specifications. This length is measured from the termination panel in the Telecommunications Room to the outlet and shall include any slack required for the installation and termination. The Contractor shall install station cabling in a fashion to avoid unnecessarily long runs.
- E. Contractor shall verify cable lengths comply with published standards; prior to installation of any horizontal cabling, this Contractor shall verify cable paths and confirm no horizontal cable will exceed 295 total feet. If it is determined that the cable will exceed 295', this Contractor shall route the cabling to another Telecommunications Room or determine shorter path so cables are under 295'. If this is not possible, the Contractor shall notify the Owner prior to installation. Failure to do this step will not result in a change order from the Contractor.
- F. All cables shall be installed splice-free unless otherwise specified.
- G. During pulling operation, an adequate number of workers shall be present to allow cable observation at all points of duct entry and exit as well as the feed cable and operate pulling machinery.
- H. Avoid abrasion and other damage to cables during installation.
- I. All cable shall be free of tension at both ends. In cases where the cable shall bear some stress, Kellums grips may be used to spread the strain over a longer length of cable.
- J. All data cables shall be installed in conduit.
- K. Cable shall never be laid directly on the ceiling grid.
- L. Cables shall not be attached to existing cabling, plumbing, or steam piping, ductwork, ceiling supports, or electrical or communications conduit.
- M. Manufacturers' minimum bend radius specifications shall be observed in all instances. Use of plastic cable ties is not acceptable. Cable bundles shall be neatly dressed with use of Velcro type straps.
- N. Cable sheaths shall be protected from damage from sharp edges. Where a cable passes over a sharp edge, a bushing or grommet shall be used to protect the cable.

- O. A coil of one foot in each cable shall be placed in the ceiling at the last support (e.g., J-hook) before the cables enter a fishable wall, conduit, surface raceway, or box. At any location where cables are installed into movable partition walls or modular furniture via a service pole, approximately 15 feet of slack shall be left in each station cable under 250 feet in length to allow for change in the office layout without re-cabling. These "service loops" shall be secured at the last cable support before the cable leaves the ceiling and shall be coiled from 100% to 200% of the cable recommended minimum bend radius.
- P. To reduce or eliminate EMI, the following minimum separation distances from 480V power lines shall be adhered to:
 - 1. Twelve (12) inches from power lines of <5-kV
 - 2. Eighteen (18) inches from high voltage lighting (including fluorescent)
 - 3. Thirty-nine (39) inches from power lines of 5-kV or greater
 - 4. Thirty-nine (39) inches from transformers and motors

3.02 CABLE TERMINATION

- A. At the Telecommunication Room, all data and voice cables shall be positioned on termination hardware in sequence of the outlet ID, starting with the lowest number.
- B. Termination hardware (blocks and patch panels) positioning and layout will be reviewed and approved by the Owner prior to construction. The review does not exempt the Contractor from meeting any of the requirements stated in this document.
- C. Cable Termination – Data/Voice UTP
 - 1. Data/voice patch panels shall be designed and installed in a fashion as to allow future station cabling to be terminated on the panel without disruption to existing connections.
 - 2. Data patch panels shall be sized to accommodate a minimum of 20% growth in the quantity of stations relative to the initial installation.
 - 3. At information outlets and data/voice patch panels, the installer shall ensure that the twists in each cable pair are preserved to within 0.5 inch of the termination for data/voice cables. The cable jacket shall be removed only to the extent required to make the termination.
 - 4. Horizontal Category 6 cables shall be terminated for the T568B wiring scheme.
 - 5. Terminations of cables at the Fire Alarm Control Panel shall be on RJ31X Jacks.

3.03 TESTING AND ACCEPTANCE

- A. General
 - 1. All cables and termination hardware shall be 100% tested for defects in installation and to verify cabling system performance under installed conditions according to the requirements of ANSI/TIA/EIA-568-B.
 - 2. All pairs of each installed cable shall be verified prior to system acceptance. Any defect in the cabling system installation including but not limited to cable, connectors, feed through couplers, patch panels, and connector blocks shall be repaired or replaced in order to ensure 100% useable conductors in all cables installed.
 - 3. All cables shall be tested in accordance with this document, the ANSI/TIA/EIA standards and best industry practice. If any of these are in conflict, the Contractor shall bring any discrepancies to the attention of the Owner for clarification and resolution.

3.04 TEST RESULTS

- A. The results shall include a record of test frequencies, cable type, conductor pair and cable (or outlet), measurement direction, reference setup, and crew member name(s). The test equipment name, manufacturer, model number, serial number, software version and last calibration date shall also be provided at the end of the document. Unless the manufacturer specifies a more frequent calibration cycle, an annual calibration cycle is anticipated on all test equipment used for this installation. The test document shall detail the test method used and the specific settings of the equipment during the test as well as the software version being used in the field test equipment.
- B. The field test equipment shall meet the requirements of ANSI/TIA/EIA-568-B including applicable TSB's and amendments. The appropriate level III tester shall be used to verify Category 6 cabling systems.
- C. Printouts generated for each cable by the wire test instrument shall be submitted as part of the documentation package. Alternately, the Telecommunications Contractor may furnish this information in electronic format. File shall be of a format readable from Microsoft Office.
- D. When repairs and re-tests are performed, the problem found and corrective action taken shall be noted, and both the failed and passed test data shall be documented.
- E. UTP Cable Acceptance Tests:
 - 1. The installer shall test the UTP cabling system in accordance with TIA/EIA TSB67, TIA/EIA TSB95, and ANSI/TIA/EIA-568-B. Acceptance tests of the following will be accomplished, Wire map, Length, Attenuation, Near End Cross Talk (NEXT), Power Level Equal Level Far-End Cross Talk (ELFEXT), Delay and delay skew, Return loss Power sum crosstalk (PSNEXT and PSELFEXT).

END OF SECTION

SECTION 28 10 00

ACCESS CONTROL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The Drawings, the provisions of the Contract including the General and Supplementary Conditions, and the General Requirements apply to the Work of this Section.

1.02 SCOPE

- A. This section covers the requirements for providing labor, materials, equipment and services necessary for the installation of a fully functional card reader access control system. The basic system includes a single security system head end control panel and two (2) card readers located at vehicle gates. The card access system will be connected to each vehicle gate to open the gate. The gates will close automatically based on a timer. This includes:
 - 1. Access control control panel.
 - 2. Network communications connection for access control panel
 - 3. Access control point peripherals, including proximity card readers.
 - 4. Accessories and composite cables.
 - 5. Software and licensing.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. UL 294 - Access Control System Units; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other motorized gate installers to provide as required for a complete workable access control system.
- B. Pre-installation Meetings:
 - 1. Conduct meeting with facility representative to review reader and equipment locations.
 - 2. Conduct meeting with owners IT and computer network engineers to discuss network connectivity to the existing Ethernet based network.

1.05 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for each system component. Include ratings, configurations, standard wiring diagrams, dimensions, finishes, service condition requirements, and installed features.
- B. Design Data: Standby battery/UPS calculations.
- C. Certify that proposed system design and components meet or exceed specified requirements.

- D. Evidence of qualifications for installer.
- E. Manufacturer's detailed field testing procedures.
- F. Project Record Documents: Record actual locations of system components and installed wiring arrangements and routing, as well as door and cabling label/identifiers.
- G. Operation and Maintenance Data: Include detailed information on system operation, equipment programming and setup, replacement parts, and recommended maintenance procedures and intervals.
- H. Warranty: Submit sample of manufacturer's warranty and documentation of final executed warranty completed in Owner's name and registered with manufacturer.
- I. Software: One copy of software not resident in read-only memory.

1.06 QUALITY ASSURANCE

- A. Comply with the following:
 - 1. NFPA 70.
 - 2. The requirements of the local authorities having jurisdiction.
 - 3. Applicable TIA/EIA standards.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience with access control systems of similar size, type, and complexity and providing contract maintenance service as a regular part of their business; authorized manufacturer's representative.
 - 1. Installation Contractor shall be Genetec Unified Elite certified.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.
- B. Store products in manufacturer's unopened packaging, keep dry and protect from damage until ready for installation.

1.08 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

- A. Provide manufacturers standard one year warranty covering repair or replacement due to defective materials or workmanship.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Access Control System:
 - 1. Genetec
- B. Products other than basis of design are subject to compliance with specified requirements and prior approval of Engineer. By using products other than basis of design, Contractor accepts responsibility for costs associated with any necessary modifications to related work, including any design fees.
- C. The system must communicate with the owners existing Genetec system via network connection.

2.02 ACCESS CONTROL SYSTEM REQUIREMENTS

- A. The access control system shall be an enterprise class IP access control software solution. It shall be fully embedded within a Unified Security Platform (USP). The USP shall allow the seamless unification of the access control system with an IP video management system.
- B. Provide new access control system consisting of all required equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, software, system programming, etc. as necessary for a complete operating system that provides the functional intent indicated.
- C. The access control system shall be an IP enabled solution. All communication between the access control system and hardware controllers shall be based on standard TCP/IP protocol.
- D. System Battery Backup: Provide batteries/uninterruptible power supplies (UPS) as required for 8 hours full operation.
- E. Surge Protection:
 - 1. Provide surge protection for the card access control panel.
 - 2. Provide equipment power surge protection where electrical distribution system surge protection is not provided.
- F. Network Equipment Required:
 - 1. Server(s):
 - a. Communications hardware and software shall be included in this control panel to communicate with the owners existing security and card access head end remote systems.
- G. Provide products listed, classified, and labeled as suitable for the purpose intended.
 - 1. Access Control Units and Readers: Listed and labeled as complying with UL 294.

2.03 ACCESS CONTROLLER

- A. The access control system shall have an open architecture that supports the integration of third party IP-based door controllers and I/O modules. The access control system shall simultaneously support mixed configurations of access control hardware from multiple vendors.

- B. The access control system shall support OSDP transparent reader mode to read Desfire credentials.
- C. The access control system shall support multiple types of hardware devices: single-reader controllers, 2-reader controllers, 1- to 64-reader controllers, integrated readers and door controllers, and Power-over-Ethernet (PoE) enabled door controllers.
- D. The access control system shall support most industry standard card readers that output card data using the Wiegand protocol and Clock-and-Data.
- E. The access control system shall support the following IP-enabled controller:
 - 1. Synergis Cloud Link.
- F. The access control system shall support the discovery, configuration and management of IP enabled controllers and I/O modules (hardware units). A user shall be permitted to add, delete or modify a controller if they have the appropriate privileges.

2.04 ACCESS CONTROL UNITS AND SOFTWARE

- A. Provide access control units and associated software compatible with readers to be connected.
- B. Access Control Unit:
 - 1. Basis of Design: Mercury Series 3.
 - a. LP1502
 - b. MR Series 3
- C. Software:
 - 1. Unless otherwise indicated, provide all software and licenses required for fully operational system.
 - 2. Software shall provide the user interface for unified security platform configuration and monitoring over any network and be accessible locally or from a remote connection. The software shall be Windows-based and provide an easy-to-use graphical user interface.
 - 3. All applications shall provide an authentication mechanism, which verifies the validity of the user. As such, the administrator (who has all rights and privileges) can define specific access rights and privileges for each user in the system.
 - 4. Access Control System:
 - a. Basis of Design: Genetec Synergis Standard Package.
- D. Programming
 - 1. Contractor shall provide up to 16 hours (up to eight, 2-hour sessions) of scheduled and dedicated coordination time to assist Owner with sequence of operation, rule creation, action creation

2.05 CARD READERS

- A. Provide devices compatible with control units.
- B. Provide devices suitable for operation under the service conditions at the installed location.
- C. Provide readers compatible with credentials to be used.

D. Contactless Smart Card Readers:

1. Utilizes 13.56 Mhz RF communication with compatible credentials.
2. Utilizes OSDP with SCP and Bluetooth to support mobile access.
3. Utilizes 64 bit authentication keys.
4. Supports ISO compliant credentials.
5. Supports data encryption.
6. Contactless Smart Card Reader:
 - a. Basis of Design: HID Signo Reader.
 - b. Provide form factor appropriate for conditions.

2.06 ACCESSORIES

- A. Nema 3R Enclosure, Life Safety Power panel suitable for connections to 4 card readers. Approximate size 24" x 24" x 8".
- B. Dual voltage power supplies: 12VDC and 24VDC power supplies for card readers and potential future cameras.
- C. 24VDC Back Up batteries.
- D. Provide components as required for connection of access control system.
- E. Provide cables required for connections between system components.
 1. Data Cables for IP Network Connections: Unshielded twisted pair CAT 6 (UTP) required inside the control panel.
 2. Provide cabling per manufacturer's recommendations and code requirements for conductor sizing and environmental rating.
- F. Composite Cables for card readers shall be bundled under a single jacket where possible and include the following conductor counts:
 1. Card reader - 6 conductor, 22 awg shielded minimum.
 2. Gate Operator - 4 conductor, 16 awg minimum.
 3. Overall outer jacket
 4. Manufacturers:
 - a. Belden #638AMJ
 - b. General Cable #4IPL1S
 - c. West Penn
 - d. Or approved equal
- G. Provide end-of-line resistors (EOLR) as required for supervision of hardwired connections.
- H. Provide all necessary power supplies, backup batteries, cabling, connection, and enclosures.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that ratings and configurations of system components are consistent with the indicated requirements.

- C. Verify that mounting surfaces are ready to receive system components.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to system.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install access control system in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Wiring Method:
 - 1. Use suitable listed cables in wet locations, including underground raceways.
 - 2. Use suitable listed cables for vertical riser applications.
 - 3. Use listed plenum rated cables in spaces used for environmental air.
 - 4. Install wiring in conduit for the following:
 - a. Where required for rough-in.
 - b. Where required by authorities having jurisdiction.
 - c. Where exposed to damage.
 - d. Where installed outside a building.
 - e. For exposed connections from outlet boxes to devices.
 - 5. Conceal all cables unless specifically indicated to be exposed.
 - 6. All system cables must be installed in conduit.
 - 7. Do not exceed manufacturer's recommended maximum cable length between components.
- D. Ground cable shields, drain conductors and equipment. Bond shields and drain conductors to ground at only one point in each circuit.
- E. Labeling:
 - 1. Contractor shall neatly label all security devices and cabling at both ends. All labels shall be recorded on the project as-built drawings.
- F. Firestopping of openings between floors, fire-rated walls, and smoke-rated walls, created by others for This Contractor to pass cable through, shall be the responsibility of This Contractor. Sealing material and application of this material shall be accomplished in such a manner that is acceptable to the local fire and building authorities having jurisdiction over this work
- G. Any openings created by This Contractor and left unused shall be sealed up by This Contractor.
- H. This Contractor shall be responsible for creating a waterproof seal in and around any openings that This Contractor creates from the structure to the outside environment.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4500 - Quality Control, for additional requirements.
- B. Prepare and start system in accordance with manufacturer's instructions.
- C. Program system parameters according to requirements of Owner.

- D. Test for proper interface with other systems.
- E. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.
- F. Submit detailed reports indicating inspection and testing results and corrective actions taken.

3.04 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.05 SPARE PARTS

- A. None Specified for this project.

3.06 CLOSEOUT ACTIVITIES

- A. Demonstration: Demonstrate proper operation of system to Owner, and correct deficiencies or make adjustments as directed.
- B. Contractor shall complete the following tasks before final approval:
 - 1. Punch list items are complete.
 - 2. As-build documentation is complete and submitted to Owner/Architect.

3.07 PROTECTION

- A. Protect installed system components from subsequent construction operations.

END OF SECTION

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PHASE II ENVIRONMENTAL SITE ASSESSMENT

**40th Avenue West
Parcels 010-2120-01846 and 010-3610-08340
Duluth, Minnesota 55807**

BAY WEST PROJECT NO. J210479

June 17, 2021

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1.0 INTRODUCTION

1.1 Purpose

Bay West LLC (Bay West) performed a Phase II Environmental Site Assessment (ESA) at the property located at 40th Avenue West in Duluth, Minnesota, Saint Louis County Parcel IDs 010-2120 and 010-3610-08340 (the Site). This Phase II ESA was performed in accordance with Bay West Proposal No. P210479 dated May 7, 2021. The parcels comprising the Site are owned by Joe Kleiman; the City of Duluth is considering acquiring the parcels for construction of a parking lot to store impounded vehicles by the City Police Department. The City may also construct a 6-stall garage, and it is likely that it will be used for storage of equipment and materials for Parks Maintenance (currently located on the adjacent property to the south).

This report documents the findings, opinions, and conclusions of the Phase II ESA. The primary objective of this Phase II ESA was to assess for the presence of contaminants, the results of which may be used to support the preparation of a soil management plan to manage potential contamination at the Site encountered during future Site redevelopment activities. The Site location and parcels are shown on **Figure 1** and the Phase II ESA sampling locations are shown on **Figure 2**.

1.2 Background

The Property is located near industrial, commercial, and residential properties and appears, based on recent aerial photography, to be primarily undeveloped and wooded except for the eastern one-half of parcel 010-2120-01846 which has a paved parking lot and equipment storage area.

Bay West completed a Phase I ESA for the property dated June 2021. Based on a review of historical maps and photographs, it appears that the Property has been improved with railroad track since at least the 1890s, with a bridge overpass apparent in historical aerial photographs by the late 1930s. The Property's eastern side has been used for parking vehicles since the 1970s. By the 2000s, the railroad tracks appeared to be abandoned, and the Property continued operation as a tenant parking space for both the City of Duluth and Hunt Electric Corporation through the present day. The surrounding area was historically a mix of residences and storefront businesses along Grand Ave, with industrial activity along N 40th Ave W and N 42nd Ave W. At present, the City of Duluth operates maintenance facilities south of the Property, and to the north, east, and west are a mixture of commercial retail and light industrial properties along Grand Avenue.

Bay West's Phase I ESA revealed the following Recognized Environmental Conditions (RECs), Historical RECs (HRECs), Controlled RECs (CRECs), and/or Vapor Encroachment Concern (VECs) in connection with the Property:

- REC – Railroad Activity: Railroad tracks have been present on the Property since at least the 1890s; while no longer operational, sections of intact track as well as wooden ties and track bed remain. The historical railroad operations and potential for legacy contamination on the northern and western portions of the Property represents a REC for the Property.
- HREC – Closed Leak Site #8769: Landry's Transport Refinishing, formerly located northwest-adjointing the Property along N 40th Ave W, was listed in the regulatory databases as a closed leak site (MPCA ID# LS0008769). A release of diesel-fuel was reported at the leak site in 1995 and closed in 1997. Further site investigation in 2003 found extensive soil contamination extending from this facility onto the northernmost

portions of the Site. Based on soil screening and excavation records, it appears that the grossly contaminated soil had been removed from the Site, with the MPCA reaffirming the site's closed leak status. The historical presence of diesel-fuel impacted soil at the Site is considered an HREC for the Site.

- VEC – Minnesota Dry Cleaners located approximately 275 feet upgradient from the Site represents a VEC for the Site due to its historical use as a dry cleaner, upgradient location, and proximity to the Site.
- VEC – Denfield Dry Cleaners located approximately 200 feet upgradient from the Site represents a VEC for the Site due to its historical use as a dry cleaner, upgradient location, and proximity to the Site.

Bay West prepared a proposal to conduct the Phase II ESA on May 7, 2021. On May 19, 2021, the City of Duluth authorized Bay West to proceed with the Phase II ESA.

1.3 Scope of Work

Bay West conducted the following activities as part of this Phase II ESA:

- Prior to field mobilization, Bay West prepared a site-specific Site Safety and Health Plan (SSHP). All field staff maintain health and safety training to ensure compliance with Occupational Safety and Health Administration (OSHA) as established in 29 Code of Federal Regulations (CFR) 1910.120 and 29 CFR 1910.126 (as applicable).
- Coordinated a public and private utility locate on the Site.
- Advanced 11 test pit excavations (TP-1 through TP-11) to 4 to 5 feet below ground surface (bgs) along the former railroad line at the northern property boundary and within the Property boundary. Test pits were completed using a mini excavator provided and operated by the City of Duluth staff.
- Collected soil samples at each test pit location from the ground surface to the termination depth of the test pit for field screening, soil classification, and laboratory analysis. Screened soil in the field for the presence of organic vapors using a photoionization detector (PID) using the Ziplock™ bag headspace screening technique.
- Collected one soil sample for laboratory analysis from each of the completed test pits. The soil samples were collected between 1 and 5 feet bgs which is representative of the surface soil direct contact zone. Soil samples were submitted for independent laboratory analysis of the following contaminants of concern: diesel range organics (DRO) with silica gel cleanup, volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), poly-aromatic hydrocarbons (PAHs), and Resource Conservation and Recovery Act (RCRA) metals.
- Following sample collection, the test pits were backfilled with the removed material and returned to previous grade.
- Collected three soil gas samples (SG-1 through SG-3) from select locations across the Site. The samples were collected by manually driving soil gas sampling probes to a depth of 4 feet below grade. The samples were collected in 1-liter Summa vacuum canisters fitted with 200 milliliter per minute (ml/min) flow controllers.
- Submitted the soil gas samples for laboratory analysis of VOCs using EPA Method TO-15.

- Prepared this Phase II ESA Report detailing our field investigation results with conclusions and recommendations.

2.0 PHASE II INVESTIGATION APPROACH

2.1 Field Investigation and Sampling Methods

The following sections describe the methods and procedures used to complete the excavation test pits and collect the soil gas samples.

2.1.1 Soil Excavation Test Pits

On May 27, 2021, Bay West completed 11 soil test pits (TP-1 through TP-11) at the Site to depths of approximately 4 to 5 feet bgs and were typically 3 feet wide by 5 feet long. The test pits were completed using a mini excavator. The test pits were advanced to assess for the presence or absence of fill material, buried waste/debris, and potential soil contamination associated with historical use of the Site. The test pit locations are illustrated on **Figure 2**.

Following field screening, sampling for lab analysis, and visual logging of the excavations, the test pits were backfilled with removed material and compacted using the mini excavator bucket and tracks.

2.1.2 Soil Sampling

Soil samples were visually screened throughout each test pit profile, field classified for soil type and the presence of waste or debris and screened for the presence of organic vapors with a PID equipped with a 10.6 electron-volt (eV) lamp.

Soils encountered generally consisted of approximately 6 inches of organic topsoil. The topsoil was underlain by a black to brown course-grained sand and gravel to depth ranging from 3 to 4 feet bgs. The sand and gravel was underlain by red clay from 3 to 5 feet bgs at test pits TP-1, -2, -3, -7, -8 and -9. The sand and gravel was underlain by fine grained sand at test pits TP-4, -5, -6, -10, and -11. Bay West observed angular railroad ballast rock on the former rail line along the north property boundary, although most of the railroad rail and ties had been removed. Railroad rail and ties were still present on a railroad spur branching off the mainline on the western portion of the property. Fill material and waste was observed only at test pit location TP-10. Waste was observed at TP-10 from the ground surface to 3 feet bgs and consisted of asphalt pieces, steel cable, wire, steel pipe, cans, and bottles.

Soil samples for field screening with a PID were placed in a new, clean, quart-size, labeled, re-sealable bag. The bags used for field screening were used for one sample only. Soil clumps were manually agitated, and the bags were shaken vigorously at the beginning and end of the headspace development period. A Rae Environmental Instruments® MiniRAE-3000 PID equipped with a 10.6-eV lamp calibrated to 100 parts per million (ppm) isobutylene was inserted into a small opening in the bag and the highest reading was recorded. A portion of each sample was reserved for description in the field in general conformance with American Society for Testing and Materials (ASTM) D 2488. In addition to soil headspace screening, the soil samples were observed for other indications of contamination (e.g., debris, staining, odors, and sheen). Test pit logs were prepared for each test pit and are included in **Appendix A**.

A total of ten soil samples, were collected and submitted to Pace Analytical Services, LLC (Pace) for laboratory analysis of the following parameters:

- Diesel range organics (DRO; Wisconsin Modified DRO) with silica-gel cleanup;
- Volatile organic compounds (VOCs; EPA Method 8260D);

- Polycyclic aromatic hydrocarbons (PAHs) by selective ion monitoring (EPA Method 8270E by SIM);
- Polychlorinated Biphenyls (PCBs; EPA Method 8082A); and
- Resource Conservation and Recovery Act (RCRA) metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by EPA Method 6010D, with mercury by EPA Method 7471B.

Soil analytical results are described in **Section 3.2**.

2.1.3 Soil Gas Sampling

Bay West collected soil gas samples at three locations (**Figure 2**). Soil gas samples were collected using hand-driven soil gas sampling points at depths of approximately 4 feet bgs. Soil gas samples were collected using batch certified 1-liter Summa canisters fitted with 200 ml/min flow controllers. The samples were submitted to Pace for analysis of Minnesota soil gas list VOCs by EPA method TO-15. Analytical results are described in **Section 3.3**.

3.0 PHASE II INVESTIGATION RESULTS

The results of this Phase II ESA are discussed below.

3.1 Field Screening Results

Bay West observed what appeared to be fill material at all ten test pit locations to depths of up to 5 feet bgs. Red clay, which was likely native soil, was observed at six of the ten test pit locations at depths of 3 to 5 feet bgs. Bay West screened soil samples from each test pit for organic vapors using a PID. Results of the field screening are included on the test pit logs in **Appendix A**. Organic vapor readings ranged from 0.4 parts per million (ppm) to 9.8 ppm in soil samples collected at the Site. None of the observed PID readings were accompanied by stained soil or odors suggesting contaminant impacts.

3.2 Soil Sampling Results

One soil sample was collected at each test pit for laboratory analysis of VOCs, PCBs, DRO, PAHs, and RCRA metals. The table below summarizes the soil samples collected and their depths.

Test Pit	Soil Sample Depth (feet)
TP-1	1-2'
TP-2	1-2'
TP-3	1-2'
TP-4	4-5'
TP-5	4-5'
TP-6	1-2'
TP-7	1-2'
TP-8	1-2'
TP-9	1-2'
TP-10	1-2'
TP-11	No sample

Analytical results were compared to Minnesota Pollution Control Agency (MPCA) residential and industrial Soil Reference Values (SRVs). An SRV has not been established for DRO; however, the MPCA has defined limits for DRO in the Guidance Document C-REM1-01, "Best Management Practices for the Off-Site Reuse of Unregulated Fill" (MPCA, 2012) of 100 milligrams per kilogram (mg/kg) in soil.

Table 1 presents a summary of the soil analytical results that were compared to MPCA residential soil reference values (SRVs) and industrial SRVs. Laboratory analytical reports are included in **Appendix B**.

3.2.1 DRO

DRO was detected in 5 of the 10 samples collected at the Site at concentrations ranging from 4.3 mg/kg to 153 mg/kg. The MPCA does not have a land-use specific SRV established for DRO; however, the MPCA's unregulated fill criteria of 100 mg/kg was exceeded in the soil sample collected at test pit TP-10 at 1-2 feet bgs.

3.2.2 VOCs

Several VOCs were detected in all ten soil samples collected on the Site; however, none of the detected compounds exceeded their respective residential or industrial SRVs.

3.2.3 PAHs

PAH compounds were detected in all ten soil samples collected on the Site. None of the PAHs were detected at concentrations exceeding their respective residential or industrial SRVs. The benzo(a)pyrene equivalent calculation for the detected PAHs also did not exceed the residential or industrial SRVs.

3.2.4 PCBs

PCBs were not detected at concentrations exceeding the laboratory reporting limits in 8 of the 10 soil samples analyzed. Low level PCBs were detected in soil samples collected at test pits TP-9 and TP-10; however, the detected concentrations were below the MPCA's residential and industrial SRVs.

3.2.5 Metals

Arsenic, barium, cadmium, chromium, lead, mercury and silver were detected in one more soil samples at concentrations exceeding their respective reporting limits. The reported metals concentrations were all in the range of naturally occurring background levels and none exceeded their respective residential or industrial SRVs.

3.3 Soil Gas Sampling Results

Bay West collected three soil gas samples (labeled SG-1, -2, and -3). The soil gas samples were collected to assess the potential for soil vapor impacts associated with nearby off-site dry cleaners. The soil gas samples were collected at 4 feet bgs based on the assumption that future development on the Site would be consist of a slab-on-grade building. Soil gas results summarized in **Table 2** were compared to the latest MPCA residential and industrial intrusion screening values (ISVs).

Although several VOCs were detected in the three soil gas samples collected at the Site (see **Table 2**), none were detected at concentrations exceeding industrial or residential ISVs. A copy of the laboratory analytical report is provided in **Appendix B**.

4.0 CONCLUSIONS

At the request of the City of Duluth, Bay West conducted this Phase II ESA to screen for the presence or absence of potential soil and soil gas contamination at the Site. Based on the results of the investigation, Bay West makes the following conclusions:

Soil Assessment

No significant indications of contamination (e.g., staining, odors) were noted during the field activities. PID screening of soil samples collected at each test pit did not indicate the presence of organic vapors exceeding background concentrations, generally considered to be greater than 10 ppm. A minor amount of solid waste and debris was noted to be present at only one test pit location (TP-10) and consisted of asphalt pieces, cable, wire, cans, and bottles. Remnant railroad infrastructure consisting of railway ballast and some rail and railroad ties were present primarily on the western portion of the Site.

The following summarizes laboratory analytical contaminant detections in soil at the Site:

- DRO was detected in one soil sample (TP-10) exceeding the MPCA Unregulated Fill Criteria (100 mg/kg).
- VOCs, metals, PAHs, and PCBs were not detected in any soil samples exceeding residential or industrial SRVs.

Based on the limited field screening readings, limited area of buried solid waste at test pit TP-10, and laboratory analytical results, soil contamination does not appear to be a significant concern at the Site. The one DRO exceedance of the unregulated fill criteria at TP-10 appears to be isolated, and based on visual and PID field screening, surficial in nature.

Soil Gas Assessment

VOCs were not detected in any of the three soil gas samples collected at the Site exceeding applicable screening criteria. This data indicates that previously identified off-site soil vapor concerns (dry cleaners) are not causing a vapor intrusion risk on the Site at this time.

5.0 RECOMMENDATIONS

Based on the results of the investigation and the proposed continued commercial use of the property in the future, Bay West recommends the following:

- Management of surface waste and remnant railroad infrastructure should be anticipated prior to future grading and construction activities. This material will likely require off-site landfill disposal as non-hazardous waste.
- Due to the presence of debris, solid waste, and potential DRO exceeding unregulated fill criteria, if excess soil must be exported off-site during future grading activities, Bay West recommends temporarily stockpiling the material on-site with waste characterization sampling to determine an appropriate disposal option. Ideally Bay West recommends no export of soil from the Site if possible and on-site beneficial re-use of soil to the extent possible.
- Because of the urban location of the Site and the presence of solid waste and debris in several locations, there is potential that contaminated soil or other environmental concerns may be identified during future earthwork. Bay West recommends that the City develop and implement a Construction Contingency Plan (CCP) to govern future on-site grading and construction activities. The CCP would provide a notification framework for contractors in the event unknowns are encountered and outline the means and methods to manage contaminated materials during future on-site work.

Tables

TABLE 1
Soil Analytical Results
40th Ave W, Duluth, MN

Analyte	CAS #	SRV		Date Sampled									
		Residential	Industrial	TP-01 (1-2)	TP-02 (1-2)	TP-03 (1-2)	TP-04 (4-5)	TP-05 (4-5)	TP-06 (1-2)	TP-07 (1-2)	TP-08 (1-2)	TP-09 (1-2)	TP-10 (1-2)
		5/27/2021	5/27/2021	5/27/2021	5/27/2021	5/27/2021	5/27/2021	5/27/2021	5/27/2021	5/27/2021	5/27/2021	5/27/2021	5/27/2021
Metals (method EPA 6010D unless noted otherwise; mg/Kg)													
Arsenic	7440-38-2	9	9	2.8	1.4	6.1	1.1	1.2	8.2	2.2	1.7	5.1	3.1
Barium	7440-39-3	250	41,000	49.6	34.8	68.9	25.9	21.2	120	47.2	22.2	29.1	7.4
Cadmium	7440-43-9	9	23	0.71	0.085 J	0.61 J	0.078 J	0.06 J	0.43	0.18	0.082 J	0.29	0.65
Chromium	7440-47-3	23,000	100,000	16.6	14.2	17.5	10.2	7.4	17.6	16.8	9.3	18.3	33.2
Lead	7439-92-1	300	700	39.5	3.2	95.1	4.8	2.9	179	8.7	3	26	87.8
Mercury [EPA 7471B]	7439-97-6	3	3	0.022 < 0.019	0.058 < 0.019	0.058 < 0.019	0.061 < 0.023	0.061 < 0.023	0.061 < 0.023	0.061 < 0.023	0.061 < 0.023	0.061 < 0.023	0.061 < 0.023
Selenium	7782-49-2	77	1,200	< 1.1	< 1.0	< 5.6	< 1.0	< 1.2	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
Silver	7440-22-4	77	1,200	< 0.54	< 0.51	< 2.8	< 0.52	< 0.53	0.1 J	< 0.56	< 0.53	< 0.53	< 0.54
Volatile Organic Compounds (method EPA 8260D; µg/Kg)													
1,1,1,2-Tetrachloroethane	630-20-6	300,000	680,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,1,1-Trichloroethane	71-55-6	640,000	640,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,1,2-Tetrachloroethane	79-34-5	39,000	230,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	900,000	900,000	< 240	< 204	< 279	< 247	< 264	< 348	< 273	< 246	< 240	< 249
1,1,2-Trichloroethane	79-00-5	930	3,100	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,1-Dichloroethane	75-34-3	390,000	1,700,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,1-Dichloroethene	75-35-4	450,000	1,200,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,1-Dichloropropene	563-58-6	NE	NE	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,2,3-Trichlorobenzene	87-61-6	NE	NE	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,2,3-Trichloropropane	96-18-4	NE	NE	< 240	< 204	< 279	< 247	< 264	< 348	< 273	< 246	< 240	< 249
1,2,4-Trichlorobenzene	120-82-1	25,000	87,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,2,4-Trimethylbenzene	95-63-6	140,000	220,000	64.4	< 51.1	380	< 61.8	< 65.9	1,420	< 68.3	< 61.6	< 60.0	76.6
1,2-Dibromo-3-Chloropropane	96-12-8	NE	NE	< 600.0	< 511	< 698	< 618	< 659	< 869	< 683	< 616	< 600.0	62.3
1,2-Dibromoethane	106-93-4	830	3,200	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,2-Dichlorobenzene	95-50-1	380,000	390,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,2-Dichloroethane	107-06-2	5,800	72,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,2-Dichloropropane	78-87-5	19,000	63,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,3,5-Trimethylbenzene	108-67-8	140,000	180,000	19.8 J	< 51.1	86.9	< 61.8	< 65.9	279	< 68.3	< 61.6	< 60.0	< 62.3
1,3-Dichlorobenzene	541-73-1	300,000	300,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,3-Dichloropropane	142-28-9	NE	NE	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
1,4-Dichlorobenzene	106-46-7	56,000	200,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
2,2-Dichloropropane	594-20-7	NE	NE	< 240	< 204	< 279	< 247	< 264	< 348	< 273	< 246	< 240	< 249
2-Butanone (MEK)	78-93-3	8,700,000	28,000,000	72.6 J	59.0 J	129 J	72.5 J	75.7 J	352 J	75.6 J	71.7 J	< 300.0	71.9 J
2-Chlorotoluene	95-49-9	430,000	910,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
3-Chloropropene	107-05-1	NE	NE	< 240	< 204	< 279	< 247	< 264	< 348	< 273	< 246	< 240	< 249
4-Chlorotoluene	106-43-4	NE	NE	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
4-Isopropyltoluene	99-87-6	NE	NE	< 60.0	< 51.1	37.5 J	< 61.8	< 65.9	128	< 68.3	< 61.6	< 60.0	30.8 J
4-Methyl-2-pentanone (MIBK)	108-10-1	1,500,000	3,400,000	< 300.0	< 256	< 349	< 309	< 330	< 434	< 342	< 308	< 300.0	37.4 J
Acetone	67-64-1	14,000,000	100,000,000	< 1,200	< 1,020	< 1,400	< 1,240	< 1,320	2,250	< 1,370	< 1,230	< 1,200	< 1,250
Benzene	71-43-2	9,400	42,000	< 240	< 204	125	< 247	< 264	292	< 273	< 246	< 240	17.5 J
Bromobenzene	108-96-1	NE	NE	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
Bromochloromethane	74-97-5	NE	NE	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
Bromodichloromethane	75-27-4	160,000	930,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
Bromofrom	75-25-2	360,000	910,000	< 240	< 204	< 279	< 247	< 264	< 348	< 273	< 246	< 240	< 249
Bromomethane	74-83-9	13,000	67,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
Carbon tetrachloride	56-23-5	14,000	230,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
Chlorobenzene	108-90-7	150,000	700,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
Chloroethane	75-00-3	2,100,000	2,100,000	< 600.0	< 511	< 698	< 618	< 659	< 869	< 683	< 616	< 600.0	62.3
Chloroform	67-66-3	220,000	1,200,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
Chloromethane	74-87-3	420,000	1,300,000	< 240	< 204	< 279	< 247	< 264	< 348	< 273	< 246	< 240	< 249
cis-1,2-Dichloroethane	156-59-2	28,000	420,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
cis-1,3-Dichloropropene	10061-01-5	NE	NE	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
Dibromochloromethane	124-48-1	93,000	540,000	< 240	< 204	< 279	< 247	< 264	< 348	< 273	< 246	< 240	< 249
Dibromomethane	74-95-3	17,000	62,000	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
Dichlorodifluoromethane	75-71-8	840,000	840,000	< 240	< 204	< 279	< 247	< 264	< 348	< 273	< 246	< 240	< 249
Dichlorofluoromethane	75-43-4	NE	NE	< 600.0	< 511	< 698	< 618	< 659	< 869	< 683	< 616	< 600.0	62.3
Diethylether	60-29-7	NE	NE	< 240	< 204	< 279	< 247	< 264	< 348	< 273	< 246	< 240	< 249
Ethylbenzene	100-41-4	190,000	480,000	19.5 J	< 51.1	187	< 61.8	< 65.9	542	< 68.3	< 61.6	19.8 J	46.2 J
Hexachlorobutadiene	87-68-3	17,000	17,000	< 300.0	< 256	< 349	< 309	< 330	< 434	< 342	< 308	< 300.0	31.2
Isopropylbenzene	98-82-8	270,000	270,000	< 60.0	< 51.1	117	< 61.8	< 65.9	363	< 68.3	< 61.6	< 60.0	62.3
Methyl tert-butyl ether	1634-04-4	NE	NE	< 60.0	< 51.1	< 69.8	< 61.8	< 65.9	< 86.9	< 68.3	< 61.6	< 60.0	< 62.3
Methylene Chloride	75-09-2	120,000	1,600,000	< 240	< 204	< 279	< 247	< 264	< 348	< 273	< 246	< 240	< 249
m-Xylene & p-Xylene	179601-23-1	NE	NE	89.4 J	< 102	777	< 124	< 132	2,520	< 137	< 123	< 247	120 J
Naphthalene	91-20-3	81,000	280,000	192 J	< 204	646	< 247	< 264	2,530	< 273	< 246	< 240	322
n-Butylbenzene	104-51-8	110,000	110,000	< 60.0	< 51.1	46.5 J	< 61.8	< 65.9	138	< 68.3	< 61.6	< 60.0	62.3
n-Propylbenzene	103-65-1	260,000	260,000	13.5 J	< 51.1	143	< 61.8	< 65.9	400	< 68.3	< 61.6	< 60.0	21.8 J
o-Xylene	95-47-6	NE	NE	77.1	< 51.1	584	< 61.8	< 65.9	2,060	< 68.3	< 61.6	< 60.0	91.6
sec-Butylbenzene	135-98-8	140,000	140,000	< 60.0	< 51.1	45.6 J	< 61.8	< 65.9	131</				

TABLE 2
Soil Gas Analytical Results
40th Ave W, Duluth, MN

Analyte	CAS #	Residential ISV	Residential EISV	Residential ISV 33X	Residential EISV 33X	Industrial ISV	Industrial EISV	Industrial ISV 33X	Industrial EISV 33X	Sample ID	SG-01	SG-02	SG-03
										Date Sampled	5/27/2021	5/27/2021	5/27/2021
Volatile Organic Compounds (by method TO-15; µg/m³)													
1,1,1-Trichloroethane	71-55-6	5200	16000	170000	530000	18000	53000	600000	1800000		< 1.9	< 2.1	< 1.9
1,1,2,2-Tetrachloroethane	79-34-5	NE	NE	NE	NE	NE	NE	NE	NE		< 2.4	< 2.6	< 2.4
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	5200	16000	170000	530000	18000	53000	600000	1800000		0.7 J	0.94 J	0.62 J
1,1,2-Trichloroethane	79-00-5	0.21	0.63	7	21	0.7	2.1	23	70		< 0.97	< 1.0	< 0.93
1,1-Dichloroethane	75-34-3	NE	NE	NE	NE	NE	NE	NE	NE		< 1.4	< 1.5	< 1.4
1,1-Dichloroethene	75-35-4	210	630	7000	21000	700	2100	23000	70000		< 1.4	< 1.5	< 1.4
1,2,4-Trichlorobenzene	120-82-1	2.1	6.3	70	210	7	21	230	700		< 13.1	< 14.1	< 12.7
1,2,4-Trimethylbenzene	95-63-6	63	190	2100	6300	210	630	7000	21000		< 1.7	0.95 J	< 1.7
1,2-Dibromoethane	106-93-4	0.017	0.17	0.57	5.7	0.16	1.6	5.3	53		< 1.4	< 1.5	< 1.3
1,2-Dichlorobenzene	95-50-1	NE	NE	NE	NE	NE	NE	NE	NE		< 5.3	< 5.7	< 5.1
1,2-Dichloroethane	107-06-2	0.39	3.9	13	130	3.8	38	130	1300		< 1.4	< 1.5	< 1.4
1,2-Dichloropropane	78-87-5	2.7	13	90	430	14	42	470	1400		< 1.6	< 1.8	< 1.6
1,3,5-Trimethylbenzene	108-67-8	63	190	2100	6300	210	630	7000	21000		< 1.7	0.57 J	< 1.7
1,3-Butadiene	106-99-0	0.28	2.8	9.3	93	2.7	21	90	700		< 0.78	< 0.84	< 0.76
1,3-Dichlorobenzene	541-73-1	NE	NE	NE	NE	NE	NE	NE	NE		1.6 J	1.7 J	< 5.1
1,4-Dichlorobenzene	106-46-7	63	190	2100	6300	210	630	7000	21000		< 5.3	< 5.7	< 5.1
2-Butanone (MEK)	78-93-3	3100	9400	100000	310000	11000	32000	370000	1100000		3.0 J	2.2 J	1.2 J
2-Hexanone	591-78-6	31	94	1000	3100	110	320	3700	11000		2.2 J	2.0 J	< 7.0
2-Propanol	67-63-0	210	630	7000	21000	700	2100	23000	70000		9.3	2.8 J	< 4.2
4-Ethyltoluene	622-96-8	NE	NE	NE	NE	NE	NE	NE	NE		0.88 J	1.4 J	0.97 J
4-Methyl-2-pentanone (MIBK)	108-10-1	3100	9400	100000	310000	11000	32000	370000	1100000		0.99 J	< 7.8	< 7.0
Acetone	67-64-1	32000	97000	1100000	3200000	110000	330000	3700000	11000000		30.6	15.9	6.3 J
Benzene	71-43-2	1.3	9.4	43	310	11	32	370	1100		0.4 J	2.5	< 0.55
Bromodichloromethane	75-27-4	21	63	700	2100	70	210	2300	7000		< 2.4	< 2.5	< 2.3
Bromoform	75-25-2	NE	NE	NE	NE	NE	NE	NE	NE		< 9.1	< 9.8	< 8.8
Bromomethane	74-83-9	4.2	13	140	430	14	42	470	1400		< 1.4	< 1.5	< 1.3
Carbon disulfide	75-15-0	830	2500	28000	83000	2800	8400	93000	280000		3.1	14.3	< 1.1
Carbon tetrachloride	56-23-5	1.7	17	57	570	16	160	530	5300		< 2.2	< 2.4	< 2.2
Chlorobenzene	108-90-7	52	160	1700	5300	180	530	6000	18000		< 1.6	< 1.8	< 1.6
Chloroethane	75-00-3	4200	13000	140000	430000	14000	42000	470000	1400000		< 0.93	< 1.0	< 0.9
Chloroform	67-66-3	100	310	3300	10000	350	1100	12000	37000		< 0.86	< 0.93	< 0.83
Chloromethane	74-87-3	94	280	3100	9300	320	950	11000	32000		0.92	< 0.79	0.87
Chloromethylbenzene	100-44-7	0.21	2.1	7	70	2	11	67	370		< 4.6	< 4.9	< 4.4
cis-1,2-Dichloroethene	156-59-2	NE	NE	NE	NE	NE	NE	NE	NE		< 1.4	< 1.5	< 1.4
cis-1,3-Dichloropropene	10061-01-5	2.5	25	83	830	25	210	830	7000		< 4.0	< 4.3	< 3.9
Cyclohexane	110-82-7	6300	19000	210000	630000	21000	63000	700000	2100000		3.8	20.5	4.1
Dibromochloromethane	124-48-1	NE	NE	NE	NE	NE	NE	NE	NE		< 3.0	< 3.2	< 2.9
Dichlorodifluoromethane	75-71-8	NE	NE	NE	NE	NE	NE	NE	NE		2.2	3.6	2.4
Dichlorotetrafluoroethane	76-14-2	NE	NE	NE	NE	NE	NE	NE	NE		< 2.5	< 2.7	< 2.4
Ethanol	64-17-5	NE	NE	NE	NE	NE	NE	NE	NE		13.2	8.5	4.1
Ethyl Acetate	141-78-6	73	220	2400	7300	250	740	8300	25000		< 1.3	< 1.4	< 1.2
Ethylbenzene	100-41-4	4.1	41	140	1400	39	390	1300	13000		< 1.5	0.76 J	0.81 J
Hexachlorobutadiene	87-68-3	NE	NE	NE	NE	NE	NE	NE	NE		< 9.4	< 10.1	< 9.1
Methyl tert-butyl ether	1634-04-4	39	390	1300	13000	380	3800	13000	130000		0.34 J	< 6.8	< 6.1
Methylene Chloride	75-09-2	630	1900	21000	63000	2100	6300	70000	210000		< 6.1	< 6.6	< 5.9
m-Xylene & p-Xylene	179601-23-1	100	310	3300	10000	350	1100	12000	37000		< 3.1	2.3 J	< 3.0
Naphthalene	91-20-3	9.4	28	310	930	32	95	1100	3200		< 4.6	< 5.0	< 4.5
n-Heptane	142-82-5	420	1300	14000	43000	1400	4200	47000	140000		< 1.4	2.4	< 1.4
n-Hexane	110-54-3	730	2200	24000	73000	2500	7400	83000	250000		1.4	3.2	0.67 J
o-Xylene	95-47-6	100	310	3300	10000	350	1100	12000	37000		< 1.5	1.5 J	< 1.5
Propene	115-07-1	3100	9400	100000	310000	11000	32000	370000	1100000		0.7 J	8.2	0.3 J
Styrene	100-42-5	940	2800	31000	93000	3200	9500	110000	320000		1.2 J	0.88 J	0.74 J
Tetrachloroethene	127-18-4	3.4	34	110	1100	33	160	1100	5300		< 1.2	< 1.3	< 1.2
Tetrahydrofuran	109-99-9	2100	6300	70000	210000	7000	21000	230000	700000		18.4	7.2	5.5
Toluene	108-88-3	4200	13000	140000	430000	14000	42000	470000	1400000		1.8	4.4	1.3
trans-1,2-Dichloroethene	156-60-5	21	63	700	2100	70	210	2300	7000		< 1.4	< 1.5	< 1.4
trans-1,3-Dichloropropene	10061-02-6	2.5	25	83	830	25	210	830	7000		< 4.0	< 4.3	< 3.9
Trichloroethene	79-01-6	2.1	6.3	70	210	7	21	230	700		< 0.95	< 1.0	< 0.92
Trichlorofluoromethane	75-69-4	1000	3100	33000	100000	3500	11000	120000	370000		1.8 J	3.1	1.5 J
Vinyl Acetate	108-05-4	210	630	7000	21000	700	2100	23000	70000		< 1.2	< 1.3	< 1.2
Vinyl chloride	75-01-4	1.7	17	57	570	22	220	730	7300		< 0.45	< 0.49	< 0.44

Notes:

- All results are in micrograms per cubic meter (µg/m³)
- SG - soil gas
- MPCA - Minnesota Pollution Control Agency
- ISV - Intrusion Screening Value
- EISV - Expedited Intrusion Screening Value
- ISVs & EISVs as published by the MPCA January 22, 2021
- NE - Action level not established for this analyte
- < - Less than the laboratory Reporting Limit (RL)
- J - Estimated result
- Bold - Analyte detected**
- Grey - Result exceeds the Residential ISV
- Yellow - Result exceeds the Residential EISV
- Orange - Result exceeds the Residential ISV 33X
- Red - Result exceeds the Residential EISV 33X
- Tan - Result exceeds the Industrial ISV
- Green - Result exceeds the Industrial EISV
- Light blue - Result exceeds the Industrial ISV 33X
- Dark blue - Result exceeds the Industrial EISV 33X

Figures

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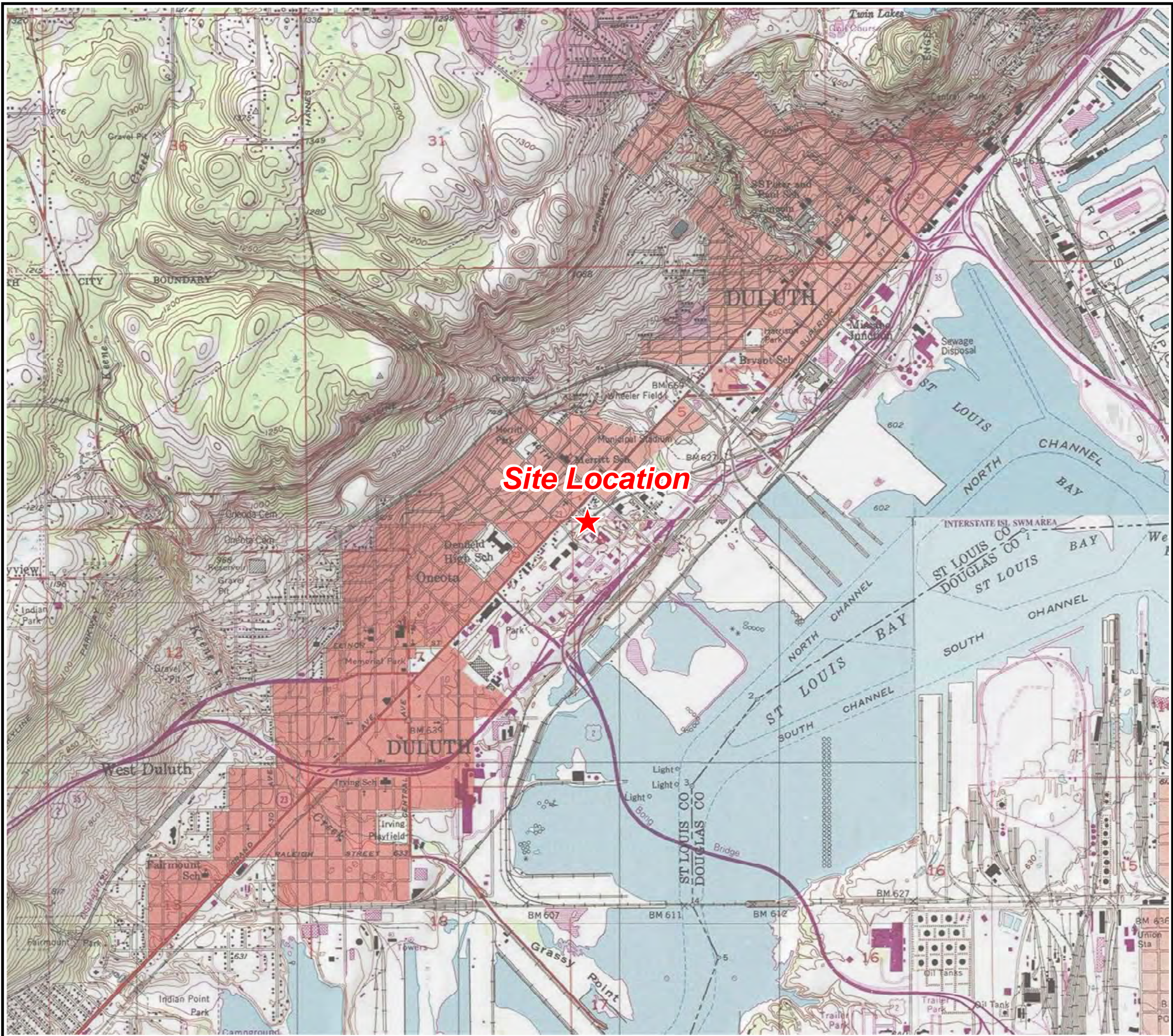
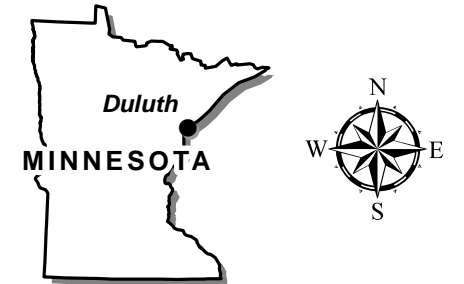


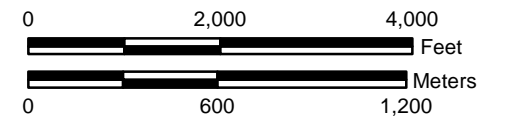
Figure 1 Site Location Map

Phase II ESA

40th Ave W
Duluth, MN 55807



Map Projection: NAD 1983 UTM Zone 15 N, Meters
Basemap: ESRI USA Topo Maps WMS



1 inch = 2,000 feet

 Site Location



Y:\Clients\CITY_OF_DULUTH\40th_Ave_W\MapDocs\210479\001_Phase_II_ESA\210479 FIG 2 Site Map.mxd

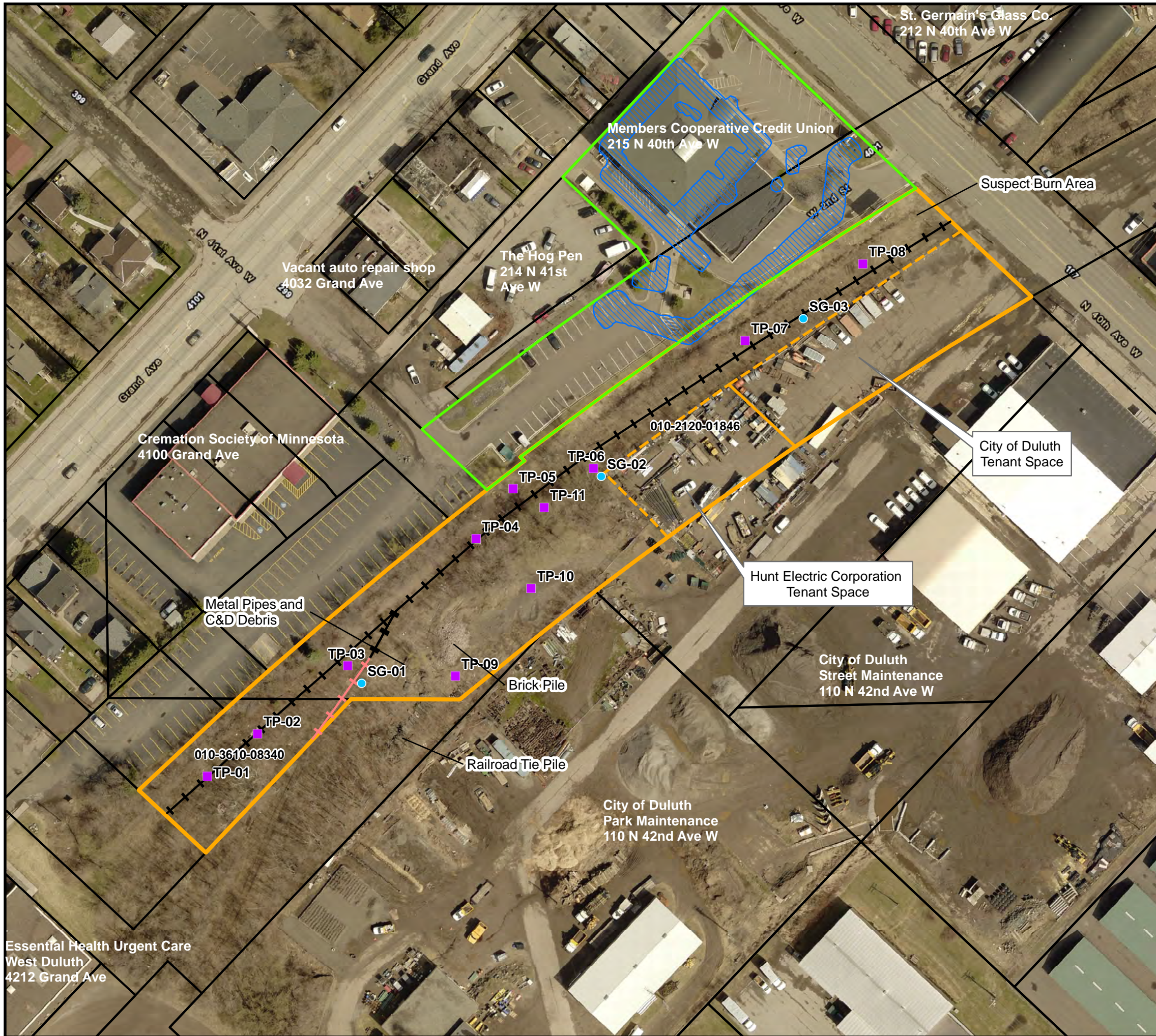
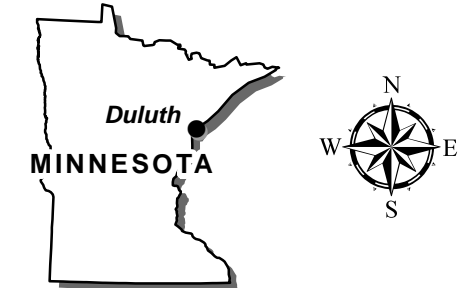


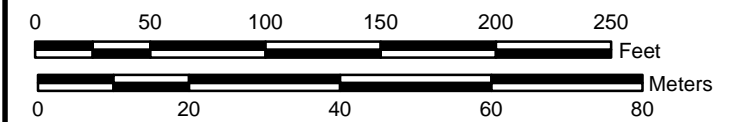
Figure 2 Site Map

Phase I ESA

40th Ave W
Duluth, MN 55807



Map Projection: NAD 1983 UTM Zone 15 N, Meters
Basemap: Saint Louis County Aerial Imagery WMS, 2019



- Soil Gas Sampling Location
- Test Pit Sampling Location
- Former Railroad Bed
- Former Railroad Bed with Track Present
- Former Landry's Transport Company Site 4009 W 2nd St
- Corrective Action Excavations - Leak Site #8769 (2003)
- Site Boundary
- Parcel Boundaries






Appendix A

Test Pit Logs



TEST PIT LOG

BOREHOLE NO. TP-01		LOCATION Parcels 010-2120-01846/010-3610-08340		N ↑
PROJECT NO. / NAME J210479 / 40th Ave West Ph II ESA				
APPROVED BY Rick Van Allen		DRILLER'S NAME Duluth, MN		START - FINISH DATE 5/27/21 - 5/27/21
DRILLING CONTRACTOR City of Duluth		DRILLER'S NAME Darren		
DRILLING EQUIPMENT / METHOD Cat Mini-Ex / Trench		SIZE / TYPE OF BIT		GW ELEVATION DATE
LOGGED BY Patrick Sweeney		SAMPLING METHOD Grab		
ELEVATION OF:	GROUND SURFACE	GW SURFACE		
(FT.)				

Depth, ft bgs	Graphic Log	Visual Description	Analytical Sample Number	Sample Interval	Headspace Values (ppm)
1		Black Topsoil	TP-01(1-2)		
2		Sandy gravel with cobbles, rounded, firm, brown.			6.3
3					
4		Clay, red.			2.2
		Bottom of trench.			

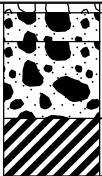
TEST PIT LOG

BOREHOLE NO. TP-02		LOCATION Parcels 010-2120-01846/010-3610-08340		N ↑
PROJECT NO. / NAME J210479 / 40th Ave West Ph II ESA				
APPROVED BY Rick Van Allen		DRILLER'S NAME Duluth, MN		START - FINISH DATE 5/27/21 - 5/27/21
DRILLING CONTRACTOR City of Duluth		DRILLER'S NAME Darren		
DRILLING EQUIPMENT / METHOD Cat Mini-Ex / Trench		SIZE / TYPE OF BIT		LOGGED BY Patrick Sweeney
ELEVATION OF: GROUND SURFACE		GW SURFACE		
(FT.)				


Depth, ft bgs	Graphic Log	Visual Description	Analytical Sample Number	Sample Interval	Headspace Values (ppm)
1		Black sandy gravel, loose, subrounded, moist.	TP-02(1-2)		4.3
2		Same as above, brown/red.			
3		Clay, red.			5.2
4		Bottom of trench.			



TEST PIT LOG

BOREHOLE NO. TP-03		LOCATION Parcels 010-2120-01846/010-3610-08340		N ↑
PROJECT NO. / NAME J210479 / 40th Ave West Ph II ESA				
APPROVED BY Rick Van Allen		DRILLER'S NAME Duluth, MN		START - FINISH DATE 5/27/21 - 5/27/21
DRILLING CONTRACTOR City of Duluth		DRILLER'S NAME Darren		
DRILLING EQUIPMENT / METHOD Cat Mini-Ex / Trench		SIZE / TYPE OF BIT		GW ELEVATION DATE
LOGGED BY Patrick Sweeney		SAMPLING METHOD Grab		
ELEVATION OF: GROUND SURFACE		GW SURFACE		
(FT.)				

Depth, ft bgs	Graphic Log	Visual Description	Analytical Sample Number	Sample Interval	Headspace Values (ppm)
1		Large gravel. Railroad bed.	TP-03(1-2)		6.1
2		Black sand and gravel.			6.3
3		Brown sand and cobbles, rounded, moist.			
4		Clay, red.			5.5
		Bottom of trench.			



TEST PIT LOG

BOREHOLE NO. TP-04		LOCATION Parcels 010-2120-01846/010-3610-08340		
PROJECT NO. / NAME J210479 / 40th Ave West Ph II ESA		DRILLER'S NAME Duluth, MN		
APPROVED BY Rick Van Allen		DRILLER'S NAME Darren		
DRILLING CONTRACTOR City of Duluth		SIZE / TYPE OF BIT		START - FINISH DATE 5/27/21 - 5/27/21
DRILLING EQUIPMENT / METHOD Cat Mini-Ex / Trench		SAMPLING METHOD Grab		
LOGGED BY Patrick Sweeney		GW SURFACE		GW ELEVATION DATE
ELEVATION OF: GROUND SURFACE (FT.)		GW SURFACE		


Depth, ft bgs	Graphic Log	Visual Description	Analytical Sample Number	Sample Interval	Headspace Values (ppm)
1		Angular coarse gravel.			0.4
2					
3					
4		Sand, very fine, soft, brown, subrounded, moist.	TP-04(4-5)		1.2
5		Bottom of trench.			

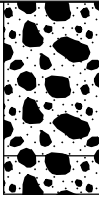
TEST PIT LOG

BOREHOLE NO. TP-05		LOCATION Parcels 010-2120-01846/010-3610-08340		N ↑
PROJECT NO. / NAME J210479 / 40th Ave West Ph II ESA				
APPROVED BY Rick Van Allen		DRILLER'S NAME Duluth, MN		START - FINISH DATE 5/27/21 - 5/27/21
DRILLING CONTRACTOR City of Duluth		DRILLER'S NAME Darren		
DRILLING EQUIPMENT / METHOD Cat Mini-Ex / Trench		SIZE / TYPE OF BIT		LOGGED BY Patrick Sweeney
ELEVATION OF: GROUND SURFACE (FT.)		GW SURFACE		
		GW ELEVATION DATE		

Depth, ft bgs	Graphic Log	Visual Description	Analytical Sample Number	Sample Interval	Headspace Values (ppm)	
1		Angular coarse gravel.				
2					1.1	
3						
4						
5		Sand, very fine, soft, brown, subrounded, moist.	TP-05(4-5)		2.4	
		Bottom of trench.				






TEST PIT LOG

BOREHOLE NO. TP-06		LOCATION Parcels 010-2120-01846/010-3610-08340		N 
PROJECT NO. / NAME J210479 / 40th Ave West Ph II ESA		APPROVED BY Rick Van Allen		
DRILLING CONTRACTOR City of Duluth		DRILLER'S NAME Darren		
DRILLING EQUIPMENT / METHOD Cat Mini-Ex / Trench		SIZE / TYPE OF BIT		START - FINISH DATE 5/27/21 - 5/27/21
LOGGED BY Patrick Sweeney		SAMPLING METHOD Grab		
ELEVATION OF:	GROUND SURFACE	GW SURFACE	GW ELEVATION DATE	
(FT.)				

Depth, ft bgs	Graphic Log	Visual Description	Analytical Sample Number	Sample Interval	Headspace Values (ppm)	
1		Black sandy gravel, angular, firm.	TP-06(1-2)			
2						
3						8.1
4						
5			Same as above, rounded, brown.			6.3
		Bottom of trench.				




TEST PIT LOG

BOREHOLE NO. TP-07		LOCATION Parcels 010-2120-01846/010-3610-08340		N ↑
PROJECT NO. / NAME J210479 / 40th Ave West Ph II ESA				
APPROVED BY Rick Van Allen		DRILLER'S NAME Duluth, MN		START - FINISH DATE 5/27/21 - 5/27/21
DRILLING CONTRACTOR City of Duluth		DRILLER'S NAME Darren		
DRILLING EQUIPMENT / METHOD Cat Mini-Ex / Trench		SIZE / TYPE OF BIT		GW ELEVATION DATE
LOGGED BY Patrick Sweeney		SAMPLING METHOD Grab		
ELEVATION OF: GROUND SURFACE		GW SURFACE		
(FT.)				

Depth, ft bgs	Graphic Log	Visual Description	Analytical Sample Number	Sample Interval	Headspace Values (ppm)
1		Black topsoil and large gravel, subangular.	TP-07(1-2)		7.2
2		Sandy gravel, moist to wet, red/brown, firm, rounded.			
3					4.2
4					
5		Clay, red.			1.9
		Bottom of trench.			

TEST PIT LOG



BOREHOLE NO. TP-08		LOCATION Parcels 010-2120-01846/010-3610-08340		N ↑
PROJECT NO. / NAME J210479 / 40th Ave West Ph II ESA				
APPROVED BY Rick Van Allen		DRILLER'S NAME Duluth, MN		START - FINISH DATE 5/27/21 - 5/27/21
DRILLING CONTRACTOR City of Duluth		DRILLER'S NAME Darren		
DRILLING EQUIPMENT / METHOD Cat Mini-Ex / Trench		SIZE / TYPE OF BIT		GW ELEVATION DATE
LOGGED BY Patrick Sweeney		SAMPLING METHOD Grab		
ELEVATION OF: GROUND SURFACE		GW SURFACE		
(FT.)				

Depth, ft bgs	Graphic Log	Visual Description	Analytical Sample Number	Sample Interval	Headspace Values (ppm)
1		Black topsoil with gravel.	TP-08(1-2)		4.1
2		Sandy gravel, red/brown, firm, rounded, moist to wet.			2.7
3					
4					
5		Sandy clay, red.			1.6
		Bottom of trench.			

TEST PIT LOG

BOREHOLE NO. TP-09		LOCATION Parcels 010-2120-01846/010-3610-08340		N ↑
PROJECT NO. / NAME J210479 / 40th Ave West Ph II ESA				
APPROVED BY Rick Van Allen		DRILLER'S NAME Duluth, MN		START - FINISH DATE 5/27/21 - 5/27/21
DRILLING CONTRACTOR City of Duluth		DRILLER'S NAME Darren		
DRILLING EQUIPMENT / METHOD Cat Mini-Ex / Trench		SIZE / TYPE OF BIT		GW ELEVATION DATE
LOGGED BY Patrick Sweeney		SAMPLING METHOD Grab		
ELEVATION OF: GROUND SURFACE		GW SURFACE		
(FT.)				

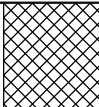

Depth, ft bgs	Graphic Log	Visual Description	Analytical Sample Number	Sample Interval	Headspace Values (ppm)
---------------	-------------	--------------------	--------------------------	-----------------	------------------------

1		Brown, silty-sand and gravel, fine sand and gravel, rounded, loose, moist.	TP-09(1-2)		
2					4.9
3					
4		Red fat clay.			0.2
		Bottom of trench.			

TEST PIT LOG



BOREHOLE NO. TP-10		LOCATION Parcels 010-2120-01846/010-3610-08340		N ↑
PROJECT NO. / NAME J210479 / 40th Ave West Ph II ESA				
APPROVED BY Rick Van Allen		DRILLER'S NAME Duluth, MN		START - FINISH DATE 5/27/21 - 5/27/21
DRILLING CONTRACTOR City of Duluth		DRILLER'S NAME Darren		
DRILLING EQUIPMENT / METHOD Cat Mini-Ex / Trench		SIZE / TYPE OF BIT		LOGGED BY Patrick Sweeney
ELEVATION OF: GROUND SURFACE (FT.)		GW SURFACE		
LOGGED BY		SAMPLING METHOD Grab		

Depth, ft bgs	Graphic Log	Visual Description	Analytical Sample Number	Sample Interval	Headspace Values (ppm)
---------------	-------------	--------------------	--------------------------	-----------------	------------------------

1		Silt, sand, gravel, asphalt, cables, wires, pipe (steel), cans, bottles. Black and brown.	TP-10(1-2)		9.8
2					
3		Same as above, no human related materials.			4.3
4					
		Bottom of trench.			

TEST PIT LOG

BOREHOLE NO. TP-11		LOCATION Parcels 010-2120-01846/010-3610-08340		N ↑
PROJECT NO. / NAME J210479 / 40th Ave West Ph II ESA				
APPROVED BY Rick Van Allen		DRILLER'S NAME Duluth, MN		START - FINISH DATE 5/27/21 - 5/27/21
DRILLING CONTRACTOR City of Duluth		DRILLER'S NAME Darren		
DRILLING EQUIPMENT / METHOD Cat Mini-Ex / Trench		SIZE / TYPE OF BIT		LOGGED BY Patrick Sweeney
ELEVATION OF: GROUND SURFACE		GW SURFACE		
(FT.)				

Depth, ft bgs	Graphic Log	Visual Description	Analytical Sample Number	Sample Interval	Headspace Values (ppm)	
1		Angular coarse gravel.				
2						
3						
4						
5		Sand, very fine, soft, brown, subrounded, moist.				
		Bottom of trench.				

Appendix B

Laboratory Analytical Reports

June 16, 2021

Rick VanAllen
Bay West, Inc.
5 Empire Drive
Saint Paul, MN 55103

RE: Project: J210479 40th Ave W - Phase II
Pace Project No.: 10563078

Dear Rick VanAllen:

Enclosed are the analytical results for sample(s) received by the laboratory on May 28, 2021. 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 - Minneapolis

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

Sincerely,



Jared Dickinson for
Sylvia Hunter
sylvia.hunter@pacelabs.com
1(612)607-1700
Project Manager

Enclosures

cc: Ryan Riley, Bay West LLC
Jeff Smith, Pace Analytical Services, Inc
Gerrit Vanderwaal, Bay West



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414

1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab

A2LA Certification #: 2926.01*

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009*

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014*

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605*

Georgia Certification #: 959

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: AI-03086*

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064*

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137*

Minnesota Dept of Ag Approval: via MN 027-053-137

Minnesota Petrofund Registration #: 1240*

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081*

New Jersey Certification #: MN002

New York Certification #: 11647*

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification (1700) #: CL101

Ohio VAP Certification (1800) #: CL110*

Oklahoma Certification #: 9507*

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001*

Pennsylvania Certification #: 68-00563*

Puerto Rico Certification #: MN00064

South Carolina Certification #:74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192*

Utah Certification #: MN00064*

Vermont Certification #: VT-027053137

Virginia Certification #: 460163*

Washington Certification #: C486*

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

USDA Permit #: P330-19-00208

Please Note: Applicable air certifications are denoted with an asterisk ().

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10563078001	TP-01 (1-2)	Solid	05/27/21 12:00	05/28/21 16:30
10563078002	TP-02 (1-2)	Solid	05/27/21 11:45	05/28/21 16:30
10563078003	TP-03 (1-2)	Solid	05/27/21 11:15	05/28/21 16:30
10563078004	TP-04 (4-5)	Solid	05/27/21 12:30	05/28/21 16:30
10563078005	TP-05 (4-5)	Solid	05/27/21 12:50	05/28/21 16:30
10563078006	TP-06 (1-2)	Solid	05/27/21 13:15	05/28/21 16:30
10563078007	TP-07 (1-2)	Solid	05/27/21 13:40	05/28/21 16:30
10563078008	TP-08 (1-2)	Solid	05/27/21 14:00	05/28/21 16:30
10563078009	TP-09 (1-2)	Solid	05/27/21 10:30	05/28/21 16:30
10563078010	TP-10 (1-2)	Solid	05/27/21 10:00	05/28/21 16:30
10563078011	TB-01	Solid	05/27/21 08:00	05/28/21 16:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10563078001	TP-01 (1-2)	EPA 8082A	RAG	11
		WI MOD DRO	JVM	2
		EPA 6010D	DM	7
		EPA 7471B	LMW	1
		ASTM D2974	JDL	1
		EPA 8270E by SIM	JLR	18
		EPA 8260D	JT2	72
10563078002	TP-02 (1-2)	EPA 8082A	RAG	11
		WI MOD DRO	JVM	2
		EPA 6010D	DM	7
		EPA 7471B	LMW	1
		ASTM D2974	JDL	1
		EPA 8270E by SIM	JLR	18
		EPA 8260D	JT2	72
10563078003	TP-03 (1-2)	EPA 8082A	RAG	11
		WI MOD DRO	JVM	2
		EPA 6010D	DM	7
		EPA 7471B	LMW	1
		ASTM D2974	JDL	1
		EPA 8270E by SIM	JLR	18
		EPA 8260D	JT2	72
10563078004	TP-04 (4-5)	EPA 8082A	RAG	11
		WI MOD DRO	JVM	2
		EPA 6010D	DM	7
		EPA 7471B	LMW	1
		ASTM D2974	JDL	1
		EPA 8270E by SIM	JLR	18
		EPA 8260D	JT2	72
10563078005	TP-05 (4-5)	EPA 8082A	RAG	11
		WI MOD DRO	JVM	2
		EPA 6010D	DM	7
		EPA 7471B	LMW	1
		ASTM D2974	JDL	1
		EPA 8270E by SIM	JLR	18
		EPA 8260D	JT2	72
10563078006	TP-06 (1-2)	EPA 8082A	RAG	11
		WI MOD DRO	JVM	2

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10563078007	TP-07 (1-2)	EPA 6010D	DM	7
		EPA 7471B	LMW	1
		ASTM D2974	JDL	1
		EPA 8270E by SIM	JLR	18
		EPA 8260D	JT2	72
		EPA 8082A	RAG	11
		WI MOD DRO	JVM	2
		EPA 6010D	DM	7
		EPA 7471B	LMW	1
		ASTM D2974	JDL	1
10563078008	TP-08 (1-2)	EPA 8270E by SIM	JLR	18
		EPA 8260D	JT2	72
		EPA 8082A	RAG	11
		WI MOD DRO	JVM	2
		EPA 6010D	DM	7
		EPA 7471B	LMW	1
		ASTM D2974	JDL	1
		EPA 8270E by SIM	JLR	18
		EPA 8260D	JT2	72
		EPA 8082A	RAG	11
10563078009	TP-09 (1-2)	WI MOD DRO	JVM	2
		EPA 6010D	DM	7
		EPA 7471B	LMW	1
		ASTM D2974	JDL	1
		EPA 8270E by SIM	JLR	18
		EPA 8260D	JT2	72
		EPA 8082A	RAG	11
		WI MOD DRO	JVM	2
		EPA 6010D	DM	7
		EPA 7471B	LMW	1
10563078010	TP-10 (1-2)	ASTM D2974	JDL	1
		EPA 8270E by SIM	JLR	18
		EPA 8260D	JT2	72
		EPA 8082A	RAG	11
		WI MOD DRO	JVM	2
		EPA 6010D	DM	7
		EPA 7471B	LMW	1
		ASTM D2974	JDL	1
		EPA 8270E by SIM	JLR	18
		EPA 8260D	JT2	72
10563078011	TB-01	EPA 8260D	JT2	72
		EPA 8260D	JT2	72

PASI-M = Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Method: EPA 8082A

Description: 8082A GCS PCB

Client: Bay West LLC

Date: June 16, 2021

General Information:

10 samples were analyzed for EPA 8082A by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Method: WI MOD DRO

Description: WIDRO GCS Silica Gel

Client: Bay West LLC

Date: June 16, 2021

General Information:

10 samples were analyzed for WI MOD DRO by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with WI MOD DRO with any exceptions noted below.

QC Batch: 746420

P1: Routine initial sample volume or weight was not used for extraction, resulting in elevated reporting limits.

- TP-06 (1-2) (Lab ID: 10563078006)

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 746420

T6: High boiling point hydrocarbons are present in the sample.

- TP-03 (1-2) (Lab ID: 10563078003)
 - WDRO C10-C28
- TP-06 (1-2) (Lab ID: 10563078006)
 - WDRO C10-C28
- TP-09 (1-2) (Lab ID: 10563078009)
 - WDRO C10-C28

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Method: WI MOD DRO

Description: WIDRO GCS Silica Gel

Client: Bay West LLC

Date: June 16, 2021

Analyte Comments:

QC Batch: 746420

T6: High boiling point hydrocarbons are present in the sample.

- TP-10 (1-2) (Lab ID: 10563078010)
- WDRO C10-C28

T7: Low boiling point hydrocarbons are present in the sample.

- TP-03 (1-2) (Lab ID: 10563078003)
- WDRO C10-C28
- TP-06 (1-2) (Lab ID: 10563078006)
- WDRO C10-C28

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Method: EPA 6010D

Description: 6010D MET ICP

Client: Bay West LLC

Date: June 16, 2021

General Information:

10 samples were analyzed for EPA 6010D by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3050B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 746872

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10563078001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 3984086)
 - Barium
 - Selenium
- MSD (Lab ID: 3984087)
 - Selenium

Additional Comments:

Analyte Comments:

QC Batch: 746872

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- TP-03 (1-2) (Lab ID: 10563078003)
 - Silver
 - Cadmium
 - Selenium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Method: EPA 7471B

Description: 7471B Mercury

Client: Bay West LLC

Date: June 16, 2021

General Information:

10 samples were analyzed for EPA 7471B by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 7471B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Method: EPA 8270E by SIM

Description: 8270E MSSV PAH by SIM

Client: Bay West LLC

Date: June 16, 2021

General Information:

10 samples were analyzed for EPA 8270E by SIM by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3550C with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 746615

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- MS (Lab ID: 3982582)
 - 2-Fluorobiphenyl (S)
- MSD (Lab ID: 3982583)
 - 2-Fluorobiphenyl (S)
- TP-09 (1-2) (Lab ID: 10563078009)
 - 2-Fluorobiphenyl (S)

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Method: EPA 8270E by SIM

Description: 8270E MSSV PAH by SIM

Client: Bay West LLC

Date: June 16, 2021

Analyte Comments:

QC Batch: 746615

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- TP-10 (1-2) (Lab ID: 10563078010)
- 2-Fluorobiphenyl (S)

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Method: EPA 8260D

Description: 8260D MSV 5030 Med Level

Client: Bay West LLC

Date: June 16, 2021

General Information:

11 samples were analyzed for EPA 8260D by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 5035/5030B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 747732

1M: This analyte did not meet the secondary source verification criteria for the initial calibration. Analyte recovery exceeded the 130% upper control limit at 138%. Results are estimated.

- BLANK (Lab ID: 3988266)
 - Bromomethane
- LCS (Lab ID: 3988267)
 - Bromomethane
- MS (Lab ID: 3988268)
 - Bromomethane

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PROJECT NARRATIVE

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Method: EPA 8260D

Description: 8260D MSV 5030 Med Level

Client: Bay West LLC

Date: June 16, 2021

Analyte Comments:

QC Batch: 747732

1M: This analyte did not meet the secondary source verification criteria for the initial calibration. Analyte recovery exceeded the 130% upper control limit at 138%. Results are estimated.

- MSD (Lab ID: 3988269)
 - Bromomethane
- TB-01 (Lab ID: 10563078011)
 - Bromomethane
- TP-01 (1-2) (Lab ID: 10563078001)
 - Bromomethane
- TP-02 (1-2) (Lab ID: 10563078002)
 - Bromomethane
- TP-03 (1-2) (Lab ID: 10563078003)
 - Bromomethane
- TP-04 (4-5) (Lab ID: 10563078004)
 - Bromomethane
- TP-05 (4-5) (Lab ID: 10563078005)
 - Bromomethane
- TP-06 (1-2) (Lab ID: 10563078006)
 - Bromomethane
- TP-07 (1-2) (Lab ID: 10563078007)
 - Bromomethane
- TP-08 (1-2) (Lab ID: 10563078008)
 - Bromomethane
- TP-09 (1-2) (Lab ID: 10563078009)
 - Bromomethane
- TP-10 (1-2) (Lab ID: 10563078010)
 - Bromomethane

2M: This analyte did not meet the secondary source verification criteria for the initial calibration. Analyte recovery exceeded the 130% upper control limit at 141%. Results are estimated.

- BLANK (Lab ID: 3988266)
 - Trichlorofluoromethane
- LCS (Lab ID: 3988267)
 - Trichlorofluoromethane
- MS (Lab ID: 3988268)
 - Trichlorofluoromethane
- MSD (Lab ID: 3988269)
 - Trichlorofluoromethane
- TB-01 (Lab ID: 10563078011)
 - Trichlorofluoromethane
- TP-01 (1-2) (Lab ID: 10563078001)
 - Trichlorofluoromethane
- TP-02 (1-2) (Lab ID: 10563078002)
 - Trichlorofluoromethane
- TP-03 (1-2) (Lab ID: 10563078003)
 - Trichlorofluoromethane

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PROJECT NARRATIVE

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Method: EPA 8260D

Description: 8260D MSV 5030 Med Level

Client: Bay West LLC

Date: June 16, 2021

Analyte Comments:

QC Batch: 747732

2M: This analyte did not meet the secondary source verification criteria for the initial calibration. Analyte recovery exceeded the 130% upper control limit at 141%. Results are estimated.

- TP-04 (4-5) (Lab ID: 10563078004)
 - Trichlorofluoromethane
- TP-05 (4-5) (Lab ID: 10563078005)
 - Trichlorofluoromethane
- TP-06 (1-2) (Lab ID: 10563078006)
 - Trichlorofluoromethane
- TP-07 (1-2) (Lab ID: 10563078007)
 - Trichlorofluoromethane
- TP-08 (1-2) (Lab ID: 10563078008)
 - Trichlorofluoromethane
- TP-09 (1-2) (Lab ID: 10563078009)
 - Trichlorofluoromethane
- TP-10 (1-2) (Lab ID: 10563078010)
 - Trichlorofluoromethane

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-01 (1-2) **Lab ID: 10563078001** Collected: 05/27/21 12:00 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB									
Analytical Method: EPA 8082A Preparation Method: EPA 3546									
Pace Analytical Services - Minneapolis									
PCB-1016 (Aroclor 1016)	<54.5	ug/kg	54.5	18.8	1	06/07/21 15:07	06/08/21 18:08	12674-11-2	
PCB-1221 (Aroclor 1221)	<54.5	ug/kg	54.5	25.5	1	06/07/21 15:07	06/08/21 18:08	11104-28-2	
PCB-1232 (Aroclor 1232)	<54.5	ug/kg	54.5	22.4	1	06/07/21 15:07	06/08/21 18:08	11141-16-5	
PCB-1242 (Aroclor 1242)	<54.5	ug/kg	54.5	19.8	1	06/07/21 15:07	06/08/21 18:08	53469-21-9	
PCB-1248 (Aroclor 1248)	<54.5	ug/kg	54.5	32.6	1	06/07/21 15:07	06/08/21 18:08	12672-29-6	
PCB-1254 (Aroclor 1254)	<54.5	ug/kg	54.5	29.8	1	06/07/21 15:07	06/08/21 18:08	11097-69-1	
PCB-1260 (Aroclor 1260)	<54.5	ug/kg	54.5	20.1	1	06/07/21 15:07	06/08/21 18:08	11096-82-5	
PCB-1262 (Aroclor 1262)	<54.5	ug/kg	54.5	27.2	1	06/07/21 15:07	06/08/21 18:08	37324-23-5	
PCB-1268 (Aroclor 1268)	<54.5	ug/kg	54.5	25.7	1	06/07/21 15:07	06/08/21 18:08	11100-14-4	
Surrogates									
Tetrachloro-m-xylene (S)	82	%	59-125		1	06/07/21 15:07	06/08/21 18:08	877-09-8	
Decachlorobiphenyl (S)	87	%	57-125		1	06/07/21 15:07	06/08/21 18:08	2051-24-3	
WIDRO GCS Silica Gel									
Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
Pace Analytical Services - Minneapolis									
WDRO C10-C28	4.3J	mg/kg	8.2	3.1	1	06/03/21 13:13	06/04/21 14:41		
Surrogates									
n-Triacontane (S)	61	%	30-150		1	06/03/21 13:13	06/04/21 14:41		
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3050B									
Pace Analytical Services - Minneapolis									
Arsenic	2.8	mg/kg	1.1	0.22	1	06/07/21 13:07	06/14/21 11:40	7440-38-2	
Barium	49.6	mg/kg	0.54	0.086	1	06/07/21 13:07	06/14/21 11:40	7440-39-3	M1
Cadmium	0.71	mg/kg	0.16	0.032	1	06/07/21 13:07	06/14/21 11:40	7440-43-9	
Chromium	16.6	mg/kg	0.54	0.11	1	06/07/21 13:07	06/14/21 11:40	7440-47-3	
Lead	39.5	mg/kg	0.54	0.12	1	06/07/21 13:07	06/14/21 11:40	7439-92-1	
Selenium	<1.1	mg/kg	1.1	0.35	1	06/07/21 13:07	06/14/21 11:40	7782-49-2	M1
Silver	<0.54	mg/kg	0.54	0.039	1	06/07/21 13:07	06/14/21 11:40	7440-22-4	
7471B Mercury									
Analytical Method: EPA 7471B Preparation Method: EPA 7471B									
Pace Analytical Services - Minneapolis									
Mercury	0.022	mg/kg	0.019	0.0081	1	06/07/21 14:55	06/09/21 14:52	7439-97-6	
Dry Weight / %M by ASTM D2974									
Analytical Method: ASTM D2974									
Pace Analytical Services - Minneapolis									
Percent Moisture	8.3	%	0.10	0.10	1		06/03/21 15:44		N2
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Acenaphthene	6.6J	ug/kg	10.8	0.48	1	06/04/21 08:54	06/15/21 18:30	83-32-9	
Acenaphthylene	59.7	ug/kg	10.8	0.74	1	06/04/21 08:54	06/15/21 18:30	208-96-8	
Anthracene	78.4	ug/kg	10.8	0.34	1	06/04/21 08:54	06/15/21 18:30	120-12-7	
Benzo(a)anthracene	70.2	ug/kg	10.8	0.45	1	06/04/21 08:54	06/15/21 18:30	56-55-3	
Benzo(a)pyrene	78.2	ug/kg	10.8	0.61	1	06/04/21 08:54	06/15/21 18:30	50-32-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-01 (1-2) **Lab ID: 10563078001** Collected: 05/27/21 12:00 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Benzo(b)fluoranthene	247	ug/kg	10.8	0.51	1	06/04/21 08:54	06/15/21 18:30	205-99-2	
Benzo(g,h,i)perylene	57.3	ug/kg	10.8	0.50	1	06/04/21 08:54	06/15/21 18:30	191-24-2	
Benzo(k)fluoranthene	83.9	ug/kg	10.8	0.52	1	06/04/21 08:54	06/15/21 18:30	207-08-9	
Chrysene	136	ug/kg	10.8	0.44	1	06/04/21 08:54	06/15/21 18:30	218-01-9	
Dibenz(a,h)anthracene	29.0	ug/kg	10.8	0.71	1	06/04/21 08:54	06/15/21 18:30	53-70-3	
Fluoranthene	156	ug/kg	10.8	0.66	1	06/04/21 08:54	06/15/21 18:30	206-44-0	
Fluorene	6.9J	ug/kg	10.8	0.65	1	06/04/21 08:54	06/15/21 18:30	86-73-7	
Indeno(1,2,3-cd)pyrene	80.6	ug/kg	10.8	0.58	1	06/04/21 08:54	06/15/21 18:30	193-39-5	
Naphthalene	45.9	ug/kg	10.8	0.49	1	06/04/21 08:54	06/15/21 18:30	91-20-3	
Phenanthrene	97.3	ug/kg	10.8	0.76	1	06/04/21 08:54	06/15/21 18:30	85-01-8	
Pyrene	110	ug/kg	10.8	0.70	1	06/04/21 08:54	06/15/21 18:30	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	82	%	50-125		1	06/04/21 08:54	06/15/21 18:30	321-60-8	
p-Terphenyl-d14 (S)	82	%	51-125		1	06/04/21 08:54	06/15/21 18:30	1718-51-0	

8260D MSV 5030 Med Level

Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B

Pace Analytical Services - Minneapolis

Acetone	<1200	ug/kg	1200	566	1	06/09/21 10:43	06/09/21 17:55	67-64-1	
Allyl chloride	<240	ug/kg	240	48.6	1	06/09/21 10:43	06/09/21 17:55	107-05-1	
Benzene	<24.0	ug/kg	24.0	11.0	1	06/09/21 10:43	06/09/21 17:55	71-43-2	
Bromobenzene	<60.0	ug/kg	60.0	7.9	1	06/09/21 10:43	06/09/21 17:55	108-86-1	
Bromochloromethane	<60.0	ug/kg	60.0	29.6	1	06/09/21 10:43	06/09/21 17:55	74-97-5	
Bromodichloromethane	<60.0	ug/kg	60.0	19.1	1	06/09/21 10:43	06/09/21 17:55	75-27-4	
Bromoform	<240	ug/kg	240	79.4	1	06/09/21 10:43	06/09/21 17:55	75-25-2	
Bromomethane	<600	ug/kg	600	112	1	06/09/21 10:43	06/09/21 17:55	74-83-9	1M
2-Butanone (MEK)	72.6J	ug/kg	300	37.4	1	06/09/21 10:43	06/09/21 17:55	78-93-3	
n-Butylbenzene	<60.0	ug/kg	60.0	13.2	1	06/09/21 10:43	06/09/21 17:55	104-51-8	
sec-Butylbenzene	<60.0	ug/kg	60.0	26.3	1	06/09/21 10:43	06/09/21 17:55	135-98-8	
tert-Butylbenzene	<60.0	ug/kg	60.0	18.6	1	06/09/21 10:43	06/09/21 17:55	98-06-6	
Carbon tetrachloride	<60.0	ug/kg	60.0	29.2	1	06/09/21 10:43	06/09/21 17:55	56-23-5	
Chlorobenzene	<60.0	ug/kg	60.0	9.9	1	06/09/21 10:43	06/09/21 17:55	108-90-7	
Chloroethane	<600	ug/kg	600	95.0	1	06/09/21 10:43	06/09/21 17:55	75-00-3	
Chloroform	<60.0	ug/kg	60.0	26.4	1	06/09/21 10:43	06/09/21 17:55	67-66-3	
Chloromethane	<240	ug/kg	240	32.6	1	06/09/21 10:43	06/09/21 17:55	74-87-3	
2-Chlorotoluene	<60.0	ug/kg	60.0	14.8	1	06/09/21 10:43	06/09/21 17:55	95-49-8	
4-Chlorotoluene	<60.0	ug/kg	60.0	7.7	1	06/09/21 10:43	06/09/21 17:55	106-43-4	
1,2-Dibromo-3-chloropropane	<600	ug/kg	600	142	1	06/09/21 10:43	06/09/21 17:55	96-12-8	
Dibromochloromethane	<240	ug/kg	240	20.3	1	06/09/21 10:43	06/09/21 17:55	124-48-1	
1,2-Dibromoethane (EDB)	<60.0	ug/kg	60.0	21.0	1	06/09/21 10:43	06/09/21 17:55	106-93-4	
Dibromomethane	<60.0	ug/kg	60.0	26.2	1	06/09/21 10:43	06/09/21 17:55	74-95-3	
1,2-Dichlorobenzene	<60.0	ug/kg	60.0	11.3	1	06/09/21 10:43	06/09/21 17:55	95-50-1	
1,3-Dichlorobenzene	<60.0	ug/kg	60.0	7.4	1	06/09/21 10:43	06/09/21 17:55	541-73-1	
1,4-Dichlorobenzene	<60.0	ug/kg	60.0	9.5	1	06/09/21 10:43	06/09/21 17:55	106-46-7	
Dichlorodifluoromethane	<240	ug/kg	240	31.9	1	06/09/21 10:43	06/09/21 17:55	75-71-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-01 (1-2) **Lab ID: 10563078001** Collected: 05/27/21 12:00 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
1,1-Dichloroethane	<60.0	ug/kg	60.0	27.0	1	06/09/21 10:43	06/09/21 17:55	75-34-3	
1,2-Dichloroethane	<60.0	ug/kg	60.0	22.9	1	06/09/21 10:43	06/09/21 17:55	107-06-2	
1,1-Dichloroethene	<60.0	ug/kg	60.0	21.5	1	06/09/21 10:43	06/09/21 17:55	75-35-4	
cis-1,2-Dichloroethene	<60.0	ug/kg	60.0	16.7	1	06/09/21 10:43	06/09/21 17:55	156-59-2	
trans-1,2-Dichloroethene	<60.0	ug/kg	60.0	27.5	1	06/09/21 10:43	06/09/21 17:55	156-60-5	
Dichlorofluoromethane	<600	ug/kg	600	167	1	06/09/21 10:43	06/09/21 17:55	75-43-4	
1,2-Dichloropropane	<60.0	ug/kg	60.0	27.4	1	06/09/21 10:43	06/09/21 17:55	78-87-5	
1,3-Dichloropropane	<60.0	ug/kg	60.0	22.1	1	06/09/21 10:43	06/09/21 17:55	142-28-9	
2,2-Dichloropropane	<240	ug/kg	240	22.8	1	06/09/21 10:43	06/09/21 17:55	594-20-7	
1,1-Dichloropropene	<60.0	ug/kg	60.0	24.7	1	06/09/21 10:43	06/09/21 17:55	563-58-6	
cis-1,3-Dichloropropene	<60.0	ug/kg	60.0	5.8	1	06/09/21 10:43	06/09/21 17:55	10061-01-5	
trans-1,3-Dichloropropene	<60.0	ug/kg	60.0	7.6	1	06/09/21 10:43	06/09/21 17:55	10061-02-6	
Diethyl ether (Ethyl ether)	<240	ug/kg	240	51.1	1	06/09/21 10:43	06/09/21 17:55	60-29-7	
Ethylbenzene	19.5J	ug/kg	60.0	10.6	1	06/09/21 10:43	06/09/21 17:55	100-41-4	
Hexachloro-1,3-butadiene	<300	ug/kg	300	27.1	1	06/09/21 10:43	06/09/21 17:55	87-68-3	
Isopropylbenzene (Cumene)	<60.0	ug/kg	60.0	22.7	1	06/09/21 10:43	06/09/21 17:55	98-82-8	
p-Isopropyltoluene	<60.0	ug/kg	60.0	19.0	1	06/09/21 10:43	06/09/21 17:55	99-87-6	
Methylene Chloride	<240	ug/kg	240	113	1	06/09/21 10:43	06/09/21 17:55	75-09-2	
4-Methyl-2-pentanone (MIBK)	<300	ug/kg	300	28.7	1	06/09/21 10:43	06/09/21 17:55	108-10-1	
Methyl-tert-butyl ether	<60.0	ug/kg	60.0	12.0	1	06/09/21 10:43	06/09/21 17:55	1634-04-4	
Naphthalene	192J	ug/kg	240	67.4	1	06/09/21 10:43	06/09/21 17:55	91-20-3	
n-Propylbenzene	13.5J	ug/kg	60.0	12.6	1	06/09/21 10:43	06/09/21 17:55	103-65-1	
Styrene	<60.0	ug/kg	60.0	8.6	1	06/09/21 10:43	06/09/21 17:55	100-42-5	
1,1,1,2-Tetrachloroethane	<60.0	ug/kg	60.0	15.8	1	06/09/21 10:43	06/09/21 17:55	630-20-6	
1,1,1,2,2-Tetrachloroethane	<60.0	ug/kg	60.0	19.3	1	06/09/21 10:43	06/09/21 17:55	79-34-5	
Tetrachloroethene	<60.0	ug/kg	60.0	28.4	1	06/09/21 10:43	06/09/21 17:55	127-18-4	
Tetrahydrofuran	<2400	ug/kg	2400	494	1	06/09/21 10:43	06/09/21 17:55	109-99-9	
Toluene	53.0J	ug/kg	60.0	25.7	1	06/09/21 10:43	06/09/21 17:55	108-88-3	
1,2,3-Trichlorobenzene	<60.0	ug/kg	60.0	18.5	1	06/09/21 10:43	06/09/21 17:55	87-61-6	
1,2,4-Trichlorobenzene	<60.0	ug/kg	60.0	14.8	1	06/09/21 10:43	06/09/21 17:55	120-82-1	
1,1,1-Trichloroethane	<60.0	ug/kg	60.0	25.8	1	06/09/21 10:43	06/09/21 17:55	71-55-6	
1,1,2-Trichloroethane	<60.0	ug/kg	60.0	29.8	1	06/09/21 10:43	06/09/21 17:55	79-00-5	
Trichloroethene	<60.0	ug/kg	60.0	25.3	1	06/09/21 10:43	06/09/21 17:55	79-01-6	
Trichlorofluoromethane	<240	ug/kg	240	114	1	06/09/21 10:43	06/09/21 17:55	75-69-4	2M
1,2,3-Trichloropropane	<240	ug/kg	240	70.0	1	06/09/21 10:43	06/09/21 17:55	96-18-4	
1,1,2-Trichlorotrifluoroethane	<240	ug/kg	240	106	1	06/09/21 10:43	06/09/21 17:55	76-13-1	
1,2,4-Trimethylbenzene	64.4	ug/kg	60.0	26.4	1	06/09/21 10:43	06/09/21 17:55	95-63-6	
1,3,5-Trimethylbenzene	19.8J	ug/kg	60.0	19.2	1	06/09/21 10:43	06/09/21 17:55	108-67-8	
Vinyl chloride	<24.0	ug/kg	24.0	11.9	1	06/09/21 10:43	06/09/21 17:55	75-01-4	
Xylene (Total)	167J	ug/kg	180	28.9	1	06/09/21 10:43	06/09/21 17:55	1330-20-7	
m&p-Xylene	89.4J	ug/kg	120	19.1	1	06/09/21 10:43	06/09/21 17:55	179601-23-1	
o-Xylene	77.1	ug/kg	60.0	28.9	1	06/09/21 10:43	06/09/21 17:55	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	95	%	73-125		1	06/09/21 10:43	06/09/21 17:55	17060-07-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-01 (1-2) **Lab ID: 10563078001** Collected: 05/27/21 12:00 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
Surrogates									
Toluene-d8 (S)	99	%	75-125		1	06/09/21 10:43	06/09/21 17:55	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1	06/09/21 10:43	06/09/21 17:55	460-00-4	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-02 (1-2) **Lab ID: 10563078002** Collected: 05/27/21 11:45 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB									
Analytical Method: EPA 8082A Preparation Method: EPA 3546									
Pace Analytical Services - Minneapolis									
PCB-1016 (Aroclor 1016)	<54.1	ug/kg	54.1	18.7	1	06/07/21 15:07	06/08/21 18:56	12674-11-2	
PCB-1221 (Aroclor 1221)	<54.1	ug/kg	54.1	25.4	1	06/07/21 15:07	06/08/21 18:56	11104-28-2	
PCB-1232 (Aroclor 1232)	<54.1	ug/kg	54.1	22.3	1	06/07/21 15:07	06/08/21 18:56	11141-16-5	
PCB-1242 (Aroclor 1242)	<54.1	ug/kg	54.1	19.7	1	06/07/21 15:07	06/08/21 18:56	53469-21-9	
PCB-1248 (Aroclor 1248)	<54.1	ug/kg	54.1	32.3	1	06/07/21 15:07	06/08/21 18:56	12672-29-6	
PCB-1254 (Aroclor 1254)	<54.1	ug/kg	54.1	29.6	1	06/07/21 15:07	06/08/21 18:56	11097-69-1	
PCB-1260 (Aroclor 1260)	<54.1	ug/kg	54.1	20.0	1	06/07/21 15:07	06/08/21 18:56	11096-82-5	
PCB-1262 (Aroclor 1262)	<54.1	ug/kg	54.1	27.0	1	06/07/21 15:07	06/08/21 18:56	37324-23-5	
PCB-1268 (Aroclor 1268)	<54.1	ug/kg	54.1	25.5	1	06/07/21 15:07	06/08/21 18:56	11100-14-4	
Surrogates									
Tetrachloro-m-xylene (S)	90	%	59-125		1	06/07/21 15:07	06/08/21 18:56	877-09-8	
Decachlorobiphenyl (S)	98	%	57-125		1	06/07/21 15:07	06/08/21 18:56	2051-24-3	
WIDRO GCS Silica Gel									
Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
Pace Analytical Services - Minneapolis									
WDRO C10-C28	<7.7	mg/kg	7.7	2.9	1	06/03/21 13:13	06/04/21 14:55		
Surrogates									
n-Triacontane (S)	73	%	30-150		1	06/03/21 13:13	06/04/21 14:55		
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3050B									
Pace Analytical Services - Minneapolis									
Arsenic	1.4	mg/kg	1.0	0.21	1	06/07/21 13:07	06/14/21 11:52	7440-38-2	
Barium	34.8	mg/kg	0.51	0.081	1	06/07/21 13:07	06/14/21 11:52	7440-39-3	
Cadmium	0.085J	mg/kg	0.15	0.031	1	06/07/21 13:07	06/14/21 11:52	7440-43-9	
Chromium	14.2	mg/kg	0.51	0.10	1	06/07/21 13:07	06/14/21 11:52	7440-47-3	
Lead	3.2	mg/kg	0.51	0.12	1	06/07/21 13:07	06/14/21 11:52	7439-92-1	
Selenium	<1.0	mg/kg	1.0	0.33	1	06/07/21 13:07	06/14/21 11:52	7782-49-2	
Silver	<0.51	mg/kg	0.51	0.037	1	06/07/21 13:07	06/14/21 11:52	7440-22-4	
7471B Mercury									
Analytical Method: EPA 7471B Preparation Method: EPA 7471B									
Pace Analytical Services - Minneapolis									
Mercury	<0.019	mg/kg	0.019	0.0081	1	06/07/21 14:55	06/09/21 14:57	7439-97-6	
Dry Weight / %M by ASTM D2974									
Analytical Method: ASTM D2974									
Pace Analytical Services - Minneapolis									
Percent Moisture	8.2	%	0.10	0.10	1		06/03/21 15:45		N2
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Acenaphthene	0.50J	ug/kg	10.8	0.48	1	06/04/21 08:54	06/15/21 18:49	83-32-9	
Acenaphthylene	3.3J	ug/kg	10.8	0.74	1	06/04/21 08:54	06/15/21 18:49	208-96-8	
Anthracene	6.4J	ug/kg	10.8	0.34	1	06/04/21 08:54	06/15/21 18:49	120-12-7	
Benzo(a)anthracene	10.5J	ug/kg	10.8	0.44	1	06/04/21 08:54	06/15/21 18:49	56-55-3	
Benzo(a)pyrene	12.3	ug/kg	10.8	0.61	1	06/04/21 08:54	06/15/21 18:49	50-32-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-02 (1-2) **Lab ID: 10563078002** Collected: 05/27/21 11:45 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Benzo(b)fluoranthene	19.4	ug/kg	10.8	0.50	1	06/04/21 08:54	06/15/21 18:49	205-99-2	
Benzo(g,h,i)perylene	9.6J	ug/kg	10.8	0.50	1	06/04/21 08:54	06/15/21 18:49	191-24-2	
Benzo(k)fluoranthene	7.7J	ug/kg	10.8	0.52	1	06/04/21 08:54	06/15/21 18:49	207-08-9	
Chrysene	12.3	ug/kg	10.8	0.43	1	06/04/21 08:54	06/15/21 18:49	218-01-9	
Dibenz(a,h)anthracene	2.0J	ug/kg	10.8	0.71	1	06/04/21 08:54	06/15/21 18:49	53-70-3	
Fluoranthene	18.1	ug/kg	10.8	0.65	1	06/04/21 08:54	06/15/21 18:49	206-44-0	
Fluorene	0.94J	ug/kg	10.8	0.65	1	06/04/21 08:54	06/15/21 18:49	86-73-7	
Indeno(1,2,3-cd)pyrene	7.5J	ug/kg	10.8	0.58	1	06/04/21 08:54	06/15/21 18:49	193-39-5	
Naphthalene	0.88J	ug/kg	10.8	0.49	1	06/04/21 08:54	06/15/21 18:49	91-20-3	
Phenanthrene	6.1J	ug/kg	10.8	0.76	1	06/04/21 08:54	06/15/21 18:49	85-01-8	
Pyrene	15.7	ug/kg	10.8	0.70	1	06/04/21 08:54	06/15/21 18:49	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	66	%	50-125		1	06/04/21 08:54	06/15/21 18:49	321-60-8	
p-Terphenyl-d14 (S)	74	%	51-125		1	06/04/21 08:54	06/15/21 18:49	1718-51-0	

8260D MSV 5030 Med Level

Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B

Pace Analytical Services - Minneapolis

Acetone	<1020	ug/kg	1020	482	1	06/09/21 10:43	06/09/21 18:14	67-64-1	
Allyl chloride	<204	ug/kg	204	41.4	1	06/09/21 10:43	06/09/21 18:14	107-05-1	
Benzene	<20.4	ug/kg	20.4	9.4	1	06/09/21 10:43	06/09/21 18:14	71-43-2	
Bromobenzene	<51.1	ug/kg	51.1	6.7	1	06/09/21 10:43	06/09/21 18:14	108-86-1	
Bromochloromethane	<51.1	ug/kg	51.1	25.2	1	06/09/21 10:43	06/09/21 18:14	74-97-5	
Bromodichloromethane	<51.1	ug/kg	51.1	16.3	1	06/09/21 10:43	06/09/21 18:14	75-27-4	
Bromoform	<204	ug/kg	204	67.7	1	06/09/21 10:43	06/09/21 18:14	75-25-2	
Bromomethane	<511	ug/kg	511	95.5	1	06/09/21 10:43	06/09/21 18:14	74-83-9	1M
2-Butanone (MEK)	59.0J	ug/kg	256	31.9	1	06/09/21 10:43	06/09/21 18:14	78-93-3	
n-Butylbenzene	<51.1	ug/kg	51.1	11.2	1	06/09/21 10:43	06/09/21 18:14	104-51-8	
sec-Butylbenzene	<51.1	ug/kg	51.1	22.4	1	06/09/21 10:43	06/09/21 18:14	135-98-8	
tert-Butylbenzene	<51.1	ug/kg	51.1	15.8	1	06/09/21 10:43	06/09/21 18:14	98-06-6	
Carbon tetrachloride	<51.1	ug/kg	51.1	24.8	1	06/09/21 10:43	06/09/21 18:14	56-23-5	
Chlorobenzene	<51.1	ug/kg	51.1	8.4	1	06/09/21 10:43	06/09/21 18:14	108-90-7	
Chloroethane	<511	ug/kg	511	80.9	1	06/09/21 10:43	06/09/21 18:14	75-00-3	
Chloroform	<51.1	ug/kg	51.1	22.5	1	06/09/21 10:43	06/09/21 18:14	67-66-3	
Chloromethane	<204	ug/kg	204	27.8	1	06/09/21 10:43	06/09/21 18:14	74-87-3	
2-Chlorotoluene	<51.1	ug/kg	51.1	12.6	1	06/09/21 10:43	06/09/21 18:14	95-49-8	
4-Chlorotoluene	<51.1	ug/kg	51.1	6.5	1	06/09/21 10:43	06/09/21 18:14	106-43-4	
1,2-Dibromo-3-chloropropane	<511	ug/kg	511	121	1	06/09/21 10:43	06/09/21 18:14	96-12-8	
Dibromochloromethane	<204	ug/kg	204	17.3	1	06/09/21 10:43	06/09/21 18:14	124-48-1	
1,2-Dibromoethane (EDB)	<51.1	ug/kg	51.1	17.9	1	06/09/21 10:43	06/09/21 18:14	106-93-4	
Dibromomethane	<51.1	ug/kg	51.1	22.3	1	06/09/21 10:43	06/09/21 18:14	74-95-3	
1,2-Dichlorobenzene	<51.1	ug/kg	51.1	9.6	1	06/09/21 10:43	06/09/21 18:14	95-50-1	
1,3-Dichlorobenzene	<51.1	ug/kg	51.1	6.3	1	06/09/21 10:43	06/09/21 18:14	541-73-1	
1,4-Dichlorobenzene	<51.1	ug/kg	51.1	8.1	1	06/09/21 10:43	06/09/21 18:14	106-46-7	
Dichlorodifluoromethane	<204	ug/kg	204	27.2	1	06/09/21 10:43	06/09/21 18:14	75-71-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-02 (1-2) Lab ID: 10563078002 Collected: 05/27/21 11:45 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
1,1-Dichloroethane	<51.1	ug/kg	51.1	23.0	1	06/09/21 10:43	06/09/21 18:14	75-34-3	
1,2-Dichloroethane	<51.1	ug/kg	51.1	19.5	1	06/09/21 10:43	06/09/21 18:14	107-06-2	
1,1-Dichloroethene	<51.1	ug/kg	51.1	18.3	1	06/09/21 10:43	06/09/21 18:14	75-35-4	
cis-1,2-Dichloroethene	<51.1	ug/kg	51.1	14.2	1	06/09/21 10:43	06/09/21 18:14	156-59-2	
trans-1,2-Dichloroethene	<51.1	ug/kg	51.1	23.4	1	06/09/21 10:43	06/09/21 18:14	156-60-5	
Dichlorofluoromethane	<51.1	ug/kg	51.1	142	1	06/09/21 10:43	06/09/21 18:14	75-43-4	
1,2-Dichloropropane	<51.1	ug/kg	51.1	23.3	1	06/09/21 10:43	06/09/21 18:14	78-87-5	
1,3-Dichloropropane	<51.1	ug/kg	51.1	18.8	1	06/09/21 10:43	06/09/21 18:14	142-28-9	
2,2-Dichloropropane	<204	ug/kg	204	19.4	1	06/09/21 10:43	06/09/21 18:14	594-20-7	
1,1-Dichloropropene	<51.1	ug/kg	51.1	21.1	1	06/09/21 10:43	06/09/21 18:14	563-58-6	
cis-1,3-Dichloropropene	<51.1	ug/kg	51.1	4.9	1	06/09/21 10:43	06/09/21 18:14	10061-01-5	
trans-1,3-Dichloropropene	<51.1	ug/kg	51.1	6.4	1	06/09/21 10:43	06/09/21 18:14	10061-02-6	
Diethyl ether (Ethyl ether)	<204	ug/kg	204	43.5	1	06/09/21 10:43	06/09/21 18:14	60-29-7	
Ethylbenzene	<51.1	ug/kg	51.1	9.1	1	06/09/21 10:43	06/09/21 18:14	100-41-4	
Hexachloro-1,3-butadiene	<256	ug/kg	256	23.1	1	06/09/21 10:43	06/09/21 18:14	87-68-3	
Isopropylbenzene (Cumene)	<51.1	ug/kg	51.1	19.3	1	06/09/21 10:43	06/09/21 18:14	98-82-8	
p-Isopropyltoluene	<51.1	ug/kg	51.1	16.1	1	06/09/21 10:43	06/09/21 18:14	99-87-6	
Methylene Chloride	<204	ug/kg	204	96.4	1	06/09/21 10:43	06/09/21 18:14	75-09-2	
4-Methyl-2-pentanone (MIBK)	<256	ug/kg	256	24.4	1	06/09/21 10:43	06/09/21 18:14	108-10-1	
Methyl-tert-butyl ether	<51.1	ug/kg	51.1	10.2	1	06/09/21 10:43	06/09/21 18:14	1634-04-4	
Naphthalene	<204	ug/kg	204	57.4	1	06/09/21 10:43	06/09/21 18:14	91-20-3	
n-Propylbenzene	<51.1	ug/kg	51.1	10.7	1	06/09/21 10:43	06/09/21 18:14	103-65-1	
Styrene	<51.1	ug/kg	51.1	7.3	1	06/09/21 10:43	06/09/21 18:14	100-42-5	
1,1,1,2-Tetrachloroethane	<51.1	ug/kg	51.1	13.5	1	06/09/21 10:43	06/09/21 18:14	630-20-6	
1,1,2,2-Tetrachloroethane	<51.1	ug/kg	51.1	16.5	1	06/09/21 10:43	06/09/21 18:14	79-34-5	
Tetrachloroethene	<51.1	ug/kg	51.1	24.2	1	06/09/21 10:43	06/09/21 18:14	127-18-4	
Tetrahydrofuran	<2040	ug/kg	2040	421	1	06/09/21 10:43	06/09/21 18:14	109-99-9	
Toluene	<51.1	ug/kg	51.1	21.9	1	06/09/21 10:43	06/09/21 18:14	108-88-3	
1,2,3-Trichlorobenzene	<51.1	ug/kg	51.1	15.7	1	06/09/21 10:43	06/09/21 18:14	87-61-6	
1,2,4-Trichlorobenzene	<51.1	ug/kg	51.1	12.6	1	06/09/21 10:43	06/09/21 18:14	120-82-1	
1,1,1-Trichloroethane	<51.1	ug/kg	51.1	22.0	1	06/09/21 10:43	06/09/21 18:14	71-55-6	
1,1,2-Trichloroethane	<51.1	ug/kg	51.1	25.3	1	06/09/21 10:43	06/09/21 18:14	79-00-5	
Trichloroethene	<51.1	ug/kg	51.1	21.6	1	06/09/21 10:43	06/09/21 18:14	79-01-6	
Trichlorofluoromethane	<204	ug/kg	204	96.8	1	06/09/21 10:43	06/09/21 18:14	75-69-4	2M
1,2,3-Trichloropropane	<204	ug/kg	204	59.6	1	06/09/21 10:43	06/09/21 18:14	96-18-4	
1,1,2-Trichlorotrifluoroethane	<204	ug/kg	204	90.1	1	06/09/21 10:43	06/09/21 18:14	76-13-1	
1,2,4-Trimethylbenzene	<51.1	ug/kg	51.1	22.5	1	06/09/21 10:43	06/09/21 18:14	95-63-6	
1,3,5-Trimethylbenzene	<51.1	ug/kg	51.1	16.4	1	06/09/21 10:43	06/09/21 18:14	108-67-8	
Vinyl chloride	<20.4	ug/kg	20.4	10.1	1	06/09/21 10:43	06/09/21 18:14	75-01-4	
Xylene (Total)	<153	ug/kg	153	24.6	1	06/09/21 10:43	06/09/21 18:14	1330-20-7	
m&p-Xylene	<102	ug/kg	102	16.3	1	06/09/21 10:43	06/09/21 18:14	179601-23-1	
o-Xylene	<51.1	ug/kg	51.1	24.6	1	06/09/21 10:43	06/09/21 18:14	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	94	%	73-125		1	06/09/21 10:43	06/09/21 18:14	17060-07-0	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-02 (1-2) **Lab ID: 10563078002** Collected: 05/27/21 11:45 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
Surrogates									
Toluene-d8 (S)	100	%	75-125		1	06/09/21 10:43	06/09/21 18:14	2037-26-5	
4-Bromofluorobenzene (S)	98	%	75-125		1	06/09/21 10:43	06/09/21 18:14	460-00-4	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II
Pace Project No.: 10563078

Sample: TP-03 (1-2) **Lab ID: 10563078003** Collected: 05/27/21 11:15 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB									
Analytical Method: EPA 8082A Preparation Method: EPA 3546									
Pace Analytical Services - Minneapolis									
PCB-1016 (Aroclor 1016)	<60.1	ug/kg	60.1	20.7	1	06/07/21 15:07	06/08/21 19:11	12674-11-2	
PCB-1221 (Aroclor 1221)	<60.1	ug/kg	60.1	28.1	1	06/07/21 15:07	06/08/21 19:11	11104-28-2	
PCB-1232 (Aroclor 1232)	<60.1	ug/kg	60.1	24.7	1	06/07/21 15:07	06/08/21 19:11	11141-16-5	
PCB-1242 (Aroclor 1242)	<60.1	ug/kg	60.1	21.8	1	06/07/21 15:07	06/08/21 19:11	53469-21-9	
PCB-1248 (Aroclor 1248)	<60.1	ug/kg	60.1	35.9	1	06/07/21 15:07	06/08/21 19:11	12672-29-6	
PCB-1254 (Aroclor 1254)	<60.1	ug/kg	60.1	32.8	1	06/07/21 15:07	06/08/21 19:11	11097-69-1	
PCB-1260 (Aroclor 1260)	<60.1	ug/kg	60.1	22.2	1	06/07/21 15:07	06/08/21 19:11	11096-82-5	
PCB-1262 (Aroclor 1262)	<60.1	ug/kg	60.1	29.9	1	06/07/21 15:07	06/08/21 19:11	37324-23-5	
PCB-1268 (Aroclor 1268)	<60.1	ug/kg	60.1	28.3	1	06/07/21 15:07	06/08/21 19:11	11100-14-4	
Surrogates									
Tetrachloro-m-xylene (S)	75	%	59-125		1	06/07/21 15:07	06/08/21 19:11	877-09-8	
Decachlorobiphenyl (S)	92	%	57-125		1	06/07/21 15:07	06/08/21 19:11	2051-24-3	
WIDRO GCS Silica Gel									
Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
Pace Analytical Services - Minneapolis									
WDRO C10-C28	32.0	mg/kg	11.0	4.1	1	06/03/21 13:13	06/04/21 14:19		T6,T7
Surrogates									
n-Triacontane (S)	75	%	30-150		1	06/03/21 13:13	06/04/21 14:19		
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3050B									
Pace Analytical Services - Minneapolis									
Arsenic	6.1	mg/kg	5.6	1.2	5	06/07/21 13:07	06/14/21 13:17	7440-38-2	
Barium	68.9	mg/kg	2.8	0.45	5	06/07/21 13:07	06/14/21 13:17	7440-39-3	
Cadmium	0.61J	mg/kg	0.84	0.17	5	06/07/21 13:07	06/14/21 13:17	7440-43-9	D3
Chromium	17.5	mg/kg	2.8	0.56	5	06/07/21 13:07	06/14/21 13:17	7440-47-3	
Lead	95.1	mg/kg	2.8	0.64	5	06/07/21 13:07	06/14/21 13:17	7439-92-1	
Selenium	< 5.6	mg/kg	5.6	1.8	5	06/07/21 13:07	06/14/21 13:17	7782-49-2	D3
Silver	< 2.8	mg/kg	2.8	0.20	5	06/07/21 13:07	06/14/21 13:17	7440-22-4	D3
7471B Mercury									
Analytical Method: EPA 7471B Preparation Method: EPA 7471B									
Pace Analytical Services - Minneapolis									
Mercury	0.058	mg/kg	0.024	0.010	1	06/07/21 14:55	06/09/21 14:58	7439-97-6	
Dry Weight / %M by ASTM D2974									
Analytical Method: ASTM D2974									
Pace Analytical Services - Minneapolis									
Percent Moisture	16.9	%	0.10	0.10	1		06/03/21 15:45		N2
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Acenaphthene	< 12.0	ug/kg	12.0	0.53	1	06/04/21 08:54	06/15/21 19:08	83-32-9	
Acenaphthylene	< 12.0	ug/kg	12.0	0.82	1	06/04/21 08:54	06/15/21 19:08	208-96-8	
Anthracene	0.85J	ug/kg	12.0	0.38	1	06/04/21 08:54	06/15/21 19:08	120-12-7	
Benzo(a)anthracene	0.94J	ug/kg	12.0	0.49	1	06/04/21 08:54	06/15/21 19:08	56-55-3	
Benzo(a)pyrene	< 12.0	ug/kg	12.0	0.67	1	06/04/21 08:54	06/15/21 19:08	50-32-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-03 (1-2) **Lab ID: 10563078003** Collected: 05/27/21 11:15 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Benzo(b)fluoranthene	2.0J	ug/kg	12.0	0.56	1	06/04/21 08:54	06/15/21 19:08	205-99-2	
Benzo(g,h,i)perylene	<12.0	ug/kg	12.0	0.56	1	06/04/21 08:54	06/15/21 19:08	191-24-2	
Benzo(k)fluoranthene	0.60J	ug/kg	12.0	0.58	1	06/04/21 08:54	06/15/21 19:08	207-08-9	
Chrysene	1.3J	ug/kg	12.0	0.48	1	06/04/21 08:54	06/15/21 19:08	218-01-9	
Dibenz(a,h)anthracene	<12.0	ug/kg	12.0	0.79	1	06/04/21 08:54	06/15/21 19:08	53-70-3	
Fluoranthene	2.7J	ug/kg	12.0	0.72	1	06/04/21 08:54	06/15/21 19:08	206-44-0	
Fluorene	<12.0	ug/kg	12.0	0.72	1	06/04/21 08:54	06/15/21 19:08	86-73-7	
Indeno(1,2,3-cd)pyrene	0.67J	ug/kg	12.0	0.64	1	06/04/21 08:54	06/15/21 19:08	193-39-5	
Naphthalene	<12.0	ug/kg	12.0	0.54	1	06/04/21 08:54	06/15/21 19:08	91-20-3	
Phenanthrene	3.5J	ug/kg	12.0	0.84	1	06/04/21 08:54	06/15/21 19:08	85-01-8	
Pyrene	1.8J	ug/kg	12.0	0.77	1	06/04/21 08:54	06/15/21 19:08	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	73	%	50-125		1	06/04/21 08:54	06/15/21 19:08	321-60-8	
p-Terphenyl-d14 (S)	74	%	51-125		1	06/04/21 08:54	06/15/21 19:08	1718-51-0	

8260D MSV 5030 Med Level

Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B

Pace Analytical Services - Minneapolis

Acetone	<1400	ug/kg	1400	659	1	06/09/21 10:43	06/09/21 18:32	67-64-1	
Allyl chloride	<279	ug/kg	279	56.6	1	06/09/21 10:43	06/09/21 18:32	107-05-1	
Benzene	125	ug/kg	27.9	12.8	1	06/09/21 10:43	06/09/21 18:32	71-43-2	
Bromobenzene	<69.8	ug/kg	69.8	9.1	1	06/09/21 10:43	06/09/21 18:32	108-86-1	
Bromochloromethane	<69.8	ug/kg	69.8	34.5	1	06/09/21 10:43	06/09/21 18:32	74-97-5	
Bromodichloromethane	<69.8	ug/kg	69.8	22.2	1	06/09/21 10:43	06/09/21 18:32	75-27-4	
Bromoform	<279	ug/kg	279	92.5	1	06/09/21 10:43	06/09/21 18:32	75-25-2	
Bromomethane	<698	ug/kg	698	130	1	06/09/21 10:43	06/09/21 18:32	74-83-9	1M
2-Butanone (MEK)	129J	ug/kg	349	43.6	1	06/09/21 10:43	06/09/21 18:32	78-93-3	
n-Butylbenzene	46.5J	ug/kg	69.8	15.4	1	06/09/21 10:43	06/09/21 18:32	104-51-8	
sec-Butylbenzene	45.6J	ug/kg	69.8	30.6	1	06/09/21 10:43	06/09/21 18:32	135-98-8	
tert-Butylbenzene	<69.8	ug/kg	69.8	21.6	1	06/09/21 10:43	06/09/21 18:32	98-06-6	
Carbon tetrachloride	<69.8	ug/kg	69.8	33.9	1	06/09/21 10:43	06/09/21 18:32	56-23-5	
Chlorobenzene	<69.8	ug/kg	69.8	11.5	1	06/09/21 10:43	06/09/21 18:32	108-90-7	
Chloroethane	<698	ug/kg	698	111	1	06/09/21 10:43	06/09/21 18:32	75-00-3	
Chloroform	<69.8	ug/kg	69.8	30.7	1	06/09/21 10:43	06/09/21 18:32	67-66-3	
Chloromethane	<279	ug/kg	279	38.0	1	06/09/21 10:43	06/09/21 18:32	74-87-3	
2-Chlorotoluene	<69.8	ug/kg	69.8	17.2	1	06/09/21 10:43	06/09/21 18:32	95-49-8	
4-Chlorotoluene	<69.8	ug/kg	69.8	8.9	1	06/09/21 10:43	06/09/21 18:32	106-43-4	
1,2-Dibromo-3-chloropropane	<698	ug/kg	698	165	1	06/09/21 10:43	06/09/21 18:32	96-12-8	
Dibromochloromethane	<279	ug/kg	279	23.6	1	06/09/21 10:43	06/09/21 18:32	124-48-1	
1,2-Dibromoethane (EDB)	<69.8	ug/kg	69.8	24.4	1	06/09/21 10:43	06/09/21 18:32	106-93-4	
Dibromomethane	<69.8	ug/kg	69.8	30.4	1	06/09/21 10:43	06/09/21 18:32	74-95-3	
1,2-Dichlorobenzene	<69.8	ug/kg	69.8	13.2	1	06/09/21 10:43	06/09/21 18:32	95-50-1	
1,3-Dichlorobenzene	<69.8	ug/kg	69.8	8.6	1	06/09/21 10:43	06/09/21 18:32	541-73-1	
1,4-Dichlorobenzene	<69.8	ug/kg	69.8	11.1	1	06/09/21 10:43	06/09/21 18:32	106-46-7	
Dichlorodifluoromethane	<279	ug/kg	279	37.2	1	06/09/21 10:43	06/09/21 18:32	75-71-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-03 (1-2) Lab ID: 10563078003 Collected: 05/27/21 11:15 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
1,1-Dichloroethane	<69.8	ug/kg	69.8	31.4	1	06/09/21 10:43	06/09/21 18:32	75-34-3	
1,2-Dichloroethane	<69.8	ug/kg	69.8	26.7	1	06/09/21 10:43	06/09/21 18:32	107-06-2	
1,1-Dichloroethene	<69.8	ug/kg	69.8	25.0	1	06/09/21 10:43	06/09/21 18:32	75-35-4	
cis-1,2-Dichloroethene	<69.8	ug/kg	69.8	19.4	1	06/09/21 10:43	06/09/21 18:32	156-59-2	
trans-1,2-Dichloroethene	<69.8	ug/kg	69.8	32.0	1	06/09/21 10:43	06/09/21 18:32	156-60-5	
Dichlorofluoromethane	<69.8	ug/kg	69.8	194	1	06/09/21 10:43	06/09/21 18:32	75-43-4	
1,2-Dichloropropane	<69.8	ug/kg	69.8	31.8	1	06/09/21 10:43	06/09/21 18:32	78-87-5	
1,3-Dichloropropane	<69.8	ug/kg	69.8	25.7	1	06/09/21 10:43	06/09/21 18:32	142-28-9	
2,2-Dichloropropane	<279	ug/kg	279	26.5	1	06/09/21 10:43	06/09/21 18:32	594-20-7	
1,1-Dichloropropene	<69.8	ug/kg	69.8	28.8	1	06/09/21 10:43	06/09/21 18:32	563-58-6	
cis-1,3-Dichloropropene	<69.8	ug/kg	69.8	6.7	1	06/09/21 10:43	06/09/21 18:32	10061-01-5	
trans-1,3-Dichloropropene	<69.8	ug/kg	69.8	8.8	1	06/09/21 10:43	06/09/21 18:32	10061-02-6	
Diethyl ether (Ethyl ether)	<279	ug/kg	279	59.5	1	06/09/21 10:43	06/09/21 18:32	60-29-7	
Ethylbenzene	187	ug/kg	69.8	12.4	1	06/09/21 10:43	06/09/21 18:32	100-41-4	
Hexachloro-1,3-butadiene	<349	ug/kg	349	31.6	1	06/09/21 10:43	06/09/21 18:32	87-68-3	
Isopropylbenzene (Cumene)	117	ug/kg	69.8	26.4	1	06/09/21 10:43	06/09/21 18:32	98-82-8	
p-Isopropyltoluene	37.5J	ug/kg	69.8	22.1	1	06/09/21 10:43	06/09/21 18:32	99-87-6	
Methylene Chloride	<279	ug/kg	279	132	1	06/09/21 10:43	06/09/21 18:32	75-09-2	
4-Methyl-2-pentanone (MIBK)	<349	ug/kg	349	33.4	1	06/09/21 10:43	06/09/21 18:32	108-10-1	
Methyl-tert-butyl ether	<69.8	ug/kg	69.8	13.9	1	06/09/21 10:43	06/09/21 18:32	1634-04-4	
Naphthalene	646	ug/kg	279	78.5	1	06/09/21 10:43	06/09/21 18:32	91-20-3	
n-Propylbenzene	143	ug/kg	69.8	14.7	1	06/09/21 10:43	06/09/21 18:32	103-65-1	
Styrene	<69.8	ug/kg	69.8	10.0	1	06/09/21 10:43	06/09/21 18:32	100-42-5	
1,1,1,2-Tetrachloroethane	<69.8	ug/kg	69.8	18.4	1	06/09/21 10:43	06/09/21 18:32	630-20-6	
1,1,2,2-Tetrachloroethane	<69.8	ug/kg	69.8	22.5	1	06/09/21 10:43	06/09/21 18:32	79-34-5	
Tetrachloroethene	<69.8	ug/kg	69.8	33.1	1	06/09/21 10:43	06/09/21 18:32	127-18-4	
Tetrahydrofuran	<2790	ug/kg	2790	575	1	06/09/21 10:43	06/09/21 18:32	109-99-9	
Toluene	840	ug/kg	69.8	29.9	1	06/09/21 10:43	06/09/21 18:32	108-88-3	
1,2,3-Trichlorobenzene	<69.8	ug/kg	69.8	21.5	1	06/09/21 10:43	06/09/21 18:32	87-61-6	
1,2,4-Trichlorobenzene	<69.8	ug/kg	69.8	17.2	1	06/09/21 10:43	06/09/21 18:32	120-82-1	
1,1,1-Trichloroethane	<69.8	ug/kg	69.8	30.0	1	06/09/21 10:43	06/09/21 18:32	71-55-6	
1,1,2-Trichloroethane	<69.8	ug/kg	69.8	34.6	1	06/09/21 10:43	06/09/21 18:32	79-00-5	
Trichloroethene	<69.8	ug/kg	69.8	29.5	1	06/09/21 10:43	06/09/21 18:32	79-01-6	
Trichlorofluoromethane	<279	ug/kg	279	132	1	06/09/21 10:43	06/09/21 18:32	75-69-4	2M
1,2,3-Trichloropropane	<279	ug/kg	279	81.4	1	06/09/21 10:43	06/09/21 18:32	96-18-4	
1,1,2-Trichlorotrifluoroethane	<279	ug/kg	279	123	1	06/09/21 10:43	06/09/21 18:32	76-13-1	
1,2,4-Trimethylbenzene	380	ug/kg	69.8	30.7	1	06/09/21 10:43	06/09/21 18:32	95-63-6	
1,3,5-Trimethylbenzene	86.9	ug/kg	69.8	22.3	1	06/09/21 10:43	06/09/21 18:32	108-67-8	
Vinyl chloride	<27.9	ug/kg	27.9	13.9	1	06/09/21 10:43	06/09/21 18:32	75-01-4	
Xylene (Total)	1360	ug/kg	210	33.7	1	06/09/21 10:43	06/09/21 18:32	1330-20-7	
m&p-Xylene	777	ug/kg	140	22.2	1	06/09/21 10:43	06/09/21 18:32	179601-23-1	
o-Xylene	584	ug/kg	69.8	33.7	1	06/09/21 10:43	06/09/21 18:32	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	94	%	73-125		1	06/09/21 10:43	06/09/21 18:32	17060-07-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-03 (1-2) **Lab ID: 10563078003** Collected: 05/27/21 11:15 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
Surrogates									
Toluene-d8 (S)	101	%	75-125		1	06/09/21 10:43	06/09/21 18:32	2037-26-5	
4-Bromofluorobenzene (S)	99	%	75-125		1	06/09/21 10:43	06/09/21 18:32	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-04 (4-5) **Lab ID: 10563078004** Collected: 05/27/21 12:30 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB									
Analytical Method: EPA 8082A Preparation Method: EPA 3546									
Pace Analytical Services - Minneapolis									
PCB-1016 (Aroclor 1016)	<53.8	ug/kg	53.8	18.6	1	06/07/21 15:07	06/08/21 19:27	12674-11-2	
PCB-1221 (Aroclor 1221)	<53.8	ug/kg	53.8	25.2	1	06/07/21 15:07	06/08/21 19:27	11104-28-2	
PCB-1232 (Aroclor 1232)	<53.8	ug/kg	53.8	22.1	1	06/07/21 15:07	06/08/21 19:27	11141-16-5	
PCB-1242 (Aroclor 1242)	<53.8	ug/kg	53.8	19.5	1	06/07/21 15:07	06/08/21 19:27	53469-21-9	
PCB-1248 (Aroclor 1248)	<53.8	ug/kg	53.8	32.1	1	06/07/21 15:07	06/08/21 19:27	12672-29-6	
PCB-1254 (Aroclor 1254)	<53.8	ug/kg	53.8	29.4	1	06/07/21 15:07	06/08/21 19:27	11097-69-1	
PCB-1260 (Aroclor 1260)	<53.8	ug/kg	53.8	19.9	1	06/07/21 15:07	06/08/21 19:27	11096-82-5	
PCB-1262 (Aroclor 1262)	<53.8	ug/kg	53.8	26.8	1	06/07/21 15:07	06/08/21 19:27	37324-23-5	
PCB-1268 (Aroclor 1268)	<53.8	ug/kg	53.8	25.4	1	06/07/21 15:07	06/08/21 19:27	11100-14-4	
Surrogates									
Tetrachloro-m-xylene (S)	88	%	59-125		1	06/07/21 15:07	06/08/21 19:27	877-09-8	
Decachlorobiphenyl (S)	100	%	57-125		1	06/07/21 15:07	06/08/21 19:27	2051-24-3	
WIDRO GCS Silica Gel									
Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
Pace Analytical Services - Minneapolis									
WDRO C10-C28	<9.8	mg/kg	9.8	3.6	1	06/03/21 13:13	06/04/21 15:02		
Surrogates									
n-Triacontane (S)	58	%	30-150		1	06/03/21 13:13	06/04/21 15:02		
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3050B									
Pace Analytical Services - Minneapolis									
Arsenic	1.1	mg/kg	1.0	0.21	1	06/07/21 13:07	06/14/21 11:55	7440-38-2	
Barium	25.9	mg/kg	0.52	0.082	1	06/07/21 13:07	06/14/21 11:55	7440-39-3	
Cadmium	0.078J	mg/kg	0.16	0.031	1	06/07/21 13:07	06/14/21 11:55	7440-43-9	
Chromium	10.2	mg/kg	0.52	0.10	1	06/07/21 13:07	06/14/21 11:55	7440-47-3	
Lead	4.8	mg/kg	0.52	0.12	1	06/07/21 13:07	06/14/21 11:55	7439-92-1	
Selenium	<1.0	mg/kg	1.0	0.34	1	06/07/21 13:07	06/14/21 11:55	7782-49-2	
Silver	<0.52	mg/kg	0.52	0.038	1	06/07/21 13:07	06/14/21 11:55	7440-22-4	
7471B Mercury									
Analytical Method: EPA 7471B Preparation Method: EPA 7471B									
Pace Analytical Services - Minneapolis									
Mercury	<0.020	mg/kg	0.020	0.0086	1	06/07/21 14:55	06/09/21 15:00	7439-97-6	
Dry Weight / %M by ASTM D2974									
Analytical Method: ASTM D2974									
Pace Analytical Services - Minneapolis									
Percent Moisture	8.2	%	0.10	0.10	1		06/03/21 15:45		N2
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Acenaphthene	15.2	ug/kg	10.9	0.49	1	06/04/21 08:54	06/15/21 19:27	83-32-9	
Acenaphthylene	45.9	ug/kg	10.9	0.74	1	06/04/21 08:54	06/15/21 19:27	208-96-8	
Anthracene	88.2	ug/kg	10.9	0.34	1	06/04/21 08:54	06/15/21 19:27	120-12-7	
Benzo(a)anthracene	131	ug/kg	10.9	0.45	1	06/04/21 08:54	06/15/21 19:27	56-55-3	
Benzo(a)pyrene	116	ug/kg	10.9	0.61	1	06/04/21 08:54	06/15/21 19:27	50-32-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-04 (4-5) **Lab ID: 10563078004** Collected: 05/27/21 12:30 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Benzo(b)fluoranthene	281	ug/kg	10.9	0.51	1	06/04/21 08:54	06/15/21 19:27	205-99-2	
Benzo(g,h,i)perylene	51.7	ug/kg	10.9	0.51	1	06/04/21 08:54	06/15/21 19:27	191-24-2	
Benzo(k)fluoranthene	99.5	ug/kg	10.9	0.52	1	06/04/21 08:54	06/15/21 19:27	207-08-9	
Chrysene	188	ug/kg	10.9	0.44	1	06/04/21 08:54	06/15/21 19:27	218-01-9	
Dibenz(a,h)anthracene	19.5	ug/kg	10.9	0.72	1	06/04/21 08:54	06/15/21 19:27	53-70-3	
Fluoranthene	284	ug/kg	10.9	0.66	1	06/04/21 08:54	06/15/21 19:27	206-44-0	
Fluorene	13.8	ug/kg	10.9	0.66	1	06/04/21 08:54	06/15/21 19:27	86-73-7	
Indeno(1,2,3-cd)pyrene	65.9	ug/kg	10.9	0.58	1	06/04/21 08:54	06/15/21 19:27	193-39-5	
Naphthalene	53.4	ug/kg	10.9	0.49	1	06/04/21 08:54	06/15/21 19:27	91-20-3	
Phenanthrene	163	ug/kg	10.9	0.77	1	06/04/21 08:54	06/15/21 19:27	85-01-8	
Pyrene	234	ug/kg	10.9	0.70	1	06/04/21 08:54	06/15/21 19:27	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	75	%	50-125		1	06/04/21 08:54	06/15/21 19:27	321-60-8	
p-Terphenyl-d14 (S)	75	%	51-125		1	06/04/21 08:54	06/15/21 19:27	1718-51-0	

8260D MSV 5030 Med Level

Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B

Pace Analytical Services - Minneapolis

Acetone	<1240	ug/kg	1240	584	1	06/09/21 10:43	06/09/21 18:51	67-64-1	
Allyl chloride	<247	ug/kg	247	50.1	1	06/09/21 10:43	06/09/21 18:51	107-05-1	
Benzene	<24.7	ug/kg	24.7	11.4	1	06/09/21 10:43	06/09/21 18:51	71-43-2	
Bromobenzene	<61.8	ug/kg	61.8	8.1	1	06/09/21 10:43	06/09/21 18:51	108-86-1	
Bromochloromethane	<61.8	ug/kg	61.8	30.5	1	06/09/21 10:43	06/09/21 18:51	74-97-5	
Bromodichloromethane	<61.8	ug/kg	61.8	19.7	1	06/09/21 10:43	06/09/21 18:51	75-27-4	
Bromoform	<247	ug/kg	247	81.9	1	06/09/21 10:43	06/09/21 18:51	75-25-2	
Bromomethane	<618	ug/kg	618	116	1	06/09/21 10:43	06/09/21 18:51	74-83-9	1M
2-Butanone (MEK)	72.5J	ug/kg	309	38.6	1	06/09/21 10:43	06/09/21 18:51	78-93-3	
n-Butylbenzene	<61.8	ug/kg	61.8	13.6	1	06/09/21 10:43	06/09/21 18:51	104-51-8	
sec-Butylbenzene	<61.8	ug/kg	61.8	27.1	1	06/09/21 10:43	06/09/21 18:51	135-98-8	
tert-Butylbenzene	<61.8	ug/kg	61.8	19.2	1	06/09/21 10:43	06/09/21 18:51	98-06-6	
Carbon tetrachloride	<61.8	ug/kg	61.8	30.1	1	06/09/21 10:43	06/09/21 18:51	56-23-5	
Chlorobenzene	<61.8	ug/kg	61.8	10.2	1	06/09/21 10:43	06/09/21 18:51	108-90-7	
Chloroethane	<618	ug/kg	618	97.9	1	06/09/21 10:43	06/09/21 18:51	75-00-3	
Chloroform	<61.8	ug/kg	61.8	27.2	1	06/09/21 10:43	06/09/21 18:51	67-66-3	
Chloromethane	<247	ug/kg	247	33.6	1	06/09/21 10:43	06/09/21 18:51	74-87-3	
2-Chlorotoluene	<61.8	ug/kg	61.8	15.2	1	06/09/21 10:43	06/09/21 18:51	95-49-8	
4-Chlorotoluene	<61.8	ug/kg	61.8	7.9	1	06/09/21 10:43	06/09/21 18:51	106-43-4	
1,2-Dibromo-3-chloropropane	<618	ug/kg	618	146	1	06/09/21 10:43	06/09/21 18:51	96-12-8	
Dibromochloromethane	<247	ug/kg	247	20.9	1	06/09/21 10:43	06/09/21 18:51	124-48-1	
1,2-Dibromoethane (EDB)	<61.8	ug/kg	61.8	21.6	1	06/09/21 10:43	06/09/21 18:51	106-93-4	
Dibromomethane	<61.8	ug/kg	61.8	27.0	1	06/09/21 10:43	06/09/21 18:51	74-95-3	
1,2-Dichlorobenzene	<61.8	ug/kg	61.8	11.7	1	06/09/21 10:43	06/09/21 18:51	95-50-1	
1,3-Dichlorobenzene	<61.8	ug/kg	61.8	7.7	1	06/09/21 10:43	06/09/21 18:51	541-73-1	
1,4-Dichlorobenzene	<61.8	ug/kg	61.8	9.8	1	06/09/21 10:43	06/09/21 18:51	106-46-7	
Dichlorodifluoromethane	<247	ug/kg	247	32.9	1	06/09/21 10:43	06/09/21 18:51	75-71-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-04 (4-5) **Lab ID: 10563078004** Collected: 05/27/21 12:30 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
1,1-Dichloroethane	<61.8	ug/kg	61.8	27.8	1	06/09/21 10:43	06/09/21 18:51	75-34-3	
1,2-Dichloroethane	<61.8	ug/kg	61.8	23.6	1	06/09/21 10:43	06/09/21 18:51	107-06-2	
1,1-Dichloroethene	<61.8	ug/kg	61.8	22.1	1	06/09/21 10:43	06/09/21 18:51	75-35-4	
cis-1,2-Dichloroethene	<61.8	ug/kg	61.8	17.2	1	06/09/21 10:43	06/09/21 18:51	156-59-2	
trans-1,2-Dichloroethene	<61.8	ug/kg	61.8	28.3	1	06/09/21 10:43	06/09/21 18:51	156-60-5	
Dichlorofluoromethane	<61.8	ug/kg	61.8	172	1	06/09/21 10:43	06/09/21 18:51	75-43-4	
1,2-Dichloropropane	<61.8	ug/kg	61.8	28.2	1	06/09/21 10:43	06/09/21 18:51	78-87-5	
1,3-Dichloropropane	<61.8	ug/kg	61.8	22.8	1	06/09/21 10:43	06/09/21 18:51	142-28-9	
2,2-Dichloropropane	<247	ug/kg	247	23.5	1	06/09/21 10:43	06/09/21 18:51	594-20-7	
1,1-Dichloropropene	<61.8	ug/kg	61.8	25.5	1	06/09/21 10:43	06/09/21 18:51	563-58-6	
cis-1,3-Dichloropropene	<61.8	ug/kg	61.8	6.0	1	06/09/21 10:43	06/09/21 18:51	10061-01-5	
trans-1,3-Dichloropropene	<61.8	ug/kg	61.8	7.8	1	06/09/21 10:43	06/09/21 18:51	10061-02-6	
Diethyl ether (Ethyl ether)	<247	ug/kg	247	52.7	1	06/09/21 10:43	06/09/21 18:51	60-29-7	
Ethylbenzene	<61.8	ug/kg	61.8	11.0	1	06/09/21 10:43	06/09/21 18:51	100-41-4	
Hexachloro-1,3-butadiene	<309	ug/kg	309	27.9	1	06/09/21 10:43	06/09/21 18:51	87-68-3	
Isopropylbenzene (Cumene)	<61.8	ug/kg	61.8	23.4	1	06/09/21 10:43	06/09/21 18:51	98-82-8	
p-Isopropyltoluene	<61.8	ug/kg	61.8	19.5	1	06/09/21 10:43	06/09/21 18:51	99-87-6	
Methylene Chloride	<247	ug/kg	247	117	1	06/09/21 10:43	06/09/21 18:51	75-09-2	
4-Methyl-2-pentanone (MIBK)	<309	ug/kg	309	29.6	1	06/09/21 10:43	06/09/21 18:51	108-10-1	
Methyl-tert-butyl ether	<61.8	ug/kg	61.8	12.3	1	06/09/21 10:43	06/09/21 18:51	1634-04-4	
Naphthalene	<247	ug/kg	247	69.5	1	06/09/21 10:43	06/09/21 18:51	91-20-3	
n-Propylbenzene	<61.8	ug/kg	61.8	13.0	1	06/09/21 10:43	06/09/21 18:51	103-65-1	
Styrene	<61.8	ug/kg	61.8	8.9	1	06/09/21 10:43	06/09/21 18:51	100-42-5	
1,1,1,2-Tetrachloroethane	<61.8	ug/kg	61.8	16.3	1	06/09/21 10:43	06/09/21 18:51	630-20-6	
1,1,2,2-Tetrachloroethane	<61.8	ug/kg	61.8	19.9	1	06/09/21 10:43	06/09/21 18:51	79-34-5	
Tetrachloroethene	<61.8	ug/kg	61.8	29.3	1	06/09/21 10:43	06/09/21 18:51	127-18-4	
Tetrahydrofuran	<2470	ug/kg	2470	510	1	06/09/21 10:43	06/09/21 18:51	109-99-9	
Toluene	<61.8	ug/kg	61.8	26.5	1	06/09/21 10:43	06/09/21 18:51	108-88-3	
1,2,3-Trichlorobenzene	<61.8	ug/kg	61.8	19.0	1	06/09/21 10:43	06/09/21 18:51	87-61-6	
1,2,4-Trichlorobenzene	<61.8	ug/kg	61.8	15.2	1	06/09/21 10:43	06/09/21 18:51	120-82-1	
1,1,1-Trichloroethane	<61.8	ug/kg	61.8	26.6	1	06/09/21 10:43	06/09/21 18:51	71-55-6	
1,1,2-Trichloroethane	<61.8	ug/kg	61.8	30.7	1	06/09/21 10:43	06/09/21 18:51	79-00-5	
Trichloroethene	<61.8	ug/kg	61.8	26.1	1	06/09/21 10:43	06/09/21 18:51	79-01-6	
Trichlorofluoromethane	<247	ug/kg	247	117	1	06/09/21 10:43	06/09/21 18:51	75-69-4	2M
1,2,3-Trichloropropane	<247	ug/kg	247	72.1	1	06/09/21 10:43	06/09/21 18:51	96-18-4	
1,1,2-Trichlorotrifluoroethane	<247	ug/kg	247	109	1	06/09/21 10:43	06/09/21 18:51	76-13-1	
1,2,4-Trimethylbenzene	<61.8	ug/kg	61.8	27.2	1	06/09/21 10:43	06/09/21 18:51	95-63-6	
1,3,5-Trimethylbenzene	<61.8	ug/kg	61.8	19.8	1	06/09/21 10:43	06/09/21 18:51	108-67-8	
Vinyl chloride	<24.7	ug/kg	24.7	12.3	1	06/09/21 10:43	06/09/21 18:51	75-01-4	
Xylene (Total)	<186	ug/kg	186	29.8	1	06/09/21 10:43	06/09/21 18:51	1330-20-7	
m&p-Xylene	<124	ug/kg	124	19.7	1	06/09/21 10:43	06/09/21 18:51	179601-23-1	
o-Xylene	<61.8	ug/kg	61.8	29.8	1	06/09/21 10:43	06/09/21 18:51	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	93	%	73-125		1	06/09/21 10:43	06/09/21 18:51	17060-07-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-04 (4-5) **Lab ID: 10563078004** Collected: 05/27/21 12:30 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
Surrogates									
Toluene-d8 (S)	100	%	75-125		1	06/09/21 10:43	06/09/21 18:51	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1	06/09/21 10:43	06/09/21 18:51	460-00-4	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-05 (4-5) **Lab ID: 10563078005** Collected: 05/27/21 12:50 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB									
Analytical Method: EPA 8082A Preparation Method: EPA 3546									
Pace Analytical Services - Minneapolis									
PCB-1016 (Aroclor 1016)	<54.1	ug/kg	54.1	18.7	1	06/07/21 15:07	06/08/21 19:43	12674-11-2	
PCB-1221 (Aroclor 1221)	<54.1	ug/kg	54.1	25.4	1	06/07/21 15:07	06/08/21 19:43	11104-28-2	
PCB-1232 (Aroclor 1232)	<54.1	ug/kg	54.1	22.3	1	06/07/21 15:07	06/08/21 19:43	11141-16-5	
PCB-1242 (Aroclor 1242)	<54.1	ug/kg	54.1	19.7	1	06/07/21 15:07	06/08/21 19:43	53469-21-9	
PCB-1248 (Aroclor 1248)	<54.1	ug/kg	54.1	32.4	1	06/07/21 15:07	06/08/21 19:43	12672-29-6	
PCB-1254 (Aroclor 1254)	<54.1	ug/kg	54.1	29.6	1	06/07/21 15:07	06/08/21 19:43	11097-69-1	
PCB-1260 (Aroclor 1260)	<54.1	ug/kg	54.1	20.0	1	06/07/21 15:07	06/08/21 19:43	11096-82-5	
PCB-1262 (Aroclor 1262)	<54.1	ug/kg	54.1	27.0	1	06/07/21 15:07	06/08/21 19:43	37324-23-5	
PCB-1268 (Aroclor 1268)	<54.1	ug/kg	54.1	25.5	1	06/07/21 15:07	06/08/21 19:43	11100-14-4	
Surrogates									
Tetrachloro-m-xylene (S)	79	%	59-125		1	06/07/21 15:07	06/08/21 19:43	877-09-8	
Decachlorobiphenyl (S)	102	%	57-125		1	06/07/21 15:07	06/08/21 19:43	2051-24-3	
WIDRO GCS Silica Gel									
Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
Pace Analytical Services - Minneapolis									
WDRO C10-C28	<9.3	mg/kg	9.3	3.5	1	06/03/21 13:13	06/04/21 15:09		
Surrogates									
n-Triacontane (S)	60	%	30-150		1	06/03/21 13:13	06/04/21 15:09		
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3050B									
Pace Analytical Services - Minneapolis									
Arsenic	1.2	mg/kg	1.1	0.22	1	06/07/21 13:07	06/14/21 11:57	7440-38-2	
Barium	21.2	mg/kg	0.53	0.084	1	06/07/21 13:07	06/14/21 11:57	7440-39-3	
Cadmium	0.060J	mg/kg	0.16	0.032	1	06/07/21 13:07	06/14/21 11:57	7440-43-9	
Chromium	7.4	mg/kg	0.53	0.11	1	06/07/21 13:07	06/14/21 11:57	7440-47-3	
Lead	2.9	mg/kg	0.53	0.12	1	06/07/21 13:07	06/14/21 11:57	7439-92-1	
Selenium	<1.1	mg/kg	1.1	0.35	1	06/07/21 13:07	06/14/21 11:57	7782-49-2	
Silver	<0.53	mg/kg	0.53	0.039	1	06/07/21 13:07	06/14/21 11:57	7440-22-4	
7471B Mercury									
Analytical Method: EPA 7471B Preparation Method: EPA 7471B									
Pace Analytical Services - Minneapolis									
Mercury	<0.019	mg/kg	0.019	0.0083	1	06/07/21 14:55	06/09/21 15:05	7439-97-6	
Dry Weight / %M by ASTM D2974									
Analytical Method: ASTM D2974									
Pace Analytical Services - Minneapolis									
Percent Moisture	7.7	%	0.10	0.10	1		06/03/21 15:45		N2
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Acenaphthene	<10.8	ug/kg	10.8	0.48	1	06/04/21 08:54	06/15/21 19:46	83-32-9	
Acenaphthylene	1.3J	ug/kg	10.8	0.74	1	06/04/21 08:54	06/15/21 19:46	208-96-8	
Anthracene	2.3J	ug/kg	10.8	0.34	1	06/04/21 08:54	06/15/21 19:46	120-12-7	
Benzo(a)anthracene	4.4J	ug/kg	10.8	0.44	1	06/04/21 08:54	06/15/21 19:46	56-55-3	
Benzo(a)pyrene	4.6J	ug/kg	10.8	0.61	1	06/04/21 08:54	06/15/21 19:46	50-32-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-05 (4-5) **Lab ID: 10563078005** Collected: 05/27/21 12:50 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Benzo(b)fluoranthene	8.8J	ug/kg	10.8	0.50	1	06/04/21 08:54	06/15/21 19:46	205-99-2	
Benzo(g,h,i)perylene	2.5J	ug/kg	10.8	0.50	1	06/04/21 08:54	06/15/21 19:46	191-24-2	
Benzo(k)fluoranthene	3.4J	ug/kg	10.8	0.52	1	06/04/21 08:54	06/15/21 19:46	207-08-9	
Chrysene	5.5J	ug/kg	10.8	0.43	1	06/04/21 08:54	06/15/21 19:46	218-01-9	
Dibenz(a,h)anthracene	<10.8	ug/kg	10.8	0.71	1	06/04/21 08:54	06/15/21 19:46	53-70-3	
Fluoranthene	9.7J	ug/kg	10.8	0.65	1	06/04/21 08:54	06/15/21 19:46	206-44-0	
Fluorene	0.69J	ug/kg	10.8	0.65	1	06/04/21 08:54	06/15/21 19:46	86-73-7	
Indeno(1,2,3-cd)pyrene	2.8J	ug/kg	10.8	0.58	1	06/04/21 08:54	06/15/21 19:46	193-39-5	
Naphthalene	1.0J	ug/kg	10.8	0.49	1	06/04/21 08:54	06/15/21 19:46	91-20-3	
Phenanthrene	5.5J	ug/kg	10.8	0.76	1	06/04/21 08:54	06/15/21 19:46	85-01-8	
Pyrene	7.2J	ug/kg	10.8	0.70	1	06/04/21 08:54	06/15/21 19:46	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	73	%	50-125		1	06/04/21 08:54	06/15/21 19:46	321-60-8	
p-Terphenyl-d14 (S)	72	%	51-125		1	06/04/21 08:54	06/15/21 19:46	1718-51-0	

8260D MSV 5030 Med Level

Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B

Pace Analytical Services - Minneapolis

Acetone	<1320	ug/kg	1320	622	1	06/09/21 10:43	06/09/21 19:08	67-64-1	
Allyl chloride	<264	ug/kg	264	53.4	1	06/09/21 10:43	06/09/21 19:08	107-05-1	
Benzene	<26.4	ug/kg	26.4	12.1	1	06/09/21 10:43	06/09/21 19:08	71-43-2	
Bromobenzene	<65.9	ug/kg	65.9	8.6	1	06/09/21 10:43	06/09/21 19:08	108-86-1	
Bromochloromethane	<65.9	ug/kg	65.9	32.6	1	06/09/21 10:43	06/09/21 19:08	74-97-5	
Bromodichloromethane	<65.9	ug/kg	65.9	21.0	1	06/09/21 10:43	06/09/21 19:08	75-27-4	
Bromoform	<264	ug/kg	264	87.3	1	06/09/21 10:43	06/09/21 19:08	75-25-2	
Bromomethane	<659	ug/kg	659	123	1	06/09/21 10:43	06/09/21 19:08	74-83-9	1M
2-Butanone (MEK)	75.7J	ug/kg	330	41.1	1	06/09/21 10:43	06/09/21 19:08	78-93-3	
n-Butylbenzene	<65.9	ug/kg	65.9	14.5	1	06/09/21 10:43	06/09/21 19:08	104-51-8	
sec-Butylbenzene	<65.9	ug/kg	65.9	28.9	1	06/09/21 10:43	06/09/21 19:08	135-98-8	
tert-Butylbenzene	<65.9	ug/kg	65.9	20.4	1	06/09/21 10:43	06/09/21 19:08	98-06-6	
Carbon tetrachloride	<65.9	ug/kg	65.9	32.0	1	06/09/21 10:43	06/09/21 19:08	56-23-5	
Chlorobenzene	<65.9	ug/kg	65.9	10.8	1	06/09/21 10:43	06/09/21 19:08	108-90-7	
Chloroethane	<659	ug/kg	659	104	1	06/09/21 10:43	06/09/21 19:08	75-00-3	
Chloroform	<65.9	ug/kg	65.9	29.0	1	06/09/21 10:43	06/09/21 19:08	67-66-3	
Chloromethane	<264	ug/kg	264	35.9	1	06/09/21 10:43	06/09/21 19:08	74-87-3	
2-Chlorotoluene	<65.9	ug/kg	65.9	16.2	1	06/09/21 10:43	06/09/21 19:08	95-49-8	
4-Chlorotoluene	<65.9	ug/kg	65.9	8.4	1	06/09/21 10:43	06/09/21 19:08	106-43-4	
1,2-Dibromo-3-chloropropane	<659	ug/kg	659	156	1	06/09/21 10:43	06/09/21 19:08	96-12-8	
Dibromochloromethane	<264	ug/kg	264	22.3	1	06/09/21 10:43	06/09/21 19:08	124-48-1	
1,2-Dibromoethane (EDB)	<65.9	ug/kg	65.9	23.1	1	06/09/21 10:43	06/09/21 19:08	106-93-4	
Dibromomethane	<65.9	ug/kg	65.9	28.7	1	06/09/21 10:43	06/09/21 19:08	74-95-3	
1,2-Dichlorobenzene	<65.9	ug/kg	65.9	12.4	1	06/09/21 10:43	06/09/21 19:08	95-50-1	
1,3-Dichlorobenzene	<65.9	ug/kg	65.9	8.2	1	06/09/21 10:43	06/09/21 19:08	541-73-1	
1,4-Dichlorobenzene	<65.9	ug/kg	65.9	10.4	1	06/09/21 10:43	06/09/21 19:08	106-46-7	
Dichlorodifluoromethane	<264	ug/kg	264	35.1	1	06/09/21 10:43	06/09/21 19:08	75-71-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-05 (4-5) Lab ID: 10563078005 Collected: 05/27/21 12:50 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
1,1-Dichloroethane	<65.9	ug/kg	65.9	29.7	1	06/09/21 10:43	06/09/21 19:08	75-34-3	
1,2-Dichloroethane	<65.9	ug/kg	65.9	25.2	1	06/09/21 10:43	06/09/21 19:08	107-06-2	
1,1-Dichloroethene	<65.9	ug/kg	65.9	23.6	1	06/09/21 10:43	06/09/21 19:08	75-35-4	
cis-1,2-Dichloroethene	<65.9	ug/kg	65.9	18.3	1	06/09/21 10:43	06/09/21 19:08	156-59-2	
trans-1,2-Dichloroethene	<65.9	ug/kg	65.9	30.2	1	06/09/21 10:43	06/09/21 19:08	156-60-5	
Dichlorofluoromethane	<65.9	ug/kg	65.9	183	1	06/09/21 10:43	06/09/21 19:08	75-43-4	
1,2-Dichloropropane	<65.9	ug/kg	65.9	30.1	1	06/09/21 10:43	06/09/21 19:08	78-87-5	
1,3-Dichloropropane	<65.9	ug/kg	65.9	24.3	1	06/09/21 10:43	06/09/21 19:08	142-28-9	
2,2-Dichloropropane	<264	ug/kg	264	25.0	1	06/09/21 10:43	06/09/21 19:08	594-20-7	
1,1-Dichloropropene	<65.9	ug/kg	65.9	27.2	1	06/09/21 10:43	06/09/21 19:08	563-58-6	
cis-1,3-Dichloropropene	<65.9	ug/kg	65.9	6.4	1	06/09/21 10:43	06/09/21 19:08	10061-01-5	
trans-1,3-Dichloropropene	<65.9	ug/kg	65.9	8.3	1	06/09/21 10:43	06/09/21 19:08	10061-02-6	
Diethyl ether (Ethyl ether)	<264	ug/kg	264	56.2	1	06/09/21 10:43	06/09/21 19:08	60-29-7	
Ethylbenzene	<65.9	ug/kg	65.9	11.7	1	06/09/21 10:43	06/09/21 19:08	100-41-4	
Hexachloro-1,3-butadiene	<330	ug/kg	330	29.8	1	06/09/21 10:43	06/09/21 19:08	87-68-3	
Isopropylbenzene (Cumene)	<65.9	ug/kg	65.9	24.9	1	06/09/21 10:43	06/09/21 19:08	98-82-8	
p-Isopropyltoluene	<65.9	ug/kg	65.9	20.8	1	06/09/21 10:43	06/09/21 19:08	99-87-6	
Methylene Chloride	<264	ug/kg	264	124	1	06/09/21 10:43	06/09/21 19:08	75-09-2	
4-Methyl-2-pentanone (MIBK)	<330	ug/kg	330	31.5	1	06/09/21 10:43	06/09/21 19:08	108-10-1	
Methyl-tert-butyl ether	<65.9	ug/kg	65.9	13.1	1	06/09/21 10:43	06/09/21 19:08	1634-04-4	
Naphthalene	<264	ug/kg	264	74.1	1	06/09/21 10:43	06/09/21 19:08	91-20-3	
n-Propylbenzene	<65.9	ug/kg	65.9	13.8	1	06/09/21 10:43	06/09/21 19:08	103-65-1	
Styrene	<65.9	ug/kg	65.9	9.5	1	06/09/21 10:43	06/09/21 19:08	100-42-5	
1,1,1,2-Tetrachloroethane	<65.9	ug/kg	65.9	17.4	1	06/09/21 10:43	06/09/21 19:08	630-20-6	
1,1,2,2-Tetrachloroethane	<65.9	ug/kg	65.9	21.2	1	06/09/21 10:43	06/09/21 19:08	79-34-5	
Tetrachloroethene	<65.9	ug/kg	65.9	31.2	1	06/09/21 10:43	06/09/21 19:08	127-18-4	
Tetrahydrofuran	<2640	ug/kg	2640	543	1	06/09/21 10:43	06/09/21 19:08	109-99-9	
Toluene	<65.9	ug/kg	65.9	28.2	1	06/09/21 10:43	06/09/21 19:08	108-88-3	
1,2,3-Trichlorobenzene	<65.9	ug/kg	65.9	20.3	1	06/09/21 10:43	06/09/21 19:08	87-61-6	
1,2,4-Trichlorobenzene	<65.9	ug/kg	65.9	16.2	1	06/09/21 10:43	06/09/21 19:08	120-82-1	
1,1,1-Trichloroethane	<65.9	ug/kg	65.9	28.3	1	06/09/21 10:43	06/09/21 19:08	71-55-6	
1,1,2-Trichloroethane	<65.9	ug/kg	65.9	32.7	1	06/09/21 10:43	06/09/21 19:08	79-00-5	
Trichloroethene	<65.9	ug/kg	65.9	27.8	1	06/09/21 10:43	06/09/21 19:08	79-01-6	
Trichlorofluoromethane	<264	ug/kg	264	125	1	06/09/21 10:43	06/09/21 19:08	75-69-4	2M
1,2,3-Trichloropropane	<264	ug/kg	264	76.9	1	06/09/21 10:43	06/09/21 19:08	96-18-4	
1,1,2-Trichlorotrifluoroethane	<264	ug/kg	264	116	1	06/09/21 10:43	06/09/21 19:08	76-13-1	
1,2,4-Trimethylbenzene	<65.9	ug/kg	65.9	29.0	1	06/09/21 10:43	06/09/21 19:08	95-63-6	
1,3,5-Trimethylbenzene	<65.9	ug/kg	65.9	21.1	1	06/09/21 10:43	06/09/21 19:08	108-67-8	
Vinyl chloride	<26.4	ug/kg	26.4	13.1	1	06/09/21 10:43	06/09/21 19:08	75-01-4	
Xylene (Total)	<198	ug/kg	198	31.8	1	06/09/21 10:43	06/09/21 19:08	1330-20-7	
m&p-Xylene	<132	ug/kg	132	21.0	1	06/09/21 10:43	06/09/21 19:08	179601-23-1	
o-Xylene	<65.9	ug/kg	65.9	31.8	1	06/09/21 10:43	06/09/21 19:08	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	93	%	73-125		1	06/09/21 10:43	06/09/21 19:08	17060-07-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-05 (4-5) **Lab ID: 10563078005** Collected: 05/27/21 12:50 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B Pace Analytical Services - Minneapolis									
Surrogates									
Toluene-d8 (S)	99	%.	75-125		1	06/09/21 10:43	06/09/21 19:08	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	75-125		1	06/09/21 10:43	06/09/21 19:08	460-00-4	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-06 (1-2) **Lab ID: 10563078006** Collected: 05/27/21 13:15 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB									
Analytical Method: EPA 8082A Preparation Method: EPA 3546									
Pace Analytical Services - Minneapolis									
PCB-1016 (Aroclor 1016)	<58.0	ug/kg	58.0	20.0	1	06/07/21 15:07	06/08/21 20:31	12674-11-2	
PCB-1221 (Aroclor 1221)	<58.0	ug/kg	58.0	27.2	1	06/07/21 15:07	06/08/21 20:31	11104-28-2	
PCB-1232 (Aroclor 1232)	<58.0	ug/kg	58.0	23.9	1	06/07/21 15:07	06/08/21 20:31	11141-16-5	
PCB-1242 (Aroclor 1242)	<58.0	ug/kg	58.0	21.1	1	06/07/21 15:07	06/08/21 20:31	53469-21-9	
PCB-1248 (Aroclor 1248)	<58.0	ug/kg	58.0	34.7	1	06/07/21 15:07	06/08/21 20:31	12672-29-6	
PCB-1254 (Aroclor 1254)	<58.0	ug/kg	58.0	31.7	1	06/07/21 15:07	06/08/21 20:31	11097-69-1	
PCB-1260 (Aroclor 1260)	<58.0	ug/kg	58.0	21.4	1	06/07/21 15:07	06/08/21 20:31	11096-82-5	
PCB-1262 (Aroclor 1262)	<58.0	ug/kg	58.0	28.9	1	06/07/21 15:07	06/08/21 20:31	37324-23-5	
PCB-1268 (Aroclor 1268)	<58.0	ug/kg	58.0	27.4	1	06/07/21 15:07	06/08/21 20:31	11100-14-4	
Surrogates									
Tetrachloro-m-xylene (S)	81	%	59-125		1	06/07/21 15:07	06/08/21 20:31	877-09-8	
Decachlorobiphenyl (S)	92	%	57-125		1	06/07/21 15:07	06/08/21 20:31	2051-24-3	
WIDRO GCS Silica Gel									
Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
Pace Analytical Services - Minneapolis									
WDRO C10-C28	74.7	mg/kg	15.9	5.9	1	06/03/21 13:13	06/04/21 14:12		T6,T7
Surrogates									
n-Triacontane (S)	66	%	30-150		1	06/03/21 13:13	06/04/21 14:12		P1
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3050B									
Pace Analytical Services - Minneapolis									
Arsenic	8.2	mg/kg	1.2	0.24	1	06/07/21 13:07	06/14/21 11:59	7440-38-2	
Barium	120	mg/kg	0.58	0.092	1	06/07/21 13:07	06/14/21 11:59	7440-39-3	
Cadmium	0.43	mg/kg	0.17	0.035	1	06/07/21 13:07	06/14/21 11:59	7440-43-9	
Chromium	17.6	mg/kg	0.58	0.12	1	06/07/21 13:07	06/14/21 11:59	7440-47-3	
Lead	179	mg/kg	0.58	0.13	1	06/07/21 13:07	06/14/21 11:59	7439-92-1	
Selenium	<1.2	mg/kg	1.2	0.38	1	06/07/21 13:07	06/14/21 11:59	7782-49-2	
Silver	0.10J	mg/kg	0.58	0.042	1	06/07/21 13:07	06/14/21 11:59	7440-22-4	
7471B Mercury									
Analytical Method: EPA 7471B Preparation Method: EPA 7471B									
Pace Analytical Services - Minneapolis									
Mercury	0.061	mg/kg	0.022	0.0095	1	06/07/21 14:55	06/09/21 15:07	7439-97-6	
Dry Weight / %M by ASTM D2974									
Analytical Method: ASTM D2974									
Pace Analytical Services - Minneapolis									
Percent Moisture	14.4	%	0.10	0.10	1		06/03/21 15:45		N2
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Acenaphthene	43.5	ug/kg	11.7	0.52	1	06/04/21 08:54	06/15/21 20:05	83-32-9	
Acenaphthylene	125	ug/kg	11.7	0.80	1	06/04/21 08:54	06/15/21 20:05	208-96-8	
Anthracene	254	ug/kg	11.7	0.37	1	06/04/21 08:54	06/15/21 20:05	120-12-7	
Benzo(a)anthracene	517	ug/kg	58.4	2.4	5	06/04/21 08:54	06/16/21 15:07	56-55-3	
Benzo(a)pyrene	459	ug/kg	58.4	3.3	5	06/04/21 08:54	06/16/21 15:07	50-32-8	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-06 (1-2) **Lab ID: 10563078006** Collected: 05/27/21 13:15 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Benzo(b)fluoranthene	969	ug/kg	58.4	2.7	5	06/04/21 08:54	06/16/21 15:07	205-99-2	
Benzo(g,h,i)perylene	142	ug/kg	11.7	0.54	1	06/04/21 08:54	06/15/21 20:05	191-24-2	
Benzo(k)fluoranthene	373	ug/kg	11.7	0.56	1	06/04/21 08:54	06/15/21 20:05	207-08-9	
Chrysene	703	ug/kg	58.4	2.3	5	06/04/21 08:54	06/16/21 15:07	218-01-9	
Dibenz(a,h)anthracene	52.0	ug/kg	11.7	0.77	1	06/04/21 08:54	06/15/21 20:05	53-70-3	
Fluoranthene	1100	ug/kg	58.4	3.5	5	06/04/21 08:54	06/16/21 15:07	206-44-0	
Fluorene	33.0	ug/kg	11.7	0.70	1	06/04/21 08:54	06/15/21 20:05	86-73-7	
Indeno(1,2,3-cd)pyrene	188	ug/kg	11.7	0.62	1	06/04/21 08:54	06/15/21 20:05	193-39-5	
Naphthalene	242	ug/kg	11.7	0.53	1	06/04/21 08:54	06/15/21 20:05	91-20-3	
Phenanthrene	607	ug/kg	58.4	4.1	5	06/04/21 08:54	06/16/21 15:07	85-01-8	
Pyrene	869	ug/kg	58.4	3.8	5	06/04/21 08:54	06/16/21 15:07	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	72	%	50-125		1	06/04/21 08:54	06/15/21 20:05	321-60-8	
p-Terphenyl-d14 (S)	72	%	51-125		1	06/04/21 08:54	06/15/21 20:05	1718-51-0	

8260D MSV 5030 Med Level

Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B

Pace Analytical Services - Minneapolis

Acetone	2250	ug/kg	1740	820	1	06/09/21 10:43	06/09/21 19:28	67-64-1	
Allyl chloride	<348	ug/kg	348	70.4	1	06/09/21 10:43	06/09/21 19:28	107-05-1	
Benzene	292	ug/kg	34.8	16.0	1	06/09/21 10:43	06/09/21 19:28	71-43-2	
Bromobenzene	<86.9	ug/kg	86.9	11.4	1	06/09/21 10:43	06/09/21 19:28	108-86-1	
Bromochloromethane	<86.9	ug/kg	86.9	42.9	1	06/09/21 10:43	06/09/21 19:28	74-97-5	
Bromodichloromethane	<86.9	ug/kg	86.9	27.6	1	06/09/21 10:43	06/09/21 19:28	75-27-4	
Bromoform	<348	ug/kg	348	115	1	06/09/21 10:43	06/09/21 19:28	75-25-2	
Bromomethane	<869	ug/kg	869	162	1	06/09/21 10:43	06/09/21 19:28	74-83-9	1M
2-Butanone (MEK)	352J	ug/kg	434	54.2	1	06/09/21 10:43	06/09/21 19:28	78-93-3	
n-Butylbenzene	138	ug/kg	86.9	19.1	1	06/09/21 10:43	06/09/21 19:28	104-51-8	
sec-Butylbenzene	131	ug/kg	86.9	38.1	1	06/09/21 10:43	06/09/21 19:28	135-98-8	
tert-Butylbenzene	<86.9	ug/kg	86.9	26.9	1	06/09/21 10:43	06/09/21 19:28	98-06-6	
Carbon tetrachloride	<86.9	ug/kg	86.9	42.2	1	06/09/21 10:43	06/09/21 19:28	56-23-5	
Chlorobenzene	<86.9	ug/kg	86.9	14.3	1	06/09/21 10:43	06/09/21 19:28	108-90-7	
Chloroethane	<869	ug/kg	869	138	1	06/09/21 10:43	06/09/21 19:28	75-00-3	
Chloroform	<86.9	ug/kg	86.9	38.2	1	06/09/21 10:43	06/09/21 19:28	67-66-3	
Chloromethane	<348	ug/kg	348	47.3	1	06/09/21 10:43	06/09/21 19:28	74-87-3	
2-Chlorotoluene	<86.9	ug/kg	86.9	21.4	1	06/09/21 10:43	06/09/21 19:28	95-49-8	
4-Chlorotoluene	<86.9	ug/kg	86.9	11.1	1	06/09/21 10:43	06/09/21 19:28	106-43-4	
1,2-Dibromo-3-chloropropane	<869	ug/kg	869	205	1	06/09/21 10:43	06/09/21 19:28	96-12-8	
Dibromochloromethane	<348	ug/kg	348	29.4	1	06/09/21 10:43	06/09/21 19:28	124-48-1	
1,2-Dibromoethane (EDB)	<86.9	ug/kg	86.9	30.4	1	06/09/21 10:43	06/09/21 19:28	106-93-4	
Dibromomethane	<86.9	ug/kg	86.9	37.9	1	06/09/21 10:43	06/09/21 19:28	74-95-3	
1,2-Dichlorobenzene	<86.9	ug/kg	86.9	16.4	1	06/09/21 10:43	06/09/21 19:28	95-50-1	
1,3-Dichlorobenzene	<86.9	ug/kg	86.9	10.8	1	06/09/21 10:43	06/09/21 19:28	541-73-1	
1,4-Dichlorobenzene	<86.9	ug/kg	86.9	13.8	1	06/09/21 10:43	06/09/21 19:28	106-46-7	
Dichlorodifluoromethane	<348	ug/kg	348	46.2	1	06/09/21 10:43	06/09/21 19:28	75-71-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-06 (1-2) **Lab ID: 10563078006** Collected: 05/27/21 13:15 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
1,1-Dichloroethane	<86.9	ug/kg	86.9	39.1	1	06/09/21 10:43	06/09/21 19:28	75-34-3	
1,2-Dichloroethane	<86.9	ug/kg	86.9	33.2	1	06/09/21 10:43	06/09/21 19:28	107-06-2	
1,1-Dichloroethene	<86.9	ug/kg	86.9	31.1	1	06/09/21 10:43	06/09/21 19:28	75-35-4	
cis-1,2-Dichloroethene	<86.9	ug/kg	86.9	24.2	1	06/09/21 10:43	06/09/21 19:28	156-59-2	
trans-1,2-Dichloroethene	<86.9	ug/kg	86.9	39.8	1	06/09/21 10:43	06/09/21 19:28	156-60-5	
Dichlorofluoromethane	<86.9	ug/kg	86.9	242	1	06/09/21 10:43	06/09/21 19:28	75-43-4	
1,2-Dichloropropane	<86.9	ug/kg	86.9	39.6	1	06/09/21 10:43	06/09/21 19:28	78-87-5	
1,3-Dichloropropane	<86.9	ug/kg	86.9	32.0	1	06/09/21 10:43	06/09/21 19:28	142-28-9	
2,2-Dichloropropane	<348	ug/kg	348	33.0	1	06/09/21 10:43	06/09/21 19:28	594-20-7	
1,1-Dichloropropene	<86.9	ug/kg	86.9	35.8	1	06/09/21 10:43	06/09/21 19:28	563-58-6	
cis-1,3-Dichloropropene	<86.9	ug/kg	86.9	8.4	1	06/09/21 10:43	06/09/21 19:28	10061-01-5	
trans-1,3-Dichloropropene	<86.9	ug/kg	86.9	11.0	1	06/09/21 10:43	06/09/21 19:28	10061-02-6	
Diethyl ether (Ethyl ether)	<348	ug/kg	348	74.0	1	06/09/21 10:43	06/09/21 19:28	60-29-7	
Ethylbenzene	542	ug/kg	86.9	15.4	1	06/09/21 10:43	06/09/21 19:28	100-41-4	
Hexachloro-1,3-butadiene	<434	ug/kg	434	39.3	1	06/09/21 10:43	06/09/21 19:28	87-68-3	
Isopropylbenzene (Cumene)	363	ug/kg	86.9	32.8	1	06/09/21 10:43	06/09/21 19:28	98-82-8	
p-Isopropyltoluene	128	ug/kg	86.9	27.5	1	06/09/21 10:43	06/09/21 19:28	99-87-6	
Methylene Chloride	<348	ug/kg	348	164	1	06/09/21 10:43	06/09/21 19:28	75-09-2	
4-Methyl-2-pentanone (MIBK)	<434	ug/kg	434	41.5	1	06/09/21 10:43	06/09/21 19:28	108-10-1	
Methyl-tert-butyl ether	<86.9	ug/kg	86.9	17.3	1	06/09/21 10:43	06/09/21 19:28	1634-04-4	
Naphthalene	2530	ug/kg	348	97.7	1	06/09/21 10:43	06/09/21 19:28	91-20-3	
n-Propylbenzene	400	ug/kg	86.9	18.2	1	06/09/21 10:43	06/09/21 19:28	103-65-1	
Styrene	<86.9	ug/kg	86.9	12.5	1	06/09/21 10:43	06/09/21 19:28	100-42-5	
1,1,1,2-Tetrachloroethane	<86.9	ug/kg	86.9	22.9	1	06/09/21 10:43	06/09/21 19:28	630-20-6	
1,1,2,2-Tetrachloroethane	<86.9	ug/kg	86.9	28.0	1	06/09/21 10:43	06/09/21 19:28	79-34-5	
Tetrachloroethene	<86.9	ug/kg	86.9	41.2	1	06/09/21 10:43	06/09/21 19:28	127-18-4	
Tetrahydrofuran	<3480	ug/kg	3480	716	1	06/09/21 10:43	06/09/21 19:28	109-99-9	
Toluene	1840	ug/kg	86.9	37.2	1	06/09/21 10:43	06/09/21 19:28	108-88-3	
1,2,3-Trichlorobenzene	<86.9	ug/kg	86.9	26.8	1	06/09/21 10:43	06/09/21 19:28	87-61-6	
1,2,4-Trichlorobenzene	<86.9	ug/kg	86.9	21.4	1	06/09/21 10:43	06/09/21 19:28	120-82-1	
1,1,1-Trichloroethane	<86.9	ug/kg	86.9	37.4	1	06/09/21 10:43	06/09/21 19:28	71-55-6	
1,1,2-Trichloroethane	<86.9	ug/kg	86.9	43.1	1	06/09/21 10:43	06/09/21 19:28	79-00-5	
Trichloroethene	<86.9	ug/kg	86.9	36.7	1	06/09/21 10:43	06/09/21 19:28	79-01-6	
Trichlorofluoromethane	<348	ug/kg	348	165	1	06/09/21 10:43	06/09/21 19:28	75-69-4	2M
1,2,3-Trichloropropane	<348	ug/kg	348	101	1	06/09/21 10:43	06/09/21 19:28	96-18-4	
1,1,2-Trichlorotrifluoroethane	<348	ug/kg	348	153	1	06/09/21 10:43	06/09/21 19:28	76-13-1	
1,2,4-Trimethylbenzene	1420	ug/kg	86.9	38.2	1	06/09/21 10:43	06/09/21 19:28	95-63-6	
1,3,5-Trimethylbenzene	279	ug/kg	86.9	27.8	1	06/09/21 10:43	06/09/21 19:28	108-67-8	
Vinyl chloride	<34.8	ug/kg	34.8	17.3	1	06/09/21 10:43	06/09/21 19:28	75-01-4	
Xylene (Total)	4580	ug/kg	261	41.9	1	06/09/21 10:43	06/09/21 19:28	1330-20-7	
m&p-Xylene	2520	ug/kg	174	27.6	1	06/09/21 10:43	06/09/21 19:28	179601-23-1	
o-Xylene	2060	ug/kg	86.9	41.9	1	06/09/21 10:43	06/09/21 19:28	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	93	%	73-125		1	06/09/21 10:43	06/09/21 19:28	17060-07-0	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-06 (1-2) **Lab ID: 10563078006** Collected: 05/27/21 13:15 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
Surrogates									
Toluene-d8 (S)	99	%	75-125		1	06/09/21 10:43	06/09/21 19:28	2037-26-5	
4-Bromofluorobenzene (S)	100	%	75-125		1	06/09/21 10:43	06/09/21 19:28	460-00-4	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-07 (1-2) **Lab ID: 10563078007** Collected: 05/27/21 13:40 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB									
Analytical Method: EPA 8082A Preparation Method: EPA 3546									
Pace Analytical Services - Minneapolis									
PCB-1016 (Aroclor 1016)	<60.2	ug/kg	60.2	20.8	1	06/07/21 15:07	06/08/21 20:46	12674-11-2	
PCB-1221 (Aroclor 1221)	<60.2	ug/kg	60.2	28.2	1	06/07/21 15:07	06/08/21 20:46	11104-28-2	
PCB-1232 (Aroclor 1232)	<60.2	ug/kg	60.2	24.8	1	06/07/21 15:07	06/08/21 20:46	11141-16-5	
PCB-1242 (Aroclor 1242)	<60.2	ug/kg	60.2	21.9	1	06/07/21 15:07	06/08/21 20:46	53469-21-9	
PCB-1248 (Aroclor 1248)	<60.2	ug/kg	60.2	36.0	1	06/07/21 15:07	06/08/21 20:46	12672-29-6	
PCB-1254 (Aroclor 1254)	<60.2	ug/kg	60.2	32.9	1	06/07/21 15:07	06/08/21 20:46	11097-69-1	
PCB-1260 (Aroclor 1260)	<60.2	ug/kg	60.2	22.2	1	06/07/21 15:07	06/08/21 20:46	11096-82-5	
PCB-1262 (Aroclor 1262)	<60.2	ug/kg	60.2	30.0	1	06/07/21 15:07	06/08/21 20:46	37324-23-5	
PCB-1268 (Aroclor 1268)	<60.2	ug/kg	60.2	28.4	1	06/07/21 15:07	06/08/21 20:46	11100-14-4	
Surrogates									
Tetrachloro-m-xylene (S)	86	%	59-125		1	06/07/21 15:07	06/08/21 20:46	877-09-8	
Decachlorobiphenyl (S)	99	%	57-125		1	06/07/21 15:07	06/08/21 20:46	2051-24-3	
WIDRO GCS Silica Gel									
Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
Pace Analytical Services - Minneapolis									
WDRO C10-C28	<8.9	mg/kg	8.9	3.3	1	06/03/21 13:13	06/04/21 15:16		
Surrogates									
n-Triacontane (S)	64	%	30-150		1	06/03/21 13:13	06/04/21 15:16		
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3050B									
Pace Analytical Services - Minneapolis									
Arsenic	2.2	mg/kg	1.1	0.23	1	06/07/21 13:07	06/14/21 12:00	7440-38-2	
Barium	47.2	mg/kg	0.56	0.089	1	06/07/21 13:07	06/14/21 12:00	7440-39-3	
Cadmium	0.18	mg/kg	0.17	0.034	1	06/07/21 13:07	06/14/21 12:00	7440-43-9	
Chromium	16.8	mg/kg	0.56	0.11	1	06/07/21 13:07	06/14/21 12:00	7440-47-3	
Lead	8.7	mg/kg	0.56	0.13	1	06/07/21 13:07	06/14/21 12:00	7439-92-1	
Selenium	<1.1	mg/kg	1.1	0.37	1	06/07/21 13:07	06/14/21 12:00	7782-49-2	
Silver	<0.56	mg/kg	0.56	0.041	1	06/07/21 13:07	06/14/21 12:00	7440-22-4	
7471B Mercury									
Analytical Method: EPA 7471B Preparation Method: EPA 7471B									
Pace Analytical Services - Minneapolis									
Mercury	<0.023	mg/kg	0.023	0.0099	1	06/07/21 14:55	06/09/21 15:08	7439-97-6	
Dry Weight / %M by ASTM D2974									
Analytical Method: ASTM D2974									
Pace Analytical Services - Minneapolis									
Percent Moisture	17.4	%	0.10	0.10	1		06/03/21 15:45		N2
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Acenaphthene	0.98J	ug/kg	12.0	0.54	1	06/04/21 08:54	06/15/21 20:25	83-32-9	
Acenaphthylene	3.8J	ug/kg	12.0	0.82	1	06/04/21 08:54	06/15/21 20:25	208-96-8	
Anthracene	6.2J	ug/kg	12.0	0.38	1	06/04/21 08:54	06/15/21 20:25	120-12-7	
Benzo(a)anthracene	10.0J	ug/kg	12.0	0.49	1	06/04/21 08:54	06/15/21 20:25	56-55-3	
Benzo(a)pyrene	8.0J	ug/kg	12.0	0.68	1	06/04/21 08:54	06/15/21 20:25	50-32-8	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-07 (1-2) Lab ID: 10563078007 Collected: 05/27/21 13:40 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Benzo(b)fluoranthene	21.6	ug/kg	12.0	0.56	1	06/04/21 08:54	06/15/21 20:25	205-99-2	
Benzo(g,h,i)perylene	4.2J	ug/kg	12.0	0.56	1	06/04/21 08:54	06/15/21 20:25	191-24-2	
Benzo(k)fluoranthene	7.0J	ug/kg	12.0	0.58	1	06/04/21 08:54	06/15/21 20:25	207-08-9	
Chrysene	13.7	ug/kg	12.0	0.48	1	06/04/21 08:54	06/15/21 20:25	218-01-9	
Dibenz(a,h)anthracene	1.5J	ug/kg	12.0	0.79	1	06/04/21 08:54	06/15/21 20:25	53-70-3	
Fluoranthene	18.6	ug/kg	12.0	0.73	1	06/04/21 08:54	06/15/21 20:25	206-44-0	
Fluorene	1.5J	ug/kg	12.0	0.72	1	06/04/21 08:54	06/15/21 20:25	86-73-7	
Indeno(1,2,3-cd)pyrene	5.5J	ug/kg	12.0	0.64	1	06/04/21 08:54	06/15/21 20:25	193-39-5	
Naphthalene	10.6J	ug/kg	12.0	0.54	1	06/04/21 08:54	06/15/21 20:25	91-20-3	
Phenanthrene	17.8	ug/kg	12.0	0.85	1	06/04/21 08:54	06/15/21 20:25	85-01-8	
Pyrene	13.5	ug/kg	12.0	0.78	1	06/04/21 08:54	06/15/21 20:25	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	71	%	50-125		1	06/04/21 08:54	06/15/21 20:25	321-60-8	
p-Terphenyl-d14 (S)	75	%	51-125		1	06/04/21 08:54	06/15/21 20:25	1718-51-0	

8260D MSV 5030 Med Level

Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B

Pace Analytical Services - Minneapolis

Acetone	<1370	ug/kg	1370	645	1	06/09/21 10:43	06/09/21 19:46	67-64-1	
Allyl chloride	<273	ug/kg	273	55.3	1	06/09/21 10:43	06/09/21 19:46	107-05-1	
Benzene	<27.3	ug/kg	27.3	12.5	1	06/09/21 10:43	06/09/21 19:46	71-43-2	
Bromobenzene	<68.3	ug/kg	68.3	9.0	1	06/09/21 10:43	06/09/21 19:46	108-86-1	
Bromochloromethane	<68.3	ug/kg	68.3	33.8	1	06/09/21 10:43	06/09/21 19:46	74-97-5	
Bromodichloromethane	<68.3	ug/kg	68.3	21.7	1	06/09/21 10:43	06/09/21 19:46	75-27-4	
Bromoform	<273	ug/kg	273	90.5	1	06/09/21 10:43	06/09/21 19:46	75-25-2	
Bromomethane	<683	ug/kg	683	128	1	06/09/21 10:43	06/09/21 19:46	74-83-9	1M
2-Butanone (MEK)	75.6J	ug/kg	342	42.6	1	06/09/21 10:43	06/09/21 19:46	78-93-3	
n-Butylbenzene	<68.3	ug/kg	68.3	15.0	1	06/09/21 10:43	06/09/21 19:46	104-51-8	
sec-Butylbenzene	<68.3	ug/kg	68.3	29.9	1	06/09/21 10:43	06/09/21 19:46	135-98-8	
tert-Butylbenzene	<68.3	ug/kg	68.3	21.2	1	06/09/21 10:43	06/09/21 19:46	98-06-6	
Carbon tetrachloride	<68.3	ug/kg	68.3	33.2	1	06/09/21 10:43	06/09/21 19:46	56-23-5	
Chlorobenzene	<68.3	ug/kg	68.3	11.2	1	06/09/21 10:43	06/09/21 19:46	108-90-7	
Chloroethane	<683	ug/kg	683	108	1	06/09/21 10:43	06/09/21 19:46	75-00-3	
Chloroform	<68.3	ug/kg	68.3	30.1	1	06/09/21 10:43	06/09/21 19:46	67-66-3	
Chloromethane	<273	ug/kg	273	37.2	1	06/09/21 10:43	06/09/21 19:46	74-87-3	
2-Chlorotoluene	<68.3	ug/kg	68.3	16.8	1	06/09/21 10:43	06/09/21 19:46	95-49-8	
4-Chlorotoluene	<68.3	ug/kg	68.3	8.7	1	06/09/21 10:43	06/09/21 19:46	106-43-4	
1,2-Dibromo-3-chloropropane	<683	ug/kg	683	161	1	06/09/21 10:43	06/09/21 19:46	96-12-8	
Dibromochloromethane	<273	ug/kg	273	23.1	1	06/09/21 10:43	06/09/21 19:46	124-48-1	
1,2-Dibromoethane (EDB)	<68.3	ug/kg	68.3	23.9	1	06/09/21 10:43	06/09/21 19:46	106-93-4	
Dibromomethane	<68.3	ug/kg	68.3	29.8	1	06/09/21 10:43	06/09/21 19:46	74-95-3	
1,2-Dichlorobenzene	<68.3	ug/kg	68.3	12.9	1	06/09/21 10:43	06/09/21 19:46	95-50-1	
1,3-Dichlorobenzene	<68.3	ug/kg	68.3	8.5	1	06/09/21 10:43	06/09/21 19:46	541-73-1	
1,4-Dichlorobenzene	<68.3	ug/kg	68.3	10.8	1	06/09/21 10:43	06/09/21 19:46	106-46-7	
Dichlorodifluoromethane	<273	ug/kg	273	36.3	1	06/09/21 10:43	06/09/21 19:46	75-71-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-07 (1-2) Lab ID: 10563078007 Collected: 05/27/21 13:40 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
1,1-Dichloroethane	<68.3	ug/kg	68.3	30.7	1	06/09/21 10:43	06/09/21 19:46	75-34-3	
1,2-Dichloroethane	<68.3	ug/kg	68.3	26.1	1	06/09/21 10:43	06/09/21 19:46	107-06-2	
1,1-Dichloroethene	<68.3	ug/kg	68.3	24.5	1	06/09/21 10:43	06/09/21 19:46	75-35-4	
cis-1,2-Dichloroethene	<68.3	ug/kg	68.3	19.0	1	06/09/21 10:43	06/09/21 19:46	156-59-2	
trans-1,2-Dichloroethene	<68.3	ug/kg	68.3	31.3	1	06/09/21 10:43	06/09/21 19:46	156-60-5	
Dichlorofluoromethane	<68.3	ug/kg	68.3	190	1	06/09/21 10:43	06/09/21 19:46	75-43-4	
1,2-Dichloropropane	<68.3	ug/kg	68.3	31.2	1	06/09/21 10:43	06/09/21 19:46	78-87-5	
1,3-Dichloropropane	<68.3	ug/kg	68.3	25.1	1	06/09/21 10:43	06/09/21 19:46	142-28-9	
2,2-Dichloropropane	<273	ug/kg	273	26.0	1	06/09/21 10:43	06/09/21 19:46	594-20-7	
1,1-Dichloropropene	<68.3	ug/kg	68.3	28.1	1	06/09/21 10:43	06/09/21 19:46	563-58-6	
cis-1,3-Dichloropropene	<68.3	ug/kg	68.3	6.6	1	06/09/21 10:43	06/09/21 19:46	10061-01-5	
trans-1,3-Dichloropropene	<68.3	ug/kg	68.3	8.6	1	06/09/21 10:43	06/09/21 19:46	10061-02-6	
Diethyl ether (Ethyl ether)	<273	ug/kg	273	58.2	1	06/09/21 10:43	06/09/21 19:46	60-29-7	
Ethylbenzene	<68.3	ug/kg	68.3	12.1	1	06/09/21 10:43	06/09/21 19:46	100-41-4	
Hexachloro-1,3-butadiene	<342	ug/kg	342	30.9	1	06/09/21 10:43	06/09/21 19:46	87-68-3	
Isopropylbenzene (Cumene)	<68.3	ug/kg	68.3	25.8	1	06/09/21 10:43	06/09/21 19:46	98-82-8	
p-Isopropyltoluene	<68.3	ug/kg	68.3	21.6	1	06/09/21 10:43	06/09/21 19:46	99-87-6	
Methylene Chloride	<273	ug/kg	273	129	1	06/09/21 10:43	06/09/21 19:46	75-09-2	
4-Methyl-2-pentanone (MIBK)	<342	ug/kg	342	32.7	1	06/09/21 10:43	06/09/21 19:46	108-10-1	
Methyl-tert-butyl ether	<68.3	ug/kg	68.3	13.6	1	06/09/21 10:43	06/09/21 19:46	1634-04-4	
Naphthalene	<273	ug/kg	273	76.8	1	06/09/21 10:43	06/09/21 19:46	91-20-3	
n-Propylbenzene	<68.3	ug/kg	68.3	14.3	1	06/09/21 10:43	06/09/21 19:46	103-65-1	
Styrene	<68.3	ug/kg	68.3	9.8	1	06/09/21 10:43	06/09/21 19:46	100-42-5	
1,1,1,2-Tetrachloroethane	<68.3	ug/kg	68.3	18.0	1	06/09/21 10:43	06/09/21 19:46	630-20-6	
1,1,2,2-Tetrachloroethane	<68.3	ug/kg	68.3	22.0	1	06/09/21 10:43	06/09/21 19:46	79-34-5	
Tetrachloroethene	<68.3	ug/kg	68.3	32.4	1	06/09/21 10:43	06/09/21 19:46	127-18-4	
Tetrahydrofuran	<2730	ug/kg	2730	563	1	06/09/21 10:43	06/09/21 19:46	109-99-9	
Toluene	<68.3	ug/kg	68.3	29.2	1	06/09/21 10:43	06/09/21 19:46	108-88-3	
1,2,3-Trichlorobenzene	<68.3	ug/kg	68.3	21.0	1	06/09/21 10:43	06/09/21 19:46	87-61-6	
1,2,4-Trichlorobenzene	<68.3	ug/kg	68.3	16.8	1	06/09/21 10:43	06/09/21 19:46	120-82-1	
1,1,1-Trichloroethane	<68.3	ug/kg	68.3	29.4	1	06/09/21 10:43	06/09/21 19:46	71-55-6	
1,1,2-Trichloroethane	<68.3	ug/kg	68.3	33.9	1	06/09/21 10:43	06/09/21 19:46	79-00-5	
Trichloroethene	<68.3	ug/kg	68.3	28.8	1	06/09/21 10:43	06/09/21 19:46	79-01-6	
Trichlorofluoromethane	<273	ug/kg	273	129	1	06/09/21 10:43	06/09/21 19:46	75-69-4	2M
1,2,3-Trichloropropane	<273	ug/kg	273	79.7	1	06/09/21 10:43	06/09/21 19:46	96-18-4	
1,1,2-Trichlorotrifluoroethane	<273	ug/kg	273	121	1	06/09/21 10:43	06/09/21 19:46	76-13-1	
1,2,4-Trimethylbenzene	<68.3	ug/kg	68.3	30.1	1	06/09/21 10:43	06/09/21 19:46	95-63-6	
1,3,5-Trimethylbenzene	<68.3	ug/kg	68.3	21.9	1	06/09/21 10:43	06/09/21 19:46	108-67-8	
Vinyl chloride	<27.3	ug/kg	27.3	13.6	1	06/09/21 10:43	06/09/21 19:46	75-01-4	
Xylene (Total)	<205	ug/kg	205	32.9	1	06/09/21 10:43	06/09/21 19:46	1330-20-7	
m&p-Xylene	<137	ug/kg	137	21.7	1	06/09/21 10:43	06/09/21 19:46	179601-23-1	
o-Xylene	<68.3	ug/kg	68.3	32.9	1	06/09/21 10:43	06/09/21 19:46	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	95	%	73-125		1	06/09/21 10:43	06/09/21 19:46	17060-07-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-07 (1-2) **Lab ID: 10563078007** Collected: 05/27/21 13:40 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
Surrogates									
Toluene-d8 (S)	99	%	75-125		1	06/09/21 10:43	06/09/21 19:46	2037-26-5	
4-Bromofluorobenzene (S)	99	%	75-125		1	06/09/21 10:43	06/09/21 19:46	460-00-4	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-08 (1-2) **Lab ID: 10563078008** Collected: 05/27/21 14:00 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB									
Analytical Method: EPA 8082A Preparation Method: EPA 3546									
Pace Analytical Services - Minneapolis									
PCB-1016 (Aroclor 1016)	<53.7	ug/kg	53.7	18.5	1	06/07/21 15:07	06/08/21 21:02	12674-11-2	
PCB-1221 (Aroclor 1221)	<53.7	ug/kg	53.7	25.1	1	06/07/21 15:07	06/08/21 21:02	11104-28-2	
PCB-1232 (Aroclor 1232)	<53.7	ug/kg	53.7	22.1	1	06/07/21 15:07	06/08/21 21:02	11141-16-5	
PCB-1242 (Aroclor 1242)	<53.7	ug/kg	53.7	19.5	1	06/07/21 15:07	06/08/21 21:02	53469-21-9	
PCB-1248 (Aroclor 1248)	<53.7	ug/kg	53.7	32.1	1	06/07/21 15:07	06/08/21 21:02	12672-29-6	
PCB-1254 (Aroclor 1254)	<53.7	ug/kg	53.7	29.3	1	06/07/21 15:07	06/08/21 21:02	11097-69-1	
PCB-1260 (Aroclor 1260)	<53.7	ug/kg	53.7	19.8	1	06/07/21 15:07	06/08/21 21:02	11096-82-5	
PCB-1262 (Aroclor 1262)	<53.7	ug/kg	53.7	26.7	1	06/07/21 15:07	06/08/21 21:02	37324-23-5	
PCB-1268 (Aroclor 1268)	<53.7	ug/kg	53.7	25.3	1	06/07/21 15:07	06/08/21 21:02	11100-14-4	
Surrogates									
Tetrachloro-m-xylene (S)	78	%	59-125		1	06/07/21 15:07	06/08/21 21:02	877-09-8	
Decachlorobiphenyl (S)	97	%	57-125		1	06/07/21 15:07	06/08/21 21:02	2051-24-3	
WIDRO GCS Silica Gel									
Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
Pace Analytical Services - Minneapolis									
WDRO C10-C28	<8.0	mg/kg	8.0	3.0	1	06/03/21 13:13	06/04/21 15:24		
Surrogates									
n-Triacontane (S)	65	%	30-150		1	06/03/21 13:13	06/04/21 15:24		
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3050B									
Pace Analytical Services - Minneapolis									
Arsenic	1.7	mg/kg	1.1	0.22	1	06/07/21 13:07	06/14/21 12:02	7440-38-2	
Barium	22.2	mg/kg	0.53	0.084	1	06/07/21 13:07	06/14/21 12:02	7440-39-3	
Cadmium	0.082J	mg/kg	0.16	0.032	1	06/07/21 13:07	06/14/21 12:02	7440-43-9	
Chromium	9.3	mg/kg	0.53	0.11	1	06/07/21 13:07	06/14/21 12:02	7440-47-3	
Lead	3.0	mg/kg	0.53	0.12	1	06/07/21 13:07	06/14/21 12:02	7439-92-1	
Selenium	<1.1	mg/kg	1.1	0.35	1	06/07/21 13:07	06/14/21 12:02	7782-49-2	
Silver	<0.53	mg/kg	0.53	0.038	1	06/07/21 13:07	06/14/21 12:02	7440-22-4	
7471B Mercury									
Analytical Method: EPA 7471B Preparation Method: EPA 7471B									
Pace Analytical Services - Minneapolis									
Mercury	0.0086J	mg/kg	0.019	0.0083	1	06/07/21 14:55	06/09/21 15:10	7439-97-6	
Dry Weight / %M by ASTM D2974									
Analytical Method: ASTM D2974									
Pace Analytical Services - Minneapolis									
Percent Moisture	8.0	%	0.10	0.10	1		06/03/21 15:46		N2
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Acenaphthene	<10.8	ug/kg	10.8	0.48	1	06/04/21 08:54	06/15/21 20:44	83-32-9	
Acenaphthylene	0.97J	ug/kg	10.8	0.74	1	06/04/21 08:54	06/15/21 20:44	208-96-8	
Anthracene	1.3J	ug/kg	10.8	0.34	1	06/04/21 08:54	06/15/21 20:44	120-12-7	
Benzo(a)anthracene	1.4J	ug/kg	10.8	0.45	1	06/04/21 08:54	06/15/21 20:44	56-55-3	
Benzo(a)pyrene	1.2J	ug/kg	10.8	0.61	1	06/04/21 08:54	06/15/21 20:44	50-32-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-08 (1-2) **Lab ID: 10563078008** Collected: 05/27/21 14:00 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Benzo(b)fluoranthene	3.7J	ug/kg	10.8	0.50	1	06/04/21 08:54	06/15/21 20:44	205-99-2	
Benzo(g,h,i)perylene	0.84J	ug/kg	10.8	0.50	1	06/04/21 08:54	06/15/21 20:44	191-24-2	
Benzo(k)fluoranthene	1.2J	ug/kg	10.8	0.52	1	06/04/21 08:54	06/15/21 20:44	207-08-9	
Chrysene	2.2J	ug/kg	10.8	0.44	1	06/04/21 08:54	06/15/21 20:44	218-01-9	
Dibenz(a,h)anthracene	<10.8	ug/kg	10.8	0.71	1	06/04/21 08:54	06/15/21 20:44	53-70-3	
Fluoranthene	3.4J	ug/kg	10.8	0.66	1	06/04/21 08:54	06/15/21 20:44	206-44-0	
Fluorene	<10.8	ug/kg	10.8	0.65	1	06/04/21 08:54	06/15/21 20:44	86-73-7	
Indeno(1,2,3-cd)pyrene	1.3J	ug/kg	10.8	0.58	1	06/04/21 08:54	06/15/21 20:44	193-39-5	
Naphthalene	1.3J	ug/kg	10.8	0.49	1	06/04/21 08:54	06/15/21 20:44	91-20-3	
Phenanthrene	3.3J	ug/kg	10.8	0.76	1	06/04/21 08:54	06/15/21 20:44	85-01-8	
Pyrene	2.2J	ug/kg	10.8	0.70	1	06/04/21 08:54	06/15/21 20:44	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	68	%	50-125		1	06/04/21 08:54	06/15/21 20:44	321-60-8	
p-Terphenyl-d14 (S)	75	%	51-125		1	06/04/21 08:54	06/15/21 20:44	1718-51-0	

8260D MSV 5030 Med Level

Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B

Pace Analytical Services - Minneapolis

Acetone	<1230	ug/kg	1230	581	1	06/09/21 10:43	06/09/21 20:04	67-64-1	
Allyl chloride	<246	ug/kg	246	49.9	1	06/09/21 10:43	06/09/21 20:04	107-05-1	
Benzene	<24.6	ug/kg	24.6	11.3	1	06/09/21 10:43	06/09/21 20:04	71-43-2	
Bromobenzene	<61.6	ug/kg	61.6	8.1	1	06/09/21 10:43	06/09/21 20:04	108-86-1	
Bromochloromethane	<61.6	ug/kg	61.6	30.4	1	06/09/21 10:43	06/09/21 20:04	74-97-5	
Bromodichloromethane	<61.6	ug/kg	61.6	19.6	1	06/09/21 10:43	06/09/21 20:04	75-27-4	
Bromoform	<246	ug/kg	246	81.5	1	06/09/21 10:43	06/09/21 20:04	75-25-2	
Bromomethane	<616	ug/kg	616	115	1	06/09/21 10:43	06/09/21 20:04	74-83-9	1M
2-Butanone (MEK)	71.7J	ug/kg	308	38.4	1	06/09/21 10:43	06/09/21 20:04	78-93-3	
n-Butylbenzene	<61.6	ug/kg	61.6	13.5	1	06/09/21 10:43	06/09/21 20:04	104-51-8	
sec-Butylbenzene	<61.6	ug/kg	61.6	27.0	1	06/09/21 10:43	06/09/21 20:04	135-98-8	
tert-Butylbenzene	<61.6	ug/kg	61.6	19.1	1	06/09/21 10:43	06/09/21 20:04	98-06-6	
Carbon tetrachloride	<61.6	ug/kg	61.6	29.9	1	06/09/21 10:43	06/09/21 20:04	56-23-5	
Chlorobenzene	<61.6	ug/kg	61.6	10.1	1	06/09/21 10:43	06/09/21 20:04	108-90-7	
Chloroethane	<616	ug/kg	616	97.5	1	06/09/21 10:43	06/09/21 20:04	75-00-3	
Chloroform	<61.6	ug/kg	61.6	27.1	1	06/09/21 10:43	06/09/21 20:04	67-66-3	
Chloromethane	<246	ug/kg	246	33.5	1	06/09/21 10:43	06/09/21 20:04	74-87-3	
2-Chlorotoluene	<61.6	ug/kg	61.6	15.1	1	06/09/21 10:43	06/09/21 20:04	95-49-8	
4-Chlorotoluene	<61.6	ug/kg	61.6	7.9	1	06/09/21 10:43	06/09/21 20:04	106-43-4	
1,2-Dibromo-3-chloropropane	<616	ug/kg	616	145	1	06/09/21 10:43	06/09/21 20:04	96-12-8	
Dibromochloromethane	<246	ug/kg	246	20.8	1	06/09/21 10:43	06/09/21 20:04	124-48-1	
1,2-Dibromoethane (EDB)	<61.6	ug/kg	61.6	21.6	1	06/09/21 10:43	06/09/21 20:04	106-93-4	
Dibromomethane	<61.6	ug/kg	61.6	26.8	1	06/09/21 10:43	06/09/21 20:04	74-95-3	
1,2-Dichlorobenzene	<61.6	ug/kg	61.6	11.6	1	06/09/21 10:43	06/09/21 20:04	95-50-1	
1,3-Dichlorobenzene	<61.6	ug/kg	61.6	7.6	1	06/09/21 10:43	06/09/21 20:04	541-73-1	
1,4-Dichlorobenzene	<61.6	ug/kg	61.6	9.8	1	06/09/21 10:43	06/09/21 20:04	106-46-7	
Dichlorodifluoromethane	<246	ug/kg	246	32.8	1	06/09/21 10:43	06/09/21 20:04	75-71-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-08 (1-2) Lab ID: 10563078008 Collected: 05/27/21 14:00 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B Pace Analytical Services - Minneapolis									
1,1-Dichloroethane	<61.6	ug/kg	61.6	27.7	1	06/09/21 10:43	06/09/21 20:04	75-34-3	
1,2-Dichloroethane	<61.6	ug/kg	61.6	23.5	1	06/09/21 10:43	06/09/21 20:04	107-06-2	
1,1-Dichloroethene	<61.6	ug/kg	61.6	22.0	1	06/09/21 10:43	06/09/21 20:04	75-35-4	
cis-1,2-Dichloroethene	<61.6	ug/kg	61.6	17.1	1	06/09/21 10:43	06/09/21 20:04	156-59-2	
trans-1,2-Dichloroethene	<61.6	ug/kg	61.6	28.2	1	06/09/21 10:43	06/09/21 20:04	156-60-5	
Dichlorofluoromethane	<61.6	ug/kg	61.6	171	1	06/09/21 10:43	06/09/21 20:04	75-43-4	
1,2-Dichloropropane	<61.6	ug/kg	61.6	28.1	1	06/09/21 10:43	06/09/21 20:04	78-87-5	
1,3-Dichloropropane	<61.6	ug/kg	61.6	22.7	1	06/09/21 10:43	06/09/21 20:04	142-28-9	
2,2-Dichloropropane	<246	ug/kg	246	23.4	1	06/09/21 10:43	06/09/21 20:04	594-20-7	
1,1-Dichloropropene	<61.6	ug/kg	61.6	25.4	1	06/09/21 10:43	06/09/21 20:04	563-58-6	
cis-1,3-Dichloropropene	<61.6	ug/kg	61.6	5.9	1	06/09/21 10:43	06/09/21 20:04	10061-01-5	
trans-1,3-Dichloropropene	<61.6	ug/kg	61.6	7.8	1	06/09/21 10:43	06/09/21 20:04	10061-02-6	
Diethyl ether (Ethyl ether)	<246	ug/kg	246	52.5	1	06/09/21 10:43	06/09/21 20:04	60-29-7	
Ethylbenzene	<61.6	ug/kg	61.6	10.9	1	06/09/21 10:43	06/09/21 20:04	100-41-4	
Hexachloro-1,3-butadiene	<308	ug/kg	308	27.8	1	06/09/21 10:43	06/09/21 20:04	87-68-3	
Isopropylbenzene (Cumene)	<61.6	ug/kg	61.6	23.3	1	06/09/21 10:43	06/09/21 20:04	98-82-8	
p-Isopropyltoluene	<61.6	ug/kg	61.6	19.5	1	06/09/21 10:43	06/09/21 20:04	99-87-6	
Methylene Chloride	<246	ug/kg	246	116	1	06/09/21 10:43	06/09/21 20:04	75-09-2	
4-Methyl-2-pentanone (MIBK)	<308	ug/kg	308	29.4	1	06/09/21 10:43	06/09/21 20:04	108-10-1	
Methyl-tert-butyl ether	<61.6	ug/kg	61.6	12.3	1	06/09/21 10:43	06/09/21 20:04	1634-04-4	
Naphthalene	<246	ug/kg	246	69.2	1	06/09/21 10:43	06/09/21 20:04	91-20-3	
n-Propylbenzene	<61.6	ug/kg	61.6	12.9	1	06/09/21 10:43	06/09/21 20:04	103-65-1	
Styrene	<61.6	ug/kg	61.6	8.8	1	06/09/21 10:43	06/09/21 20:04	100-42-5	
1,1,1,2-Tetrachloroethane	<61.6	ug/kg	61.6	16.3	1	06/09/21 10:43	06/09/21 20:04	630-20-6	
1,1,2,2-Tetrachloroethane	<61.6	ug/kg	61.6	19.8	1	06/09/21 10:43	06/09/21 20:04	79-34-5	
Tetrachloroethene	<61.6	ug/kg	61.6	29.2	1	06/09/21 10:43	06/09/21 20:04	127-18-4	
Tetrahydrofuran	<2460	ug/kg	2460	507	1	06/09/21 10:43	06/09/21 20:04	109-99-9	
Toluene	<61.6	ug/kg	61.6	26.4	1	06/09/21 10:43	06/09/21 20:04	108-88-3	
1,2,3-Trichlorobenzene	<61.6	ug/kg	61.6	19.0	1	06/09/21 10:43	06/09/21 20:04	87-61-6	
1,2,4-Trichlorobenzene	<61.6	ug/kg	61.6	15.1	1	06/09/21 10:43	06/09/21 20:04	120-82-1	
1,1,1-Trichloroethane	<61.6	ug/kg	61.6	26.5	1	06/09/21 10:43	06/09/21 20:04	71-55-6	
1,1,2-Trichloroethane	<61.6	ug/kg	61.6	30.5	1	06/09/21 10:43	06/09/21 20:04	79-00-5	
Trichloroethene	<61.6	ug/kg	61.6	26.0	1	06/09/21 10:43	06/09/21 20:04	79-01-6	
Trichlorofluoromethane	<246	ug/kg	246	117	1	06/09/21 10:43	06/09/21 20:04	75-69-4	2M
1,2,3-Trichloropropane	<246	ug/kg	246	71.8	1	06/09/21 10:43	06/09/21 20:04	96-18-4	
1,1,2-Trichlorotrifluoroethane	<246	ug/kg	246	109	1	06/09/21 10:43	06/09/21 20:04	76-13-1	
1,2,4-Trimethylbenzene	<61.6	ug/kg	61.6	27.1	1	06/09/21 10:43	06/09/21 20:04	95-63-6	
1,3,5-Trimethylbenzene	<61.6	ug/kg	61.6	19.7	1	06/09/21 10:43	06/09/21 20:04	108-67-8	
Vinyl chloride	<24.6	ug/kg	24.6	12.2	1	06/09/21 10:43	06/09/21 20:04	75-01-4	
Xylene (Total)	<185	ug/kg	185	29.7	1	06/09/21 10:43	06/09/21 20:04	1330-20-7	
m&p-Xylene	<123	ug/kg	123	19.6	1	06/09/21 10:43	06/09/21 20:04	179601-23-1	
o-Xylene	<61.6	ug/kg	61.6	29.7	1	06/09/21 10:43	06/09/21 20:04	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	93	%	73-125		1	06/09/21 10:43	06/09/21 20:04	17060-07-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-08 (1-2) **Lab ID: 10563078008** Collected: 05/27/21 14:00 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
Surrogates									
Toluene-d8 (S)	100	%	75-125		1	06/09/21 10:43	06/09/21 20:04	2037-26-5	
4-Bromofluorobenzene (S)	98	%	75-125		1	06/09/21 10:43	06/09/21 20:04	460-00-4	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II
Pace Project No.: 10563078

Sample: TP-09 (1-2) **Lab ID: 10563078009** Collected: 05/27/21 10:30 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB									
Analytical Method: EPA 8082A Preparation Method: EPA 3546									
Pace Analytical Services - Minneapolis									
PCB-1016 (Aroclor 1016)	<54.2	ug/kg	54.2	18.7	1	06/07/21 15:07	06/08/21 21:18	12674-11-2	
PCB-1221 (Aroclor 1221)	<54.2	ug/kg	54.2	25.4	1	06/07/21 15:07	06/08/21 21:18	11104-28-2	
PCB-1232 (Aroclor 1232)	<54.2	ug/kg	54.2	22.3	1	06/07/21 15:07	06/08/21 21:18	11141-16-5	
PCB-1242 (Aroclor 1242)	<54.2	ug/kg	54.2	19.7	1	06/07/21 15:07	06/08/21 21:18	53469-21-9	
PCB-1248 (Aroclor 1248)	<54.2	ug/kg	54.2	32.4	1	06/07/21 15:07	06/08/21 21:18	12672-29-6	
PCB-1254 (Aroclor 1254)	<54.2	ug/kg	54.2	29.6	1	06/07/21 15:07	06/08/21 21:18	11097-69-1	
PCB-1260 (Aroclor 1260)	269	ug/kg	54.2	20.0	1	06/07/21 15:07	06/08/21 21:18	11096-82-5	
PCB-1262 (Aroclor 1262)	<54.2	ug/kg	54.2	27.0	1	06/07/21 15:07	06/08/21 21:18	37324-23-5	
PCB-1268 (Aroclor 1268)	<54.2	ug/kg	54.2	25.6	1	06/07/21 15:07	06/08/21 21:18	11100-14-4	
Surrogates									
Tetrachloro-m-xylene (S)	81	%	59-125		1	06/07/21 15:07	06/08/21 21:18	877-09-8	
Decachlorobiphenyl (S)	94	%	57-125		1	06/07/21 15:07	06/08/21 21:18	2051-24-3	
WIDRO GCS Silica Gel									
Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
Pace Analytical Services - Minneapolis									
WDRO C10-C28	75.0	mg/kg	18.4	6.9	2	06/03/21 13:13	06/09/21 10:47		T6
Surrogates									
n-Triacontane (S)	59	%	30-150		2	06/03/21 13:13	06/09/21 10:47		
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3050B									
Pace Analytical Services - Minneapolis									
Arsenic	5.1	mg/kg	1.1	0.22	1	06/07/21 13:07	06/14/21 12:09	7440-38-2	
Barium	29.1	mg/kg	0.53	0.083	1	06/07/21 13:07	06/14/21 12:09	7440-39-3	
Cadmium	0.29	mg/kg	0.16	0.032	1	06/07/21 13:07	06/14/21 12:09	7440-43-9	
Chromium	18.3	mg/kg	0.53	0.11	1	06/07/21 13:07	06/14/21 12:09	7440-47-3	
Lead	26.0	mg/kg	0.53	0.12	1	06/07/21 13:07	06/14/21 12:09	7439-92-1	
Selenium	<1.1	mg/kg	1.1	0.34	1	06/07/21 13:07	06/14/21 12:09	7782-49-2	
Silver	<0.53	mg/kg	0.53	0.038	1	06/07/21 13:07	06/14/21 12:09	7440-22-4	
7471B Mercury									
Analytical Method: EPA 7471B Preparation Method: EPA 7471B									
Pace Analytical Services - Minneapolis									
Mercury	0.019J	mg/kg	0.022	0.0095	1	06/07/21 14:55	06/09/21 15:11	7439-97-6	
Dry Weight / %M by ASTM D2974									
Analytical Method: ASTM D2974									
Pace Analytical Services - Minneapolis									
Percent Moisture	8.6	%	0.10	0.10	1		06/03/21 15:46		N2
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Acenaphthene	55.6J	ug/kg	109	4.9	10	06/04/21 08:54	06/15/21 21:03	83-32-9	
Acenaphthylene	21.9J	ug/kg	109	7.5	10	06/04/21 08:54	06/15/21 21:03	208-96-8	
Anthracene	200	ug/kg	109	3.4	10	06/04/21 08:54	06/15/21 21:03	120-12-7	
Benzo(a)anthracene	600	ug/kg	109	4.5	10	06/04/21 08:54	06/15/21 21:03	56-55-3	
Benzo(a)pyrene	569	ug/kg	109	6.1	10	06/04/21 08:54	06/15/21 21:03	50-32-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-09 (1-2) **Lab ID: 10563078009** Collected: 05/27/21 10:30 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Benzo(b)fluoranthene	841	ug/kg	109	5.1	10	06/04/21 08:54	06/15/21 21:03	205-99-2	
Benzo(g,h,i)perylene	200	ug/kg	109	5.1	10	06/04/21 08:54	06/15/21 21:03	191-24-2	
Benzo(k)fluoranthene	357	ug/kg	109	5.2	10	06/04/21 08:54	06/15/21 21:03	207-08-9	
Chrysene	600	ug/kg	109	4.4	10	06/04/21 08:54	06/15/21 21:03	218-01-9	
Dibenz(a,h)anthracene	62.4J	ug/kg	109	7.2	10	06/04/21 08:54	06/15/21 21:03	53-70-3	
Fluoranthene	1450	ug/kg	109	6.6	10	06/04/21 08:54	06/15/21 21:03	206-44-0	
Fluorene	62.3J	ug/kg	109	6.6	10	06/04/21 08:54	06/15/21 21:03	86-73-7	
Indeno(1,2,3-cd)pyrene	240	ug/kg	109	5.8	10	06/04/21 08:54	06/15/21 21:03	193-39-5	
Naphthalene	19.2J	ug/kg	109	4.9	10	06/04/21 08:54	06/15/21 21:03	91-20-3	
Phenanthrene	725	ug/kg	109	7.7	10	06/04/21 08:54	06/15/21 21:03	85-01-8	
Pyrene	1030	ug/kg	109	7.1	10	06/04/21 08:54	06/15/21 21:03	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	67	%	50-125		10	06/04/21 08:54	06/15/21 21:03	321-60-8	D3
p-Terphenyl-d14 (S)	69	%	51-125		10	06/04/21 08:54	06/15/21 21:03	1718-51-0	

8260D MSV 5030 Med Level

Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B

Pace Analytical Services - Minneapolis

Acetone	<1200	ug/kg	1200	567	1	06/09/21 10:43	06/09/21 20:22	67-64-1	
Allyl chloride	<240	ug/kg	240	48.6	1	06/09/21 10:43	06/09/21 20:22	107-05-1	
Benzene	<24.0	ug/kg	24.0	11.0	1	06/09/21 10:43	06/09/21 20:22	71-43-2	
Bromobenzene	<60.0	ug/kg	60.0	7.9	1	06/09/21 10:43	06/09/21 20:22	108-86-1	
Bromochloromethane	<60.0	ug/kg	60.0	29.6	1	06/09/21 10:43	06/09/21 20:22	74-97-5	
Bromodichloromethane	<60.0	ug/kg	60.0	19.1	1	06/09/21 10:43	06/09/21 20:22	75-27-4	
Bromoform	<240	ug/kg	240	79.5	1	06/09/21 10:43	06/09/21 20:22	75-25-2	
Bromomethane	<600	ug/kg	600	112	1	06/09/21 10:43	06/09/21 20:22	74-83-9	1M
2-Butanone (MEK)	<300	ug/kg	300	37.5	1	06/09/21 10:43	06/09/21 20:22	78-93-3	
n-Butylbenzene	<60.0	ug/kg	60.0	13.2	1	06/09/21 10:43	06/09/21 20:22	104-51-8	
sec-Butylbenzene	<60.0	ug/kg	60.0	26.3	1	06/09/21 10:43	06/09/21 20:22	135-98-8	
tert-Butylbenzene	<60.0	ug/kg	60.0	18.6	1	06/09/21 10:43	06/09/21 20:22	98-06-6	
Carbon tetrachloride	<60.0	ug/kg	60.0	29.2	1	06/09/21 10:43	06/09/21 20:22	56-23-5	
Chlorobenzene	<60.0	ug/kg	60.0	9.9	1	06/09/21 10:43	06/09/21 20:22	108-90-7	
Chloroethane	<600	ug/kg	600	95.1	1	06/09/21 10:43	06/09/21 20:22	75-00-3	
Chloroform	<60.0	ug/kg	60.0	26.4	1	06/09/21 10:43	06/09/21 20:22	67-66-3	
Chloromethane	<240	ug/kg	240	32.7	1	06/09/21 10:43	06/09/21 20:22	74-87-3	
2-Chlorotoluene	<60.0	ug/kg	60.0	14.8	1	06/09/21 10:43	06/09/21 20:22	95-49-8	
4-Chlorotoluene	<60.0	ug/kg	60.0	7.7	1	06/09/21 10:43	06/09/21 20:22	106-43-4	
1,2-Dibromo-3-chloropropane	<600	ug/kg	600	142	1	06/09/21 10:43	06/09/21 20:22	96-12-8	
Dibromochloromethane	<240	ug/kg	240	20.3	1	06/09/21 10:43	06/09/21 20:22	124-48-1	
1,2-Dibromoethane (EDB)	<60.0	ug/kg	60.0	21.0	1	06/09/21 10:43	06/09/21 20:22	106-93-4	
Dibromomethane	<60.0	ug/kg	60.0	26.2	1	06/09/21 10:43	06/09/21 20:22	74-95-3	
1,2-Dichlorobenzene	<60.0	ug/kg	60.0	11.3	1	06/09/21 10:43	06/09/21 20:22	95-50-1	
1,3-Dichlorobenzene	<60.0	ug/kg	60.0	7.4	1	06/09/21 10:43	06/09/21 20:22	541-73-1	
1,4-Dichlorobenzene	<60.0	ug/kg	60.0	9.5	1	06/09/21 10:43	06/09/21 20:22	106-46-7	
Dichlorodifluoromethane	<240	ug/kg	240	31.9	1	06/09/21 10:43	06/09/21 20:22	75-71-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-09 (1-2) Lab ID: 10563078009 Collected: 05/27/21 10:30 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
1,1-Dichloroethane	<60.0	ug/kg	60.0	27.0	1	06/09/21 10:43	06/09/21 20:22	75-34-3	
1,2-Dichloroethane	<60.0	ug/kg	60.0	22.9	1	06/09/21 10:43	06/09/21 20:22	107-06-2	
1,1-Dichloroethene	<60.0	ug/kg	60.0	21.5	1	06/09/21 10:43	06/09/21 20:22	75-35-4	
cis-1,2-Dichloroethene	<60.0	ug/kg	60.0	16.7	1	06/09/21 10:43	06/09/21 20:22	156-59-2	
trans-1,2-Dichloroethene	<60.0	ug/kg	60.0	27.5	1	06/09/21 10:43	06/09/21 20:22	156-60-5	
Dichlorofluoromethane	<600	ug/kg	600	167	1	06/09/21 10:43	06/09/21 20:22	75-43-4	
1,2-Dichloropropane	<60.0	ug/kg	60.0	27.4	1	06/09/21 10:43	06/09/21 20:22	78-87-5	
1,3-Dichloropropane	<60.0	ug/kg	60.0	22.1	1	06/09/21 10:43	06/09/21 20:22	142-28-9	
2,2-Dichloropropane	<240	ug/kg	240	22.8	1	06/09/21 10:43	06/09/21 20:22	594-20-7	
1,1-Dichloropropene	<60.0	ug/kg	60.0	24.7	1	06/09/21 10:43	06/09/21 20:22	563-58-6	
cis-1,3-Dichloropropene	<60.0	ug/kg	60.0	5.8	1	06/09/21 10:43	06/09/21 20:22	10061-01-5	
trans-1,3-Dichloropropene	<60.0	ug/kg	60.0	7.6	1	06/09/21 10:43	06/09/21 20:22	10061-02-6	
Diethyl ether (Ethyl ether)	<240	ug/kg	240	51.1	1	06/09/21 10:43	06/09/21 20:22	60-29-7	
Ethylbenzene	13.8J	ug/kg	60.0	10.6	1	06/09/21 10:43	06/09/21 20:22	100-41-4	
Hexachloro-1,3-butadiene	<300	ug/kg	300	27.1	1	06/09/21 10:43	06/09/21 20:22	87-68-3	
Isopropylbenzene (Cumene)	<60.0	ug/kg	60.0	22.7	1	06/09/21 10:43	06/09/21 20:22	98-82-8	
p-Isopropyltoluene	<60.0	ug/kg	60.0	19.0	1	06/09/21 10:43	06/09/21 20:22	99-87-6	
Methylene Chloride	<240	ug/kg	240	113	1	06/09/21 10:43	06/09/21 20:22	75-09-2	
4-Methyl-2-pentanone (MIBK)	<300	ug/kg	300	28.7	1	06/09/21 10:43	06/09/21 20:22	108-10-1	
Methyl-tert-butyl ether	<60.0	ug/kg	60.0	12.0	1	06/09/21 10:43	06/09/21 20:22	1634-04-4	
Naphthalene	<240	ug/kg	240	67.5	1	06/09/21 10:43	06/09/21 20:22	91-20-3	
n-Propylbenzene	<60.0	ug/kg	60.0	12.6	1	06/09/21 10:43	06/09/21 20:22	103-65-1	
Styrene	<60.0	ug/kg	60.0	8.6	1	06/09/21 10:43	06/09/21 20:22	100-42-5	
1,1,1,2-Tetrachloroethane	<60.0	ug/kg	60.0	15.8	1	06/09/21 10:43	06/09/21 20:22	630-20-6	
1,1,1,2,2-Tetrachloroethane	<60.0	ug/kg	60.0	19.3	1	06/09/21 10:43	06/09/21 20:22	79-34-5	
Tetrachloroethene	<60.0	ug/kg	60.0	28.4	1	06/09/21 10:43	06/09/21 20:22	127-18-4	
Tetrahydrofuran	<2400	ug/kg	2400	495	1	06/09/21 10:43	06/09/21 20:22	109-99-9	
Toluene	81.1	ug/kg	60.0	25.7	1	06/09/21 10:43	06/09/21 20:22	108-88-3	
1,2,3-Trichlorobenzene	<60.0	ug/kg	60.0	18.5	1	06/09/21 10:43	06/09/21 20:22	87-61-6	
1,2,4-Trichlorobenzene	<60.0	ug/kg	60.0	14.8	1	06/09/21 10:43	06/09/21 20:22	120-82-1	
1,1,1-Trichloroethane	<60.0	ug/kg	60.0	25.8	1	06/09/21 10:43	06/09/21 20:22	71-55-6	
1,1,2-Trichloroethane	<60.0	ug/kg	60.0	29.8	1	06/09/21 10:43	06/09/21 20:22	79-00-5	
Trichloroethene	<60.0	ug/kg	60.0	25.3	1	06/09/21 10:43	06/09/21 20:22	79-01-6	
Trichlorofluoromethane	<240	ug/kg	240	114	1	06/09/21 10:43	06/09/21 20:22	75-69-4	2M
1,2,3-Trichloropropane	<240	ug/kg	240	70.0	1	06/09/21 10:43	06/09/21 20:22	96-18-4	
1,1,2-Trichlorotrifluoroethane	<240	ug/kg	240	106	1	06/09/21 10:43	06/09/21 20:22	76-13-1	
1,2,4-Trimethylbenzene	<60.0	ug/kg	60.0	26.4	1	06/09/21 10:43	06/09/21 20:22	95-63-6	
1,3,5-Trimethylbenzene	<60.0	ug/kg	60.0	19.2	1	06/09/21 10:43	06/09/21 20:22	108-67-8	
Vinyl chloride	<24.0	ug/kg	24.0	11.9	1	06/09/21 10:43	06/09/21 20:22	75-01-4	
Xylene (Total)	<180	ug/kg	180	28.9	1	06/09/21 10:43	06/09/21 20:22	1330-20-7	
m&p-Xylene	24.7J	ug/kg	120	19.1	1	06/09/21 10:43	06/09/21 20:22	179601-23-1	
o-Xylene	<60.0	ug/kg	60.0	28.9	1	06/09/21 10:43	06/09/21 20:22	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	95	%	73-125		1	06/09/21 10:43	06/09/21 20:22	17060-07-0	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-09 (1-2) **Lab ID: 10563078009** Collected: 05/27/21 10:30 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
Surrogates									
Toluene-d8 (S)	99	%	75-125		1	06/09/21 10:43	06/09/21 20:22	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1	06/09/21 10:43	06/09/21 20:22	460-00-4	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-10 (1-2) **Lab ID: 10563078010** Collected: 05/27/21 10:00 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB									
Analytical Method: EPA 8082A Preparation Method: EPA 3546									
Pace Analytical Services - Minneapolis									
PCB-1016 (Aroclor 1016)	<54.6	ug/kg	54.6	18.9	1	06/07/21 15:07	06/08/21 21:34	12674-11-2	
PCB-1221 (Aroclor 1221)	<54.6	ug/kg	54.6	25.6	1	06/07/21 15:07	06/08/21 21:34	11104-28-2	
PCB-1232 (Aroclor 1232)	<54.6	ug/kg	54.6	22.5	1	06/07/21 15:07	06/08/21 21:34	11141-16-5	
PCB-1242 (Aroclor 1242)	<54.6	ug/kg	54.6	19.9	1	06/07/21 15:07	06/08/21 21:34	53469-21-9	
PCB-1248 (Aroclor 1248)	<54.6	ug/kg	54.6	32.6	1	06/07/21 15:07	06/08/21 21:34	12672-29-6	
PCB-1254 (Aroclor 1254)	<54.6	ug/kg	54.6	29.9	1	06/07/21 15:07	06/08/21 21:34	11097-69-1	
PCB-1260 (Aroclor 1260)	93.9	ug/kg	54.6	20.2	1	06/07/21 15:07	06/08/21 21:34	11096-82-5	
PCB-1262 (Aroclor 1262)	<54.6	ug/kg	54.6	27.2	1	06/07/21 15:07	06/08/21 21:34	37324-23-5	
PCB-1268 (Aroclor 1268)	<54.6	ug/kg	54.6	25.8	1	06/07/21 15:07	06/08/21 21:34	11100-14-4	
Surrogates									
Tetrachloro-m-xylene (S)	81	%	59-125		1	06/07/21 15:07	06/08/21 21:34	877-09-8	
Decachlorobiphenyl (S)	85	%	57-125		1	06/07/21 15:07	06/08/21 21:34	2051-24-3	
WIDRO GCS Silica Gel									
Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
Pace Analytical Services - Minneapolis									
WDRO C10-C28	153	mg/kg	92.1	34.4	10	06/03/21 13:13	06/04/21 14:05		T6
Surrogates									
n-Triacontane (S)	42	%	30-150		10	06/03/21 13:13	06/04/21 14:05		
6010D MET ICP									
Analytical Method: EPA 6010D Preparation Method: EPA 3050B									
Pace Analytical Services - Minneapolis									
Arsenic	3.1	mg/kg	1.1	0.22	1	06/07/21 13:07	06/14/21 12:11	7440-38-2	
Barium	74.0	mg/kg	0.54	0.086	1	06/07/21 13:07	06/14/21 12:11	7440-39-3	
Cadmium	0.65	mg/kg	0.16	0.032	1	06/07/21 13:07	06/14/21 12:11	7440-43-9	
Chromium	33.2	mg/kg	0.54	0.11	1	06/07/21 13:07	06/14/21 12:11	7440-47-3	
Lead	87.8	mg/kg	0.54	0.12	1	06/07/21 13:07	06/14/21 12:11	7439-92-1	
Selenium	<1.1	mg/kg	1.1	0.35	1	06/07/21 13:07	06/14/21 12:11	7782-49-2	
Silver	<0.54	mg/kg	0.54	0.039	1	06/07/21 13:07	06/14/21 12:11	7440-22-4	
7471B Mercury									
Analytical Method: EPA 7471B Preparation Method: EPA 7471B									
Pace Analytical Services - Minneapolis									
Mercury	0.053	mg/kg	0.019	0.0084	1	06/07/21 14:55	06/09/21 15:13	7439-97-6	
Dry Weight / %M by ASTM D2974									
Analytical Method: ASTM D2974									
Pace Analytical Services - Minneapolis									
Percent Moisture	9.3	%	0.10	0.10	1		06/03/21 15:46		N2
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Acenaphthene	370	ug/kg	110	4.9	10	06/04/21 08:54	06/15/21 21:22	83-32-9	
Acenaphthylene	109J	ug/kg	110	7.5	10	06/04/21 08:54	06/15/21 21:22	208-96-8	
Anthracene	448	ug/kg	110	3.5	10	06/04/21 08:54	06/15/21 21:22	120-12-7	
Benzo(a)anthracene	507	ug/kg	110	4.5	10	06/04/21 08:54	06/15/21 21:22	56-55-3	
Benzo(a)pyrene	618	ug/kg	110	6.2	10	06/04/21 08:54	06/15/21 21:22	50-32-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-10 (1-2) **Lab ID: 10563078010** Collected: 05/27/21 10:00 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270E MSSV PAH by SIM									
Analytical Method: EPA 8270E by SIM Preparation Method: EPA 3550C									
Pace Analytical Services - Minneapolis									
Benzo(b)fluoranthene	999	ug/kg	110	5.1	10	06/04/21 08:54	06/15/21 21:22	205-99-2	
Benzo(g,h,i)perylene	232	ug/kg	110	5.1	10	06/04/21 08:54	06/15/21 21:22	191-24-2	
Benzo(k)fluoranthene	362	ug/kg	110	5.3	10	06/04/21 08:54	06/15/21 21:22	207-08-9	
Chrysene	601	ug/kg	110	4.4	10	06/04/21 08:54	06/15/21 21:22	218-01-9	
Dibenz(a,h)anthracene	78.5J	ug/kg	110	7.2	10	06/04/21 08:54	06/15/21 21:22	53-70-3	
Fluoranthene	1390	ug/kg	110	6.7	10	06/04/21 08:54	06/15/21 21:22	206-44-0	
Fluorene	341	ug/kg	110	6.6	10	06/04/21 08:54	06/15/21 21:22	86-73-7	
Indeno(1,2,3-cd)pyrene	270	ug/kg	110	5.9	10	06/04/21 08:54	06/15/21 21:22	193-39-5	
Naphthalene	342	ug/kg	110	5.0	10	06/04/21 08:54	06/15/21 21:22	91-20-3	
Phenanthrene	1130	ug/kg	110	7.7	10	06/04/21 08:54	06/15/21 21:22	85-01-8	
Pyrene	1040	ug/kg	110	7.1	10	06/04/21 08:54	06/15/21 21:22	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	64	%	50-125		10	06/04/21 08:54	06/15/21 21:22	321-60-8	D3
p-Terphenyl-d14 (S)	64	%	51-125		10	06/04/21 08:54	06/15/21 21:22	1718-51-0	

8260D MSV 5030 Med Level

Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B

Pace Analytical Services - Minneapolis

Acetone	<1250	ug/kg	1250	588	1	06/09/21 10:43	06/09/21 20:41	67-64-1	
Allyl chloride	<249	ug/kg	249	50.5	1	06/09/21 10:43	06/09/21 20:41	107-05-1	
Benzene	17.5J	ug/kg	24.9	11.4	1	06/09/21 10:43	06/09/21 20:41	71-43-2	
Bromobenzene	<62.3	ug/kg	62.3	8.2	1	06/09/21 10:43	06/09/21 20:41	108-86-1	
Bromochloromethane	<62.3	ug/kg	62.3	30.8	1	06/09/21 10:43	06/09/21 20:41	74-97-5	
Bromodichloromethane	<62.3	ug/kg	62.3	19.8	1	06/09/21 10:43	06/09/21 20:41	75-27-4	
Bromoform	<249	ug/kg	249	82.5	1	06/09/21 10:43	06/09/21 20:41	75-25-2	
Bromomethane	<623	ug/kg	623	116	1	06/09/21 10:43	06/09/21 20:41	74-83-9	1M
2-Butanone (MEK)	71.9J	ug/kg	312	38.9	1	06/09/21 10:43	06/09/21 20:41	78-93-3	
n-Butylbenzene	<62.3	ug/kg	62.3	13.7	1	06/09/21 10:43	06/09/21 20:41	104-51-8	
sec-Butylbenzene	<62.3	ug/kg	62.3	27.3	1	06/09/21 10:43	06/09/21 20:41	135-98-8	
tert-Butylbenzene	<62.3	ug/kg	62.3	19.3	1	06/09/21 10:43	06/09/21 20:41	98-06-6	
Carbon tetrachloride	<62.3	ug/kg	62.3	30.3	1	06/09/21 10:43	06/09/21 20:41	56-23-5	
Chlorobenzene	<62.3	ug/kg	62.3	10.3	1	06/09/21 10:43	06/09/21 20:41	108-90-7	
Chloroethane	<623	ug/kg	623	98.7	1	06/09/21 10:43	06/09/21 20:41	75-00-3	
Chloroform	<62.3	ug/kg	62.3	27.4	1	06/09/21 10:43	06/09/21 20:41	67-66-3	
Chloromethane	<249	ug/kg	249	33.9	1	06/09/21 10:43	06/09/21 20:41	74-87-3	
2-Chlorotoluene	<62.3	ug/kg	62.3	15.3	1	06/09/21 10:43	06/09/21 20:41	95-49-8	
4-Chlorotoluene	<62.3	ug/kg	62.3	8.0	1	06/09/21 10:43	06/09/21 20:41	106-43-4	
1,2-Dibromo-3-chloropropane	<623	ug/kg	623	147	1	06/09/21 10:43	06/09/21 20:41	96-12-8	
Dibromochloromethane	<249	ug/kg	249	21.1	1	06/09/21 10:43	06/09/21 20:41	124-48-1	
1,2-Dibromoethane (EDB)	<62.3	ug/kg	62.3	21.8	1	06/09/21 10:43	06/09/21 20:41	106-93-4	
Dibromomethane	<62.3	ug/kg	62.3	27.2	1	06/09/21 10:43	06/09/21 20:41	74-95-3	
1,2-Dichlorobenzene	<62.3	ug/kg	62.3	11.8	1	06/09/21 10:43	06/09/21 20:41	95-50-1	
1,3-Dichlorobenzene	<62.3	ug/kg	62.3	7.7	1	06/09/21 10:43	06/09/21 20:41	541-73-1	
1,4-Dichlorobenzene	<62.3	ug/kg	62.3	9.9	1	06/09/21 10:43	06/09/21 20:41	106-46-7	
Dichlorodifluoromethane	<249	ug/kg	249	33.1	1	06/09/21 10:43	06/09/21 20:41	75-71-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-10 (1-2) Lab ID: 10563078010 Collected: 05/27/21 10:00 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
1,1-Dichloroethane	<62.3	ug/kg	62.3	28.0	1	06/09/21 10:43	06/09/21 20:41	75-34-3	
1,2-Dichloroethane	<62.3	ug/kg	62.3	23.8	1	06/09/21 10:43	06/09/21 20:41	107-06-2	
1,1-Dichloroethene	<62.3	ug/kg	62.3	22.3	1	06/09/21 10:43	06/09/21 20:41	75-35-4	
cis-1,2-Dichloroethene	<62.3	ug/kg	62.3	17.3	1	06/09/21 10:43	06/09/21 20:41	156-59-2	
trans-1,2-Dichloroethene	<62.3	ug/kg	62.3	28.5	1	06/09/21 10:43	06/09/21 20:41	156-60-5	
Dichlorofluoromethane	<62.3	ug/kg	62.3	173	1	06/09/21 10:43	06/09/21 20:41	75-43-4	
1,2-Dichloropropane	<62.3	ug/kg	62.3	28.4	1	06/09/21 10:43	06/09/21 20:41	78-87-5	
1,3-Dichloropropane	<62.3	ug/kg	62.3	22.9	1	06/09/21 10:43	06/09/21 20:41	142-28-9	
2,2-Dichloropropane	<249	ug/kg	249	23.7	1	06/09/21 10:43	06/09/21 20:41	594-20-7	
1,1-Dichloropropene	<62.3	ug/kg	62.3	25.7	1	06/09/21 10:43	06/09/21 20:41	563-58-6	
cis-1,3-Dichloropropene	<62.3	ug/kg	62.3	6.0	1	06/09/21 10:43	06/09/21 20:41	10061-01-5	
trans-1,3-Dichloropropene	<62.3	ug/kg	62.3	7.9	1	06/09/21 10:43	06/09/21 20:41	10061-02-6	
Diethyl ether (Ethyl ether)	<249	ug/kg	249	53.1	1	06/09/21 10:43	06/09/21 20:41	60-29-7	
Ethylbenzene	46.2J	ug/kg	62.3	11.0	1	06/09/21 10:43	06/09/21 20:41	100-41-4	
Hexachloro-1,3-butadiene	<312	ug/kg	312	28.2	1	06/09/21 10:43	06/09/21 20:41	87-68-3	
Isopropylbenzene (Cumene)	<62.3	ug/kg	62.3	23.6	1	06/09/21 10:43	06/09/21 20:41	98-82-8	
p-Isopropyltoluene	30.8J	ug/kg	62.3	19.7	1	06/09/21 10:43	06/09/21 20:41	99-87-6	
Methylene Chloride	<249	ug/kg	249	118	1	06/09/21 10:43	06/09/21 20:41	75-09-2	
4-Methyl-2-pentanone (MIBK)	37.4J	ug/kg	312	29.8	1	06/09/21 10:43	06/09/21 20:41	108-10-1	
Methyl-tert-butyl ether	<62.3	ug/kg	62.3	12.4	1	06/09/21 10:43	06/09/21 20:41	1634-04-4	
Naphthalene	322	ug/kg	249	70.0	1	06/09/21 10:43	06/09/21 20:41	91-20-3	
n-Propylbenzene	21.8J	ug/kg	62.3	13.1	1	06/09/21 10:43	06/09/21 20:41	103-65-1	
Styrene	<62.3	ug/kg	62.3	8.9	1	06/09/21 10:43	06/09/21 20:41	100-42-5	
1,1,1,2-Tetrachloroethane	<62.3	ug/kg	62.3	16.4	1	06/09/21 10:43	06/09/21 20:41	630-20-6	
1,1,2,2-Tetrachloroethane	<62.3	ug/kg	62.3	20.1	1	06/09/21 10:43	06/09/21 20:41	79-34-5	
Tetrachloroethene	<62.3	ug/kg	62.3	29.5	1	06/09/21 10:43	06/09/21 20:41	127-18-4	
Tetrahydrofuran	<2490	ug/kg	2490	513	1	06/09/21 10:43	06/09/21 20:41	109-99-9	
Toluene	122	ug/kg	62.3	26.7	1	06/09/21 10:43	06/09/21 20:41	108-88-3	
1,2,3-Trichlorobenzene	<62.3	ug/kg	62.3	19.2	1	06/09/21 10:43	06/09/21 20:41	87-61-6	
1,2,4-Trichlorobenzene	<62.3	ug/kg	62.3	15.3	1	06/09/21 10:43	06/09/21 20:41	120-82-1	
1,1,1-Trichloroethane	<62.3	ug/kg	62.3	26.8	1	06/09/21 10:43	06/09/21 20:41	71-55-6	
1,1,2-Trichloroethane	<62.3	ug/kg	62.3	30.9	1	06/09/21 10:43	06/09/21 20:41	79-00-5	
Trichloroethene	<62.3	ug/kg	62.3	26.3	1	06/09/21 10:43	06/09/21 20:41	79-01-6	
Trichlorofluoromethane	<249	ug/kg	249	118	1	06/09/21 10:43	06/09/21 20:41	75-69-4	2M
1,2,3-Trichloropropane	<249	ug/kg	249	72.7	1	06/09/21 10:43	06/09/21 20:41	96-18-4	
1,1,2-Trichlorotrifluoroethane	<249	ug/kg	249	110	1	06/09/21 10:43	06/09/21 20:41	76-13-1	
1,2,4-Trimethylbenzene	76.6	ug/kg	62.3	27.4	1	06/09/21 10:43	06/09/21 20:41	95-63-6	
1,3,5-Trimethylbenzene	<62.3	ug/kg	62.3	19.9	1	06/09/21 10:43	06/09/21 20:41	108-67-8	
Vinyl chloride	<24.9	ug/kg	24.9	12.4	1	06/09/21 10:43	06/09/21 20:41	75-01-4	
Xylene (Total)	212	ug/kg	187	30.0	1	06/09/21 10:43	06/09/21 20:41	1330-20-7	
m&p-Xylene	120J	ug/kg	125	19.8	1	06/09/21 10:43	06/09/21 20:41	179601-23-1	
o-Xylene	91.6	ug/kg	62.3	30.0	1	06/09/21 10:43	06/09/21 20:41	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	94	%	73-125		1	06/09/21 10:43	06/09/21 20:41	17060-07-0	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TP-10 (1-2) **Lab ID: 10563078010** Collected: 05/27/21 10:00 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
Surrogates									
Toluene-d8 (S)	99	%	75-125		1	06/09/21 10:43	06/09/21 20:41	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1	06/09/21 10:43	06/09/21 20:41	460-00-4	

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TB-01 **Lab ID: 10563078011** Collected: 05/27/21 08:00 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
Acetone	<1000	ug/kg	1000	472	1	06/09/21 10:43	06/09/21 15:28	67-64-1	
Allyl chloride	<200	ug/kg	200	40.5	1	06/09/21 10:43	06/09/21 15:28	107-05-1	
Benzene	<20.0	ug/kg	20.0	9.2	1	06/09/21 10:43	06/09/21 15:28	71-43-2	
Bromobenzene	<50.0	ug/kg	50.0	6.6	1	06/09/21 10:43	06/09/21 15:28	108-86-1	
Bromochloromethane	<50.0	ug/kg	50.0	24.7	1	06/09/21 10:43	06/09/21 15:28	74-97-5	
Bromodichloromethane	<50.0	ug/kg	50.0	15.9	1	06/09/21 10:43	06/09/21 15:28	75-27-4	
Bromoform	<200	ug/kg	200	66.2	1	06/09/21 10:43	06/09/21 15:28	75-25-2	
Bromomethane	<500	ug/kg	500	93.4	1	06/09/21 10:43	06/09/21 15:28	74-83-9	1M
2-Butanone (MEK)	53.2J	ug/kg	250	31.2	1	06/09/21 10:43	06/09/21 15:28	78-93-3	
n-Butylbenzene	<50.0	ug/kg	50.0	11.0	1	06/09/21 10:43	06/09/21 15:28	104-51-8	
sec-Butylbenzene	<50.0	ug/kg	50.0	21.9	1	06/09/21 10:43	06/09/21 15:28	135-98-8	
tert-Butylbenzene	<50.0	ug/kg	50.0	15.5	1	06/09/21 10:43	06/09/21 15:28	98-06-6	
Carbon tetrachloride	<50.0	ug/kg	50.0	24.3	1	06/09/21 10:43	06/09/21 15:28	56-23-5	
Chlorobenzene	<50.0	ug/kg	50.0	8.2	1	06/09/21 10:43	06/09/21 15:28	108-90-7	
Chloroethane	<500	ug/kg	500	79.2	1	06/09/21 10:43	06/09/21 15:28	75-00-3	
Chloroform	<50.0	ug/kg	50.0	22.0	1	06/09/21 10:43	06/09/21 15:28	67-66-3	
Chloromethane	<200	ug/kg	200	27.2	1	06/09/21 10:43	06/09/21 15:28	74-87-3	
2-Chlorotoluene	<50.0	ug/kg	50.0	12.3	1	06/09/21 10:43	06/09/21 15:28	95-49-8	
4-Chlorotoluene	<50.0	ug/kg	50.0	6.4	1	06/09/21 10:43	06/09/21 15:28	106-43-4	
1,2-Dibromo-3-chloropropane	<500	ug/kg	500	118	1	06/09/21 10:43	06/09/21 15:28	96-12-8	
Dibromochloromethane	<200	ug/kg	200	16.9	1	06/09/21 10:43	06/09/21 15:28	124-48-1	
1,2-Dibromoethane (EDB)	<50.0	ug/kg	50.0	17.5	1	06/09/21 10:43	06/09/21 15:28	106-93-4	
Dibromomethane	<50.0	ug/kg	50.0	21.8	1	06/09/21 10:43	06/09/21 15:28	74-95-3	
1,2-Dichlorobenzene	<50.0	ug/kg	50.0	9.4	1	06/09/21 10:43	06/09/21 15:28	95-50-1	
1,3-Dichlorobenzene	<50.0	ug/kg	50.0	6.2	1	06/09/21 10:43	06/09/21 15:28	541-73-1	
1,4-Dichlorobenzene	<50.0	ug/kg	50.0	7.9	1	06/09/21 10:43	06/09/21 15:28	106-46-7	
Dichlorodifluoromethane	<200	ug/kg	200	26.6	1	06/09/21 10:43	06/09/21 15:28	75-71-8	
1,1-Dichloroethane	<50.0	ug/kg	50.0	22.5	1	06/09/21 10:43	06/09/21 15:28	75-34-3	
1,2-Dichloroethane	<50.0	ug/kg	50.0	19.1	1	06/09/21 10:43	06/09/21 15:28	107-06-2	
1,1-Dichloroethene	<50.0	ug/kg	50.0	17.9	1	06/09/21 10:43	06/09/21 15:28	75-35-4	
cis-1,2-Dichloroethene	<50.0	ug/kg	50.0	13.9	1	06/09/21 10:43	06/09/21 15:28	156-59-2	
trans-1,2-Dichloroethene	<50.0	ug/kg	50.0	22.9	1	06/09/21 10:43	06/09/21 15:28	156-60-5	
Dichlorofluoromethane	<500	ug/kg	500	139	1	06/09/21 10:43	06/09/21 15:28	75-43-4	
1,2-Dichloropropane	<50.0	ug/kg	50.0	22.8	1	06/09/21 10:43	06/09/21 15:28	78-87-5	
1,3-Dichloropropane	<50.0	ug/kg	50.0	18.4	1	06/09/21 10:43	06/09/21 15:28	142-28-9	
2,2-Dichloropropane	<200	ug/kg	200	19.0	1	06/09/21 10:43	06/09/21 15:28	594-20-7	
1,1-Dichloropropene	<50.0	ug/kg	50.0	20.6	1	06/09/21 10:43	06/09/21 15:28	563-58-6	
cis-1,3-Dichloropropene	<50.0	ug/kg	50.0	4.8	1	06/09/21 10:43	06/09/21 15:28	10061-01-5	
trans-1,3-Dichloropropene	<50.0	ug/kg	50.0	6.3	1	06/09/21 10:43	06/09/21 15:28	10061-02-6	
Diethyl ether (Ethyl ether)	<200	ug/kg	200	42.6	1	06/09/21 10:43	06/09/21 15:28	60-29-7	
Ethylbenzene	<50.0	ug/kg	50.0	8.9	1	06/09/21 10:43	06/09/21 15:28	100-41-4	
Hexachloro-1,3-butadiene	<250	ug/kg	250	22.6	1	06/09/21 10:43	06/09/21 15:28	87-68-3	
Isopropylbenzene (Cumene)	<50.0	ug/kg	50.0	18.9	1	06/09/21 10:43	06/09/21 15:28	98-82-8	
p-Isopropyltoluene	<50.0	ug/kg	50.0	15.8	1	06/09/21 10:43	06/09/21 15:28	99-87-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Sample: TB-01 **Lab ID: 10563078011** Collected: 05/27/21 08:00 Received: 05/28/21 16:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV 5030 Med Level									
Analytical Method: EPA 8260D Preparation Method: EPA 5035/5030B									
Pace Analytical Services - Minneapolis									
Methylene Chloride	<200	ug/kg	200	94.3	1	06/09/21 10:43	06/09/21 15:28	75-09-2	
4-Methyl-2-pentanone (MIBK)	<250	ug/kg	250	23.9	1	06/09/21 10:43	06/09/21 15:28	108-10-1	
Methyl-tert-butyl ether	<50.0	ug/kg	50.0	10	1	06/09/21 10:43	06/09/21 15:28	1634-04-4	
Naphthalene	<200	ug/kg	200	56.2	1	06/09/21 10:43	06/09/21 15:28	91-20-3	
n-Propylbenzene	<50.0	ug/kg	50.0	10.5	1	06/09/21 10:43	06/09/21 15:28	103-65-1	
Styrene	<50.0	ug/kg	50.0	7.2	1	06/09/21 10:43	06/09/21 15:28	100-42-5	
1,1,1,2-Tetrachloroethane	<50.0	ug/kg	50.0	13.2	1	06/09/21 10:43	06/09/21 15:28	630-20-6	
1,1,2,2-Tetrachloroethane	<50.0	ug/kg	50.0	16.1	1	06/09/21 10:43	06/09/21 15:28	79-34-5	
Tetrachloroethene	<50.0	ug/kg	50.0	23.7	1	06/09/21 10:43	06/09/21 15:28	127-18-4	
Tetrahydrofuran	<2000	ug/kg	2000	412	1	06/09/21 10:43	06/09/21 15:28	109-99-9	
Toluene	<50.0	ug/kg	50.0	21.4	1	06/09/21 10:43	06/09/21 15:28	108-88-3	
1,2,3-Trichlorobenzene	<50.0	ug/kg	50.0	15.4	1	06/09/21 10:43	06/09/21 15:28	87-61-6	
1,2,4-Trichlorobenzene	<50.0	ug/kg	50.0	12.3	1	06/09/21 10:43	06/09/21 15:28	120-82-1	
1,1,1-Trichloroethane	<50.0	ug/kg	50.0	21.5	1	06/09/21 10:43	06/09/21 15:28	71-55-6	
1,1,2-Trichloroethane	<50.0	ug/kg	50.0	24.8	1	06/09/21 10:43	06/09/21 15:28	79-00-5	
Trichloroethene	<50.0	ug/kg	50.0	21.1	1	06/09/21 10:43	06/09/21 15:28	79-01-6	
Trichlorofluoromethane	<200	ug/kg	200	94.7	1	06/09/21 10:43	06/09/21 15:28	75-69-4	2M
1,2,3-Trichloropropane	<200	ug/kg	200	58.3	1	06/09/21 10:43	06/09/21 15:28	96-18-4	
1,1,2-Trichlorotrifluoroethane	<200	ug/kg	200	88.2	1	06/09/21 10:43	06/09/21 15:28	76-13-1	
1,2,4-Trimethylbenzene	<50.0	ug/kg	50.0	22.0	1	06/09/21 10:43	06/09/21 15:28	95-63-6	
1,3,5-Trimethylbenzene	<50.0	ug/kg	50.0	16.0	1	06/09/21 10:43	06/09/21 15:28	108-67-8	
Vinyl chloride	<20.0	ug/kg	20.0	9.9	1	06/09/21 10:43	06/09/21 15:28	75-01-4	
Xylene (Total)	<150	ug/kg	150	24.1	1	06/09/21 10:43	06/09/21 15:28	1330-20-7	
m&p-Xylene	<100	ug/kg	100	15.9	1	06/09/21 10:43	06/09/21 15:28	179601-23-1	
o-Xylene	<50.0	ug/kg	50.0	24.1	1	06/09/21 10:43	06/09/21 15:28	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	94	%	73-125		1	06/09/21 10:43	06/09/21 15:28	17060-07-0	
Toluene-d8 (S)	100	%	75-125		1	06/09/21 10:43	06/09/21 15:28	2037-26-5	
4-Bromofluorobenzene (S)	100	%	75-125		1	06/09/21 10:43	06/09/21 15:28	460-00-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

QC Batch:	746877	Analysis Method:	EPA 7471B
QC Batch Method:	EPA 7471B	Analysis Description:	7471B Mercury Solids
		Laboratory:	Pace Analytical Services - Minneapolis

Associated Lab Samples: 10563078001, 10563078002, 10563078003, 10563078004, 10563078005, 10563078006, 10563078007, 10563078008, 10563078009, 10563078010

METHOD BLANK: 3984094 Matrix: Solid

Associated Lab Samples: 10563078001, 10563078002, 10563078003, 10563078004, 10563078005, 10563078006, 10563078007, 10563078008, 10563078009, 10563078010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/kg	<0.018	0.018	0.0079	06/09/21 14:49	

LABORATORY CONTROL SAMPLE: 3984095

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	0.47	0.47	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3984096 3984097

Parameter	Units	10563078001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.022	0.51	0.47	0.54	0.53	101	109	80-120	1	20	

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

QC Batch: 746872 Analysis Method: EPA 6010D
 QC Batch Method: EPA 3050B Analysis Description: 6010D Solids
 Laboratory: Pace Analytical Services - Minneapolis
 Associated Lab Samples: 10563078001, 10563078002, 10563078003, 10563078004, 10563078005, 10563078006, 10563078007, 10563078008, 10563078009, 10563078010

METHOD BLANK: 3984084 Matrix: Solid
 Associated Lab Samples: 10563078001, 10563078002, 10563078003, 10563078004, 10563078005, 10563078006, 10563078007, 10563078008, 10563078009, 10563078010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/kg	<1.0	1.0	0.20	06/14/21 11:37	
Barium	mg/kg	<0.50	0.50	0.079	06/14/21 11:37	
Cadmium	mg/kg	<0.15	0.15	0.030	06/14/21 11:37	
Chromium	mg/kg	<0.50	0.50	0.10	06/14/21 11:37	
Lead	mg/kg	<0.50	0.50	0.11	06/14/21 11:37	
Selenium	mg/kg	<1.0	1.0	0.33	06/14/21 11:37	
Silver	mg/kg	<0.50	0.50	0.036	06/14/21 11:37	

LABORATORY CONTROL SAMPLE: 3984085

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	47.6	49.1	103	80-120	
Barium	mg/kg	47.6	51.6	108	80-120	
Cadmium	mg/kg	47.6	51.2	108	80-120	
Chromium	mg/kg	47.6	50.5	106	80-120	
Lead	mg/kg	47.6	49.9	105	80-120	
Selenium	mg/kg	47.6	46.1	97	80-120	
Silver	mg/kg	23.8	23.9	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3984086 3984087

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Spike Conc.	Result	Spike Conc.	Result								
Arsenic	mg/kg	2.8	51.5	50.1	44.3	43.1	81	81	75-125	3	20		
Barium	mg/kg	49.6	51.5	50.1	87.5	87.4	74	76	75-125	0	20	M1	
Cadmium	mg/kg	0.71	51.5	50.1	42.5	41.7	81	82	75-125	2	20		
Chromium	mg/kg	16.6	51.5	50.1	61.9	58.1	88	83	75-125	6	20		
Lead	mg/kg	39.5	51.5	50.1	82.0	77.3	82	75	75-125	6	20		
Selenium	mg/kg	<1.1	51.5	50.1	37.8	36.7	73	73	75-125	3	20	M1	
Silver	mg/kg	<0.54	25.8	25	21.4	21.0	83	84	75-125	2	20		

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

QC Batch:	746260	Analysis Method:	ASTM D2974
QC Batch Method:	ASTM D2974	Analysis Description:	Dry Weight / %M by ASTM D2974
		Laboratory:	Pace Analytical Services - Minneapolis

Associated Lab Samples: 10563078001, 10563078002, 10563078003, 10563078004, 10563078005, 10563078006, 10563078007, 10563078008, 10563078009, 10563078010

SAMPLE DUPLICATE: 3982122

Parameter	Units	10563078009 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	8.6	9.5	10	30	N2

SAMPLE DUPLICATE: 3982123

Parameter	Units	10562987002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	2.8	2.8	1	30	N2

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II
Pace Project No.: 10563078

QC Batch: 747732 Analysis Method: EPA 8260D
QC Batch Method: EPA 5035/5030B Analysis Description: 8260D MSV 5030 Med Level
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10563078001, 10563078002, 10563078003, 10563078004, 10563078005, 10563078006, 10563078007, 10563078008, 10563078009, 10563078010, 10563078011

METHOD BLANK: 3988266 Matrix: Solid
Associated Lab Samples: 10563078001, 10563078002, 10563078003, 10563078004, 10563078005, 10563078006, 10563078007, 10563078008, 10563078009, 10563078010, 10563078011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	<50.0	50.0	13.2	06/09/21 14:52	
1,1,1-Trichloroethane	ug/kg	<50.0	50.0	21.5	06/09/21 14:52	
1,1,2,2-Tetrachloroethane	ug/kg	<50.0	50.0	16.1	06/09/21 14:52	
1,1,2-Trichloroethane	ug/kg	<50.0	50.0	24.8	06/09/21 14:52	
1,1,2-Trichlorotrifluoroethane	ug/kg	<200	200	88.2	06/09/21 14:52	
1,1-Dichloroethane	ug/kg	<50.0	50.0	22.5	06/09/21 14:52	
1,1-Dichloroethene	ug/kg	<50.0	50.0	17.9	06/09/21 14:52	
1,1-Dichloropropene	ug/kg	<50.0	50.0	20.6	06/09/21 14:52	
1,2,3-Trichlorobenzene	ug/kg	<50.0	50.0	15.4	06/09/21 14:52	
1,2,3-Trichloropropane	ug/kg	<200	200	58.3	06/09/21 14:52	
1,2,4-Trichlorobenzene	ug/kg	<50.0	50.0	12.3	06/09/21 14:52	
1,2,4-Trimethylbenzene	ug/kg	<50.0	50.0	22.0	06/09/21 14:52	
1,2-Dibromo-3-chloropropane	ug/kg	<500	500	118	06/09/21 14:52	
1,2-Dibromoethane (EDB)	ug/kg	<50.0	50.0	17.5	06/09/21 14:52	
1,2-Dichlorobenzene	ug/kg	<50.0	50.0	9.4	06/09/21 14:52	
1,2-Dichloroethane	ug/kg	<50.0	50.0	19.1	06/09/21 14:52	
1,2-Dichloropropane	ug/kg	<50.0	50.0	22.8	06/09/21 14:52	
1,3,5-Trimethylbenzene	ug/kg	<50.0	50.0	16.0	06/09/21 14:52	
1,3-Dichlorobenzene	ug/kg	<50.0	50.0	6.2	06/09/21 14:52	
1,3-Dichloropropane	ug/kg	<50.0	50.0	18.4	06/09/21 14:52	
1,4-Dichlorobenzene	ug/kg	<50.0	50.0	7.9	06/09/21 14:52	
2,2-Dichloropropane	ug/kg	<200	200	19.0	06/09/21 14:52	
2-Butanone (MEK)	ug/kg	<250	250	31.2	06/09/21 14:52	
2-Chlorotoluene	ug/kg	<50.0	50.0	12.3	06/09/21 14:52	
4-Chlorotoluene	ug/kg	<50.0	50.0	6.4	06/09/21 14:52	
4-Methyl-2-pentanone (MIBK)	ug/kg	<250	250	23.9	06/09/21 14:52	
Acetone	ug/kg	<1000	1000	472	06/09/21 14:52	
Allyl chloride	ug/kg	<200	200	40.5	06/09/21 14:52	
Benzene	ug/kg	<20.0	20.0	9.2	06/09/21 14:52	
Bromobenzene	ug/kg	<50.0	50.0	6.6	06/09/21 14:52	
Bromochloromethane	ug/kg	<50.0	50.0	24.7	06/09/21 14:52	
Bromodichloromethane	ug/kg	<50.0	50.0	15.9	06/09/21 14:52	
Bromoform	ug/kg	<200	200	66.2	06/09/21 14:52	
Bromomethane	ug/kg	<500	500	93.4	06/09/21 14:52	1M
Carbon tetrachloride	ug/kg	<50.0	50.0	24.3	06/09/21 14:52	
Chlorobenzene	ug/kg	<50.0	50.0	8.2	06/09/21 14:52	
Chloroethane	ug/kg	<500	500	79.2	06/09/21 14:52	
Chloroform	ug/kg	<50.0	50.0	22.0	06/09/21 14:52	
Chloromethane	ug/kg	<200	200	27.2	06/09/21 14:52	

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

METHOD BLANK: 3988266

Matrix: Solid

Associated Lab Samples: 10563078001, 10563078002, 10563078003, 10563078004, 10563078005, 10563078006, 10563078007, 10563078008, 10563078009, 10563078010, 10563078011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
cis-1,2-Dichloroethene	ug/kg	<50.0	50.0	13.9	06/09/21 14:52	
cis-1,3-Dichloropropene	ug/kg	<50.0	50.0	4.8	06/09/21 14:52	
Dibromochloromethane	ug/kg	<200	200	16.9	06/09/21 14:52	
Dibromomethane	ug/kg	<50.0	50.0	21.8	06/09/21 14:52	
Dichlorodifluoromethane	ug/kg	<200	200	26.6	06/09/21 14:52	
Dichlorofluoromethane	ug/kg	<500	500	139	06/09/21 14:52	
Diethyl ether (Ethyl ether)	ug/kg	<200	200	42.6	06/09/21 14:52	
Ethylbenzene	ug/kg	<50.0	50.0	8.9	06/09/21 14:52	
Hexachloro-1,3-butadiene	ug/kg	<250	250	22.6	06/09/21 14:52	
Isopropylbenzene (Cumene)	ug/kg	<50.0	50.0	18.9	06/09/21 14:52	
m&p-Xylene	ug/kg	<100	100	15.9	06/09/21 14:52	
Methyl-tert-butyl ether	ug/kg	<50.0	50.0	10	06/09/21 14:52	
Methylene Chloride	ug/kg	<200	200	94.3	06/09/21 14:52	
n-Butylbenzene	ug/kg	<50.0	50.0	11.0	06/09/21 14:52	
n-Propylbenzene	ug/kg	<50.0	50.0	10.5	06/09/21 14:52	
Naphthalene	ug/kg	<200	200	56.2	06/09/21 14:52	
o-Xylene	ug/kg	<50.0	50.0	24.1	06/09/21 14:52	
p-Isopropyltoluene	ug/kg	<50.0	50.0	15.8	06/09/21 14:52	
sec-Butylbenzene	ug/kg	<50.0	50.0	21.9	06/09/21 14:52	
Styrene	ug/kg	<50.0	50.0	7.2	06/09/21 14:52	
tert-Butylbenzene	ug/kg	<50.0	50.0	15.5	06/09/21 14:52	
Tetrachloroethene	ug/kg	<50.0	50.0	23.7	06/09/21 14:52	
Tetrahydrofuran	ug/kg	<2000	2000	412	06/09/21 14:52	
Toluene	ug/kg	<50.0	50.0	21.4	06/09/21 14:52	
trans-1,2-Dichloroethene	ug/kg	<50.0	50.0	22.9	06/09/21 14:52	
trans-1,3-Dichloropropene	ug/kg	<50.0	50.0	6.3	06/09/21 14:52	
Trichloroethene	ug/kg	<50.0	50.0	21.1	06/09/21 14:52	
Trichlorofluoromethane	ug/kg	<200	200	94.7	06/09/21 14:52	2M
Vinyl chloride	ug/kg	<20.0	20.0	9.9	06/09/21 14:52	
Xylene (Total)	ug/kg	<150	150	24.1	06/09/21 14:52	
1,2-Dichloroethane-d4 (S)	%	96	73-125		06/09/21 14:52	
4-Bromofluorobenzene (S)	%	99	75-125		06/09/21 14:52	
Toluene-d8 (S)	%	99	75-125		06/09/21 14:52	

LABORATORY CONTROL SAMPLE: 3988267

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	1000	1010	101	62-125	
1,1,1-Trichloroethane	ug/kg	1000	949	95	52-135	
1,1,2,2-Tetrachloroethane	ug/kg	1000	999	100	56-125	
1,1,2-Trichloroethane	ug/kg	1000	1030	103	62-125	
1,1,2-Trichlorotrifluoroethane	ug/kg	1000	980	98	49-143	
1,1-Dichloroethane	ug/kg	1000	949	95	51-128	

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II
Pace Project No.: 10563078

LABORATORY CONTROL SAMPLE: 3988267

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/kg	1000	945	95	32-143	
1,1-Dichloropropene	ug/kg	1000	947	95	43-141	
1,2,3-Trichlorobenzene	ug/kg	1000	1050	105	54-125	
1,2,3-Trichloropropane	ug/kg	1000	1020	102	61-125	
1,2,4-Trichlorobenzene	ug/kg	1000	1070	107	56-125	
1,2,4-Trimethylbenzene	ug/kg	1000	1050	105	61-129	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2430	97	54-125	
1,2-Dibromoethane (EDB)	ug/kg	1000	1030	103	58-125	
1,2-Dichlorobenzene	ug/kg	1000	1020	102	57-125	
1,2-Dichloroethane	ug/kg	1000	892	89	53-125	
1,2-Dichloropropane	ug/kg	1000	1010	101	55-125	
1,3,5-Trimethylbenzene	ug/kg	1000	1050	105	63-128	
1,3-Dichlorobenzene	ug/kg	1000	1030	103	57-125	
1,3-Dichloropropane	ug/kg	1000	1050	105	59-125	
1,4-Dichlorobenzene	ug/kg	1000	1040	104	60-125	
2,2-Dichloropropane	ug/kg	1000	943	94	52-138	
2-Butanone (MEK)	ug/kg	5000	5640	113	44-132	
2-Chlorotoluene	ug/kg	1000	1020	102	58-125	
4-Chlorotoluene	ug/kg	1000	1030	103	57-125	
4-Methyl-2-pentanone (MIBK)	ug/kg	5000	4990	100	54-125	
Acetone	ug/kg	5000	4290	86	49-145	
Allyl chloride	ug/kg	1000	935	93	40-134	
Benzene	ug/kg	1000	981	98	54-129	
Bromobenzene	ug/kg	1000	1030	103	59-125	
Bromochloromethane	ug/kg	1000	959	96	50-126	
Bromodichloromethane	ug/kg	1000	981	98	58-125	
Bromoform	ug/kg	1000	966	97	57-125	
Bromomethane	ug/kg	1000	893	89	44-130 1M	
Carbon tetrachloride	ug/kg	1000	960	96	49-143	
Chlorobenzene	ug/kg	1000	1020	102	59-125	
Chloroethane	ug/kg	1000	799	80	44-143	
Chloroform	ug/kg	1000	932	93	56-125	
Chloromethane	ug/kg	1000	807	81	42-125	
cis-1,2-Dichloroethene	ug/kg	1000	965	97	50-128	
cis-1,3-Dichloropropene	ug/kg	1000	995	99	56-127	
Dibromochloromethane	ug/kg	1000	983	98	60-125	
Dibromomethane	ug/kg	1000	1020	102	57-125	
Dichlorodifluoromethane	ug/kg	1000	997	100	30-125	
Dichlorofluoromethane	ug/kg	1000	834	83	45-145	
Diethyl ether (Ethyl ether)	ug/kg	1000	942	94	41-126	
Ethylbenzene	ug/kg	1000	999	100	65-125	
Hexachloro-1,3-butadiene	ug/kg	1000	1080	108	57-137	
Isopropylbenzene (Cumene)	ug/kg	1000	1040	104	60-131	
m&p-Xylene	ug/kg	2000	2050	102	65-129	
Methyl-tert-butyl ether	ug/kg	1000	950	95	60-125	
Methylene Chloride	ug/kg	1000	889	89	50-125	
n-Butylbenzene	ug/kg	1000	1080	108	59-132	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II
Pace Project No.: 10563078

LABORATORY CONTROL SAMPLE: 3988267

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
n-Propylbenzene	ug/kg	1000	1040	104	59-127	
Naphthalene	ug/kg	1000	1050	105	55-127	
o-Xylene	ug/kg	1000	1000	100	66-126	
p-Isopropyltoluene	ug/kg	1000	1090	109	61-127	
sec-Butylbenzene	ug/kg	1000	1070	107	60-131	
Styrene	ug/kg	1000	1030	103	62-125	
tert-Butylbenzene	ug/kg	1000	1040	104	59-128	
Tetrachloroethene	ug/kg	1000	1060	106	51-133	
Tetrahydrofuran	ug/kg	10000	9900	99	47-135	
Toluene	ug/kg	1000	1010	101	59-125	
trans-1,2-Dichloroethene	ug/kg	1000	930	93	37-137	
trans-1,3-Dichloropropene	ug/kg	1000	1020	102	60-125	
Trichloroethene	ug/kg	1000	1000	100	54-131	
Trichlorofluoromethane	ug/kg	1000	791	79	30-150 2M	
Vinyl chloride	ug/kg	1000	885	88	50-125	
Xylene (Total)	ug/kg	3000	3050	102	66-127	
1,2-Dichloroethane-d4 (S)	%			97	73-125	
4-Bromofluorobenzene (S)	%			98	75-125	
Toluene-d8 (S)	%			100	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3988268 3988269

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10562944037 Result	Spike Conc.	Spike Conc.	Result								
1,1,1,2-Tetrachloroethane	ug/kg	ND	1070	1070	1300	1240	121	116	46-150	4	30		
1,1,1-Trichloroethane	ug/kg	ND	1070	1070	1320	1230	123	115	44-150	7	30		
1,1,2,2-Tetrachloroethane	ug/kg	ND	1070	1070	1270	1240	119	116	37-150	3	30		
1,1,2-Trichloroethane	ug/kg	ND	1070	1070	1300	1260	122	118	47-150	3	30		
1,1,2-Trichlorotrifluoroethane	ug/kg	ND	1070	1070	1320	1260	124	118	35-150	5	30		
1,1-Dichloroethane	ug/kg	ND	1070	1070	1290	1230	121	115	40-150	5	30		
1,1-Dichloroethene	ug/kg	ND	1070	1070	1310	1220	123	114	30-150	7	30		
1,1-Dichloropropene	ug/kg	ND	1070	1070	1280	1190	120	111	36-150	7	30		
1,2,3-Trichlorobenzene	ug/kg	ND	1070	1070	1310	1280	122	119	39-150	2	30		
1,2,3-Trichloropropane	ug/kg	ND	1070	1070	1290	1250	120	117	51-150	3	30		
1,2,4-Trichlorobenzene	ug/kg	ND	1070	1070	1320	1270	124	119	40-150	4	30		
1,2,4-Trimethylbenzene	ug/kg	ND	1070	1070	1340	1320	125	123	39-150	1	30		
1,2-Dibromo-3-chloropropane	ug/kg	ND	2680	2680	3160	3030	118	113	41-150	4	30		
1,2-Dibromoethane (EDB)	ug/kg	ND	1070	1070	1300	1260	121	118	48-150	3	30		
1,2-Dichlorobenzene	ug/kg	ND	1070	1070	1320	1280	123	120	46-150	3	30		
1,2-Dichloroethane	ug/kg	ND	1070	1070	1160	1140	108	106	39-150	2	30		
1,2-Dichloropropane	ug/kg	ND	1070	1070	1370	1290	128	120	48-150	6	30		
1,3,5-Trimethylbenzene	ug/kg	ND	1070	1070	1340	1320	125	123	45-150	2	30		
1,3-Dichlorobenzene	ug/kg	ND	1070	1070	1330	1310	124	123	45-150	1	30		
1,3-Dichloropropane	ug/kg	ND	1070	1070	1320	1280	123	119	46-150	3	30		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3988268 3988269												
Parameter	Units	10562944037		MS	MSD	MS		MSD		% Rec Limits	Max RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec			
1,4-Dichlorobenzene	ug/kg	ND	1070	1070	1340	1290	125	120	44-150	4	30	
2,2-Dichloropropane	ug/kg	ND	1070	1070	1290	1210	120	113	39-150	6	30	
2-Butanone (MEK)	ug/kg	ND	5360	5360	5630	5360	104	99	32-150	5	30	
2-Chlorotoluene	ug/kg	ND	1070	1070	1310	1290	122	120	44-150	2	30	
4-Chlorotoluene	ug/kg	ND	1070	1070	1320	1300	124	122	46-150	2	30	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	5360	5360	6370	6110	119	114	34-150	4	30	
Acetone	ug/kg	ND	5360	5360	6910	6820	129	127	30-150	1	30	
Allyl chloride	ug/kg	ND	1070	1070	1280	1230	119	115	30-150	4	30	
Benzene	ug/kg	ND	1070	1070	1290	1230	120	115	43-150	4	30	
Bromobenzene	ug/kg	ND	1070	1070	1330	1290	124	121	46-150	3	30	
Bromochloromethane	ug/kg	ND	1070	1070	1290	1240	121	116	42-150	4	30	
Bromodichloromethane	ug/kg	ND	1070	1070	1340	1250	126	117	44-150	7	30	
Bromoform	ug/kg	ND	1070	1070	1190	1180	112	110	39-150	1	30	
Bromomethane	ug/kg	ND	1070	1070	1210	1030	110	93	36-150	16	30	1M
Carbon tetrachloride	ug/kg	ND	1070	1070	1330	1250	124	117	42-150	6	30	
Chlorobenzene	ug/kg	ND	1070	1070	1330	1310	124	122	46-150	2	30	
Chloroethane	ug/kg	ND	1070	1070	1100	1070	102	100	30-150	3	30	
Chloroform	ug/kg	ND	1070	1070	1230	1220	115	114	43-150	1	30	
Chloromethane	ug/kg	ND	1070	1070	1070	995	100	93	31-137	8	30	
cis-1,2-Dichloroethene	ug/kg	ND	1070	1070	1270	1220	119	114	44-150	4	30	
cis-1,3-Dichloropropene	ug/kg	ND	1070	1070	1310	1260	123	118	45-150	4	30	
Dibromochloromethane	ug/kg	ND	1070	1070	1270	1230	119	115	45-150	3	30	
Dibromomethane	ug/kg	ND	1070	1070	1350	1290	126	120	48-150	5	30	
Dichlorodifluoromethane	ug/kg	ND	1070	1070	1330	1230	124	114	30-127	8	30	
Dichlorofluoromethane	ug/kg	ND	1070	1070	1220	1120	114	105	30-150	8	30	
Diethyl ether (Ethyl ether)	ug/kg	ND	1070	1070	1200	1160	113	108	33-150	4	30	
Ethylbenzene	ug/kg	ND	1070	1070	1320	1270	123	119	51-150	4	30	
Hexachloro-1,3-butadiene	ug/kg	ND	1070	1070	1310	1300	123	121	37-150	1	30	
Isopropylbenzene (Cumene)	ug/kg	ND	1070	1070	1370	1310	128	122	43-150	5	30	
m&p-Xylene	ug/kg	ND	2140	2140	2720	2630	127	123	51-150	3	30	
Methyl-tert-butyl ether	ug/kg	ND	1070	1070	1220	1170	114	110	42-150	4	30	
Methylene Chloride	ug/kg	ND	1070	1070	1180	1130	107	103	36-150	4	30	
n-Butylbenzene	ug/kg	ND	1070	1070	1350	1340	126	125	44-150	1	30	
n-Propylbenzene	ug/kg	ND	1070	1070	1330	1290	125	121	46-150	3	30	
Naphthalene	ug/kg	ND	1070	1070	1300	1270	122	118	35-150	3	30	
o-Xylene	ug/kg	ND	1070	1070	1340	1290	125	120	52-150	4	30	
p-Isopropyltoluene	ug/kg	ND	1070	1070	1370	1330	128	125	41-150	2	30	
sec-Butylbenzene	ug/kg	ND	1070	1070	1360	1310	127	123	47-150	3	30	
Styrene	ug/kg	ND	1070	1070	1370	1310	128	122	44-150	5	30	
tert-Butylbenzene	ug/kg	ND	1070	1070	1350	1310	126	122	46-150	3	30	
Tetrachloroethene	ug/kg	ND	1070	1070	1360	1320	128	124	42-150	3	30	
Tetrahydrofuran	ug/kg	ND	10700	10700	13000	12400	121	116	37-150	5	30	
Toluene	ug/kg	ND	1070	1070	1310	1270	122	119	51-150	3	30	
trans-1,2-Dichloroethene	ug/kg	ND	1070	1070	1280	1210	120	113	33-150	6	30	

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Parameter	Units	3988268		3988269		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10562944037 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
trans-1,3-Dichloropropene	ug/kg	ND	1070	1070	1310	1250	123	116	43-150	5	30		
Trichloroethene	ug/kg	ND	1070	1070	1320	1280	124	119	49-150	3	30		
Trichlorofluoromethane	ug/kg	ND	1070	1070	1450	1490	135	139	30-150	3	30	2M	
Vinyl chloride	ug/kg	ND	1070	1070	1210	1110	113	103	35-147	9	30		
Xylene (Total)	ug/kg	ND	3210	3210	4060	3920	127	122	51-150	4	30		
1,2-Dichloroethane-d4 (S)	%						96	97	73-125				
4-Bromofluorobenzene (S)	%						100	100	75-125				
Toluene-d8 (S)	%						100	100	75-125				

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

QC Batch:	747146	Analysis Method:	EPA 8082A
QC Batch Method:	EPA 3546	Analysis Description:	8082A GCS PCB
		Laboratory:	Pace Analytical Services - Minneapolis
Associated Lab Samples:	10563078001, 10563078002, 10563078003, 10563078004, 10563078005, 10563078006, 10563078007, 10563078008, 10563078009, 10563078010		

METHOD BLANK:	3985492	Matrix:	Solid
Associated Lab Samples:	10563078001, 10563078002, 10563078003, 10563078004, 10563078005, 10563078006, 10563078007, 10563078008, 10563078009, 10563078010		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	<50.0	50.0	17.2	06/08/21 16:49	
PCB-1221 (Aroclor 1221)	ug/kg	<50.0	50.0	23.4	06/08/21 16:49	
PCB-1232 (Aroclor 1232)	ug/kg	<50.0	50.0	20.6	06/08/21 16:49	
PCB-1242 (Aroclor 1242)	ug/kg	<50.0	50.0	18.2	06/08/21 16:49	
PCB-1248 (Aroclor 1248)	ug/kg	<50.0	50.0	29.8	06/08/21 16:49	
PCB-1254 (Aroclor 1254)	ug/kg	<50.0	50.0	27.3	06/08/21 16:49	
PCB-1260 (Aroclor 1260)	ug/kg	<50.0	50.0	18.4	06/08/21 16:49	
PCB-1262 (Aroclor 1262)	ug/kg	<50.0	50.0	24.9	06/08/21 16:49	
PCB-1268 (Aroclor 1268)	ug/kg	<50.0	50.0	23.6	06/08/21 16:49	
Decachlorobiphenyl (S)	%	98	57-125		06/08/21 16:49	
Tetrachloro-m-xylene (S)	%	88	59-125		06/08/21 16:49	

LABORATORY CONTROL SAMPLE: 3985493						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	1000	890	89	68-125	
PCB-1260 (Aroclor 1260)	ug/kg	1000	898	90	68-125	
Decachlorobiphenyl (S)	%			98	57-125	
Tetrachloro-m-xylene (S)	%			85	59-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3985494												3985495	
Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10563078001 Result	Spike Conc.	Spike Conc.	MS Result								
PCB-1016 (Aroclor 1016)	ug/kg	<54.5	1080	1090	946	882	87	81	70-130	7	30		
PCB-1260 (Aroclor 1260)	ug/kg	<54.5	1080	1090	933	910	86	84	70-130	3	30		
Decachlorobiphenyl (S)	%						90	90	57-125				
Tetrachloro-m-xylene (S)	%						80	72	59-125				

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

QC Batch:	746615	Analysis Method:	EPA 8270E by SIM
QC Batch Method:	EPA 3550C	Analysis Description:	8270E Solid PAH by SIM MSSV
		Laboratory:	Pace Analytical Services - Minneapolis

Associated Lab Samples: 10563078001, 10563078002, 10563078003, 10563078004, 10563078005, 10563078006, 10563078007, 10563078008, 10563078009, 10563078010

METHOD BLANK: 3982524 Matrix: Solid

Associated Lab Samples: 10563078001, 10563078002, 10563078003, 10563078004, 10563078005, 10563078006, 10563078007, 10563078008, 10563078009, 10563078010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Acenaphthene	ug/kg	<10.0	10.0	0.45	06/15/21 12:47	
Acenaphthylene	ug/kg	<10.0	10.0	0.68	06/15/21 12:47	
Anthracene	ug/kg	<10.0	10.0	0.32	06/15/21 12:47	
Benzo(a)anthracene	ug/kg	<10.0	10.0	0.41	06/15/21 12:47	
Benzo(a)pyrene	ug/kg	<10.0	10.0	0.56	06/15/21 12:47	
Benzo(b)fluoranthene	ug/kg	<10.0	10.0	0.47	06/15/21 12:47	
Benzo(g,h,i)perylene	ug/kg	<10.0	10.0	0.46	06/15/21 12:47	
Benzo(k)fluoranthene	ug/kg	<10.0	10.0	0.48	06/15/21 12:47	
Chrysene	ug/kg	<10.0	10.0	0.40	06/15/21 12:47	
Dibenz(a,h)anthracene	ug/kg	<10.0	10.0	0.66	06/15/21 12:47	
Fluoranthene	ug/kg	<10.0	10.0	0.60	06/15/21 12:47	
Fluorene	ug/kg	<10.0	10.0	0.60	06/15/21 12:47	
Indeno(1,2,3-cd)pyrene	ug/kg	<10.0	10.0	0.54	06/15/21 12:47	
Naphthalene	ug/kg	<10.0	10.0	0.45	06/15/21 12:47	
Phenanthrene	ug/kg	<10.0	10.0	0.70	06/15/21 12:47	
Pyrene	ug/kg	<10.0	10.0	0.65	06/15/21 12:47	
2-Fluorobiphenyl (S)	%	74	50-125		06/15/21 12:47	
p-Terphenyl-d14 (S)	%	86	51-125		06/15/21 12:47	

LABORATORY CONTROL SAMPLE: 3982525

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	24.5	74	56-125	
Acenaphthylene	ug/kg	33.3	22.0	66	47-125	
Anthracene	ug/kg	33.3	25.7	77	60-125	
Benzo(a)anthracene	ug/kg	33.3	27.4	82	69-125	
Benzo(a)pyrene	ug/kg	33.3	25.7	77	63-125	
Benzo(b)fluoranthene	ug/kg	33.3	27.7	83	67-125	
Benzo(g,h,i)perylene	ug/kg	33.3	29.6	89	67-125	
Benzo(k)fluoranthene	ug/kg	33.3	27.9	84	67-125	
Chrysene	ug/kg	33.3	26.9	81	71-125	
Dibenz(a,h)anthracene	ug/kg	33.3	30.4	91	65-125	
Fluoranthene	ug/kg	33.3	27.0	81	65-125	
Fluorene	ug/kg	33.3	25.7	77	63-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	29.3	88	69-125	
Naphthalene	ug/kg	33.3	22.3	67	51-125	
Phenanthrene	ug/kg	33.3	26.1	78	66-125	

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

LABORATORY CONTROL SAMPLE: 3982525

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Pyrene	ug/kg	33.3	27.2	82	68-125	
2-Fluorobiphenyl (S)	%.			74	50-125	
p-Terphenyl-d14 (S)	%.			84	51-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3982582 3982583

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10563461001 Result	Spike Conc.	Spike Conc.	Result						
Acenaphthene	ug/kg	ND	34.9	34.7	20.7J	21.1J	59	61	30-140	30	
Acenaphthylene	ug/kg	ND	34.9	34.7	18.5J	19.9J	53	57	30-136	30	
Anthracene	ug/kg	ND	34.9	34.7	20.4J	19.6J	58	56	46-125	30	
Benzo(a)anthracene	ug/kg	ND	34.9	34.7	21.6J	23.3J	62	67	30-150	30	
Benzo(a)pyrene	ug/kg	ND	34.9	34.7	20.5J	21.1J	59	61	30-150	30	
Benzo(b)fluoranthene	ug/kg	ND	34.9	34.7	23.4J	24.7J	67	71	30-150	30	
Benzo(g,h,i)perylene	ug/kg	ND	34.9	34.7	22.6J	22.9J	65	66	30-150	30	
Benzo(k)fluoranthene	ug/kg	ND	34.9	34.7	19.2J	20.9J	55	60	30-150	30	
Chrysene	ug/kg	ND	34.9	34.7	28.1J	28.3J	81	82	36-126	30	
Dibenz(a,h)anthracene	ug/kg	ND	34.9	34.7	18.4J	18.0J	53	52	30-147	30	
Fluoranthene	ug/kg	ND	34.9	34.7	23.1J	23.6J	66	68	30-150	30	
Fluorene	ug/kg	ND	34.9	34.7	19.5J	20.4J	56	59	30-140	30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	34.9	34.7	16.7J	16.6J	48	48	30-150	30	
Naphthalene	ug/kg	ND	34.9	34.7	21.4J	20.8J	61	60	30-138	30	
Phenanthrene	ug/kg	ND	34.9	34.7	25.1J	24.5J	55	53	30-150	30	
Pyrene	ug/kg	ND	34.9	34.7	22.8J	23.1J	65	66	30-150	30	
2-Fluorobiphenyl (S)	%.						57	60	50-125		D3
p-Terphenyl-d14 (S)	%.						54	56	51-125		

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

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

QC Batch:	746420	Analysis Method:	WI MOD DRO
QC Batch Method:	WI MOD DRO	Analysis Description:	WIDRO Solid GCV
		Laboratory:	Pace Analytical Services - Minneapolis

Associated Lab Samples: 10563078001, 10563078002, 10563078003, 10563078004, 10563078005, 10563078006, 10563078007, 10563078008, 10563078009, 10563078010

METHOD BLANK: 3981316 Matrix: Solid

Associated Lab Samples: 10563078001, 10563078002, 10563078003, 10563078004, 10563078005, 10563078006, 10563078007, 10563078008, 10563078009, 10563078010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	<10	10	3.7	06/04/21 13:44	
n-Triacontane (S)	%.	78	30-150		06/04/21 13:44	

LABORATORY CONTROL SAMPLE & LCSD: 3981317 3981318

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	79.9	69.6	71.9	87	90	59-125	3	20	
n-Triacontane (S)	%.				71	71	30-150			

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

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QUALIFIERS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

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.

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

- | | |
|----|---|
| 1M | This analyte did not meet the secondary source verification criteria for the initial calibration. Analyte recovery exceeded the 130% upper control limit at 138%. Results are estimated. |
| 2M | This analyte did not meet the secondary source verification criteria for the initial calibration. Analyte recovery exceeded the 130% upper control limit at 141%. Results are estimated. |
| D3 | Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference. |
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |
| N2 | The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request. |
| P1 | Routine initial sample volume or weight was not used for extraction, resulting in elevated reporting limits. |
| T6 | High boiling point hydrocarbons are present in the sample. |
| T7 | Low boiling point hydrocarbons are present in the sample. |

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10563078001	TP-01 (1-2)	EPA 3546	747146	EPA 8082A	747624
10563078002	TP-02 (1-2)	EPA 3546	747146	EPA 8082A	747624
10563078003	TP-03 (1-2)	EPA 3546	747146	EPA 8082A	747624
10563078004	TP-04 (4-5)	EPA 3546	747146	EPA 8082A	747624
10563078005	TP-05 (4-5)	EPA 3546	747146	EPA 8082A	747624
10563078006	TP-06 (1-2)	EPA 3546	747146	EPA 8082A	747624
10563078007	TP-07 (1-2)	EPA 3546	747146	EPA 8082A	747624
10563078008	TP-08 (1-2)	EPA 3546	747146	EPA 8082A	747624
10563078009	TP-09 (1-2)	EPA 3546	747146	EPA 8082A	747624
10563078010	TP-10 (1-2)	EPA 3546	747146	EPA 8082A	747624
10563078001	TP-01 (1-2)	WI MOD DRO	746420	WI MOD DRO	746725
10563078002	TP-02 (1-2)	WI MOD DRO	746420	WI MOD DRO	746725
10563078003	TP-03 (1-2)	WI MOD DRO	746420	WI MOD DRO	746725
10563078004	TP-04 (4-5)	WI MOD DRO	746420	WI MOD DRO	746725
10563078005	TP-05 (4-5)	WI MOD DRO	746420	WI MOD DRO	746725
10563078006	TP-06 (1-2)	WI MOD DRO	746420	WI MOD DRO	746725
10563078007	TP-07 (1-2)	WI MOD DRO	746420	WI MOD DRO	746725
10563078008	TP-08 (1-2)	WI MOD DRO	746420	WI MOD DRO	746725
10563078009	TP-09 (1-2)	WI MOD DRO	746420	WI MOD DRO	746725
10563078010	TP-10 (1-2)	WI MOD DRO	746420	WI MOD DRO	746725
10563078001	TP-01 (1-2)	EPA 3050B	746872	EPA 6010D	747328
10563078002	TP-02 (1-2)	EPA 3050B	746872	EPA 6010D	747328
10563078003	TP-03 (1-2)	EPA 3050B	746872	EPA 6010D	747328
10563078004	TP-04 (4-5)	EPA 3050B	746872	EPA 6010D	747328
10563078005	TP-05 (4-5)	EPA 3050B	746872	EPA 6010D	747328
10563078006	TP-06 (1-2)	EPA 3050B	746872	EPA 6010D	747328
10563078007	TP-07 (1-2)	EPA 3050B	746872	EPA 6010D	747328
10563078008	TP-08 (1-2)	EPA 3050B	746872	EPA 6010D	747328
10563078009	TP-09 (1-2)	EPA 3050B	746872	EPA 6010D	747328
10563078010	TP-10 (1-2)	EPA 3050B	746872	EPA 6010D	747328
10563078001	TP-01 (1-2)	EPA 7471B	746877	EPA 7471B	747433
10563078002	TP-02 (1-2)	EPA 7471B	746877	EPA 7471B	747433
10563078003	TP-03 (1-2)	EPA 7471B	746877	EPA 7471B	747433
10563078004	TP-04 (4-5)	EPA 7471B	746877	EPA 7471B	747433
10563078005	TP-05 (4-5)	EPA 7471B	746877	EPA 7471B	747433
10563078006	TP-06 (1-2)	EPA 7471B	746877	EPA 7471B	747433
10563078007	TP-07 (1-2)	EPA 7471B	746877	EPA 7471B	747433
10563078008	TP-08 (1-2)	EPA 7471B	746877	EPA 7471B	747433
10563078009	TP-09 (1-2)	EPA 7471B	746877	EPA 7471B	747433
10563078010	TP-10 (1-2)	EPA 7471B	746877	EPA 7471B	747433
10563078001	TP-01 (1-2)	ASTM D2974	746260		
10563078002	TP-02 (1-2)	ASTM D2974	746260		
10563078003	TP-03 (1-2)	ASTM D2974	746260		
10563078004	TP-04 (4-5)	ASTM D2974	746260		
10563078005	TP-05 (4-5)	ASTM D2974	746260		
10563078006	TP-06 (1-2)	ASTM D2974	746260		
10563078007	TP-07 (1-2)	ASTM D2974	746260		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10563078

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10563078008	TP-08 (1-2)	ASTM D2974	746260		
10563078009	TP-09 (1-2)	ASTM D2974	746260		
10563078010	TP-10 (1-2)	ASTM D2974	746260		
10563078001	TP-01 (1-2)	EPA 3550C	746615	EPA 8270E by SIM	748791
10563078002	TP-02 (1-2)	EPA 3550C	746615	EPA 8270E by SIM	748791
10563078003	TP-03 (1-2)	EPA 3550C	746615	EPA 8270E by SIM	748791
10563078004	TP-04 (4-5)	EPA 3550C	746615	EPA 8270E by SIM	748791
10563078005	TP-05 (4-5)	EPA 3550C	746615	EPA 8270E by SIM	748791
10563078006	TP-06 (1-2)	EPA 3550C	746615	EPA 8270E by SIM	748791
10563078007	TP-07 (1-2)	EPA 3550C	746615	EPA 8270E by SIM	748791
10563078008	TP-08 (1-2)	EPA 3550C	746615	EPA 8270E by SIM	748791
10563078009	TP-09 (1-2)	EPA 3550C	746615	EPA 8270E by SIM	748791
10563078010	TP-10 (1-2)	EPA 3550C	746615	EPA 8270E by SIM	748791
10563078001	TP-01 (1-2)	EPA 5035/5030B	747732	EPA 8260D	747922
10563078002	TP-02 (1-2)	EPA 5035/5030B	747732	EPA 8260D	747922
10563078003	TP-03 (1-2)	EPA 5035/5030B	747732	EPA 8260D	747922
10563078004	TP-04 (4-5)	EPA 5035/5030B	747732	EPA 8260D	747922
10563078005	TP-05 (4-5)	EPA 5035/5030B	747732	EPA 8260D	747922
10563078006	TP-06 (1-2)	EPA 5035/5030B	747732	EPA 8260D	747922
10563078007	TP-07 (1-2)	EPA 5035/5030B	747732	EPA 8260D	747922
10563078008	TP-08 (1-2)	EPA 5035/5030B	747732	EPA 8260D	747922
10563078009	TP-09 (1-2)	EPA 5035/5030B	747732	EPA 8260D	747922
10563078010	TP-10 (1-2)	EPA 5035/5030B	747732	EPA 8260D	747922
10563078011	TB-01	EPA 5035/5030B	747732	EPA 8260D	747922

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

MO#: 10563078

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.



Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:		Section D Laboratory Information:	
Company:	Bay West	Project Name:	40th Ave W - Phase II	Attention:	Accounts Payable	Lab Name:	1700 Elm St. Minneapolis MN, 55414
Address:	5 Empire Dr. St. Paul MN, 55103	Project Number:	J210479	Company Name:	Bay West LLC	Address:	1700 Elm St. Minneapolis MN, 55414
Project Manager:	Rick Van Allen	Turnaround Time:	Standard	Address:	5 Empire Dr. St. Paul, MN 55103	Lab Project Manager:	Sylvia Hunter
Email To:	rickv@baywest.com	Site Location (State):	MN	Purchase Order No.:	110841	Lab Phone:	612-607-6347
Phone:	651-291-3441	Copy To:	rvanr@baywest.com			Project Task Code:	
Copy To:	Eweaver@baywest.com	Copy To:	gvandervaal@baywest.com			Program Code:	

ITEM #	Location Unique ID	Sample Common ID	RELINQUISHED BY / AFFILIATION				DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
			Sample Type Code (MPCA ONLY)	SAMPLE TYPE (G=GRAB C=COMP)	Matrix Code	Lab Matrix Code (MPCA ONLY)						
1		TP-01(1-2)	G	SO			05/27/21	1200				
2		TP-02(1-2)	G	SO			05/27/21	1145				
3		TP-03(1-2)	G	SO			05/27/21	1115				
4		TP-04(4-5)	G	SO			05/27/21	1230				
5		TP-05(4-5)	G	SO			05/27/21	1250				
6		TP-06(1-2)	G	SO			05/27/21	1315				
7		TP-07(1-2)	G	SO			05/27/21	1340				
8		TP-08(1-2)	G	SO			05/27/21	1400				
9		TP-09(1-2)	G	SO			05/27/21	1030				
10		TP-10(1-2)	G	SO			05/27/21	1000				
11		TB-01	L	W			05/27/21	800				

ADDITIONAL COMMENTS	
RELINQUISHED BY / AFFILIATION	<i>[Signature]</i> TN/BSA
DATE	5-28-21 0600
TIME	1630
ACCEPTED BY / AFFILIATION	<i>[Signature]</i> Ryan S / BSA
DATE	5-28-21
TIME	1555
SAMPLE CONDITIONS	0.4 Y N X
Temp (C)	16.30
Received on Ice (Y/N)	
Custody Sealed Container (Y/N)	
Samples Intact (Y/N)	

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	Patrick Sweeney
SIGNATURE of SAMPLER:	<i>[Signature]</i>
DATE Signed (MM/DD/YYYY):	5/27/21



Document Name: Sample Condition Upon Receipt (SCUR) - MN

Document Revised: 14Apr2021

Page 1 of 1

Document No.: ENV-FRM-MIN4-0150 Rev.02

Pace Analytical Services - Minneapolis

Sample Condition Upon Receipt

Client Name:

Project #:

Bay West

WO#: 10563078

PM: SH1

Due Date: 06/14/21

CLIENT: BW-BAY WEST

Courier: Fed Ex, UPS, USPS, Client, Pace, SpeeDee, Commercial

See Exceptions ENV-FRM-MIN4-0142

Tracking Number:

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No Biological Tissue Frozen? Yes No N/A

Packing Material: Bubble Wrap, Bubble Bags, None, Other Temp Blank? Yes No

Thermometer: T1(0461), T2(1336), T3(0459), OS418-L5, T4(0254), T5(0489), 160285052 Type of Ice: Wet, Blue, None, Dry, Melted

Did Samples Originate in West Virginia? Yes No Were All Container Temps Taken? Yes No N/A

Temp should be above freezing to 6°C Cooler Temp Read w/temp blank: 0.4 °C

Average Corrected Temp (no temp blank only): °C See Exceptions ENV-FRM-MIN4-0142 1 Container

Correction Factor: T Cooler Temp Corrected w/temp blank: 0.4 °C

USDA Regulated Soil: (N/A, water sample/Other:)

Date/Initials of Person Examining Contents: 6/1/21 QJ2

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? Yes No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

Table with 2 columns: Question and COMMENTS. Contains 14 rows of inspection questions and their corresponding checkboxes and notes.

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review:

Signature of Project Manager

Date: 6/16/21

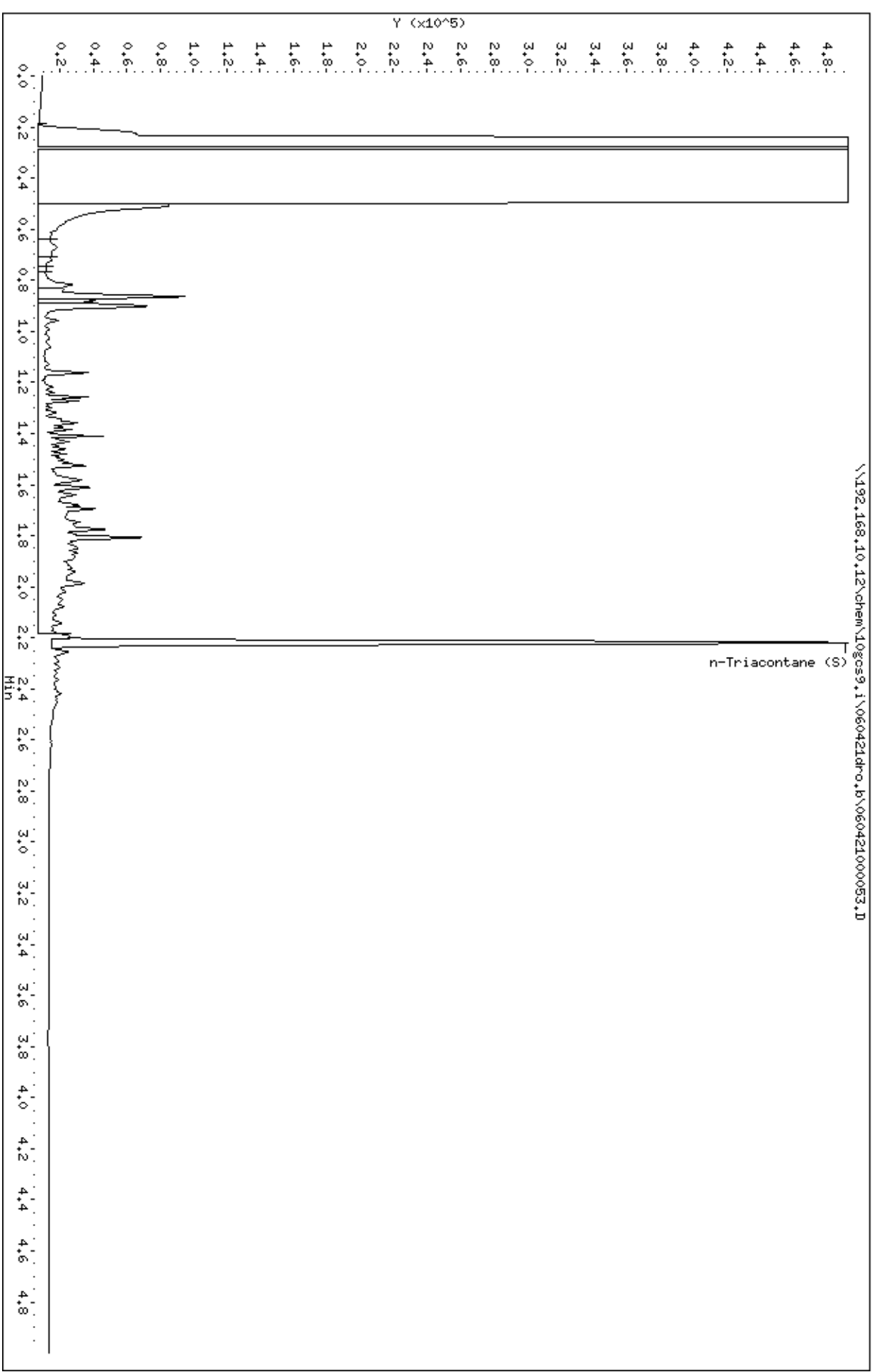
Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by:

RSZ (Signature)

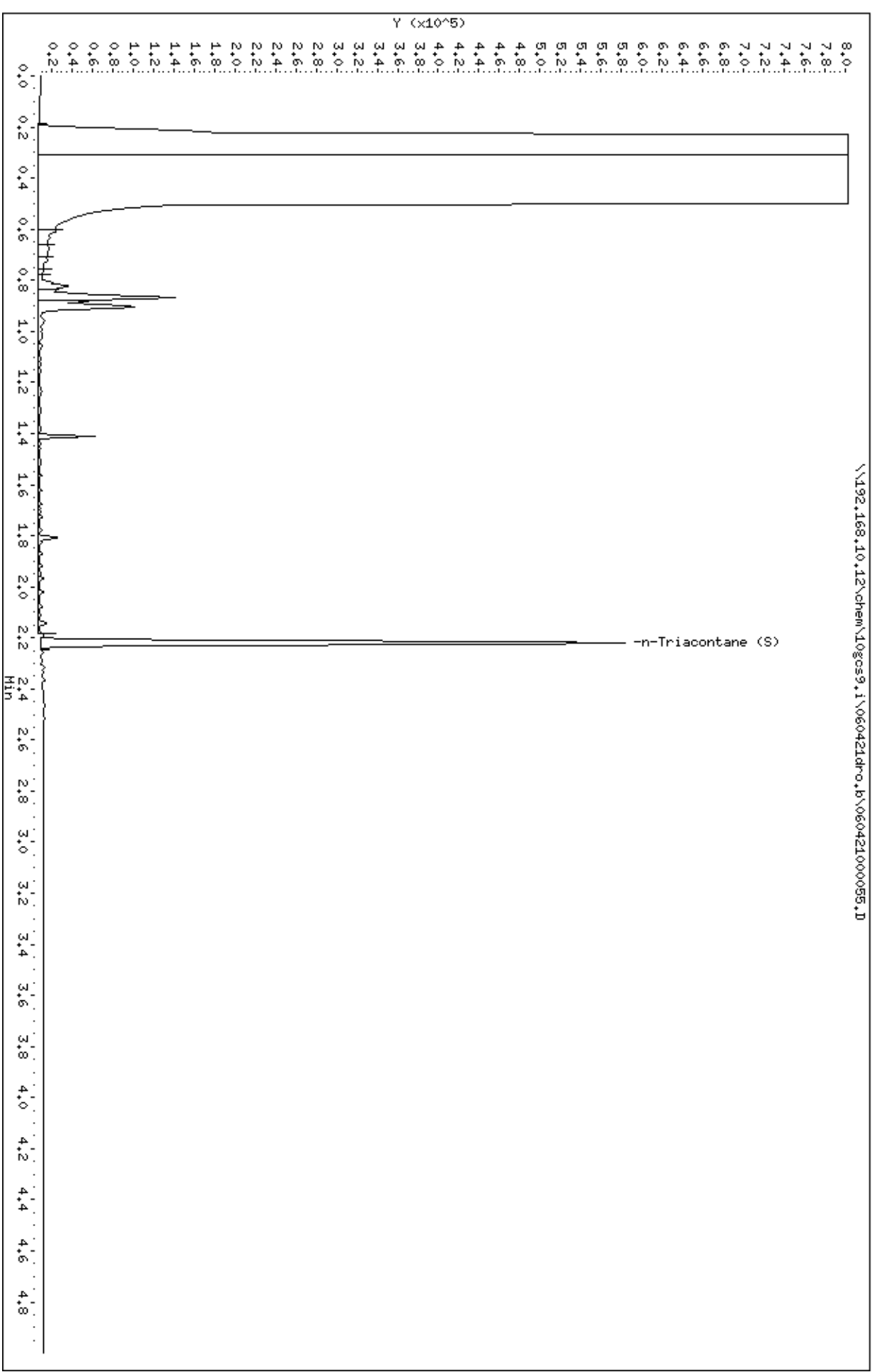
Data File: \\192.168.10.12\chem\10gos9.i\060421dr.o.b\060421000053.D
Date : 04-JUN-2021 14:41
Client ID: TP-01 (1-2)
Sample Info: 10563078001
Volume Injected (uL): 1.0
Column phase: DB-5-MS21080004

Instrument: 10gos9.i
Operator: JVH
Column diameter: 0.32



Data File: \\192.168.10.12\chem\10gos9.i\060421dr.o.b\060421000055.D
Date : 04-JUN-2021 14:55
Client ID: TP-02 (1-2)
Sample Info: 10563078002
Volume Injected (uL): 1.0
Column phase: DB-5-MS21080004

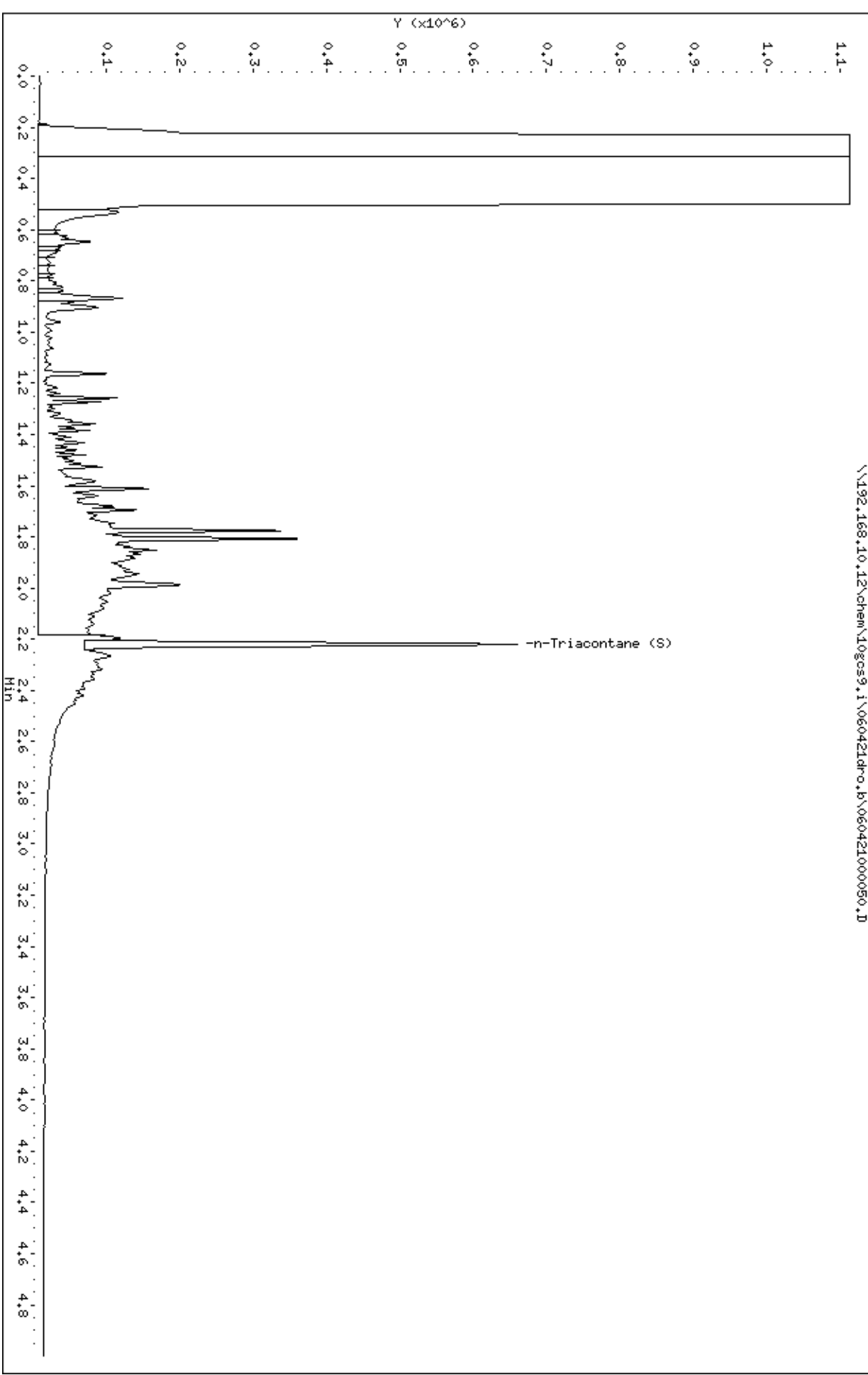
Instrument: 10gos9.i
Operator: JWH
Column diameter: 0.32



Data File: \\192.168.10.12\chem\10gos9.i\060421dr.o.b\060421000050.D
Date : 04-JUN-2021 14:19
Client ID: TP-03 (1-2)
Sample Info: 10563078003
Volume Injected (uL): 1.0
Column phase: DB-5-MS21080004

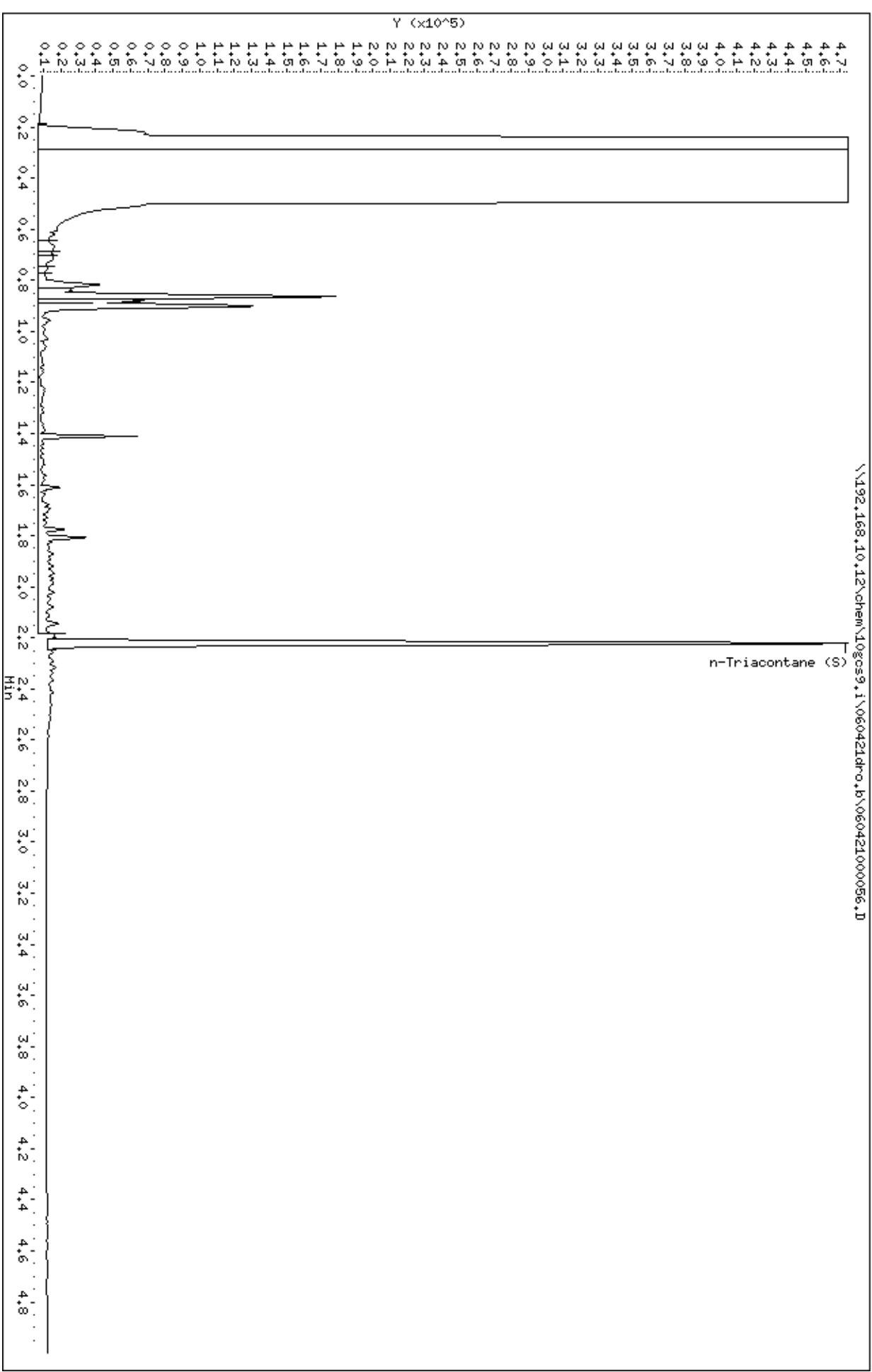
Instrument: 10gos9.i
Operator: JWH
Column diameter: 0.32

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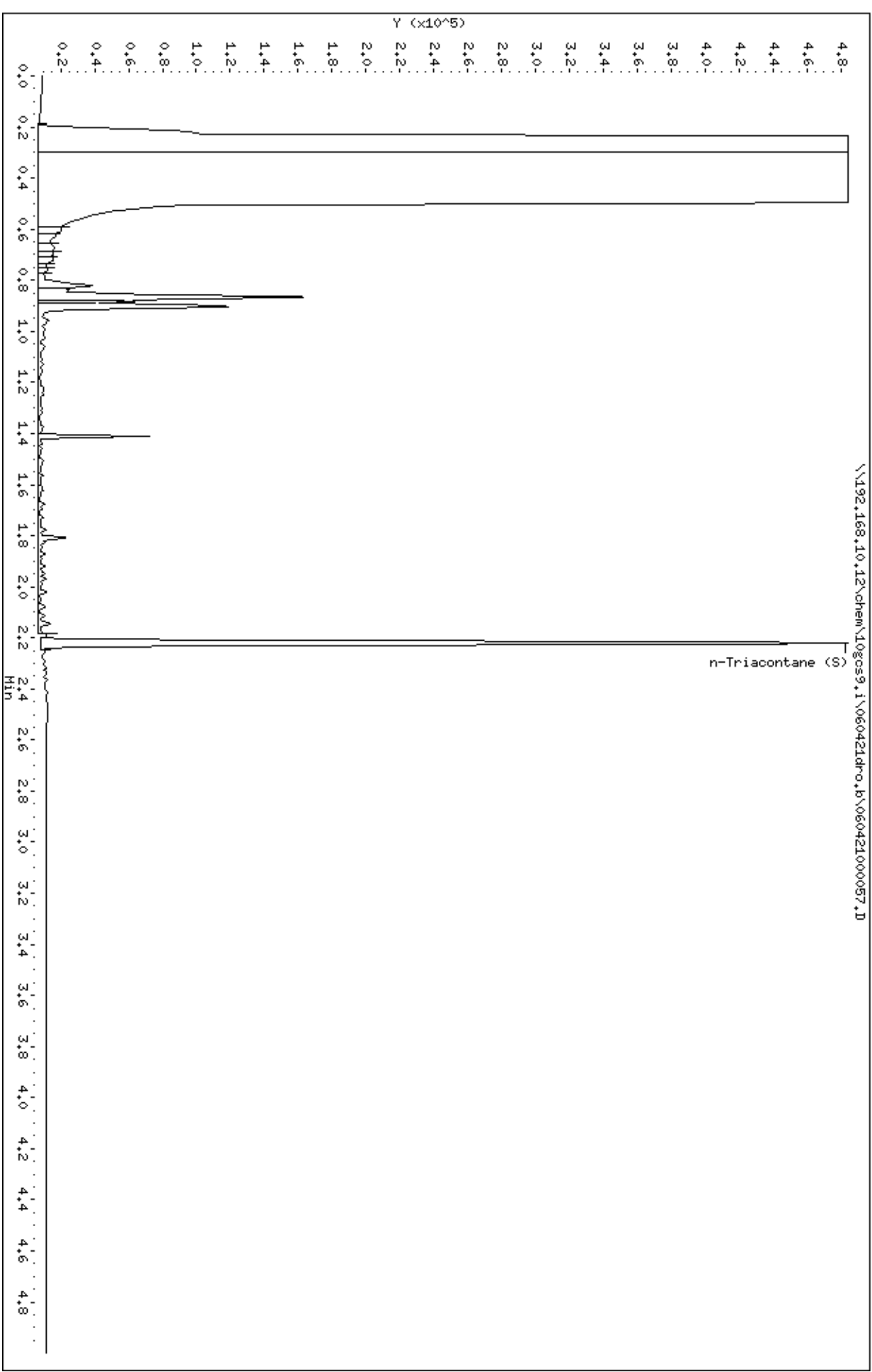
Data File: \\192.168.10.12\chem\10gos9.i\060421dr.o.b\060421000056.D
Date : 04-JUN-2021 15:02
Client ID: TP-04 (4-5)
Sample Info: 10563078004
Volume Injected (uL): 1.0
Column phase: DB-5-MS21080004

Instrument: 10gos9.i
Operator: JWH
Column diameter: 0.32



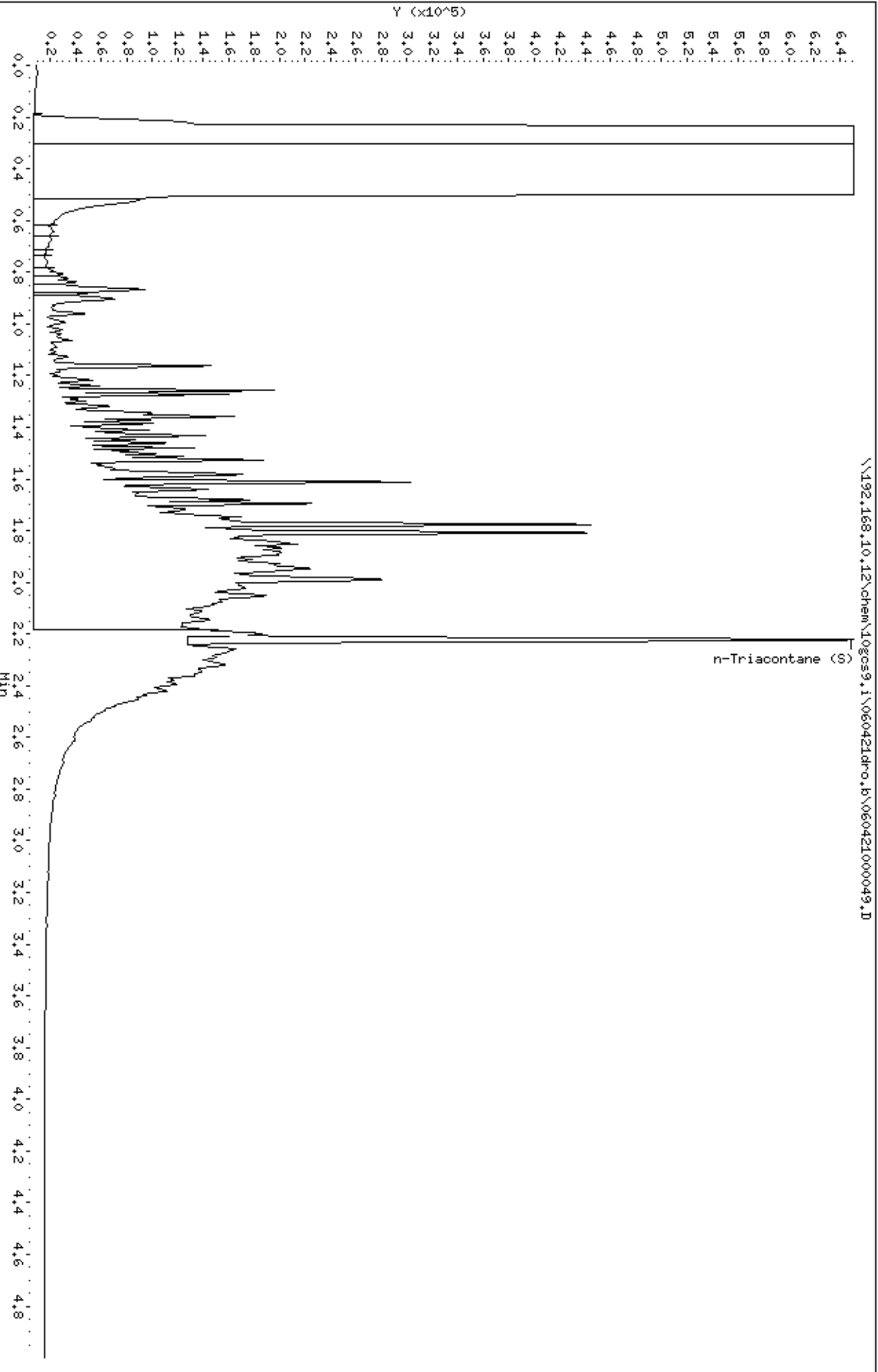
Data File: \\192.168.10.12\chem\10gos9.i\060421dr.o.b\060421000057.D
Date : 04-JUN-2021 15:09
Client ID: TP-05 (4-5)
Sample Info: 10563078005
Volume Injected (uL): 1.0
Column phase: DB-5-MS21080004

Instrument: 10gos9.i
Operator: JVH
Column diameter: 0.32



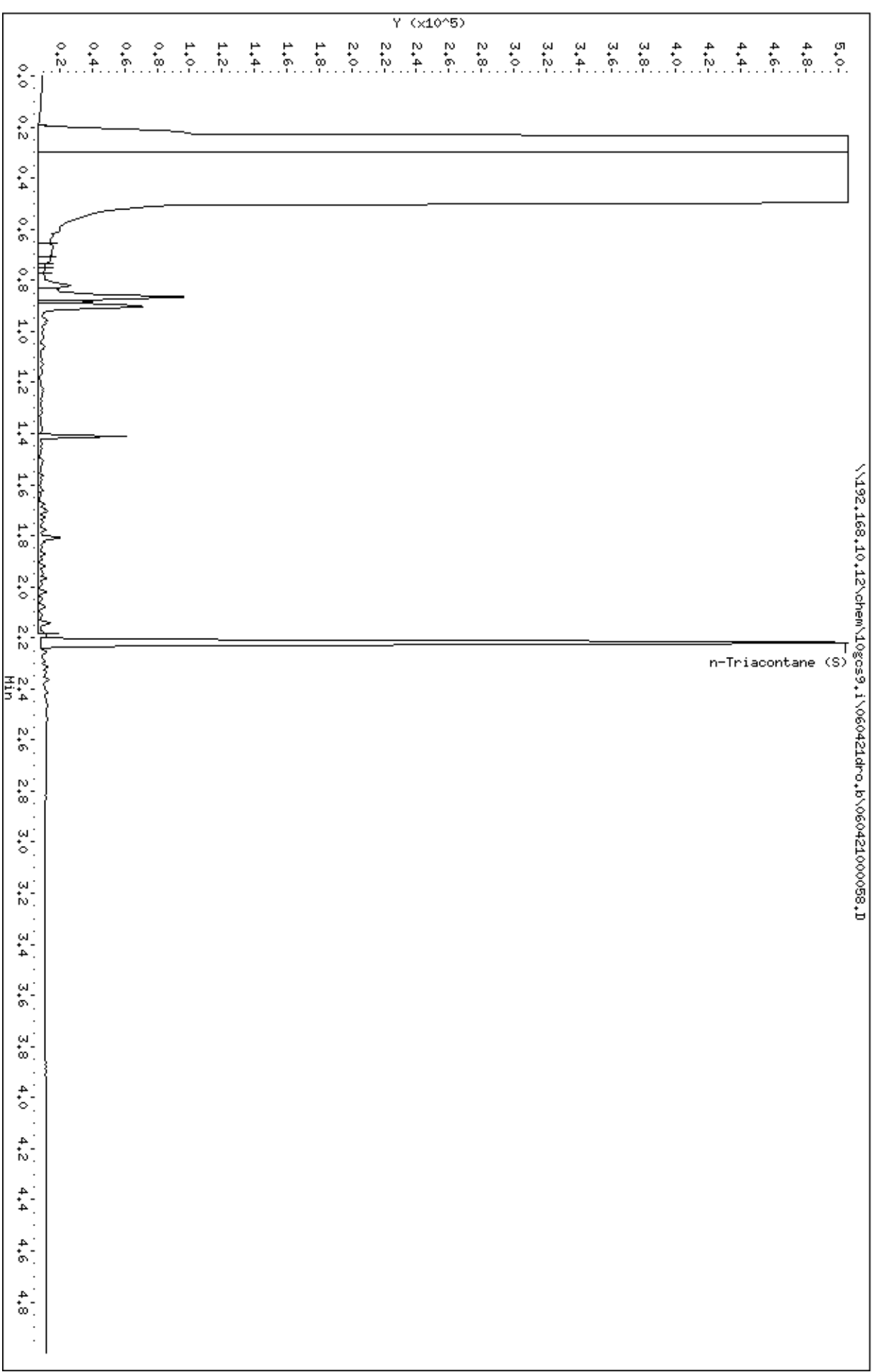
Data File: \\192.168.10.12\chem\10gos9.i\060421dr.o.b\060421000049.D
Date : 04-JUN-2021 14:12
Client ID: TP-06 (1-2)
Sample Info: 10563078006
Volume Injected (uL): 1.0
Column phase: DB-5-MS21080004

Instrument: 10gos9.i
Operator: JVH
Column diameter: 0.32



Data File: \\192.168.10.12\chem\10gos9.i\060421dr.o.b\060421000058.D
Date : 04-JUN-2021 15:16
Client ID: TP-07 (1-2)
Sample Info: 10563078007
Volume Injected (uL): 1.0
Column phase: DB-5-MS21080004

Instrument: 10gos9.i
Operator: JVH
Column diameter: 0.32



Date : 04-JUN-2021 15:24
Client ID: TP-08 (1-2)

Instrument: 10gos9.i

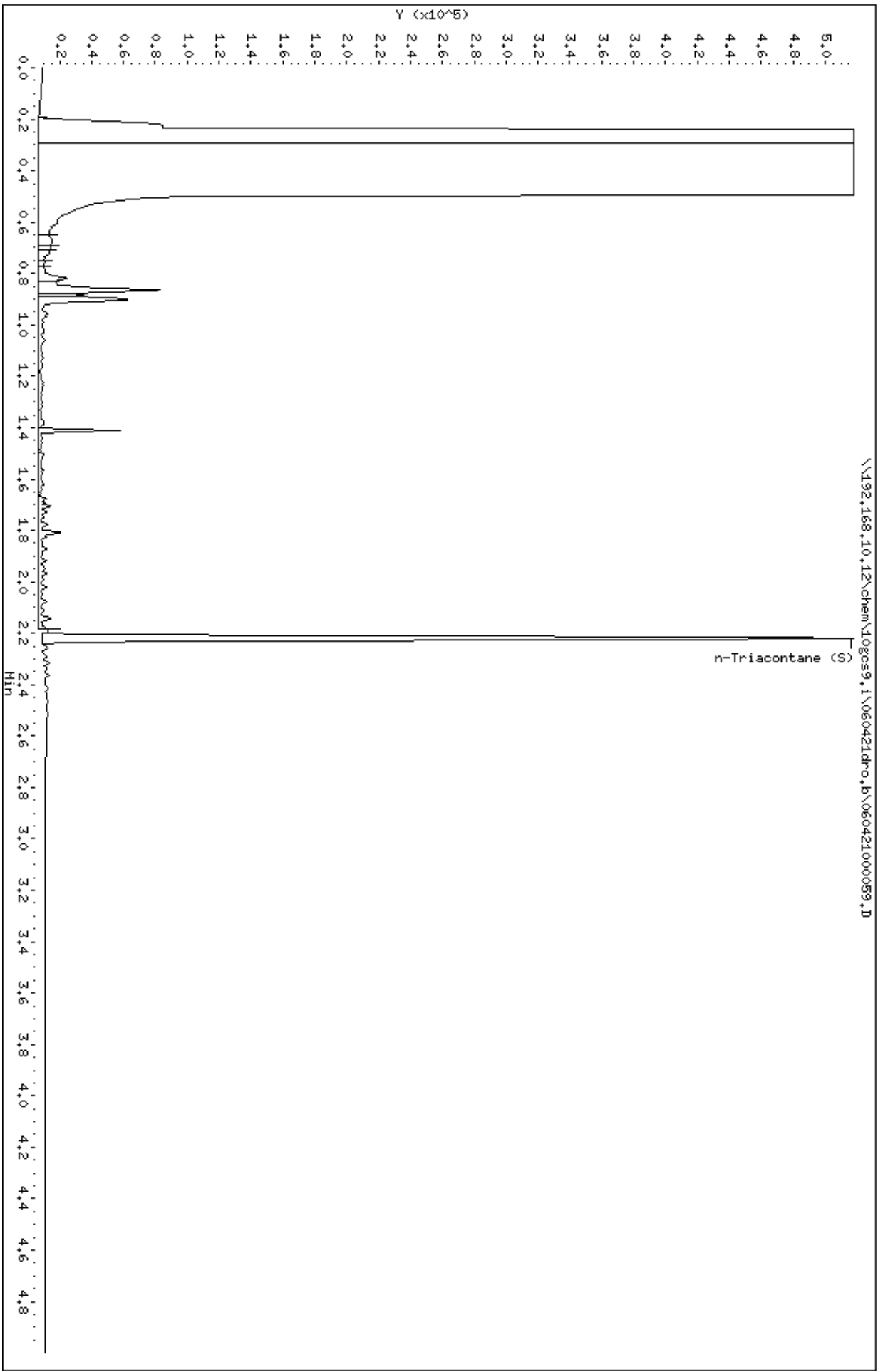
Sample Info: 10563078008

Volume Injected (uL): 1.0

Operator: JWH

Column phase: DB-5-MS21080004

Column diameter: 0.32



Date : 09-JUN-2021 10:47
Client ID: TP-09 (1-2)

Instrument: 10gos9.i

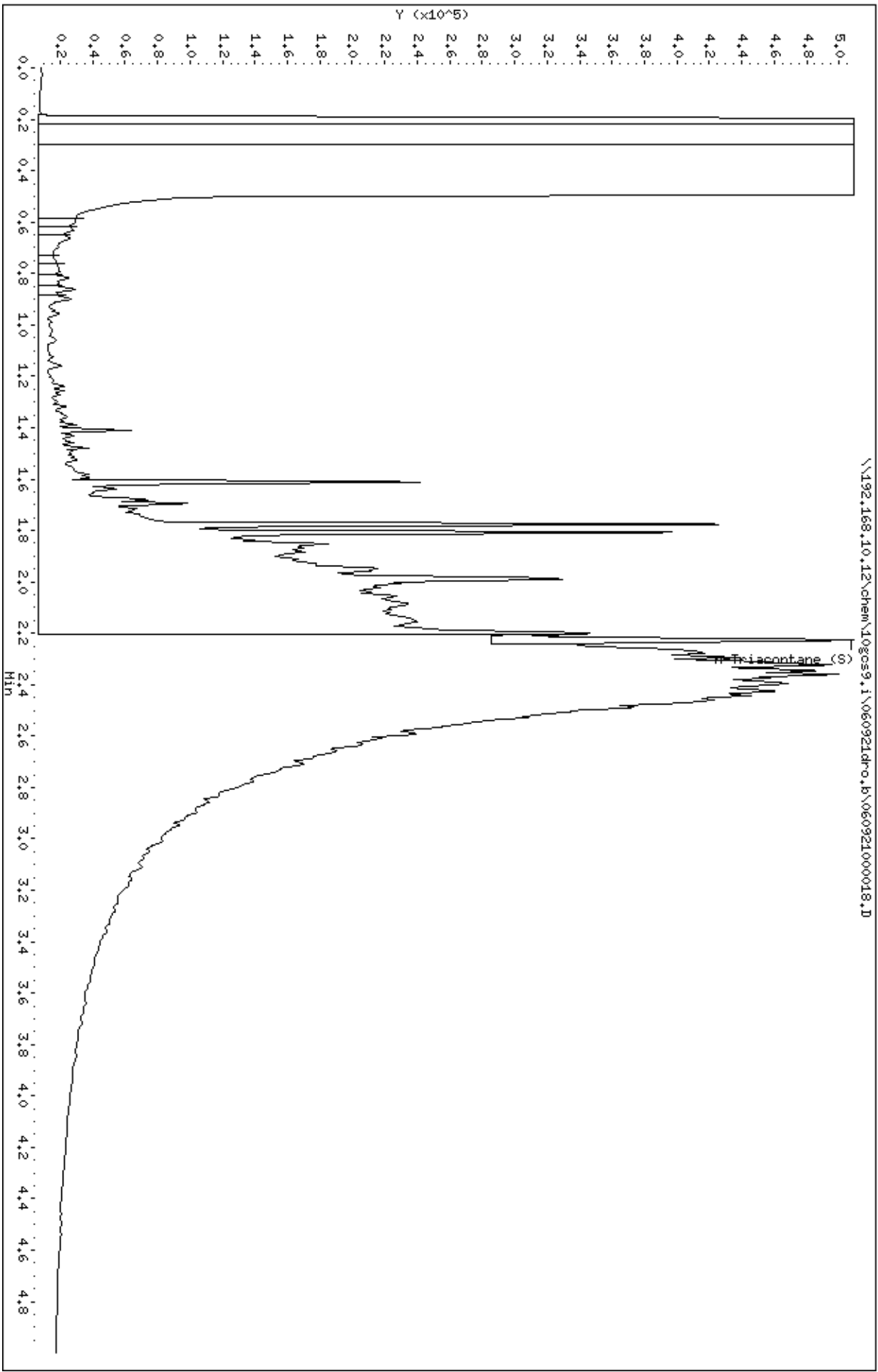
Sample Info: 10563078009X2

Volume Injected (uL): 1.0

Operator: JWH

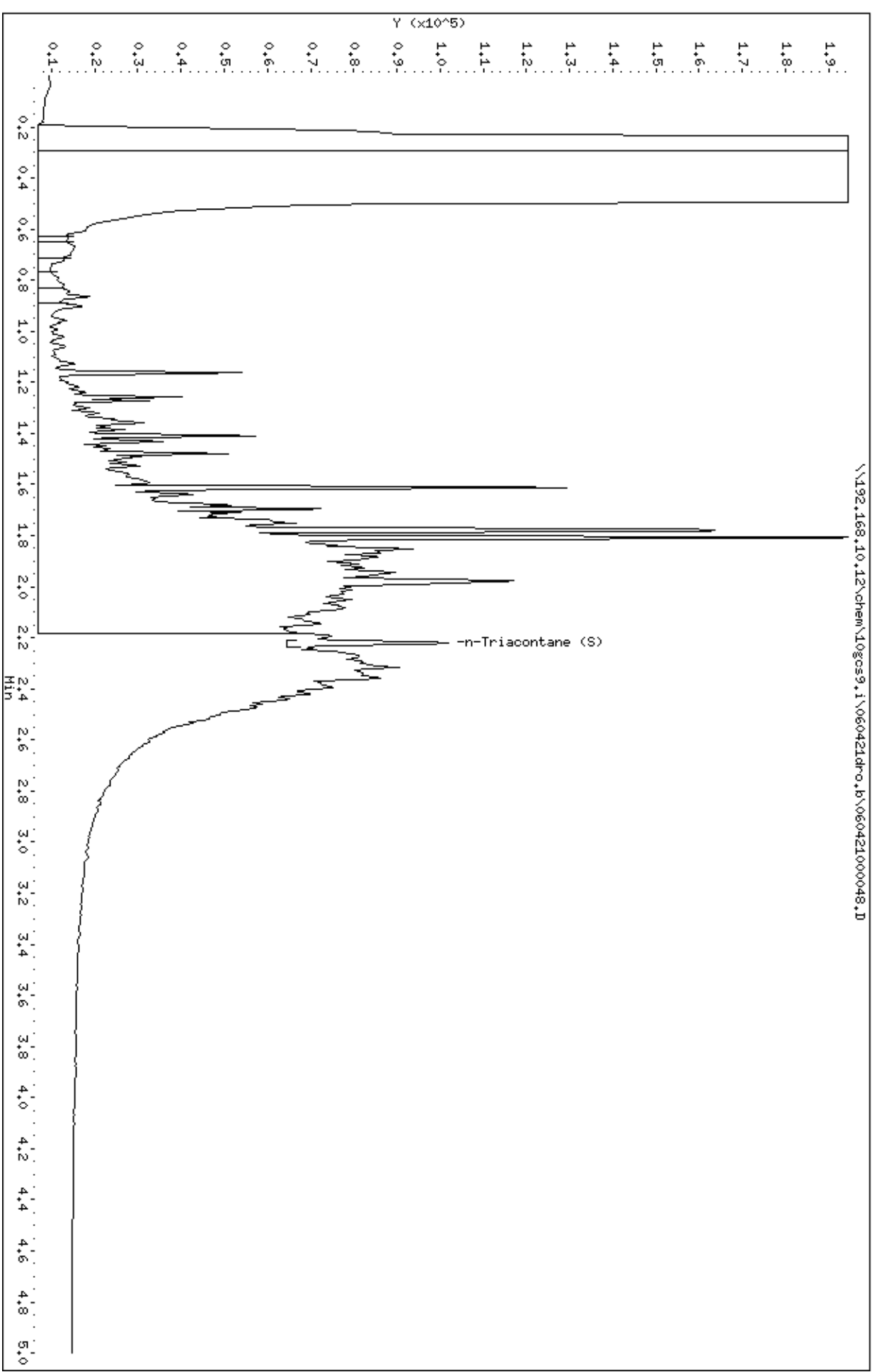
Column phase: DB-5-MS21080004

Column diameter: 0.32



Data File: \\192.168.10.12\chem\10gos9.i\060421dr.o.b\060421000048.D
Date : 04-JUN-2021 14:05
Client ID: TP-10 (1-2)
Sample Info: 10563078010X10
Volume Injected (uL): 1.0
Column phase: DB-5-MS21080004

Instrument: 10gos9.i
Operator: JWH
Column diameter: 0.32



June 11, 2021

Rick VanAllen
Bay West, Inc.
5 Empire Drive
Saint Paul, MN 55103

RE: Project: J210479 40th Ave W - Phase II
Pace Project No.: 10562861

Dear Rick VanAllen:

Enclosed are the analytical results for sample(s) received by the laboratory on May 28, 2021. 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 - Minneapolis

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

Sincerely,



Sylvia Hunter
sylvia.hunter@pacelabs.com
1(612)607-1700
Project Manager

Enclosures

cc: Ryan Riley, Bay West LLC
Jeff Smith, Pace Analytical Services, Inc
Gerrit Vanderwaal, Bay West



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10562861

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414

A2LA Certification #: 2926.01*

1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009*

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014*

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605*

Georgia Certification #: 959

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: AI-03086*

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064*

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137*

Minnesota Dept of Ag Approval: via MN 027-053-137

Minnesota Petrofund Registration #: 1240*

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081*

New Jersey Certification #: MN002

New York Certification #: 11647*

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification (1700) #: CL101

Ohio VAP Certification (1800) #: CL110*

Oklahoma Certification #: 9507*

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001*

Pennsylvania Certification #: 68-00563*

Puerto Rico Certification #: MN00064

South Carolina Certification #:74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192*

Utah Certification #: MN00064*

Vermont Certification #: VT-027053137

Virginia Certification #: 460163*

Washington Certification #: C486*

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

USDA Permit #: P330-19-00208

Please Note: Applicable air certifications are denoted with an asterisk ().

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10562861

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10562861001	SG-01	Air	05/27/21 14:49	05/28/21 16:20
10562861002	SG-02	Air	05/27/21 15:23	05/28/21 16:20
10562861003	SG-03	Air	05/27/21 16:14	05/28/21 16:20

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10562861

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10562861001	SG-01	TO-15	MJL	61
10562861002	SG-02	TO-15	MJL	61
10562861003	SG-03	TO-15	MJL	61

PASI-M = Pace Analytical Services - Minneapolis

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10562861

Date: June 11, 2021

SG-01 (Lab ID: 10562861001)

- K3: The Total Hydrocarbon (THC) pattern is evenly distributed throughout the chromatogram (before and after toluene).

SG-02 (Lab ID: 10562861002)

- K3: The Total Hydrocarbon (THC) pattern is evenly distributed throughout the chromatogram (before and after toluene).

SG-03 (Lab ID: 10562861003)

- K3: The Total Hydrocarbon (THC) pattern is evenly distributed throughout the chromatogram (before and after toluene).

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10562861

Method: TO-15

Description: TO15 MSV AIR

Client: Bay West LLC

Date: June 11, 2021

General Information:

3 samples were analyzed for TO-15 by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10562861

Sample: SG-01 **Lab ID: 10562861001** Collected: 05/27/21 14:49 Received: 05/28/21 16:20 Matrix: Air

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
TO15 MSV AIR									
Analytical Method: TO-15									
Pace Analytical Services - Minneapolis									
Acetone	30.6	ug/m3	10.5	3.1	1.74		06/08/21 21:28	67-64-1	
Benzene	0.40J	ug/m3	0.57	0.20	1.74		06/08/21 21:28	71-43-2	
Benzyl chloride	<4.6	ug/m3	4.6	1.5	1.74		06/08/21 21:28	100-44-7	
Bromodichloromethane	<2.4	ug/m3	2.4	0.41	1.74		06/08/21 21:28	75-27-4	
Bromoform	<9.1	ug/m3	9.1	2.8	1.74		06/08/21 21:28	75-25-2	
Bromomethane	<1.4	ug/m3	1.4	0.26	1.74		06/08/21 21:28	74-83-9	
1,3-Butadiene	<0.78	ug/m3	0.78	0.21	1.74		06/08/21 21:28	106-99-0	
2-Butanone (MEK)	3.0J	ug/m3	5.2	0.81	1.74		06/08/21 21:28	78-93-3	
Carbon disulfide	3.1	ug/m3	1.1	0.22	1.74		06/08/21 21:28	75-15-0	
Carbon tetrachloride	<2.2	ug/m3	2.2	0.49	1.74		06/08/21 21:28	56-23-5	
Chlorobenzene	<1.6	ug/m3	1.6	0.27	1.74		06/08/21 21:28	108-90-7	
Chloroethane	<0.93	ug/m3	0.93	0.39	1.74		06/08/21 21:28	75-00-3	
Chloroform	<0.86	ug/m3	0.86	0.32	1.74		06/08/21 21:28	67-66-3	
Chloromethane	0.92	ug/m3	0.73	0.15	1.74		06/08/21 21:28	74-87-3	
Cyclohexane	3.8	ug/m3	3.0	0.38	1.74		06/08/21 21:28	110-82-7	
Dibromochloromethane	<3.0	ug/m3	3.0	0.90	1.74		06/08/21 21:28	124-48-1	
1,2-Dibromoethane (EDB)	<1.4	ug/m3	1.4	0.52	1.74		06/08/21 21:28	106-93-4	
1,2-Dichlorobenzene	<5.3	ug/m3	5.3	0.70	1.74		06/08/21 21:28	95-50-1	
1,3-Dichlorobenzene	1.6J	ug/m3	5.3	0.89	1.74		06/08/21 21:28	541-73-1	
1,4-Dichlorobenzene	<5.3	ug/m3	5.3	1.5	1.74		06/08/21 21:28	106-46-7	
Dichlorodifluoromethane	2.2	ug/m3	1.8	0.33	1.74		06/08/21 21:28	75-71-8	
1,1-Dichloroethane	<1.4	ug/m3	1.4	0.29	1.74		06/08/21 21:28	75-34-3	
1,2-Dichloroethane	<1.4	ug/m3	1.4	0.34	1.74		06/08/21 21:28	107-06-2	
1,1-Dichloroethene	<1.4	ug/m3	1.4	0.24	1.74		06/08/21 21:28	75-35-4	
cis-1,2-Dichloroethene	<1.4	ug/m3	1.4	0.34	1.74		06/08/21 21:28	156-59-2	
trans-1,2-Dichloroethene	<1.4	ug/m3	1.4	0.29	1.74		06/08/21 21:28	156-60-5	
1,2-Dichloropropane	<1.6	ug/m3	1.6	0.47	1.74		06/08/21 21:28	78-87-5	
cis-1,3-Dichloropropene	<4.0	ug/m3	4.0	0.44	1.74		06/08/21 21:28	10061-01-5	
trans-1,3-Dichloropropene	<4.0	ug/m3	4.0	0.95	1.74		06/08/21 21:28	10061-02-6	
Dichlorotetrafluoroethane	<2.5	ug/m3	2.5	0.35	1.74		06/08/21 21:28	76-14-2	
Ethanol	13.2	ug/m3	3.3	1.0	1.74		06/08/21 21:28	64-17-5	
Ethyl acetate	<1.3	ug/m3	1.3	0.23	1.74		06/08/21 21:28	141-78-6	
Ethylbenzene	<1.5	ug/m3	1.5	0.54	1.74		06/08/21 21:28	100-41-4	
4-Ethyltoluene	0.88J	ug/m3	4.4	0.82	1.74		06/08/21 21:28	622-96-8	
n-Heptane	<1.4	ug/m3	1.4	0.31	1.74		06/08/21 21:28	142-82-5	
Hexachloro-1,3-butadiene	<9.4	ug/m3	9.4	2.1	1.74		06/08/21 21:28	87-68-3	
n-Hexane	1.4	ug/m3	1.2	0.33	1.74		06/08/21 21:28	110-54-3	
2-Hexanone	2.2J	ug/m3	7.2	0.77	1.74		06/08/21 21:28	591-78-6	
Methylene Chloride	<6.1	ug/m3	6.1	1.0	1.74		06/08/21 21:28	75-09-2	
4-Methyl-2-pentanone (MIBK)	0.99J	ug/m3	7.2	0.56	1.74		06/08/21 21:28	108-10-1	
Methyl-tert-butyl ether	0.34J	ug/m3	6.4	0.22	1.74		06/08/21 21:28	1634-04-4	
Naphthalene	<4.6	ug/m3	4.6	3.8	1.74		06/08/21 21:28	91-20-3	
2-Propanol	9.3	ug/m3	4.4	0.89	1.74		06/08/21 21:28	67-63-0	
Propylene	0.70J	ug/m3	1.5	0.23	1.74		06/08/21 21:28	115-07-1	
Styrene	1.2J	ug/m3	1.5	0.67	1.74		06/08/21 21:28	100-42-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10562861

Sample: SG-01 **Lab ID: 10562861001** Collected: 05/27/21 14:49 Received: 05/28/21 16:20 Matrix: Air

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
TO15 MSV AIR									
Analytical Method: TO-15									
Pace Analytical Services - Minneapolis									
1,1,2,2-Tetrachloroethane	<2.4	ug/m3	2.4	0.65	1.74		06/08/21 21:28	79-34-5	
Tetrachloroethene	<1.2	ug/m3	1.2	0.51	1.74		06/08/21 21:28	127-18-4	
Tetrahydrofuran	18.4	ug/m3	1.0	0.31	1.74		06/08/21 21:28	109-99-9	
Toluene	1.8	ug/m3	1.3	0.42	1.74		06/08/21 21:28	108-88-3	
1,2,4-Trichlorobenzene	<13.1	ug/m3	13.1	8.5	1.74		06/08/21 21:28	120-82-1	
1,1,1-Trichloroethane	<1.9	ug/m3	1.9	0.32	1.74		06/08/21 21:28	71-55-6	
1,1,2-Trichloroethane	<0.97	ug/m3	0.97	0.34	1.74		06/08/21 21:28	79-00-5	
Trichloroethene	<0.95	ug/m3	0.95	0.34	1.74		06/08/21 21:28	79-01-6	
Trichlorofluoromethane	1.8J	ug/m3	2.0	0.41	1.74		06/08/21 21:28	75-69-4	
1,1,2-Trichlorotrifluoroethane	0.70J	ug/m3	2.7	0.50	1.74		06/08/21 21:28	76-13-1	
1,2,4-Trimethylbenzene	<1.7	ug/m3	1.7	0.62	1.74		06/08/21 21:28	95-63-6	
1,3,5-Trimethylbenzene	<1.7	ug/m3	1.7	0.50	1.74		06/08/21 21:28	108-67-8	
Vinyl acetate	<1.2	ug/m3	1.2	0.36	1.74		06/08/21 21:28	108-05-4	
Vinyl chloride	<0.45	ug/m3	0.45	0.15	1.74		06/08/21 21:28	75-01-4	
m&p-Xylene	<3.1	ug/m3	3.1	1.1	1.74		06/08/21 21:28	179601-23-1	
o-Xylene	<1.5	ug/m3	1.5	0.47	1.74		06/08/21 21:28	95-47-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10562861

Sample: SG-02 **Lab ID: 10562861002** Collected: 05/27/21 15:23 Received: 05/28/21 16:20 Matrix: Air

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
TO15 MSV AIR									
Analytical Method: TO-15									
Pace Analytical Services - Minneapolis									
Acetone	15.9	ug/m3	11.3	3.4	1.87		06/08/21 21:57	67-64-1	
Benzene	2.5	ug/m3	0.61	0.21	1.87		06/08/21 21:57	71-43-2	
Benzyl chloride	<4.9	ug/m3	4.9	1.7	1.87		06/08/21 21:57	100-44-7	
Bromodichloromethane	<2.5	ug/m3	2.5	0.44	1.87		06/08/21 21:57	75-27-4	
Bromoform	<9.8	ug/m3	9.8	3.0	1.87		06/08/21 21:57	75-25-2	
Bromomethane	<1.5	ug/m3	1.5	0.28	1.87		06/08/21 21:57	74-83-9	
1,3-Butadiene	<0.84	ug/m3	0.84	0.22	1.87		06/08/21 21:57	106-99-0	
2-Butanone (MEK)	2.2J	ug/m3	5.6	0.87	1.87		06/08/21 21:57	78-93-3	
Carbon disulfide	14.3	ug/m3	1.2	0.24	1.87		06/08/21 21:57	75-15-0	
Carbon tetrachloride	<2.4	ug/m3	2.4	0.52	1.87		06/08/21 21:57	56-23-5	
Chlorobenzene	<1.8	ug/m3	1.8	0.29	1.87		06/08/21 21:57	108-90-7	
Chloroethane	<1.0	ug/m3	1.0	0.42	1.87		06/08/21 21:57	75-00-3	
Chloroform	<0.93	ug/m3	0.93	0.34	1.87		06/08/21 21:57	67-66-3	
Chloromethane	<0.79	ug/m3	0.79	0.16	1.87		06/08/21 21:57	74-87-3	
Cyclohexane	20.5	ug/m3	3.3	0.41	1.87		06/08/21 21:57	110-82-7	
Dibromochloromethane	<3.2	ug/m3	3.2	0.96	1.87		06/08/21 21:57	124-48-1	
1,2-Dibromoethane (EDB)	<1.5	ug/m3	1.5	0.56	1.87		06/08/21 21:57	106-93-4	
1,2-Dichlorobenzene	<5.7	ug/m3	5.7	0.76	1.87		06/08/21 21:57	95-50-1	
1,3-Dichlorobenzene	1.7J	ug/m3	5.7	0.95	1.87		06/08/21 21:57	541-73-1	
1,4-Dichlorobenzene	<5.7	ug/m3	5.7	1.6	1.87		06/08/21 21:57	106-46-7	
Dichlorodifluoromethane	3.6	ug/m3	1.9	0.35	1.87		06/08/21 21:57	75-71-8	
1,1-Dichloroethane	<1.5	ug/m3	1.5	0.31	1.87		06/08/21 21:57	75-34-3	
1,2-Dichloroethane	<1.5	ug/m3	1.5	0.36	1.87		06/08/21 21:57	107-06-2	
1,1-Dichloroethene	<1.5	ug/m3	1.5	0.26	1.87		06/08/21 21:57	75-35-4	
cis-1,2-Dichloroethene	<1.5	ug/m3	1.5	0.36	1.87		06/08/21 21:57	156-59-2	
trans-1,2-Dichloroethene	<1.5	ug/m3	1.5	0.31	1.87		06/08/21 21:57	156-60-5	
1,2-Dichloropropane	<1.8	ug/m3	1.8	0.50	1.87		06/08/21 21:57	78-87-5	
cis-1,3-Dichloropropene	<4.3	ug/m3	4.3	0.48	1.87		06/08/21 21:57	10061-01-5	
trans-1,3-Dichloropropene	<4.3	ug/m3	4.3	1.0	1.87		06/08/21 21:57	10061-02-6	
Dichlorotetrafluoroethane	<2.7	ug/m3	2.7	0.38	1.87		06/08/21 21:57	76-14-2	
Ethanol	8.5	ug/m3	3.6	1.1	1.87		06/08/21 21:57	64-17-5	
Ethyl acetate	<1.4	ug/m3	1.4	0.24	1.87		06/08/21 21:57	141-78-6	
Ethylbenzene	0.76J	ug/m3	1.7	0.58	1.87		06/08/21 21:57	100-41-4	
4-Ethyltoluene	1.4J	ug/m3	4.7	0.88	1.87		06/08/21 21:57	622-96-8	
n-Heptane	2.4	ug/m3	1.6	0.34	1.87		06/08/21 21:57	142-82-5	
Hexachloro-1,3-butadiene	<10.1	ug/m3	10.1	2.3	1.87		06/08/21 21:57	87-68-3	
n-Hexane	3.2	ug/m3	1.3	0.36	1.87		06/08/21 21:57	110-54-3	
2-Hexanone	2.0J	ug/m3	7.8	0.83	1.87		06/08/21 21:57	591-78-6	
Methylene Chloride	<6.6	ug/m3	6.6	1.1	1.87		06/08/21 21:57	75-09-2	
4-Methyl-2-pentanone (MIBK)	<7.8	ug/m3	7.8	0.60	1.87		06/08/21 21:57	108-10-1	
Methyl-tert-butyl ether	<6.8	ug/m3	6.8	0.24	1.87		06/08/21 21:57	1634-04-4	
Naphthalene	<5.0	ug/m3	5.0	4.1	1.87		06/08/21 21:57	91-20-3	
2-Propanol	2.8J	ug/m3	4.7	0.95	1.87		06/08/21 21:57	67-63-0	
Propylene	8.2	ug/m3	1.6	0.24	1.87		06/08/21 21:57	115-07-1	
Styrene	0.88J	ug/m3	1.6	0.72	1.87		06/08/21 21:57	100-42-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10562861

Sample: SG-02 **Lab ID: 10562861002** Collected: 05/27/21 15:23 Received: 05/28/21 16:20 Matrix: Air

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
TO15 MSV AIR									
Analytical Method: TO-15									
Pace Analytical Services - Minneapolis									
1,1,2,2-Tetrachloroethane	<2.6	ug/m3	2.6	0.70	1.87		06/08/21 21:57	79-34-5	
Tetrachloroethene	<1.3	ug/m3	1.3	0.55	1.87		06/08/21 21:57	127-18-4	
Tetrahydrofuran	7.2	ug/m3	1.1	0.34	1.87		06/08/21 21:57	109-99-9	
Toluene	4.4	ug/m3	1.4	0.46	1.87		06/08/21 21:57	108-88-3	
1,2,4-Trichlorobenzene	<14.1	ug/m3	14.1	9.1	1.87		06/08/21 21:57	120-82-1	
1,1,1-Trichloroethane	<2.1	ug/m3	2.1	0.35	1.87		06/08/21 21:57	71-55-6	
1,1,2-Trichloroethane	<1.0	ug/m3	1.0	0.37	1.87		06/08/21 21:57	79-00-5	
Trichloroethene	<1.0	ug/m3	1.0	0.37	1.87		06/08/21 21:57	79-01-6	
Trichlorofluoromethane	3.1	ug/m3	2.1	0.44	1.87		06/08/21 21:57	75-69-4	
1,1,2-Trichlorotrifluoroethane	0.94J	ug/m3	2.9	0.54	1.87		06/08/21 21:57	76-13-1	
1,2,4-Trimethylbenzene	0.95J	ug/m3	1.9	0.66	1.87		06/08/21 21:57	95-63-6	
1,3,5-Trimethylbenzene	0.57J	ug/m3	1.9	0.54	1.87		06/08/21 21:57	108-67-8	
Vinyl acetate	<1.3	ug/m3	1.3	0.39	1.87		06/08/21 21:57	108-05-4	
Vinyl chloride	<0.49	ug/m3	0.49	0.16	1.87		06/08/21 21:57	75-01-4	
m&p-Xylene	2.3J	ug/m3	3.3	1.2	1.87		06/08/21 21:57	179601-23-1	
o-Xylene	1.5J	ug/m3	1.7	0.51	1.87		06/08/21 21:57	95-47-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10562861

Sample: **SG-03** Lab ID: **10562861003** Collected: 05/27/21 16:14 Received: 05/28/21 16:20 Matrix: Air

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
TO15 MSV AIR Analytical Method: TO-15 Pace Analytical Services - Minneapolis									
Acetone	6.3J	ug/m3	10.1	3.0	1.68		06/08/21 22:26	67-64-1	
Benzene	<0.55	ug/m3	0.55	0.19	1.68		06/08/21 22:26	71-43-2	
Benzyl chloride	<4.4	ug/m3	4.4	1.5	1.68		06/08/21 22:26	100-44-7	
Bromodichloromethane	<2.3	ug/m3	2.3	0.40	1.68		06/08/21 22:26	75-27-4	
Bromoform	<8.8	ug/m3	8.8	2.7	1.68		06/08/21 22:26	75-25-2	
Bromomethane	<1.3	ug/m3	1.3	0.25	1.68		06/08/21 22:26	74-83-9	
1,3-Butadiene	<0.76	ug/m3	0.76	0.20	1.68		06/08/21 22:26	106-99-0	
2-Butanone (MEK)	1.2J	ug/m3	5.0	0.78	1.68		06/08/21 22:26	78-93-3	
Carbon disulfide	<1.1	ug/m3	1.1	0.22	1.68		06/08/21 22:26	75-15-0	
Carbon tetrachloride	<2.2	ug/m3	2.2	0.47	1.68		06/08/21 22:26	56-23-5	
Chlorobenzene	<1.6	ug/m3	1.6	0.26	1.68		06/08/21 22:26	108-90-7	
Chloroethane	<0.90	ug/m3	0.90	0.38	1.68		06/08/21 22:26	75-00-3	
Chloroform	<0.83	ug/m3	0.83	0.31	1.68		06/08/21 22:26	67-66-3	
Chloromethane	0.87	ug/m3	0.71	0.14	1.68		06/08/21 22:26	74-87-3	
Cyclohexane	4.1	ug/m3	2.9	0.37	1.68		06/08/21 22:26	110-82-7	
Dibromochloromethane	<2.9	ug/m3	2.9	0.87	1.68		06/08/21 22:26	124-48-1	
1,2-Dibromoethane (EDB)	<1.3	ug/m3	1.3	0.50	1.68		06/08/21 22:26	106-93-4	
1,2-Dichlorobenzene	<5.1	ug/m3	5.1	0.68	1.68		06/08/21 22:26	95-50-1	
1,3-Dichlorobenzene	<5.1	ug/m3	5.1	0.86	1.68		06/08/21 22:26	541-73-1	
1,4-Dichlorobenzene	<5.1	ug/m3	5.1	1.5	1.68		06/08/21 22:26	106-46-7	
Dichlorodifluoromethane	2.4	ug/m3	1.7	0.32	1.68		06/08/21 22:26	75-71-8	
1,1-Dichloroethane	<1.4	ug/m3	1.4	0.28	1.68		06/08/21 22:26	75-34-3	
1,2-Dichloroethane	<1.4	ug/m3	1.4	0.33	1.68		06/08/21 22:26	107-06-2	
1,1-Dichloroethene	<1.4	ug/m3	1.4	0.23	1.68		06/08/21 22:26	75-35-4	
cis-1,2-Dichloroethene	<1.4	ug/m3	1.4	0.33	1.68		06/08/21 22:26	156-59-2	
trans-1,2-Dichloroethene	<1.4	ug/m3	1.4	0.28	1.68		06/08/21 22:26	156-60-5	
1,2-Dichloropropane	<1.6	ug/m3	1.6	0.45	1.68		06/08/21 22:26	78-87-5	
cis-1,3-Dichloropropene	<3.9	ug/m3	3.9	0.43	1.68		06/08/21 22:26	10061-01-5	
trans-1,3-Dichloropropene	<3.9	ug/m3	3.9	0.91	1.68		06/08/21 22:26	10061-02-6	
Dichlorotetrafluoroethane	<2.4	ug/m3	2.4	0.34	1.68		06/08/21 22:26	76-14-2	
Ethanol	4.1	ug/m3	3.2	0.99	1.68		06/08/21 22:26	64-17-5	
Ethyl acetate	<1.2	ug/m3	1.2	0.22	1.68		06/08/21 22:26	141-78-6	
Ethylbenzene	0.81J	ug/m3	1.5	0.52	1.68		06/08/21 22:26	100-41-4	
4-Ethyltoluene	0.97J	ug/m3	4.2	0.79	1.68		06/08/21 22:26	622-96-8	
n-Heptane	<1.4	ug/m3	1.4	0.30	1.68		06/08/21 22:26	142-82-5	
Hexachloro-1,3-butadiene	<9.1	ug/m3	9.1	2.1	1.68		06/08/21 22:26	87-68-3	
n-Hexane	0.67J	ug/m3	1.2	0.32	1.68		06/08/21 22:26	110-54-3	
2-Hexanone	<7.0	ug/m3	7.0	0.74	1.68		06/08/21 22:26	591-78-6	
Methylene Chloride	<5.9	ug/m3	5.9	1.0	1.68		06/08/21 22:26	75-09-2	
4-Methyl-2-pentanone (MIBK)	<7.0	ug/m3	7.0	0.54	1.68		06/08/21 22:26	108-10-1	
Methyl-tert-butyl ether	<6.1	ug/m3	6.1	0.21	1.68		06/08/21 22:26	1634-04-4	
Naphthalene	<4.5	ug/m3	4.5	3.6	1.68		06/08/21 22:26	91-20-3	
2-Propanol	<4.2	ug/m3	4.2	0.86	1.68		06/08/21 22:26	67-63-0	
Propylene	0.30J	ug/m3	1.5	0.22	1.68		06/08/21 22:26	115-07-1	
Styrene	0.74J	ug/m3	1.5	0.65	1.68		06/08/21 22:26	100-42-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10562861

Sample: SG-03 **Lab ID: 10562861003** Collected: 05/27/21 16:14 Received: 05/28/21 16:20 Matrix: Air

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
TO15 MSV AIR									
Analytical Method: TO-15									
Pace Analytical Services - Minneapolis									
1,1,2,2-Tetrachloroethane	<2.4	ug/m3	2.4	0.62	1.68		06/08/21 22:26	79-34-5	
Tetrachloroethene	<1.2	ug/m3	1.2	0.49	1.68		06/08/21 22:26	127-18-4	
Tetrahydrofuran	5.5	ug/m3	1.0	0.30	1.68		06/08/21 22:26	109-99-9	
Toluene	1.3	ug/m3	1.3	0.41	1.68		06/08/21 22:26	108-88-3	
1,2,4-Trichlorobenzene	<12.7	ug/m3	12.7	8.2	1.68		06/08/21 22:26	120-82-1	
1,1,1-Trichloroethane	<1.9	ug/m3	1.9	0.31	1.68		06/08/21 22:26	71-55-6	
1,1,2-Trichloroethane	<0.93	ug/m3	0.93	0.33	1.68		06/08/21 22:26	79-00-5	
Trichloroethene	<0.92	ug/m3	0.92	0.33	1.68		06/08/21 22:26	79-01-6	
Trichlorofluoromethane	1.5J	ug/m3	1.9	0.39	1.68		06/08/21 22:26	75-69-4	
1,1,2-Trichlorotrifluoroethane	0.62J	ug/m3	2.6	0.49	1.68		06/08/21 22:26	76-13-1	
1,2,4-Trimethylbenzene	<1.7	ug/m3	1.7	0.59	1.68		06/08/21 22:26	95-63-6	
1,3,5-Trimethylbenzene	<1.7	ug/m3	1.7	0.49	1.68		06/08/21 22:26	108-67-8	
Vinyl acetate	<1.2	ug/m3	1.2	0.35	1.68		06/08/21 22:26	108-05-4	
Vinyl chloride	<0.44	ug/m3	0.44	0.15	1.68		06/08/21 22:26	75-01-4	
m&p-Xylene	<3.0	ug/m3	3.0	1.1	1.68		06/08/21 22:26	179601-23-1	
o-Xylene	<1.5	ug/m3	1.5	0.46	1.68		06/08/21 22:26	95-47-6	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II
Pace Project No.: 10562861

QC Batch: 747495 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10562861001, 10562861002, 10562861003

METHOD BLANK: 3987110 Matrix: Air

Associated Lab Samples: 10562861001, 10562861002, 10562861003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	<1.1	1.1	0.19	06/08/21 08:18	
1,1,2,2-Tetrachloroethane	ug/m3	<1.4	1.4	0.37	06/08/21 08:18	
1,1,2-Trichloroethane	ug/m3	<0.56	0.56	0.20	06/08/21 08:18	
1,1,2-Trichlorotrifluoroethane	ug/m3	<1.6	1.6	0.29	06/08/21 08:18	
1,1-Dichloroethane	ug/m3	<0.82	0.82	0.16	06/08/21 08:18	
1,1-Dichloroethene	ug/m3	<0.81	0.81	0.14	06/08/21 08:18	
1,2,4-Trichlorobenzene	ug/m3	<7.5	7.5	4.9	06/08/21 08:18	
1,2,4-Trimethylbenzene	ug/m3	<1.0	1.0	0.35	06/08/21 08:18	
1,2-Dibromoethane (EDB)	ug/m3	<0.78	0.78	0.30	06/08/21 08:18	
1,2-Dichlorobenzene	ug/m3	0.79J	3.1	0.40	06/08/21 08:18	
1,2-Dichloroethane	ug/m3	<0.82	0.82	0.19	06/08/21 08:18	
1,2-Dichloropropane	ug/m3	<0.94	0.94	0.27	06/08/21 08:18	
1,3,5-Trimethylbenzene	ug/m3	<1.0	1.0	0.29	06/08/21 08:18	
1,3-Butadiene	ug/m3	<0.45	0.45	0.12	06/08/21 08:18	
1,3-Dichlorobenzene	ug/m3	0.89J	3.1	0.51	06/08/21 08:18	
1,4-Dichlorobenzene	ug/m3	1.1J	3.1	0.88	06/08/21 08:18	
2-Butanone (MEK)	ug/m3	<3.0	3.0	0.46	06/08/21 08:18	
2-Hexanone	ug/m3	<4.2	4.2	0.44	06/08/21 08:18	
2-Propanol	ug/m3	<2.5	2.5	0.51	06/08/21 08:18	
4-Ethyltoluene	ug/m3	0.50J	2.5	0.47	06/08/21 08:18	
4-Methyl-2-pentanone (MIBK)	ug/m3	<4.2	4.2	0.32	06/08/21 08:18	
Acetone	ug/m3	<6.0	6.0	1.8	06/08/21 08:18	
Benzene	ug/m3	<0.32	0.32	0.11	06/08/21 08:18	
Benzyl chloride	ug/m3	1.2J	2.6	0.89	06/08/21 08:18	
Bromodichloromethane	ug/m3	<1.4	1.4	0.24	06/08/21 08:18	
Bromoform	ug/m3	<5.2	5.2	1.6	06/08/21 08:18	
Bromomethane	ug/m3	<0.79	0.79	0.15	06/08/21 08:18	
Carbon disulfide	ug/m3	<0.63	0.63	0.13	06/08/21 08:18	
Carbon tetrachloride	ug/m3	<1.3	1.3	0.28	06/08/21 08:18	
Chlorobenzene	ug/m3	<0.94	0.94	0.16	06/08/21 08:18	
Chloroethane	ug/m3	<0.54	0.54	0.22	06/08/21 08:18	
Chloroform	ug/m3	<0.50	0.50	0.18	06/08/21 08:18	
Chloromethane	ug/m3	0.18J	0.42	0.085	06/08/21 08:18	
cis-1,2-Dichloroethene	ug/m3	<0.81	0.81	0.20	06/08/21 08:18	
cis-1,3-Dichloropropene	ug/m3	<2.3	2.3	0.26	06/08/21 08:18	
Cyclohexane	ug/m3	<1.8	1.8	0.22	06/08/21 08:18	
Dibromochloromethane	ug/m3	<1.7	1.7	0.52	06/08/21 08:18	
Dichlorodifluoromethane	ug/m3	<1.0	1.0	0.19	06/08/21 08:18	
Dichlorotetrafluoroethane	ug/m3	<1.4	1.4	0.20	06/08/21 08:18	
Ethanol	ug/m3	<1.9	1.9	0.59	06/08/21 08:18	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10562861

METHOD BLANK: 3987110

Matrix: Air

Associated Lab Samples: 10562861001, 10562861002, 10562861003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Ethyl acetate	ug/m3	<0.73	0.73	0.13	06/08/21 08:18	
Ethylbenzene	ug/m3	<0.88	0.88	0.31	06/08/21 08:18	
Hexachloro-1,3-butadiene	ug/m3	<5.4	5.4	1.2	06/08/21 08:18	
m&p-Xylene	ug/m3	<1.8	1.8	0.64	06/08/21 08:18	
Methyl-tert-butyl ether	ug/m3	<3.7	3.7	0.13	06/08/21 08:18	
Methylene Chloride	ug/m3	<3.5	3.5	0.59	06/08/21 08:18	
n-Heptane	ug/m3	<0.83	0.83	0.18	06/08/21 08:18	
n-Hexane	ug/m3	<0.72	0.72	0.19	06/08/21 08:18	
Naphthalene	ug/m3	<2.7	2.7	2.2	06/08/21 08:18	
o-Xylene	ug/m3	<0.88	0.88	0.27	06/08/21 08:18	
Propylene	ug/m3	<0.88	0.88	0.13	06/08/21 08:18	
Styrene	ug/m3	<0.87	0.87	0.38	06/08/21 08:18	
Tetrachloroethene	ug/m3	<0.69	0.69	0.29	06/08/21 08:18	
Tetrahydrofuran	ug/m3	<0.60	0.60	0.18	06/08/21 08:18	
Toluene	ug/m3	<0.77	0.77	0.24	06/08/21 08:18	
trans-1,2-Dichloroethene	ug/m3	<0.81	0.81	0.17	06/08/21 08:18	
trans-1,3-Dichloropropene	ug/m3	<2.3	2.3	0.54	06/08/21 08:18	
Trichloroethene	ug/m3	<0.55	0.55	0.20	06/08/21 08:18	
Trichlorofluoromethane	ug/m3	<1.1	1.1	0.23	06/08/21 08:18	
Vinyl acetate	ug/m3	<0.72	0.72	0.21	06/08/21 08:18	
Vinyl chloride	ug/m3	<0.26	0.26	0.087	06/08/21 08:18	

LABORATORY CONTROL SAMPLE: 3987111

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	59.3	51.6	87	70-130	
1,1,2,2-Tetrachloroethane	ug/m3	75.4	76.0	101	70-132	
1,1,2-Trichloroethane	ug/m3	59.6	58.8	99	70-134	
1,1,2-Trichlorotrifluoroethane	ug/m3	83.6	75.3	90	70-130	
1,1-Dichloroethane	ug/m3	43.9	38.2	87	70-133	
1,1-Dichloroethene	ug/m3	43.5	35.2	81	70-130	
1,2,4-Trichlorobenzene	ug/m3	177	178	100	69-132	
1,2,4-Trimethylbenzene	ug/m3	54	58.2	108	70-142	
1,2-Dibromoethane (EDB)	ug/m3	82.5	73.2	89	70-138	
1,2-Dichlorobenzene	ug/m3	66.2	62.5	94	70-146	
1,2-Dichloroethane	ug/m3	44.4	37.9	85	70-132	
1,2-Dichloropropane	ug/m3	50.6	44.4	88	70-134	
1,3,5-Trimethylbenzene	ug/m3	53.7	54.3	101	70-143	
1,3-Butadiene	ug/m3	24.2	21.2	88	70-136	
1,3-Dichlorobenzene	ug/m3	66.3	62.7	95	70-145	
1,4-Dichlorobenzene	ug/m3	66.3	62.1	94	70-140	
2-Butanone (MEK)	ug/m3	32.3	28.5	88	50-139	
2-Hexanone	ug/m3	44.8	34.7	78	70-148	
2-Propanol	ug/m3	149	117	78	67-135	

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QUALITY CONTROL DATA

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10562861

LABORATORY CONTROL SAMPLE: 3987111

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Ethyltoluene	ug/m3	53.7	48.5	90	70-145	
4-Methyl-2-pentanone (MIBK)	ug/m3	44.9	39.9	89	70-139	
Acetone	ug/m3	128	95.7	75	64-130	
Benzene	ug/m3	34.8	29.3	84	70-131	
Benzyl chloride	ug/m3	57.6	51.6	90	70-130	
Bromodichloromethane	ug/m3	73.1	65.7	90	70-133	
Bromoform	ug/m3	114	106	93	70-137	
Bromomethane	ug/m3	42.5	38.4	91	64-134	
Carbon disulfide	ug/m3	34.4	31.5	92	70-131	
Carbon tetrachloride	ug/m3	69.4	64.0	92	70-131	
Chlorobenzene	ug/m3	50.2	49.5	99	70-130	
Chloroethane	ug/m3	28.8	25.0	87	69-141	
Chloroform	ug/m3	52.4	46.1	88	70-130	
Chloromethane	ug/m3	22.6	18.5	82	70-130	
cis-1,2-Dichloroethene	ug/m3	43.4	43.2	99	70-137	
cis-1,3-Dichloropropene	ug/m3	49.4	47.5	96	70-144	
Cyclohexane	ug/m3	37.4	31.5	84	70-137	
Dibromochloromethane	ug/m3	93.2	93.8	101	70-132	
Dichlorodifluoromethane	ug/m3	54.6	46.4	85	70-130	
Dichlorotetrafluoroethane	ug/m3	71.2	63.6	89	70-130	
Ethanol	ug/m3	124	94.4	76	63-133	
Ethyl acetate	ug/m3	38.9	34.2	88	70-136	
Ethylbenzene	ug/m3	47.8	46.0	96	70-142	
Hexachloro-1,3-butadiene	ug/m3	133	132	99	70-135	
m&p-Xylene	ug/m3	95.4	92.2	97	70-141	
Methyl-tert-butyl ether	ug/m3	39.6	35.1	89	70-143	
Methylene Chloride	ug/m3	190	154	81	70-130	
n-Heptane	ug/m3	44.6	35.8	80	70-137	
n-Hexane	ug/m3	38	33.5	88	70-135	
Naphthalene	ug/m3	65.2	63.4	97	67-132	
o-Xylene	ug/m3	47.6	45.6	96	70-141	
Propylene	ug/m3	18.9	14.4	76	70-130	
Styrene	ug/m3	47	42.2	90	70-142	
Tetrachloroethene	ug/m3	73.4	74.6	102	70-130	
Tetrahydrofuran	ug/m3	32.1	28.8	90	70-136	
Toluene	ug/m3	41.6	39.8	96	70-138	
trans-1,2-Dichloroethene	ug/m3	43.6	42.9	98	70-130	
trans-1,3-Dichloropropene	ug/m3	50.5	50.5	100	70-145	
Trichloroethene	ug/m3	58.4	56.8	97	70-130	
Trichlorofluoromethane	ug/m3	62	51.8	83	69-135	
Vinyl acetate	ug/m3	46.4	36.0	78	70-146	
Vinyl chloride	ug/m3	28	24.1	86	70-137	

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

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QUALIFIERS

Project: J210479 40th Ave W - Phase II

Pace Project No.: 10562861

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.

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

TNI - The NELAC Institute.

SAMPLE QUALIFIERS

Sample: 10562861001

[1] The Total Hydrocarbon (THC) pattern is evenly distributed throughout the chromatogram (before and after toluene).

Sample: 10562861002

[1] The Total Hydrocarbon (THC) pattern is evenly distributed throughout the chromatogram (before and after toluene).

Sample: 10562861003

[1] The Total Hydrocarbon (THC) pattern is evenly distributed throughout the chromatogram (before and after toluene).

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: J210479 40th Ave W - Phase II
Pace Project No.: 10562861

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10562861001	SG-01	TO-15	747495		
10562861002	SG-02	TO-15	747495		
10562861003	SG-03	TO-15	747495		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information		Section B Required Project Information		Section C Invoice Information		Section D Laboratory Information		Section E MPCA Information	
Company:	Bay West	Project Name:	40th Ave W - Phase II	Attention:	Accounts Payable	Lab Name:	Pace	COC ID:	
Address:	5 Empire Dr. St. Paul MN, 55103	Project Number:	J210479	Company Name:	Bay West LLC	Address:	5 Elm St. Minneapolis MN, 55103	Work Order Number:	0
Project Manager:	Rick Van Allen	Turnaround Time:	Standard	Address:	5 Empire Dr. St. Paul, MN 55103	Lab Project Manager:	Sylvia Hunter	Facility Code:	0
Email To:	rickv@baywest.com	Site Location (State):	MN	Purchase Order No.:	110841	Lab Phone:	612-607-6347	Project Task Code:	
Phone:	651-291-3441	Copy To:	ryanr@baywest.com					Program Code	
Copy To:	Eweaver@baywest.com	Copy To:	gvanderwaal@baywest.com						

Matrix Code SE=Sediment SO=Soil QA=Aqueous WG=Groundwater S=Surface	Lab Matrix Codes DW=Drinking Water NP=Non-potable Water SD=Soil/Solid WP=Wipe AR=Air BL=Biological Material OT=Other	Field Matrix Codes Gas-Soil - Soil Gas Air-Ambient - Ambient Air Air-Indoor - Indoor Air	Sample Type Codes Sample-Routine Sample S-CWOP - Composite Sample S-VP - Integrated Vertical Profile Sample QC-FB = Field Blank Sample QC-FR = Field Replicate Sample QC-TB = Trip Blank Sample
---	--	--	--

ITEM #	Location Unique ID	Sample Common ID (MPCA ONLY)	Date		Time		Start Pressure	End Pressure	Sample Type (G=GRAB C=COMP)	Lab Matrix Code	Field Matrix Code	Can #	Reg. #	# of Containers	Comments
			Start	End	Start	End									
1		SG-01	5-27-21	1443	5-27-21	1449	-39	-4	G	AR		3547	1151	1	CO1
2		SG-02	5-27-21	1517	5-27-21	1523	-38	-4	G	AR		3548	0965	1	CO2
3		SG-03	5-27-21	1607	5-27-21	1614			G	AR		3546	0957	1	CO3
4															
5															
6															
7															
8															
9															
10															
11															
12															

WO#: 10562861

10562861

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION		ACCEPTED BY / AFFILIATION		DATE	TIME	SAMPLE CONDITIONS
	DATE	TIME	DATE	TIME			
	5-28-21	0800	5-28-21	1555	5/28/21	1555	Received on Ice (Y/N)
	5-28-21	1620	5-28-21	1620	5/28/21	1620	Custody Sealed Cooler (Y/N)
							Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: *Patricia S.*

SIGNATURE of SAMPLER: *[Signature]*

DATE Signed (MM/DD/YYYY): *05/28/21*



Document Name:
Sample Condition Upon Receipt (SCUR) - Air
 Document No.:
ENV-FRM-MIN4-0113 Rev.00

Document Revised: 24Mar2020
Page 1 of 1
 Pace Analytical Services -
Minneapolis

**Air Sample Condition
 Upon Receipt**

Client Name: Daywest Project #: _____

WO#: 10562861

Courier: Fed Ex UPS USPS Client
 Pace Speedee Commercial See Exception

PM: SH1 Due Date: 06/14/21
 CLIENT: BW-BAY WEST

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Tin Can Other: _____ Temp Blank rec: Yes No

Temp. (TO17 and TO13 samples only) (°C): _____ Corrected Temp (°C): _____ Thermometer Used: G87A9170600254

Temp should be above freezing to 6°C Correction Factor: _____ Date & Initials of Person Examining Contents: RGS/28/21

Type of ice Received Blue Wet None

Comments:

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Correct Containers Used? (Tedlar bags not acceptable container for TO-14, TO-15 or APH)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact? (visual inspection/no leaks when pressurized)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Media: <u>Air Can</u> Airbag Filter TDT Passive		11. Individually Certified Cans Y <u>N</u> (list which samples)
Is sufficient information available to reconcile samples to the COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12.
Do cans need to be pressurized? (DO NOT PRESSURIZE 3C or ASTM 1946!!!)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	13.

Gauge # 10AIR26 10AIR34 10AIR35 4097

Canisters

Canisters

Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
01	2455	1151	-1	+10					
02	1334	965	-3	"					
03	3746	957	0	"					

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Alycia Hunter

Date: 5/31/21

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 (in the event of a hold, incorrect preservative, out of temp, incorrect containers)

Data File: \\192.168.10.12\chem\10airB.i\060821.b\15925.D
Report Date: 09-Jun-2021 11:30

Pace Analytical Services, Inc.

TO15 Analysis (UNIX)

Data file : \\192.168.10.12\chem\10airB.i\060821.b\15925.D
Lab Smp Id: 10562861001
Inj Date : 08-JUN-2021 21:28
Operator : MJL Inst ID: 10airB.i
Smp Info :
Misc Info : 39545
Comment : Volatile Organic COMPOUNDS in Air
Method : \\192.168.10.12\chem\10airB.i\060821.b\TO15_144-21.m
Meth Date : 08-Jun-2021 07:58 mlytle Quant Type: ISTD
Cal Date : 24-MAY-2021 11:43 Cal File: 14408.D
Als bottle: 22
Dil Factor: 1.74000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: RC10A
Processing Host: M710BASE

- NO TENTATIVELY IDENTIFIED COMPOUNDS -

Data File: \\192.168.10.12\chem\10airB.i\060821.b\15925.D
Report Date: 09-Jun-2021 11:30

Pace Analytical Services, Inc.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Name:
Lab Smp Id: 10562861001
Operator : MJL
Sample Location:
Sample Matrix: AIR
Analysis Type: VOA
Inj Date: 08-JUN-2021 21:28

Client SDG: 060821.b
Sample Date:
Sample Point:
Date Received:
Level: LOW

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/KG) ppbv

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

Data File: \\192.168.10.12\chem\10airB.i\060821.b\15925.D
 Date : 08-JUN-2021 21:28
 Client ID:

Sample Info:

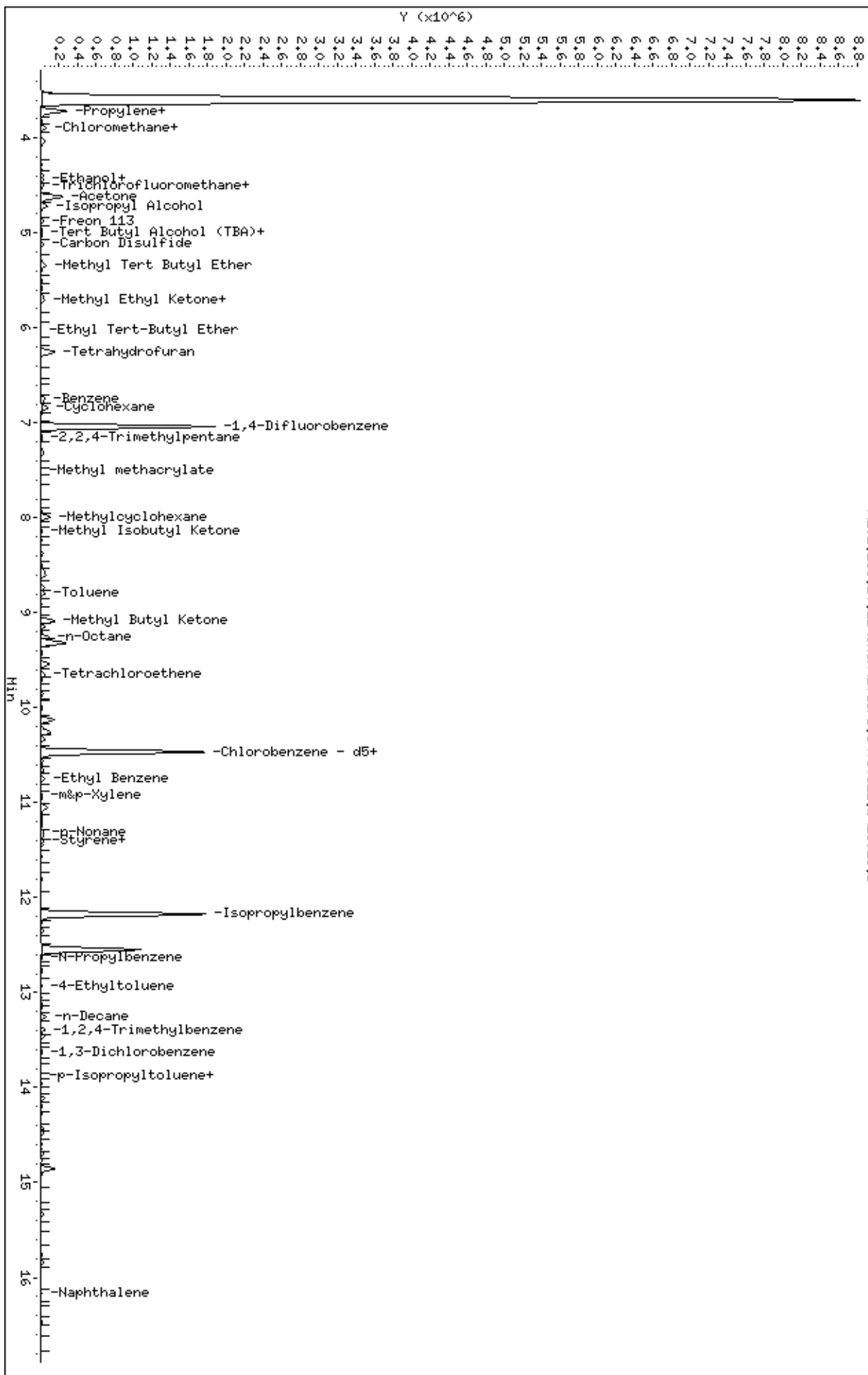
Column phase: ZB-SHSplus SN338957

Instrument: 10airB.i

Operator: MJL

Column diameter: 0.32

\\192.168.10.12\chem\10airB.i\060821.b\15925.D



Data File: \\192.168.10.12\chem\10airB.i\060821.b\15926.D
Report Date: 09-Jun-2021 11:30

Pace Analytical Services, Inc.

TO15 Analysis (UNIX)

Data file : \\192.168.10.12\chem\10airB.i\060821.b\15926.D
Lab Smp Id: 10562861002
Inj Date : 08-JUN-2021 21:57
Operator : MJL Inst ID: 10airB.i
Smp Info :
Misc Info : 39545
Comment : Volatile Organic COMPOUNDS in Air
Method : \\192.168.10.12\chem\10airB.i\060821.b\TO15_144-21.m
Meth Date : 08-Jun-2021 07:58 mlytle Quant Type: ISTD
Cal Date : 24-MAY-2021 11:43 Cal File: 14408.D
Als bottle: 23
Dil Factor: 1.87000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: RC10A
Processing Host: M710BASE

Concentration Formula: Amt * DF * Uf * CpndVariable

Name	Value	Description
DF	1.870	Dilution Factor
Uf	1.000	ng unit correction factor
Cpnd Variable		Local Compound Variable

ISTD	RT	AREA	AMOUNT
* 64 Chlorobenzene - d5	10.467	3598516	10.000

CONCENTRATIONS				QUANT			
RT	AREA	ON-COL(ppbv)	FINAL(ppbv)	QUAL	LIBRARY	LIB ENTRY	CPND #
Unknown					CAS #:		
14.849	1062631	2.95296918	5.52	0		0	64(L)

QC Flag Legend

L - Operator selected an alternate library search match.

Data File: \\192.168.10.12\chem\10airB.i\060821.b\15926.D
Report Date: 09-Jun-2021 11:30

Pace Analytical Services, Inc.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Name:
Lab Smp Id: 10562861002
Operator : MJL
Sample Location:
Sample Matrix: AIR
Analysis Type: VOA
Inj Date: 08-JUN-2021 21:57

Client SDG: 060821.b
Sample Date:
Sample Point:
Date Received:
Level: LOW

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/KG) ppbv

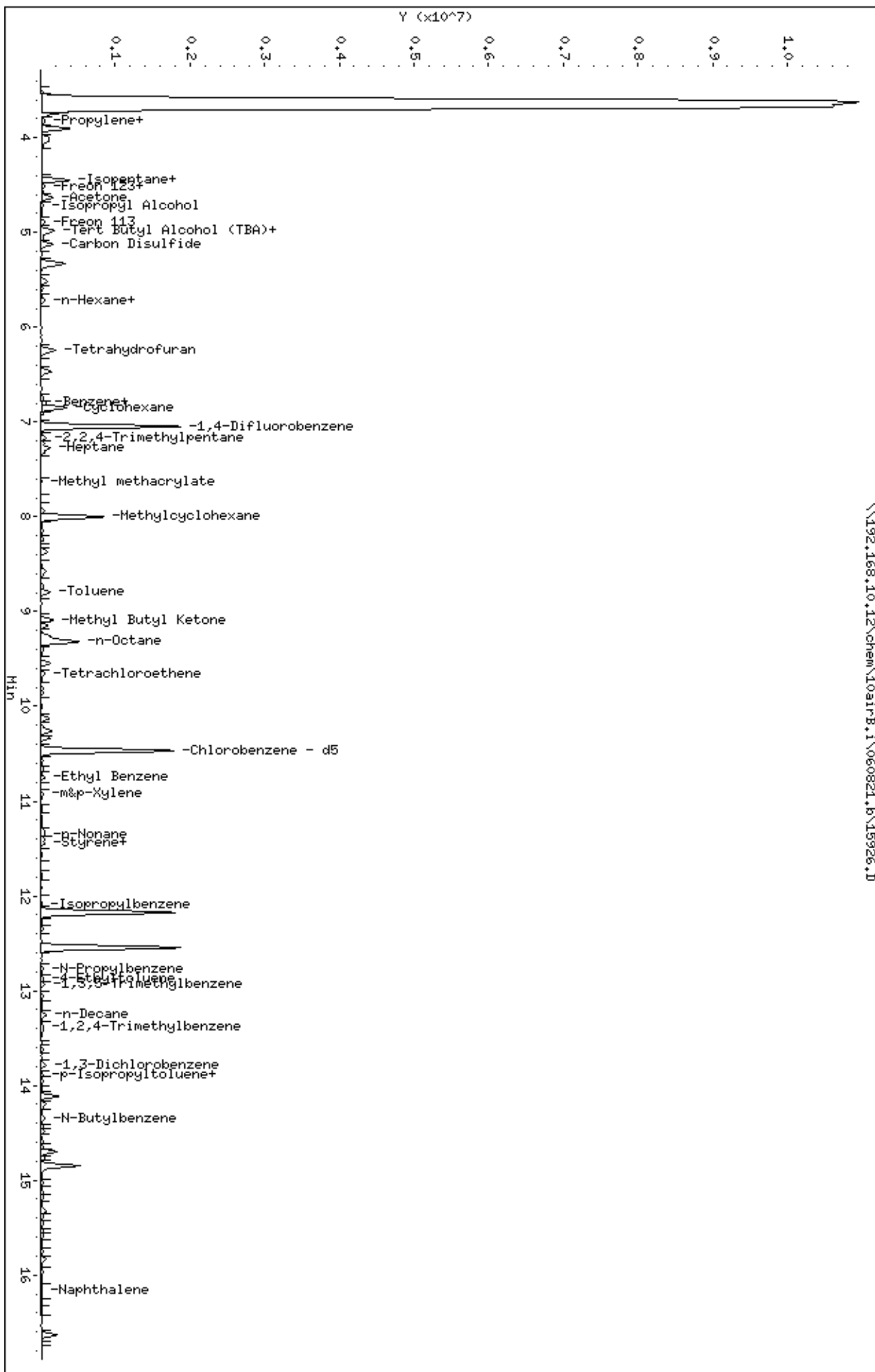
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	14.849	5.52	_J_

Data File: \\192.168.10.12\chem\10airB.i\060821.b\15926.D
Date : 08-JUN-2021 21:57
Client ID:
Sample Info:

Column phase: ZB-SHSplus SN338957

\\192.168.10.12\chem\10airB.i\060821.b\15926.D

Instrument: 10airB.i
Operator: MJL
Column diameter: 0.32



Data File: \\192.168.10.12\chem\10airB.i\060821.b\15927.D
 Report Date: 09-Jun-2021 11:30

Pace Analytical Services, Inc.

TO15 Analysis (UNIX)

Data file : \\192.168.10.12\chem\10airB.i\060821.b\15927.D
 Lab Smp Id: 10562861003
 Inj Date : 08-JUN-2021 22:26
 Operator : MJL Inst ID: 10airB.i
 Smp Info :
 Misc Info : 39545
 Comment : Volatile Organic COMPOUNDS in Air
 Method : \\192.168.10.12\chem\10airB.i\060821.b\TO15_144-21.m
 Meth Date : 08-Jun-2021 07:58 mlytle Quant Type: ISTD
 Cal Date : 24-MAY-2021 11:43 Cal File: 14408.D
 Als bottle: 24
 Dil Factor: 1.68000
 Integrator: HP RTE Compound Sublist: all.sub
 Target Version: RC10A
 Processing Host: M710BASE

Concentration Formula: Amt * DF * Uf * CpndVariable

Name	Value	Description
DF	1.680	Dilution Factor
Uf	1.000	ng unit correction factor
Cpnd Variable		Local Compound Variable

ISTD	RT	AREA	AMOUNT	
* 45	1,4-Difluorobenzene	7.036	3317532	10.000
* 64	Chlorobenzene - d5	10.463	3888500	10.000

RT	CONCENTRATIONS				QUANT		
	AREA	ON-COL(ppbv)	FINAL(ppbv)	QUAL	LIBRARY	LIB ENTRY	CPND #
Unknown					CAS #:		
8.550	1197306	3.60902471	6.06	0		0	45
Unknown					CAS #:		
12.544	2298893	5.91202872	9.93	0		0	64

Data File: \\192.168.10.12\chem\10airB.i\060821.b\15927.D
Report Date: 09-Jun-2021 11:30

Pace Analytical Services, Inc.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Name:
Lab Smp Id: 10562861003
Operator : MJL
Sample Location:
Sample Matrix: AIR
Analysis Type: VOA
Inj Date: 08-JUN-2021 22:26

Client SDG: 060821.b
Sample Date:
Sample Point:
Date Received:
Level: LOW

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/KG) ppbv

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	8.550	6.06	_J_
2.	Unknown	12.544	9.93	_J_

