MEMORANDUM

To:	Erin McDonnell	From:	Steven Vandecoevering, E.I.T. (Washington) Mike F. Coenen, P.E.
Company:	Oregon Department of Environmental Quality, Northwest Region Portland Office	Date:	January 17, 2023
Address:	700 NE Multnomah Street, Suite 600 Portland, OR 97232		

cc:	Tanya Ange, Washington County Stephen Cruise, Washington County Stephen Roberts, Washington County Cortney Duke-Driessen, Washington County Sheila Giambrone, Washington County Larry Burke, Davis Wright Tremaine LLP Laura Kerr, Stoel Rives, LLP Andrew Jones, Pacific Realty Associates, LP John Wiitala, Pacific Realty Associates, LP Jeff Oswald, Pacific Realty Associates, LP Ken Leahy, Ken Leahy Construction, Inc. David Weymann, ERM Group, Inc. Laura C. Maffei, Cable Huston LLP Marisa Pearson, Allianz Reinsurance America, Inc.

Project No.:	WashCoLUT-3-05-02
RE:	Former Durham Pit Landfill – North ECSI File No. 3870 2022 Annual Methane Monitoring Report

This memorandum summarizes the methane monitoring activities performed at the Former Durham Pit Landfill – North (subject property) in 2022. Methane monitoring activities have been performed at the subject property since 2005. Methane monitoring was conducted in accordance with the Oregon Department of Environmental Quality (DEQ)-approved Methane Monitoring and Contingency Plan (MMCP) dated June 24, 2011, and the DEQ-approved Addendum 1, MMCP (MMCP Addendum), dated May 28, 2021. A summary of the annual monitoring conducted in 2022 is provided below.

SUMMARY OF ACTIVITIES DURING 2022
FORMER DURHAM PIT LANDFILL – NORTH
TIGARD, OREGON

GENERAL SUMMARY

Annual monitoring was performed in February 2022. Methane was detected in monitoring wells at concentrations and pressures consistent with previous monitoring events during annual monitoring activities. Purge testing of methane monitoring wells was performed during the 2022 annual monitoring event to identify wells that exhibited restricted flow and could not achieve the target purge volume of two well casing volumes. The water level in well MMW-7i suggested restricted air flow. Methane was not detected in exterior confined spaces during this reporting period.

The vicinity map is shown on Figure 1. The site plan is shown on Figure 2. Methane monitoring results are summarized in Tables 1 and 2, well sounding data from select methane monitoring wells are summarized in Table 3, and results of the well purge analysis are summarized in Table 4. Details of the 2022 methane monitoring activities are discussed in the following sections.

MONITORING WELLS AND PROBES

Well methane concentration and pressure action level exceedances were not observed during this reporting period. Methane was detected in monitoring wells at concentrations and pressures consistent with previous monitoring events during annual monitoring activities. During the monitoring event, NV5 recorded the temperature, barometric pressure, static pressure, percent methane, percent carbon dioxide, percent oxygen, and percent balance gas concentrations at each monitoring point. A GAST model 22D1180 vacuum pump was used to purge wells before gas concentrations were recorded using a calibrated Landtec GEM 2000 methane meter (GEM). Purge testing of methane monitoring wells was performed during the 2022 annual monitoring event to identify wells with restricted flow. The water level measured in well MMW-7i indicated that the well screen was fully submerged, suggesting restricted soil gas flow between well casings and surrounding subsurface materials. Purge testing results suggest that the remaining methane monitoring wells were purged of approximately two well volumes before methane concentration readings were measured and recorded.

Monitoring results for wells are summarized in Table 1. Well sounding results are summarized in Table 3 and results of the well purge analysis are summarized in Table 4.

EXTERIOR CONFINED SPACE MONITORING RESULTS

Methane was not detected in exterior confined spaces during this reporting period. NV5 performed annual monitoring of exterior confined spaces in February 2022. NV5 personnel used a calibrated GEM to screen for methane at seven exterior confined spaces near Buildings J, L, N, P, and Q at the PacTrust Business Center. Exterior confined space monitoring results are summarized in Table 2.

PROJECT DOCUMENTATION (2022)	
NV5 Submitted Reports	*Memorandum; PacTrust Business Center (Former Durham Pit Landfill, North); ECSI File No. 3870; 2021 Annual Methane Monitoring Report,* dated January 20, 2022
	Memorandum; Notification of Ventilation Enhancement and Discontinuation of Interior Confined Space Monitoring; PacTrust Business Center (Former Durham Pit Landfill, North); Tigard, Oregon; ECSI File No. 3870, dated January 20, 2022
DEQ Correspondence Received	DEQ correspondence regarding the subject property was not received during this reporting period.
FUTURE ACTIVITIES	
In accordance with the DEQ-approved MMCP Addendum dated May 28, 2021, NV5 will continue annual monitoring of methane monitoring wells MMW-3s, MMW-5s, MMW-5i, MMW-6s, MMW-6i, MMW-7s, MMW-7i, and MMW-9s and exterior confined spaces E-J-4, E-L-1, E-L-5, E-N-3, E-P-3, E-P-4, and E-Q-4 during the first quarter of 2023.	

We appreciate the opportunity to be of service to you. Please contact us if you have questions regarding this submittal.

SRV:MFC:sn
Attachments
One copy submitted
Document ID: WashCoLUT-3-05-02-011723-envm

FIGURES

Printed By: mmiller | Print Date: 1/3/2023 10:44:42 AM
File Name: J:\S-Z\WashCoLUT\WashCoLUT-3\WashCoLUT-3-05\WashCoLUT-3-05-02_Annual_Reporting\Figures\CAD\DECEMBER 2022\WashCoLUT-3-05-02-VM01.dwg | Layout: FIGURE 1

LEGEND:

SUBJECT PROPERTY BOUNDARY

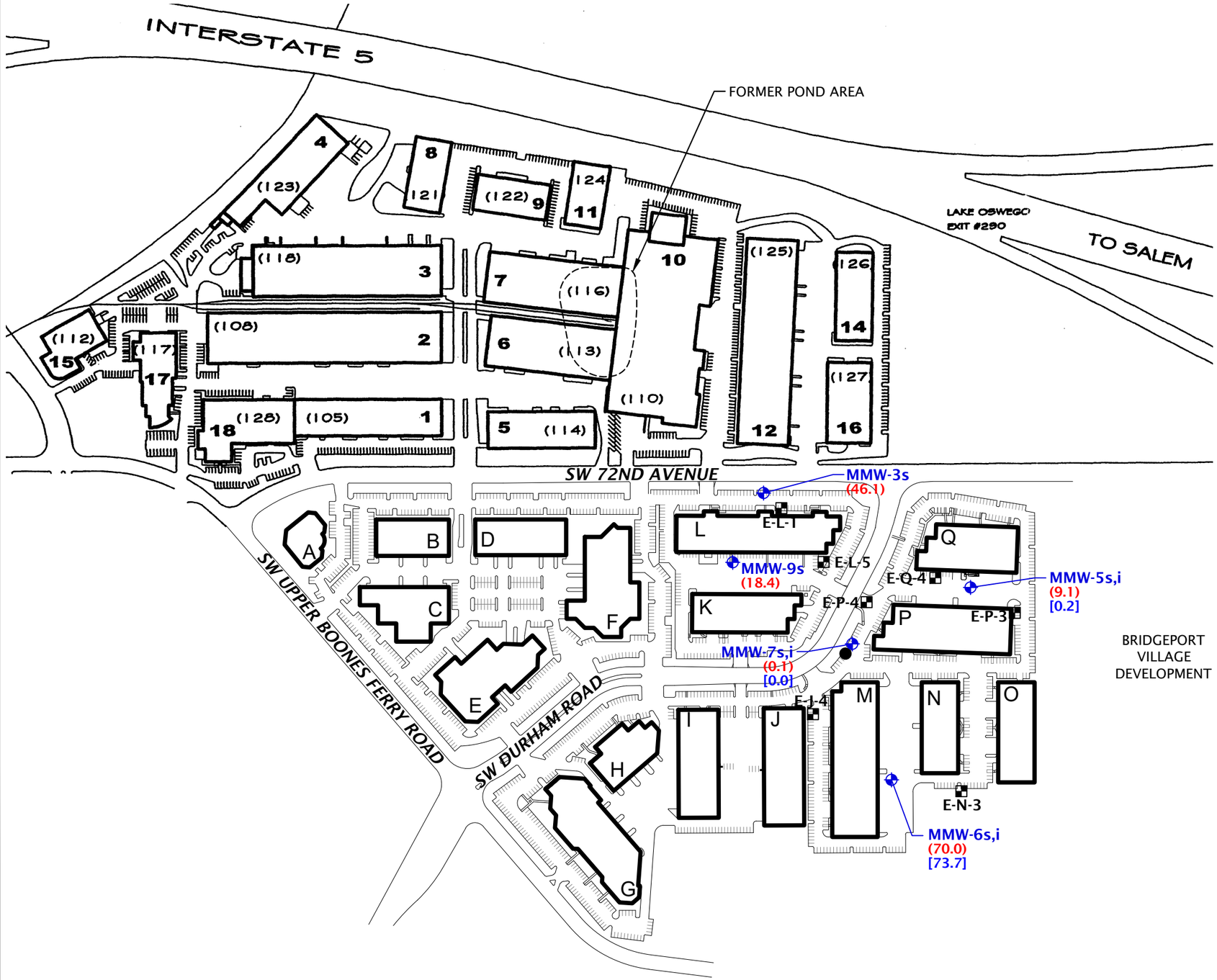
N

0 250 500

(SCALE IN FEET)

SITE PLAN BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO® JANUARY 3, 2020

NV5	WASHCOLUT-3-05-02	VICINITY MAP
	JANUARY 2023	FORMER DURHAM PIT LANDFILL - NORTH TIGARD, OR
		FIGURE 1



LEGEND:

MMW-5s,i	NESTED METHANE MONITORING WELL
(9.1)	2022 METHANE CONCENTRATION - SHALLOW (pbv)
[0.2]	2022 METHANE CONCENTRATION - INTERMEDIATE (pbv)
E-L-1	EXTERIOR CONFINED SPACE MONITORING LOCATION
pbv	PERCENT BY VOLUME

N

0 300 600

(SCALE IN FEET)

SITE PLAN BASED ON DRAWING AND IMAGE OBTAINED FROM PACTRUST FEBRUARY 2007

SITE PLAN

FORMER DURHAM PIT LANDFILL - NORTH
TIGARD, OR

FIGURE 2

WASHCOLUT-3-05-02

JANUARY 2023

NV5

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TABLES

TABLE 1
Methane Monitoring Data – 2022
Methane Monitoring Wells
PacTrust Business Center
Tigard, Oregon

Methane Monitoring Well	Date	Time	Temperature[1] (degrees Celsius)	Barometric Pressure[2] (mbars)	Static Pressure[3] (inches water)	Methane (pbv)	Methane Action Level (pbv)	Carbon Dioxide (pbv)	Oxygen (pbv)	Balance (pbv)	Purge Flags
Perimeter Methane Monitoring Well											
MMW-3s	02/22/22	12:56	2.8	1,023	-0.24	46.1	85.7	16.5	0.0	37.4	--
Shallow and Intermediate Nested Methane Monitoring Wells											
MMW-5s	02/22/22	11:41	2.2	1,023	-0.33	9.1	23.0	11.1	0.0	79.8	--
MMW-5i	02/22/22	11:43	2.2	1,023	1.75	0.2	67.4	0.2	20.7	78.9	--
MMW-6s	02/22/22	12:12	2.2	1,023	-0.75	70.0	90.4	29.3	0.0	0.7	--
MMW-6i	02/22/22	12:05	2.2	1,023	0.12	73.7	92.9	25.8	0.0	0.5	--
MMW-7s	02/22/22	12:32	2.8	1,023	0.05	0.1	88.6	0.1	21.0	78.8	--
MMW-7i	02/22/22	12:27	2.2	1,023	-0.86	0.0	91.4	0.1	21.1	78.8	SUB
MMW-9s	02/22/22	12:46	2.8	1,023	0.09	18.4	24.6	6.3	0.0	75.3	--

Notes:
1. Temperature values obtained from Weather Underground KORTUALA2 weather station history.
2. Barometric pressure values obtained from Weather Underground KORTUALA2 weather station history.
3. Based on the May 2021 MMCP Addendum, the static pressure action level for DEQ notification is (a) 2 inches of water or greater if the well screen interval is less than 50 percent submerged or (b) 1 inch of water in wells with a methane concentration above 30 pbv if the well screen is not fully submerged.

mbars: millibars
pbv: percent by volume
--: no purge flags

Purge Flags:
SUB: Water level measurements indicated that the well screen was fully submerged. If reported, the detected gas concentrations may not be representative of subsurface conditions.

TABLE 2
Methane Monitoring Data – 2022
Exterior Confined Spaces
PacTrust Business Center
Tigard, Oregon

Confined Space	Description	Date	Time	Temperature[1] (degrees Celsius)	Barometric Pressure[2] (mbars)	Methane[3] (pbv)	Carbon Dioxide (pbv)	Oxygen (pbv)	Balance (pbv)
E-J-4	Sewer cleanout, southeast corner	02/22/22	13:51	2.8	1,023	0.0	0.0	21.2	78.8
E-L-1	Storm drain manhole	02/22/22	13:58	2.8	1,023	0.0	0.1	21.3	78.6
E-L-5	Water meter box, southwest corner of building	02/22/22	13:55	2.8	1,023	0.0	0.2	21.2	78.6
E-N-3	Sprinkler control vault	02/22/22	13:44	2.8	1,023	0.0	0.0	21.1	78.9
E-P-3	Sprinkler control vault	02/22/22	13:40	2.8	1,023	0.0	0.2	21.1	78.7
E-P-4	GTE manhole, north side of building	02/22/22	13:34	2.8	1,023	0.0	0.2	21.1	78.7
E-Q-4	Sewer cleanout, west side of building	02/22/22	13:37	2.8	1,023	0.0	0.1	21.2	78.7

Notes:
1. Temperature values obtained from Weather Underground KORTUALA2 weather station history.
2. Barometric pressure values obtained from Weather Underground KORTUALA2 weather station history.
3. Based on the June 2011 MMCP, the exterior confined space methane action level to assess nearby building spaces and notify the property manager, Washington County, and DEQ is 1.25 percent.

mbars: millibars
pbv: percent by volume

TABLE 3
Well Sounding Data – 2022
Methane Monitoring Wells
PacTrust Business Center
Tigard, Oregon

Methane Monitoring Well	Date	Time	Depth to Water (feet BGS)	Top of Screen (feet BGS)	Bottom of Screen (feet BGS)	Well Screen Submergence (percent)
MMW-3s	02/22/22	12:56	17.53	5.0	20.0	16
MMW-5i	02/22/22	11:43	38.16	30.0	50.0	59
MMW-5s	02/22/22	11:41	14.50	5.0	25.0	53
MMW-6i	02/22/22	12:05	34.58	30.0	45.0	69
MMW-6s	02/22/22	12:12	24.83	5.0	25.0	1
MMW-7i	02/22/22	12:27	24.03	25.0	45.0	100
MMW-7s	02/22/22	12:32	19.29	5.0	20.0	5
MMW-9s	02/22/22	12:46	8.13	5.0	20.0	79

Notes:
BGS: below ground surface

TABLE 4
Purge Test – Annual Monitoring Event 2022
Methane Monitoring Wells
PacTrust Business Center
Tigard, Oregon

Methane Monitoring Well	Date	Time	Well Depth (feet BGS)	Well Screen Submergence (percent)	Methane (pbv)	Purge Vacuum ("Hg)	Well Volume (ft^3)	Purge Time (s)	Purge Flowrate[1] (cfm)	Well Volumes Purged[2]	Purge Flags
MMW-3s	02/22/22	12:56	20	16	46.1	3.0	0.109	12	1.09	2.0	--
MMW-5i	02/22/22	11:43	50	59	0.2	7.0	0.273	41	0.79	2.0	--
MMW-5s	02/22/22	11:41	25	53	9.1	2.0	0.136	14	1.17	2.0	--
MMW-6i	02/22/22	12:05	45	69	73.7	3.0	0.245	27	1.09	2.0	--
MMW-6s	02/22/22	12:12	25	1	70.0	2.0	0.136	14	1.17	2.0	--
MMW-7i	02/22/22	12:27	45	100	0.0	9.0	0.245	44	0.66	2.0	SUB
MMW-7s	02/22/22	12:32	20	5	0.1	4.0	0.109	13	1.01	2.0	--
MMW-9s	02/22/22	12:46	20	79	18.4	3.0	0.109	12	1.09	2.0	--

Notes:
1. Estimated based on purge vacuum and pump curve provided by GAST.
2. Estimated based on the purge flowrate, purge time, and well volume.
BGS: below ground surface
cfm: cubic feet per minute
ft^3: cubic feet
"Hg: inches of mercury
pbv: percent by volume
s: second(s)
--: no purge flags

Purge Flags:
SUB: Water level measurements indicated that the well screen was fully submerged. If reported, the detected gas concentrations may not be representative of subsurface conditions.