TECHNICAL MEMORANDUM E-12

SEABOARD GROUP II AND CITY OF HIGH POINT, NC

TO: North Carolina Department of Environmental Quality

ATTN: Eric Aufderhaar, Hazardous Waste Section

Jackie Drummond, Solid Waste Section

FROM: Seaboard Group II and City of High Point

SUBJECT: Technical Memorandum No. E-12 – PFAS Monitoring Workplan

DATE: September 11, 2023

In response to the NCDEQ's August 10, 2023 request to conduct water quality monitoring for PFAS compounds at the Site, the Seaboard Group II and the City of High Point (Parties) have prepared this Workplan in accordance with the Remedial Action Settlement Agreement (RASA), Exhibit A - Statement of Work, Section B. This Workplan represents Technical Memorandum No. E-12 (TM-12) developed under the amendment provisions of the RASA.

The NC Solid Waste Section has issued two Memoranda, dated March 13 and July 17, 2023, regarding selection of sample locations, sample collection and analytical methodology, monitoring frequency, and data reporting. These two documents, in conjunction with the virtual meeting between the Parties and NCDEQ on August 2, 2023, provide the basis for development of this Workplan.

The objective of this Workplan is to analyze groundwater and surface water at the former Seaboard Chemical/Riverdale Drive Landfill Site (Site) for the presence of the 40 PFAS compounds identified by EPA Draft Method 1633. The groundwater monitoring wells and surface water sample locations included in this Workplan were selected to determine if PFAS compounds are present in groundwater and/or surface water at the Site.

The focus of this Workplan is to analyze groundwater quality at select monitoring locations indicative of Site conditions for the presence of PFAS compounds. The following criteria were used to select the proposed water quality monitoring locations:

- An upgradient groundwater monitoring location which has not been impacted by activities at the Site.
- Groundwater monitoring locations which are representative of the water quality hydraulically downgradient of the Site.
- Monitoring well locations which have shown the presence of Site contaminants during water quality monitoring events conducted over the past 25 years.
- Surface water monitoring locations near the downgradient property boundary.

In line with these selection criteria, the following water quality monitoring locations are proposed for evaluation of PFAS compounds by EPA Draft Method 1633:

Upgradient Groundwater Monitoring

The existing upgradient groundwater monitoring well MW-1, screened from 47'-57', will provide an upgradient water quality location which has not been affected by activities at the Site. The historical water quality data for this well is provided on Table 1.

Northern Intermittent Stream (NIS) Area

The NIS area consists of the older portion of the former Landfill and any discharges from the former Burn Pit area. This area of the closed Landfill is currently used for Zones 1 – 11 of the phytoremediation treatment system. One groundwater monitoring well and one surface water location are proposed to analyze for the presence/absence of PFAS compounds:

- Monitoring well MW-12A, screened from 5' – 20', is proposed to analyze shallow groundwater immediately downgradient of the closed Landfill area and phytoremediation zones 1 - 11. This is the shallow well in a three well nest and has historically shown the highest contaminant concentrations at this location (Table 1).
- Surface water monitoring station SW-2 is proposed to analyze overland flow from Phytoremediation Zones 1 - 11 and topographically upgradient properties.

Southern Intermittent Stream (SIS) Area

The SIS drainage area has been identified as the primary contaminant migration pathway. The presence of the landfill, Soil Residue Mound, and the operational areas of the former Seaboard Chemical facility serve as source areas for the contaminants observed in the SIS drainage valley. Portions of phytoremediation zones 2, 3, 4, 15, and 16 also drain to the SIS valley. The majority of the groundwater extraction activities occur in the SIS drainage valley as noted on Figure 1. Two groundwater monitoring wells and one surface water location are proposed to analyze for the presence/absence of PFAS compounds:

- Monitoring well MW-3C (screened from 47' – 57') is proposed to analyze the shallow bedrock zone at the downgradient extent of the SIS drainage valley. The historical contaminant concentrations in MW-3C well pair has decreased over the past five years due to the operation of the extraction system at PW-DR1.
- Monitoring well PW-6I (screened from 90' – 100') is proposed to analyze groundwater from the SIS drainage valley. This well represents the approximate eastern extent of the SIS drainage valley contaminant plume. The historical contaminant concentration in this well has remained stable over the past five years.
- Surface water monitoring station SW-4 is proposed to analyze the shallow groundwater discharge in the SIS drainage valley which outlets into the SIS Basin.

Eastern Boundary of Former Landfill Area

The eastern extent of the former Landfill adjacent to Interstate 85 is downgradient of Zones 12 – 16 of the phytoremediation treatment system. The monitoring wells on the eastern border of the former Landfill are located along a drainage depression that likely represents a preferential groundwater flow path. To analyze for the presence/absence of PFAS compounds in this area, the sampling of one groundwater monitoring well is proposed:

- Groundwater Monitoring well MW-10, screened from 8' – 28', will analyze water quality in the shallow groundwater aquifer near the outlet of a wet-weather drainage feature. The contaminant concentrations in this well have been minor in this well over the past five years.

Groundwater and Surface Water Collection and Reporting

The groundwater and surface water evaluation for PFAS compounds will occur as a standalone monitoring event to reduce the potential for cross-contamination during sample collection. The samples will be collected using low-flow techniques to reduce turbidity in the samples. PFAS-specific sample collection precautions will be followed and the sample team will adhere to guidance provided by the Interstate Technology and Regulatory Council (https://pfas-1.itrcweb.org). The following general modifications to the low-flow sampling procedure are planned to limit the potential for cross-contamination during collection of the PFAS samples:

- The tubing used for sample collection will consist of silicone tubing for the peristaltic pump head and HDPE for the downhole tubing. New tubing will be used for each sample location.
- Powder-free nitrile gloves will be worn by all sampling personnel which will be changed out between each sample location.
- The sample collection team will consist of two technicians; one person will operate the pump and tubing while the second person will only handle the sample containers.
- No Teflon™ products, insect repellant, or sunscreen will be used by the sample collection team during the monitoring event.

A trip blank, two equipment blanks (one following initial sample collection and the second following final sample collection) and one duplicate sample will be collected as part of this effort.

The surface water samples for PFAS analysis (SW-2 and SW-4) will be collected as grab samples directly in the laboratory-supplied containers. Sampling personnel will wear new disposable powder-free nitrile gloves for each sample location.

All collected samples will be sent to a laboratory accredited to perform draft Method 1633 on aqueous solutions.

The results of the sampling contained in this Work Plan will be tabulated and provided to NCDEQ as discussed during the August 2, 2023 virtual meeting regarding this effort.

Please contact Craig Coslett (610/435-1151, Extension 8001) or Gary Babb (919/605-4719) if there are any questions or comments regarding this Technical Memorandum.

Respectfully,

Seaboard Group II and City of High Point

Mr. Craig Coslett, Project Coordinator
de maximis, inc.
1550 Pond Road, Suite 120
Allentown, PA 18104
ccoslett@demaximis.com

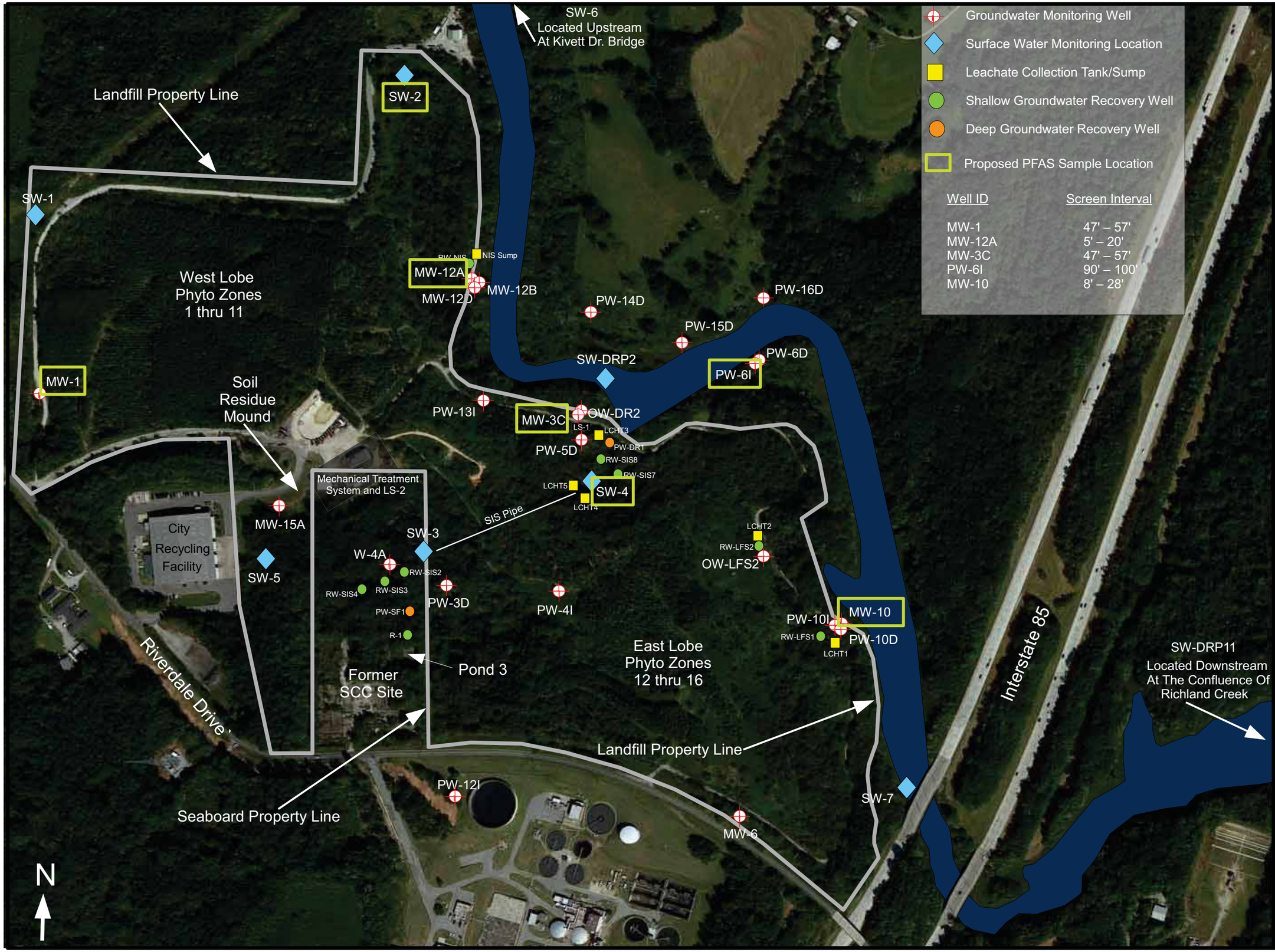
Gary D. Babb, P.G.
Babb & Associates, P.A.

gdbabb@gmail.com

NORTH CAROLINA LICENSED SEAL 488 GEOLOGIST GARY D. BABB

Attachments

Figure 1 – Proposed PFAS Sample Locations
Table 1 – Historical VOC Analytical Summary



Seaboard Group II
and
The City of High Point

Date: August 18, 2023

Rev. By: G. Babb

Prep. By: G. Babb

Scale: 1" = 360'

Figure 1 – Proposed PFAS Sample Locations

Former Seaboard/Riverdale Drive Landfill Site
5899 Riverdale Drive
Jamestown, North Carolina

Figure 1

TABLE 1
GROUND WATER ANALYTICAL RESULTS - VOCs and 1,4-Dioxane
SEABOARD CHEMICAL/RIVERDALE DRIVE LANDFILL SITE

Sample I.D.	Sample Date	VOLATILE ORGANIC COMPOUNDS (ug/L)																							
		Total VOCs and 1,4-Dioxane	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	1,2-Dichloropropane	1,4-Dioxane	Acetone	Benzene	Carbon Tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	Ethylbenzene	Methylene Chloride	Tetrachloroethene	Toluene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Xylenes (total)	Other VOCs
NC 2L Standard		**NE**	**200**	**0.6**	**6**	**350**	**0.4**	**0.6**	**3**	**6000**	**1**	**0.3**	**50**	**3,000**	**70**	**3**	**70**	**600**	**5**	**0.7**	**600**	**100**	**3**	**0.03**	**500**	**-**
MW-1																									
	1/28/1997	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND
	3/5/2009	17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	15.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	ND
	3/31/2010	0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	ND	ND
	11/2/2011	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<3.0	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	11/20/2012	54	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**54.4**	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND
	1/21/2013	ND							<2.0																	
	12/9/2013	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	ND
	12/8/2014	ND	<1	<1	<1	<1	<1	<1	<2	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	ND
	10/26/2015	ND	<1	<1	<1	<1	<1	<1	<2	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	ND
	11/14/2016	ND	<1	<1	<1	<1	<1	<1	<2	<20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	ND
	10/11/2017	ND	<1	<1	<1	<1	<1	<1	<2	<20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	ND
	11/1/2018	ND	<1	<1	<1	<1	<1	<1	<2	<20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	<5
	9/10/2019	ND	<1	<1	<1	<1	<1	<1	<2	<20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	ND
	10/13/2020	ND	<1	<1	<1	<1	<1	<1	<2	<20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	ND
	10/26/2021	ND	<1	<1	<1	<1	<1	<1	<2	<20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	ND
	10/12/2022	ND	<1	<1	<1	<1	<1	<1	<2	<20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.3	ND
MW-3C																										
	8/6/1996	273	11	ND	**150**	31	**5.0**	ND		ND	**6**		37	ND	ND		ND	ND	2 J	**4J**	ND	ND	**14**	**13**	ND	ND
	1/28/1997	197	6	ND	**92**	21	**3.0**	ND	ND	ND	ND		41	14	ND		NA	ND	1 J	ND	ND	ND	**9**	**10.0**	ND	ND
	9/26/2000	138	<5	<5	**41**	7.2	<5	<5	<100	NA	<5		32	<10	<5		21	<5	<5	<5	37	<5	<5	<10	<10	ND
	9/5/2001	178	<5	<5	**22.6**	<5	<5	<5	**117**	<10	<5		24.2	<10	<5		14.6	<5	<5	<5	<5	<5	<5	<10	<5	ND
	9/18/2002	152	<5	<5	**18.4**	<5	<5	<5	**94.6**	<10	<5		27.3	<10	<5		12	<5	<5	<5	<5	<5	<5	<10	<5	ND
	9/19/2003	103	<5	<5	<5	<5	<5	<5	**90**	<10	<5		13.4	<10	<5		<5	<5	<5	<5	<5	<5	<5	<10	<5	ND
	8/17/2004	132	<5	<5	**19.4**	<5	<5	<5	**71**	<10	<5		30.0	<10	<5		12.4	<5	<5	<5	<5	<5	<5	<10	<5	ND
	2/27/2009	589	<1.0	<1.0	**104**	20.3	**4.4**	<1.0	**160**	<5.0	**3.0**	<1.0	**151**	32.7	<1.0	<1.0	**70.1**	<1.0	<1.0	**1.9**	<1.0	<1.0	2.5	**39.4**	<2.0	ND
	3/30/2010	863	<1.0	<1.0	**161**	32.4	**6.31**	<1.0	**186**	<5.0	**3.92**	<1.0	**249**	45.7	<1.0	<1.0	**108**	<1.0	4.87	**1.71**	<1.0	<1.0	2.71	**61**	ND	ND
	11/1/2011	1,861	29.1	<0.5	**396**	144	**14**	<0.5	**80**	<0.5	**9.94**	<0.5	**459**	192	<0.5	<0.5	**364**	<0.5	<0.5	**3.09**	<0.5	1.15	**8.74**	**157**	<0.5	3.26
	11/20/2012	1,798	28.5	<0.5	**361**	106	<0.5	<0.5	**268**	<0.5	**8.73**	<0.5	**386**	150	<0.5	<0.5	**314**	<0.5	4.30	**3.83**	1.26	1.40	**8.36**	**146**	0.7	10.31
	12/11/2013	2,268	18.6	<5	**383**	107	**15**	<5	**549**	<50	**9**	<5	**559**	137	<5	<5	**318**	<5	<5	<5	<5	<5	<5	**173**	<5	ND
	12/11/2014	2,051	100	<1	**290**	170	<1	<1	**311**	<5.0	**12**	**17.0**	**330**	60	<1	<1	**620**	<1	<1	<1	<1	<1	**11**	**130**	<3	ND
	10/27/2015	1,262	66	<1	**210**	100	<1	<1	**308**	>50	**10**	<1	**350**	40	<1	<1	**410**	<1	<1	<1	<1	<1	9.4 J	**67**	<30	ND
	11/14/2016	872	67	<10	**94**	56	<10	<10	**190**	<10	5.4 J	**12.0**	**150**	<10	<10	<10	**270**	<10	<10	<10	<10	<10	**6.0**	**27**	<30	ND
	10/10/2017	402	15	<1	**57**	22	**1.8**	<1	**120**	<20	**2.2**	<1	49	6.2 J	<1	<1	**100**	<1	<1	0.81 J	<1	0.73 J	2.0	**31**	<3	1.70
	11/2/2018	414	6	<1	**54**	30	**1.9**	<1	**110**	<20	**3.2**	<1	**66**	6.3	<1	<1	**110**	<1	<1	0.62 J	<1	0.61 J	2.3	**22**	<3	2.60
	9/11/2019	288	<10	<10	**41**	17	<10	<10	**94**	<200	<10	<10	**50**	<10	<10	<10	**72**	<10	<10	<10	<10	<10	<10	**14**	<30	ND
	10/13/2020	246	1.7	<1	**38**	13	**1.5**	<1	**64**	<20	**1.6**	<1	**50**	5.4	<1	<1	46	<1	<1	<1	0.57 J	0.55 J	1.4	**23**	<2	ND
	10/26/2021	156	<1	<1	**37**	2	**1.4**	<1	**67**	<20	0.93 J	<1	36	2.8	<1	<1	9.8	<1	<1	<1	<1	0.53 J	<1	**21**	<2	ND
	10/17/2022	173	<1	<1	**28**	5	**1.3**	<1	**39**	<20	0.97 J	<1	64	<1	<1	<1	18.0	<1	<1	<1	<1	0.56 J	<1	**15**	<3	1.51

TABLE 1
GROUND WATER ANALYTICAL RESULTS - VOCs and 1,4-Dioxane
SEABOARD CHEMICAL/RIVERDALE DRIVE LANDFILL SITE

Sample I.D.	Sample Date	Total VOCs and 1,4-Dioxane	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	1,2-Dichloropropane	1,4-Dioxane	Acetone	Benzene	Carbon Tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	Ethylbenzene	Methylene Chloride	Tetrachloroethene	Toluene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Xylenes (total)	Other VOCs
NC 2L Standard		**NE**	**200**	**0.6**	**6**	**350**	**0.4**	**0.6**	**3**	**6000**	**1**	**0.3**	**50**	**3,000**	**70**	**3**	**70**	**600**	**5**	**0.7**	**600**	**100**	**3**	**0.03**	**500**	**-**
MW-10																										
	1/27/1997	126	ND	ND	6	ND	ND	ND	**120**	ND	**2 J**		ND	ND	ND			ND	ND	ND	ND	ND	1 J	ND	ND	ND
	7/14/1998	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	9/26/2000	258	<5	<5	**7.6**	<5	<5	<5	**250**	NA	<5		<5	<10	<5		<5	<5	<5	<5	<5	<5	<5	<10	<10	ND
	9/6/2001	335	<5	<5	<5	<5	<5	<5	**335**	<10	<5		<5	<10	<5		<5	<5	<5	<5	<5	<5	<5	<10	<5	ND
	9/19/2002	234	<5	<5	<5	<5	<5	<5	**234**	<10	<5		<5	<10	<5		<5	<5	<5	<5	<5	<5	<5	<10	<5	ND
	9/16/2003	221	<5	<5	<5	<5	<5	<5	**221**	<10	<5		<5	<10	<5		<5	<5	<5	<5	<5	<5	<5	<10	<5	ND
	8/19/2004	198	<5	<5	<5	<5	<5	<5	**198**	<10	<5		<5	<10	<5		<5	<5	<5	<5	<5	<5	<5	<10	<5	ND
	3/6/2009	176	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**162**	6.4	1.1	<1.0	4.1	<1.0	<1.0	<1.0	<1.0	<1.0	2.2	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	ND
	3/29/2010	184	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**166**	10.6	<1.0	<1.0	3.82	1.26	<1.0	<1.0	<1.0	<1.0	2.31	<1.0	<1.0	<1.0	<1.0	<1.0	ND	ND
	11/1/2011	56	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**47**	<0.5	<0.5	<0.5	3.99	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	6.45
	11/19/2012	148	<5	74	<5	<5	<5	<5	**74.4**	<50	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ND
	12/10/2013	33	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**28.1**	<5	<0.5	<0.5	2.27	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	2.7
	12/10/2014	137	<1	<1	<1	<1	<1	<1	**133**	<5	<1	<1	2.6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	1.2
	10/26/2015	104	<1	<1	<1	<1	<1	<1	**103**	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	1.1
	11/14/2016	130	<1	<1	<1	<1	<1	<1	**130**	<20	0.78 J	<1	2.8 J	<1	<1	<1	0.41 J	<1	<1	<1	<1	<1	<1	<1	<3	ND
	10/10/2017	150	<1	<1	<1	<1	<1	<1	**150**	<20	<1	<1	<1	1.8 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	ND
	10/31/2018	160	<1	<1	<1	<1	<1	<1	**160**	<20	<1	<1	0.93 J	1.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	ND
	9/10/2019	74	<1	<1	<1	<1	<1	<1	**72**	<20	<1	<1	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	ND
	10/12/2020	14	<1	<1	<1	<1	<1	<1	**14**	<20	<1	<1	0.46 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	ND
	10/26/2021	10	<1	<1	<1	<1	<1	<1	**10**	<20	<1	<1	0.46 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	ND
	10/14/2022	12	<1	<1	<1	<1	<1	<1	**12**	<20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	ND
MW-12A																										
	1/23/1997	11	2 J	ND	ND	3 J	ND	ND	ND	ND	**2 J**		ND	ND	ND			ND	ND	ND	2 J	ND	2 J	ND	ND	ND
	7/10/1998	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND			ND	ND	ND	ND	ND	ND	ND	ND	ND
	10/30/2000	ND	<5	<5	<5	<5	<5	<5	<100		<5		<5	<10	<5		<5	<5	<5	<5	<5	<5	<5	<10	<10	ND
	9/6/2001	12	<5	<5	<5	<5	<5	<5	<10	12.3	<5		<5	<10	<5		<5	<5	<5	<5	<5	<5	<5	<10	<5	ND
	9/20/2002	27	<5	<5	<5	<5	<5	<5	**11.7**	14.9	<5		<5	<10	<5		<5	<5	<5	<5	<5	<5	<5	<10	<5	ND
	9/16/2003	28	<5	<5	<5	<5	<5	<5	**11.9**	15.6	<5		<5	<10	<5		<5	<5	<5	<5	<5	<5	<5	<10	<5	ND
	8/18/2004	44	<5	<5	<5	<5	<5	<5	<10	43.7	<5		<5	<10	<5		<5	<5	<5	<5	<5	<5	<5	<10	<5	ND
	3/6/2009	40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	38.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	ND
	4/1/2010	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.50	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.09	<1.0	<1.0	<1.0	<1.0	<1.0	ND	ND
	11/2/2011	38	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**29.0**	<5	<0.5	<0.5	8.04	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.61
	11/19/2012	203	<5	<5	<5	<5	<5	<5	**203**	<50	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ND
	12/10/2013	210	<5	<5	<5	<5	<5	<5	**210**	<50	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	ND
	12/11/2014	226	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**210**	8.3	<1.0	<1.0	5.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3	1.7
	10/27/2015	213	<1	<1	<1	<1	<1	<1	**200**	<5	<1	<1	11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	2.2
	11/14/2016	207	<1	<1	<1	<1	<1	<1	**200**	19 J	<1	<1	5.9	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	1.5
	10/10/2017	273	<1	<1	<1	<1	<1	<1	**260**	<20	<1	<1	11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	1.7
	11/1/2018	93	<1	<1	<1	<1	<1	<1	**79**	<20	<1	<1	11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	2.9
	9/10/2019	189	<1	<1	<1	<1	<1	<1	**180**	16 J	<1	<1	6.2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	2.9
	10/13/2020	34	<1	<1	<1	<1	<1	<1	**31**	<20	<1	<1	1.0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	2.0
	10/26/2021	188	<1	<1	<1	<1	<1	<1	**180**	<20	<1	<1	5.8	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	1.7
	10/17/2022	157	<1	<1	<1	<1	<1	<1	**150**	<20	<1	<1	6.9	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	ND

TABLE 1
GROUND WATER ANALYTICAL RESULTS - VOCs and 1,4-Dioxane
SEABOARD CHEMICAL/RIVERDALE DRIVE LANDFILL SITE

Sample I.D.	Sample Date	Total VOCs and 1,4-Dioxane	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	1,2-Dichloropropane	1,4-Dioxane	Acetone	Benzene	Carbon Tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	Ethylbenzene	Methylene Chloride	Tetrachloroethene	Toluene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Xylenes (total)	Other VOCs
NC 2L Standard		**NE**	**200**	**0.6**	**6**	**350**	**0.4**	**0.6**	**3**	**6000**	**1**	**0.3**	**50**	**3,000**	**70**	**3**	**70**	**600**	**5**	**0.7**	**600**	**100**	**3**	**0.03**	**500**	**-**
PW-6I																										
	1/28/1997	33	ND	ND	**11**	ND	**1 J**	ND	ND	ND	ND		14	4 J	ND			ND	1 J	ND	ND	ND	2 J	ND	ND	ND
	7/14/1998	46	ND	ND	**10**	ND	ND	ND	ND	ND	ND		14	4 J	ND		5	ND	ND	**5**	ND	ND	**3 J**	ND	ND	5
	9/26/2000	29	<5	<5	**12**	<5	<5	<5	<100		<5		8.4	<10	<5		8.3	<5	<5	<5	<5	<5	<5	<10	<10	ND
	9/12/2001	28	<5	<5	**10.7**	<5	<5	<5	<10	<10	<5		7.2	<10	<5		9.9	<5	<5	<5	<5	<5	<5	<10	<5	ND
	9/19/2002	31	<5	<5	**12.2**	<5	<5	<5	<10	<10	<5		9.0	<10	<5		9.8	<5	<5	<5	<5	<5	<5	<10	<5	ND
	10/20/2003	47	<5	<5	**12.1**	<5	<5	<5	**11.6**	<10	<5		9.9	<10	<5		13	<5	<5	<5	<5	<5	<5	<10	<5	ND
	8/25/2004	42	<5	<5	**10.6**	<5	<5	<5	**11.7**	<10	<5		6.2	<10	<5		13.0	<5	<5	<5	<5	<5	<5	<10	<5	ND
	3/4/2009	8.2	<1.0	<1.0	**<1.0**	<1.0	<1.0	<1.0	<2.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.0	<1.0	2.4	<1.0	3.8	<1.0	<1.0	<1.0	<2.0	ND
	3/31/2010	143.1	<1.0	<1.0	**32**	1.63	**3.47**	<1.0	**22.5**	<5.0	<1.0	<1.0	35.7	10.3	<1.0	<1.0	**25.2**	<1.0	<1.0	1.56	<1.0	<1.0	2.81	7.88	ND	ND
	11/3/2011	damaged																								
	11/21/2012	damaged																								
	12/10/2013	damaged																								
new well	12/10/2014	115	0.41 J	<1	**26**	2.2	<1	<1	**47.9**	<5	<1	<1	2.2	<1	<1	<1	24	<1	1.1	0.7 J	0.7 J	<1	1.1	**3.3**	4.8	1.9
	10/27/2015	98	<1	<1	**20**	1.1 J	**3**	<1	**46.7**	<5	<1	<1	7.6	<1	<1	<1	18	<1	<1	0.74 J	<1	<1	1.4	<1	<3	1.1
	11/17/2016	132	<1	<1	**19**	1.1 J	**11**	<1	**56**	<20	0.47 J	<1	21	<1	<1	<1	18	<1	0.53 J	**1.0**	<1	<1	2.5	**3.6**	<3	3.89 J
	10/10/2017	148	<1	<1	**25**	0.92 J	**3.6**	<1	**71**	<20	0.52 J	<1	19	<1	<1	<1	25	<1	<1	0.42 J	<1	<1	1.1	**3.0**	<3	1.4
	11/1/2018	128	<1	<1	**17**	1.1	**3.2**	0.4 J	**60**	<20	0.58 J	<1	14	<1	<1	<1	24	<1	<1	0.8 J	<1	<1	1.7	**4.7**	<3	1.8
	9/12/2019	148	<1	<1	**19**	1.0	**2.9**	<1	**79**	<20	0.74 J	<1	13	<1	<1	<1	26	<1	<1	0.42 J	<1	<1	<1	**5.3**	<3	1.8
	10/13/2020	137	<1	<1	**20**	1.4	**3.3**	<1	**63**	<20	0.74 J	<1	15	<1	<1	<1	26	<1	<1	0.52 J	<1	0.43 J	1.6	**4.5**	<2	1.8
	10/28/2021	115	<1	<1	**11**	0.74 J	**2.1**	<1	**69**	<20	0.62 J	<1	9.6	<1	<1	<1	18	<1	<1	0.50 J	<1	<1	<1	**3.2**	<2	2.0
	10/14/2022	116	<1	<1	**8.3**	<1	**2.0**	<1	**86**	<20	<1	<1	5.2	<1	<1	<1	12	<1	<1	<1	<1	<1	<1	**1.6**	<3	1.2

ug/l = micrograms per liter *J = Estimated Value* ND = Not Detected NA - Not Analyzed *Bold type indicates value exceeds NC 2L ground water standard*