Illinois Environmental Protection Agency

Bureau of Land • 1021 N. Grand Avenue E. • P.O. Box 19276 • Springfield • Illinois • 62794-9276

HIGHWAY AUTHORITY AGREEMENT

This Agreement is entered into this ____ day of _____ , 20___ pursuant to 35 Ill. Adm. Code 742.1020 by and between the (1) Flip 25, LLC ("Property Owner") [*or, in the case of a petroleum leaking underground storage tank (UST), the owner/operator of the tank ("Owner/Operator")*] and (2) City of Aurora [*Name of Entity in Control of the Right-of-Way*] ("Highway Authority"), collectively known as the "Parties."

[*Use this paragraph for sites with petroleum leaking underground storage tank(s)*]
WHEREAS, Flip 25, LLC is the owner or operator of one or more leaking underground storage tanks presently or formerly located at 1125 Aurora Avenue, Aurora ("the Site");

[*Use this paragraph for sites that do not have petroleum leaking USTs*]
WHEREAS, _____ is the owner of the property located at _____ ("the Site");

WHEREAS, as a result of one or more releases of contaminants at the above referenced Site ("the Release(s)"), soil and/or groundwater contamination at the Site exceeds the Tier 1 residential remediation objectives of 35 Ill. Adm. Code 742;

WHEREAS, the soil and/or groundwater contamination exceeding Tier 1 residential remediation objectives extends or may extend into the Highway Authority's right-of-way;

WHEREAS, the Owner/Operator or Property Owner is conducting corrective action in response to the Release(s);

WHEREAS, the Parties desire to prevent groundwater beneath the Highway Authority's right-of-way that exceeds Tier 1 remediation objectives from use as a supply of potable or domestic water and to limit access to soil within the right-of-way that exceeds Tier 1 residential remediation objectives so that human health and the environment are protected during and after any access;

NOW, THEREFORE, the Parties agree as follows:

1. The recitals set forth above are incorporated by reference as if fully set forth herein.

2. [*Use this paragraph if IEMA has issued an incident number*] The Illinois Emergency Management Agency has assigned incident number(s) 20190483 to the Release(s).

3. Attached as Exhibit A is a scaled map(s) prepared by the Property Owner that shows the Site and surrounding area and delineates the current and estimated future extent of soil and groundwater contamination above the applicable Tier 1 residential remediation objectives as a result of the Release(s). [*Use the following sentence if either soil or groundwater is not contaminated above applicable Tier 1 residential remediation objectives*: Soil is not contaminated above the applicable Tier 1 residential remediation objectives.]

4. Attached as Exhibit B is a table(s) prepared by the Property Owner that lists each contaminant of concern that exceeds its Tier 1 residential remediation objective, its Tier 1 residential remediation objective and its concentrations within the zone where Tier 1 residential remediation objectives are exceeded. The locations of the concentrations listed in Exhibit B are identified on the map(s) in Exhibit A.

5. Attached as Exhibit C is a scaled map prepared by the __Owner/Operator__ showing the area of the Highway Authority's right-of-way that is governed by this agreement ("Right-of-Way"). Because Exhibit C is not a surveyed plat, the Right-of-Way boundary may be an approximation of the actual Right-of-Way lines.

6. [*Use this paragraph if samples have not been collected within the Right-of-Way, sampling within the Right-of-Way is not practical, and contamination does not extend beyond the Right-of-Way*.] Because the collection of samples within the Right-of-Way is not practical, the Parties stipulate that, based on modeling, soil and groundwater contamination exceeding Tier 1 residential remediation objectives does not and will not extend beyond the boundaries of the Right-of- Way.

7. The Highway Authority stipulates it has jurisdiction over the Right-of-Way that gives it sole control over the use of the groundwater and access to the soil located within or beneath the Right-of-Way.

8. The Highway Authority agrees to prohibit within the Right-of-Way all potable and domestic uses of groundwater exceeding Tier 1 residential remediation objectives.

9. The Highway Authority further agrees to limit access by itself and others to soil within the Right-of-Way exceeding Tier 1 residential remediation objectives. Access shall be allowed only if human health (including worker safety) and the environment are protected during and after any access. The Highway Authority may construct, reconstruct, improve, repair, maintain and operate a highway upon the Right-of-Way, or allow others to do the same by permit. In addition, the Highway Authority and others using or working in the Right-of-Way under permit have the right to remove soil or groundwater from the Right-of-Way and dispose of the same in accordance with applicable environmental laws and regulations. The Highway Authority agrees to issue all permits for work in the Right-of-Way, and make all existing permits for work in the Right-of-Way, subject to the following or a substantially similar condition:

As a condition of this permit the permittee shall request the office issuing this permit to identify sites in the Right-of-Way where a Highway Authority Agreement governs access to soil that exceeds the Tier 1 residential remediation objectives of 35 Ill. Adm. Code 742. The permittee shall take all measures necessary to protect human health (including worker safety) and the environment during and after any access to such soil.

10. This agreement shall be referenced in the Agency's no further remediation determination issued for the Release(s).

11. The Agency shall be notified of any transfer of jurisdiction over the Right-of-Way at least 30 days prior to the date the transfer takes effect. This agreement shall be null and void upon the transfer unless the transferee agrees to be bound by this agreement as if the transferee were an original party to this agreement. The transferee's agreement to be bound by the terms of this agreement shall be memorialized at the time of transfer in a writing ("Rider") that references this Highway Authority Agreement and is signed by the Highway Authority, or subsequent transferor, and the transferee.

12. This agreement shall become effective on the date the Agency issues a no further remediation determination for the Release(s). It shall remain effective until the Right-of-Way is demonstrated to be suitable for unrestricted use and the Agency issues a new no further remediation determination to reflect there is no longer a need for this agreement, or until the agreement is otherwise terminated or voided.

13. In addition to any other remedies that may be available, the Agency may bring suit to enforce the terms of this agreement or may, in its sole discretion, declare this agreement null and void if any of the Parties or any transferee violates any term of this agreement. The Parties or transferee shall be notified in writing of any such declaration.

14. This agreement shall be null and void if a court of competent jurisdiction strikes down any part or provision of the agreement.

15. This agreement supersedes any prior written or oral agreements or understandings between the Parties on the subject matter addressed herein. It may be altered, modified or amended only upon the written consent and agreement of the Parties.

16. Any notices or other correspondence regarding this agreement shall be sent to the Parties at following addresses:

Manager, Division of Remediation Management
Bureau of Land
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, IL 62974-9276

Property Owner or Owner/Operator

Name Amaan Fazal

Address 1 S 376 Summit Ave

City Oakbrook Terrace

State IL

Zip Code 60181

_____
(Contact at Highway Authority)

Address _____

City _____

State _____

Zip Code _____

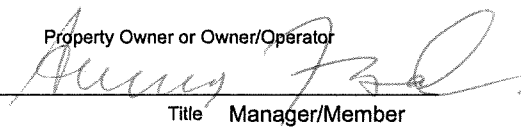
IN WITNESS WHEREOF, the Parties have caused this agreement to be signed by their duly authorized representatives.

[NAME OF LOCAL GOVERNMENT]

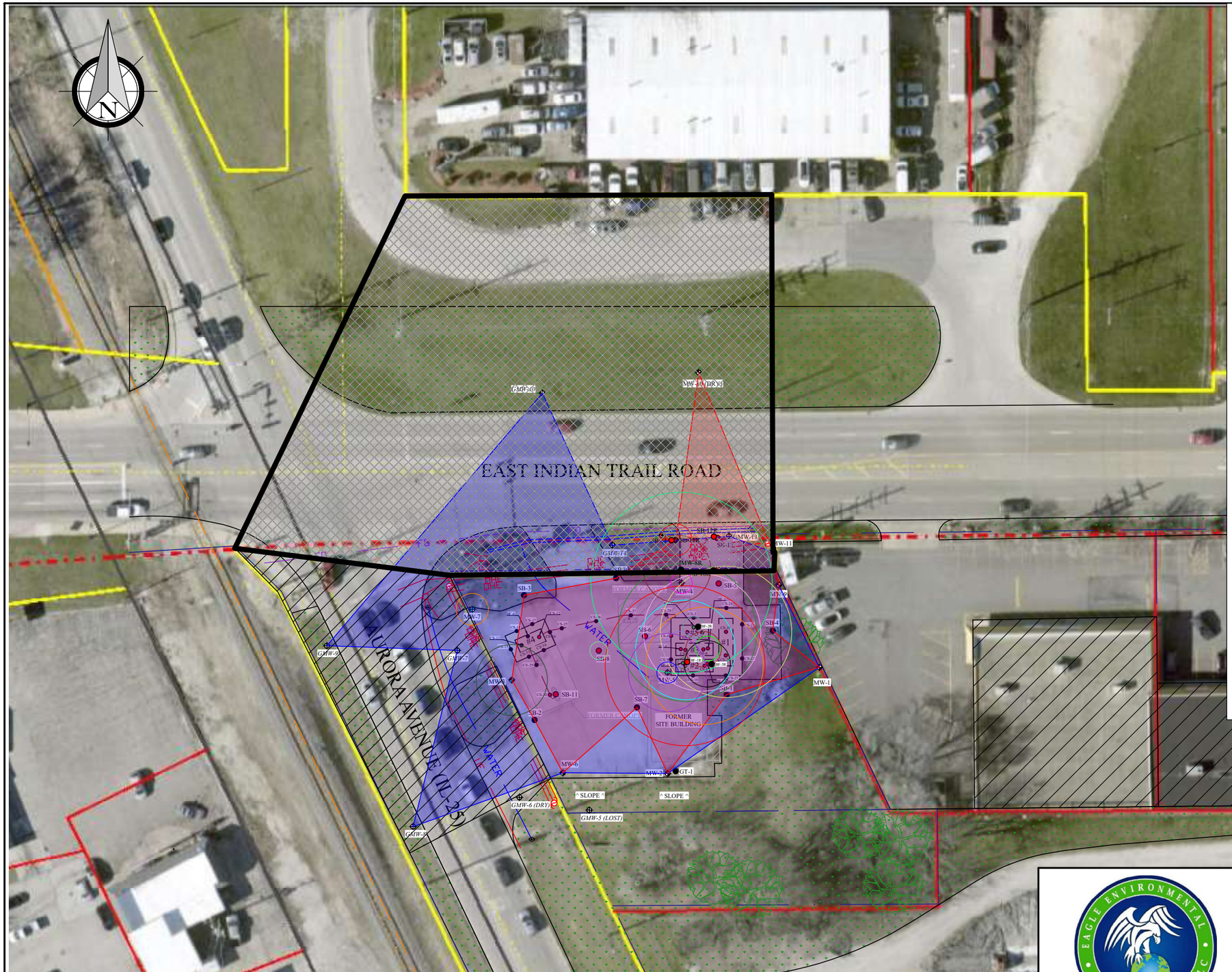
Date: _____ By: _____

Its: _____

Property Owner or Owner/Operator

Date: _____ By: 

Title Manager/Member



LEGEND

- CONFIRMATION SAMPLE LOCATION
  - (● = ABOVE TIER 1 SRO'S)
  - (● = ABOVE TIER 1 SOIL SATURATION LIMIT)
  - (● = BELOW TIER 1 SRO'S)
- SOIL BORING LOCATION
  - (● = ABOVE TIER 1 SRO'S)
  - (● = BELOW TIER 1 SRO'S)
- MONITORING WELL LOCATION
  - (⊕ = SOIL AND GW BELOW TIER 1 RO'S)
  - (⊕ = SOIL BELOW TIER 1 SRO'S, GW ABOVE TIER 1 GRO'S)
  - (⊕ = SOIL AND GW ABOVE TIER 1 RO'S)
  - (⊕ = GW BELOW TIER 1 RO'S, NO SOIL COLLECTED)
  - (⊕ = GW ABOVE TIER 1 RO'S, NO SOIL COLLECTED)
- PROPERTY LINE
- FORMER PRODUCT PIPING RUN
- OHE — OVERHEAD ELECTRIC LINE
- UE — UNDERGROUND ELECTRIC LINE
- FO — UNDERGROUND FIBER OPTIC LINE
- WATER — WATER LINE
- RAILROAD LINE
- UTILITY POLE
- LIGHT POLE
- FIRE HYDRANT
- STORM SEWER GRATE

NOTE: MWS LABELED "GMW" WERE INSTALLED BY OTHERS AND CORRESPOND TO LUST INCIDENT #20050170.

- HIGHWAY AUTHORITY AGREEMENT LIMITS (CITY OF AURORA)
- HIGHWAY AUTHORITY AGREEMENT LIMITS (IDOT)
- ESTIMATED GROUNDWATER EXTENTS EXCEEDING CLASS I
- ESTIMATED SOIL EXTENTS EXCEEDING TIER 1
- MODELED EXTENT

0 60 120

GRAPHIC SCALE (IN FEET)

EAGLE ENVIRONMENTAL CONSULTANTS, LLC

3805 ILLINOIS AVENUE
ST. CHARLES, ILLINOIS 60174

PROPOSED HIGHWAY AUTHORITY AGREEMENT LIMITS

GC REAL ESTATE LLC
1125 AURORA AVENUE
AURORA, IL

PREPARED BY:	*EXHIBIT*	*DATE:*	*PROJECT #:*
ELMORE	A	03/26/25	124121
DRAWN BY:	*FILE NAME:*		
PELLICO	124121 - FLIP 25, LLC		

Contaminant	Sample Location	Soil Concentration (mg/kg)	Modeled (or Measured) Concentration (mg/L)	Modeled Distance (ft)
Benzene	CS-1	13.2	0.386	39
	CS-2	7.68	0.225	33
	CS-4	0.0513	0.0015	<Class I
	CS-5	4.63	0.135	28
	CS-6	0.700	0.020	10
	CS-7	24	0.702	45
	CS-8	7.8	0.228	33
	CS-12	0.134	0.0039	<Class I
	CS-19	10.9	0.319	37
	CS-20	0.0703	0.0021	<Class I
	CS-30	0.0645	0.0019	<Class I
	BF-1	0.262	0.0077	3
	BF-2	0.401	0.012	6
	BF-3	0.440	0.013	7
	BF-4	0.609	0.018	10
	BF-5	0.925	0.027	13
	MW-4 (7'-8')	0.360	0.011	6
	MW-5 (7'-9')	0.376	0.011	6
	SB-5 (7'-9')	0.104	0.0030	<Class I
	SB-8 (9'-10')	0.319	0.0093	5
	SB-10 (7'-9')	0.0385	0.0011	<Class I
	MW-8 (7'-9')	0.0371	0.0011	<Class I
	SB-11 (10'-11')	0.483	0.014	8
	SB-11 (9'-10')	0.548	0.016	9
	SB-12 (7'-9')	0.0774	0.0023	<Class I
	MW-3	N/A	0.0574	20
	MW-4	N/A	1.24	51
	MW-5	N/A	0.0735	22
	MW-7	N/A	0.0167	9
	MW-8	N/A	0.0548	19
Ethylbenzene	CS-1	15.7	0.46	<Class I
	CS-8	13.2	0.39	<Class I
	BF-1	23.4	0.68	<Class I
	BF-2	14.6	0.43	<Class I
	BF-4	18.5	0.54	<Class I
	MW-5	N/A	1.75	2

Exceeds Tier 1 SROs	Soil Saturation Limit		
	Soil Component of Groundwater Ingestion	Outdoor Inhalation	
Xylenes (total)	BF-1, BF-2	- - -	
Exceeds Tier 1 SROs	**Soil Ingestion Exposure Route**		
	Residential	**Industrial/ Commercial**	**Construction Worker**
Benzene	CS-1, CS-7	- - -	- - -
Exceeds Tier 1 SROs	**Soil Inhalation Exposure Route**		
	Residential	**Industrial/ Commercial**	**Construction Worker**
Benzene	CS-1, CS-2, CS-5, CS-7, CS-8, CS-19, BF-5	CS-1, CS-2, CS-5, CS-7, CS-8, CS-19	CS-1, CS-2, CS-5, CS-7, CS-8, CS-19
Xylenes (total)	- - -	- - -	CS-1, CS-2, CS-5, CS-6, CS-7, CS-8, CS-30, BF-1, BF-2, BF-3, BF-4, BF-5, SB-6 (5'-7')
Exceeds Tier 1 SROs	**Soil Component of the Groundwater Ingestion Exposure Route**		
	Class I Groundwater		
Benzene	CS-1, CS-2, CS-4, CS-5, CS-6, CS-7, CS-8, CS-12, CS-19, CS-20, CS-30, BF-1, BF-2, BF-3, BF-4, BF-5, MW-4 (7'-8'), MW-5 (7'-9'), SB-5 (7'-9'), SB-8 (9'-10'), SB-10 (7'-9'), MW-8 (7'-9'), SB-11 (10'-11'), SB-11 (9'-10'), SB-12 (7'-9')		
Ethylbenzene	CS-1, CS-8, BF-1, BF-2, BF-4		
Exceeds Tier 1 SROs	**Groundwater Component of the Groundwater Ingestion Exposure Route**		
	Class I Groundwater		
Benzene	MW-3, MW-4, MW-5, MW-7, MW-8		
Ethylbenzene	MW-5		
Exceeds Tier 1 SROs	**Indoor Inhalation Exposure Route**		
	Diffusion and Advection		**Diffusion Only**	
	Residential	**Industrial/ Commercial**	**Residential**	**Industrial/ Commercial**
Benzene	MW-4	MW-4	N/A	N/A
Ethylbenzene	MW-5	MW-5	N/A	N/A

Table 1
Summary of Analytical Results – Soil Samples
118109 GC Real Estate, LLC
Corrective Action Plan

118109 - GC Real Estate LLC - Early Action			CS-1	CS-2	CS-3	CS-4	CS-5	CS-6	Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			5/14/2019	5/14/2019	5/14/2019	5/14/2019	5/14/2019	5/14/2019	Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			10:00 AM	10:05 AM	10:10 AM	10:15 AM	11:15 AM	11:20 AM										
First Environmental Lab ID:			19-2957-001	19-2957-002	19-2957-003	19-2957-004	19-2957-005	19-2957-006	Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	5/22/2019	5/22/2019	5/21/2019	5/22/2019	5/22/2019	5/22/2019										
Benzene	µg/kg	5.0	**13,200**	**7,680**	<5.0	**51.3**	**4,630**	**700**	30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	µg/kg	5.0	<500	<500	<5.0	<500	<500	<500	12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	µg/kg	5.0	**15,700**	2,480	37.1	<500	7,880	7,560	13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	µg/kg	5.0	**13,100**	**5,780**	29.2	<500	**18,800**	**24,800**	150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	µg/kg	5.0	<320	<320	<5.0	<320	<320	<320	320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	5/17/2019	5/17/2019	5/17/2019	5/17/2019	5/17/2019	5/17/2019										
Total Solids	%	---	80.49	84.81	83.74	91.93	83.97	83.97	---	---	---	---	---	---	---	---	---	---

118109 - GC Real Estate LLC - Early Action			CS-7	CS-8	CS-9	CS-10	CS-11	CS-12	Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			5/14/2019	5/14/2019	5/14/2019	5/14/2019	5/15/2019	5/15/2019	Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			12:40 PM	12:45 PM	1:00 PM	1:15 PM	9:15 AM	9:20 AM										
First Environmental Lab ID:			19-2957-007	19-2957-008	19-2957-009	19-2957-010	19-2958-001	19-2958-002	Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	5/22/2019	5/22/2019	5/22/2019	5/22/2019	5/22/2019	5/23/2019										
Benzene	µg/kg	5.0	**24,000**	**7,800**	6.1	<5.0	29.9	**134**	30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	µg/kg	5.0	<500	755	<5.0	<5.0	<500	<500	12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	µg/kg	5.0	6,900	**13,200**	<5.0	<5.0	<500	665	13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	µg/kg	5.0	**24,100**	**38,200**	<5.0	<5.0	<500	<500	150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	µg/kg	5.0	<320	<320	<5.0	<5.0	<320	<320	320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	5/17/2019	5/17/2019	5/17/2019	5/17/2019	5/17/2019	5/17/2019										
Total Solids	%	---	84.70	80.32	84.35	82.32	84.45	83.77	---	---	---	---	---	---	---	---	---	---

118109 - GC Real Estate LLC - Early Action			CS-13	CS-14	CS-15	CS-16	CS-17	CS-18	Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			9:30 AM	9:35 AM	9:45 AM	9:55 AM	10:00 AM	10:05 AM										
First Environmental Lab ID:			19-2958-003	19-2958-004	19-2958-005	19-2958-006	19-2958-007	19-2958-008	Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	5/22/2019	5/22/2019	5/23/2019	5/22/2019	5/22/2019	5/22/2019										
Benzene	µg/kg	5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	µg/kg	5.0	<5.0	<5.0	<500	<5.0	<5.0	<5.0	12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	µg/kg	5.0	<5.0	<5.0	<500	<5.0	<5.0	<5.0	13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	µg/kg	5.0	<5.0	<5.0	<500	<5.0	<5.0	<5.0	150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	µg/kg	5.0	<5.0	<5.0	<320	<5.0	<5.0	<5.0	320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	5/17/2019	5/17/2019	5/17/2019	5/17/2019	5/17/2019	5/17/2019										
Total Solids	%	---	90.43	90.10	89.11	85.96	89.98	90.65	---	---	---	---	---	---	---	---	---	---

Analytical results in parts-per-billion (ppb) concentrations.
Exceedences of the Tier 1 SROs highlighted and bold.

Table 1
Summary of Analytical Results – Soil Samples
118109 GC Real Estate, LLC
Corrective Action Plan

118109 - GC Real Estate LLC - Early Action			CS-19	CS-20	CS-21	CS-22	CS-23	CS-24	Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			10:30 AM	10:40 AM	10:45 AM	10:50 AM	11:00 AM	11:10 AM										
First Environmental Lab ID:			19-2958-009	19-2958-010	19-2958-011	19-2958-012	19-2958-013	19-2958-014	Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	5/23/2019	5/23/2019	5/22/2019	5/22/2019	5/23/2019	5/22/2019										
Benzene	µg/kg	5.0	**10,900**	**70.3**	<5.0	<5.0	27.5	<5.0	30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	µg/kg	5.0	<500	<500	<5.0	<5.0	<500	<5.0	12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	µg/kg	5.0	444	<500	<5.0	<5.0	<500	<5.0	13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	µg/kg	5.0	594	<500	<5.0	<5.0	<500	19.8	150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	µg/kg	5.0	<320	<320	<5.0	<5.0	<320	<5.0	320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	5/17/2019	5/17/2019	5/17/2019	5/17/2019	5/17/2019	5/17/2019										
Total Solids	%	---	86.28	86.20	94.53	95.15	84.75	85.81	---	---	---	---	---	---	---	---	---	---

118109 - GC Real Estate LLC - Early Action			CS-25	CS-26	CS-27	CS-28	CS-29	CS-30	Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	5/15/2019	Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			1:15 PM	1:30 PM	1:45 PM	2:00 PM	2:40 PM	3:00 PM										
First Environmental Lab ID:			19-2958-015	19-2958-016	19-2958-017	19-2958-018	19-2958-019	19-2958-020	Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	5/22/2019	5/22/2019	5/22/2019	5/22/2019	5/22/2019	5/23/2019										
Benzene	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**64.5**	30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	µg/kg	5.0	11.8	<5.0	<5.0	<5.0	6.1	<500	12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	3,850	13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	µg/kg	5.0	21.9	<5.0	<5.0	<5.0	<5.0	**32,200**	150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<320	320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	5/20/2019	5/20/2019	5/20/2019	5/20/2019	5/20/2019	5/20/2019										
Total Solids	%	---	91.08	92.25	93.87	90.82	87.47	89.69	---	---	---	---	---	---	---	---	---	---

118109 - GC Real Estate LLC - Early Action			BF-1	BF-2	BF-3	BF-4	BF-5	BF-6	Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			5/14/2019	5/14/2019	5/14/2019	5/14/2019	5/14/2019	5/15/2019	Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			8:30 AM	8:45 AM	9:00 AM	10:50 AM	11:30 AM	9:00 AM										
First Environmental Lab ID:			19-2957-011	19-2957-012	19-2957-013	19-2957-014	19-2957-015	19-2958-021	Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	5/22/2019	5/22/2019	5/22/2019	5/22/2019	5/22/2019	5/23/2019										
Benzene	µg/kg	5.0	**262**	**401**	**440**	**609**	**925**	<25.0	30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	µg/kg	5.0	<500	3,010	<500	<500	2,580	<500	12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	µg/kg	5.0	**23,400**	**14,600**	5,480	**18,500**	3,690	<500	13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	µg/kg	5.0	**146,000**	**131,000**	**8,060**	**23,300**	**15,200**	<500	150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	µg/kg	5.0	<320	<320	<320	<320	<320	<320	320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	5/17/2019	5/17/2019	5/17/2019	5/17/2019	5/17/2019	5/20/2019										
Total Solids	%	---	87.60	82.25	82.35	84.25	87.12	62.37	---	---	---	---	---	---	---	---	---	---

Analytical results in parts-per-billion (ppb) concentrations.
Exceedences of the Tier 1 SROs highlighted and bold.

Table 1
Summary of Analytical Results – Soil Samples
118109 GC Real Estate, LLC
Corrective Action Plan

118109 - GC Real Estate LLC - Stage 1			MW-1 (3'-5')	MW-1 (7'-9')	MW-1 (10'-11')	MW-2 (1'-3')	MW-2 (5'-7')	MW-2 (10'-11')	Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			2/6/2020	2/6/2020	2/6/2020	2/6/2020	2/6/2020	2/6/2020	Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			9:10 AM	9:40 AM	10:00 AM	11:00 AM	11:20 AM	11:40 AM										
First Environmental Lab ID:			20-0729-001	20-0729-002	20-0729-003	20-0729-006	20-0729-007	20-0729-008	Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	2/13/2020	2/13/2020	2/14/2020	2/13/2020	2/13/2020	2/13/2020										
Benzene	ug/kg	5.0	<5.0	<5.0	<25.0	<5.0	<5.0	<5.0	30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	ug/kg	5.0	<5.0	<5.0	<500	<5.0	<5.0	<5.0	12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	ug/kg	5.0	<5.0	<5.0	<500	<5.0	<5.0	<5.0	13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	ug/kg	5.0	<5.0	<5.0	<500	<5.0	<5.0	<5.0	150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	ug/kg	5.0	<5.0	<5.0	<320	<5.0	<5.0	<5.0	320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	2/10/2020	2/10/2020	2/10/2020	2/10/2020	2/10/2020	2/10/2020										
Total Solids	%	---	75.60	87.85	89.46	91.75	94.11	84.12	---	---	---	---	---	---	---	---	---	---

118109 - GC Real Estate LLC - Stage 1			MW-3 (3'-5')	MW-3 (7'-9')	MW-4 (3'-5')	MW-4 (7'-8')	MW-5 (1'-3')	MW-5 (7'-9')	Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			2/6/2020	2/6/2020	2/6/2020	2/6/2020	2/7/2020	2/7/2020	Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			12:30 PM	12:50 PM	2:10 PM	2:30 PM	8:55 AM	9:00 AM										
First Environmental Lab ID:			20-0729-011	20-0729-012	20-0729-015	20-0729-016	20-0726-001	20-0726-002	Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	2/13/2020	2/13/2020	2/13/2020	2/14/2020	2/13/2020	2/14/2020										
Benzene	ug/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	ug/kg	5.0	<5.0	<5.0	<5.0	**360**	<5.0	**376**	12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	ug/kg	5.0	<5.0	<5.0	<5.0	<500	<5.0	<500	13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	ug/kg	5.0	<5.0	<5.0	<5.0	8,150	<5.0	4,270	150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	ug/kg	5.0	<5.0	<5.0	<5.0	<500	<5.0	1,560	320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	2/10/2020	2/10/2020	2/10/2020	2/10/2020	2/10/2020	2/10/2020										
Total Solids	%	---	84.46	91.5	92.28	89.75	88.74	91.51	---	---	---	---	---	---	---	---	---	---

118109 - GC Real Estate LLC - Stage 1			SB-1 (1'-3')	SB-1 (5'-7')	SB-2 (1'-3')	SB-2 (7'-9')	SB-3 (1'-3')	SB-3 (5'-7')	Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			2/6/2020	2/6/2020	2/6/2020	2/6/2020	2/6/2020	2/6/2020	Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			10:20 AM	10:40 AM	12:00 PM	12:10 PM	1:20 PM	1:40 PM										
First Environmental Lab ID:			20-0729-004	20-0729-005	20-0729-009	20-0729-010	20-0729-013	20-0729-014	Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	2/13/2020	2/13/2020	2/13/2020	2/13/2020	2/13/2020	2/13/2020										
Benzene	ug/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	ug/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	ug/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	ug/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	ug/kg	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	2/10/2020	2/10/2020	2/10/2020	2/10/2020	2/10/2020	2/10/2020										
Total Solids	%	---	84.39	87.29	94.44	88.58	89.35	89.72	---	---	---	---	---	---	---	---	---	---

Analytical results in parts-per-billion (ppb) concentrations.
Exceedences of the Tier 1 SROs highlighted and **bold**

Table 1
Summary of Analytical Results – Soil Samples
118109 GC Real Estate, LLC
Corrective Action Plan

118109 - GC Real Estate LLC - Stage 1			SB-4 (3'-5')	SB-4 (9'-10')	SB-5 (3'-5')	SB-5 (7'-9')	SB-6 (1'-3')	SB-6 (5'-7')	Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			2/7/2020	2/7/2020	2/7/2020	2/7/2020	2/7/2020	2/7/2020	Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			10:15 AM	10:20 AM	10:30 AM	10:45 AM	11:00 AM	11:10 AM										
First Environmental Lab ID:			20-0726-003	20-0726-004	20-0726-005	20-0726-006	20-0726-007	20-0726-008	Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	2/13/2020	2/14/2020	2/13/2020	2/14/2020	2/13/2020	2/14/2020										
Benzene	µg/kg	5.0	<5.0	<25.0	<5.0	**104**	<5.0	<25.0	30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	µg/kg	5.0	<5.0	<500	<5.0	<500	<5.0	<500	12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	µg/kg	5.0	<5.0	<500	<5.0	5,400	<5.0	3,300	13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	µg/kg	5.0	<5.0	<500	<5.0	<500	8.8	**14,300**	150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	µg/kg	5.0	<5.0	<320	<5.0	<320	<5.0	<320	320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	2/10/2020	2/10/2020	2/10/2020	2/10/2020	2/10/2020	2/10/2020										
Total Solids	%	---	89.32	88.07	91.65	86.88	94.05	89.94	---	---	---	---	---	---	---	---	---	---

118109 - GC Real Estate LLC - Stage 2			MW-6 (1'-3')	MW-6 (5'-7')	SB-7 (1'-3')	SB-7 (5'-7')	SB-8 (3'-5')	SB-8 (9'-10')	Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			11/13/2020	11/13/2020	11/13/2020	11/13/2020	11/13/2020	11/13/2020	Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			10:00 AM	10:30 AM	11:40 AM	11:50 AM	12:15 PM	12:30 PM										
First Environmental Lab ID:			20-6498-001	20-6498-002	20-6498-003	20-6498-004	20-6498-005	20-6498-006	Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	11/18/2020	11/18/2020	11/19/2020	11/18/2020	11/18/2020	11/18/2020										
Benzene	µg/kg	5.0	<5.0	<5.0	<25.0	<5.0	<5.0	**319**	30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	µg/kg	5.0	<5.0	<5.0	<500	<5.0	<5.0	11.6	12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	µg/kg	5.0	<5.0	<5.0	<500	<5.0	<5.0	327	13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	µg/kg	5.0	<5.0	<5.0	<500	<5.0	<5.0	392	150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	µg/kg	5.0	<5.0	<5.0	<320	<5.0	<5.0	<5.0	320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	11/16/2020	11/16/2020	11/16/2020	11/16/2020	11/16/2020	11/16/2020										
Total Solids	%	---	93.96	92.39	94.04	90.91	95.74	80.50	---	---	---	---	---	---	---	---	---	---

118109 - GC Real Estate LLC - Stage 2			SB-9 (3'-5')	SB-9 (7'-9')	SB-10 (1'-3')	SB-10 (7'-9')	MW-8 (3'-5')	MW-8 (7'-9')	Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			11/13/2020	11/13/2020	11/13/2020	11/13/2020	11/13/2020	11/13/2020	Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			12:50 PM	1:00 PM	1:30 PM	1:45 PM	1:50 PM	2:00 PM										
First Environmental Lab ID:			20-6498-007	20-6498-008	20-6498-009	20-6498-010	20-6498-011	20-6498-012	Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	11/18/2020	11/19/2020	11/18/2020	11/19/2020	11/18/2020	11/19/2020										
Benzene	µg/kg	5.0	<5.0	<25.0	7.1	**38.5**	<5.0	**37.1**	30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	µg/kg	5.0	<5.0	<500	<5.0	<500	<5.0	<500	12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	µg/kg	5.0	<5.0	<500	<5.0	714	<5.0	<500	13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	µg/kg	5.0	<5.0	<500	<5.0	<500	<5.0	<500	150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	µg/kg	5.0	<5.0	<320	<5.0	<320	<5.0	<320	320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	11/16/2020	11/16/2020	11/16/2020	11/16/2020	11/16/2020	11/16/2020										
Total Solids	%	---	94.07	88.01	93.28	87.37	92.38	89.84	---	---	---	---	---	---	---	---	---	---

Analytical results in parts-per-billion (ppb) concentrations.
Exceedences of the Tier 1 SROs highlighted and bold.

Table 1
Summary of Analytical Results – Soil Samples
118109 GC Real Estate, LLC
Corrective Action Plan

118109 - GC Real Estate LLC - Stage 2			MW-9 (1'-3')	MW-9 (5'-7')	SB-11 (3'-5')	SB-11 (7'-9')	SB-11 (10'-11')	—	Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			11/13/2020	11/13/2020	11/16/2020	11/16/2020	11/16/2020	—	Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			2:45 PM	3:00 PM	12:45 PM	1:00 PM	1:30 PM	—	Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
First Environmental Lab ID:			20-6498-013	20-6498-014	20-6525-001	20-6525-002	20-6525-003	—										
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	11/19/2020	11/19/2020	11/19/2020	11/20/2020	11/20/2020	—										
Benzene	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	483	—	30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	14.4	—	12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	µg/kg	5.0	<5.0	<5.0	<5.0	8.3	1,890	—	13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	µg/kg	5.0	<5.0	<5.0	<5.0	5.5	158	—	150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	µg/kg	5.0	<5.0	<5.0	<5.0	<5.0	60.1	—	320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	11/16/2020	11/16/2020	11/17/2020	11/17/2020	11/17/2020	—										
Total Solids	%	—	77.04	85.97	94.62	95.35	79.80	—	—	—	—	—	—	—	—	—	—	—

118109 - GC Real Estate LLC - Stage 3			SB-11 (3'-5')	SB-11 (9'-10')	SB-12 (1'-3')	SB-12 (7'-9')	MW-10 (3'-5')	MW-10 (5'-7')	Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			10/5/2021	10/5/2021	10/5/2021	10/5/2021	10/5/2021	10/5/2021	Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			12:15 PM	12:25 PM	12:35 PM	12:45 PM	11:00 AM	11:10 AM	Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
First Environmental Lab ID:			21-6522-003	21-6522-004	21-6522-005	21-6522-006	21-6522-001	21-6522-002										
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021										
Benzene	µg/kg	5.0	<5.0	548	<5.0	77.4	<5.0	<5.0	30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	µg/kg	5.0	<5.0	6.0	<5.0	<500	<5.0	<5.0	12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	µg/kg	5.0	<5.0	24.2	<5.0	5,650	<5.0	<5.0	13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	µg/kg	5.0	<5.0	38.8	<5.0	3,120	<5.0	<5.0	150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	µg/kg	5.0	<5.0	<5.0	<5.0	<320	<5.0	<5.0	320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	10/7/2021	10/7/2021	10/8/2021	10/8/2021	10/7/2021	10/7/2021										
Total Solids	%	—	94.41	81.38	94.41	89.44	96.24	80.50	—	—	—	—	—	—	—	—	—	—

118109 - GC Real Estate LLC - Stage 3			MW-11 (1'-3')	MW-11 (9'-10')	MW-11 (11'-13')				Tier 1 Soil Remediation Objectives									
Date of Sample Collection:			10/5/2021	10/5/2021	10/5/2021				Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			12:55 PM	1:05 PM	1:15 PM				Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
First Environmental Lab ID:			21-6522-007	21-6522-008	21-6522-009													
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	10/7/2021	10/7/2021	10/8/2021													
Benzene	µg/kg	5.0	<5.0	<5.0	<5.0				30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	µg/kg	5.0	<5.0	<5.0	6.1				12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	µg/kg	5.0	<5.0	<5.0	26.4				13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	µg/kg	5.0	<5.0	<5.0	<5.0				150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	µg/kg	5.0	<5.0	<5.0	<5.0				320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	10/8/2021	10/8/2021	10/8/2021													
Total Solids	%	—	83.31	84.98	88.29				—	—	—	—	—	—	—	—	—	—

Analytical results in parts-per-billion (ppb) concentrations.
Exceedences of the Tier 1 SROs highlighted and **bold**.

Table 1
Summary of Analytical Results – Soil Samples
118109 GC Real Estate, LLC
Corrective Action Plan

118109 - GC Real Estate LLC - CAP			BF-1R (13'-15')	BF-2R (13'-15')	BF-5R (13'-15')				Tier 1 Soil Remediation Objectives										
Date of Sample Collection:			6/2/2023	6/2/2023	6/2/2023				Soil Component of the Groundwater Ingestion Exposure Route		Ingestion Exposure Route			Inhalation Exposure Route			Soil Saturation Limit	
Time of Sample Collection:			11:00 AM	11:30 AM	12:00 PM				Class I	Class II	Residential	Industrial/ Commercial	Construction Worker	Residential	Industrial/ Commercial	Construction Worker	Soil Component of Groundwater Ingestion	Soil Inhalation
First Environmental Lab ID:			23-4572-001	23-4572-002	23-4572-003													
BTEX Organic Compounds (5035A/8260B)																		
Date Analyzed:	Units	RL	6/12/2023	6/8/2023	6/8/2023													
Benzene	µg/kg	5.0	**8,560**	<5.0	<5.0				30	170	12,000	100,000	2,300,000	800	1,600	2,200	580,000	800,000
Toluene	µg/kg	5.0	152	<5.0	<5.0				12,000	29,000	16,000,000	410,000,000	410,000,000	650,000	650,000	42,000	290,000	580,000
Ethylbenzene	µg/kg	5.0	2,500	<5.0	<5.0				13,000	19,000	7,800,000	200,000,000	20,000,000	400,000	400,000	58,000	150,000	350,000
Total Xylenes	µg/kg	5.0	4,970	<5.0	<5.0				150,000	150,000	16,000,000	410,000,000	41,000,000	320,000	320,000	5,600	110,000	280,000
Methyl-tert-butylether (MTBE)	µg/kg	5.0	<320	<5.0	<5.0				320	320	780,000	20,000,000	2,000,000	8,800,000	8,800,000	140,000	8,400,000	1,200,000,000
Solids, Total (2540B)																		
Date Analyzed:	Units	RL	6/5/2023	6/5/2023	6/5/2023													
Total Solids	%	---	78.04	83.24	83.91				---	---	---	---	---	---	---	---	---	---

Analytical results in parts-per-billion (ppb) concentrations.
Exceedences of the Tier 1 SROs highlighted and **bold**.

Table 2
Summary of Analytical Results - Groundwater Samples
118109 - GC Real Estate LLC
Corrective Action Plan

118109 - GC Real Estate LLC - Stage 1			MW-1	MW-2	MW-3	MW-4	MW-5	Tier 1 Groundwater Remediation Objectives			
Date of Sample Collection:			2/21/2020	2/21/2020	2/21/2020	2/21/2020	2/21/2020	Class I	Class II	Indoor Inhalation Exposure Route	
Time of Sample Collection:			12:00 PM	12:15 PM	12:30 PM	1:00 PM	1:20 PM			Diffusion and Advection	
First Environmental Lab ID:			20-0990-001	20-0990-002	20-0990-003	20-0990-004	20-0990-005			Residential	Industrial/ Commercial
BTEX Organic Compounds (5035A/8260B)											
Date Analyzed:	Units	RL	2/25/2020	2/25/2020	2/27/2020	2/27/2020	2/25/2020			---	---
Benzene	µg/L	5.0	<5.0	<5.0	**57.4**	**1,240**	**73.5**	5.0	25	111	410
Toluene	µg/L	5.0	<5.0	<5.0	<5.0	11.2	19.6	1,000	2,500	530,000	530,000
Ethylbenzene	µg/L	5.0	41.3	<5.0	102	284	**1,750**	700	1,000	370	1,400
Total Xylenes	µg/L	5.0	36.7	<5.0	<5.0	96.3	3,780	10,000	10,000	30,000	93,000
Methyl-tert-butylether (MTBE)	µg/L	5.0	<5.0	<5.0	<5.0	12.6	12	70	70	1,900,000	6,800,000

118109 - GC Real Estate LLC - Stage 2			MW-7	MW-8	MW-9	---	---	Tier 1 Groundwater Remediation Objectives			
Date of Sample Collection:			12/4/2020	12/4/2020	12/4/2020	---	---	Class I	Class II	Indoor Inhalation Exposure Route	
Time of Sample Collection:			11:00 AM	11:15 AM	11:30 AM	---	---			Diffusion and Advection	
First Environmental Lab ID:			20-6877-001	20-6877-002	20-6877-003	---	---			Residential	Industrial/ Commercial
BTEX Organic Compounds (5035A/8260B)											
Date Analyzed:	Units	RL	12/8/2020	12/8/2020	12/8/2020	---	---			---	---
Benzene	µg/L	5.0	**16.7**	**54.8**	<5.0	---	---	5.0	25	111	410
Toluene	µg/L	5.0	<5.0	<5.0	<5.0	---	---	1,000	2,500	530,000	530,000
Ethylbenzene	µg/L	5.0	<5.0	30.8	13.3	---	---	700	1,000	370	1,400
Total Xylenes	µg/L	5.0	9.6	<5.0	<5.0	---	---	10,000	10,000	30,000	93,000
Methyl-tert-butylether (MTBE)	µg/L	5.0	<5.0	<5.0	<5.0	---	---	70	70	1,900,000	6,800,000

Exceeds Class I GROs or Appendix B, Table H

Diffusion and Advection Objectives Based on 35 IAC Part 742 Appendix B Table H.

Table 2
Summary of Analytical Results - Groundwater Samples
118109 - GC Real Estate LLC
Corrective Action Plan

118109 - GC Real Estate LLC - Stage 3			MW-6	MW-11	GMW-7	GMW-8	GMW-9	Tier 1 Groundwater Remediation Objectives			
Date of Sample Collection:			10/26/2021	10/26/2021	10/26/2021	10/26/2021	10/26/2021	Class I	Class II	Indoor Inhalation Exposure Route	
Time of Sample Collection:			11:00 AM	11:30 AM	1:00 PM	2:15 PM	2:00 PM			Diffusion and Advection	
First Environmental Lab ID:			21-7108-001	21-7108-002	21-7108-003	21-7108-004	21-7108-005			Residential	Industrial/ Commercial
BTEX Organic Compounds (5035A/8260B)											
Date Analyzed:	Units	RL	10/29/2021	10/29/2021	10/29/2021	10/29/2021	10/29/2021			---	---
Benzene	µg/L	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	25	111	410
Toluene	µg/L	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	1,000	2,500	530,000	530,000
Ethylbenzene	µg/L	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	700	1,000	370	1,400
Total Xylenes	µg/L	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	10,000	10,000	30,000	93,000
Methyl-tert-butylether (MTBE)	µg/L	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	70	70	1,900,000	6,800,000

118109 - GC Real Estate LLC - Stage 3			GMW-10	GMW-13	GMW-14			Tier 1 Groundwater Remediation Objectives			
Date of Sample Collection:			10/26/2021	10/26/2021	10/26/2021			Class I	Class II	Indoor Inhalation Exposure Route	
Time of Sample Collection:			1:45 PM	1:30 PM	12:00 PM					Diffusion and Advection	
First Environmental Lab ID:			21-7108-006	21-7108-007	21-7108-008					Residential	Industrial/ Commercial
BTEX Organic Compounds (5035A/8260B)											
Date Analyzed:	Units	RL	10/29/2021	10/29/2021	10/29/2021	---	---			---	---
Benzene	µg/L	5.0	<5.0	<5.0	<5.0	---	---	5.0	25	111	410
Toluene	µg/L	5.0	<5.0	<5.0	<5.0	---	---	1,000	2,500	530,000	530,000
Ethylbenzene	µg/L	5.0	<5.0	17.3	<5.0	---	---	700	1,000	370	1,400
Total Xylenes	µg/L	5.0	<5.0	<5.0	<5.0	---	---	10,000	10,000	30,000	93,000
Methyl-tert-butylether (MTBE)	µg/L	5.0	<5.0	<5.0	<5.0	---	---	70	70	1,900,000	6,800,000

Exceeds Class I GROs or Appendix B, Table H

Diffusion and Advection Objectives Based on 35 IAC Part 742 Appendix B Table H.

Table 3
Summary of Analytical Results - Indoor Inhalation Exposure Route
118109 - GC Real Estate
Corrective Action Plan

				Tier 1 Groundwater Remediation Objectives for Indoor Inhalation Exposure Route			
Sample ID :		MW-4	MW-5				
Laboratory ID :		20-0990-004	20-0990-005				
Date Collected :		02/21/20	02/21/20	Diffusion and Advection (mg/L)		Diffusion Only (mg/L)	
CAS No.	Analyte	Result (ug/L)	Result (ug/L)	Residential	Industrial/ Commercial	Residential	Industrial/ Commercial
71-43-2	Benzene	**1.24**	**0.0735**	0.110	0.41	0.41	2.6
108-88-3	Toluene	0.0112	0.0196	530	530	530	530
100-41-4	Ethylbenzene	0.284	**1.75**	0.37	1.4	1.3	8.1
1330-20-7	Xylenes, Total	0.0963	3.78	30	93	96	110
1634-04-4	MTBE	0.0126	0.012	1,900	6,800	30,000	51,000
Sample ID :		VP-1	VP-2	Tier 1 Soil Gas Remediation Objectives for Indoor Inhalation Exposure Route			
Laboratory ID :		23-4574-001	23-4574-002				
Date Collected :		06/02/23	06/02/23	Diffusion & Advection (mg/m^3)		Diffusion Only (mg/m^3)	
CAS No.	Analyte	Result (mg/m^3)	Result (mg/m^3)	Residential	Industrial / Commercial	Residential	Industrial / Commercial
71-43-2	Benzene	**1.8**	0.0091	0.37	2.8	41	300
108-88-3	Toluene	<0.81	0.013	6,200	40,000	140,000	140,000
100-41-4	Ethylbenzene	<0.94	0.017	1.3	9.3	150	1,100
1330-20-7	Xylenes, Total	<2.8	0.074	140	840	17,000	49,000
1634-04-4	MTBE	<0.78	<0.0026	3,700	24,000	420,000	1,200,000
67-63-0	Isopropal Alcohol	<2.7	<0.0090	---	---	---	---

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
RBCA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 20190483, 20050170 IEPA LPC # (10-digit): 0894076105

Site Name: GC Real Estate, LLC.

Site Address (not a P.O. Box): 1125 Aurora Avenue

City: Aurora County: Kane Zip Code: 60505

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: R12, R14, R26): R26

Contact Information for Individual Who Performed Calculations: Jeff Ogden, Senior Project Manager, Eagle Environmental Consultants, LLC Phone: (630) 940-2540

Land Use: Not Applicable Soil Type: Sand

Groundwater: ☒ Class I ☐ Class II

Mass Limit: ☐ Yes ☒ No If Yes, then Specify Acreage: ☐ 0.5 ☐ 1 ☐ 2 ☐ 5 ☐ 10 ☐ 30

Result from S18/S28 used in R26? ☒ Yes ☐ No Specify C_{source} from S18/S28 _____ mg/L

- **Mass Limit Acreage other than defaults must always be rounded up.**
- **Failure to use site-specific parameters where allowed could affect payment from the Underground Storage Tank Fund.**
- **Maps depicting source width, plume dimensions, distance, etc. must also be submitted.**
- **Inputs must be submitted in the designated unit.**

Symbol			Unit	Symbol			Unit
AT_c	=	70	yr	d	=		cm
AT_n	=		yr	D^{air}	=		cm^2/s
BW	=	70	kg	D^{water}	=		cm^2/s
C_{source}	=	see page 3	mg/L	D_s^{eff}	=		cm^2/s
$C_{(x)}$	=	see page 3	mg/L	ED	=		yr
$C_{(x)}/C_{source}$	=		unitless	EF	=		d/yr

Incident #: 20190483, 20050170 Chemical: Benzene Land Use: Not Applicable

Symbol			Unit	Symbol			Unit
erf	=		unitless	RAF_d (PNAs)	=	0.05	unitless
f_{oc}	=		g/g	RAF_d (inorganics)	=	0	unitless
GW_{comp}	=		mg/L	RAF_0	=	1.0	unitless
GW_{source}	=		mg/L	$RBSL_{air}$ (carcinogenic)	=		$\mu g/m^3$
H'	=		cm^3_{water}/cm^3_{air}	$RBSL_{air}$ (noncarcinogenic)	=		$\mu g/m^3$
i	=	0.03	cm/cm	RfD_i	=		mg/kg-d
I	=	30	cm/yr	RfD_o	=		mg/kg-d
IR_{air}	=	20	m^3/d	SA	=	3,160	cm^2/d
IR_{soil}	=		mg/d	S_d	=	200	cm
IR_w	=		L/d	S_w	=	4,965.19	cm
K	=	1.841	cm/d for R15, R19, R26; cm/yr for R24	SF_i	=		$(mg/kg\text{-}d)^{-1}$
K_{oc}	=		cm^3/g or L/kg	SF_o	=		$(mg/kg\text{-}d)^{-1}$
k_s (non-ionizing organics)	=		cm^3_{water}/g_{soil}	THQ	=	1	unitless
k_s (ionizing organics)	=		cm^3_{water}/g_{soil}	TR	=		unitless
k_s (inorganics)	=		cm^3_{water}/g_{soil}	U	=		cm/d
L_s	=	100	cm	U_{air}	=	225	cm/s
LF_{sw}	=		$(mg/L_{water})/(mg/kg_{soil})$	U_{gw}	=		cm/yr
M	=	0.5	mg/cm^2	VF_p	=		kg/m^3
Pe	=	$6.9 \cdot 10^{-14}$	$g/cm^2\text{-}s$	VF_{samb}	=		$(mg/m^3_{air})/mg/kg_{soil})$ or kg/m^3
RAF_d	=	0.5	unitless	VF_{ss}	=		kg/m^3

Incident #: 20190483, 20050170 Chemical: Benzene Land Use: Not Applicable

Symbol			Unit
W	=		cm
w	=		g_{water}/g_{soil}
X	=	see below	cm
α_x	=		cm
α_y	=		cm
α_z	=		cm
δ_{air}	=	200	cm
δ_{gw}	=	200	cm

Symbol			Unit
θ_{as}	=		cm^3_{air}/cm^3_{soil}
θ_{ws}	=		cm^3_{water}/cm^3_{soil}
θ_T	=	0.32	cm^3/cm^3_{soil}
λ	=	0.0009	d^{-1}
π	=	3.1416	
ρ_b	=		g/cm^3
ρ_w	=	1	g/cm^3
τ	=	$9.46 \cdot 10^8$	s

Equation		Result	Unit(s)
R1	=		mg/kg
R2	=		mg/kg
R7	=		mg/kg
R8	=		mg/kg
R12	=		mg/kg
R25	=		mg/L

Csource Values: (mg/L)

CS-1 = 0.386 SB-12 (7'-9') = 0.0023
CS-2 = 0.225
CS-4 = 0.0015
CS-5 = 0.135
CS-6 = 0.020
CS-7 = 0.702
CS-8 = 0.228
CS-12 = 0.0039
CS-19 = 0.319
CS-20 = 0.0021
CS-30 = 0.0019
BF-1 = 0.0077
BF-2 = 0.012
BF-3 = 0.013
BF-4 = 0.018
BF-5 = 0.027
MW-4 (7'-8') = 0.011
MW-5 (7'-9') = 0.011
SB-5 (7'-9') = 0.0030
SB-8 (9'-10') = 0.0093
SB-10 (7'-9') = 0.0011
MW-8 (7'-9') = 0.0011
SB-11 (10'-11') = 0.014
SB-11 (9'-10') = 0.016

Maximum Predicted Extent of Groundwater Impact (X):
(feet from point source)

CS-1 = 39 SB-12 (7'-9') = <Class I
CS-2 = 33
CS-4 = <Class I
CS-5 = 28
CS-6 = 10
CS-7 = 45
CS-8 = 33
CS-12 = <Class I
CS-19 = 37
CS-20 = <Class I
CS-30 = <Class I
BF-1 = 3
BF-2 = 6
BF-3 = 7
BF-4 = 10
BF-5 = 13
MW-4 (7'-8') = 6
MW-5 (7'-9') = 6
SB-5 (7'-9') = <Class I
SB-8 (9'-10') = 5
SB-10 (7'-9') = <Class I
MW-8 (7'-9') = <Class I
SB-11 (10'-11') = 8
SB-11 (9'-10') = 9

RBCA Equation R26
Dissolved Hydrocarbon Concentration Along Centerline
Maximum Predicted Extent of Groundwater Impact Modeling
Groundwater Component of the Groundwater Ingestion Exposure Route
1125 Aurora Avenue
Aurora

Input Parameters Used in the Solution of Equation R26		
Parameter	**Value**	**Description**
First Order Degradation Constant (λ)	Benzene: 0.0009/day Ethylbenzene: 0.003/day	Default Value (Appendix C, Table E)
Aquifer Hydraulic Conductivity (K)	2.131E-05 cm/sec	Site specific value as provided in approved SICR dated September 2, 2021
Hydraulic Gradient (i)	0.03 cm/cm	Site specific value as provided in approved SICR dated February 7, 2022
Total Soil Porosity (θ_T)	0.32 cm^3/cm^3	Default for sand
Source Width Perpendicular to Groundwater Flow in the Horizontal Plane (S_w)	4,965.19 cm	Site specific value as provided in approved SICR dated February 7, 2022
Source Width Perpendicular to Groundwater Flow in the Vertical Plane (S_d)	200 cm	Default Value Appendix C, Table D
Tier 1 Groundwater Remediation Objective for Class I groundwater at the point of human exposure (C_x)	Benzene: 0.005 mg/L Ethylbenzene: 0.7 mg/L	Appendix B, Table E

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** CS-1 **Sample Date:** 05/14/2019
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.386 mg/L			
Distance along centerline of the plume coming from the source (X)=	**38.1** ft	=	1,161.29 cm	
First order degradation constant (λ)=	0.0009 /day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05 cm/sec	=	1.841 cm/day	
Hydraulic gradient (i)=	0.03 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9 ft	=	4,965.19 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Calculated Parameters **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	116.1 cm	
Transverse dispersivity	Ay=	38.7 cm	
Vertical dispersivity	Az=	5.8 cm	
Specific discharge	U=	0.2 cm/day	
Sw/(4*SQRT(Ay*X))	B=	5.9	
Sd/(2*SQRT(Az*X))	C=	1.2	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	0.9	see F46 & K46 in the linear interpolation section.

Actual B value=	5.9	Actual C value=	1.2
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	0.9

Solutions

$C_{(x)}$
0.005 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	5.854593479	1.217485691
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.342710731	0.714879331
erf(x)=	1	0.914891557

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** CS-2 **Sample Date:** 05/14/2019
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.225 mg/L			
Distance along centerline of the plume coming from the source (X)=	**32.5** ft	=	990.60 cm	
First order degradation constant (λ)=	0.0009 /day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05 cm/sec	=	1.841 cm/day	
Hydraulic gradient (i)=	0.03 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9 ft	=	4,965.19 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Calculated Parameters — **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	99.1 cm	
Transverse dispersivity	Ay=	33.0 cm	
Vertical dispersivity	Az=	5.0 cm	
Specific discharge	U=	0.2 cm/day	
Sw/(4*SQRT(Ay*X))	B=	6.9	
Sd/(2*SQRT(Az*X))	C=	1.4	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	6.9	Actual C value=	1.4
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$	
0.005	mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	6.863384971	1.427267841
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.307845394	0.681403033
erf(x)=	1	0.956456921

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** CS-5 **Sample Date:** 05/14/2019
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.135	mg/L		
Distance along centerline of the plume coming from the source (X)=	**27.3**	ft =	832.10	cm
First order degradation constant (λ)=	0.0009	/day	if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05	cm/sec =	1.841	cm/day
Hydraulic gradient (i)=	0.03	m/m		
Total soil porosity (θ_T)=	0.32	cm^3/cm^3_{soil}		
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9	ft =	4,965.19	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56	ft =	200	cm (assuming complete mixing)

Calculated Parameters — **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	83.2	cm
Transverse dispersivity	Ay=	27.7	cm
Vertical dispersivity	Az=	4.2	cm
Specific discharge	U=	0.2	cm/day
Sw/(4*SQRT(Ay*X))	B=	8.2	
Sd/(2*SQRT(Az*X))	C=	1.7	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	8.2	Actual C value=	1.7
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$
0.005 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	8.170696394	1.699128383
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.271986918	0.64241782
erf(x)=	1	0.98373573

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** CS-6 **Sample Date:** 05/14/2019
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.020	mg/L		
Distance along centerline of the plume coming from the source (X)=	**9.9**	ft =	301.75	cm
First order degradation constant (λ)=	0.0009	/day	if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05	cm/sec =	1.841	cm/day
Hydraulic gradient (i)=	0.03	m/m		
Total soil porosity (θ_T)=	0.32	cm^3/cm^3_{soil}		
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9	ft =	4,965.19	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56	ft =	200	cm (assuming complete mixing)

Calculated Parameters		**DO NOT ENTER VALUES HERE!**	
Longitudinal dispersivity	Ax=	30.2	cm
Transverse dispersivity	Ay=	10.1	cm
Vertical dispersivity	Az=	1.5	cm
Specific discharge	U=	0.2	cm/day
Sw/(4*SQRT(Ay*X))	B=	22.5	
Sd/(2*SQRT(Az*X))	C=	4.7	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	22.5	Actual C value=	4.7
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$	
0.005	mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	22.5313143	4.685475237
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.119316678	0.394489769
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** CS-7 **Sample Date:** 05/14/2019
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.702	mg/L			
Distance along centerline of the plume coming from the source (X)=	**44.6**	ft	=	1,359.41	cm
First order degradation constant (λ)=	0.0009	/day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05	cm/sec	=	1.841	cm/day
Hydraulic gradient (i)=	0.03	m/m			
Total soil porosity (θ_T)=	0.32	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9	ft	=	4,965.19	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56	ft	=	200	cm (assuming complete mixing)

Calculated Parameters		**DO NOT ENTER VALUES HERE!**	
Longitudinal dispersivity	Ax=	135.9	cm
Transverse dispersivity	Ay=	45.3	cm
Vertical dispersivity	Az=	6.8	cm
Specific discharge	U=	0.2	cm/day
Sw/(4*SQRT(Ay*X))	B=	5.0	
Sd/(2*SQRT(Az*X))	C=	1.0	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	0.9	see F46 & K46 in the linear interpolation section.

Actual B value=	5.0	Actual C value=	1.0
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	0.9

Solutions

$C_{(x)}$	
0.005	mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	5.00134555	1.040049436
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.379018119	0.745872933
erf(x)=	1	0.858668783

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** CS-8 **Sample Date:** 05/14/2019
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.228 mg/L			
Distance along centerline of the plume coming from the source (X)=	**32.7** ft	=	996.70 cm	
First order degradation constant (λ)=	0.0009 /day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05 cm/sec	=	1.841 cm/day	
Hydraulic gradient (i)=	0.03 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9 ft	=	4,965.19 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Calculated Parameters — **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	99.7 cm	
Transverse dispersivity	Ay=	33.2 cm	
Vertical dispersivity	Az=	5.0 cm	
Specific discharge	U=	0.2 cm/day	
Sw/(4*SQRT(Ay*X))	B=	6.8	
Sd/(2*SQRT(Az*X))	C=	1.4	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	6.8	Actual C value=	1.4
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$
0.005 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	6.821407081	1.418538374
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.309154155	0.682733411
erf(x)=	1	0.955156287

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** CS-19 **Sample Date:** 05/15/2019
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.319	mg/L			
Distance along centerline of the plume coming from the source (X)=	**36.1**	ft	=	1,100.33	cm
First order degradation constant (λ)=	0.0009	/day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05	cm/sec	=	1.841	cm/day
Hydraulic gradient (i)=	0.03	m/m			
Total soil porosity (θ_T)=	0.32	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9	ft	=	4,965.19	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56	ft	=	200	cm (assuming complete mixing)

Calculated Parameters — **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	110.0	cm
Transverse dispersivity	Ay=	36.7	cm
Vertical dispersivity	Az=	5.5	cm
Specific discharge	U=	0.2	cm/day
Sw/(4*SQRT(Ay*X))	B=	6.2	
Sd/(2*SQRT(Az*X))	C=	1.3	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	0.9	see F46 & K46 in the linear interpolation section.

Actual B value=	6.2	Actual C value=	1.3
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	0.9

Solutions

$C_{(x)}$
0.005 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	6.178947688	1.284936422
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.330669431	0.703762586
erf(x)=	1	0.930809715

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** BF-1 **Sample Date:** 05/14/2019
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.0077	mg/L			
Distance along centerline of the plume coming from the source (X)=	**2.8**	ft	=	85.34	cm
First order degradation constant (λ)=	0.0009	/day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05	cm/sec	=	1.841	cm/day
Hydraulic gradient (i)=	0.03	m/m			
Total soil porosity (θ_T)=	0.32	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9	ft	=	4,965.19	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56	ft	=	200	cm (assuming complete mixing)

Calculated Parameters		**DO NOT ENTER VALUES HERE!**	
Longitudinal dispersivity	Ax=	8.5	cm
Transverse dispersivity	Ay=	2.8	cm
Vertical dispersivity	Az=	0.4	cm
Specific discharge	U=	0.2	cm/day
Sw/(4*SQRT(Ay*X))	B=	79.7	
Sd/(2*SQRT(Az*X))	C=	16.6	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	79.7	Actual C value=	16.6
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$
0.005 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	79.66428984	16.56650173
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.036904029	0.155592657
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** BF-2 **Sample Date:** 05/14/2019
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.012 mg/L			
Distance along centerline of the plume coming from the source (X)=	**6.0** ft	=	181.97 cm	
First order degradation constant (λ)=	0.0009 /day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05 cm/sec	=	1.841 cm/day	
Hydraulic gradient (i)=	0.03 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9 ft	=	4,965.19 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Calculated Parameters		**DO NOT ENTER VALUES HERE!**	
Longitudinal dispersivity	Ax=	18.2 cm	
Transverse dispersivity	Ay=	6.1 cm	
Vertical dispersivity	Az=	0.9 cm	
Specific discharge	U=	0.2 cm/day	
Sw/(4*SQRT(Ay*X))	B=	37.4	
Sd/(2*SQRT(Az*X))	C=	7.8	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	37.4	Actual C value=	7.8
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$	
0.005	mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	37.36348602	7.769883559
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.075529012	0.282060021
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** BF-3 **Sample Date:** 05/14/2019
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.013	mg/L			
Distance along centerline of the plume coming from the source (X)=	**6.6**	ft	=	200.56	cm
First order degradation constant (λ)=	0.0009	/day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05	cm/sec	=	1.841	cm/day
Hydraulic gradient (i)=	0.03	m/m			
Total soil porosity (θ_T)=	0.32	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9	ft	=	4,965.19	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56	ft	=	200	cm (assuming complete mixing)

Calculated Parameters		**DO NOT ENTER VALUES HERE!**	
Longitudinal dispersivity	Ax=	20.1	cm
Transverse dispersivity	Ay=	6.7	cm
Vertical dispersivity	Az=	1.0	cm
Specific discharge	U=	0.2	cm/day
Sw/(4*SQRT(Ay*X))	B=	33.9	
Sd/(2*SQRT(Az*X))	C=	7.0	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	33.9	Actual C value=	7.0
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$	
0.005	mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	33.8996978	7.049575205
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.082608859	0.302171578
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** BF-4 **Sample Date:** 05/14/2019
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.018 mg/L			
Distance along centerline of the plume coming from the source (X)=	**9.1** ft	=	276.45 cm	
First order degradation constant (λ)=	0.0009 /day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05 cm/sec	=	1.841 cm/day	
Hydraulic gradient (i)=	0.03 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9 ft	=	4,965.19 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Calculated Parameters		**DO NOT ENTER VALUES HERE!**	
Longitudinal dispersivity	Ax=	27.6 cm	
Transverse dispersivity	Ay=	9.2 cm	
Vertical dispersivity	Az=	1.4 cm	
Specific discharge	U=	0.2 cm/day	
Sw/(4*SQRT(Ay*X))	B=	24.6	
Sd/(2*SQRT(Az*X))	C=	5.1	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	24.6	Actual C value=	5.1
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$	
0.005	mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	24.59316555	5.114245297
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.110417906	0.373778505
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** BF-5 **Sample Date:** 05/14/2019
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.027	mg/L			
Distance along centerline of the plume coming from the source (X)=	**12.4**	ft	=	377.95	cm
First order degradation constant (λ)=	0.0009	/day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05	cm/sec	=	1.841	cm/day
Hydraulic gradient (i)=	0.03	m/m			
Total soil porosity (θ_T)=	0.32	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9	ft	=	4,965.19	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56	ft	=	200	cm (assuming complete mixing)

Calculated Parameters		**DO NOT ENTER VALUES HERE!**	
Longitudinal dispersivity	Ax=	37.8	cm
Transverse dispersivity	Ay=	12.6	cm
Vertical dispersivity	Az=	1.9	cm
Specific discharge	U=	0.2	cm/day
Sw/(4*SQRT(Ay*X))	B=	18.0	
Sd/(2*SQRT(Az*X))	C=	3.7	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	18.0	Actual C value=	3.7
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$	
0.005	mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	17.98871061	3.740822971
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.145075945	0.449345241
erf(x)=	1	0.999999878

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** MW-4 (7'-8') **Sample Date:** 02/06/2020
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.011	mg/L			
Distance along centerline of the plume coming from the source (X)=	**5.3**	ft	=	161.54	cm
First order degradation constant (λ)=	0.0009	/day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05	cm/sec	=	1.841	cm/day
Hydraulic gradient (i)=	0.03	m/m			
Total soil porosity (θ_T)=	0.32	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9	ft	=	4,965.19	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56	ft	=	200	cm (assuming complete mixing)

Calculated Parameters		**DO NOT ENTER VALUES HERE!**	
Longitudinal dispersivity	Ax=	16.2	cm
Transverse dispersivity	Ay=	5.4	cm
Vertical dispersivity	Az=	0.8	cm
Specific discharge	U=	0.2	cm/day
Sw/(4*SQRT(Ay*X))	B=	42.1	
Sd/(2*SQRT(Az*X))	C=	8.8	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	42.1	Actual C value=	8.8
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$	
0.005	mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	42.08679463	8.752114122
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.067625784	0.258590727
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** MW-5 (7'-9') **Sample Date:** 02/07/2020
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.011 mg/L			
Distance along centerline of the plume coming from the source (X)=	**5.3** ft	=	161.54 cm	
First order degradation constant (λ)=	0.0009 /day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05 cm/sec	=	1.841 cm/day	
Hydraulic gradient (i)=	0.03 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9 ft	=	4,965.19 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Calculated Parameters — **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	16.2 cm	
Transverse dispersivity	Ay=	5.4 cm	
Vertical dispersivity	Az=	0.8 cm	
Specific discharge	U=	0.2 cm/day	
Sw/(4*SQRT(Ay*X))	B=	42.1	
Sd/(2*SQRT(Az*X))	C=	8.8	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	42.1	Actual C value=	8.8
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$
0.005 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	42.08679463	8.752114122
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.067625784	0.258590727
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** SB-8 (9'-10') **Sample Date:** 11/13/2020
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.0093 mg/L			
Distance along centerline of the plume coming from the source (X)=	**4.1** ft	=	124.97 cm	
First order degradation constant (λ)=	0.0009 /day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05 cm/sec	=	1.841 cm/day	
Hydraulic gradient (i)=	0.03 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9 ft	=	4,965.19 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Calculated Parameters — **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	12.5 cm	
Transverse dispersivity	Ay=	4.2 cm	
Vertical dispersivity	Az=	0.6 cm	
Specific discharge	U=	0.2 cm/day	
Sw/(4*SQRT(Ay*X))	B=	54.4	
Sd/(2*SQRT(Az*X))	C=	11.3	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	54.4	Actual C value=	11.3
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$

0.005 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	54.40488086	11.3137085
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.053127751	0.212482487
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** SB-11 (10'-11') **Sample Date:** 11/16/2020
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.014 mg/L			
Distance along centerline of the plume coming from the source (X)=	7.1 ft	=	216.41 cm	
First order degradation constant (λ)=	0.0009 /day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05 cm/sec	=	1.841 cm/day	
Hydraulic gradient (i)=	0.03 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9 ft	=	4,965.19 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Calculated Parameters		**DO NOT ENTER VALUES HERE!**	
Longitudinal dispersivity	Ax=	21.6 cm	
Transverse dispersivity	Ay=	7.2 cm	
Vertical dispersivity	Az=	1.1 cm	
Specific discharge	U=	0.2 cm/day	
Sw/(4*SQRT(Ay*X))	B=	31.4	
Sd/(2*SQRT(Az*X))	C=	6.5	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	31.4	Actual C value=	6.5
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$
0.005 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	31.41690303	6.533268288
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.088559073	0.318446942
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** SB-11 (9'-10') **Sample Date:** 10/05/2021
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.016 mg/L			
Distance along centerline of the plume coming from the source (X)=	**8.2** ft	=	248.41 cm	
First order degradation constant (λ)=	0.0009 /day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05 cm/sec	=	1.841 cm/day	
Hydraulic gradient (i)=	0.03 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	162.9 ft	=	4,965.19 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Calculated Parameters		**DO NOT ENTER VALUES HERE!**	
Longitudinal dispersivity	Ax=	24.8 cm	
Transverse dispersivity	Ay=	8.3 cm	
Vertical dispersivity	Az=	1.2 cm	
Specific discharge	U=	0.2 cm/day	
Sw/(4*SQRT(Ay*X))	B=	27.4	
Sd/(2*SQRT(Az*X))	C=	5.7	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	27.4	Actual C value=	5.7
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$
0.005 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	27.36932657	5.691558877
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.100341686	0.349100573
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
RBCA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 20190483, 20050170 IEPA LPC # (10-digit): 0894076105

Site Name: GC Real Estate, LLC.

Site Address (not a P.O. Box): 1125 Aurora Avenue

City: Aurora County: Kane Zip Code: 60505

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: R12, R14, R26): R26

Contact Information for Individual Who Performed Calculations: Jeff Ogden, Senior Project Manager, Eagle Environmental Consultants, LLC Phone: (630) 940-2540

Land Use: Not Applicable Soil Type: Sand

Groundwater: ☒ Class I ☐ Class II

Mass Limit: ☐ Yes ☒ No If Yes, then Specify Acreage: ☐ 0.5 ☐ 1 ☐ 2 ☐ 5 ☐ 10 ☐ 30

Result from S18/S28 used in R26? ☐ Yes ☒ No Specify C_{source} from S18/S28 _____ mg/L

- **Mass Limit Acreage other than defaults must always be rounded up.**
- **Failure to use site-specific parameters where allowed could affect payment from the Underground Storage Tank Fund.**
- **Maps depicting source width, plume dimensions, distance, etc. must also be submitted.**
- **Inputs must be submitted in the designated unit.**

Symbol			Unit	Symbol			Unit
AT_c	=	70	yr	d	=		cm
AT_n	=		yr	D^{air}	=		cm^2/s
BW	=	70	kg	D^{water}	=		cm^2/s
C_{source}	=	see page 3	mg/L	D_s^{eff}	=		cm^2/s
$C_{(x)}$	=	see page 3	mg/L	ED	=		yr
$C_{(x)}/C_{source}$	=		unitless	EF	=		d/yr

Incident #: 20190483, 20050170 Chemical: Benzene Land Use: Not Applicable

Symbol			Unit	Symbol			Unit
erf	=		unitless	RAF_d (PNAs)	=	0.05	unitless
f_{oc}	=		g/g	RAF_d (inorganics)	=	0	unitless
GW_{comp}	=		mg/L	RAF_0	=	1.0	unitless
GW_{source}	=		mg/L	$RBSL_{air}$ (carcinogenic)	=		$\mu g/m^3$
H'	=		cm^3_{water}/cm^3_{air}	$RBSL_{air}$ (noncarcinogenic)	=		$\mu g/m^3$
i	=	0.03	cm/cm	RfD_i	=		mg/kg-d
I	=	30	cm/yr	RfD_o	=		mg/kg-d
IR_{air}	=	20	m^3/d	SA	=	3,160	cm^2/d
IR_{soil}	=		mg/d	S_d	=	200	cm
IR_w	=		L/d	S_w	=	6,681.22	cm
K	=	1.841	cm/d for R15, R19, R26; cm/yr for R24	SF_i	=		$(mg/kg\text{-}d)^{-1}$
K_{oc}	=		cm^3/g or L/kg	SF_o	=		$(mg/kg\text{-}d)^{-1}$
k_s (non-ionizing organics)	=		cm^3_{water}/g_{soil}	THQ	=	1	unitless
k_s (ionizing organics)	=		cm^3_{water}/g_{soil}	TR	=		unitless
k_s (inorganics)	=		cm^3_{water}/g_{soil}	U	=		cm/d
L_s	=	100	cm	U_{air}	=	225	cm/s
LF_{sw}	=		$(mg/L_{water})/(mg/kg_{soil})$	U_{gw}	=		cm/yr
M	=	0.5	mg/cm^2	VF_p	=		kg/m^3
Pe	=	$6.9 \cdot 10^{-14}$	$g/cm^2\text{-}s$	VF_{samb}	=		$(mg/m^3_{air})/mg/kg_{soil})$ or kg/m^3
RAF_d	=	0.5	unitless	VF_{ss}	=		kg/m^3

Incident #: 20190483, 20050170 Chemical: Benzene Land Use: Not Applicable

Symbol			Unit
W	=		cm
w	=		g_{water}/g_{soil}
X	=	see below	cm
α_x	=		cm
α_y	=		cm
α_z	=		cm
δ_{air}	=	200	cm
δ_{gw}	=	200	cm

Symbol			Unit
θ_{as}	=		cm^3_{air}/cm^3_{soil}
θ_{ws}	=		cm^3_{water}/cm^3_{soil}
θ_T	=	0.32	cm^3/cm^3_{soil}
λ	=	0.0009	d^{-1}
π	=	3.1416	
ρ_b	=		g/cm^3
ρ_w	=	1	g/cm^3
τ	=	$9.46 \cdot 10^8$	s

Equation		Result	Unit(s)
R1	=		mg/kg
R2	=		mg/kg
R7	=		mg/kg
R8	=		mg/kg
R12	=		mg/kg
R25	=		mg/L

C_{source} Values: (mg/L)

MW-3 = 0.0574
MW-4 = 1.24
MW-5 = 0.0735
MW-7 = 0.0167
MW-8 = 0.0548

Maximum Predicted Extent of Groundwater Impact (X):
(feet from point source)

MW-3 = 20
MW-4 = 51
MW-5 = 22
MW-7 = 9
MW-8 = 19

RBCA Equation R26
Dissolved Hydrocarbon Concentration Along Centerline
Maximum Predicted Extent of Groundwater Impact Modeling
Groundwater Component of the Groundwater Ingestion Exposure Route
1125 Aurora Avenue
Aurora

Input Parameters Used in the Solution of Equation R26		
Parameter	**Value**	**Description**
First Order Degradation Constant (λ)	Benzene: 0.0009/day Ethylbenzene: 0.003/day	Default Value (Appendix C, Table E)
Aquifer Hydraulic Conductivity (K)	2.131E-05 cm/sec	Site specific value as provided in approved SICR dated September 2, 2021
Hydraulic Gradient (i)	0.03 cm/cm	Site specific value as provided in approved SICR dated February 7, 2022
Total Soil Porosity (θ_T)	0.32 cm^3/cm^3	Default for sand
Source Width Perpendicular to Groundwater Flow in the Horizontal Plane (S_w)	6,681.22 cm	Site specific value as provided in approved SICR dated February 7, 2022
Source Width Perpendicular to Groundwater Flow in the Vertical Plane (S_d)	200 cm	Default Value Appendix C, Table D
Tier 1 Groundwater Remediation Objective for Class I groundwater at the point of human exposure (C_x)	Benzene: 0.005 mg/L Ethylbenzene: 0.7 mg/L	Appendix B, Table E

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** MW-3 **Sample Date:** 02/21/2020
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.057 mg/L			
Distance along centerline of the plume coming from the source (X)=	**19.1** ft	=	582.17 cm	
First order degradation constant (λ)=	0.0009 /day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05 cm/sec	=	1.841 cm/day	
Hydraulic gradient (i)=	0.03 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	219.2 ft	=	6,681.22 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Calculated Parameters — **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	58.2 cm	
Transverse dispersivity	Ay=	19.4 cm	
Vertical dispersivity	Az=	2.9 cm	
Specific discharge	U=	0.2 cm/day	
Sw/(4*SQRT(Ay*X))	B=	15.7	
Sd/(2*SQRT(Az*X))	C=	2.4	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	15.7	Actual C value=	2.4
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$
0.005 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	15.71476238	2.428597112
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.162654091	0.556921002
erf(x)=	1	0.999406374

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** MW-4 **Sample Date:** 02/21/2020
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	1.240 mg/L			
Distance along centerline of the plume coming from the source (X)=	**50.9** ft	=	1,551.43 cm	
First order degradation constant (λ)=	0.0009 /day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05 cm/sec	=	1.841 cm/day	
Hydraulic gradient (i)=	0.03 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	219.2 ft	=	6,681.22 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Calculated Parameters — **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	155.1 cm	
Transverse dispersivity	Ay=	51.7 cm	
Vertical dispersivity	Az=	7.8 cm	
Specific discharge	U=	0.2 cm/day	
Sw/(4*SQRT(Ay*X))	B=	5.9	
Sd/(2*SQRT(Az*X))	C=	0.9	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	0.8	see F46 & K46 in the linear interpolation section.

Actual B value=	5.9	Actual C value=	0.9
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	0.8

Solutions

$C_{(x)}$
0.005 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	5.896895118	0.911320331
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.341090835	0.770095391
erf(x)=	1	0.802532784

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** MW-5 **Sample Date:** 02/21/2020
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.074 mg/L			
Distance along centerline of the plume coming from the source (X)=	**21.4** ft	=	652.27 cm	
First order degradation constant (λ)=	0.0009 /day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05 cm/sec	=	1.841 cm/day	
Hydraulic gradient (i)=	0.03 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	219.2 ft	=	6,681.22 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Calculated Parameters — **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	65.2 cm	
Transverse dispersivity	Ay=	21.7 cm	
Vertical dispersivity	Az=	3.3 cm	
Specific discharge	U=	0.2 cm/day	
Sw/(4*SQRT(Ay*X))	B=	14.0	
Sd/(2*SQRT(Az*X))	C=	2.2	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	14.0	Actual C value=	2.2
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$
0.005 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	14.02579259	2.167579666
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.178739801	0.58476803
erf(x)=	1	0.997826221

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** MW-7 **Sample Date:** 12/04/2020
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.017 mg/L			
Distance along centerline of the plume coming from the source (X)=	**8.5** ft	=	259.08 cm	
First order degradation constant (λ)=	0.0009 /day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05 cm/sec	=	1.841 cm/day	
Hydraulic gradient (i)=	0.03 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	219.2 ft	=	6,681.22 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Calculated Parameters — **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	25.9 cm	
Transverse dispersivity	Ay=	8.6 cm	
Vertical dispersivity	Az=	1.3 cm	
Specific discharge	U=	0.2 cm/day	
Sw/(4*SQRT(Ay*X))	B=	35.3	
Sd/(2*SQRT(Az*X))	C=	5.5	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	35.3	Actual C value=	5.5
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$
0.005 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	35.31199547	5.45720057
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.079567817	0.358714753
erf(x)=	1	1

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** MW-8 **Sample Date:** 12/04/2020
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Benzene

Concentration at the source (C_{source})=	0.055 mg/L			
Distance along centerline of the plume coming from the source (X)=	**18.7** ft	=	568.45 cm	
First order degradation constant (λ)=	0.0009 /day		if benzene, lambda=0.0009/day	
Aquifer hydraulic conductivity (K)=	2.131E-05 cm/sec	=	1.841 cm/day	
Hydraulic gradient (i)=	0.03 m/m			
Total soil porosity (θ_T)=	0.32 cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	219.2 ft	=	6,681.22 cm	
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56 ft	=	200 cm	(assuming complete mixing)

Calculated Parameters — **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	56.8 cm	
Transverse dispersivity	Ay=	18.9 cm	
Vertical dispersivity	Az=	2.8 cm	
Specific discharge	U=	0.2 cm/day	
Sw/(4*SQRT(Ay*X))	B=	16.1	
Sd/(2*SQRT(Az*X))	C=	2.5	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	16.1	Actual C value=	2.5
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

$C_{(x)}$
0.005 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	16.09393896	2.48719597
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.159432899	0.551029988
erf(x)=	1	0.999564161

DOMENICO SOLUTE TRANSPORT MODEL CALCULATION

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
RBCA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): 20190483, 20050170 IEPA LPC # (10-digit): 0894076105

Site Name: GC Real Estate, LLC.

Site Address (not a P.O. Box): 1125 Aurora Avenue

City: Aurora County: Kane Zip Code: 60505

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: R12, R14, R26): R26

Contact Information for Individual Who Performed Calculations: Jeff Ogden, Senior Project Manager, Eagle Environmental Consultants, LLC Phone: (630) 940-2540

Land Use: Not Applicable Soil Type: Sand

Groundwater: ☒ Class I ☐ Class II

Mass Limit: ☐ Yes ☒ No If Yes, then Specify Acreage: ☐ 0.5 ☐ 1 ☐ 2 ☐ 5 ☐ 10 ☐ 30

Result from S18/S28 used in R26? ☐ Yes ☒ No Specify C_{source} from S18/S28 _____ mg/L

- **Mass Limit Acreage other than defaults must always be rounded up.**
- **Failure to use site-specific parameters where allowed could affect payment from the Underground Storage Tank Fund.**
- **Maps depicting source width, plume dimensions, distance, etc. must also be submitted.**
- **Inputs must be submitted in the designated unit.**

Symbol			Unit	Symbol			Unit
AT_c	=	70	yr	d	=		cm
AT_n	=		yr	D^{air}	=		cm^2/s
BW	=	70	kg	D^{water}	=		cm^2/s
C_{source}	=	see page 3	mg/L	D_s^{eff}	=		cm^2/s
$C_{(x)}$	=	see page 3	mg/L	ED	=		yr
$C_{(x)}/C_{source}$	=		unitless	EF	=		d/yr

Incident #: 20190483, 20050170 Chemical: Ethylbenzene Land Use: Not Applicable

Symbol			Unit	Symbol			Unit
erf	=		unitless	RAF_d (PNAs)	=	0.05	unitless
f_{oc}	=		g/g	RAF_d (inorganics)	=	0	unitless
GW_{comp}	=		mg/L	RAF_0	=	1.0	unitless
GW_{source}	=		mg/L	$RBSL_{air}$ (carcinogenic)	=		$\mu g/m^3$
H'	=		cm^3_{water}/cm^3_{air}	$RBSL_{air}$ (noncarcinogenic)	=		$\mu g/m^3$
i	=	0.03	cm/cm	RfD_i	=		mg/kg-d
I	=	30	cm/yr	RfD_o	=		mg/kg-d
IR_{air}	=	20	m^3/d	SA	=	3,160	cm^2/d
IR_{soil}	=		mg/d	S_d	=	200	cm
IR_w	=		L/d	S_w	=	6,681.22	cm
K	=	1.841	cm/d for R15, R19, R26; cm/yr for R24	SF_i	=		$(mg/kg-d)^{-1}$
K_{oc}	=		cm^3/g or L/kg	SF_o	=		$(mg/kg-d)^{-1}$
k_s (non-ionizing organics)	=		cm^3_{water}/g_{soil}	THQ	=	1	unitless
k_s (ionizing organics)	=		cm^3_{water}/g_{soil}	TR	=		unitless
k_s (inorganics)	=		cm^3_{water}/g_{soil}	U	=		cm/d
L_s	=	100	cm	U_{air}	=	225	cm/s
LF_{sw}	=		$(mg/L_{water})/(mg/kg_{soil})$	U_{gw}	=		cm/yr
M	=	0.5	mg/cm^2	VF_p	=		kg/m^3
Pe	=	$6.9 * 10^{-14}$	g/cm^2-s	VF_{samb}	=		$(mg/m^3_{air})/mg/kg_{soil})$ or kg/m^3
RAF_d	=	0.5	unitless	VF_{ss}	=		kg/m^3

Incident #: 20190483, 20050170 Chemical: Ethylbenzene Land Use: Not Applicable

Symbol			Unit
W	=		cm
w	=		g_{water}/g_{soil}
X	=	see below	cm
α_x	=		cm
α_y	=		cm
α_z	=		cm
δ_{air}	=	200	cm
δ_{gw}	=	200	cm

Symbol			Unit
θ_{as}	=		cm^3_{air}/cm^3_{soil}
θ_{ws}	=		cm^3_{water}/cm^3_{soil}
θ_T	=	0.32	cm^3/cm^3_{soil}
λ	=	0.003	d^{-1}
π	=	3.1416	
ρ_b	=		g/cm^3
ρ_w	=	1	g/cm^3
τ	=	$9.46 \cdot 10^8$	s

Equation		Result	Unit(s)
R1	=		mg/kg
R2	=		mg/kg
R7	=		mg/kg
R8	=		mg/kg
R12	=		mg/kg
R25	=		mg/L

C_{source} Values: (mg/L)

MW-5 = 1.75

Maximum Predicted Extent of Groundwater Impact (X):
(feet from point source)

MW-5 = 2

DISSOLVED HYDROCARBON CONCENTRATION ALONG CENTERLINE
MAXIMUM PREDICTED EXTENT OF GROUNDWATER IMPACT MODELING
RBCA EQUATION R26

Site Details		Sample Details
Site Name & Location:	1125 Aurora Avenue Aurora	**Sample Location:** MW-5 **Sample Date:** 02/21/2020
LUST Incident Number(s):	20190483, 20050170	
Exposure Pathway:	Groundwater Component of Groundwater Ingestion	
Groundwater Classification:	Class I	**Analyte:** Ethylbenzene

Concentration at the source (C_{source})=	1.750	mg/L			
Distance along centerline of the plume coming from the source (X)=	**1.9**	ft	=	57.30	cm
First order degradation constant (λ)=	0.003	/day		if ethylbenzene, lambda=0.003/day	
Aquifer hydraulic conductivity (K)=	2.131E-05	cm/sec	=	1.841	cm/day
Hydraulic gradient (i)=	0.03	m/m			
Total soil porosity (θ_T)=	0.32	cm^3/cm^3_{soil}			
Source width perpendicular to GW flow direction in horizontal plane (S_w)=	219.2	ft	=	6,681.22	cm
Source width perpendicular to GW flow direction in vertical plane (S_d)=	6.56	ft	=	200	cm (assuming complete mixing)

Calculated Parameters — **DO NOT ENTER VALUES HERE!**

Longitudinal dispersivity	Ax=	5.7	cm
Transverse dispersivity	Ay=	1.9	cm
Vertical dispersivity	Az=	0.3	cm
Specific discharge	U=	0.2	cm/day
Sw/(4*SQRT(Ay*X))	B=	159.7	
Sd/(2*SQRT(Az*X))	C=	24.7	
Error function	erf(B)=	1.0	To determine error function values,
Error function	erf(C)=	1.0	see F46 & K46 in the linear interpolation section.

Actual B value=	159.7	Actual C value=	24.7
Automatic calculations : Actual erf(B)	1.0	Actual erf(C)=	1.0

Solutions

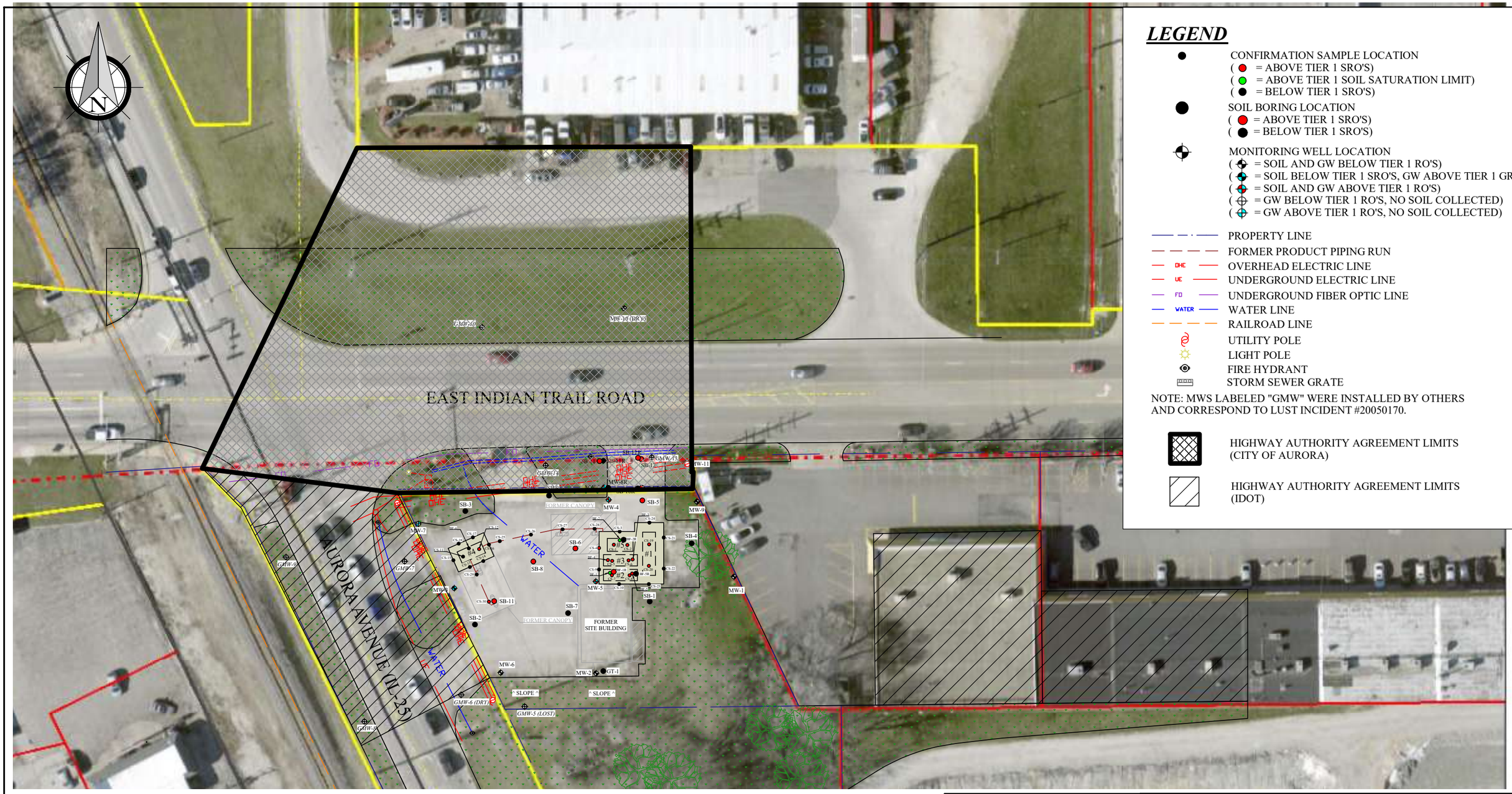
$C_{(x)}$

0.7 mg/l

Computation of erf(x)

Source: Abramowitz, M. and I. A. Stegun, 1972, Handbook of Mathematical Functions, Dover Publications, New York, page 299, formula 7.1.26
Maximum error in computation = 1.5 x 10^-7

x=	159.6552987	24.67351322
p=	0.3275911	0.3275911
a1=	0.254829592	0.254829592
a2=	-0.284496736	-0.284496736
a3=	1.421413741	1.421413741
a4=	-1.453152027	-1.453152027
a5=	1.061405429	1.061405429
t=	0.018761144	0.110097925
erf(x)=	1	1



LEGEND

- CONFIRMATION SAMPLE LOCATION
  (= ABOVE TIER 1 SRO'S)
  (= ABOVE TIER 1 SOIL SATURATION LIMIT)
  (= BELOW TIER 1 SRO'S)
- SOIL BORING LOCATION
  (= ABOVE TIER 1 SRO'S)
  (= BELOW TIER 1 SRO'S)
- MONITORING WELL LOCATION
  (= SOIL AND GW BELOW TIER 1 RO'S)
  (= SOIL BELOW TIER 1 SRO'S, GW ABOVE TIER 1 GRO'S)
  (= SOIL AND GW ABOVE TIER 1 RO'S)
  (= GW BELOW TIER 1 RO'S, NO SOIL COLLECTED)
  (= GW ABOVE TIER 1 RO'S, NO SOIL COLLECTED)
- PROPERTY LINE
- FORMER PRODUCT PIPING RUN
- OHE — OVERHEAD ELECTRIC LINE
- UE — UNDERGROUND ELECTRIC LINE
- FO — UNDERGROUND FIBER OPTIC LINE
- WATER — WATER LINE
- RAILROAD LINE
- UTILITY POLE
- LIGHT POLE
- FIRE HYDRANT
- STORM SEWER GRATE

NOTE: MWS LABELED "GMW" WERE INSTALLED BY OTHERS AND CORRESPOND TO LUST INCIDENT #20050170.

- HIGHWAY AUTHORITY AGREEMENT LIMITS (CITY OF AURORA)
- HIGHWAY AUTHORITY AGREEMENT LIMITS (IDOT)

0 60 120

GRAPHIC SCALE (IN FEET)

EAGLE ENVIRONMENTAL CONSULTANTS, LLC

3805 ILLINOIS AVENUE
ST. CHARLES, ILLINOIS 60174

PROPOSED HIGHWAY AUTHORITY AGREEMENT LIMITS

GC REAL ESTATE LLC
1125 AURORA AVENUE
AURORA, IL

PREPARED BY:	EXHIBIT	DATE:	PROJECT #:
ELMORE	C	02/03/25	118109
DRAWN BY:	FILE NAME:		
PELLICO	118109 - GC AURORA - CAD		