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MEMO

TO	Nancy Swaka Oregon Department of Environmental Quality 4026 Fairview Industrial Dr SE Salem, OR 97302
FROM	Emily Ponaski, P.E. Brendan Robinson, P.E. Environmental Resources Management, Inc.
DATE	30 January 2025
REFERENCE	Univar Solutions USA LLC. 690 McKinley St, Eugene, Oregon ODEQ ESCI #1890
SUBJECT	Phase II Vapor Intrusion Work Plan

Environmental Resources Management, Inc. (ERM), has prepared this Phase II Vapor Intrusion Assessment Work Plan (Work Plan) on behalf of Univar Solutions (Univar) for the former Univar facility located at 690 McKinley St, Eugene, Oregon (the site).

This Work Plan is a continuation of the Phase I assessment and will be used to evaluate potential volatile organic compound intrusion into buildings from impacted groundwater. Consistent with the Phase I, ERM used the March and August 2024 groundwater concentrations to interpolate the plume extent (Figures 1 and 2) and generate an area of potential impact (Figure 3). The assessment activities described within this Work Plan will be conducted in accordance with the Draft *Guidance for Assessing and Remediating Vapor Intrusion in Buildings*[1] developed by the Oregon Department of Environmental Quality (ODEQ) and technical best practices established by the United States Environmental Protection Agency (USEPA).

1. BACKGROUND

On 5 to 7 November 2024, ERM conducted a Phase I vapor intrusion assessment in buildings that approved access (Table 1). Building surveys included assessments of slab conditions, building usage, ventilation (Table 2), and current chemical inventories (Table 3). Most businesses had large, ventilated warehouse spaces suitable for reduced sampling density per ODEQ guidance (Table 2). Additionally, many businesses use chemicals that contain volatile organic compounds, though not the site constituents of

[1] ODEQ (Oregon Department of Environmental Quality). 2024. *Guidance for Assessing and Remediating Vapor Intrusion in Buildings*.

concern, except for Building #9. A Phase I Summary was submitted to ODEQ on 20 December 2024.

Phase II of the assessment will include indoor (paired sub-slab soil gas and indoor air) sampling (see Attachment A). Sample results will be compared to the 2024 ODEQ occupational guidance levels (risk-based soil gas concentrations for vapor intrusion into buildings for an occupational receptor).

2. SCOPE OF WORK

The scope of work for this Work Plan consists of:

- Access requests
- Subsurface clearance
- Passive subsurface soil gas sampling
- Paired indoor air and sub-slab soil gas sampling

The proposed sampling methodology is based on the ODEQ *Guidance for Assessing and Remediating Vapor Intrusion in Buildings*[2] and USEPA *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*[3]. Samples will be analyzed for a reduced analyte list by USEPA Method TO-15 to focus on those chemicals that may be present in soil gas according to the site chemicals of concern: tetrachloroethene, trichloroethene, vinyl chloride, and 1,2 dichloroethane. Work conducted at the site will be performed under the site-specific Health and Safety Plan.

ERM proposes to collect indoor samples in six buildings, as summarized below and presented in Tables 1 and 2.

- Paired indoor air and sub-slab sampling will be conducted in Buildings #1, #2, #3, #4, #5, and #14 at up to 54 points total. These buildings permitted access and are situated closer to the site/source area; however, actual number of points and locations will be dependent on continued access, owner preference, and subsurface clearance.
- Sampling will not be conducted in Buildings #6 through #13, #15, and #16 for the following reasons:
    - Access Denied: Buildings #6 (access was initially approved for survey but later denied for further sampling), #7, and #8 did not allow sampling.
    - No response or potential interference: Buildings #9, #10, #13, and #15 either did not respond to access inquiries, are no longer operational (as detailed in Table 1), and/or utilize chemicals that could cause sample

[2] ODEQ (Oregon Department of Environmental Quality). 2024. *Guidance for Assessing and Remediating Vapor Intrusion in Buildings*.
[3] USEPA (U.S. Environmental Protection Agency). 2015. *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*.

interference (Table 3). Additionally, these buildings have minimal overlap (approximately less than 25 percent) with the area of potential impact (as shown in Figure 3).

- Outside the area of potential impact: Buildings #11, #12, and #16 are located outside the defined area of potential impact.

Buildings excluded from sampling during Phase II may be reevaluated based on results obtained from Buildings #1, #2, #3, #4, #5, and #14.

2.1 SUBSURFACE CLEARENCE

In February 2025, ERM will clear the proposed subsurface and sub-slab locations for potential subsurface utilities. This will include reviewing available historical documents, as-built drawings, geospatial data, field notes from the building surveys, and interviewing knowledgeable site personnel (e.g., onsite personnel or others as appropriate). ERM will notify the Oregon 811 public utility notification center and conduct a private utility clearance of the entire proposed sampling area.

2.2 PAIRED INDOOR AIR AND SUB-SLAB SOIL GAS SAMPLING

In March 2025, ERM will conduct paired indoor air and sub-slab soil gas sampling in six buildings containing 11 business with up to 54 sampling points (Figures 3 and Attachment A). Actual number of points and locations will depend on building owner access/preference and subsurface clearance.

2.2.1 VAPOR PIN INSTALLATION

A week prior to indoor air sampling, a subcontractor overseen by ERM will install up to 54 vapor pins using a hammer drill, following the procedures outlined in Standard Operation Procedure (SOP) for the VaporPin® Drilling Guide & Secure Cover in Attachment B.

2.2.2 INDOOR AIR SAMPLING

ERM will conduct indoor air sampling at up to 54 sampling points (Figures 3 and Attachment A) following the procedure outlined in the SOPs for Indoor Air Sampling in Attachment B. An ambient air sample(s) will be collected outside and upwind of each building. ERM will also conduct an inventory of vapor-forming chemicals, similar to the building surveys, and record site activities near each sampling location. Indoor air samples will be collected the day before sub-slab soil vapor samples to avoid sample interference.

2.2.3 SUB-SLAB SOIL GAS SAMPLING

ERM will conduct sub-slab soil gas sampling at up to 54 sampling points (Figures 3 and Attachment A) following the procedure outlined in SOP Sub-Soil Gas Sampling in Attachment B. Sample train shut in tests and helium tracer leak tests will be conducted

at each point prior to sample collection. Samples will be collected the day after indoor air sampling is completed in each building.

3. IMPLEMENTATION AND REPORTING

ERM has scoped the work to be initiated in early February 2025 and completed in March 2025 to capture the winter heating season conditions; however, work will not be started until concurrence is received from ODEQ. Results and recommendations will be provided in a memorandum to ODEQ within 30 days of sample results receipt.

TABLES

Table 1
Access Status
Phase II Vapor Intrusion Assessment
Univar Solutions USA LLC
Eugene, Oregon

Building Number	Business Name	Address	Phase I Access Status	Proposed Sampling Plan[a]
1	Oregon Ice, LLC	690 McKinley St	Approved	Paired indoor air and sub-slab
2	ASF Ironworks Inc	675a Wilson St	Approved	Paired indoor air and sub-slab
	Huckleberry Fence & Deck	675a Wilson St	Approved	Paired indoor air and sub-slab
	Fikes	685-695 Wilson St	Approved	Paired indoor air and sub-slab
	NW Connect	685 Wilson St	Approved	Paired indoor air and sub-slab
	Christopher Seals	2493 SW 7th Pl	Approved	Paired indoor air and sub-slab
	Five Bodies Collective	2485 W 7th Pl Ste 1	Approved	Paired indoor air and sub-slab
3	Willamette Valley Co	680 McKinley St	Approved	Paired indoor air and sub-slab
4	Emerald Fruit and Produce	2525 W 7th Pl	Approved	Paired indoor air and sub-slab
5	Emerald Appliances & Emerald Door and Glass Inc.	720 Wilson St	Approved	Paired indoor air and sub-slab
6	The Servo Group	2480 W 7th Pl	Approved survey, further access denied	None
7	RSD	701 Conger St	Access denied	None
8	Advance Cabinet Design	2555 W 7th Pl	Access denied	None
9	Pacific Rubber & Supply Co	690 Conger St	Approved	None
10	The Home Depot Pro Institutional	700 Conger St	No response	None
11	Fastenal	730 Conger St #2	No response	None
12	Pac West Tool	675 Conger St	No response	None
13	RDNA	2395 W 7th Pl	Not in use	None
14	Mallory Supplies	645 Wilson	Approved after Phase I completed	Paired indoor air and sub-slab
15	Sons of Norway	710 McKinley	No response	None
16	Mr. Nice Guy Farms	765 Conger St	Access denied	None

Notes:
[a] Rationale for proposed sampling presented in Table 2. Subject to change depending on sampling access approval by owner.

Table 2
Building Survey
Phase II Vapor Intrusion Assessment
Univar Solutions USA LLC
Eugene, Oregon

Building Number	Business Name	Address	Slab Condition	Typical Occupation During Business Hours	General Site Activities	Chemicals of Potential Interference [a]	Ventilation	Interior Building Description	Building Square Footage	ODEQ Guidance [b]	Proposed Number of Indoor Sample Points [b,c]	Rationale for Sampling
1	Oregon Ice, LLC	690 McKinley St	Raised foundation, minor cracking	2–3 People	Loading/unloading ice, fork lift operations	Various household cleaners/aerosols kept in one location	Large outdoor intake HVAC in warehouse for ice storage; wall unit A/C in office	Large open refrigerated warehouse, freezer warehouse, and small office area with two rooms	12,100	7+ samples minimum for > 10,000 ft^2; one point for every 2,500 ft^2	6	Conditions tend to be more homogenous in larger commonly ventilated spaces (i.e., warehouse).
2	ASF Ironworks Inc	675a Wilson St	Minor cracks in slab (~1 cm deep) only in front of western garage door	2–3 People	Iron welding, iron coating, painting, woodwork	Paint, epoxy, flammable gases/fluids	Mechanical wall and roof vents, diesel portable heater, garage doors remain open during business hours	Large open warehouse/workshop, small offices	6,600	3–7 samples minimum for 1,000 ft^2 to 10,000 ft^2; one point for every 1,500 ft^2	4	Conditions tend to be more homogenous in larger commonly ventilated spaces (i.e., warehouse).
	Huckleberry Fence & Deck	675a Wilson St	Minor cracks in slab (~1 cm deep) -south woodshop room; 0.5 in. holes drilled into sub-slab (~2 in. deep) - do not appear to penetrate slab	2–3 People	Woodwork	Wood stain	Mechanical wall and roof vents, diesel portable heater, garage door remain open during business hours	Large open warehouse/woodshop, two storage rooms, and one office	4,800	3–7 samples minimum for 1,000 ft^2 to 10,000 ft^2; one point for every 1,500 ft^2	3	Conditions tend to be more homogenous in larger commonly ventilated spaces (i.e., warehouse).
	Fikes	685-695 Wilson St	Minor cracks in slab (~1 cm deep) throughout warehouse	4–6 People	Restaurant supply, former auto mechanic shop	Solvents, household cleaners, polish remover, glue, paints, degreasers kept in one location	Mechanical wall and roof vents, diesel portable heater	Large open warehouse, one electrical room, and two offices	5,900	3–7 samples minimum for 1,000 ft^2 to 10,000 ft^2; one point for every 1,500 ft^2	4	Conditions tend to be more homogenous in larger commonly ventilated spaces (i.e., warehouse).
	NW Connect	685 Wilson St	Slab not visible, vinyl tiling	2 People	Personal storage	Various household cleaners/aerosols kept in one location	N/A, electric baseboard heating	Small enclosed space with one main room	800	2 samples minimum for < 1,000 ft^2	2	Follows ODEQ Guidance.
	Christopher Seals	2493 SW 7th Pl	Slab not visible, vinyl tiling	2–3 People	Wholesale distributor of gaskets/fixtures	VOCs from rubber products, degreasers	Window unit A/C, forced air	Large open parts storage room, customer counter room, and two offices	1,900	3–7 samples minimum for 1,000 ft^2 to 10,000 ft^2; one point for every 1,500 ft^2	3	Follows ODEQ Guidance.
	Five Bodies Collective	2485 W 7th Pl Ste 1	Slab not visible, carpeted area	6–10 People	Massage studio	N/A	Ductless heat pump/air conditioner	Open main room with curtain dividers, one small office and break room	1,400	3–7 samples minimum for 1,000 ft^2 to 10,000 ft^2; one point for every 1,500 ft^2	3	Follows ODEQ Guidance.
3	Willamette Valley Co	660-680 McKinley St	Minor cracks in slab (~1 cm deep)	2–3 People	Warehouse, product storage	Solvents, resins, and other various chemicals stored in large quantities throughout warehouse	Portable heater and individual A/C unit for office room	Large open warehouse, one side room with one office	10,400	7+ samples minimum for > 10,000 ft^2; one point for every 2,500 ft^2	6	Conditions tend to be more homogenous in larger commonly ventilated spaces (i.e., warehouse).
4	Emerald Fruit and Produce Co Inc.	2525 W 7th Pl	Cracks have been filled in, good condition	8–10 People	Food warehouse, distribution center	Various household cleaners/aerosols	Central air conditioning (HVAC) in food storage, individual A/C in office area	Large open warehouse, three open refrigerated storage rooms, two loading docks, one office, and one fresh produce storage area	14,300	7+ samples minimum for > 10,000 ft^2; one point for every 2,500 ft^2	7	Conditions tend to be more homogenous in larger commonly ventilated spaces (i.e., warehouse).
5	Emerald Appliances & Emerald Door and Glass Inc.	720 Wilson St	Majority of the sub-slab is covered, uncovered areas have minor cracks	12–15 People	Door, glass, and appliance showroom and warehouse	Fuel/propane for forklift, adhesives	HVAC in office and showroom. Garage door remain open in warehouse during business hours	Large open ventilated warehouse, seven offices, two showrooms, one storage area	30,500	7+ samples minimum for > 10,000 ft^2; one point for every 2,500 ft^2	8	Conditions tend to be more homogenous in larger commonly ventilated spaces (i.e., warehouse).
6	The Servo Group	2480 W 7th Pl	Building survey conducted. Results not summarized as further access was denied.								N/A	Access denied for sampling; business uses numerous solvents; within area of potential impacts.
7	RSD	701 Conger St	Building survey could not be conducted.								N/A	Access denied; within area of potential impacts.
8	Advance Cabinet Design	2555 W 7th Pl	Building survey could not be conducted.								N/A	Access denied; within area of potential impacts.

Table 2
Building Survey
Phase II Vapor Intrusion Assessment
Univar Solutions USA LLC
Eugene, Oregon

Building Number	Business Name	Address	Slab Condition	Typical Occupation During Business Hours	General Site Activities	Chemicals of Potential Interference [a]	Ventilation	Interior Building Description	Building Square Footage	ODEQ Guidance [b]	Proposed Number of Indoor Sample Points [b,c]	Rationale for Sampling
9	Pacific Rubber & Supply Co	690 Conger St	Minor crack in sub-slab throughout warehouse/storefront (~1 cm deep)	20–25	Rubber hose and hardware store	Propane, brake cleaner, aerosols	Mechanical wall and roof vents, HVAC in office area	Large storage warehouse, two overhead doors, one break room, and three offices	9,750	3–7 samples minimum for 1,000 ft^2 to 10,000 ft^2; one point for every 1,500 ft^2	N/A	Business uses product containing site COC; building outside area of potential impacts.
10	The Home Depot Pro Institutional	700 Conger St	Building survey could not be conducted.								N/A	No response; on peripheral of area of potential impacts.
11	Fastenal	730 Conger St #2	Building survey could not be conducted.								N/A	No response; outside area of potential impacts.
12	Pac West Tool	675 Conger St	Building survey could not be conducted.								N/A	No response; outside area of potential impacts.
13	RDNA	2395 W 7th Pl	Building survey could not be conducted.								N/A	Building not in use; on peripheral of area of potential impacts.
14	Mallory Supplies	645 Wilson	Building survey could not be conducted during Phase I, will be conducted concurrent with Phase II.						17,700	7+ samples minimum for > 10,000 ft^2; one point for every 2,500 ft^2	8	Follows ODEQ Guidance as no interior information is currently available.
15	Sons of Norway	710 McKinley	Building survey could not be conducted.								N/A	No response; research indicates building only used one evening per week; on peripheral of area of potential impacts.
16	Mr. Nice Guy Farms	765 Conger St	Building survey could not be conducted.								N/A	Access denied; outside area of potential impacts.

Notes:
[a] See chemical inventory in Table 3.
[b] Reduced using ODEQ Draft Guidance for VI *"Increasing Building Size - Reduced Sample Density - Conditions tend to be more homogenous in larger commonly ventilated spaces."*
[c] Number of sample points and locations are subject to change as they are dependent on owner access/preference and subsurface clearance.
A/C = air conditioning
cm = centimeter
COC = constituent of concern
ft^2 = square feet
HVAC = heating, ventilation, and air conditioning
in. = inch
N/A = not applicable
ODEQ = Oregon Department of Environmental Quality
VOC = volatile organic compound

Table 3
Chemical Inventory
Phase I Vapor Intrusion Assessment
Univar Solutions USA LLC
Eugene, Oregon

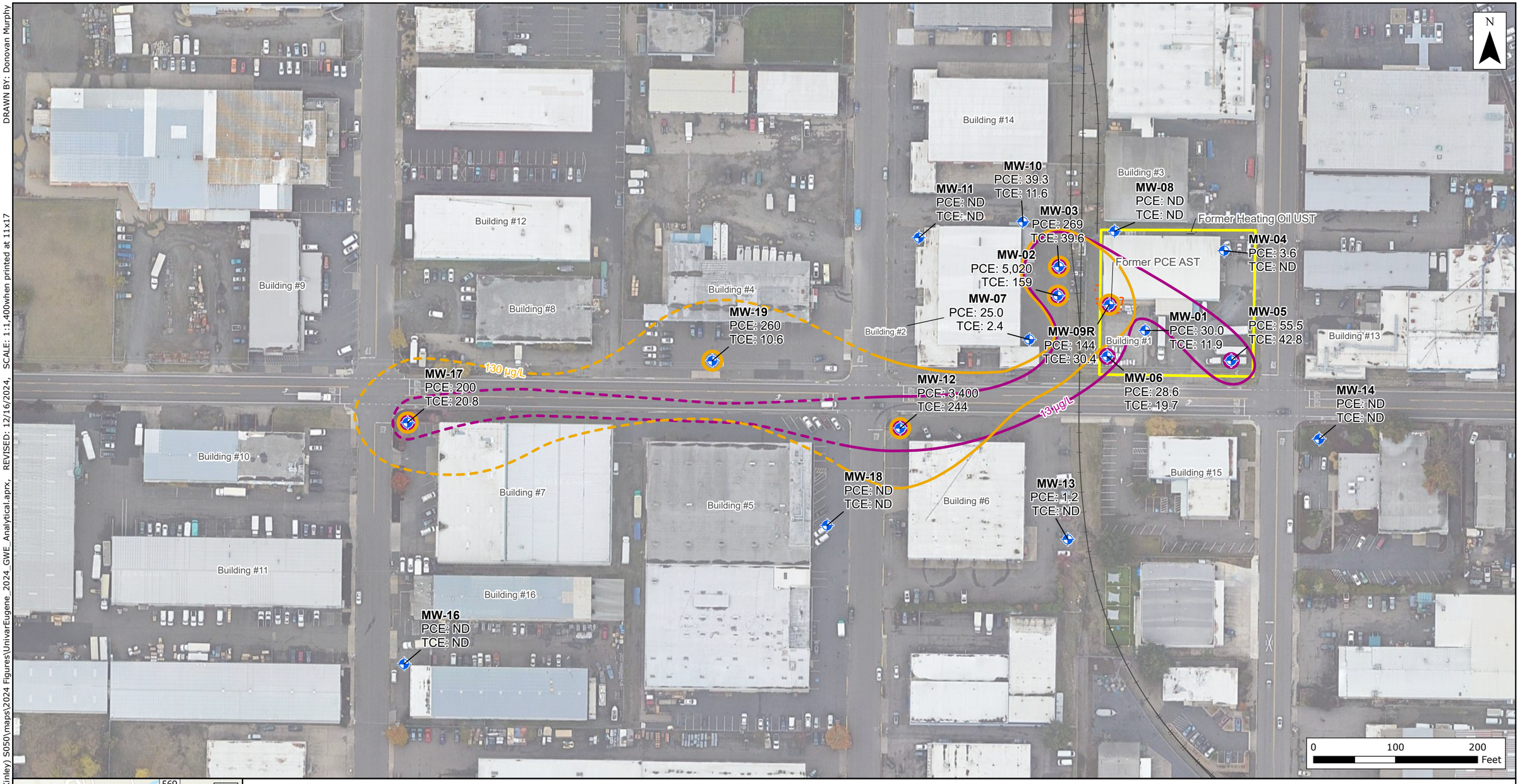
Building Number	Business Name	Address	Chemical Location	Chemical	Quantity	Contains VOCs (Y/N)	Contains Site COCs (Y/N)
1	Oregon Ice, LLC	690 McKinley St, Eugene, OR	SW Corner	Rust-Oleum Spray Paints	(5) cans	Y	N
				Porter Care Chain, Bar & Sprocket Oil	(1) ~1 L	Y	N
				Bondo Body Filler	(1) 1 gal	Y	N
				Datey Rain-R-Shine Blue PVC Cement	(1) 4 oz	Y	N
				Ace Royal Shield Semi-Gloss House & Trim	(6) 1 gal	Y	N
				Various Petroleum Greases & Oils	Unknown	Y	N
2	ASF Ironworks Inc	675 Wilson St, Eugene, OR	East Storage Shed	Forrest 16P300X	1 gal	Y	N
				Forrest 64ER80365	1 gal	Y	N
				Forrest 464ER20133	1 gal	Y	N
				Forrest 64E220	1 gal	Y	N
				Forrest 914E012	1 gal	Y	N
				Rust-Oleum (cold galvanized compound)	20 oz	Y	N
				Styrofoam Adhesive (PL300)	(10) 10 oz	N	N
				Rust-Oleum Spray Paints	(15) cans	Y	N
			Garage	Fuel Tank	Unknown	--	--
			SW Room	Forrest Coating (14E000X)	1 gal	Y	N
				Assorted Paints	(5) 1 gal	Y	N
				Seneco Air Compressor (unknown gas)	Unknown	--	--
	Huckleberry Fence & Deck	675a Wilson St, Eugene, OR	South Corner	Glidden Premium Exterior Paint & Primer	(3) 1 gal	N	N
				Minwax Wood Finish	(4) 8 oz	Y	N
				Minwax Polyurethane	(2) 0.5 gal	Y	N
					(2) 1 gal	Y	N
				Cabor Floor Polish	(4) 1 gal	Y	N
				Penofin Stain & Sealer	(5) 1 gal	Y	N
				Armstrong & Clark Stain	(2) 1 gal	Y	N
				Behr Exterior Paint	(1) 1 gal	N	N
				Old Masters Polyurethane	(1) 8 oz	Y	N
				Minwax Polycrylic	(2) 1 gal	Y	N
				Valspar SeasonPlus Exterior Paint & Primer	(1) 1 gal	N	N
				Benjamin Moore Flat Finish Acrylic House Paint	(1) 1 gal	N	N
	Fikes	685-695 Wilson St, Eugene, OR	SE Corner	SHAMROCK Low Temp Rinse Aid	(2) 1 gal	N	N
				SHAMROCK Dish Detergent	(3) 1 gal	Y	N
				REN03002-FR	(24) 3 oz	Y	N
				Ultra Clean Heavy Duty Cleaner & Degreaser	(4) 1 gal	Y	N
				Performance Plus Grill and Oven Cleaner	(16) 1 gal	Y	N
				Performance Plus Heavy Duty Degrease	(8) 1 gal	Y	N
				Performance Plus Green Dish Detergent	(6) 1 gal	Y	N
				All Free & Clear Laundry Detergent	(1) 32 oz	Y	N
				DMQ Neutral Disinfectant Cleaner	(1) 1 gal	Y	N
				Health Guard Foaming No Alcohol Hand Sanitizer	(8) 1 gal	Y	N
				Simple Green Industrial Cleaner & Degreaser	(6) 1 gal	Y	N
				Clorox Bleach Cleaner	(18) 1 gal	Y	N
				Propane	(3) 33 lb.	Y	N
				Hand RX Hand Sanitizer	(1) 40 oz	Y	N
	NW Connect	685 Wilson St, Eugene, OR	Bathroom	Febreze	(1) can	Y	N
	Christopher Seals	2493 SW 7th Pl, Eugene, OR	Storage Closet	Blaster Rust Penetrating Catalyst	(1) 11 oz	Y	N
				Promise Cleaner	(1) 12 oz	--	--
				Envirostar Green All Purpose Cleaner	(1) 4 L	Y	N
				Durus Alkyd Semi-Gloss Exterior Paint	(1) 32 oz	Y	N
				Professional Finishes Eggshell	(1) 1 gal	Y	N
				Minwax Polyurethane	(1) 1 qt	Y	N

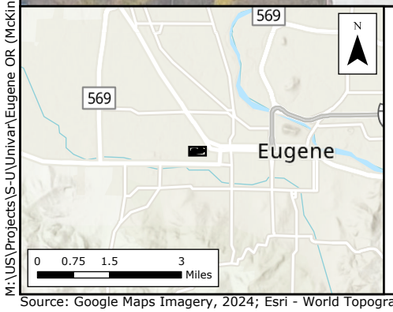
Table 3
Chemical Inventory
Phase I Vapor Intrusion Assessment
Univar Solutions USA LLC
Eugene, Oregon

Building Number	Business Name	Address	Chemical Location	Chemical	Quantity	Contains VOCs (Y/N)	Contains Site COCs (Y/N)
				ProPride Floor Cleaner & Conditioner	(1) 1 gal	Y	N
				Revenge Termite Carpenter Ant Killer	(1) 15 oz	Y	N
	Five Bodies Collective	2485 W 7th Pl Ste 1, Eugene, OR	No chemicals stored on site				
3	Willamette Valley Co	680 McKinley St, Eugene, OR	Warehouse	Jeffamine T-5000	(4) 55 gal	N	N
				Jayflex L9P	(1) 2,706 lb.	N	N
				Mondur PF Drum Gauge Steel	(1) 227 kg	Y	N
				Fastpatch LV ISO-E0	(1) 55 gal	N	N
				Spikefast CTR-100-60	(1) 55 gal	N	N
				Diethylene Glycol APX 2900	(1) 2,900 lb.	Y	N
				Triethylenetetramine	(2) 55 gal	Y	N
				BYK-P 2720	(2) 55 gal	Y	N
				Jeffamine T-403	(1) 255 gal	Y	N
				Multranol 9138	(2) 2,205 lb.	N	N
				DYTEK A amine	(1) 55 gal	N	N
				Hexatran 100	(1) 55 gal	N	N
				Modulast Pur	(1) 55 gal	Y	N
4	Emerald Fruit and Produce Co Inc	2525 W 7th Pl, Eugene, OR	No chemicals stored on site				
5	Emerald Appliances & Emerald Door and Glass Inc	720 Wilson St, Eugene, OR	Storage Room	Ace Silicone Lubricant	(1) can	Y	N
9	Pacific Rubber & Supply Co	690 Conger St	Workbench	CRC Brakleen	(1) 14 oz	Y	N
				E6000 Adhesive	(1) 10 oz	Y	Y (PCE)
				P-80 Emulsion	(1) 1 L	Y	N
				Coilhose Pneumatics Air Tool Lubricant	(1) 0.2 L	Y	N
				Wemix Cascade Floor Cleaner	(1) 1 gal	Y	N
				Wemix Ultra Quat 64	(1) 1 gal	Y	N

Notes:
COC = constituent of concern
gal = gallon
kg = kilogram
L = liter
lb. = pound
N = no
NW = northwest
oz = ounce
PCE = tetrachloroethene
qt = quart
SW = southwest
VOC = volatile organic compound
Y = yes

FIGURES





Legend

- Monitoring Well
- Site Boundary
- Excavation Boundary (2006)
- Former Heating Oil UST
- Former PCE AST
- Railroad
- Exceeds PCE Risk-Based Concentration (130 µg/L) for Groundwater Volatilization to Indoor Air
- Exceeds TCE Risk-Based Concentration (13 µg/L) for Groundwater Volatilization to Indoor Air
- PCE Isoconcentration Line (130 µg/L; Dashed Where Inferred)
- TCE Isoconcentration Line (13 µg/L; Dashed Where Inferred)

Notes:
AST = Aboveground Storage Tank
ND = Not Detected
PCE = Tetrachloroethene
TCE = Trichloroethene
UST = Underground Storage Tank
µg/L = Micrograms per liter

Source: Google Maps Imagery, 2024; Esri - World Topographic Map; NAD 1983 UTM Zone 10N

Figure 1
PCE and TCE in Groundwater
26–27 March 2024
Univar Solutions USA LLC
690 McKinley St
Eugene, Oregon

ERM

DRAWN BY: Donovan Murphy
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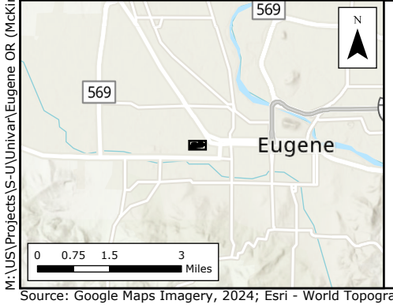

Legend

- Monitoring Well
- Site Boundary
- Excavation Boundary (2006)
- Former Heating Oil UST
- Former PCE AST
- Railroad
- Exceeds PCE Risk-Based Concentration (130 µg/L) for Groundwater Volatilization to Indoor Air
- Exceeds TCE Risk-Based Concentration (13 µg/L) for Groundwater Volatilization to Indoor Air
- PCE Isoconcentration Line (130 µg/L; Dashed Where Inferred)
- TCE Isoconcentration Line (13 µg/L; Dashed Where Inferred)

Notes:
AST = Aboveground Storage Tank
PCE = Tetrachloroethene
R = Rejected
TCE = Trichloroethene
UST = Underground Storage Tank
µg/L = Micrograms per liter

Source: Google Maps Imagery, 2024; Esri - World Topographic Map; NAD 1983 UTM Zone 10N

Figure 2
PCE and TCE in Groundwater
5–7 August 2024
Univar Solutions USA LLC
690 McKinley St
Eugene, Oregon

ERM

DRAWN BY: Donovan Murphy

REVISED: 01/15/2025, SCALE: 1:1,400when printed at 11x17

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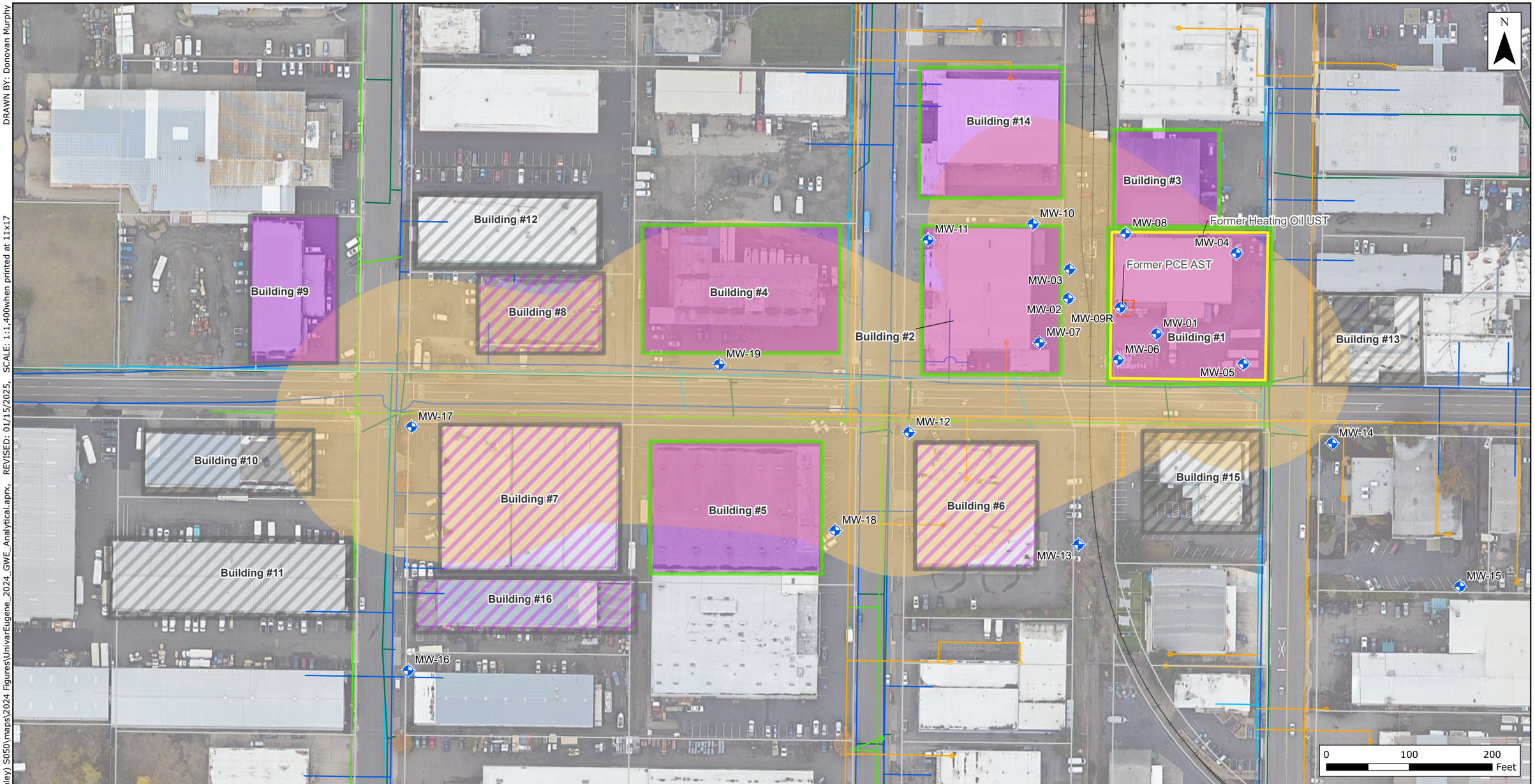
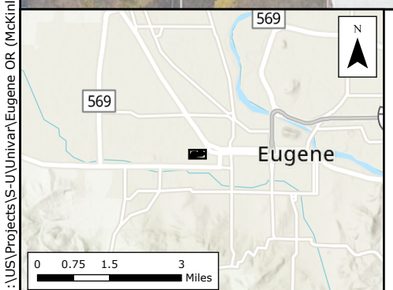




Legend

- Monitoring Well
- Site Boundary
- Excavation Boundary (2006)
- Former Heating Oil UST
- Former PCE AST
- Eugene Taxlots
- Railroad
- Gas Line
- Sanitary Sewer
- Water Line
- Stormwater Line
- Storm Drain
- VI Area of Potential Impacts

VI Assessment Locations

- Access Approved
- Access Denied
- No Response

Proposed Sampling Plan

- Paired Indoor Air and Sub-slab
- None

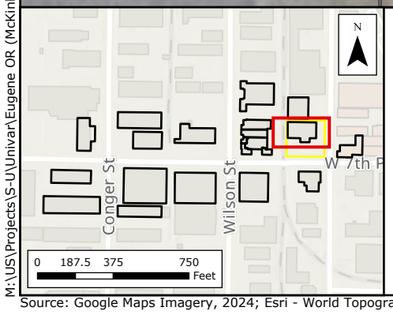
Notes:
AST = Aboveground Storage Tank
PCE = Tetrachloroethene
UST = Underground Storage Tank
VI = Vapor Intrusion

Figure 3
Conceptual Assessment Layout
Univar Solutions USA LLC
690 McKinley St
Eugene, Oregon

ERM

Source: Google Maps Imagery, 2024; Esri - World Topographic Map; NAD 1983 UTM Zone 10N

ATTACHMENT A SAMPLING LOCATIONS



Legend

- Paired Indoor Air/Sub-Slab Soil Gas Sampling Points
- Monitoring Well
- Floorplan
- Building Footprint
- Site Boundary
- Railroad
- Gas Line
- Sanitary Sewer
- Water Line
- Stormwater Line
- Storm Drain

Note:
Internal building use and dimensions were gathered during the November 2024 building surveys.

Sample points are proposed locations. Actual number of points and locations will depend on building owner access/preference and subsurface clearance.

Building #1
Oregon Ice, LLC
690 McKinley St
Phase 1 Building Survey
Eugene, Oregon

ERM

Source: Google Maps Imagery, 2024; Esri - World Topographic Map; NAD 1983 UTM Zone 10N

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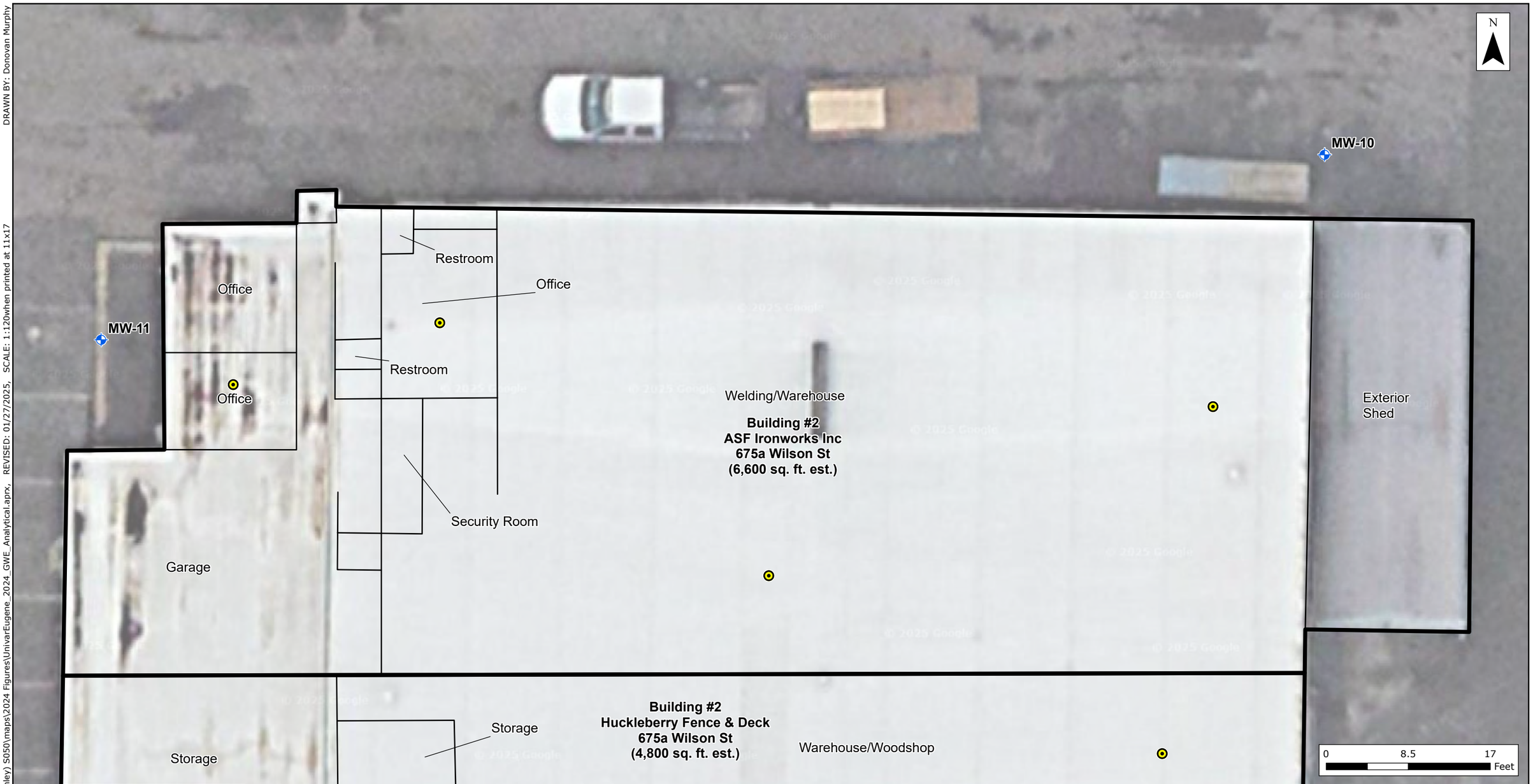

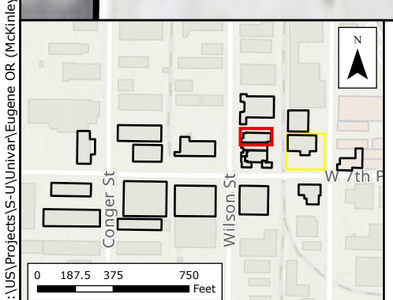

Legend

- Paired Indoor Air/Sub-Slab Soil Gas Sampling Points
- Monitoring Well
- Floorplan
- Building Footprint
- Site Boundary
- Gas Line
- Sanitary Sewer
- Water Line
- Stormwater Line
- Storm Drain

Note:
Internal building use and dimensions were gathered during the November 2024 building surveys.

Sample points are proposed locations. Actual number of points and locations will depend on building owner access/preference and subsurface clearance.

Building #2
ASF Ironworks Inc
675a Wilson St
Phase 1 Building Survey
Eugene, Oregon

ERM

Source: Google Maps Imagery, 2024; Esri - World Topographic Map; NAD 1983 UTM Zone 10N

DRAWN BY: Donovan Murphy

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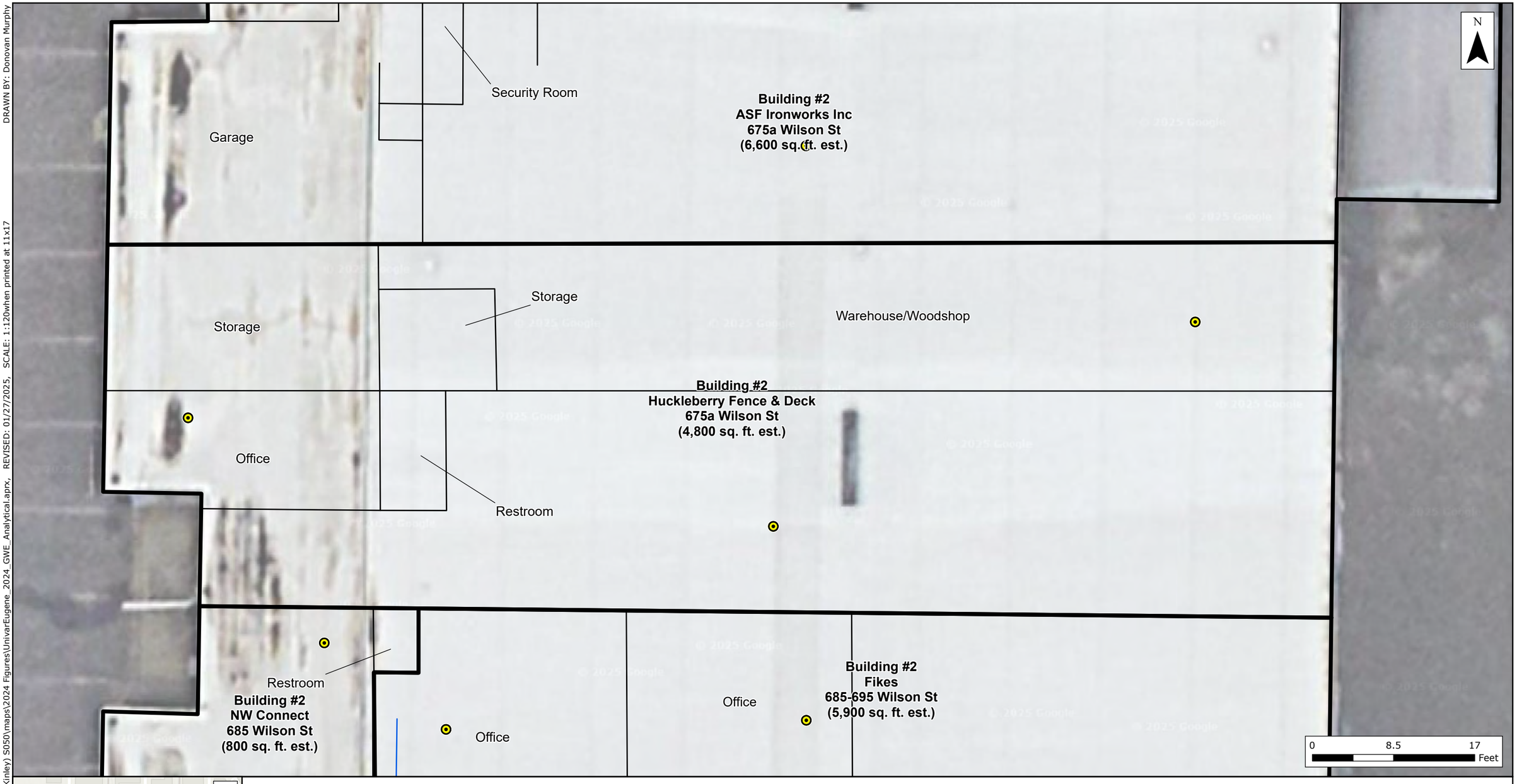

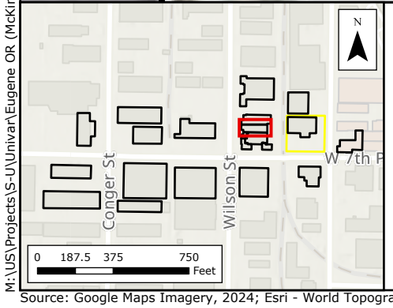

Legend

- Paired Indoor Air/Sub-Slab Soil Gas Sampling Points
- Floorplan
- Building Footprint
- Site Boundary
- Gas Line
- Sanitary Sewer
- Water Line
- Stormwater Line
- Storm Drain

Note:
Internal building use and dimensions were gathered during the November 2024 building surveys.

Sample points are proposed locations. Actual number of points and locations will depend on building owner access/preference and subsurface clearance.

Building #2
Huckleberry Fence & Deck
675a Wilson St
Phase 1 Building Survey
Eugene, Oregon

ERM

Source: Google Maps Imagery, 2024; Esri - World Topographic Map; NAD 1983 UTM Zone 10N

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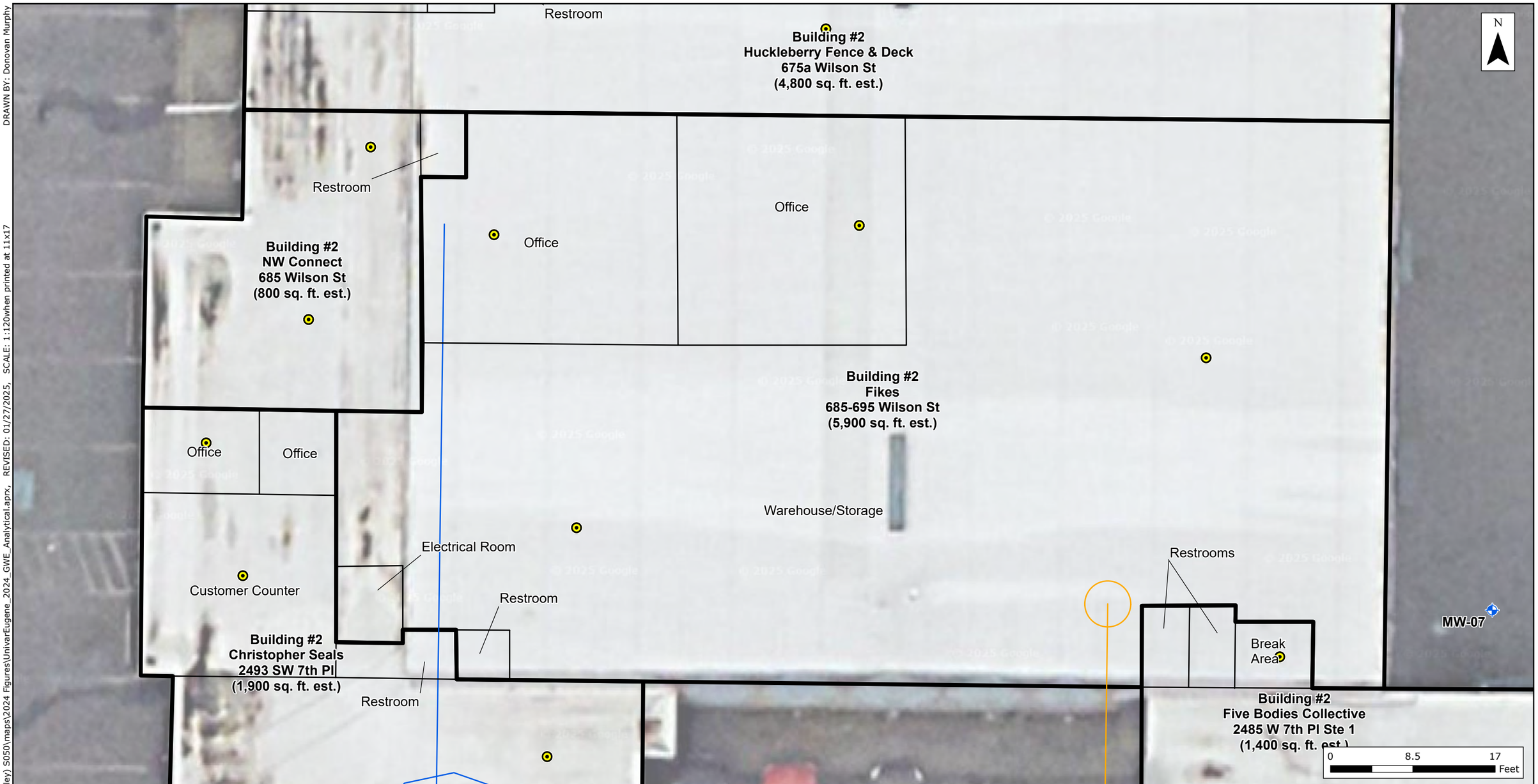

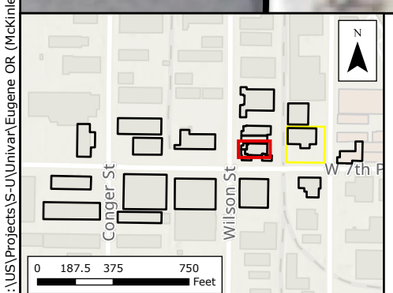

Legend

- Paired Indoor Air/Sub-Slab Soil Gas Sampling Points
- Monitoring Well
- Floorplan
- Building Footprint
- Site Boundary
- Gas Line
- Sanitary Sewer
- Water Line
- Stormwater Line
- Storm Drain

Note:
Internal building use and dimensions were gathered during the November 2024 building surveys.

Sample points are proposed locations. Actual number of points and locations will depend on building owner access/preference and subsurface clearance.

Building #2
Fikes
685-695 Wilson St
Phase 1 Building Survey
Eugene, Oregon

ERM

Source: Google Maps Imagery, 2024; Esri - World Topographic Map; NAD 1983 UTM Zone 10N

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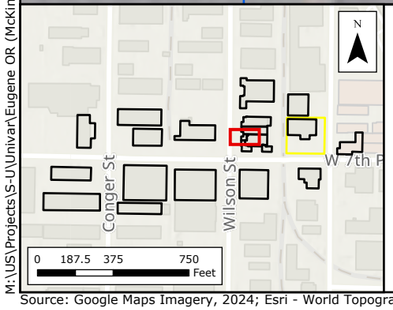
DRAWN BY: Donovan Murphy



Legend

- Paired Indoor Air/Sub-Slab Soil Gas Sampling Points
- Floorplan
- Building Footprint
- Site Boundary
- Gas Line
- Sanitary Sewer
- Water Line
- Stormwater Line
- Storm Drain

Note:
Internal building use and dimensions were gathered during the November 2024 building surveys.

Sample points are proposed locations. Actual number of points and locations will depend on building owner access/preference and subsurface clearance.

Building #2
NW Connect
685 Wilson St
Phase 1 Building Survey
Eugene, Oregon

ERM

Source: Google Maps Imagery, 2024; Esri - World Topographic Map; NAD 1983 UTM Zone 10N

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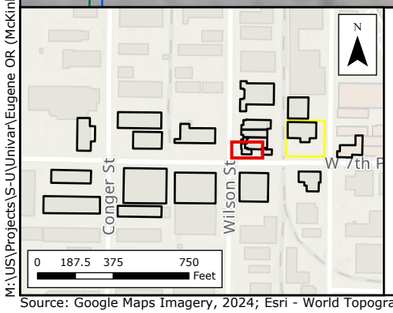
DRAWN BY: Donovan Murphy



Legend

- Paired Indoor Air/Sub-Slab Soil Gas Sampling Points
- Floorplan
- Building Footprint
- Site Boundary
- Gas Line
- Sanitary Sewer
- Water Line
- Stormwater Line
- Storm Drain

Note:
Internal building use and dimensions were gathered during the November 2024 building surveys.

Sample points are proposed locations. Actual number of points and locations will depend on building owner access/preference and subsurface clearance.

Building #2
Christopher Seals
2493 SW 7th Pl
Phase 1 Building Survey
Eugene, Oregon

ERM

Source: Google Maps Imagery, 2024; Esri - World Topographic Map; NAD 1983 UTM Zone 10N

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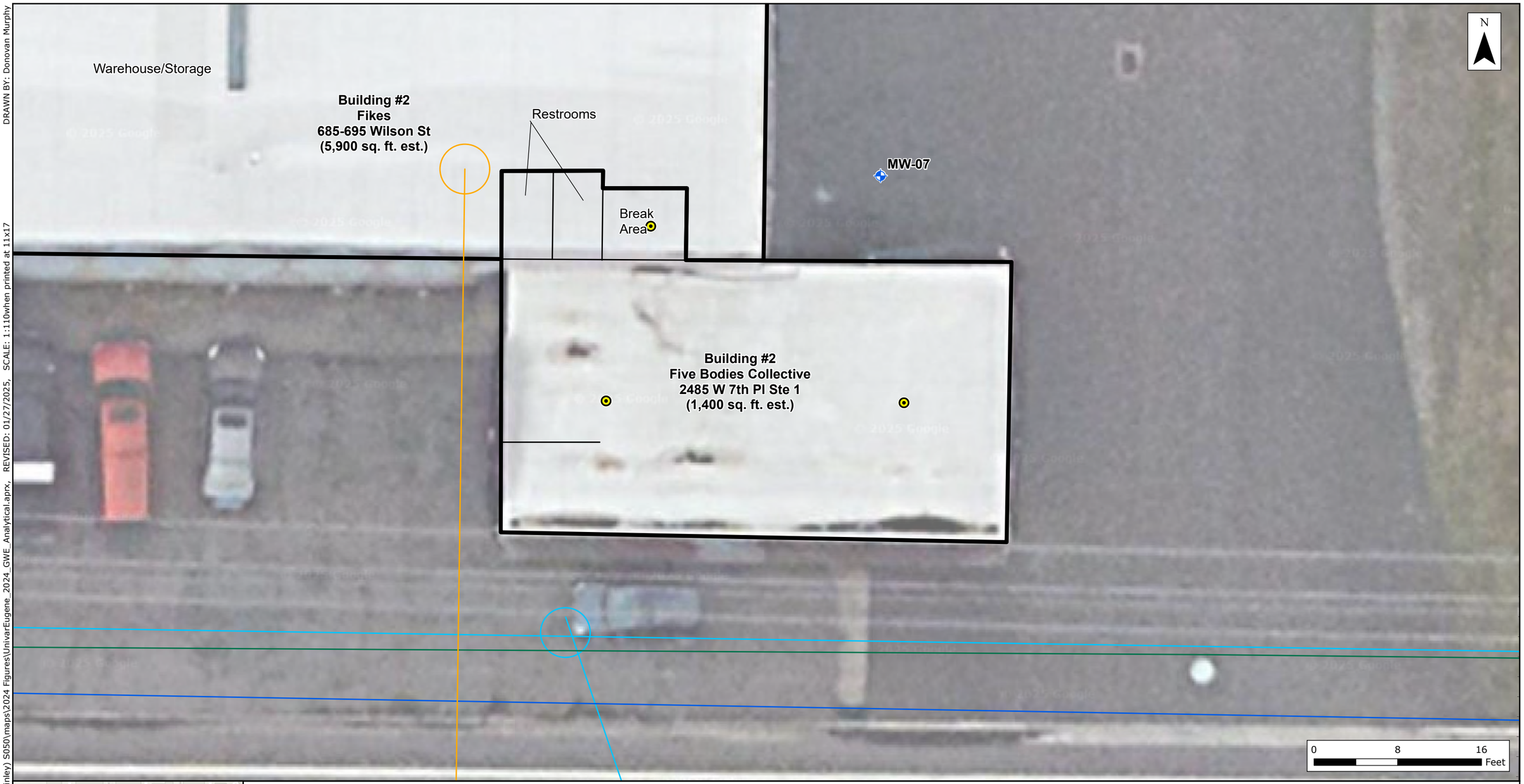

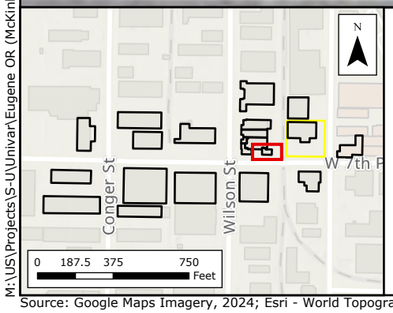

Legend

- Paired Indoor Air/Sub-Slab Soil Gas Sampling Points
- Monitoring Well
- Floorplan
- Building Footprint
- Site Boundary
- Railroad
- Gas Line
- Sanitary Sewer
- Water Line
- Stormwater Line
- Storm Drain

Note:
Internal building use and dimensions were gathered during the November 2024 building surveys.

Sample points are proposed locations. Actual number of points and locations will depend on building owner access/preference and subsurface clearance.

Building #2
Five Bodies Collective
2485 W 7th Pl Ste 1
Phase 1 Building Survey
Eugene, Oregon

ERM

Source: Google Maps Imagery, 2024; Esri - World Topographic Map; NAD 1983 UTM Zone 10N

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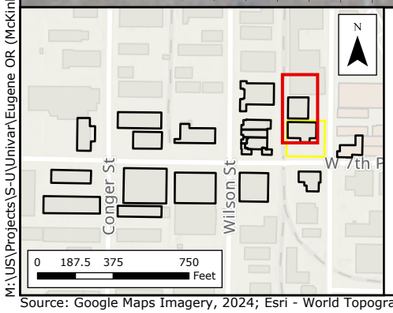

Legend

- Paired Indoor Air/Sub-Slab Soil Gas Sampling Points
- Monitoring Well
- Floorplan
- Building Footprint
- Site Boundary
- Railroad
- Gas Line
- Sanitary Sewer
- Water Line
- Stormwater Line
- Storm Drain

Note:
Internal building use and dimensions were gathered during the November 2024 building surveys.

Sample points are proposed locations. Actual number of points and locations will depend on building owner access/preference and subsurface clearance.

Building #3
Willamette Valley Co
660-680 McKinley St
Phase 1 Building Survey
Eugene, Oregon

ERM

Source: Google Maps Imagery, 2024; Esri - World Topographic Map; NAD 1983 UTM Zone 10N

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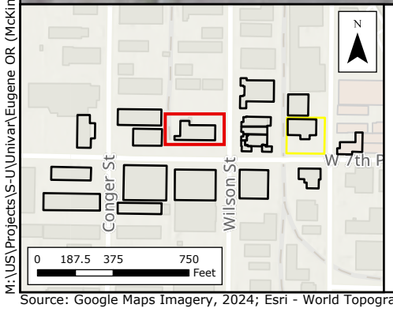

Legend

- Paired Indoor Air/Sub-Slab Soil Gas Sampling Points
- Floorplan
- Building Footprint
- Site Boundary
- Gas Line
- Sanitary Sewer
- Water Line
- Stormwater Line
- Storm Drain

Note:
Internal building use and dimensions were gathered during the November 2024 building surveys.

Sample points are proposed locations. Actual number of points and locations will depend on building owner access/preference and subsurface clearance.

Building #4
Emerald Fruit and Produce Co Inc
2525 W 7th Pl
Phase 1 Building Survey
Eugene, Oregon

ERM

Source: Google Maps Imagery, 2024; Esri - World Topographic Map; NAD 1983 UTM Zone 10N

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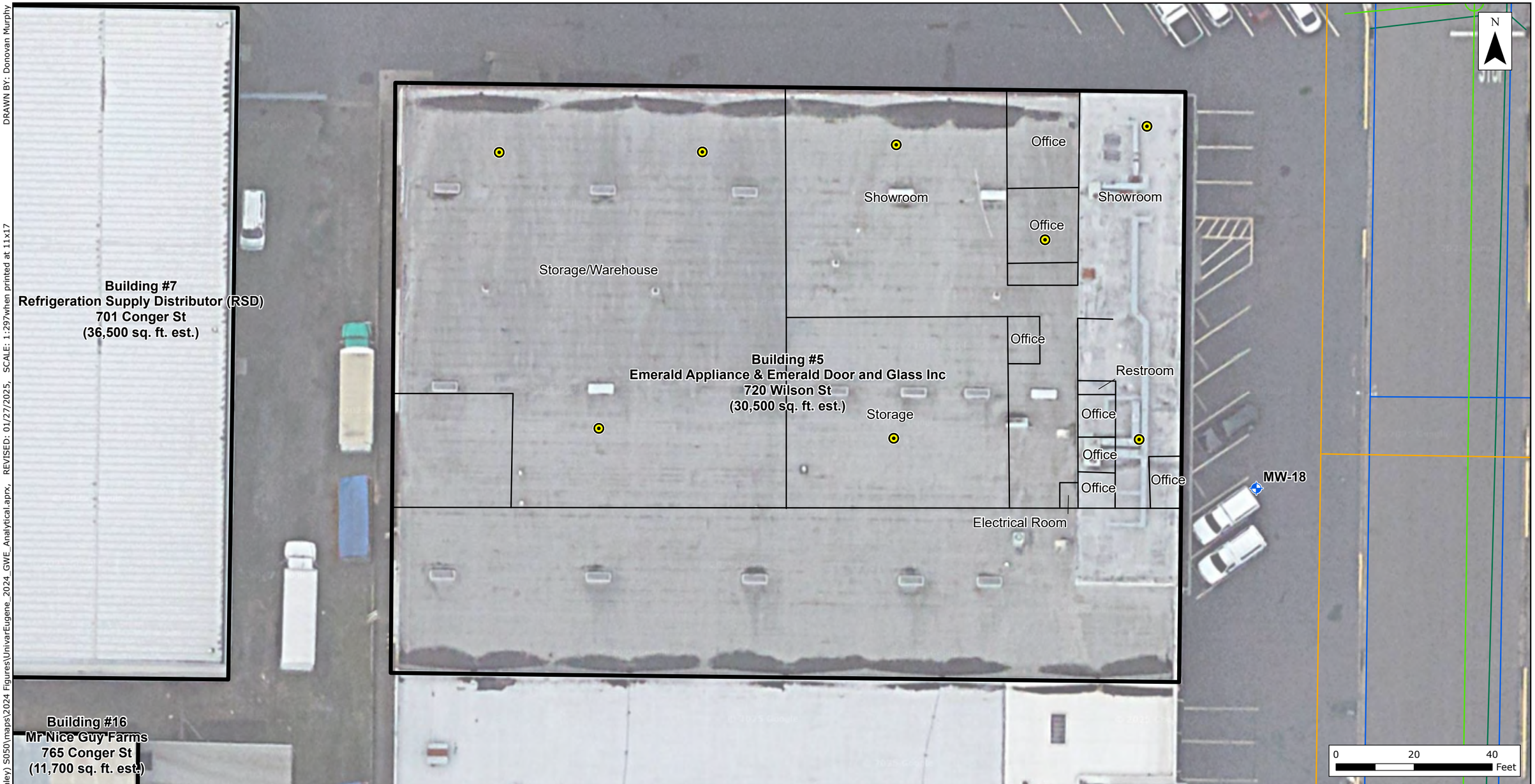

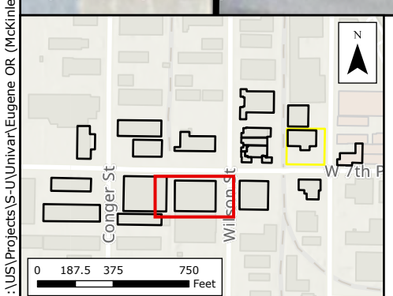

Legend

- Paired Indoor Air/Sub-Slab Soil Gas Sampling Points
- Monitoring Well
- Floorplan
- Building Footprint
- Site Boundary
- Gas Line
- Sanitary Sewer
- Water Line
- Stormwater Line
- Storm Drain

Note:
Internal building use and dimensions were gathered during the November 2024 building surveys.

Sample points are proposed locations. Actual number of points and locations will depend on building owner access/preference and subsurface clearance.

Building #5
Emerald Appliance & Emerald Door and Glass Inc
720 Wilson St
Phase 1 Building Survey
Eugene, Oregon

ERM

Source: Google Maps Imagery, 2024; Esri - World Topographic Map; NAD 1983 UTM Zone 10N

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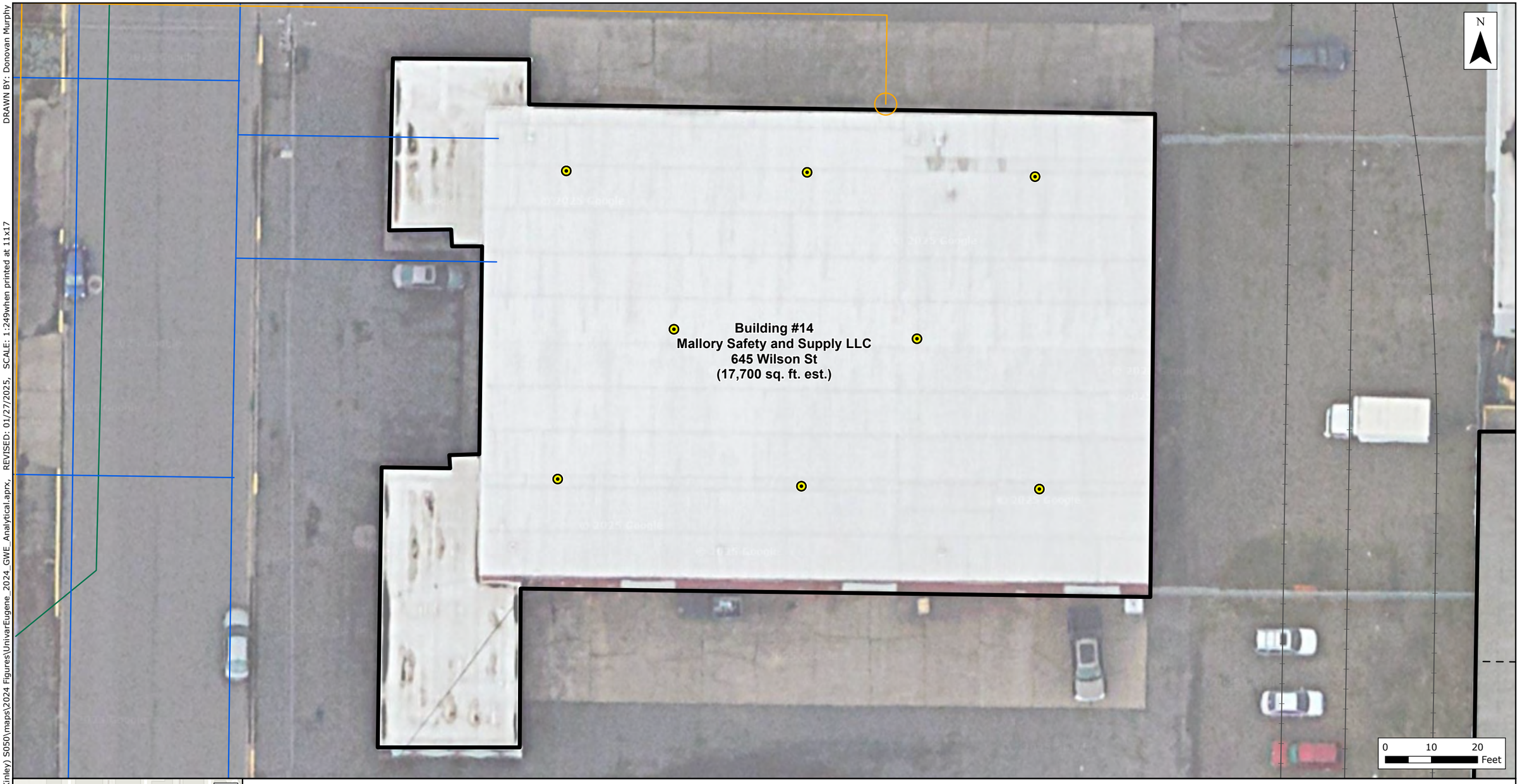

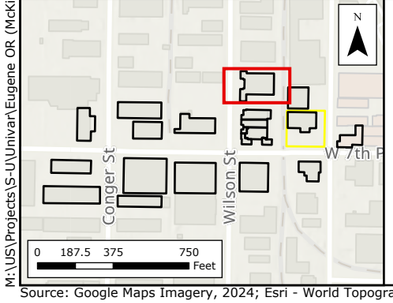

Legend

- Paired Indoor Air/Sub-Slab Soil Gas Sampling Points
- Floorplan
- Building Footprint
- Site Boundary
- Railroad
- Gas Line
- Sanitary Sewer
- Water Line
- Stormwater Line
- Storm Drain

Note:
Building survey could not be conducted during Phase I, will be conducted concurrent with Phase II.

Sample points are proposed locations. Actual number of points and locations will depend on building owner access/preference and subsurface clearance.

Building #14
Mallory Safety and Supply LLC
645 Wilson St
Eugene, Oregon

ERM

Source: Google Maps Imagery, 2024; Esri - World Topographic Map; NAD 1983 UTM Zone 10N

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DRAWN BY: Donovan Murphy

ATTACHMENT B STANDARD OPERATING PROCEDURES

1050 SW 6th Ave
Suite 1650
Portland, OR 97204

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STANDARD OPERATING PROCEDURES FOR HELIUM TRACER LEAK TESTING

1. OVERVIEW

This Standard Operating Procedures (SOP) document has been specifically designed for the Vapor Intrusion Evaluation Phase II to be conducted at the Univar Solutions USA, LLC. (Eugene) site in Eugene, Oregon. This SOP outlines helium tracer leak testing.

2. EQUIPMENT NEEDED

The following presents the equipment required to conduct sub-slab soil gas sampling at the Eugene site:

- Paper towels
- Teflon (lined) and silicon tubing
- Helium tank and regulator
- MGD-2002 helium detector
- Helium shroud
- Non-volatile organic compound clay

2.1 TASK 1: HELIUM TRACER LEAK TEST

A Helium Tracer Leak Test will be conducted on the installed Vapor Pin prior to sub-slab sample collection to confirm that there are no leaks in the installed point. If leak is detected, the pin will be reset / adjusted accordingly, and helium test will be repeated.

The Helium Tracer Leak Test is conducted using a helium shroud. The helium shroud is designed to hold ambient air around the Vapor Pin. Tubing is attached to the Vapor Pin to allow the extraction of sub-slab air. Once the helium shroud is in place and sealed properly, helium is introduced into the ambient air around the Vapor Pin until the ambient air around the Vapor Pin has a helium concentration of at least 10 percent. Sub-slab air is then extracted through the tubing, and the helium concentration of the extracted air is observed for a 5-minute period to confirm the seal around the Vapor Pin is acceptable.

Below is the procedure for conducting the Helium Tracer Leak Test:

1. Clean the ground surface around the Vapor Pin with a paper towel or hand wipe.
2. Attach one side of the Teflon (lined) tubing to the Vapor Pin using silicon tubing and attach the other side of the tubing to the center push-to-connect fitting in the underside of the top of the shroud.

3. Place the shroud over the Vapor Pin and seal the shroud to the floor with non-volatile organic compound clay.
4. Attach the Teflon (lined) tubing to the center push-to-connect fitting on the top side of the shroud and insert helium supply tubing into the other push-to-connect fitting on top of the shroud.
5. Open helium valve to fill the shroud with helium. Use the helium detector to test level of helium in the bottom of the shroud. The helium detector will be inserted into a brass pipe with a ball valve attached to the top of the shroud. Helium should be added to the shroud until the environment inside the shroud has a helium concentration greater than 10 percent.
6. Once the desired level of helium is achieved within the shroud, shut the valve on the helium tank regulator, but leave the tubing attached to the shroud. This will prevent loss of helium. Remove the MGD-2002 helium detector and close the ball valve on the brass pipe.
7. Allow the MGD-2002 helium detector to equilibrate to atmospheric conditions (0 ppm).
8. Attach the MGD-2002 helium detector to the end of the sample tubing and test the purged air for a period of 5 minutes. If the extracted air is noted to be greater than 10 percent of the shroud concentration of helium at any point during the 5-minute leak test, reexamine the seal and test again. As an added seal, wax may be heated around the Vapor Pin.
9. Once the test is complete, use the MGD-2002 helium detector to test the ambient air in the shroud. This is to ensure helium is still in the shroud, and there was no leak of helium outside of the shroud.

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STANDARD OPERATING PROCEDURES FOR INDOOR AIR SAMPLING

1. OVERVIEW

This Standard Operating Procedure (SOP) document has been specifically designed for the Vapor Intrusion Evaluation Phase II Work Plan (Work Plan) to be conducted at the Univar Solutions USA, LLC. site located in Eugene, Oregon (Eugene). This SOP outlines indoor and ambient air sampling and their associated tasks.

2. TASK 1: INDOOR AIR SAMPLE COLLECTION

Indoor air sampling involves the collection of an air sample from the breathing zone (three to five feet above the ground level) within a building's footprint. Indoor air samples are collected within approximately 10 feet of their respective soil vapor sampling location.

Indoor air and ambient air samples are collected in an evacuated 6-liter SUMMA canister over an 8-hour period, which is then sent to a laboratory and analyzed for site chemicals of concern[1] by United States Environmental Protection Agency Method TO-15.

2.1 EQUIPMENT NEEDED

The following presents the equipment required to conduct indoor and ambient air sampling at the site:

- Field book, digital field forms, and site figures
- 6-liter SUMMA Canisters
- Lab provided flow controller (set for an 8-hour sample duration)
- Teflon (lined) and silicon tubing
- Photoionization detector
- Wood stake or stainless-steel extension to set sample inlet tubing in the breathing zone

3. INDOOR AIR SAMPLE COLLECTION PROCEDURE

1. Record the following information on an EQuIS form prior to initiating sampling:
    a. Weather conditions,

[1] 1,1-Dichloroethane, Tetrachloroethene, Trichloroethene, Vinyl chloride

b. Temperature,
c. Wind speed and direction,
d. Approximate indoor temperature,
e. Relative humidity,
f. Barometric pressure, and
g. Substantial changes to these conditions that may have occurred 24 to 48 hours prior to, and during the course of sampling.

2. Sampling personnel will avoid activities immediately before and during the sampling that may contaminate the sample (e.g., using markers, fueling vehicles, etc.). If possible, all windows and doors of the facility will be closed during sampling and for 24 hours prior to sampling.
3. Place the sample canister within approximately 10 feet of its respective soil vapor sampling location. Position sample intake tubing in the breathing zone (i.e., three to five feet above the ground level) using Teflon (lined) Tubing with silicon tubing at connections and wood stake or stainless-steel extensions.
4. Collect and record photoionization detector reading in sample area.
5. Record inventory of vapor forming chemicals and site activities near the sampling location.
6. Record SUMMA canister serial number and flow controller number on the sampling log.
7. Remove the cap from the SUMMA canister. Attach flow controller with inline particulate filter and vacuum gauge to the SUMMA canister with wrench.
8. Open the SUMMA canister valve to initiate sample collection. Record on the time sampling began and the canister pressure. Pre-sampling vacuum in the canister should be between -30 inches of Mercury (in Hg) and -28 in Hg. In the event a canister is not within this initial range, it will be rejected, and a new canister will be similarly checked.
9. The SUMMA canister should be checked periodically at a minimum during the sampling process for the first 2 hours and the last 2 hours of the sampling window, and progress will be noted on the sampling log. Document any changes in sampling location adjacent site activities.
10. Stop collecting the sample when the canister gauge reaches approximately -5 in Hg (leaving some vacuum in the canister provides a way to verify if the canister leaks before it reaches the laboratory) or when the desired sample time has elapsed, whichever is soonest.
11. Record final vacuum on the vapor sampling log. Stop sample collection by closing the SUMMA canister valve.
12. Collect images of each canister, sample port, and the surrounding area before and after sampling.

13. Samples will be collected using the following sample identification convention:
    a. Sample ID # = IA-XY-yyyymmdd-01, "X" represents the numerical building identifier. "Y" represents the alphabetical sample identifier.
    b. One blind duplicate sample will be collected for every 10 samples for QA/QC purposes. Sample ID # = IA-DUP-yyyymmdd-01.
14. Record the following on the chain-of-custody form:
    a. Sample identification
    b. Numbers for each canister and flow controller
    c. Start and end times for each canister's sample collection period
    d. Initial and final canister pressures on the vacuum gauge
15. Using information from step 1, determine outdoor location that is upwind of building 1 and 2 for placement for the ambient air sample. Follow steps 2 through 12, and 14 for ambient sample. Sample ID # = AM -yyyymmdd-01
16. Deliver the sample canisters to the laboratory via commercial delivery service. If the pressure reading of a canister is "zero" when logged in by the laboratory, the sample will not be analysed.

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STANDARD OPERATING PROCEDURES FOR SUB-SLAB SOIL GAS SAMPLING

1. OVERVIEW

This Standard Operating Procedures (SOP) document has been specifically designed for the Vapor Intrusion Evaluation Phase II to be conducted at the Univar Solutions USA, LLC. (Eugene) site in Eugene, Oregon. This SOP outlines sub-slab soil gas sampling and its associated tasks.

Sub-slab soil gas sampling involves the collection of an air sample from below a building's concrete slab. Samples are collected in an evacuated 1-liter SUMMA canister, which is then sent to a laboratory and Samples will be analyzed for site chemicals of concern* by United States Environmental Protection Agency Method TO-15. Sub-air sampling consists of two sub-tasks:

- 1a: Shut-in Test
- 1b: Sub-slab Sample Collection

2. EQUIPMENT NEEDED

The following presents the equipment required to conduct sub-slab air sampling at the site:

- Field book, digital field forms, and site figures
- 1-Liter SUMMA Canister
- Lab provided 200 milliliter per minute flow controller
- Teflon (lined) and silicon tubing†
- 1- and 3-way valve fittings†
- Syringe†

2.1 TASK 1A: SHUT-IN TEST

A shut-in test will be completed on the sampling train just prior to sample collection. A shut-in test is designed to help validate the integrity of a sample train by identifying potential leaks that would cause a dilution or contamination during sampling. If a leak

* 1,1,1-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, cis-1,2-Dichloroethene, Methylene chloride, Tetrachloroethene, Trichloroethene, Vinyl chloride, Benzene, Ethylbenzene, m,p-Xylenes, o-Xylene, and Toluene
† Supplies acquired from an environmental sampling supply company.

in the sampling train is detected, all connections will be reexamined, and the test will be conducted again.

The procedure for conducting the shut-in test:

1. Using Teflon (lined) Tubing with silicon tubing at connections, assemble the entire sampling train including the laboratory provided flow controller and SUMMA canister.
2. Close valve at bottom of sampling train (near Vapor Pin). Open valve to the gauge, flow controller, and vacuum line.
3. Using a syringe, apply the vacuum on the sample train.
4. Observe the vacuum gauge for at least one minute.
    a. If the sample train is properly sealed, the vacuum will remain stable. If stable, sub-slab sample collection can continue.
    b. If the sample train is not properly sealed, the sample train will lose vacuum. If vacuum is lost, reexamine sample train and tighten any loose fitting. Rerun the shut-in test until vacuum is not lost.

2.2 TASK 1B: SUB-SLAB SAMPLE COLLECTION

1. Record the following information on an EQuIS form prior to initiating sampling:
    a. Weather conditions
    b. Temperature
    c. Wind speed and direction
    d. Approximate indoor temperature
    e. Relative humidity
    f. Barometric pressure
2. Record any substantial changes to these conditions that may have occurred 24 to 48 hours prior to, and during, the course of sampling. Check United States Environmental Protection Agency guidance for sampling during precipitation events.
3. Record SUMMA canister serial number and flow controller number on the sampling log.
4. Open the valve to the Vapor Pin and, using the laboratory provided syringe, purge 3 volumes of air from the sub-slab air point and sampling line into a Tedlar bag. Calculate three-times the volume of the inside of the sample tubing using the following calculation:

$$Vol = 49.17 * L * \pi r^2$$

Where: *Vol* = Purge Volume
L = Tubing Length in Inches
r = Tubing Radius in Inches
16.39 = constant includes 3x multiplier, and unit conversion (in^3 to mL)

5. Once purged, close the valves to the gauge, flow controller, and vacuum line.
6. Open the SUMMA canister valve to initiate sample collection. Record on the time sampling began and the canister pressure. Check all SUMMA canisters for correct vacuum. Pre-sampling vacuum in the canister should be between -30 inches of mercury (in. Hg) and -28 in. Hg. In the event a canister is not within this initial range, it will be rejected and a new canister will be similarly checked.
7. Stop collecting the sample when the canister vacuum reaches approximately -5 in. Hg (leaving some vacuum in the canister provides a way to verify if the canister leaks before it reaches the laboratory) or when the desired sample time has elapsed, whichever is soonest.
8. Record final vacuum and time. Stop sample collection by closing the SUMMA canister valve. Disconnect all sample tubing and replace Vapor Pin Flushmount.
9. Samples will be collected using the sample identification convention required on the EQuIS form. The following will be collected during sampling:
    a. One blind duplicate sample will be collected for every 10 samples for QA/QC purposes.
    b. Images of each canister, sample port, and the surrounding area before and after sampling.
10. Record the following on the chain-of-custody form:
    a. Sample identification
        i. For standard samples: Sample ID = SVP-XY-yyyymmdd, “X” represents the numerical building identifier. “Y” represents the alphabetical sample identifier.
        ii. For blind duplicate samples: Sample ID = SVP-DUP-yyyymmdd
    b. Numbers for each canister and flow controller
    c. Start and end times for each canister’s sample collection period
    d. Initial and final canister pressures on the vacuum gauge
11. Deliver the sample canisters to the laboratory via commercial delivery service. If the pressure reading of a canister is “zero” when logged in by the laboratory, the sample will not be analysed.

Standard Operating Procedure

Drilling Guide & Secure Cover

Scope & Purpose

Scope

This standard operating procedure (SOP) describes the methodology to use the Vapor Pin® Sampling Device Drilling Guide and Secure Cover to install and secure a Vapor Pin® Sampling Device in a flush mount configuration.

Purpose

The purpose of this SOP is to detail the methodology for installing a Vapor Pin® Sampling Device and Secure Cover in a flush mount configuration. The flush mount configuration reduces the risk of damage to the Vapor Pin® Sampling Device by foot and vehicular traffic, keeps dust and debris from falling into the flush mount hole, and reduces the opportunity for tampering.

Equipment Needed

- Vapor Pin® Sampling Device Secure Cover (Figure 1)
- Vapor Pin® Sampling Device Drilling Guide (Figure 2)
- Rotary Hammer Drill
  - ⅝-Inch (16mm) diameter hammer bit
  - 1½-Inch (38mm) diameter hammer bit for flush mount applications
- Assembled Vapor Pin® Sampling Device
- #14 Spanner Wrench
- Wet/Dry vacuum with HEPA filter (optional)
- Personal Protective Equipment (PPE)

Figure 1

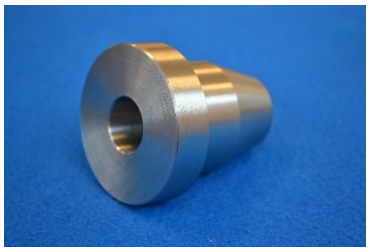

Figure 2

Installation Procedure

1. Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.
2. Set up wet/dry vacuum to collect drill cuttings.
3. While wearing PPE, drill a 1½-inch (38mm) diameter hole into the concrete slab to a depth of approximately 1¾-inches (45mm). Pre-marking the desired depth on the drill bit with tape will assist in this process.
4. Remove cuttings from the hole and place the Drilling Guide in the hole with the conical end down (Figure 3). The hole is sufficiently deep if the flange of the Drilling Guide lies flush with the surface of the slab. Deepen the hole as necessary but avoid drilling more than 2 inches (50.8mm) into the slab, as the threads on the Secure Cover may not engage properly with the threads on the Vapor Pin® Sampling Device.
5. When the 1½-inch (38mm) hole is drilled to the proper depth, replace the drill bit with a ⅝-inch (16mm) bit, insert the bit through the Drilling Guide (Figure 4), and drill through the slab. The Drilling Guide will help to center the hole for the Vapor Pin® Sampling Device and keep the hole perpendicular to the slab.
6. Remove the bit and drilling guide, clean the hole, and install the Vapor Pin® Sampling Device in accordance with the SOP “Installation and Extraction of the Vapor Pin® Sampling Device.”
7. Screw the Secure Cover onto the Vapor Pin® Sampling Device and tighten using a #14 Spanner Wrench by rotating it clockwise (Figure 5). Rotate the cover counterclockwise to remove it for subsequent access.

8. For flush mount installations, cover the Vapor Pin® with a flush mount cover, using either the plastic cover or the optional Stainless Steel Secure Cover (Figure 4).
9. Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.


Figure 3


Figure 4


Figure 5

Limitations

On slabs less than 3 inches thick, it may be difficult to obtain a good seal in a flush mount configuration with Vapor Pin® Sampling Device. But a perfect alternative for that would be our Mini Vapor Pin®!