### BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

MOTO, INC. (Swansea),	)
Petitioner,	)
y.	) PCB 17-044
ILLINOIS ENVIRONMENTAL	) (UST Appeal)
PROTECTION AGENCY,	j
Respondent.	)

### CERTIFICATE OF RECORD ON APPEAL

Pursuant to 35 Ill. Adm. Code 105.116(b) and 105.410, the following constitutes an index of documents comprising the record:

PAGES 001-066	DOCUMENT CWM e-mails with Illinois EPA and attachments	DATE 07/05/2016
067-207	CWM Corrective Action Plan and Budget	10/11/2016
208-222	Illinois EPA Leaking UST Technical Review Notes	11/18/2016
223-225	CWM e-mails with Illinois EPA and attachments	12/08/2016
226-229	Illinois EPA CAP	12/09/2016
230	Illinois EPA Environmental Justice Area Reporting Form	12/14/2016
231-237	Illinois EPA decision letter	12/20/2016

I, SHIRLENE SOUTH, certify on information and belief that the entire record of the Respondent's decision, as defined in 35 III. Adm. Code 105.410(b), is hereby enclosed.

BY:

Shirlene South

Project Manager/Environmental Protection Specialist III

Leaking Underground Storage Tank Section Illinois Environmental Protection Agency

#### South, Shirlene

From:

cwm@cwmcompany.com

Sent:

Tuesday, July 05, 2016 12:49 PM

To:

South, Shirlene

Subject:

RE: 2002-0431 Moto Mart in Swansea

#### Shirlene,

I will prepare and send them to the client for signature, and forward them to you as soon as I receive them. Vince

----- Original Message -----

Subject: 2002-0431 Moto Mart in Swansea

From: "South, Shirlene" Date: 7/5/16 11:31 am To: "CWM Company, Inc."

Hello Vince,

I saw that you were going to send the affidavits of the access denial in the CACR, but they are needed in the SICR. They are needed to prove that delineation of the contamination was attempted. Can you please send the as soon as possible so I can finish my review?

Thank you

Shirlene South

217/558-0347

### South, Shirlene

From:

cwm@cwmcompany.com

Sent:

Thursday, July 07, 2016 8:15 AM

To:

South, Shirlene

Subject:

RE: 2002-0431 Moto Mart in Swansea

Attachments:

Offsite affidavits.pdf

### Shirlene,

A scan of the affidavits is attached, the originals will be delivered soon to the Agency. Let us know if you need anything else.

Vince

----- Original Message -----

Subject: 2002-0431 Moto Mart in Swansea

From: "South, Shirlene" Date: 7/5/16 11:31 am To: "CWM Company, Inc."

Hello Vince,

I saw that you were going to send the affidavits of the access denial in the CACR, but they are needed in the SICR. They are needed to prove that delineation of the contamination was attempted. Can you please send the as soon as possible so I can finish my review?

Thank you

Shirlene South

217/558-0347

In accordance with the 415 ILCS 5/57-57.17, I do solemnly swear that every effort has been attempted in order to gain access to properties west of the Moto, Inc. facility in Swansea, Illinois, owned by Medstar Ambulance, Inc., Sparta, Illinois. The Moto, Inc. facility property is located at 1324 North Illinois Street, Swansea, Illinois and has been assigned Incident number 2002-0431. The Medstar Ambulance, Inc. properties are identified as 1209 North Illinois Street, and a parking lot located north of 1209 North Illinois in Swansea, Illinois located adjacent to the west side of Illinois Street. The access requests have been completed for the purposes of site investigation and remediation of the Moto, Inc. property. The following is the attempt that has been made and the neighboring property owner's response to the attempt.

- A request for access was dated January 25, 2008 and sent via Certified Mail #7006 2760 0000 6494 4991 to Medstar Ambulance. The letter was received January 26, 2008. This letter included the language required by 35 Illinois Administrative Code 742.350 b).
- A second request for access was dated March 25, 2008 and sent via Certified Mail #7006 2760 0000 6494 4328 to Medstar Ambulance. The letter was received March 28, 2008.
   This letter included the language required by 35 Illinois Administrative Code 742.350 b).
- A third request for access was dated January 14, 2009 and sent via Certified Mail #7008 0500 0001 2051 2540 to Medstar Ambulance. The letter was received January 16, 2009.
   This letter included the language required by 35 Illinois Administrative Code 742.350 b).
- To date, no response to the requests has been received.

Copies of the requests and proof of delivery are attached.

Owner/Operator:	Rob Whittington		_ Title:	Agent
Signature:	1 Whithough	_ Date:_	7/2/16	-
Subscribed and sworn	to before me the 6+	day of	July	_, 2016
Helen D'	Dell	Seal:	Official Helen M Notary Public, S	MIN-H
(No	tary Public)		St. Clair ( Oemmission Exp	tate of Illinois County Ires June 20, 2017

In accordance with the 415 ILCS 5/57-57.17, I do solemnly swear that every effort has been attempted in order to gain access to the property west of the Moto, Inc. facility in Swansea, Illinois, owned by Ms. Karen Roussel, Waddell, Arizona. The Moto, Inc. facility property is located at 1324 North Illinois Street, Swansea, Illinois and has been assigned Incident number 2002-0431. The Roussel property is identified 1309 North Illinois Street, Swansea, Illinois located adjacent to the west side of Illinois Street. The access requests have been completed for the purposes of site investigation and remediation of the Moto, Inc. property. The following is the attempt that has been made and the neighboring property owner's response to the attempt.

- A request for access was dated January 14, 2009 and sent via Certified Mail #7008 0500 0001 2051 2557 to Karen Roussel. This letter included the language required by 35 Illinois Administrative Code 742.350 b).
- To date, no response to the request has been received.

Copies of the requests and proof of delivery are attached.

Owner/Operator:	Rob Whittington		Title:	Agent
Signature:	Olot With for	Date:	1/6/16	
Subscribed and sworn	to before me the 644	_day of <u>J</u>	My	_, 2016
Helen /	otary Public)	_ Seal:	Notary	Chificial Seal Helen M ODell Public, State of Illinois St. Cleir County

In accordance with the 415 ILCS 5/57-57.17, I do solemnly swear that every effort has been attempted in order to gain access to the property west of the Moto, Inc. facility in Swansea, Illinois, owned by Mr. Dave Wuebbels, Belleville, Illinois. The Moto, Inc. facility property is located at 1324 North Illinois Street, Swansea, Illinois and has been assigned Incident number 2002-0431. The Wuebbels property is identified 1307 North Illinois Street, Swansea, Illinois located adjacent to the west side of Illinois Street. The access requests have been completed for the purposes of site investigation and remediation of the Moto, Inc. property. The following is the attempt that has been made and the neighboring property owner's response to the attempt.

- A request for access was dated January 14, 2009 and sent via Certified Mail #7008 0500 0001 2051 2533 to Dave Wuebbels. The letter was received January 15, 2009. This letter included the language required by 35 Illinois Administrative Code 742.350 b).
- · To date, no response to the request has been received.

Copies of the requests and proof of delivery are attached.

Owner/Operator:	Rob Whittington		Title:	Agent
Signature:	Post Wathington	Date:	7/6/16	
Subscribed and sworn	to before me the 644	_day of	July	_, 2016
Delen W	tary Public)	Seal:	lei al	filicial Seal en M ODell Illo, State of litinole Ilair County Illixpires June 20, 2017
		3	My Commission	Expires June 20, 2017

#### South, Shirlene

From: vince@cwmcompany.com
Sent: Vince@cwmcompany.com
Tuesday, July 12, 2016 2:50 PM

To: South, Shirlene

Subject: RE: 2002-0431 Moto mart

Attachments: Capture.JPG

#### Shirlene,

Looking at the aerial (capture.jpg), the right-of-way looks like it could be tight. I am also afraid the edges are full of utilities, since that is really the only location they could be. Not saying it is impossible to get a borings in there, but it might be difficult to find a location safe from utility conflicts.

We really hadn't started the modeling yet, but in a quick preliminary assessment, it looks like BH-5 would model a little less than 60 feet. The highest soil contamination, at BH-1, would model about 115 feet. The highest groundwater contamination, MW-1, would model about 265 feet, with MW-4 about 200 feet. Groundwater flow is away from the highway towards the east (and to a lesser extent south).

If you want us to complete the modeling now, let me know, and I should be able to get it to you in the next day or two.

Vince E. Smith, P.E.
Sr. Environmental Engineer
CWM Company, Inc.
701 W. South Grand Ave.
Springfield, IL 62704
217-522-8001
Fax 217-522-8009
vince@cwmcompany.com

----- Original Message ------Subject: 2002-0431 Moto mart

From: "South, Shirlene" <Shirlene.South@Illinois.gov>

Date: Tue, July 12, 2016 8:22 am

To: "vince@cwmcompany.com" <vince@cwmcompany.com>

#### HI Vince,

The question came up of whether a sb/mw could be put in the right-of-way, in order delineate the contamination at BH-5? I was also wondering if you have perhaps already modeled how far the contamination will travel across HWY 159? Shirlene South

217/558-0347

Shirlene.South@illinois.gov

#### South, Shirlene

From:

vince@cwmcompany.com Tuesday, July 26, 2016 2:50 PM

Sent:

South, Shirlene

Subject:

RE: 2002-0431 Moto mart

#### Shirlene,

We never finished the modeling, but will. It should be ready either late today or tomorrow morning, and I will forward it to you.

#### Vince

----- Original Message -------Subject: RE: 2002-0431 Moto mart

From: "South, Shirlene" <Shirlene.South@Illinois.gov>

Date: Tue, July 26, 2016 12:02 pm

To: "vince@cwmcompany.com" < vince@cwmcompany.com>

Vince,

Could you please re-send the modeling that you did for the MotoMart in

Swansea? Thank you, Shirlene

From: vince@cwmcompany.com [mailto:vince@cwmcompany.com]

Sent: Tuesday, July 12, 2016 2:50 PM

To: South, Shirlene

Subject: RE: 2002-0431 Moto mart

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Sr. Environmental Engineer

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far the contamination will travel across HWY 159?

Shirlene South 217/558-0347

Shirlene.South@illinois.gov

### South, Shirlene

From:

vince@cwmcompany.com

Sent:

Wednesday, July 27, 2016 8:22 AM

To:

South, Shirlene

Subject:

RE: 2002-0431 Moto mart

Attachments:

cwmcompany2000@gmail.com\_20160727\_080532.pdf; Moto Mart- model.pdf

#### Shirlene,

The modeling and a drawing showing the approximate limits of the contamination are attached. Let me know if you need anything else.

#### Vince

Original Message

Subject: RE: 2002-0431 Moto mart

From: "South, Shirlene" <Shirlene.South@Illinois.gov>

Date: Wed, July 27, 2016 4:55 am

To: "vince@cwmcompany.com" <vince@cwmcompany.com>

### Sorry, I thought you had sent me some figures.

From: vince@cwmcompany.com [mailto:vince@cwmcompany.com]

Sent: Tuesday, July 26, 2016 2:50 PM

To: South, Shirlene

Subject: RE: 2002-0431 Moto mart

Shirlene,

We never finished the modeling, but will. It should be ready either late today or

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To: "vince@cwmcompany.com" <vince@cwmcompany.com>

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To: South, Shirlene

Subject: RE: 2002-0431 Moto mart

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Sr. Environmental Engineer

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Shirlene South 217/558-0347

Shirlene.South@illinois.gov

R-26 Input/Summary Sheet

MA Incident # (	sion: 8/25/2016 8 or 8 digit)	2002-0431				
PA LPC # (10 di		1631405021				
te Name:	- Ind	MotoMart - Swansea			-	
te Address:		1324 North Illinois			-	
ity:		Swansea				_
ounty:		St. Clair				_
p Code:		62221				_
St. Equations U	Red:	85,6,7,8,9,10,17,18,19,20,21	92.24			_
BCA Equations		R-1, R-2, R3	100			
		lat CVVM Company, Inc., VES				
and Use:	A MARTIN GET MINE TO SERVE COMME	Residential & Constructi	on Worker			_
bjective from St	17 used in R26:	No	11011101			
roundwater:		Class 1				
	Limit Equations:	Standard Equations		If Mass Limit, then Specify Acres:		
	ume for Mass Limit Eq.:	0.00		in the new State of the land of the land of	< use this #	ahove
ate Data is Ente		July 26, 2016				
Entry	Description					
60.4	Holcomb Bulk Density (pc	), or	Shelby Tube	Location:		
94.7		n" or kg/L); 1.5, or Greval =2.0, 8				
				And the state of t		
2.54	ps - Soil Particle Density		Reference	depth and a second		
0.618	Total Soil Porosity		0.619	0.619		
0.327	Water Filled Porosity		0,327	0.327		
0,292	Air Filled Parasity		0.292	0.292		
0.430	0r - Total Soll Porosity (RE		0.43 or; Gravel - 0	25; Sand = 0.32; Sit = 0.40; Clay = 0.35		
0.286	w - Average Soft Moisture	Content	0.1, or: Subsurface 5	Soil (lap 1m) = 0.1; Subsurince Soil (below 1 m)	●0.2: or 61e Bo	ecific.
Loamy Sand	USDA Soll Classification (	Pick from List)			Entry	
				Organic Matter (%):		1
0.00580	Fractional Organic Carbo	n (foc) in g/g		Organic Matter (mg/kg):		1
				Total Organic Carbon (g/g):		1
4.30E-05	Avarage Hydraulic Conductive	ty (cm/sec) Well Name	1			
4.30E-06	Feiling Hydrause Conductivity					
	Rising Hydraulic Conductivity		2	Hydraulic Gradient Calculatio	ns	
0.08414	Hydraulic Gradient (0.02 for		Meters	E-VVIA	92.10	1
10	d Aguifer Thickness (ft)		3.048 m	MW-7	82,34	-4
10	d Depth of Source (TD (Ventical	Thirtman of Contumbations	3.048 m	Distance:	116	4
14		of the groundwater plume emanating to	0 cm	Diela Ro.	1.10	4
220	L - Source Length Parallel	to Groundwater Flow (ft)	67.056 m			
310	Sw. Source Width -horizon		9448.8 om			
C Concentre	ation of Contembrant in group	dwaler at distance X from the so	uree (mod.)	Surface Water		
-Di -MIONINE	Benzene	MTBE	and (military)	Contract Atental		
	Toluens	MIBE	-			
	Ethylbanzene					
	Ethylbenzene Total Xylenes					_
	Ethylbenzene Total Xylenes Chemicals of Con-	em				_
THE PERMIT	Ethylbenzene Total Xylenes Chemicals of Con-					
Toluene	Ethylbenzene Total Xylenes Chemicals of Con-	Chrysene				
Toluene Ethylbanzane	Ethylbenzene Total Xylenes Chemicals of Con-	Chrysene Senzo(k)fluorenthene				
Toluene	Ethylbenzene Total Xylenes Chemicals of Con-	Chrysene				

Ceat Equations

L' Fugitive Oust Equations

☑ Ingestion Equations

	Text discussion for "!", L, d <sub>s</sub> , d <sub>s</sub> , S <sub>d</sub> , S <sub>d</sub>
Hydraulic Gradient	The Hydraulic Gradient (I) was determined from an onsite survey of each of the groundwater monitoring wells. The riser elevations were determined and the depth to groundwater was noted in each well. This data was used to generate a potentiometric flow map with contour lines which show potentiometric head. A corresponding flow line, perpendicular to the contour lines, was determined between two known points of groundwater elevation. The hydraulic gradient was determined by the difference in elevation divided by the length of flow between the points.
Source Length	The Source Length Parallel to Groundwater Flow (L) was determined from the site map and analytical results. A value of 45.1104 m was used to encompass the length of contamination parallel to groundwater flow. This value is the distance between soil borings BH-1 and BH-2.
Aquiter Thickness	The Aquifer Thickness (d <sub>a</sub> ) is a site specific value determined by the length of the monitoring well screen. The Aquifer Thickness value used in the modeling equations was 3 048 meters.
Depth of Source	The Depth of Source (d <sub>s</sub> ) was determined from the analytical results and soil boring logs. A value of 3.048 m was used to encompass the vertical thickness of contamination based upon a clean soil sample at BH-1A, "hot" samples at BH-2B and BH-2C, and a clean soil sample at BH-2D. Thus the vertical thickness of soil contamination has been determined to be 3.048 m.
Source Width	The source width perpendicular to groundwater flow direction in the Horizontal Plane $(S_w)$ was determined from the site map and analytical results. A value of 3566,16 cm was used to encompass the width of contamination in the horizontal plane. This value is the distance between clean wells MW-4 and and MW-6.
Source Depth	The source width perpendicular to groundwater flow direction in the Vertical Plane $(S_a)$ was determined from the soil boring logs and analytical results. A value of 304.8 cm was used to encompass the width of contamination in the vertical plane based on the depths of contamination present and the PID readings from the bore logs.

Distance (X)

			BENZ	ENE				
	Soll Exceeds					Groundwater Exceeds		
Location	Soil Concentration (rng/kg)	(fl)	Gw <sub>obj</sub> (mg/L) R25 Gsource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	(ff)	C(x) (mg/L
BH1	3.03	118	0.217	0.0048	MW1	8,300	265	0.004
BH2	0.096	10	0.007	0.0048	MW2	0.269	124	0.004
BH3	0.463	58	0.033	0.0048	MW4	2.000	201	0,004
BH5	0.474	58	0.034	0.0049				1
ВН9	0.312	46	0.022	0.0048				
					-			
								-
		-						-
	-	-		-			-	-
								-
_		-						-

			Tolu	ene				
	Soll Exceed	ances				Groundwater Exceeds		
Location	Soll Concentration (mg/kg)	(ft)	Gw <sub>abj</sub> (mg/L) R26 Capurca	C(x) (mg/L)	Location	Groundwaler Concentration (mg/L)	(tt)	C(x) (mg/L)
								_
*								

			Ethylbe	nzene	_			
	Soll Exceed			-		Groundwater Exceeds		
Location	Soil Concentration (mc/kg)	X (ft)	GW <sub>abj</sub> (mg/L) R28 Caourca	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x)
					MW1	3.240 .	15	0.638
					MW4	3.830	18	0.687
								1
-								
								-
						1		-
								-
		-		-	+	1770		
				~				-

			Total Xy	lenes				
	Soll Exceed				1	Groundwater Exceed		
Location	Soil Concentration (rng/kg)	(m)	Gw <sub>eq</sub> (mg/L) R26 Caource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x) (mg/L)
BH1	16.4		0.300543354					
BH5	25.7		0.471					
-								
				-				
				-				
		-						
								-
								-
	-							-
-								
								-

			MTE	3E				
	Soil Exceed					Groundwater Exceeds	nces	
Location	Soil Concentration (rng/kg)	(ft)	Gw <sub>ebj</sub> (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	(ft)	C(x)
				_				
								-
		-						-
							-	-
-				a stranger				-
								1

			Naphth	alene				
	Soll Exceed				1	Groundwater Exceeds		
Location	Soll Concentration (mg/kg)	X (ft)	Gw <sub>aci</sub> (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	3K (III)	C(x)
			THE PERSON		MW1	0.387	10	0.138
					MVV4	1.230	24	0,133
								-
		-						
							_	
							-	
					•			
								1
								-
		-						
		_			-			-

			Benzo(a)	pyrene				
	Soll Exceeds					Groundwater Exceed:	ruces	
	Soll	X	Gwad (mg/L)	C(x)		Groundwater	ж	C(x)
Location	Concentration (mg/kg)	(ft)	R26 Caourca	(mg/L)	Location	Concentration (mg/L)	(m)	(mg/L)
BH2	0.16		0.000001352					-
BH9	2.6		0.000021973					_
BH11	0.11		0.000000930					
BH12	1.5		0.000012677					
BH14	0.13		0.000001099					
BH16	0.12		0.000001014					
								-
					-			-
								1
								_
								-
		-		-				-
					-			-
-								-

			Dibenz[a,h]s	nthracene				
	Soll Exceed	ences				Groundwater Exceed	ances	
Location	Soil Concentration (rng/kg)	(n)	Gw <sub>abl</sub> (mg/L) R26 Csource	G(x) (mg/L)	Location	Groundwater Concentration (mg/L)	(R)	C(x) (mg/L)
BH2	0.23	1007	0.000000522				-	
BH9	0.54		0.000001225					
BH12	0.26		0.000000590	1000000				
	7							
		-					Name of Street	
			-					1
							-	
							_	1
-				**				
					-			
			-					
								1
_				_	1			-
					-		_	+
	1				1			1
	1							1
	-							
	1	_			-			1
	-							
			-		1			+
		_			-			1

	Lead			
	Soil Exceeds			
Location	Soil Concentration (rng/kg)	X (ft)	Gw <sub>ebl</sub> (mg/L) R26 Csource	C(x) (mg/L
				10.00
				-

			Benz[a]an	thracene				
	Soil Exceed	ances				Groundwater Exceed	ances	
Location	Soil Concentration (mg/kg)	X (fl)	Gw <sub>eq</sub> (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Exceed Groundwater Concentration (mg/L)	(ft)	C(x)
ВН9	Concentration (mg/kg) 2.5	1	0.000054142					
-								
					1 2			
		-		-	-			
	-			-				
						-		
*								
-					-			-
		-			-			
					-			-

			Acenapl	ithene				
	Soll Exceeds	inces				Groundwater Exceeds	ince:s	
Location	Soll Concentration (mg/kg)	X (ft)	Gw <sub>obj</sub> (mg/L) R28 Csource	C(x) (mg/L)	Location	Groundwater Exceeds Groundwater Concentration (mg/L)	(ft)	C(x) (mg/L
***								
-								-
								-
								1

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

ii Dito labilati	Deletion	**					
IEMA Incider	nt# 6	B- or 8-digit):	2002-0431	IEPA LPC	# (10	1-digit):163	31405021
Site Name:	Mot	oMart - Swansea					
Site Address	(not	a P.O. Box): 1324 N	lorth Illinois				
City: Swan	882	Co	unty: St. (	Clet		Zip Code; 62221	
Leaking UST	Tec	holcal File					
3. Tier 2 Calcu	itatio	n information					
Equation(s) (	Used	(ex: R12,R14,R26):	R16, R17, R16,R	19, R21, R22, R23, R24	.R28		
Contact Infor	meti	on for Individual W/ho Pi	orformed Calculati	lons;			
CWM Comp	any,	Inc., VES					
Land Use:	Res	Idential		Soll Type: Loamy	Seni	1	
Groundwater	r: [	X Class I	Class II				
Mass Limit:	[	Yes X No	if Yes, I	han Specify Acresge:	_		
Objective fro	m S1	17 used in R267	Yes X	No			
		If Yes, then Specify	Common S17	See Attache	ed	mg/L.	
Mana Manh							
		age other than defaults le-specific parameters v			he US	ST Fund	
- Maps depic	ting i	source width, plume dim	ensions, distance				
- Inputs must	t bo s	ubmitted in the dealgna	ted unit.				
AT <sub>e</sub>		70	γr	Dat	at.	See Attached	cm³/s
AT <sub>a</sub>	5	Residential = 30 Con Worker = 0.115	yr yr	D* og Dange	2	See Attached See Attached	cm²/s
aw	=	70	yr	1		Residential = 30	yr
Caserca	=	See Attached	mg/L	ED		Con. Worker = 1	уг
Ctra	E	See Attached	mg/L	EF	2	Residential = 350	d/yr
d	0	100	CITI		_	Con. Worker = 30	d/yr
erf	-	See Alteched	unitiess	RAF (PNAs)		0.05	unitiess
foo	п	0,0058	D/0	RAF <sub>d</sub> (inorganica)		٥	unitiesa
GWomp	H	See Attached	mg/L	RAF.	=	1	unitleas
GW <sub>squetes</sub>	m	See Attached	mort	RBSL <sub>at</sub> (careinoginic)	0	See Attached	Ing/m <sup>3</sup>
H'	=	See Attached	eml/em²	RBSL <sub>ab</sub> (nencerchoghio)	2	See Attached	hig/m <sup>3</sup>
	E	0.084137931	cm/cm	RfD <sub>r</sub>	0	See Attached	mg/kg-d
	65	30	cm/yr	SA		3,160	cm²/d
IRek		20	m³/d	Sø		200.0	cm
IR <sub>ed</sub>	-	Residential = 100	mg/d	S.	2	9,448.8	cm
		Con. Worker = 480	mg/d	SFI	u	See Attached	(mg/kg-d)*1
IR <sub>ss</sub>	-	Residential = :2	LM	SF,		See Attached	(mg/kg-d) <sup>-1</sup>
K		3,715	cm/d	THQ	12	1	unitiess
V		1356.048	cm/yr	TR	=	1.00E-06	unitions
K <sub>op</sub>	_	Ses Altached	com <sup>3</sup> /g or LAvg		_	0.7269	
K <sub>a</sub> (remisrising organics)	Ħ	See Attached	STITI COME / Should	Uat		226	cm/s
K <sub>s</sub> (levising organics)		Not Applicable	CIN - JOHN	Upe		1358,132	cm/y
K <sub>g</sub> (humparica)		Not Applicable	CTT water Dank	VF	=	3.97133E-12	kg/m*
L <sub>a</sub>	2	100	cm	VF <sub>sorth</sub>	=	See Altached	proper alregistation or before
LF <sub>ee</sub>	-	See Attached	trapiWineta_d	VF <sub>se</sub>	_	See Attached	kg/m3
Pe		0.6 6.9 · 10 <sup>-14</sup>	mg/cm² g/cm²-a	W	=	0.288	om
	-			W	u		Santar Sant
RAF <sub>e</sub>	-	0.5	unitiess	Õ <sub>ab</sub>		200	cm
O <sub>1</sub>	-	See Attached	cm	δ <sub>pet</sub>			cm³ <sub>st</sub> /cm³ <sub>sst</sub>
a <sub>y</sub>		See Attached	c/n	θ <sub>ss</sub>	5	0.153438	CM, M/CM, M
G <sub>2</sub>	=	See Attached	d,	e <sub>us</sub>	*	0.43	cm²/cm³
A T	3	3,1416	0	e <sub>T</sub>	-	0.967	g/cm <sup>3</sup>
π	=	9.46 - 105	5	Pu	-	1	g/cm <sup>3</sup>
T	-	9710,10	-	p <sub>w</sub>	_		Best

	H	A	Koc
Bertzono	0.23	0.0009	50
Toluene	0.271	0.011	158
Ethylbanzana	0.324	0.003	320
Total Xylenea	0.271	0.0019	390
MTBE	0.0241	0	11.5
Naphthalena	0.0198	0.0027	500
	100		

		Benzene R26	Modeled G	roundwater fi	om Vertical N	Aodeled Soll	8	
Location	617 (mg/L)	C(x) (mg/L)	X (cm)	a <sub>x</sub> (cm)	a, (cm)	a, (cm)	erf: 8,/(4 4a, ·XD	erf: 8, 1 (2 √(c, -XI)
BH1	0.217	0.005	35:35,68	353.568	117.858	17.6784	0.9999977	0.6113504
BH2	0.007	0.005	304,8	30.48	10,18	1.524	1	1
ВН3	0.033	0.005	17/87.84	178.784	58.928	8.8392	1	0.9163170
BH5	0.034	0.005	17/57.84	176.784	58,92B	8.8392	1	0.9153170
BH9	0.022	0.005	1402.08	140.208	48.738	7.0104	1	0.9702883
						-		
								1
						_		
					39.5			
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			Benzene R	26 Modeled (	iroundwats		
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a, (cm)	a, (cm)	ont: 8, / (4 ·	4(c. XI)
MVV1	8.300	8077.2	807.72	269,24	40.386	0.07650755	
MVV2	0.289	3779.52	377.952	125.984	18.8976	0.99999871	
MVV4	2.000	6126.48	61:2.648	204,216	30,6324	0.99717928	
_							
	- 1						
		_					

		Toluano R26	blodeled Gr	oundwater fr	om Vertical I	Modeled Solls		
Location	Course from S17 (mg/L)	C(x) (mg/L)	X (cm)	a* (cw)	a, (cm)	a, (cm)	erf: 8, / (4 -	ent: 8, 1 (2
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			-					_
					-	-		
		-						
			-				-	-
_	-				-		-	-
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						W = 1		
			Toluone R	26 Modeled C	roundwater			
Localion	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a, (cm)	u <sub>z</sub> (cm)	erf: 8,1(4 - V(a, X))	4[cf , XI) eq; B <sup>2</sup> /(5-	

_	1		TORUME R	26 Modeled C	I DOUGHAND!		
ocalion	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a <sub>y</sub> (cm)	a <sub>2</sub> (cm)	erf: 8,1(4 · *[a <sub>y</sub> : X0	4[d' : XI) out: B" \ (5 -
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		_					
							-
				5-25			
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Location	Canan from	hylbenzene R					art: 8,/(4 ·	erf: 8, / (2
LOCAMON	317 (mg/L)	C(x) (mg/L)	X (cm)	a (cm)	a, (cm)	a <sub>z</sub> (cm)	4(a. XI)	Na XD
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					d Groundwat		
Location	G(x) (mg/L)	X (cm)	a <sub>s</sub> (cm)	a, (cm)	a, (cm)	4 4 × 10	4(a-XI)
MW1	3.240	457.2	45.72	15.24	2,286	1	1
MVV4	3.830	467.68	48,768	18,256	2.4384	_ 1	1
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Location	S17 (mg/L)	C(x) (mg/L)	X (cm)	a <sub>n</sub> (cm)	a <sub>r</sub> (am)	a <sub>e</sub> (am)	erf: 8_1(4 · √a,- X0	en: s,/ (2 √(2, - XI)
BH1	0.3005	C(X) (ITHUE)	A (CIII)	U <sub>g</sub> (Catt)	u <sub>y</sub> (um)	u, tari	Algh-YD	Alst - Wil
BHI	0,3005							
BH5	0.4710							
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		T	otal Xviene	R28 Modele	d Groundwet	or .		
				1	d Grutingwai	01	7	
Location	C(x) (mg/L)	X (cm)	a, (cm)	a, (cm)	ar (au)	erf: 8, 7(4 -	ed: 8,1(2 ·	
Location	C(x) (mg/L)					erf: 8, /(4-	ed: 8,1(2. 10, 70	
Location	C(x) (mg/L)					erf: 8, /(4-	ed: 5,1(2. 1(a, X)	
Location	C(x) (mg/L)					erf: 8, /(4-	ed: \$_1(2 - 10)	
Location	C(x) (mg/L)					erf: 8, /(4-	ed: 8,1(2 · fig. XI)	
Location	C(x) (mgAL)					erf: 8, /(4-	ed: 8,1(2. Ma; XD	
Location	C(x) (mgAL)					erf: 8, /(4-	ed: 8,1(2. Ma, XD	
Location	C(x) (mgā.)					erf: 8, /(4-	en: s, 1(2- fig XI)	
Location	C(x) (mg/L)					erf: 8, /(4-	eff: \$_1/2 - *[a_i - XD]	
Location	C(x) (mg/L)					erf: 8, /(4-	ent: 8,1(2. MaXD	
Location	C(x) (mg/L)					erf: 8, /(4-	ef: \$_1(2 - 1)   10   10   10   10   10   10   10	
Location	C(x) (mg/L)					erf: 8, /(4-	ef: \$_1(2 - 10, -20)	-
Location	C(x) (mg/L)					erf: 8, /(4-	ent: 8,1/2 - 1/0,-1/0	
Location	C(x) (mg/L)					erf: 8, /(4-	af: 8,/(2- fig. XD	
Location	C(x) (mg/L)					erf: 8, /(4-	ed: 8,7(2- fic. XD	-
Location	C(x) (mg/L)					erf: 8, /(4-	ef: 8,1(2 - 1/2 -	-
Location	C(x) (mg/L)					erf: 8, /(4-	ef: \$_1(2 -	-
Location	C(x) (mg/L)					erf: 8, /(4-	ad: 8,/(2- fig. XD	-
Location	C(x) (mg/L)					erf: 8, /(4-	ed: 8,7(2- fig. XD	
Location	C(x) (mg/L)					erf: 8, /(4-	ed: 8,1(2- fic. XD	
Location	C(x) (mg/L)					erf: 8, /(4-	en: 8,1(2 ·	-
Location	C(x) (mg/L)					erf: 8, /(4-	ed: 8,7(2- fig. XD	
Location	C(x) (mg/L)					erf: 8, /(4-	ed: 8,7(2- fig. XD	
Location	C(x) (mg/L)					erf: 8, /(4-	en: 8,1(2- fici-XD	

C. from		nodulad Dri		III VOIGEBILIN		orf; 8_/(4 ·	orf: 8_/(2
S17 (mg/L)	C(x) (mg/L)	X (cm)	a* (cw)	a, (cm)	a, (cm)	v(a, · xŋ	√[a₁·X])
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	C <sub>manus</sub> from S17 (mg/L)	C <sub>source</sub> from	C <sub>source</sub> from	C <sub>source</sub> from	Custos from	MTBE R26 Modeled Groundwater from Vertical Modeled Soils  Castree from S17 (mg/L) C(x) (mg/L) X (cm) a, (cm) a, (cm) a, (cm) a, (cm)	C <sub>secret</sub> from Brf: B <sub>e</sub> /(4·

				6 Modeled Gr		ort: 8, 1(4 ·	orf: 8_/(2 ·
.ocation	C(x) (mg/L)	X (cm)	a <sub>e</sub> (cm)	cy (cm)	a, (cm)	√(a, · XI)	V[az X]
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ocation	S17 (mg/L)	C(x) (mg/L)	X (cm)	o <sub>z</sub> (cm)	a <sub>y</sub> (cm)	a, (cm)	ert: 5_/(4 ·	40, XD
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			Naphinalene	R25 Modeled	1 PLOQUE MAI	er	1
Location	G(x) (mg/L)	X (cm)	a <sub>e</sub> (cm)	a, (cm)	a, (om)	8rf: 8, / (4 -	erf: 5,/(2 · भूब, - मा
MW1	0.387	304.8	30.46	10.16	1.524	1	1 1
MW4	1,230	731.52	73.152	24,384	3.6576	1	0.99996909
					100		*
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			7				
						-	
					TURN TO		1

Localion	C <sub>source</sub> from S17 (mg/L)	C(x) (mg/L)	X (cm)	a <sub>e</sub> (cm)	a, (cm)	e <sub>z</sub> (cm)	erf; 8, 7(4 ·	eri: a,, / (2 \{a, \ XI)
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Location	G(x) (mg/L)	X (cm)	a <sub>e</sub> (cm)	a <sub>y</sub> (am)	o <sub>z</sub> (cm)	orf: 8,7(4 ·	01; 8,/(2·
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		100					

Location	C <sub>sauros</sub> from S17 (mg/L) 0.0001	C(x) (mg/L)	X (cm)	a, (cm)	a, (cm)	a, (cm)	orf: 3,, 1(4 · · · · · /(a, · ×))	erf: 8,1(2 √(c, X))
BH9	0.0001							
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						erf: 8, / (4	mf; 8,,/(2-	
Location	C(x) (mg/L)	X (cm)	a, (cm)	α <sub>p</sub> (cm)	a <sub>x</sub> (cm)	erf: 8, / (4 -	ed; 8,1(2-	
Location	C(x) (mg/L)	X (cm)	a <sub>x</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: a, / (4 - f(a, XI)	स्ति: XII	
Location	C(x) (mg/L)	X (cm)	C <sub>x</sub> (cm)	a, (cm)	a <sub>z</sub> (cm)	ed: 2,/(4 -{a <sub>y</sub> ·XI	erf; 8_1/2-	
Location	C(x) (mg/L)	X (cm)	C <sub>x</sub> (cm)	a, (cm)	a <sub>x</sub> (cm)	ert: 2,/{4	eq: 5°1/2-	
Location	C(x) (mg/L)	X (cm)	a, (cm)	a, (cm)	α <sub>z</sub> (cm)	ert: 2, / (4 *[a <sub>y</sub> : XI)	4[a, X]	
Location	C(x) (mg/L)	X (cm)	a, (cm)	a, (cm)	α <sub>z</sub> (cm)	erf: 2, / (4 - 1/a, XD	खा: ड-/(इ- र्ग्यः - प्रा	
Location	C(x) (mg/L)	X (cm)	a, (cm)	a, (cm)	a <sub>x</sub> (cm)	erf: a, / (4 - /(a, - X0	erf: 9, / (2 - - √(a, X))	
Location	C(x) (mg/L)	X (cm)	a <sub>e</sub> (cm)	α <sub>γ</sub> (cm)	α <sub>χ</sub> (cm)	erit a <sub>a</sub> / (4   -   -   -   -   -   -   -   -	enf: 8_/(2- 	
Location	C(x) (mg/L)	X (cm)	c <sub>x</sub> (cm)	a, (cm)	α <sub>k</sub> (cm)	ert: 5, 1 (4 - 1/4)	erf: 8, /(2- -√(a, XI)	
Location	C(x) (mg/L)	X (cm)	c, (cm)	a, (cm)	α <sub>ε</sub> (cm)	ert: 3,/(4 -{\dy-X0	erf: s_/(2- -√(a, ;X))	
Location	C(x) (mg/L)	X (cm)	c, (cm)	α <sub>γ</sub> (cm)	α <sub>χ</sub> (cm)	erf: 5, 1(4 - f(a <sub>7</sub> - XI)	erf; 8, / (2 - vf.a, · XI)	
Location	C(x) (mg/L)	X (cm)	a, (cm)	a, (cm)	α <sub>χ</sub> (cm)	ert: 2, / (4 	erf: s_/(2- -v[a, ;XD	
Location	C(x) (mg/L)	X (cm)	c, (cm)	a, (cm)	a <sub>x</sub> (cm)	ert: s., / (4	exf; 8_1/(2- 	
Location	C(x) (mgA_)	x (cm)	c, (cm)	α <sub>y</sub> (cm)	α <sub>x</sub> (cm)	ent: a, / (4 - 1/a, - X0	erf: 8_/(2- 	
Location	C(x) (mg/L)	X (cm)	a, (cm)	a, (cm)	a <sub>x</sub> (cm)	ert: a, / (4 / (a - / (4 -	erf: s_/(2- √[c, X]	
Location	C(x) (mg/L)	X (cm)	a, (cm)	α <sub>γ</sub> (cm)	α <sub>x</sub> (cm)	eit: a, 161 - flay: 20	enf; 8.,/(2- 	
Location	C(x) (mg/L)	x (cm)	c <sub>s</sub> (cm)	a, (cm)	α <sub>x</sub> (cm)	ert: 3, / (4	orf: s_/(2- 	
Location	C(x) (mg/L)	X (cm)	c <sub>x</sub> (cm)	a, (cm)	a <sub>z</sub> (cm)	erf: a, / (4 f(a, - X0)	erf: 8_1/2- 	
Location	C(x) (mg/L)	X (cm)	a, (cm)	α <sub>γ</sub> (cm)	a <sub>x</sub> (cm)	est: 4,10 flay-20	exf; 8_/(2- 	
Location	C(x) (mg/L)	X (cm)	a <sub>e</sub> (cm)	a, (cm)	a <sub>z</sub> (cm)	ert: a, / (4 	erf: s_/(2- v[c, ;X])	
Location	C(x) (mg/L)	X (cm)	c <sub>x</sub> (cm)	a, (cm)	a <sub>x</sub> (cm)	erf: a, / (4 f(a, - × t)	erf: 8_/(2- -√(a, ×I)	
Location	C(x) (mgA.)	X (cm)	c, (cm)	a, (cm)	α <sub>k</sub> (cm)	ert: 3, / (4 - 1/4) / XD	orf: s_/(2- -{a, XD	
Location	C(x) (mg/L)	X (cm)	c <sub>x</sub> (cm)	a, (cm)	a <sub>x</sub> (cm)	erf: a, / (4 - f(a, - X0)	orf: s_/(2- -v[c, XII	
Location	C(x) (mg/L)	X (cm)	a, (cm)	α <sub>γ</sub> (cm)	a <sub>x</sub> (cm)	ert: a, / (4	exf; 8_1/(2- 	
Location	C(x) (mg/L)	X (cm)	a <sub>e</sub> (cm)	a, (cm)	a <sub>z</sub> (cm)	ert: a, / (4 - da, - XB	erf: s_/(2- v[a, ;XD	
Location	C(x) (mg/L)	X (cm)	c, (cm)	a, (cm)	a <sub>z</sub> (cm)	erf: a, / (4 f(a, - X0)	orf: 8_/(2- 	
Location	C(x) (mg/L)	X (cm)	c <sub>s</sub> (cm)	a, (cm)	α <sub>k</sub> (cm)	ert: 3, / (4	erf; s_/(2- -fa, XD	
Location	C(x) (mg/L)	X (cm)	c <sub>x</sub> (cm)	a, (cm)	a <sub>x</sub> (cm)	ert: a, / (4 - fla, - X0	orf: s_/(2- v[c, XII	
Location	C(x) (mg/L)	X (cm)	c, (cm)	a, (cm)	a <sub>x</sub> (cm)	ent: a, / (4 * day : X0	erf: 8_/(2- *[a, :XD	
Location	C(x) (mg/L)	X (cm)	a <sub>e</sub> (cm)	a, (cm)	a <sub>g</sub> (cm)	ert: a, / (4 - da, / X0	erf: s_/(2- v[a, ;XD	

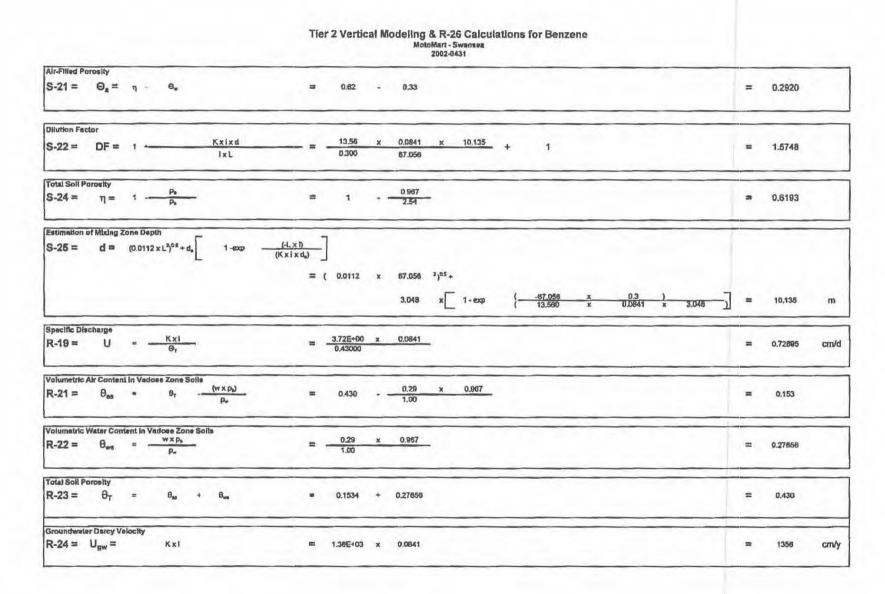
BH2 0.0000 BHB 0.0000 BH11 0.0000 BH12 0.0000 BH14 0.0000 BH16 0.0000	4[0" - XD
BH11 0,0000 BH12 0,0000 BH14 0,0000	
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erf: s_/(4   erf: s_/(2 ·	
Location $C(x)$ (mg/L) $X$ (cm) $a_{\nu}$ (cm) $a_{\nu}$ (cm) $a_{\nu}$ (cm) $a_{\nu}$ (cm) $\sqrt{a_{\nu} \cdot x_0}$	-

ocation	C(x) (mg/L)*	X (cm)	a, (cm)	a, (cm)	o, (cm)	erf: 5,,/(4 - √(a, - XB	40° XD
	-					-	
-	-					-	
		_		11	-		
_		-					
-							
						-	
_		-					17
_							-

Location	C <sub>searce</sub> from S17 (mg/L)	C(x) (mg/L)	X (cm)	a <sub>e</sub> (cm)	a, (cm)	a, (cm)	arf: 8, /(4 -	eri: 8,1(2)
BH2	0.0000						1	
BHB	0.0000							
BH12	0.0000						-	
Dille	0.0000		-	-				
_								
					_			
	-	-	-	-				
		-						
	_							
			-	-		-		
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AV c						100000		
		1						
			-	-		-	-	
					1		-	
_								
		-					-	
					-			
-								
-							-	
			450					
Location	C(x) (mg/L)	X (cm)	o₂ (cm)	tt <sub>e</sub> (cm)	a <sub>z</sub> (cm)	orf: 8_7(4 ·	कर्तः इ. <sub>५</sub> / (2 -	inter-tr
Location	C(x) (mg/L)	X (cm)	o <sub>z</sub> (can)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	orf; 8_74. 1/0,-XD	4[a, X])	isto-ii
Location	C(x) (mg/L)	X (cm)	c <sub>z</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	orf; 8_744 - 1/43 - XD	art; s=1 (2 - र्गुंद, ×2)	indo-11
Location	C(x) (mg/L)	X (cm)	O <sub>z</sub> (can)	Cu <sub>y</sub> (com)	a <sub>z</sub> (cm)	erf; 5_14. V[a <sub>y</sub> -X])	वर्तः इ. १८ - र्युद्धः ४३)	ala-y-
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	cu <sub>r</sub> (can)	a <sub>z</sub> (cm)	orf: 8_744 - 1/43 - 1/23	हार्ग; इ <sub>-</sub> / (2 -	
Location	C(x) (mg/L)	X (cm)	ರ್ಷ (ರಾಗ)	ct <sub>y</sub> (cm)	a <sub>x</sub> (cm)	orf: 0_/41 - 1/0,- X3	arf; s_/ (2- र्नुद, ×3)	
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	cr, (cm)	a <sub>x</sub> (cm)	orf: 0_/4 · 1/4 ·	arf; s <sub>+</sub> /p- र्नुद्ध-X0	
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	ct <sub>y</sub> (cm)	a <sub>z</sub> (cm)	orf: 0_14 ·	ਗਹੁ ਵ <sup>1</sup> (ਹ-	
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a <sub>f</sub> (cm)	a <sub>x</sub> (cm)	orf; 5_14. 1/a,- XI	arf; s <sub>=</sub> /Q- ग्रैद-XI)	
Location	C(x) (mg/L)	X (cm)	ರ್ಜ (ರಾಗ)	cz <sub>T</sub> (cm)	a <sub>x</sub> (cm)	orf: 0_1(4 · \f\0, \X)	वर्तः इ <sub>न</sub> / (२ - सूद्धः २०)	
Location	C(x) (mg/L)	X (cm)	c <sub>z</sub> (cm)	ct <sub>y</sub> (cm)	a <sub>2</sub> (cm)	ost: 0_1(4 ·	बार्य हुन / (दे -	
Location	C(x) (mg/L)	X (cm)	ರ್ಷ (ರಾಗ)	CL <sub>Y</sub> (CSTI)	g <sub>x</sub> (cm)	orf: 2_/4 - 1/4 - 1/4 - 1/5	arf; s_/ (2- 	
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	ct <sub>y</sub> (cm)	a <sub>z</sub> (cm)	orf: 0_/(4 · √(c, ×0)	वारी ड <sub>ू</sub> / (ट- सुंद्य- XQ)	
Location	C(x) (mg/L)	X (cm)	c <sub>z</sub> (cm)	ct <sub>y</sub> (cm)	a <sub>2</sub> (cm)	orf: a_/4 · 1/a · 1/b	arf: s_/(2- चृद, ×X)	
Location	C(x) (mg/L)	X (cm)	<b>c</b> ₂ (cn)	ct <sub>T</sub> (cm)	a <sub>x</sub> (cm)	ost: 3_/4 · √a×3	arf; s/ (2- 	
Location	C(x) (mg/L)	X (cm)	a <sub>e</sub> (cm)	ct <sub>p</sub> (cm)	a <sub>z</sub> (cm)	√(a, - XI)	वारी ड <sub>ू</sub> / (ट- सुंद्य- XQ)	
Lazekkon	C(x) (mg/L)	X (cm)	c <sub>z</sub> (cm)	c <sub>r</sub> (cm)	a <sub>x</sub> (cm)	orf: a_/4- -\fa,-Xb	arf; s <sub>e</sub> /(2- श्व, ×3)	
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	ct <sub>y</sub> (cm)	a <sub>x</sub> (cm)	√(a, - XI)	arf; s/ (2- 	
Location	C(x) (mg/L)	X (cm)	a <sub>e</sub> (cm)	cu <sub>p</sub> (carn)	a <sub>z</sub> (cm)	√(a, - XI)	वारी ड <sub>ू</sub> / (ट- सुंद्य- XQ)	
Location	C(x) (mg/L)	X (cm)	ರ್ಷ (ರಾಗ)	CL <sub>p</sub> (CTT)	g <sub>x</sub> (cm)	√(a, - XI)	arf; s <sub>=</sub> /Q- 	
Location	C(x) (mg/L)	X (crn)	a <sub>z</sub> (cm)	cı <sub>r</sub> (cm)	a <sub>x</sub> (cm)	√(a, - XI)	arf; s/ (2	
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	ct <sub>y</sub> (cm)	a <sub>z</sub> (cm)	√(a, - XI)	arf: s <sub>e</sub> /(2- चूंद, ×3)	
Location	C(x) (mg/L)	X (cm)	<b>c</b> <sub>z</sub> (cm)	CL <sub>T</sub> (CSTI)	g <sub>x</sub> (cm)	√(a, - XI)	arf; s_/ (2	
Location	C(x) (mg/L)	X (crn)	a <sub>z</sub> (an)	cz <sub>T</sub> (cm)	a <sub>z</sub> (cm)	√(a, - XI)	arf; s/ (2 - 4(a, · X))	
Location	C(x) (mg/L)	X (cm)	c <sub>z</sub> (cm)	c <sub>r</sub> (cm)	a <sub>x</sub> (cm)	√(a, - XI)	arf; s <sub>e</sub> /(2- - श्व. ×3)	
Location	C(x) (mg/L)	X (cm)	a. (cn)	ct <sub>T</sub> (cm)	a <sub>x</sub> (cm)	√(a, - XI)	arf; s/ (2	
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	ct <sub>T</sub> (cm)	a <sub>z</sub> (cm)	√(a, - XI)	arf: s_/(2- चृद, ×X)	
Location	C(x) (mg/L)	X (cm)	ರ್ಷ (ರಾಗ)	CL <sub>F</sub> (CITI)	g <sub>x</sub> (cm)	√(a, - XI)	orf; s <sub>e</sub> /Q- 	

# Tier 2 Vertical Modeling & R-26 Calculations for Benzene MotoMart - Swansea

								IMOI	oMart - Swar	18-04									
	RBCA.	SSL	SSL & RBCA						2002-0431							Data Co	moiled:	02/23/16	
	Libuni	100	TOOL S ROOM														Haon: 875/2		
input Value	18																		
Holcom	b's Bulk Density	y-> 60.4	<b>拉淀粉型</b>	Converted	Value to b	oe used in	calculation	on sheet -	> 0.91	37515	USD	A Soli Class	alfication:	Loamy Sand	Tools and				
Org	anic Matter (%	0 ===(	FOC % (0.	58 conversion		50.000 H	Orga	nic Matter (	mg/kg) =	D	FOC	g/kg (0.58 ac	(noistevin	0.000	1	foc conversion	n to g/g:	0.000	
0.967	Pa - Dry Soll I	Bulk Density					1.5 or,	Gravel = 2	.0; Sand = 1,5	; SIR = 1.6	Clay = 1.	7; or Site S	pecific						
2.54	ps - Spli Perti	ide Density				776	* 2.65 or	, Sie Spe	cific						100				
0,292	0, - Air Filled	Soil Poresty		0.292	Value fro	om S-21	Top 1 r	meter = 0.2	28; below 1 me	eter = 0.13	Gravel =	0.05; Sand	= 0.14; Si	t =0.24; Clay	= 0.19; or	Calculated Va	slue (S21)		
0.327	Ew - Water F	ited Soil Porosi	ty	0.327	Value fro	om S-20	Top 1	meter = 0.1	5; below 1 m	eter = 0.30	Gravel =	0,20; Sand	= 0.18; 50	1 =0.16; Clay	= 0.17; or	Colculated Vi	alue (520)		
0.619	n-SSL: Total	Soil Pomsty		0.619	Value fro	om S-24	0,43 0	r. Gravel -	0.25; Sand = 9	).32; Sit =	0.40; Clay	= 0.38; or 0	Calculated	Value (S24)					
0.43	JOSEPH CATTO	tal Son Porosit	ALCOHOLD STATE	gates and	T 1 1815	See Jine	类 0.43 or	Gravel -	0.25; Sand = 6	).32: Sit =	0.40; Clay	= 0.36; or I	Catculated	Value					
	II - Hydraulic (						Site St												
0.006		ganic Carbon (g	(a)				Surfac	e Soi = 0.0	006; Subsurfa	ce Soil = 0.	002; or \$1	la Specific							
20.000	DF - Dilution	Factor		1,575	Value fro	om S-22			o for DF is les				t, olso cal	culated value	is used				
10.135	d - Midng Zor	ne (m)		10.135	Value fro	om S-25	2; or ca	alculated v	alue							ALCO THE ST	onto E and		
13.58		Conductivity (m	(VT)	onvisec n	4.30E-05	5	São Sp	pecific	3.72E4	00 cr	i/d'	1.36E+03	cm/yr	Use cm/d for	RIS!RIE	& ROB LETTY	TIOPRZ4		4
67.06	L - Source Le	ength Parallel to	Groundwater Flow (n	n)	feet = 2	20	Site Sp	pecific (m)											
	d, - Aquifer T				fect = 1	0	Site St	ecific (m)			A 1-								
			plane (cm)	1144	! feet = 3	110	Source	width pen	pendicular to p	moundwate	flow dire	ction in hori	zontał ola	ne					
			lands(cm)6E46A.C				: Usa 20	0 or alte s	pecific	-									
0.0009	A PErstinde	Bearedation C	onstant Pinto	CURRENT	MARCH N	GOW SIL	Benzer	ne = 0.000	9										
1.00			WHAT IN THE WAY																
0.286			mont of the latest treatment					Surface S	all = D 1: Subs	urface soil	=02-nc	She Specific						_	_
0.3	1 - Inflitration		With the Train Person services	24.2	140	ama he Sed. 94	0.3 for		01, 000	GIIOCO PUI	-02,01	INE OPOLIN	_			_		_	_
540		d Hydraulic Con	ductivity		_				nput Values		-		_	_	_	*			
0.005			lation Objective Class	-1	_			0.025		und min f	in middle M	o Oblanta	Diana 7		_	_			
			Manori Objectiva Cass	31			_		GW <sub>atel</sub> - Gro	HINDAMPHEL I	armedan	M Colective	Gass Z		_				
0.085		ponent for \$20		-				ne = 0.226	nput Values						-			_	_
0.230	H'-Henry's L		0-00-1			_		ne = 0.226	-	_	_	_	_	-			_	_	_
50,000	Kez - Urganic	Carbon Partition	1 Coenicient	-			Benzer	ne ≈ 58.9											_
-H Campi		Inmitted to Com	oundwater Cleanup	Oblantin IC	200 41			_			_		_	_		_		_	_
son Comba	otieur oi me w	indistriou in rate			msa 1/												and the same of		
			and and a second		1.10														
5-17 =		. K.	+	(a, + 0,	xH)	-			v 0	20	. (	0.327		0.292	×	0.230	_		
S-17 =	C.	x K <sub>d</sub>	+		xH)	=		C.	x o	29	+ (	0.327	*		x.	0.230	=		
S-17 =	C.	x K <sub>d</sub>	+		xH)	=		C.	x 0	29	+ (	0.327	+	0.292 0.967	x	0.230	=	Juse	
i-17 =	C.	x K <sub>g</sub>	+		×H)			C.	x 0	29	+ (	0.327	+		х	0.230	Cwx	0.698	mo/ka
i-17 =	C <sub>e</sub>	x K <sub>g</sub>	+		×H)	-		C.,	×	.29	+ (	0.327	•		х	0.230	Cwx	0.696	mg/kg
	C.	L	•		×H)			C.,	x 0	29	+ (	0.327	•		х	0.230	Cwx	0.696	mg/kg
arget Soll		x K <sub>d</sub>	nes 1)		×H)	-		C.	x 0	29	+ (	0.327	*		х	0.230			mg/kg
arget Soll		L	•		×H)	20.00	×	0.005	x_ o	29	+ (	0.327	•		х	0.230	Cwx	0.698	mg/kg
arget Soll		L	nes 1)		xH)	20.00	×	0.005	x_ o	29	+ (	0.327	•		х	0.230			mg/kg
arget Soll :-18 =	C <sub>w</sub> =	Character (Ch	nes 1)		×H)	20.00	×	0.005	x 0	29	+ ( <u> </u>	0.327	•		х	0.230			mg/kg
arget Soil 3-18 =		Character (Ch	nes 1)		×H)	20.00	×	0.005	x 0	29	+ ( <u> </u>	0.327	•		х	0.230			mg/kg
arget Soll -18 = oll-Water	C <sub>w</sub> =	Character (Ch	ans 1)  DF x GW <sub>dq</sub>		×H)	2000		-	× o	29	+ (	0.327	•		х	0.230		0.1	mg/kg
rget Soll -18 =	C <sub>w</sub> =	Character (Ch	nes 1)		×H) =	20.00	×	0.005	x 0	29	+ (	0.327	-		х	0.230			mg/kg
rget Soll -18 =	C <sub>w</sub> =	Character (Ch	ans 1)  DF x GW <sub>dq</sub>		×H)	2000		-	x 0	29	+ (	0.327	_		х	0.230		0.1	mg/kg
arget Soll -18 = oil-Water	C <sub>w</sub> =	Character (Ch	ans 1)  DF x GW <sub>dq</sub>		×H) =	2000		-	x 0	129	+ (	0.327			х.	0.230		0.1	mg/kg
arget Soll 5-18 = oil-Water 5-19 =	C <sub>w</sub> =  Partition Coef  K <sub>d</sub> =	Character (Ch	ans 1)  DF x GW <sub>dq</sub>		×H)	2000		-	x 0	29	+ (	0.327	-		х.	0.230		0.1	mg/kg
arget Soll 5-18 = oil-Water 5-19 =	C <sub>w</sub> =  Partition Coef  K <sub>d</sub> =	Character (Ch	ans 1)  DF x GW <sub>dq</sub>		= =	50,00		-	X 0	29	+ (	0.327	•		х	0.230		0.1	mg/kg
arget Soll 5-18 = oil-Water 5-19 =	C <sub>w</sub> =  Partition Coef  K <sub>d</sub> =	Character (Ch	ans 1)  DF x GW <sub>dq</sub>		= = =	2000		-	X 0	29	+ (	0.327	•		x	0.230		0.1	mg/kg
arget Soll 6-18 = oil-Water 6-19 =	C <sub>w</sub> =  Partition Coef  K <sub>d</sub> =	Character (Ch	ans 1)  DF x GW <sub>dq</sub>		= =	50,00		-	X 0	.29	+ (	0.327	-		х	0.230		0.1	mg/kg



#### Tier 2 Vertical Modeling & R-26 Calculations for Benzene MotoMart - Swansea 2002-0431

Target Soll	Leachate Concentra	tion (Solve S-18 for GWate	)			
S-18 =	GW <sub>abj</sub> =	C., DF	=			

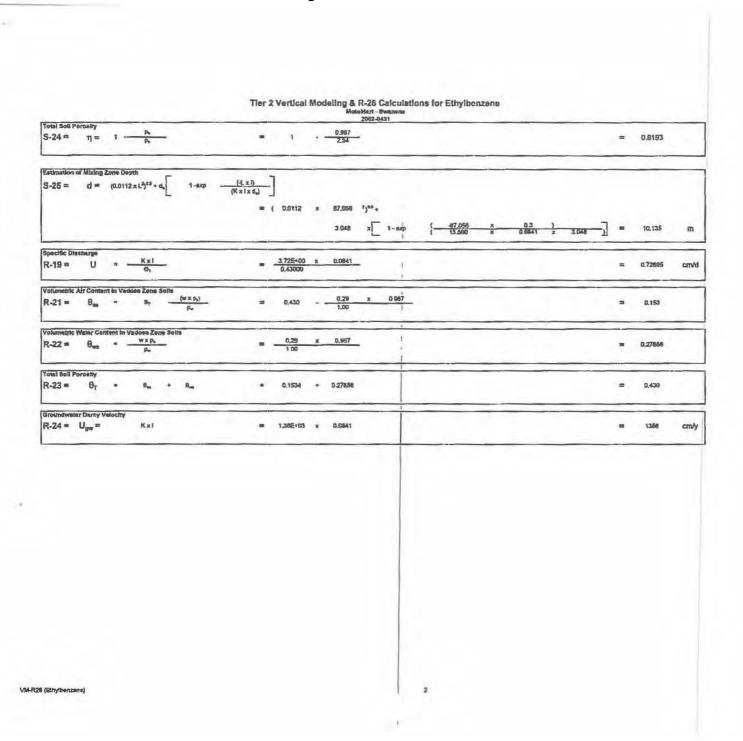
5	The greatest potential concentration of Berzene is the great/owner at the source of the contamination.	C (tod) contentination at modeling point() [V., + (Q., + 0, 117/p.)]	GW <sub>mq</sub> = CW / DF	Distance certarine groundwist grounding grounding	of the or plume from a	Contentration of contentration of contentrated in groundwater at a Distance X front the source.	Longlaudinel Dispensibility. Equation R 16.	Transverse Disposabity. Equation R 17,	Vertical Disperalityity. Estuadest R 18	R.28 Equations	R-17: 0, R-18: 0, Term 1" Term 2"	z = αz/20 "= [X/(2 * αz)] "= (1 - SQRT[1 + (		T(B <sub>2</sub> )	
Sample Location	Soli Concentration (mg/kg)	Cw	Gw <sub>obj</sub> (mg/L) R26 Csource	X (ft)	X (cm)	C(x) (mg/L)	a <sub>c</sub> (cm)	(cm)	(cm)	Term 1	Term 2	ERF (B1)	ERF (\$2)	B1 = Sw/(4*SORTTey*XD	β2 = 84/Q* 904Πσ2*X
BH1	3.03	4.343	0.21717	118	3535.7	0,00493	353.6	117,858	17.878	5	-0.6366	0.999999772	0.611350431	3,659353294	0,609574811
BH2	0.096	0.138	0.00688	10	304.8	0.00478	30.48	10,16	1,524	5	-0.0728	1	1	42,44849821	7.071087812
ВН3	0.463	0.664	0.03318	58	1767.B	0.00479	178.8	58.928	8.8362	5	-0,3695	1	0.915317028	7,318706587	1,219149623
BH5	0.474	0.879	0.03397	58	1787.8	0.00490	178.8	58.926	8.8382	5	-0.3695	1	0.915317028	7.318706587	1,219149623
BH9	0.312	0.447	0.02238	48	1402.1	0.00480	140.2	46.736	7.0104	5	-0,3017	1	0.970288331	9.227834383	1.537188655

#### Tier 2 Vertical Modeling & R-26 Calculations for Benzene MotoMart - Swanses 2002-0431

	The concentration of Bercanne in the groundwarfs at the morizoning well location.	centerline grocedwate emenating	Distance along controlline of the grocudwister plume emenating from a source.		Longitudinal Obspensibility. Expandon R. 16.	Tariserse Claparaffrity. Equation R 17,	Varideal Dispersitivity. Equation R 18.	R-28 Equations	R-16: $\alpha_x = 0.10^{\circ} X$ R-17: $\alpha_y = \alpha_x / 3$ R-18: $\alpha_z = \alpha_y / 20$ Term 1"= $[X / (2^{\circ} \alpha_x)]$ Term 2"= $[1 - SQRT]1 + (4^{\circ} \lambda^{\circ} \alpha_x) / (U)]$ eff. Section 742_APPENDIX C: Table G $C_{10} = C_{2000000} \times e^{(1+\alpha_y)} x = erf(\beta_1)$				
Well Location	Csource (mg/L)	X (f0)	X (em)	C(x) (rng/L)	cu (cm)	(cm)	(cm)	Term 1	Term 2	ERF (B1)	ERF (\$2)	β1 = \$w / (4 * 8ΩRΤ(αγ * XD	β2 ≈ 9d / (2 * SQRT)αξ * XQ
MW1	8.3	265	8077.2	0.00493	807.7	250.24	40,385	. 5	-1,2361	0.976507563	0.29409279	1.601830121	0.268832748
MW2	0,269	124	3779.5	0.00484	378	125,984	18,898	5	-0.6948	0.99999871	0.580017502	3.423265984	0.570247404
MW4	2	201	8129.5		812.8	204.216	30 632	s	-1.0085	0.997179281	0.381172265	2.111885582	0.351794419
													-

#### Tier 2 Vertical Modeling & R-25 Calculations for Ethylbergene MotoMart - Swansee 2002-0411 SSL BSL & RBCA Date Compiled. 02/23/16 Warston: 8/25/2015 hiput Values Helctero's Bulk Department Organic Mattet (NALA) Converted, Valors to be used in decidents a sheet > 0.968 ( USDV-SSR) Cleasaichtige ( Coarry Sand FOC % (0.58 conversion) > 0.000 ( Corry Sand ( Coarry Sand 0.987 Pa - Dry Sol Bulk Density 1.5 or, Gravel = 2.0; Sand = 1.8; Sti = 1.8; Clay = 1.7; or Site Specific 2.54 pa Soll Particle Density 2.85 or. Site Specific 0.292 9. - Air Filled Soll Porcetty 0.292 Value from 5-21 Top 1 meter = 0.29; below 1 meter = 0.12; Gravel = 0.05; Sand = 0.14; Sin = 0.24; Clay = 0.18; or Calculated Value (621) 0.327 Pw - Water Filled Boll Porosity 0.327 Value from 6-20 Top 1 meter = 0.16; below 1 meter = 0.30; Gosvel = 0.20; Sand = 0.18; SiX =0.18; Cisy = 0.17; or Calculated Value (520) 0.619 q - SSL; Total Soil Porosky 0.43 (CSRSC) Critical Soil Parts SkyL; 0.619 Value from S-24 0.43 or, Gravel - 0.25; Sapd = 0.32; Sh = 0.40; Clay ± 0.38; or Calculated Value (624) São Specific Surface Soil = 0.008; Subsurface Soil = 0.002; or Site Specific 1.578 Value from 5-22 If taxculated value for DF is large than 20, than 20 default is used, also calculated value is used 10.135 Value from 5-25 2; or calculated value cm/sec= 4.505 05 S8e Specific 3.725+00 "cm/0" 1.365+03 "timys [Use bond for PGS-R19; 4.735 cm//407 R24+15 - # 5.75] 13.68 K - Hydraulic Constructivity (m/yr) 67.088 L - Source Length Parallel to Groundwater Flow (m) Site Specific (m) feet = 220 3048 d. Aquiter Thickmas (m) feel = 10 6448.8 987-50402 VASS herizoftel plane (cm): 504.8 897-50402 width Evertical plane (cm): 504.8 897-50402 width Evertical plane (cm): 504.8 897-50402 width Evertical plane (cm): 5the Spectic (m) Source width perpendicular to groundwater flow direction in horizontal plane Use 200 or site specific 0.0010 A First Order Dec. 10.003 A First Ord ic. 0.1 or, Burface Soil = 0.1; Subsurface soil = 0.2; or Site Specific K<sub>o</sub> - Setumeted Hydraulic Conductivity GW<sub>obj</sub> - Grounderster Remediation Objective Class 1 See Table K for Input Values 1 GW<sub>ate</sub> - Groundwater Remediation Objective Class 2 See Table K for Input Velyas Ethylbanzana = 0.323 0,086 U(2b+3) - Exponent for 520 0.324 H\*-Herry's Law Constant 320.00 Kee - Organic Carbon Partition Coefficient Phylherizana = 363 Soil Component of the Migration to Groundwater Cleamup Objective [Class 1] (Bu+ Ba #H) 0,324 0.327 0.292 5-17 = 0.957 2.792 mg/kg Target Sall Leachate Concentration (Class 1) 5-18 = C. = 20,00 0.700 14 Soll-Water Partition Coefficient S-19= Kg= Kan X Fax 320.00 1,856 X 0 300 RANK 0.3273 S-20 = 0,= Air-Filled Paresity S-21 = 0, = 1 - 8. 0.62 0.33 0.2920 Ditution Factor 13.58 0.0841 10.135 Kxlxd S-22 = DF = 1 -1.5748 0,300 IxL 67.058

VM-R26 (Ethythenzene)



#### Tier 2 Vertical Modeling & R-26 Calculations for Ethylbenzene Metallart - Syrapses 2002-0431

	tration (Solve S-18 for GW_m)		
B = GW ==	DF R		
	04		

	The greatest potential tetransistation of Chyllecters in the groundwalet at the seeder of the contact full of contact full of	C (and community in marketing point) [5], e (C C. e (1) red	GW <sub>Sq</sub> ≈ CW / DP	Claberon cartactory groupheds coverating source	of the phase from a	Cayportisation of Osrbacjami in proventivates at a Calderso X from the souther.	Largenthal Dispensively, Equator R.18.	Tresserve Coppositivity, Equation R 17,	Veitical Dispersithes. Equation R 18.	R.M. Spanning	R-17 a R-18: a Term 1 Term 2	7 = 0_ / 20 = px / (2 * 0_ )) = (1 - sqrt(1 + 1) ston 742.APPEND:		er([P <sub>2</sub> )	
Sample Location	Soli Conomitration (mg/kg)	C <sub>e</sub>	Gwell (mg/L) R26 Csource	(m)	X (mx)	7.00	(cm)	(cm)	(cm)	Term 1	Term 2	ERF (#1)	ERF (RZ)	94144 - 80311944 - XQ	β2 ≈ 841(2 * 809(ημα • X
		50 . A													
						-									
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VM-R26 (Bhylbenzene)

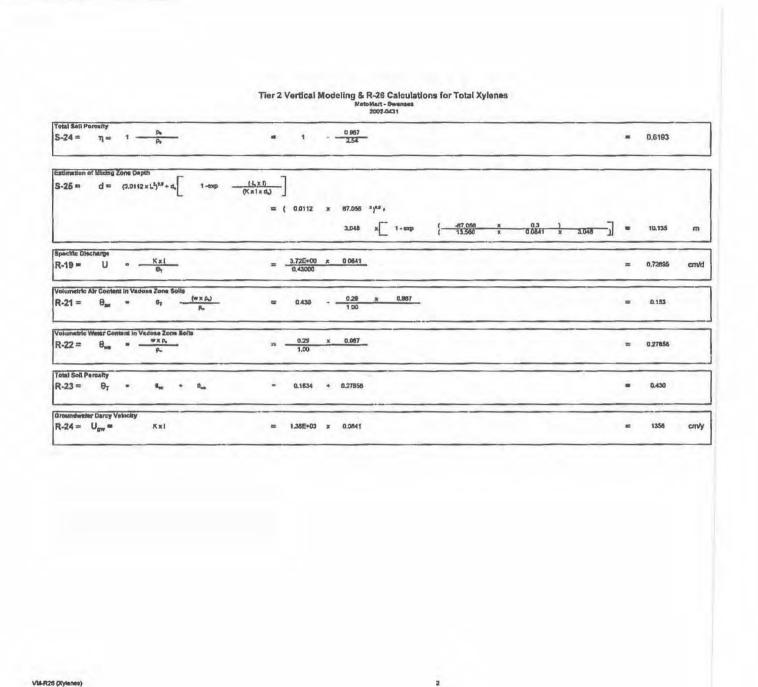
#### Tier 2 Vertical Modeling & R-26 Calculations for Ethylbenzene MetaMart - Swansest 2002-0431

	The grained polaritie committee of Englandian of Englandian in the grandians at the source of the contact state.	Distance of decisions granularises anomalog sistem	plute plute	Ceparateliza of esolization of solizational in procession to a District X long the service.	Langstudins Dispersitivity. Equation R 14.	Transvace Disperiend. Squados R 17.	Vertical Dispersituity. Equation R 16.	Rate Equations	R-17: C <sub>1</sub> R-18: C <sub>2</sub> Term 1* Term 2* erf. Sect	= 0,/20 = (X/(2+0,)) = (1-SQRT[1+) ton 742.APPEND		ert((5 <sub>3</sub> )	
Well	Csource (mg/L)	X (tt)	X (pred)	C(x) (mg/L)	C <sub>s</sub> (cm)	(cm)	(c.m)	Terra 1	Tem 2	ERF (\$1)	ERF (B2)	8=141*90RT[kg**X]	\$4112 ' SORTJer ' 70
MW1	3.24	15	457.1	0,53909	6372	15.24	2294	8	-0.3247	1	1	28.2989988	4,714045208
MW4	3.83	18	487.08	0.88750	48,77	16,298	2.084	- 5	4366	1	1	26,53031138	4 419417382
		- Y					1						

VM-ROB (Ethylbentune

#### Tier 2 Vertical Modeling & R-26 Calculations for Total Xylenes MotoMert - Swanzes 2002-0431 STEEDER SSL SELERECA Date Complied: 02/23/16 Version: 8/25/2015 . Hologob's Bulls Dentity ≥ 60.4 - Organic Wester (N) ⇒ 0 Converted Valual to be used in calculation sheet - Q.988 USDA Scal Classification; Loemy Sand FT FOC % (0.58 convertion) - Q.000 Organic Meters (mg/kg): 0 FOC mg/kg (0.58 convertion) Q.000 0.967 | Pa - Dry Soil Bulk Density 1.5 or; Gravel = 2.0; Sand = 1.8; SS: = 1.8; Clay = 1.7; or Size Specific 2.54 os - Soil Particle Density 2.55 or, Site Specific 0.292 | 8, Air Filled Soit Porosity 6L262 Value from 5-21 Top 1 meter = 0.25; below 1 meter = 0.13; Grayel = 0.05; Send = 0.14; SB =0.24; Clay = 0.19; or Calculated Value (S21) 0.327 Se - Water Rived Box Pountsly 0.618 n - SSE, Total Soil Pountsly 0.618 n - SSE, Total Soil Pountsly 0.63 71 m - Fred Total Soil Pountsly 0.000 for - Total Organic Carpton (pt) 20,000 De - Daulon Feetor 10,135 d - Moting Zone (m) 13,56 K - Hydraulic Conductivity myly) 0.327 Value from S-20 Top 1 meter = 0.15; below 1 meter = 0.30; Gravel = 0.20; Sand = 0.16; SR =0.18; Clay = 0.17; or Calcutated Value (S20) 0.618 Value from S-24 D.A3 or, Gravel - 0.25; Bend = 0.32; SRI = 0.40; Citry = 0.36; or Calculated Value (S2A) Surface Soil = 0.008; Subsurface Soil = 0.002; or Site Specific 1,578 Value from 8-22 If calculated value for 10,135 Value from 8-25 2, or calculated value If calculated value for DF is less than 20, then 20 default is used, also calculated value is used 13.58 K - Hydraulic Conductivity (m/yr) cm/sec = 4.30E-05 Site Specific 3.72E400 Zátříval 1.36E+03 cm/yr Use cm/d for R16FR1B, \$ R28. cm/yr for R24 34\* 97.058 L - Source Length Perellel to Groundwater Flow (m) test = 220 Site Specific (m) 3.048 d. - Aquifer Thickness (m) feel = 10 São Spectific (m) 9448.8 Ser Source Width horizontal plans (cm) — Service String (cm) feet = 310 304.8 Set Source with systimal plans (cm) — Service String (cm) feet = 310 0.0016 A.C. That Orderfollows actions Contact a conversation of the Service String (cm) feet = 5776 1.00 per Vision Contact (cm) feet = 5776 Source width perpendicular to groundwater flow direction in horizontal plane द्रेश्य Use 200 or sits specific PROPERTY . - CTATIFF Total Xylenes = 0.0018 0.286 w AAVerland solvenoissuff Consent 820 0.3 1-Inflantion Rate (m/n) 540 K<sub>2</sub>-Saturated Hydrauso Conductivity in a series of a 0.1 or, Surface Soil = 0.1; Substantiace soil = 0.2, or Site Specific 0.3 for Illinois See Table K for Input Values 10.000 GW<sub>eld</sub> - Groundweter Remediation Objective Class 1 10 GW<sub>ed</sub> - Groundwater Remodizition Objective Class 2 0.085 | 1/(2b+3) - Exponent for 820 Bee Table K for Input Values 0.271 Hr - Henry's Law Constant Total Xylenes = 0.25 398.00 K. Organis Carbon Partition Coefficient Total XVienes = 260 Boil Component of the Migration to Groundwater Cleanup Objective (Class 1) (B + 8 x H) 0.327 0.292 0.967 2,728 marke Target Soil Leachate Concentration (Class 1) DFXGW 20.00 × 10.000 200 5-18 = C. = S-19 = Ka= Kathe 396.00 2,3084 0.300 Ow m n x-0.3273 S-20 = 540.000 Air-Fitted Parasity 0.82 0.33 0.2920 5-21 = 0, = n Dilution Facior 13.58 10.135 Kxixe 0.0841 1.5748 S-22 = DF = 1 4 0.300 IXL 67.056

VM-R28 (Xylenes)



# Tier 2 Vertical Modeling & R-26 Calculations for Total Xylenes MotoMart - Swamses 2002-0431

Target Soli	Leachate Concern	ration (Solve S-18	for GW <sub>eel</sub>					
5-18 =	GW <sub>ebj</sub> =	C.,	=					

	The greatest polecital consensation of the Xydress in the Xydress in the groundwater of the source of the source	C (od metantralisma metalog peint) / p (P C. HQ IN)	GW <sub>eff</sub> = CAA \ D&	Distance cardedness groundless esserading source	of the r plane from a	Contemporation of contemporation of a Distance X from the states.	Lorgitudinal Dispositions, Equation R. 16.	Therapezae Disposativity. Equation H 17.	Vestical Dispersibility. Equation II 18.	R28 Equalibras	R-17; a R-18; a Term 1 Term 2 ert. Sec	,= a,/20 = (X/(2 ° a,)) = (1 - SQRT(1 + i thon 742 APPEND)		an(p_)	
Sample Location	Soil Concentration (mg/kg)	C.	Gw <sub>eb</sub> (mg/L) R26 Csource	X m	K (cm)	C(x) (mg/L)	G <sub>s</sub> (cm)	(cm)	e, (cm)	Term 1	Tem 2	ERF (\$1)	ERF (\$P2)	\$1 = Ser/(4"SKIRTJoy"XD	\$2 = \$41(2 * SORT(cs * X
BH1	16.4	6,011	0.30054												
BH5	25.7	9.419	0.47097												
		102-0								5 33					
				100											100
															-
_							1	_			1	-			
		_						_				_			
_		_	1	_	-			-		-		-	-	-	
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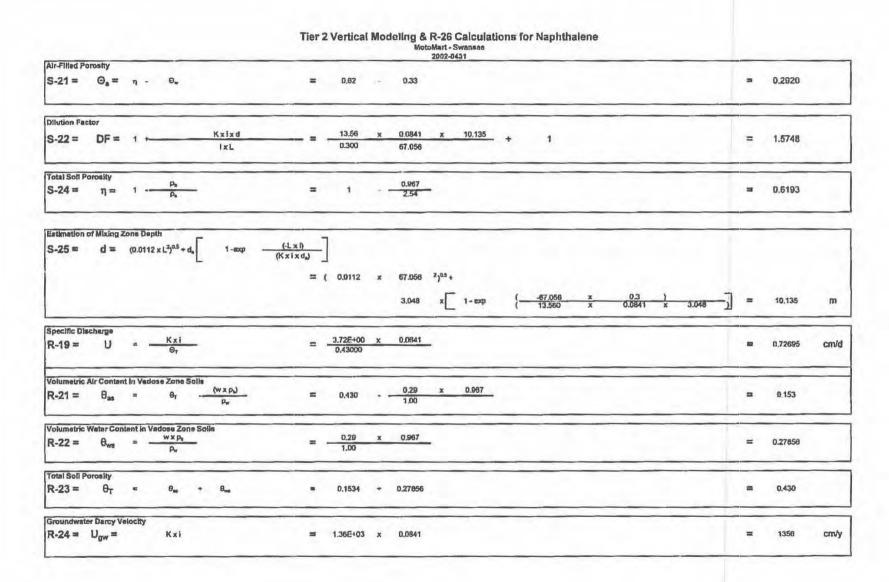
VM-R28 (Xylenes)

	The greatest potential concentration of Total Nythone in the groundwater of the draw contentration.		Distance of contenting groundstaller sensongly secure	plans plans	Corportradon of enclosed and long pro-principals at a Distance X form the senters.	Laryhadhod Dispensitivity. Equation R 18.	Tenterare Departfoly. Equation R 17.	Vurtosi Dispersibity. Equation it 18.	Rate Equations	R-17: C R-18: S Term 1 Term 2 ert Sec C <sub>px</sub> = C	= 0,/20 = [X/(2*0,)] = [1-SQRT[1+ don 742.APPEND		พวร์[คิ๋ฏ)	
Well Location	Caource (mg/L)		(II)	X (ami)	C(x) (mg/L)	n, (cm)	(cm)	(cm)	Term 1	Term 2	ERF (\$1)	ERF (RZ)	\$1 = \$4/(4-80FT)py*Xp	\$2 = \$4/01*SORT(ex*X)
							200							
						-								
			7 - 7											
				-										
						$\vdash$	-							
													172	
					-1-	$\vdash$			-			-		
							****							
		-	-											
				-			-						-	
		35777												

VM-R28 (Xylenos)

# Tier 2 Vertical Modeling & R-26 Calculations for Naphthalene

						Ma	toMart - 5										
		SL a RBCA					2002-0-9	J1						Date	Compiled: Version: 8/25/2	02/23/16	
nput Value	barbus Dennity = 60.4	- Converte	1 Value In he	Samuel lies	- Marchael	del ubains	4.05% P	0.007548	1" - AM	DA'SOF BIR	Little Niket	I name Pan	_	_		_	
	partic Matter (%) -> 0	FOC % (0.5B conversion						0.80/515		modul (0.58)				fds some	to to the	0.000	-
		SLOO M TO DE COMPANY	The Party of the P	0.000				-				0.000		loc conve	gig cit note:	0.000	163
0.967	Ps - Dry Soil Bulk Density				_			1.8, 511	1.8; Clay =	1.7; or Site 3	specific						
2.54	ps - Soil Particle Density			-		r, Sita Spe						100					
0.292	O <sub>a</sub> - Air Filled Soil Porosity	0.292	Value from		Top 1	meter = 0.	28; below	meter =	0.13; Grave	= 0.05; Sand	= 0.14; S	Rt =0.24; Cla	y = 0.19;	or Calculated	Value (S21)		
0.327	Ow - Water Filled Soil Porcetty	0.327	Value from	15-20										or Calculated	Value (S20)		
0.619	η - SSL: Total Soil Porosity	0.619	Value from							ay = 0.36; or	Calculated	1 Value (S24					
0,43	DERBEKTOM/SDILLEOCOMY TO	may - mall of the	F	An All			0.25; Sano	= 0.32; \$	Sit = 0.40; C	ay = 0.36							
	I - Hydraulic Gradient	- T		Pitt	Site S												
0.008	foc - Total Organic Carbon (g/g)									She Specific							
20.000	DF - Dilution Factor							less than	20, then 20	default is use	d, alse ca	culated valu	besu el e				
10.135	d - Mixing Zone (m)				2; or c	alcutated v	sular										
13.50	K - Hydrausc Conductivity (m/yr)	CTTVSOC ==	4,30E-05		Sile S	pecific	3.72	2E+00	S'CHING!	1.36E+0	3 Sicinfyr	Use cm/d fo	r Refinite	19, & R26, c	myr.fpcR24	about all	301 an 1
67.056	L - Source Length Parallel to Ground	iwater Flow (m)	feet = 22	0	Site S	pecific (m)											
3.048	d Aquiter Thickness (m)		feet = 10		She S	pedfic (m)	10-10-10										
9448.8	SW/Source-Width Horizontal plane	(cm)	feet = 310	0	Source	width per	pendicutar	to ground	water flow d	rection in ho	izontal pla	ne				-	
304.8	Sd: Source width Vertical plane (c			<b>通信作品</b>	Use 2	00 or site s	pecific										
	A - First Order Degradation Constan	Marie Company	The state of the s	M. W.	Nepht	nalena = 0	.027										
1.00	net-Water Continy of																
0.266	Water a station with the second and					Surface S	ml=01.5	theurford	moli = 0.2-	r Site Specif	•			_			
0.3	II - Infiltration Rate (m/m)			and the Person		Ulnois	Wil - W. 11 C	IND THE I COL	Jack - Date C	one opera							
540	K Saturated Hydraufic Conductivit	v .					oput Value				_			_		_	_
0.140	GW-M - Groundwater Remediation (			_	200 10	0.22			Jan Dame di	K OLL-E	- 61-11 7		_			_	
0.085		Tojecure Cassa 1		_	B T				net tentions	ntion Objectiv	C (1833 Z						_
	1/(2b+3) - Exponent for S20			_			nput Value	6									
0.0198	H' - Henry's Law Constant	or.ed	_	_	_	nalene = 0.	-		_								_
500.00	Kos - Organic Carbon Partition Coeff	Clerk			Napin	naiena = 21	000	_			-						
ioil Compo	onent of the Migration to Groundwa						-						-				
3-17 =	C. x K	(8, + 8),	XM)	-				20	. (	0.327		0.292	×	0.020			
1-11-	- A	pt		-		CAN.	*	4.3				0.967					
	_						-					0.801					1.2
				-	-	_	_	_		_	_				G_X	3.244	mg/kg
arget Soll	Leachale Concentration (Class 1)																
-18=	C <sub>w</sub> = DF	x GW <sub>eeq</sub>	=	20.00	X	0.140									=	2.8	
				_													
oll-Water	Partition Coefficient																
-19 =	K <sub>d</sub> = K	x foe	= !	500.00	×	0.006									=	2.9	
ator-Filler	d Perosity																



# Tier 2 Vertical Modeling & R-26 Calculations for Naphthalene MotoMart - Swansea 2002-0431

	The greatest potential conceptration of Napitalend in the groundwater at the source of the contantination.	C. = (woll contentionsion at modeling point) / PC. + (R. + 8. x 17, Pp.)	GW <sub>ed</sub> = CW / DF	Distance carder fine ground wate emensting accer-	of the Feame Forns	Concessions of conference of conference of a Distance X from the source.	Longitudinal Disportilivity. Equation R 16.	Transverse Diaperstivity. Equation R 17.	Vertical Dispursitivity, Equation R 16.	R-26 Equations	R-17: a R-18: a Term 1*	= 0.10 ° X y = a_1/3 z = a_1/20 = [X/(2 * a_1)] *= {1 - SQRT 1 + ( tion 742_APPENDIC ************************************	(4°λ°α_)/(U)]] XC:Table G <sup>sm 2)</sup> χ erf(β <sub>1</sub> ) χ e	orf(β2)	
Sample ocation	Soil Concentration (mg/kg)	C <sub>w</sub>	Gw <sub>obj</sub> (mg/L) R26 Csource	X (ft)	X (cm)	C(x) (mg/L)	(cm)	در. (cm)	(Cm)	Tesm 1	Term 2	ERF (β1)	ERF (β2)	β1 = Sw/(4 * SQRTJcy * XD	β2 s 5d1(2*SQRT(cz*X)
															-
							1								

#### Tier 2 Vertical Modeling & R-26 Calculations for Naphthalene MotoMart - Swansea 2002-0431

	The greatest potential concentration of Naphulone in the proundwater at the source of the contagnression,	Distance is contentine or contentine or contentine or contentine or contenting to sociatore	of the plume men a	Contentration of contentration of contentration of a Distance X from the turners.	Lorechadinal Dispondityly. Equation R 18.	Transverse Dispersitivity. Equation R 17.	Vertical Chapsort/Anty. Equation R 18.	R-28 Equations	R-17: a <sub>r</sub> R-18: a <sub>s</sub> Term 1°	= a <sub>2</sub> /20 = [X/(2°a <sub>2</sub> )] = {1 - SQRT[1+	(4° \ \ ^ \a_1) / (U)]] DX C: Table G Term 25 x ent(B <sub>1</sub> ) x e	ritpa)	
U€  oællon		70%	X (cm)	C(x) (mg/L)	(cm)	(cm)	a <sub>2</sub> (cm)	Term 1	Term 2	ERF (B1)	ERF (B2)	β1 = 8m/(4*8QRT oy*X)	β2 = \$61(2 * SOP(T)(α2 * X)
MW1	0.387	10	304.8	0.13862	30 48	10,16	1.524	5	-0.2053	1	1	42.44849821	7.071067612
MW4	1.23	24	731.52	0.13320	73.15	24.384	3,9578	5	-0,4448	1	0,999989091	17.68687425	2.948278256
												A	
			200										
				-					-			-	

# Tier 2 Vertical Modeling & R-26 Calculations for Benzo[a]pyrene MotoMart-Swansea

										2002-0	Swansea									
	RBCA	1	SSL	SEL & RBC	۸					2002-0	431						ne	to Compiled:	02/23/16	
		_			_													Version: 8/25/2	10 the 200 to 10 t	
ut Value								-							100					
	程的使用的		60.4	1000	Page Contag	ted Value t	o be used live	dady by	sheet -	V/V					Loamy Sand				_	1
	einic Maltiet	THE RESERVE AND ADDRESS OF THE PERSON NAMED IN	0	THREOC W	(0.58 conven	don)	0.000				0		mg/kg (0.58		0,000		foc can	rersion to g/g:	0.000	1
0.967	ps - Dry S	ion Bulk Der	rsity					1.5 or,	Gravel = 2	2.0; Sand	= 1.8; Sft =	1.6; Clay =	1.7; or Site	Specific					7 7 6 7	
2.54	pa - Soll F	Particle Den	sity					2.65 0	r, Site Spe	cińc										
0.292	O AFFI	led Soil Po	rosity		0.28	2 Value	from S-21	Top 1	meter = 0.	28; below	1 meter =	1.13; Gravel	= 0.05; San	d = 0.14; Si	1 =0.24; Clay	= 0.19; 0	r Calculated	Value (S21)		
0.327	Gw - Wate	er Filled Sol	Porosity		0.32	7 Value	from S-20	Top 1	meier = 0.	15: below	1 meter = 1	).30: Gravel	=0.20: San	d = 0.18; Si	t =0.18, Clay	= 0.17. c	r Calculated	Value (S20)	-	-
		otal Soil Po			0.81	9 Value	from S-24								Value (S24)					-
				WHILE STATE				0.43 p	r. Gravel -	0.25: San	d = 0.32: S	a = 0.40; C	av = 0.36		1001					
8413793	I - Hvdrau	lic Gradient				* -	100,0	Site S			-							-		
		Organic Co		1)		-				006 Subs	urface Soil	= 0.002* or	Site Specific		_	_				
	DF - DRut		100		1.57	5 Value	from S-22								culated value	is used				
	d - Modng		_		10.1		from S-25		alcutated v							10 400 000				
		ulic Conduc	tivity (m/	n	cm/sec	= 4.30E	-05	Site S	pecific	3.7	2E+00	CHVd.	1 385-	13 = emilie	their old in	PINTER	<b>いました</b>	My ful FIZ4	CAR PERC	- In
				roundwater Flo			= 220		pecific (m)						200500000			and Committee of the		_
		er Thickness		Total Charles	10.17	feet =			pecific (m)	_	_		_							_
				plane (cm) Links	MPA. SHEET CAS / PAST						-1	and an Alman of	firection in he		_	_				_
304.B	SWEISON	PP-AAIMIN -II	and and and	(60)		5 - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- JIU	Source Or	William of the	benescra	r to ground	Make HOW C	RECEOUT IN IN	nizonen pra	no	_				_
				market in							_									_
									faiblions.	- 0.00003		_					-			-
																				_
				ent! Fire Allo	1	Statility in	1 64.7			OU = 0.1; 3	Subsurface	soi = 0.2; c	or Site Speci	ric .						
		on Rate (m							Mools								-	_		
		ated Hydrau						_	able K for I											
				tion Objective C	Jass 1			-	0.026			ter Remedia	ation Objecti	re Class 2						
0.065	1/(25+3) -	Exponent I	or \$20						able K for i											
1.63E-06	H' - Hanzy	's Law Con	stant						(a)pyrene :			_								
020E+06	K - Orga	nic Carbon	Partition	Coefficient				Bergo	(a)pyrene :	= 1,020,00	00									
il Compo	nent of the	e Migration	to Group	ndwater Cleans	an Oblective	Class 1)		-	-		-	-	-	_		_	- No.			-
						8, x H)	7					· .	-		2 200	100				
-17 =	C.	x	K	+	100	100	=		C.	x	5916	+ '	0,327	+	0.292	X	4.63E-05	=		
6.5						ph									0.967					
		-																Cwx	5916,338	
																			9910,336	mg/k
net Soll	Laschate (	Concentrat	lon (Clas	s 1)			_	_		-						-				
18 =	0 =		To all and	DF x GW		-	20.00		0.005									=	0.1	
10 -	-W					7	24.00	^	0.000									- 7	0.1	
il-Water F	Partition C	oefficient	-							-		_			-				-	-
19 =	10 -			W 44			1.02E+06	44	0,006									_	5916	
19 =	W4 -			Kee x Ise		-	I.MZETUD	X	0.000									_	2910	
									_			-	_							_
the Elliad	Perosity		-	1/(36=3)				-	3.65	Tlener										
dent a tune			1							TALLESCO.										
-20 =	0, =	n r-		_		- 22	0.62	× -	0.300	_								=	0.3273	

#### Tier 2 Vertical Modeling & R-26 Calculations for Benzo[a]pyrene Air-Filled Porosity S-21 = 0 = 7 - 0. 0.62 0.33 0.2920 Dilution Factor 13.58 0.0841 S-22 = DF = 1 +-= 1.5748 67,056 Total Soil Porosity 0.967 0.6193 - 2.54 Estimation of Mixing Zone Depth (Kxlxd<sub>a</sub>) d = (0.0112 x L2)05 + d, 1 -exp x 67.058 2)05+ = ( 0.0112 Specific Discharge = 3.72E+00 x 0.43000 0.0841 R-19= 0.72895 cm/d Volumetric Air Content in Vadose Zone Solis 1.00 0.430 0.153 Volumetric Water Content in Vadose Zone Solis x 0.957 0.29 R-22 = 0.27656 Total Soil Porcetty 0.430 R-23 = 0.1534 0.27656 Groundwater Darcy Velocity R-24 = Ugw = 1358 cm/y KxI 1.36E+03 x 0.0841

#### Tier 2 Vertical Modeling & R-26 Calculations for Benzo[a]pyrene MotoMart - Swansea 2002-0431

Target Soll L	Leachate Concentrati	n (Solve S-18 for GWool)	
S-18 =	GW -	C,	
2-10 -	CANON	DF	

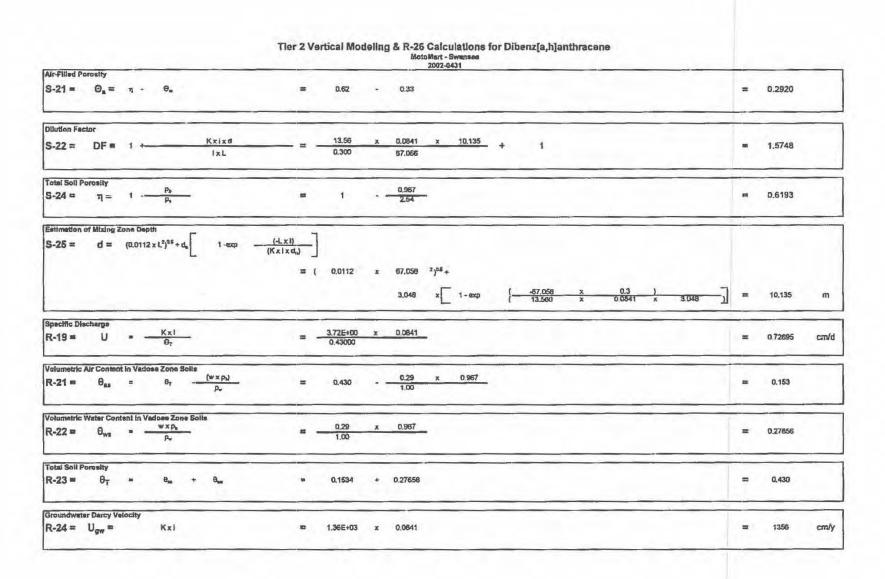
	The greatest polarisation oncereinsion of Berzofalpyrus in the groundwater at the source of the contamination.	C., a (toll contamination of smodaling point) / P., + ((B.,	gW <sub>mi</sub> ≈ CW / DP	Distance controllers groundwate erranating source	of the or plume from a	Concertization of posterior and posterior and posterior and posterior X from the source.	Longtucknet Disparativity. Equation R 18.	Transverse Disperativity. Equation R 17	Vertical Dispersitivity. Equation R 18.	R-28 Equations	R-17: 0, R-18: 0, "Term 1" "Term 2" erf: Sec	= a,/20 = [X/(2*a,)] = [1-SQRT[1+(		ri(\$2)	
Sample Location	Soll Concentration (mg/kg)	C <sub>w</sub>	Gw <sub>obj</sub> (mg/L) R26 Csource	X (ft)	X (cm)	C(x) (mg/L)	(CLII)	(cm)	(cm)	Tem 1	Tesm 2	ERF (B1)	ERF (\$2)	β1 = Bw/(4*SQAT(cy*X))	β2 = 8d/Q* SQRT(ex*X)
BH2	0.16	0.000	0.00000			(	1	1	1						
ВН9	2.6	0.000	0.00002												
BH11	0.11	0.000	0.00000												
BH12	1.5	0.000	0.00001	-											
BH14	0.13	0,000	0.00000												
BH16	0.12	0.000	0.00000												

# Tier 2 Vertical Modeling & R-26 Calculations for Benzo[a]pyrene MotoMart - Swansea 2002-0431

	The greatest potential concentration of Beauzelapyrene in the groundwester at the source of the postuminesters.	Distance a contactive of groundwater eurostating f source	long of the plume from a	Consentration of establishment of a Distance X from the source.	Longstante Dispersibity. Frunden R 18	Transverse Obsponskrite, Equation R 17,	Vertoni Disperalivity Equation R 16.	R-28 Equations	R-16: a, R-17: a, R-18: a, "Term 1" C <sub>[0]</sub> = C,	; = (1,/20 "= [X/(2" 0;)] 	erm Σ x erf(β <sub>1</sub> ) x ar	F(D <sub>2</sub> )	
ंट्र <u>।</u> निक	2.250(m) 2.3 12.2(m) (m)		X (cm)	C(x) (mg/L)	(cm)	c, (cm)	(cm)	Torm 1	Term 2	ERF (B1)	ERF (B2)	β1 = 8w/(4* BORTINY*XD	β2 = 64/(2*8ΩRT[σ2*X
			-										
												1	

# Tier 2 Vertical Modeling & R-26 Calculations for Dibenz[a,h]anthracene

nput Value	FRECAS	<u> </u>	SL ]	SSL & RBCA						2002-04							Date	Compiled: Version: 9/25/20	02/23/18	
	's Bulk Den	militirati 60	4 1	s to feele, see	Cthryeffed	Value to	by titled in the	Riskation	Sheel W.	THE L	0.967515	- B	DASSI GOM	enestrior i	oamy Sand			100000	ACM.	-
	anic Mattet			FOC % (0:	58 conversion				nic Matter (		Ö		mg/kg (0.58 co		0.000	1	foc conven	sion to g/g:	0.000	1
0.967		oll Bulk Density		3,22,0,40							= 18 SIN =		1.7; or Site Se			-	130 5011101	34.1		_
2.54		article Density							: Site Spec		1.00	1104 0104	tor, as dite of				-		-	
0.292		led Soil Porosi	w		0.292	Value	rom S-21				1 meter a f	13: Grave	= 0.05; Sand	n 14- SI	en 24: Clay	0 10 m	Calculated to	Okes (C221)		
0.327		Filled Soil Po			0,327		rom S-20						= 0.20; Sand						_	_
0.619		otal Soil Porosi			0,819	and Minks again	rom S-24						lay = 0.36; or (			- U. II, U.	COLOMBIES A	ama faishi	_	_
0.43		Start SOUP or		- igyr									lay = 0.36; or (			_	_			_
	i. Hydraul		Dest.)		19 一日日 田田 田田か	AL BER	CONTRACTOR AND ADDRESS	Site St		a,cu, chi	W. W. W.	4 0.70, 0	my - 0.00, or c	S CHOCK WINC	VIIIUO				_	-
0.006		Omanic Carbo	n (n/n)		_			Surfac	n Spil = 01	YOS: Suba	orfore Soll	=0.002: 00	Site Specific			-	-			
20.000	DF - Diluti		TIS MI	_	1.575	Value f	from 8-22						default is used	1 else cel	sulated value	is used				-
10.135	d - Midding		_		10.135		num S-25		alculated v				Toronto to the control							_
13.58		ile Conductivit	(móvr)		cm/sec =	4.306	05	Site St			2E+00	Torrida	1.36E+03	Stankell	Isaf croid Jos. F	115 173 9	\$ 706 cm/	r for FC24	MODE SERVICE	STATE OF THE
87.058				indwater Flow (	m)	feet a	220		secific (m)					- And - And -	100,100,100	31,310,410			- SALUE MILIT	
3.048		r Thickness (m		1		fee! =			pecific (m)					_						
9448.8				ne (cm)	WETEL					nendicule	r to omend	water flow r	frection in hari	contal ola	ne.		-			
304.8				(cn) Telephone					O or site s		- 10 Parent	THE STATE OF THE S	- COUNTEL TION	Man pla		_				
	A - Find O	riera Weitzetata	Signature to	antar Espera	71.589	EUN-14	WHEI/ Now				00037									
1.00				ni na na					dudades in ac		,00001					_				
0.285				N. W. W. W. C.					Curdana C	W-01-	C. Asia offices	coll a fi to	Cha Canalia	_			_			_
0.3		on Rate (mVr)	CO HELL	ASWM-W	S. J. S. Shidows	SLE SENAT	COMMENTER CO.		Illinois	00-0.1,	DUDAUI 1808	800 - U.Z. (	a sun opecano	111					_	_
540		ated Hydrautic	Conduct.	Jan.	_				ble K for I	A16-6-		_		_		_				_
- 1-														en						_
0.005				Objective Clas	31	_			0.025			er Hamedia	tion Objective	CI838 2						_
0.085		Exponent for S				-			able K for it			_			-	_				
.03E-07		's Law Constan					_		[a,h]anthro			_								
800E+08	K <sub>ea</sub> - Organ	nic Carbon Par	tition Co	efficient	_		_	Dibenz	ia hjardhra	scene = 3	800000									
all Compo i-17 =	C.,	Migration to	Ground	+	Objective (CI (6, + 8, pb	xH')	•		c.	×	22040	+(	0.327		0,292 0.967	×	6.03E-07	] = Cwx	22040,338	mg/kg
rgat Soll	Loachete (	Concentration	(Class 1	)		4														
-18 =	C <sup>w</sup> =		D	Fx GW <sub>eq</sub>		=	20.00	×	0.005										0.1	
H-Water	Partition Co	oefficient							=											
-19 =	K <sub>d</sub> =			K <sub>m</sub> x f <sub>m</sub>		=	3.80E+08	×	0.008									=	22040	
oter-Fille	d Peresity	المحدوا	11	Or S			0.62	F	0.300	Jum									0.3273	



# Tier 2 Vertical Modeling & R-26 Calculations for Dibenz[a,h]anthracene MotoMart - Swansea 2002-0431

arget Soli	Leachate Concentr	ation (Solve S-18 for G	Watt)		
40-	cw -	C <sub>w</sub>	_		
-10=	GW <sub>obj</sub> =	DF			

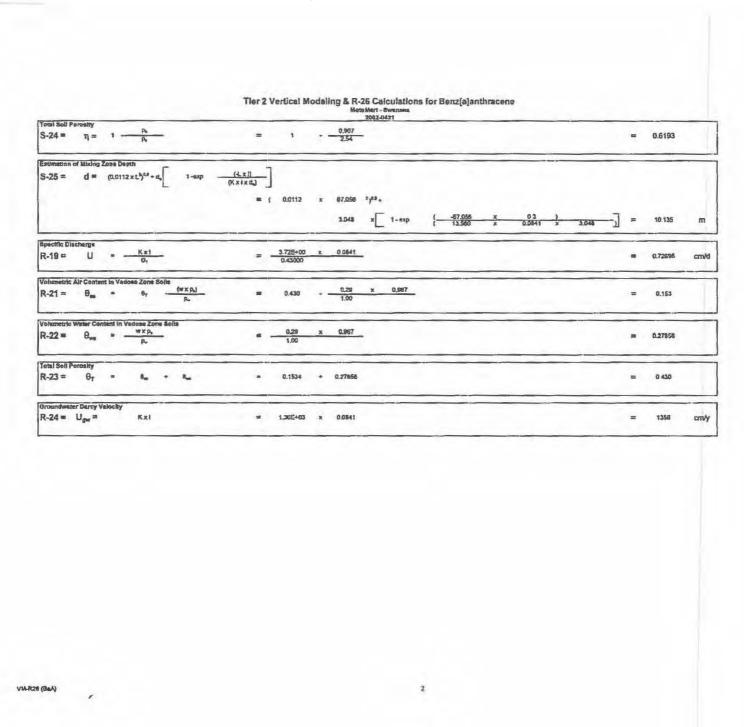
	The greatest polarisal concentration of Discrete Jiperathrecens in the groundwater at the source of the conternation.	C., = (sell contentination at modeling point) / [14, + (18, + 6, a h) / 4,]	GW <sub>ant</sub> ≈ GW / DF	Distance centralina gross (dwale agranading source	of this spheric store a	Concontration of sentimetrical in grean/heater at a Distance X from the source.	Longikudnal Dispersibitly. Equation R 18.	Transverse Diapers Knity. Equation R 17.	Vertical Caperathaly, Equation R 18.	R.28 Equations	R-17: a, R-18: a, "Term 1" "Term 2" erf. Sec.	= a,/20 = [X/(2*a,)] = {1 - SORT[1+ tion 742 APPENDI	(4" \ " c <sub>u</sub> ) / (U)]] X C: Table G <sup>mm7</sup> x enf(B <sub>1</sub> ) x en	((\$ <sub>2</sub> )	
Sample Location	Soil Concentration (mg/kg)	C,	Gw <sub>ebj</sub> (mg/L) R26 Csource	X (ft)	X (cm)	C(x) (mg/L)	(cm)	cm)	(cm)	Term 1	Term 2	ERF (B1)	ERF (62)	β1 = Sw1(4*SURTJey*X)	β2 = 5d/(2* SQRT(σz*X)
BH2	0.23	0,000	0,00000							-					
BH9	0,54	0.000	0.00000												
BH12	0.28	0.000	0.00000												
							$\Box$								
							H								

#### Tier 2 Vertical Modeling & R-26 Calculations for Dibenz[a,h]anthracene MotoMart - Swansee 2002-0431

	This greatest potential concentration of Ciber of a Nationals in the Ground and Ciber of a Nationals in the groundwater at the source of the contentials.	Distance along conference of the groundwater plume emahating from a source.	Consecutation of content and the promotern to a promotern to a Distance X from the source.	Langibudhai Olepensibility. Exuation 9.16.	Transverse Dispersitivity. Equation R 17.	Verlinel Dispersitivity. Example R 16.	R-26 Equations	R-17: 0, R-18: 0, Term 1* C <sub>m</sub> × C,	$z = \alpha_x/20$ $z = [X/(2 \cdot \alpha_x)]$ $z = [X/(2 \cdot \alpha_x)]$	emų x erf(β,) x erf	β <sub>2</sub> )	
roe (ion		(cm)	C(x) (mg/L)	(cm)	(cm)	(cm)	Term 1	Term 2	ERF (B1)	ERF (\$2)	β1 = Sw1(4*EQRT(cy*X)	β2 = Sd/(2*SORT(σ2*X)

		-				ler 2.\	Vertical M	odelin	Moto	6 Calcul Mart - Swan 2002-0431		for Be	enz[a]an	thracen	8		500			
	RBCA	1	ESL	550, 8 RBC	친													omplied. Index 82575	02/23/18	
nput Value		the second	#0.4	_	Citalland		But should fin in	Pat B other	entature t	7920 000	AFAE ISE	165	THE COLUMN	Shirt and	I annu Court	_			_	
	s Bull Der		60.4	FOC %	(0.88 convenión		Do Otreid in ics								LOWING Sand		foc conversi	on to olar (	0.000	1
	Ipa - Dry Sc			1 1100	10333301100000	,,	2.000			; Sand = 1.8						_	TOO CONTENT	on to gra. I	0.040	-
2.54	08 - Sol P			at a			apart part		Bita Specif		-	-								-
0.292	8,-AIF	ed Boll P	crosily		0.292	Vatura f	Iron: 5-21	Top 1 n	reter = 0.28	: below 1 me	riar = 0,13	3; Gravel	= 0.05; Sur	d = 0.14; S	81 =0.24; Cla	y = 0.19, p	Celculated V	akre (321)		
0.327	Gw - Wate			y	0,327		rom 6-20										Calculated V	akra (\$20)		
0.619	n- SSL To				0.010		tom 5-24	0.43 or.	Gravel - D	25; Sand = 0	1.12; SR :	0.40, C	sy = 0.38; c	Caiculate	d Value (524					
0.43	( - Hydrauli			EL DESERVE	Section 4	1 200	and History	Site Sp		25; Sand = 0	132 SU	0.40; C	ay = 0,35					_	_	-
	for - Total			vin)		-	1			id; Subsurfa	es Boll a i	0.002- 00	She Spacif	_		_				_
20,000	DF - Dilutio				1.578	Vakes I	from 5-22			for DF is les					deutated valu	te in used				
	d - Mbdng	Lone (m)			10,135		from 6-25		cutsted val									1 8 7 6		
13.58	K - Hydrau	ac Cond	uctivity (m	rlyth	con/sec =	4.3012	05	Site Sp	reite	3.72E+0	M I'm	nfhd:	1.38€+0	3 - emyr	Use can/d for	PARSHELLE	& R28. Linky	for R24.		THE
67.058				Groundwater Fl	DW (m)	feet =			scific (m)			177						3-		
3.048	d - Aquite					feet =			ecisc (m)											
8448.8					<b>本华、对北京</b>			Source	width perpe	indicular to p	<b>TOURCHE</b>	er few d	rection in h	orteorial pie	ID8	_				
0.00051	1 - Bourc	e switting.	vertical b	anstantista are	COLD I		travels on		or sas spe		,	_		_						_
0.3	I - brillentk			Granding Street		CKTAT THO	Marian & Carlon	0.3 for		- 0.0000										-
540	K Batura			ductivity					ble K for Ing	xd Values										
0.005				lation Objective	Class 1					GW - Gros	endwater	temeda	ton Objecth	re Class 2	-			-		
0.086	1/(25+3) -							See Te	ble K for bri											-
1.37E-04								Berg[a]	andle ecens	= 1.37 x 10	4									
398000	K Organ	tic Curtic	m Paritio	n Coefficient				Bertz[a]	arthrecene	= 398,000										
	C.	X	K <sub>y</sub>	erichweiter Clear	(E <sub>m</sub> + 8,				G <sub>a</sub>	x 23	06.4	+(_	0.327		0.292	×	1,37E-04	1]=		
	C <sub>s</sub>	x [		triving let Clear	[B, + 8,				G,	x 23	06.4	+ (	0.327		0.292	*	1,37E-04	Dex	2508,738	moAq
S-17 =	C <sub>a</sub>	×[	K,	÷	[B, + 8,				G <sub>a</sub>	x 23	2,80	+'	0.327			*	1,376-04	3	2308,738	mo/kg
5-17 m	C <sub>u</sub>	×[	K,	•	[B, + 8,		20 00	×	G.,	23	2,80	*(	0.327	•		¥	1,376-04	3	2508,738	moAq
S-17 = Target Soll S-18 =	C <sub>u</sub>	x [	K,	÷	[B, + 8,		20 00	×	0.008	x 230	A.00	+(	0.327	•		×	1,376-04	3		moAs
arget Soll	C <sub>w</sub> = Partition Co	x [	K,	÷	[B, + 8,		20 00 3 98E+06	×	C., 0.005	23	06.4	+ (	0337	•		*	1,376-04	3		mo/kg
S-17 =  Farget Sell S-18 =  Boil-Veiter S-19 =	C <sub>w</sub> = Partition Co	x [	K,	the 1) DF x GW_s	[B, + 8,	xH)		×		x 23/	06.4	+ (	0.327	•		*	1,376-04	De x	0.1	mg/tg
arget Soll 3-18 = coll-Water 3-19 =	C <sub>w</sub> =  Partition C  K <sub>d</sub> =	x [	K,	the 1) DF x GW_s	[B <sub>m</sub> + B <sub>s</sub>	xH)		× ×		x 230	08.4	+ (	0.527	•		•	1,176-04	De x	0.1	molty
5-17 =  arget 8e0 3-18 =  toll-Water 3-19 =  water-Fille 5-20 =	C <sub>w</sub> = Partition C <sub>d</sub> = Partition C <sub>d</sub> = d Porcelly $\Theta_w$ =	x [	K,	the 1) DF x GW_s	[B <sub>m</sub> + B <sub>s</sub>	xH)	3 98E+06	× ×	0.008	224 225	06.4	+ (	0.327			1	1,175-04	De x	0.1 2308,4	more
arget Soll 1-18 = oil Vester 1-19 = i-19 = i-20 =	C <sub>w</sub> = Partition C <sub>d</sub> = Partition C <sub>d</sub> = d Porcelly $\Theta_w$ =	x [	K,	the 1) DF x GW_s	[B <sub>m</sub> + B <sub>s</sub>	xH)	3 98E+06	x x z[-	0.008	x 239	06.4	+(	0.327	•		*	1,175-04	De x	0.1 2308,4	mo/sg
arpet Sell 3-18 =  Soll-Water 3-19 =  Veter-Fille 5-20 =  Nu-Filled II	Cw =  Partition Co Kd =  Pertition Co Kd =  Percently Gw =	x [	K,	the 1) DF x GW_s	[B <sub>m</sub> + B <sub>s</sub>	xH)	3 98E+06 0.62	x x z _ z	0.008 0.300 540,000	ans.	A.000	+ (	0.327			*	1,175-04	De x	0.1 2308.4 0.3273	mohs
arget Sell 3-18 =  oil Water 3-19 =  fator-Fille 5-20 =  iir-Filled F	Cw	x [	K,	the 1) DF x GW_s		xH)	3 98E+06 0.62	x x x	0.008 0.300 540,000	James.	135	+ (	0337	•		*	1,175-04	De x	0.1 2308.4 0.3273	mohs
5-17 = arget 8-0 3-18 = coll-Vester 3-19 =	Cw =  Partition Co Kd =  Pertition Co Kd =  Percently Gw =	x [	K,	DF x GW <sub>odg</sub> K <sub>os</sub> x f <sub>os</sub>		xH)	3 98E+06 0.62	x x = x = -	0.008 0.300 540,000	James.		+	0327			*	1,176-04	De x	0.1 2308.4 0.3273	mg/tu

VM-R25 (BAA



# Tier 2 Vertical Modeling & R-26 Calculations for Benz[a]anthracens MotoMart - Swanses 2003-0431

Target Sol	Leachess Concentrati	on (Solve 9-18 for GW <sub>eel</sub> )				
S-18 =	GW <sub>ebj</sub> =	C <sub>m</sub> =				

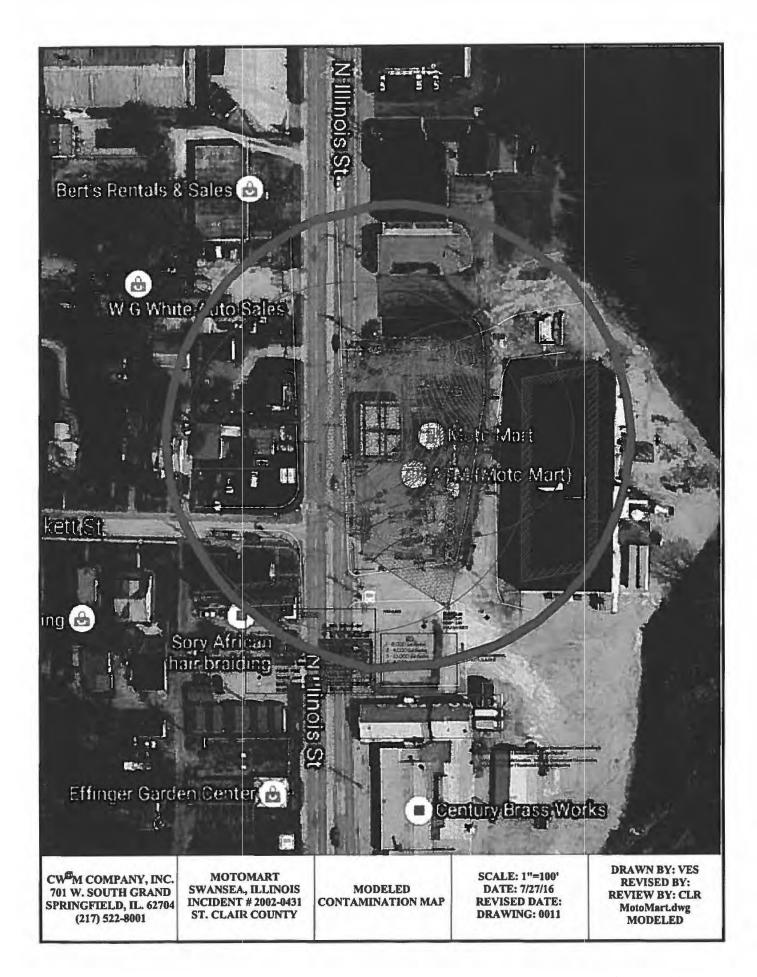
	The greedest actional correctivation of Seriodylevi Process by the groundester of the confessional seriodylevi confessional seriodylevi.	C., = (cal contactorion) or modeling point ( [5, + (fb., + 6, x (r) ) h.]	GW <sub>ett</sub> = CW / DF	Distorted senderline groundwale small hilling source	tore a	Converientes of contraction of conference at a Distance A few the search.	Larghaded Dispersibility. Equation R 18.	Taransan Daperelblör. Equalica 9 17.	Variation Disposativity. Espanden R 18.	R20 Equations	R-17: o R-18: o Term 1 Term 2 ert Sec	L= 0.10 ° X L= 0./3 L= 0./20 °= (1-SORI[1+ CON 742 APPEND X= (1-SORI[1+		ort(\$ <sub>2</sub> )	
Sample Location	Roll Concentration (mg/kg)	C.	Gw <sub>ski</sub> (mg/L) R26 Csource	X m	X (ord)	C(x) (mg/L)	c, (cm)	(दार)	(cm)	Term 1	Tem 2	ERF (\$1)	ERF (PZ)	BI =	8416. 20kilm. X
BH9	2.5	0.001	0,00005												
_				-											
					-		-		-					-	
		_			-		+		-				-		
-					1		-	_	-	-	-				
	-	_		-			1	_							
	2 3 3														
					-		-		-					-	
										-					

VM-R25 (BAA)

# Tier 2 Vertical Modeling & R-26 Calculations for Benz[a]anthracene MotoMart - Swanses 2002-9431

	The greatest judicinial convertibilities of Sentate programs of the groundwater of the occurs of the content of the content of the	Sonto Sontogue Sontogue Characterista Characterista	along of the plume fruit a	Concernation of confernition in grandwase at a Distance & Boar Se schaus.	Carphana Prof. Carphana R 18	Thereson Chapted Shirty. Equation R 12.	Various Dispersibility. Equation R 18.	R.28 Equations	R-17: q R-18: q Term 1	" 0,120 " [X/(2 ° 0,)] " (Terminal of the state of the st	1 == 2 × en[]-{} x ea	WJ	
Well	de la companya de la	500	A (trop)	C(x) (mg/L)	(cm)	(cm)	(cm)	Term 1	Term 2	ERF (§1)	ERF (\$Z)	\$1 # Serife: 80RT[01 * 20	62 a
													,
						- 57							

PCB 17-044 R. 056



#### South, Shirlene

From: Hawbaker, Carol

Sent: Wednesday, July 27, 2016 9:33 AM

To: South, Shirlene

Subject: RE: 2002-0431 Moto mart

No, I can't read the legend either. I would ask first for a clearer legend, and second, if the circles are supposed to depict a GW modeled plume in all directions, they should include the model distances on the modeled plume depictions.

#### Carol

Carol Hawbaker Leaking Underground Storage Tank Section Division of Remediation Management Bureau of Land Illinois Environmental Protection Agency (217) 782-5713

Any person who knowingly makes a false material statement or representation, orally or in writing, in any label, manifest, record, report, permit, or license, or other document filed, maintained or used for the purpose of compliance with Title XVI commits a Class 4 felony. Any second or subsequent offense after conviction hereunder is a Class 3 felony (415 ILCS 5/44 and 57.17).

From: South, Shirlene

Sent: Wednesday, July 27, 2016 9:27 AM

To: Hawbaker, Carol

Subject: FW: 2002-0431 Moto mart

From: vince@cwmcompany.com [mailto:vince@cwmcompany.com]

Sent: Wednesday, July 27, 2016 8:22 AM

To: South, Shirlene

Subject: RE: 2002-0431 Moto mart

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Vince E. Smith, P.E.
Sr. Environmental Engineer
CWM Company, Inc.
701 W. South Grand Ave.
Springfield, IL 62704
217-522-8001
Fax 217-522-8009
vince@cwmcompany.com

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Shirlene South 217/558-0347 Shirlene.South@illinois.gov

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vince@cwmcompany.com

Sent:

Wednesday, July 27, 2016 9:55 AM

To:

South, Shirlene

Subject:

RE: 2002-0431 Moto mart

#### Shirlene,

The dark blue is the perimeter of the furthest modeled contamination, which is the benzene in the groundwater at MW-1, which models 265 feet, beyond any other modeled soil or groundwater contamination in all directions.

I will prepare the drawings you are asking for, and will submit them later this morning, barring interruptions.

#### Vince

----- Original Message -----

Subject: RE: 2002-0431 Moto mart

From: "South, Shirlene" < Shirlene.South@Illinois.gov >

Date: Wed, July 27, 2016 7:44 am

To: "vince@cwmcompany.com" < vince@cwmcompany.com>

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HWY 159? Shirlene South 217/558-0347

#### South, Shirlene

From:

vince@cwmcompany.com

Sent:

Wednesday, July 27, 2016 11:12 AM

To:

South, Shirlene

Subject:

RE: 2002-0431 Moto mart

Attachments:

Moto Mart- soil model.pdf; Moto Mart- gw model.pdf

#### Shirlene,

Sorry for the confusion. Since the groundwater contamination modeling controlled, for the locations where there was both soil and water contamination, only the groundwater radii were used previously, and as I said before, groundwater at MW-1 defines the ultimate modeled boundary. On the attached drawings the dark lines are the modeled soil (drawing 0011A) or water (drawing 0011B) contamination, while the thin lines are the opposite (modeled groundwater on 0011A, modeled soil on 0011B). Each of the dark lines has an identifier for the sample location, and the radius of the circle.

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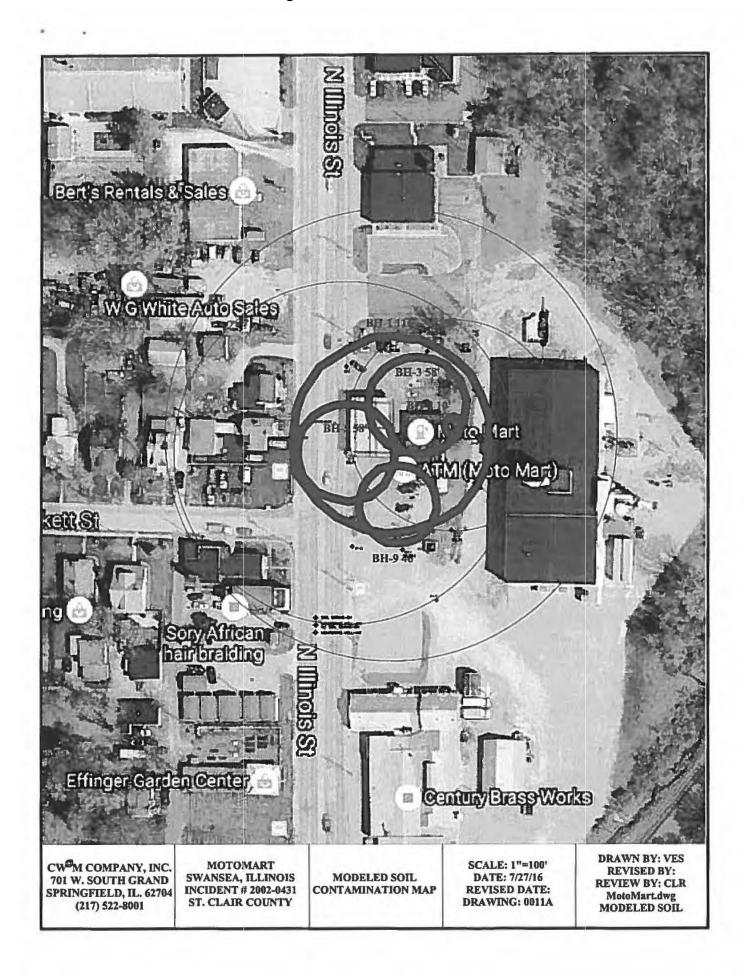
Date: Tue, July 12, 2016 8:22 am

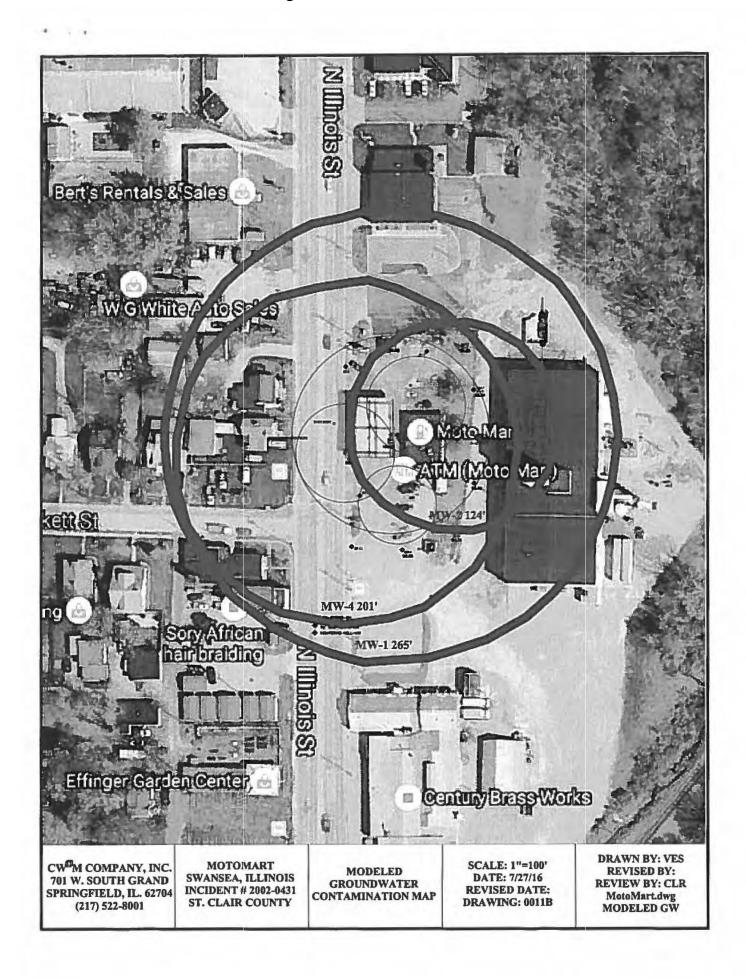
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HWY 159? Shirlene South 217/558-0347





# CW M Company Environmental Consulting Services

701 W. South Grand Avenue Springfield, IL 62704

> Phone: (217) 522-8001 Fax: (217) 522-8009

October 3, 2016

## **PREVIOUSLY IMAGED**

1631405021 – St. Clair County Moto, Inc. Incident # 20020431 Leaking UST Technical File

Ms. Shirlene South, Project Manager LUST Section, Bureau of Land Illinois Environmental Protection Agency 1021 North Grand Avenue East Springfield, IL 62794-9276

RE: LPC #1631405021-St. Clair County

MotoMart - Swansea

1324 North Illinois St. (Route 159) Incident Number: 2002-0431

LUST Technical Reports-Corrective Action Plan and Budget

Dear Ms. South:

On behalf of FKG Oil Company (MotoMart), owner of the USTs at the above-referenced site, we are submitting the attached Corrective Action Plan (CAP) and Budget. The CAP proposes using institutional controls to address the contamination defined in the Site Investigation Completion Report approved July 28, 2016. Also in the CAP is a vapor intrusion investigation and some re-sampling of on site and off-site contamination that would require remediation or additional institutional controls. Assuming that nothing is found that requires additional remediation, a Corrective Action Completion Report will be prepared. If there is contamination which requires remediation, a CAP Amendment will be submitted.

If you have any questions or require additional information, please contact Mr. Vince E. Smith or me at (217) 522-8001.

Sincerety.

RELEASANE

DEC 28 2016

Carol L. Rowe, P.G.

Senior Environmental Geologist

REVIEWER: EMI

Enclosure

XC:

Mr. Rob Whittington, MotoMart / FKG Oil Company

Mr. William T. Sinnott, CWM Company, Inc.

OCT 11 2016

RECEIVED

IEPA/BOL

701 W. South Grand Avenue Springfield, IL 62704 (217) 522-8001 400 West Jackson, Suite C Marion, IL 62959 (618) 997-2238

## PREVIOUSLY IMAGED

# CORRECTIVE ACTION PLAN & BUDGET

## MotoMart - Swansea

Swansea, Illinois LPC #1631405021 - St. Clair County Incident Number 2002-0431

Submitted to:

RECEIVED

# ILLINOIS ENVIRONMENTAL PROTECTION AGENCY Leaking Underground Storage Tank Section, Bureau of Land 007 11 2016

Leaking Underground Storage Tank Section, Bureau of Land
1021 North Grand Avenue East

Springfield, Illinois 62794-9276

IEPA/BOL

Prepared by: CW<sup>3</sup>M COMPANY, INC.

701 South Grand Avenue West Springfield, Illinois (217) 522-8001 400 West Jackson, Suite C Marion, Illinois (618) 997-2238

RELEASARLE

DEC 28 2016

OCTOBER 2016

REVIEWER: EMI

CW<sup>B</sup>M Company, Inc. Corrective Action Plan & Budget Swansea / MotoMart - Swansea LPC #1631405021 - Incident #2002-0431

## PREVIOUSLY IMAGED

### TABLE OF CONTENTS

AF	PPENDICES	,ii
	ABLES	
	CRONYMS AND ABBREVIATIONS	
1.	SITE HISTORY/EXECUTIVE SUMMARY	
	1.1 General	
	1.2 Site Location	
	1.3 Underground Storage Tank Information	2
	1.4 Early Action Summary	
	1.5 Site Investigation Summary	
	1.6 Corrective Action Executive Summary	
2.	REMEDIATION OBJECTIVES	5
	2.1 Determination of Clean-up Objectives	5
	2.2 Soil and Groundwater Objectives	
3.	CORRECTIVE ACTION PLAN	7
3	3.1 Current and Projected Uses of the Site	8
3	3.2 Institutional Controls Proposed	8
	3.3 Water Supply Well Survey	
	3.4 Closure	
4	REFERENCES	11

#### APPENDICES

APPENDIX A	Corrective Action Plan Form
APPENDIX B	Site Maps and Illustrations
APPENDIX C	OSFM Eligibility Determination
APPENDIX D	Corrective Action Plan Budget and Certifications
APPENDIX E	TACO Variables and Equations & Hydraulic Conductivity Calculations
APPENDIX F	Analytical Results
APPENDIX G	Off-Site Affidavits

IEPA-DIVISION OF RECORDS MANAGEMENT

DEC 28 2016

REVIEWER: EMI

CW<sup>B</sup>M Company, Inc. Corrective Action Plan & Budget Swansea / MotoMart - Swansea LPC #1631405021 - Incident #2002-0431

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### **TABLES**

Table 1-1.	Underground Storage Tank Summary	3
Table 2-1.	Soil Remediation Objectives	7
Table 2-2.	Soil Industrial / Commercial Remediation Objectives	8
Table 2-3.	Groundwater Remediation Objectives	9
	Water Supply Well Information	

## ACRONYMS AND ABBREVIATIONS

BETX	Benzene, Ethylbenzene, Toluene, Total Xylenes
CAP	Corrective Action Plan
CACR	Corrective Action Completion Report
CUO	Clean-up Objective
Csat	Soil saturation limit
CW <sup>3</sup> M	CW3M Company, Inc.
ELUC	Environmental Land Use Control
GEI	Greystone Environmental, Inc.
HAA	Highway Authority Agreement
IDOT	Illinois Department of Transportation
IEMA	Illinois Emergency Management Agency
IEPA	Illinois Environmental Protection Agency
Ill. Adm. Code	Illinois Administrative Code
ISGS	Illinois State Geological Survey
ISWS	Illinois State Water Survey
LEL	Lower explosive limit
LUST	Leaking Underground Storage Tank
MTBE	Methyl Tert-Butyl Ether
MW	Monitoring Well
NFR	No Further Remediation
OSFM	Illinois Office of the State Fire Marshal
PLA	Project Labor Agreement
PNA	Polynuclear Aromatic Hydrocarbon
PVC	Polyvinyl Chloride
SB	Soil Boring
SICR	Site Investigation Completion Report
SIP	Site Investigation Plan
SWAP	Source Water Assessment Program
TACO	Tiered Approach to Corrective Action Objectives
USI	United Science Industries, Inc.

CW<sup>3</sup>M Company, Inc. Corrective Action Plan & Budget Swansea / MotoMart - Swansea LPC #1631405021 - Incident #2002-0431

# PREVIOUSLY IMAGED

UST Underground Storage Tank WCR Well Completion Report CW<sup>3</sup>M Company, Inc. Corrective Action Plan & Budget Swansea / MotoMart - Swansea LPC #1631405021 - Incident #2002-0431

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#### 1. SITE HISTORY/EXECUTIVE SUMMARY

#### 1.1 GENERAL

This proposed Corrective Action Plan (CAP) and Budget has been prepared in accordance with the requirements of the 35 Illinois Administrative Code (III. Adm. Code) 734. The Illinois Environmental Protection Agency (IEPA) Corrective Action Plan Form is included in this document as Appendix A.

A 560-gallon heating oil underground storage tank (UST) was discovered on-site during the construction of a new building that now serves as the active MotoMart station in Swansea, Illinois. FKG Oil Company (MotoMart) contracted Greystone Environmental, Inc. (GEI) to remove the 560-gallon heating oil UST and proceed with the reporting requirements in accordance with the requirements of 35 Illinois Ill. Adm. Code § 732. The UST was removed on April 3, 2002, at which time a slight petroleum odor was observed in the backfill. A release was therefore reported to the Illinois Emergency Management Agency (IEMA) and Incident Number 2002-0431 was assigned on April 3, 2002. This CAP and Budget is being prepared in response to Incident Number 2002-0431.

The 20-Day Certification was submitted to the Illinois Environmental Protection Agency (IEPA) on April 19, 2002 (GEI, 2002). A 45-Day Report was submitted to the IEPA on July 19, 2002 (GEI, 2002a), and approved by the IEPA on August 8, 2002 (IEPA, 2002).

Following the submission of the 45-Day Report, MotoMart requested that United Science Industries, Inc. (USI), proceed with the site investigation and reporting requirements in accordance with the requirements of 35 Ill. Adm. Code § 732. On July 28, 2006, USI submitted an Election to Proceed under 35 Ill. Adm. Code 734 (USI, 2006). A Stage 2 Site Investigation Plan (SIP) and Budget was submitted on February 13, 2007 (USI, 2007) and approved by the IEPA on March 27, 2007 (IEPA, 2007). A Stage 3 SIP and Budget was submitted on October 16, 2007 (USI, 2007a) and approved by the IEPA on January 10, 2008 (IEPA, 2008).

Since the submission of the Stage 3 SIP, USI declared bankruptcy and is no longer in existence. MotoMart has requested that CW<sup>3</sup>M Company, Inc. (CW<sup>3</sup>M) proceed with the site investigation and reporting requirements in accordance with the requirements of 35 III. Adm. Code § 734. CW<sup>3</sup>M submitted a Stage 3 SIP and Budget Amendment on April 16, 2012 (CW<sup>3</sup>M, 2012), which was approved by the IEPA on July 18, 2012 (IEPA, 2012). Once the work proposed in the April 2012 SIP Amendment was completed, a second Stage 3 SIP and Budget Amendment was submitted by CW<sup>3</sup>M on October 27, 2015 (CW<sup>3</sup>M, 2015), and approved with modifications on February 18, 2016 (IEPA, 2016).

CW<sup>8</sup>M Company, Inc. Corrective Action Plan & Budget Swansea / MotoMart - Swansea LPC #1631405021 - Incident #2002-0431



A Site Investigation Completion Report (SICR) was submitted to the IEPA on April 4, 2016 (CW<sup>3</sup>M, 2016), and was approved by the IEPA on July 28, 2016 (IEPA, 2016a).

This report is certified by an Illinois Licensed Professional Engineer. The geological investigation and site investigation was performed under the direction of an Illinois Licensed Professional Geologist and completed in accordance with the Professional Geologist Licensing Act and its Rules for Administration.

#### 1.2 SITE LOCATION

The site, known as MotoMart, is located at 1324 North Illinois Street (Route 159), Swansea, St. Clair County, Illinois. The site is located in the NE ¼ of the NE ¼ of the NE ¼ of Section 21, Township 1 North of the Centralia Baseline and Range 8 West of the Third Principal Meridian.

#### 1.3 UNDERGROUND STORAGE TANK INFORMATION

The 560-gallon steel tank was uncovered during site construction, within the footprint of the new building which now serves as the active MotoMart station. This tank has never been used by MotoMart as they were unaware of its existence until it was uncovered during the construction. After obtaining a permit for removal from the Illinois Office of the State Fire Marshal (OSFM), the product was first removed by a vacuum truck for disposal by fuel recycling. Then the inside tank atmosphere was measured with a combustible gas indicator. When volatile vapors inside the tank were less than the Lower Explosive Limit (LEL), the tank was removed by GEI with a backhoe. The tank appeared to be intact, with no holes on the sides and bottom.

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Table 1-1. Underground Storage Tank Summary

Tank Number	Tank Volume (gallons)	Tank Contents	Incident Number	Release Information	Current Status
1	8,000	Gasoline	None	N/A	Currently in use
2	4,000	Gasoline	None	N/A	Currently in use
3	10,000	Gasoline	None	N/A	Currently in use
4	6,000	Diesel Fuel	None	N/A	Currently in use
5	560	Heating Oil	2002-0431	Tank Leak	Removed 4/3/2002

#### 1.4 EARLY ACTION SUMMARY

GEI removed the 560-gallon heating oil UST located beneath the building on April 3, 2002. A slight petroleum odor was observed in the backfill, so a release was reported to the IEMA and Incident Number 2002-0431 was assigned that day. Approximately 6 tons (4 cubic yards) of contaminated backfill and approximately 1.5 tons (1 cubic yard) of contaminated native soil was removed from the former tank pit and taken to the Roxana Landfill in Edwardsville, Illinois. Two soil samples were collected during the excavation and analyzed for benzene, ethylbenzene, toluene, and total xylenes (BETX) and polynuclear aromatic hydrocarbons (PNAs). One sample (M 8) was collected immediately below the tank as it was removed and the other sample (M 10) was collected in the clay soil beneath the coal seam. Both sample locations were located within the soil that was removed and disposed of at the Roxana Landfill. A summary of the analytical results is included in Appendix F.

#### 1.5 SITE INVESTIGATION SUMMARY

Soil analytical results from site investigation activities, indicate that Tiered Approach to Clean-up Objectives (TACO) Tier 1 Residential Clean-Up Objectives (CUOs) have been exceeded on-site and off-site to the northeast, east, southeast, and west.

Groundwater analytical results from site investigation activities indicate that the groundwater quality has exceeded the Class 1 Groundwater Objectives at the western

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property boundary and off-site to the east. One well (MW-8) that was installed during Stage 3 site investigations activities did not produce groundwater in two separate sampling attempts. During the most recent drilling event, groundwater had produced and was sampled, from MW-8, showing PNA contamination just over Tier 1 CUOs.

As mentioned above, soil and groundwater analytical results indicate that Tier 1 CUOs have been exceeded at the western property boundary. Off-site access was requested to investigate the extent of contamination west of the site; however access was considered denied. Additional soil investigation was proposed to the south (CW³M, 2015), but the Agency determined the soil contamination identified in that direction to not be associated with the 2002-0431 release (IEPA, 2016). In the second Stage 3 Plan Amendment (CW³M, 2015), it was also proposed to not continue the groundwater investigation to the east.

On September 6, 2006, USI advanced five soil borings (BH-1, BH-2, BH-3, BH-4, BH-5) and five monitoring wells (MW-1, MW-2, MW-3, MW-4, MW-5) as part of Stage 1 site investigation activities. Soil samples were analyzed for BETX and PNAs. Soil analytical results indicate that Tier 1 objectives have been exceeded for the indicator contaminants benzene, total xylenes, benzo(a)pyrene, and dibenz(a,h)anthracene. USI returned to the site on October 5, 2006, to sample the installed monitoring wells for BETX, methyl tert-butyl ether (MTBE), and PNAs. Groundwater analytical results indicated that Tier 1 objectives have been exceeded for the indicator contaminants benzene, ethybenzene, and naphthalene. The soil boring logs, well completion reports (WCRs), and analytical results were included in the Stage 2 SIP and Budget submitted on February 13, 2007 (USI, 2007), and were included in the SICR (CW<sup>3</sup>M, 2016). A table summarizing the groundwater analytical results is included in Appendix F.

On May 10, 2007, USI advanced four soil borings (BH-6, BH-7, BH-8, BH-9) as part of Stage 2 site investigation activities. Soil samples were analyzed for BETX and PNAs. Soil analytical results indicate that the Tier 1 objectives have been exceeded for the indicator contaminants benzene and PNAs. An additional soil boring (ST-1) was advanced during Stage 2 site investigation activities to obtain site specific physical parameters. The soil boring logs and analytical results were included in the Stage 3 SIP and Budget submitted on October 16, 2007 (USI, 2007a), and were included in the SICR (CW<sup>3</sup>M, 2016). A summary of the analytical results are included in Appendix F.

On July 25, 2007, USI advanced an additional two soil borings (BH-10 and BH-11) to complete Stage 2 site investigation activities. Soil samples were analyzed for BETX and PNAs. Soil analytical results indicate that the Tier 1 objectives have been exceeded at BH-11 for the PNA indicator contaminant benzo(a)pyrene. A summary of the analytical results were included in the SICR (CW³M, 2016). The soil boring logs and analytical results were included in the SICR (CW³M, 2016). A summary of the analytical results are included in Appendix F.

CW<sup>8</sup>M Company, Inc. Corrective Action Plan & Budget Swansea / MotoMart - Swansea LPC #1631405021 - Incident #2002-0431

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On September 3, 2015, CW³M personnel returned to the site to conduct off-site soil and groundwater investigation activities. Three soil borings (BH-17, BH-18, and BH-19) were advanced to fifteen feet. Soil samples were analyzed for PNAs. The samples were sampled to fifteen feet based on the previous sampling by USI and previously approved plans. The seasonal fluctuation of the water table and the lack of groundwater produced in wells in past investigations also back up soil sampling to fifteen feet. Soil analytical results indicate that the Tier 1 objectives have been exceeded for the PNA indicator contaminants benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene at BH-19 at a depth of 7.5 feet. Previously dry MW-8 was also sampled for PNAs, resulting in levels of benzo(a)anthracene and benzo(b)fluoranthene higher than Tier 1 CUOs. Soil boring logs and WCRs were included in the SICR (CW³M, 2016). A summary of the analytical results are included in Appendix F.

At the end of Stage 2 Site Investigation, the plumes remained undefined in the southern, eastern, and western directions, so access was sought for the offsite properties in those directions. Access to the east and south was sought and granted to two properties owned by Century Brass Works, and subsequent investigations were conducted. Access requests for properties to the west, across Route 159 (North Illinois Street), were requested at 1509 (Karen Roussel), 1507 (Dave Wuebbels), and two properties owned by Medstar Ambulance, one north and one south of Brackett Street. Each of the property owners west of Route 159 failed to grant access, so access is considered denied to each property. Copies of the access correspondence were included in the SICR (CW³M, 2016). Affidavits for the properties have been prepared in accordance with 35 Ill. Admin. Code 734.350 c) and were submitted during the review of the SICR, and are copied in Appendix G. They will also be included in the Corrective Action Completion Report (CACR).

#### 1.6 CORRECTIVE ACTION SUMMARY

The results from the site investigation activities indicated that soil contamination above Tier 1 Clean-up Objectives is present on site, and extends off-site to the east and west. Upon the determination of the TACO Tier 2 CUOs, it was apparent that the levels of contamination at sample BH-9-A will require additional remediation, and the off-site soil contamination to the east will require additional remediation.

Groundwater analytical results indicate that Tier 1 CUOs have been exceeded on site at MW-1, MW-2, MW-4 and MW-8. The groundwater plume covers much of the same area as the soil contamination, extending slightly further to the east. It is proposed that a groundwater ordinance be used, effectively eliminating the migration of the soil to groundwater pathway.

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The vapor intrusion pathway has not been investigated previously, and an investigation is proposed in this CAP.

### 2. REMEDIATION OBJECTIVES

#### 2.1 DETERMINATION OF CLEAN-UP OBJECTIVES

In accordance with 35 III. Adm. Code 734, remediation objectives will be determined in accordance with 35 III. Adm. Code 742. The site specific physical parameters have been determined, and are calculated below.

Hydraulic Conductivity (K), 4.30 x 10<sup>-5</sup> cm/sec Soil bulk density (ρ<sub>b</sub>), 60.4 lb/ft<sup>3</sup> (0.967 g/cm<sup>3</sup>) Soil particle density (ρ<sub>s</sub>), 2.54 g/cm<sup>3</sup> Moisture content (w), 0.286 Organic carbon content (f<sub>oc</sub>), 0.0058 g/g Classification, Loamy Sand

In order to determine the hydraulic conductivity, a slug test was performed on May 10, 2007, in monitoring well MW-3. The test was performed by lowering a "slug" constructed of polyvinyl chloride (PVC). USI used the Bouwer & Rice Method for calculating the falling and rising hydraulic conductivities. The average hydraulic conductivity was then determined by averaging the falling hydraulic conductivity and the rising hydraulic conductivity. Two tests were performed, and the results were averaged. The hydraulic conductivity was determined to be 4.30 x 10<sup>-5</sup> cm/sec. Hydraulic conductivity calculations were originally provided in Appendix E of the Stage 2 SIP and Budget (USI, 2007), and was also included in the SICR (CW<sup>3</sup>M, 2016).

Velocity was calculated using the hydraulic conductivity results determined at the site, as well as the hydraulic gradient. The hydraulic gradient was found by calculating the change in gradient between the most up-gradient well (MW-3, 92.10 feet) and the most downgradient well in the direction of flow (MW-7, 82.34 feet), then dividing this answer by the distance in feet between the two wells (116.36 feet). Formula R24, ( $U_{gw} = K \cdot i$ ) of 35 Ill. Adm. Code § 742 Appendix C, Table C was used. The hydraulic gradient was calculated to be 8.39 x  $10^{-2}$ . Velocity was calculated to be 3.61 x  $10^{-6}$  cm/sec.

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#### 2.2 SOIL AND GROUNDWATER OBJECTIVES

The soil and groundwater objectives are listed for the site below in tabular format. Additionally, the groundwater at this site continues to be considered Class 1 unless demonstrated otherwise pursuant to 35 Ill. Adm. Code § 620.210. The site is not within the setback of a known potable well, so it is assumed a groundwater use restriction will be imposed on the impacted or potentially impacted area, so the groundwater pathway was removed in determining the on site soil objectives.

The site is located in Swansea, Saint Clair County, Illinois. The population of Swansea was 13,430 in the 2010 census, so in accordance with 35 Ill. Adm. Code § 742, Appendix A, Table H background values for PNAs for a Metropolitan Area can be used. Only those PNAs for which the incident had an exceedence have been replaced by background values.

Table 2-1. Soil Remediation Objectives

Parameter	TACO Residential Tier 1 Clean-up Objective (mg/kg)	TACO Industrial / Commercial Tier 2 Clean-up Objective (mg/kg)
Benzene	0.03	3.21
Ethylbenzene	13.0	389.64
Toluene	12,0	371.29
Total Xylenes	5.6	46.17
MTBE	0.32	
Acenaphthene	570.0	
Acenaphtylene	15.0	
Anthracene	12000.0	
Benzo(a)anthracene	1.8*	
Benzo(a)pyrene	2.1*	
Benzo(b)fluoranthene	2.1*	
Benzo(g,h,i)perylene	2300.0	
Benzo(k)fluoranthene	9.0	
Chrysene	88.0	
Dibenz(a,h)anthracene	0.42*	
Fluoranthene	3,100.0	
Fluorene	560.0	

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Indeno(1,2,3-cd)pyrene	1.6*	
Naphthalene	1.8	
Phenanthrene	140.0	
Pyrene	2300.0	

<sup>\* -</sup> value replaced by background value from 35 III. Adm. Code § 742, Appendix A, Table H

Tier 2 Clean-Up Objectives and modeling has been conducted in accordance with 35 Ill. Adm. Code § 742, and is included in Appendix E. In a review of the off-site soil results from site investigation, only BH2-8', and BH19-7.5' exceed the Tier 1 Clean-Up Objectives in the table above. The contamination at BH-19 was determined to not be associated with incident 2002-0431. The BH-2-8' sample exceeds the benzene Clean-Up Objective. It should be noted that Drawings showing soil values (0006A, 0006B, and 0006C) and soil plumes (0008A, 0008B, and 0008C) in Appendix B have not been revised to show the application of background PNA values, but a new overall soil plume map showing the area where soil contamination above background values and over TACO Tier 1 Clean-Up Objectives has been prepared and included as Drawing 0012.

Comparing the on site soil results from site investigation to the Tier 2 Clean-Up Objectives listed above, only BH9A, the sample from the three to four foot depth, exceeds any Clean-Up Objectives. It exceeds the objectives for the Tier 1 Residential PNA components listed in the following table.

Table 2-2. Soil Industrial Commercial Remediation Objectives

Parameter	BH9-A Result (mg/kg)	TACO Industrial / Commercial Tier 1 Objective (mg/kg)	TACO Construction Worker Tier 1 Objective (mg/kg)
Benzo(a)anthracene	2.5	7.84	18
Benzo(a)pyrene	2.6	0.784	17.01
Benzo(b)fluoranthene	2.5	8	170
Dibenz(a,h)anthracene	0.54	0.467	17.01
Indeno(1,2,3-cd)pyrene	1.7	8	170

Sample BH9-A exceeds the industrial / commercial ingestion pathway Clean-Up Objectives for benzo(a)pyrene and dibenz(a,h)anthracene. Tier 2 ingestion values for these two

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constituents were calculated, but the calculated values were equal to or less than the Tier 1 values, so the Tier 1 values were used.

Table 2-3. Groundwater Remediation Objectives

Parameter	TACO Residential Tier 1 Clean-up Objective (mg/L)
Benzene	0.005
Ethylbenzene	0.7
Toluene	1.0
Total Xylenes	10.0
MTBE	0.07
Acenaphthene	0.42
Acenaphtylene	0.01
Anthracene	2.1
Benzo(a)anthracene	0.00013
Benzo(a)pyrene	0.0002
Benzo(b)fluoranthene	0.00018
Benzo(g,h,i)perylene	0.00076
Benzo(k)fluoranthene	0.00017
Chrysene	0.0015
Dibenz(a,h)anthracene	0.0003
Fluoranthene	0.28
Fluorene	0.28
Indeno(1,2,3-cd)pyrene	0.00043
Naphthalene	0.14
Phenanthrene	0.0064
Pyrene	0.210

#### 3. CORRECTIVE ACTION PLAN

Based upon the analytical data from the soil boring and groundwater samples collected, it is apparent that soil contamination is present over the majority of the site, extending into the right-of-way of Route 159, where the ultimate limits were not defined due to denial of access, and onto the off-site property to the east, where it was defined through investigation. Groundwater contamination is very similar to the soil contamination in

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terms of the areas affected. All site investigation details were presented in the SICR (CW<sup>3</sup>M, 2016).

The following CAP and Budget has been prepared by CW<sup>3</sup>M Company, Inc., as their recommendation for the most appropriate and economical approach to the remediation of the contamination at the Motomart site in Swansea, Illinois. Tier 2 CUOs were developed using various parameters to help determine the most beneficial and feasible outcome.

Soil to groundwater and groundwater modeling in accordance with 35 Ill. Adm. Code § 742 has been conducted, as depicted in Drawings 0011A for soil to groundwater modeling, and Drawing 0011B for groundwater modeling. The Village of Swansea has an existing groundwater use ordinance but it does not include the area affected by the potential groundwater contamination for this incident. It is proposed to request the Village to either amend the existing ordinance or to adopt another ordinance covering the area potentially affected by this release.

Soil contamination will need to be addressed on three parcels, the site itself, the off-site property to the east, and the right-of-way of Route 159.

The soil and groundwater contamination beneath Route 159 is proposed to be addressed through a Highway Authority Agreement (HAA) with the Illinois Department of Transportation (IDOT). The off-site soil contamination on the property to the east is minor, and the contamination was sampled in 2006. This CAP proposes to resample the location of BH2 to verify if contamination over TACO Tier 1 Clean-Up Objectives remains. Samples will be taken from the 8 and 14 foot depths and analyzed for BETX, MTBE, and PNAs to see if the contamination remains, or has travelled deeper. Should the results not prove that the contamination has diminished to a level below TACO Tier 1 Clean-Up Objectives, a CAP Amendment will be prepared to address the contamination in a manner acceptable to the off-site property owner, such as an Environmental Land Use Control (ELUC) or an excavation to remove it.

With the use of a groundwater ordinance and the acceptance of an industrial / commercial use restriction on the property, the only contamination that would need to be addressed in the soil contamination found at sample BH9-A. Given that the sample at BH9-A was obtained in 2007, it is proposed to resample BH-9 at the depths of 3-4 feet and 7-8 feet to see if the contamination still exceeds the TACO Tier 2 industrial / commercial Clean-Up Objectives. If the results are not favorable, a CAP amendment proposing additional definition of the area exceeding the industrial / commercial inhalation pathway will be proposed. Once the affected area is defined, the owner / operator will then decide the preferable course of remediation of the affected area.

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The proposed soil investigation of BH2 to 15 feet, and BH9 to 10 feet will be conducted using the same techniques and protocols as used in Site Investigation as detailed in the SICR (CW<sup>3</sup>M, 2016).

As discussed in the SICR (CW<sup>3</sup>M, 2016), following the June, 2013 IEPA Leaking Underground Storage Tank (LUST) flowchart for vapor intrusion assessment, CW<sup>3</sup>M conducted a screening evaluation of the site and assessment of data to date. While there is not free product in the monitoring wells, there is groundwater contamination present on and off site. No soil sample exceeded the soil saturation (Csat) limit.

Groundwater elevation surveys to date show depth to groundwater measurements to be at least 7 feet. Therefore the vertical separation distance is greater than the appropriate screening distance (5 ft) required for soil gas sampling in respect to groundwater contamination. Numerous manmade pathways for utilities intercept the area of contamination and lead to the station building. Therefore, a soil gas sampling is recommended for this site as groundwater contamination and pathways to the buildings meet the criteria to require soil gas sampling. Given these facts, a threat to the health and safety of the public from the inhalation of vapors from either groundwater or soil contamination is unlikely but still required when following the LUST flowchart for vapor intrusion assessment.

Since the review and approval of the SICR contained no information to the contrary, a soil vapor investigation is proposed to be conducted in the area of MW-1, which has the largest modeled distances for contamination at the site.

Assuming the soil vapor sampling and the proposed re-sampling results on site and off-site are favorable, a CACR will be prepared once the HAA and the groundwater ordinance are in place.

The attached CAP Budget includes the preparation of this report, as well as the preparation of the CACR. The abandonment of the existing monitoring wells and the recording of the No Further Remediation (NFR) letter are also included in the proposed budget.

#### 3.1 CURRENT AND PROJECTED USES OF THE SITE

The site is surrounded by commercial properties. The site is currently being used as an operating gas station and convenience store and will continue to be used for such purposes.

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#### 3.2 INSTITUTIONAL CONTROLS PROPOSED

The site has public water available and is not within the setback of a known potable well, so a groundwater ordinance will be sought for the potentially impacted area. Soil and groundwater contamination are known to exist beneath the right-of-way of Route 159, so a HAA with IDOT is proposed to address that contamination. The site itself has a commercial usage with no plans to change, so the site will accept an industrial / commercial land use restriction. There is known soil contamination on the property to the east of the subject site, which is proposed to be re-sampled in this CAP to verify that it remains. No institutional controls are proposed on that property at this time, but may be proposed later, if soil contamination is verified to still exist, and the controls are acceptable to the property owner.

#### 3.3 WATER SUPPLY WELL SURVEY

A survey of water supply wells for the purpose of identifying and locating all community water supply wells within 2,500 feet of the UST systems and all potable water supply wells within 200 feet of the UST systems has been conducted. The Illinois State Water Survey (ISWS), the Illinois State Geological Survey (ISGS) and the IEPA Division of Public Water Supplies were contacted via Source Water Assessment Program (SWAP) online.

The ISGS, ISWS, and IEPA Division of Public Water Supplies were accessed online on March 27, 2012 (EPA.STATE.IL.US, 2012). The response indicated that eight wells were located within 2,500 feet of the site and no wells are within the designated set back zones. Also, the response stated that there are no community water supply wells located within 2,500 feet of the site. A groundwater ordinance in effect for a portion of Swansea, but does not cover the subject site. It is located 2,165 feet from the USTs. Refer to Drawing 0001C in Appendix B for a map depicting the well and groundwater ordinance locations.

Table 3-1. Water Supply Well Information

Well ID	Туре	Depth of Well (feet)	Distance From USTs (feet)	Setback Zone (feet)
00216	ISGS	1	792	200
00216	ISGS	231	950	200
00273	ISGS	1	1,214	200
01809	ISGS	95	1,426	200

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01812	ISGS	510	1,426	200
00272	ISGS	125	1,637	200
28103	ISGS	42	2,112	200
28104	ISGS	30	2,112	200
R08030303	GWO		2,165	200

#### 3.4 CLOSURE

Once all CAP activities conclude, a CACR will be submitted to the IEPA. The closure report will be accompanied by a certification from an Illinois Registered Professional Engineer. Should the activities proposed in this CAP verify that on site and / or off-site soil contamination still remains above the allowable Clean-Up Objectives, then a CAP amendment will be prepared to address the unresolved issues.

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#### REFERENCES

CW<sup>3</sup>M, 2012. CW<sup>3</sup>M Company, Inc., Stage 3 Site Investigation Plan and Budget Amendment, MotoMart – Swansea, Swansea, Illinois, April 16, 2012.

CW<sup>3</sup>M, 2015. CW<sup>3</sup>M Company, Inc., Stage 3 Site Investigation Plan and Budget Amendment, MotoMart - Swansea, Swansea, Illinois, October 27, 2015.

CW<sup>3</sup>M, 2016. CW<sup>3</sup>M Company, Inc., Site Investigation Completion Report, MotoMart – Swansea, Swansea, Illinois, April 4, 2016.

GEI, 2002. Greystone Environmental, Inc., 20-Day Certification, MotoMart – Swansea, Swansea, Illinois, April 19, 2002.

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EPA.SATE.IL.US, 2012. Source Water Assessment Program, Water Well Survey Map www.maps.epa.state.il.us, accessed March 27, 2012.

IEPA, 2002. Illinois Environmental Protection Agency, 45-Day Report Correspondence, MotoMart – Swansea, Swansea, Illinois, August 8, 2002.

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USI, 2006. United Science Industries, Inc., Election to Proceed under 35 Ill. Adm. Code 734, MotoMart - Swansea, Swansea, Illinois, July 28, 2006.

CW<sup>8</sup>M Company, Inc. Corrective Action Plan & Budget Swansea / MotoMart - Swansea LPC #1631405021 - Incident #2002-0431

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USI, 2007. United Science Industries, Inc., Stage 2 Site Investigation Plan and Budget, MotoMart - Swansea, Swansea, Illinois, February 13, 2007.

USI, 2007a. United Science Industries, Inc., Stage 3 Site Investigation Plan and Budget, MotoMart - Swansea, Swansea, Illinois, October 16, 2007.

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# APPENDIX A

## CORRECTIVE ACTION PLAN FORM

CORRECTIVE ACTION PLAN MOTOMART SWANSEA, ILLINOIS



# Illinois Environmental Protection Agency

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

ne Agency is authorized to require this information under Section 4 and Title XVI of the Environmental Protection Act (415 ILCS 5/4, 5/57 – 57.17). Failure to disclose this information may result in a civil penalty of not to exceed \$50,000.00 for the violation and an additional civil penalty of not to exceed \$10,000.00 for each day during which the violation continues (415 ILCS 5/42). Any person who knowingly makes a false material statement or representation, orally or in writing, in any label, manifest, record, report, permit, or license, or other document filed, maintained or used for the purpose of compliance with Title XVI commits a Class 4 felony. Any second or subsequent offense after conviction hereunder is a Class 3 felony (415 ILCS 5/44 and 57.17). This form has been approved by the Forms Management Center.

# Leaking Underground Storage Tank Program Corrective Action Plan

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	IEN	MA Incident # (6- or 8-digit): 200	20431	IEPA LP	C# (10-digit): 1631405021
	Site	e Name: MotoMart - Swansea			
	Site	e Address (Not a P.O. Box): 13	24 North Illinois St. (Route 1	59)	
	Cit	y: Swansea	County: St. Clair		ZIP Code: 62221
В.	Sit	e Information			
	1.	Will the owner or operator seek	reimbursement from the Un	derground Stora	age Tank Fund? 🗸 Yes 🗌 No
	2.	If yes, is the budget attached?	✓ Yes □ No		
	3.	Is this an amended plan?	☐ Yes ✓ No		
0	4.	Identify the material(s) released	d: heating oil		
	5.	This Corrective Action Plan is s	submitted pursuant to:		
		a. 35 III. Adm. Code 731.166			
		The material released v	vas:		
		-petroleum			
			ance (see Environmental t Section 3.215)		RECEIVED
		b. 35 III. Adm. Code 732.404			
		c. 35 III. Adm. Code 734.335			OCT 11 2016
C. 1	Pro	posed Methods of Reme	diation		IEPA/BOL
		Soil Re-evaluation, HAA Groundwater Groundwater Or	dinance HAA		

IL 532 2287 LPC 513 Rev. July 2007 Corrective Action Plan Page 1 of 4

- Boring logs;
- 5. Monitoring well logs; and
- Site maps meeting the requirements of 35 III. Adm. Code 732.110(a) or 734.440 and showing:
- a.
  - Soil sample locations;
  - b. Monitoring well locations; and



#### E. Technical Information - Corrective Action Plan

Plumes of soil and groundwater contamination.

Provide the following:

- Executive summary identifying the objectives of the corrective action plan and the technical approach to be utilized to meet such objectives;
  - The major components (e.g., treatment, containment, removal) of the corrective action plan;
  - The scope of the problems to be addressed by the proposed corrective action; and
  - c. A schedule for implementation and completion of the plan;
- 2. Identification of the remediation objectives proposed for the site;
- 3. A description of the remedial technologies selected:
  - The feasibility of implementing the remedial technologies;
  - Whether the remedial technologies will perform satisfactorily and reliably until the remediation objectives are achieved; and
  - c. A schedule of when the technologies are expected to achieve the applicable remediation objectives;



- A confirmation sampling plan that describes how the effectiveness of the corrective action activities will be monitored during their implementation and after their completion;
- A description of the current and projected future uses of the site;
- A description of engineered barriers or institutional controls that will be relied upon to achieve remediation objectives:
  - an assessment of their long-term reliability;
  - b. operating and maintenance plans; and
  - c. maps showing area covered by barriers and institutional controls;
- The water supply well survey:
  - Map(s) showing locations of community water supply wells and other potable wells and the setback zone for each well;
  - Map(s) showing regulated recharge areas and wellhead protection areas;
  - Map(s) showing the current extent of groundwater contamination exceeding the most stringent Tier 1 remediation objectives;
  - Map(s) showing the modeled extent of groundwater contamination exceeding the most stringent Tier 1 remediation objectives;
  - Tables listing the setback zone for each community water supply well and other potable water supply wells;
  - f. A narrative identifying each entity contacted to identify potable water supply wells, the name and title of each person contacted, and any field observations associated with any wells identified; and
  - g. A certification from a Licensed Professional Engineer or Licensed Professional Geologist that the survey was conducted in accordance with the requirements and that documentation submitted includes information obtained as a result of the survey (certification of this plan satisfies this requirement);

Corrective Action Plan Page 2 of 4

- 8. Appendices:
  - a. References and data sources report that are organized; and
  - Field logs, well logs, and reports of laboratory analyses;
- Site map(s) meeting the requirements of 35 III. Adm. Code 732,110(a) or 734,440;
- 10. Engineering design specifications, diagrams, schematics, calculations, manufacturer's specifications, etc.;
- 11. A description of bench/pilot studies;
- 12. Cost comparison between proposed method of remediation and other methods of remediation;
- 13. For the proposed Tier 2 or 3 remediation objectives, provide the following:
  - a. The equations used;
  - b. A discussion of how input variables were determined;



- c. Map(s) depicting distances used in equations; and
- d. Calculations; and
- 14. Provide documentation to demonstrate the following for alternative technologies:
  - The proposed alternative technology has a substantial likelihood of successfully achieving compliance with all applicable regulations and remediation objectives;
  - b. The proposed alternative technology will not adversely affect human health and safety or the environment;
  - The owner or operator will obtain all Illinois EPA permits necessary to legally authorize use of the alternative technology;
  - d. The owner or operator will implement a program to monitor whether the requirements of subsection (14)(a) have been met:
  - Within one year from the date of Illinois EPA approval, the owner or operator will provide to the Illinois EPA
    monitoring program results establishing whether the proposed alternative technology will successfully achieve
    compliance with the requirements of subsection (14)(a); and
  - f. Demonstration that the cost of alternative technology will not exceed the cost of conventional technology and is not substantially higher than at least two other alternative technologies, if available and technically feasible.

#### F. Exposure Pathway Exclusion

Provide the following:

- 1. A description of the tests to be performed in determining whether the following requirements will be met:
  - a. Attenuation capacity of the soil will not be exceeded for any of the organic contaminants;
  - Soil saturation limit will not be exceeded for any of the organic contaminants;
  - Contaminated soils do not exhibit any of the reactivity characteristics of hazardous waste per 35 III. Adm. Code 721 123:
  - d. Contaminated soils do not exhibit a pH ≤ 2.0 or ≥ 12.5; and
  - Contaminated soils which contain arsenic, barium, cadmium, chromium, lead, mercury, or selenium (or their associated salts) do not exhibit any of the toxicity characteristics of hazardous waste per 35 III. Adm. Code 721.124.
- A discussion of how any exposure pathways are to be excluded.

Corrective Action Plan Page 3 of 4

#### G. Signatures

All plans, budgets, and reports must be signed by the owner or operator and list the owner's or operator's full name, address, and telephone number.

UST Owner or Operator	PREVIOUSLY	MAGonsultan
UST Owner or Operator	FINEWICOULT	Consulta

Name Moto, Inc.

Contact Rob Whittington

Address 721 W. Main Street

City Belleville

State IL

Zip Code 62222

Phone 618-233-6754

Signature

Plant Signature

Plant Signature

Company CWM Company, Inc.

Contact Carol L. Rowe

Address 7001 W. South Grand Ave.

City Springfield

State IL

Zip Code 62704

Phone 217-522-8001

Signature

Date

///3/20/6

I certify under penalty of law that all activities that are the subject of this plan were conducted under my supervision or were conducted under the supervision of another Licensed Professional Engineer or Licensed Professional Geologist and reviewed by me; that this plan and all attachments were prepared under my supervision; that, to the best of my knowledge and belief, the work described in this plan has been completed in accordance with the Environmental Protection Act [415 ILCS 5], 35 III. Adm. Code 731, 732 or 734, and generally accepted standards and practices of my profession; and that the information presented is accurate and complete. I am aware there are significant penalties for submitting false statements or representations to the Illinois EPA, including but not limited to fines, imprisonment, or both as provided in Sections 44 and 57.17 of the Environmental Protection Act [415 ILCS 5/44 and 57.17].

### Licensed Professional Engineer or Geologist

Name Vince E. Smith

Company CWM Company, Inc.

Address 701 W. South Grand Ave.

City Springfield

State IL

Zip Code 62704

Phone 217-522-8001

III. Registration No. 062-046118

License Expiration Date 11/30/17

Signature 10/3/17

L.P.E. or L.P.G. Seal



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# APPENDIX B

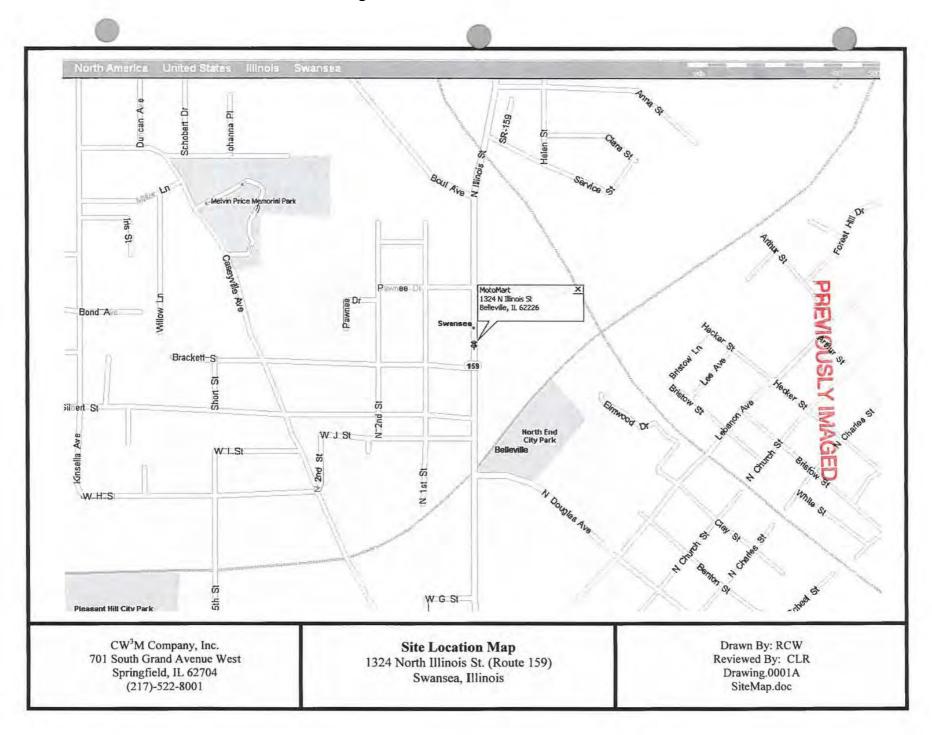
## SITE MAPS AND ILLUSTRATIONS

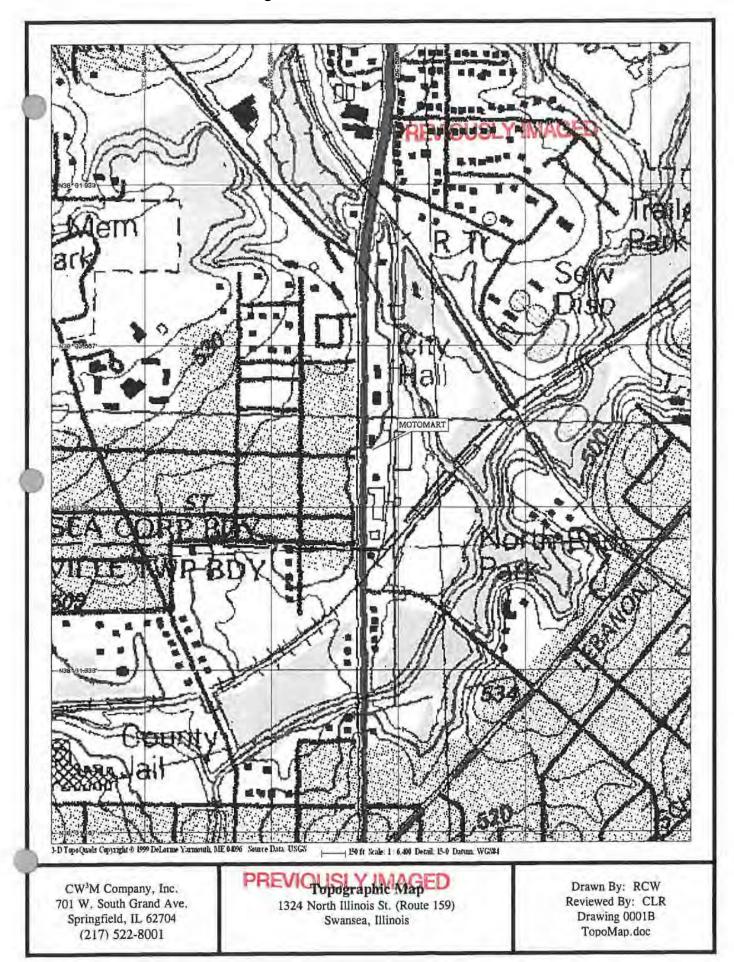
CORRECTIVE ACTION PLAN MOTOMART SWANSEA, ILLINOIS CW<sup>B</sup>M Company, Inc. Corrective Action Plan & Budget Swansea / MotoMart - Swansea LPC #1631405021 - Incident #2002-0431

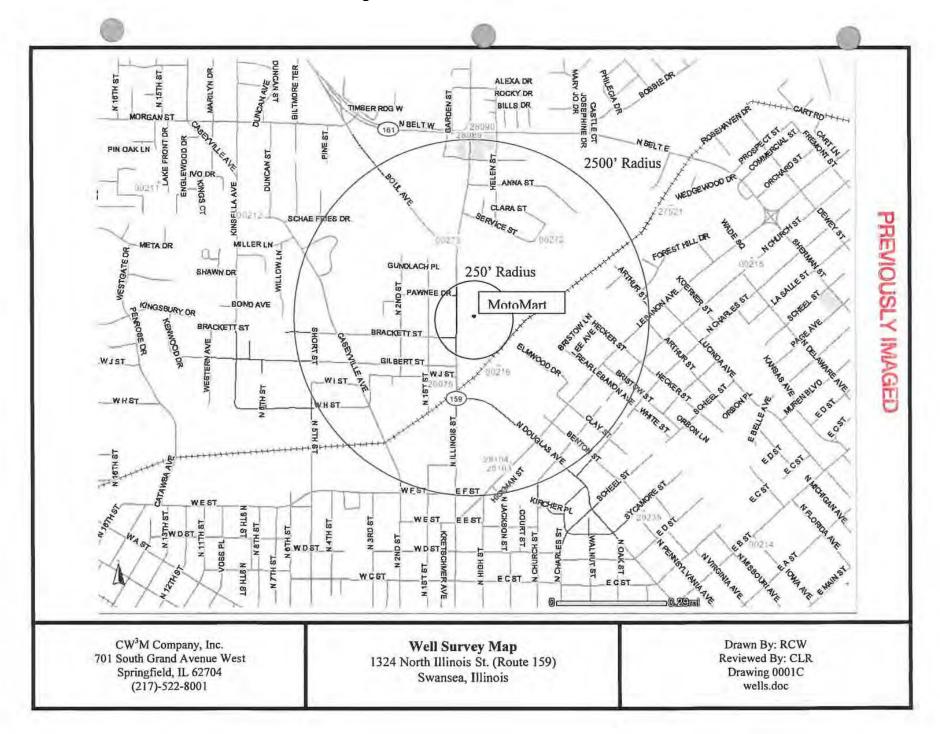
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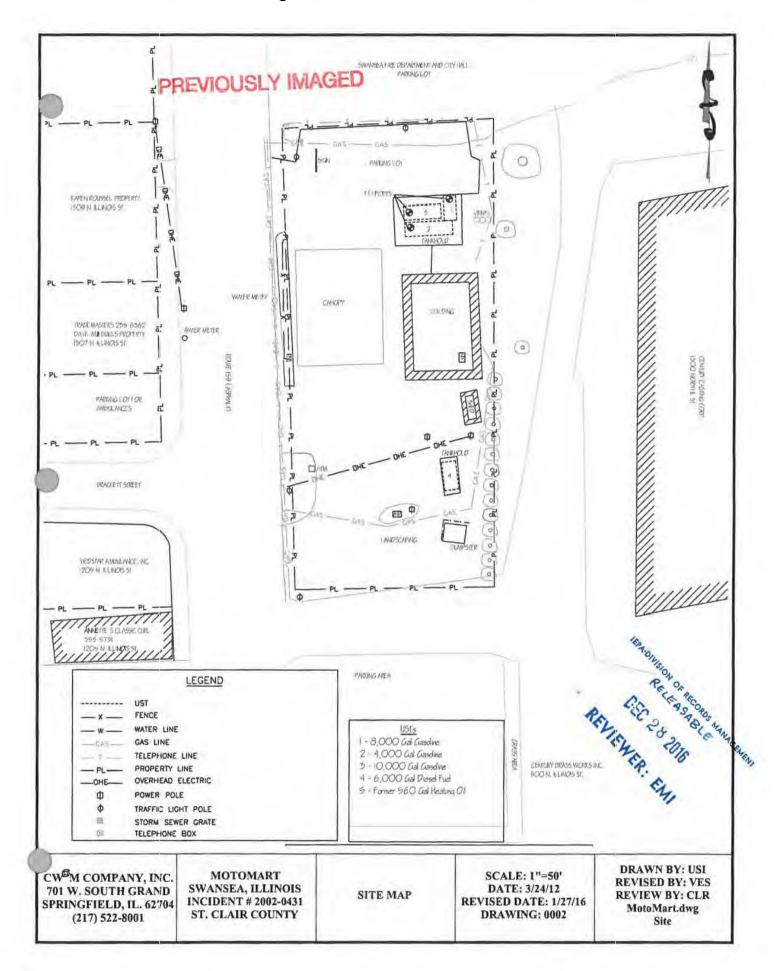
### INDEX OF DRAWINGS

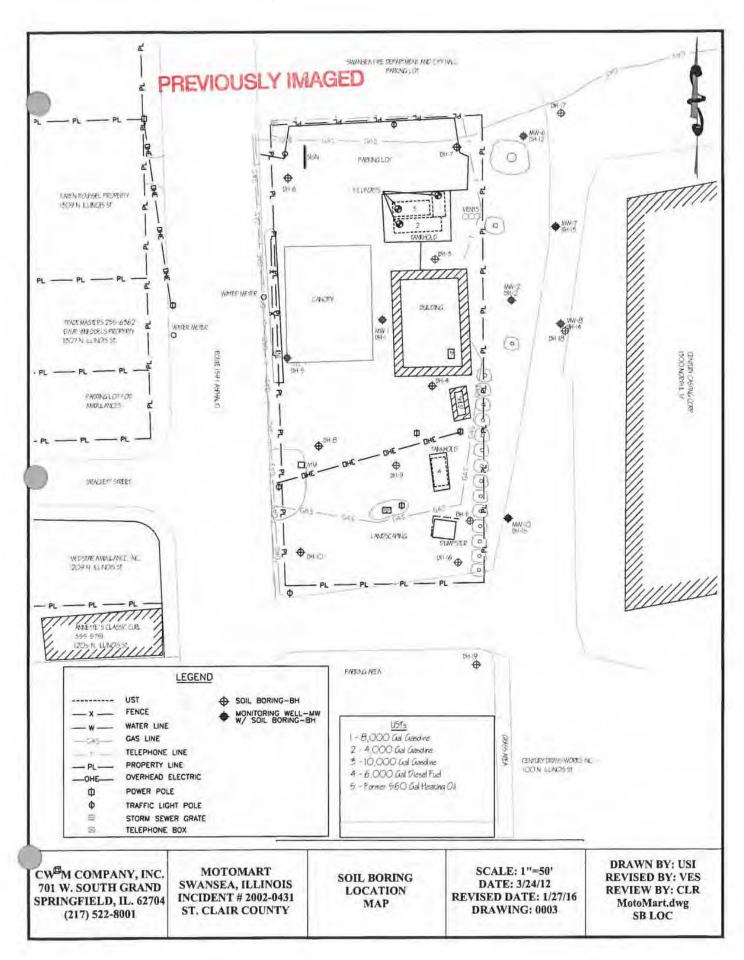
Drawing Number	Description	File Name
0001A	Site Location Map	SiteMap.doc
0001B	Topographic Map	TopoMap.doc
0001C	Well Survey Map	wells.doc
0002	Site Map	Site
0003	Soil Boring Location Map	SB Loc
0004	Monitoring Well Location Map	MW Loc
0005	Monitoring Well Elevation Map	MW Elev
0005A	Groundwater Elevation Map (October 2006)	GW 10-5-06
0005B	Groundwater Elevation Map (December 2008)	GW 12-2-08
0006A	Soil Contamination Values Map (0-5 Feet)	Soil Con 0-5
0006B	Soil Contamination Values Map (5-10 Feet)	Soil Con 5-10
0006C	Soil Contamination Values Map (10-15 Feet)	Soil Con 10-15
0007	Groundwater Contamination Values Map	GW Con
0008A	Soil Contamination Plume Map (0-5 Feet)	Soil Plume 0-5
0008B	Soil Contamination Plume Map (5-10 Feet)	Soil Plume 5-10
0008C	Soil Contamination Plume Map (10-15 Feet)	Soil Plume 10-15
0009	Groundwater Contamination Plume Map	GW Plume
0010	TACO Parameters Map	TACO
0011A	Modeled Soil Contamination Map	Modeled Soil
0011B	Modeled Groundwater Contamination Map	Modeled GW
0012	Soil Contamination Over Background Plume Map	Background

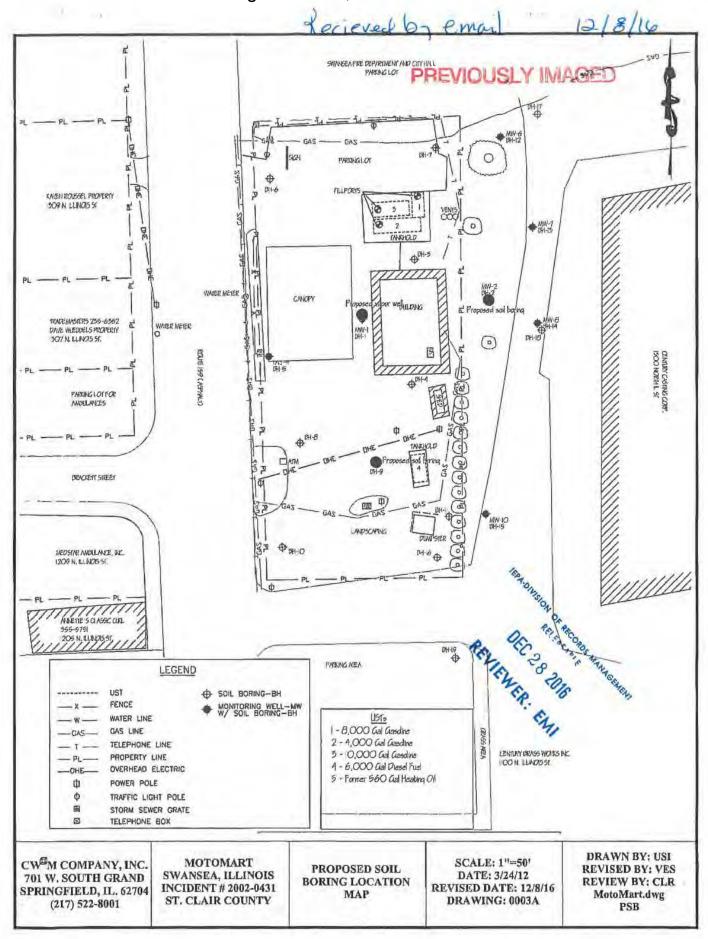


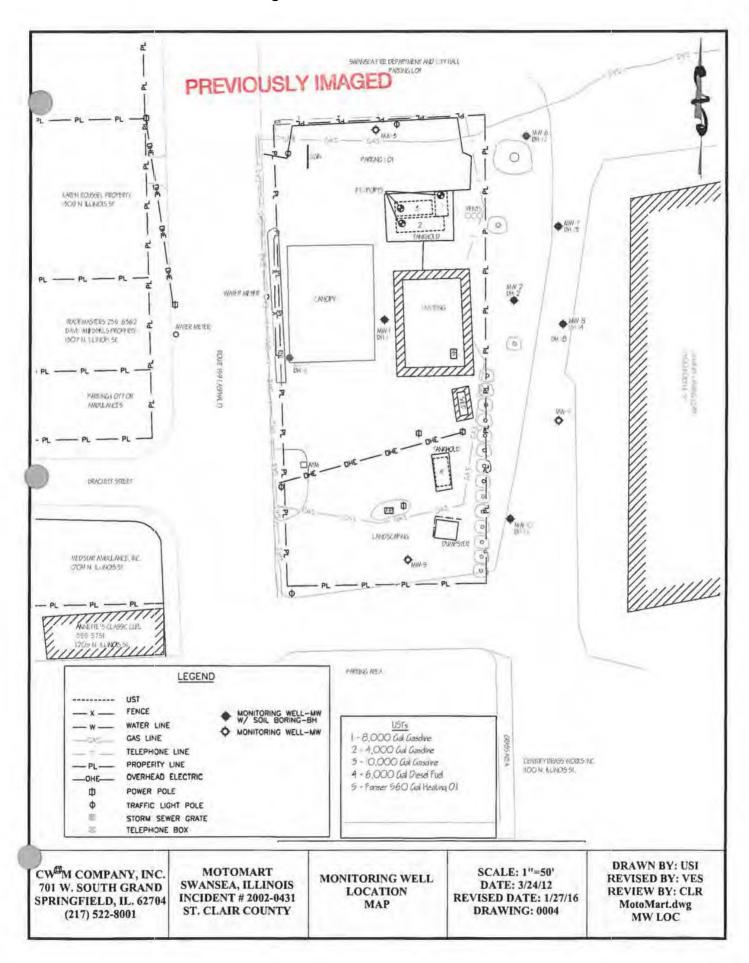


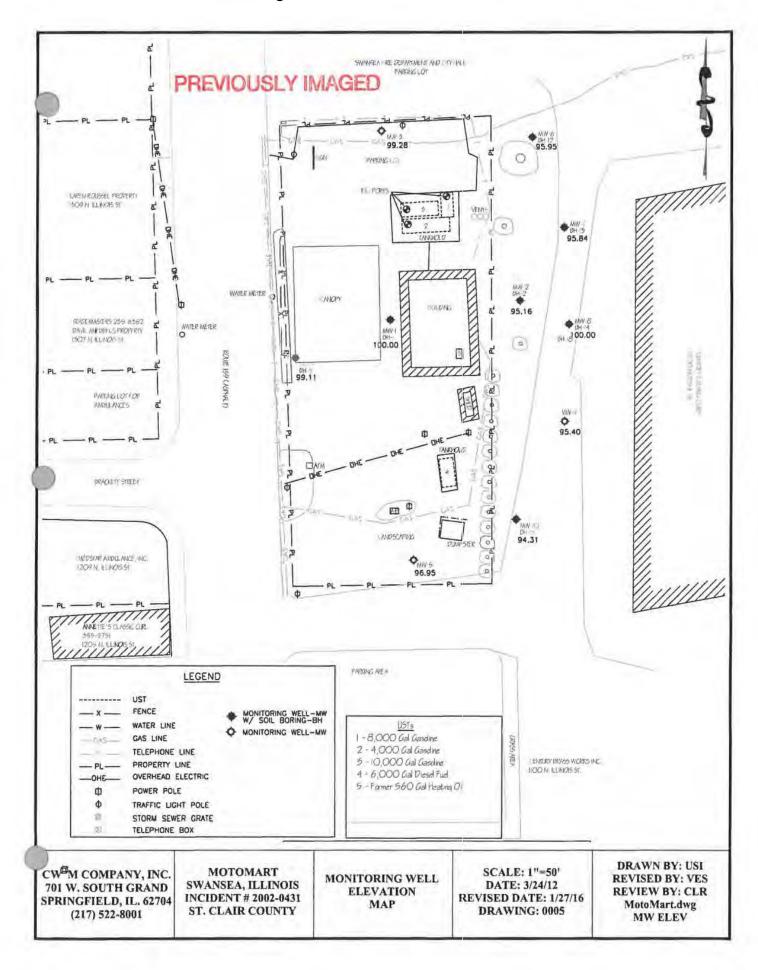


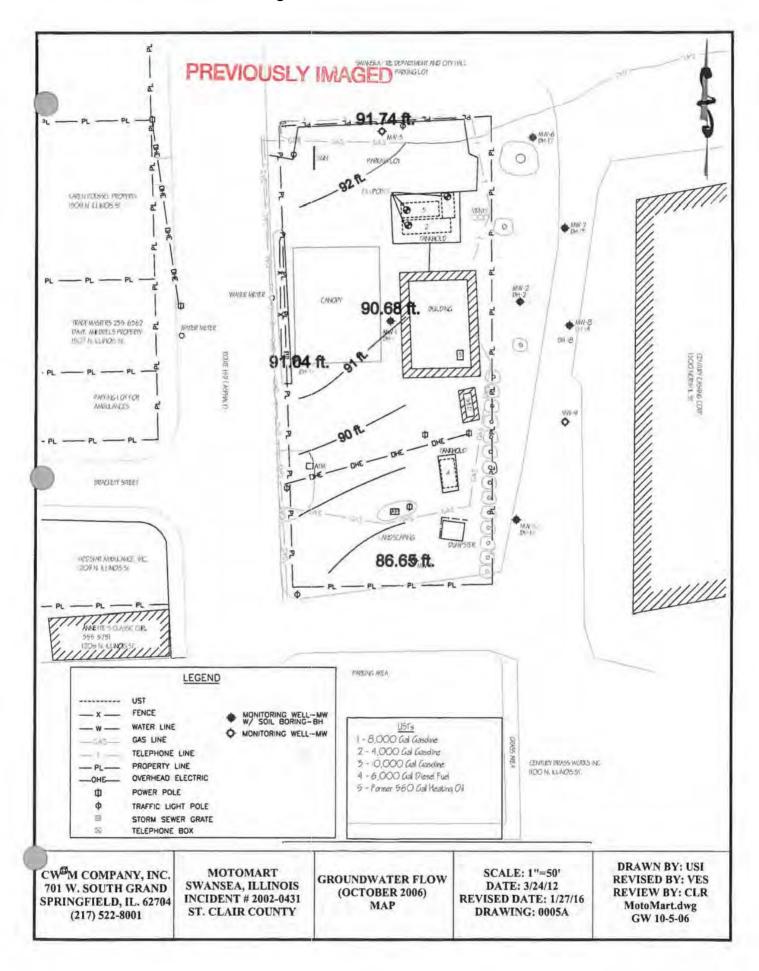


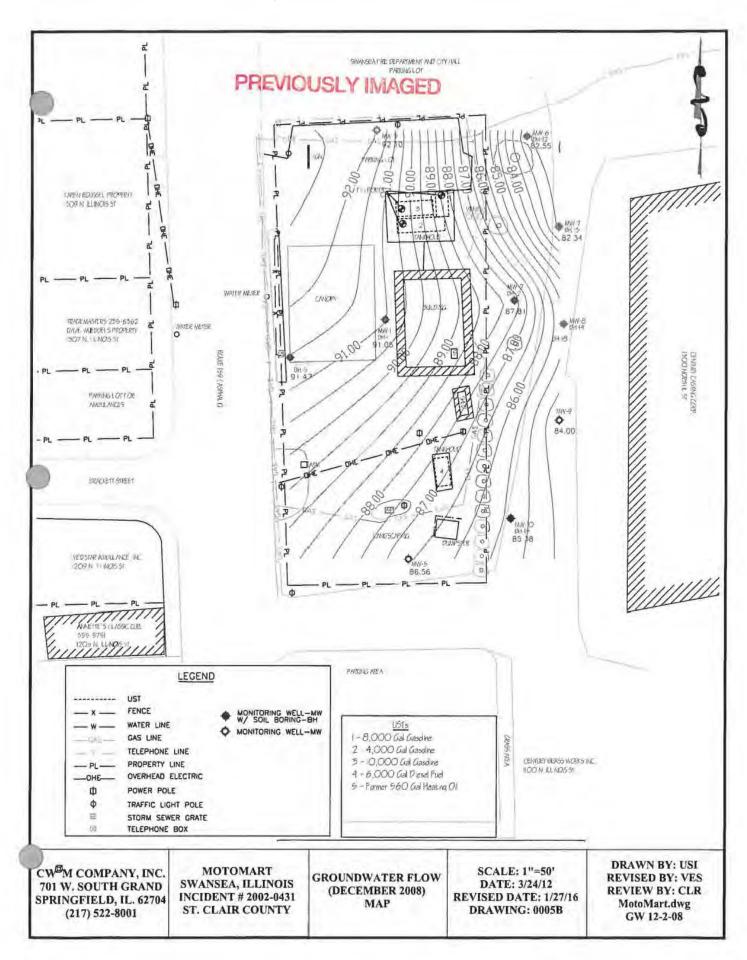


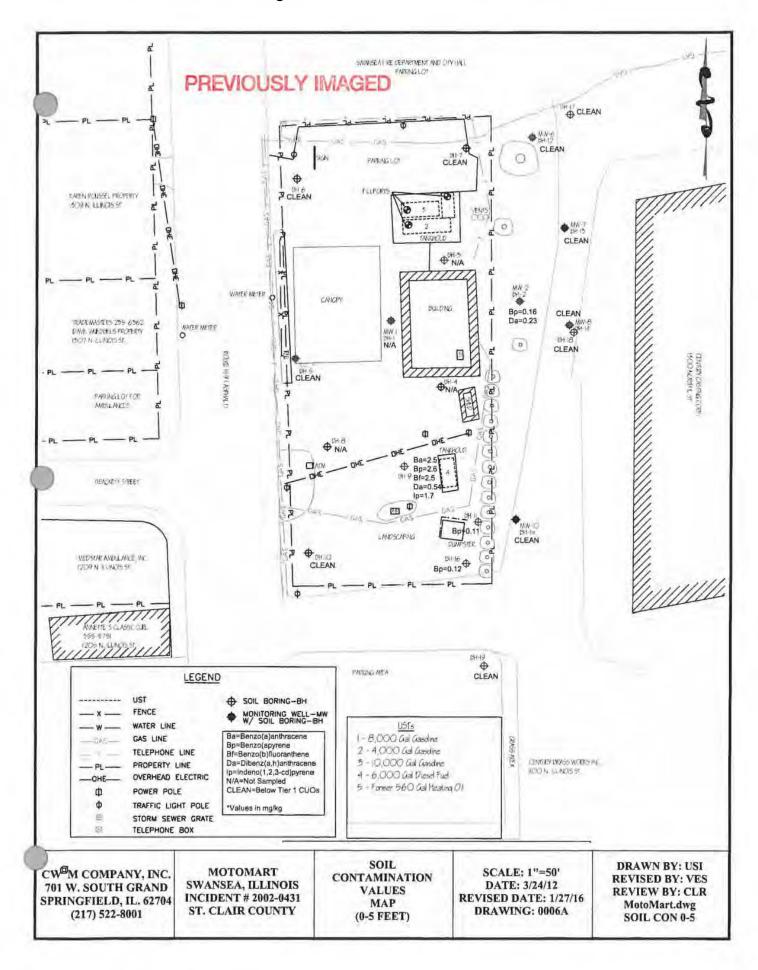


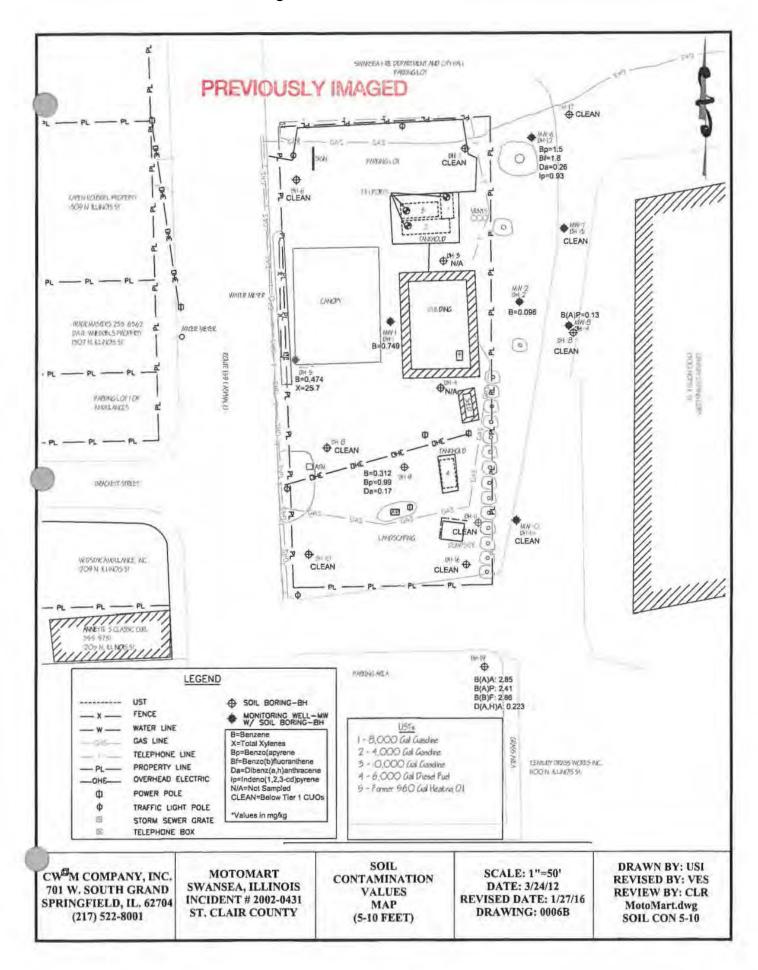


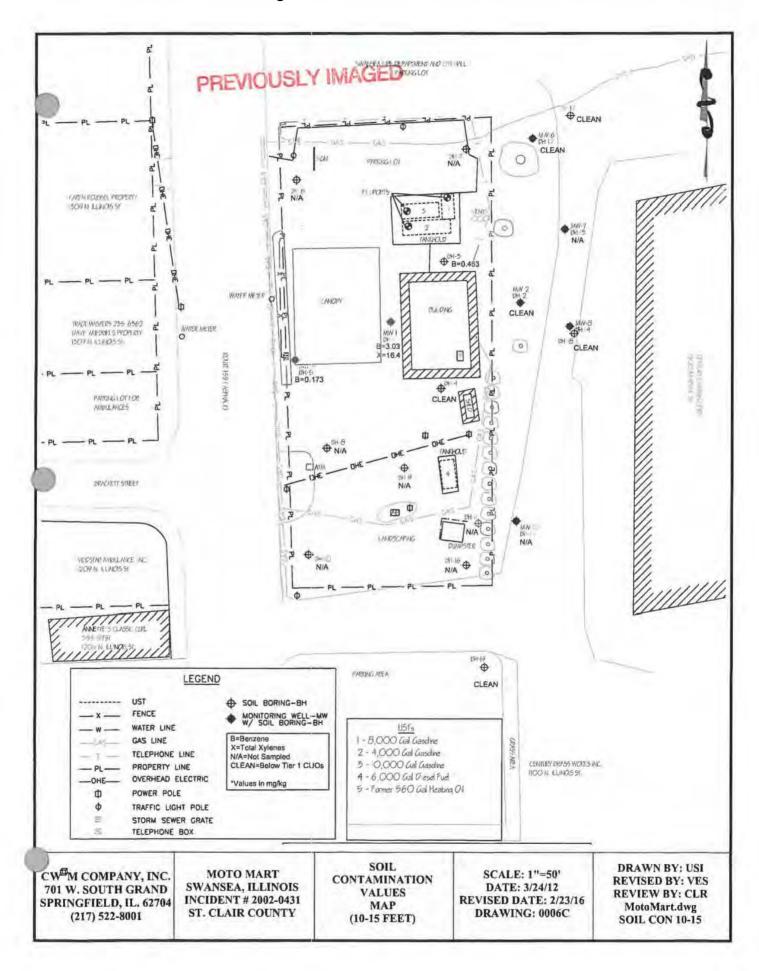


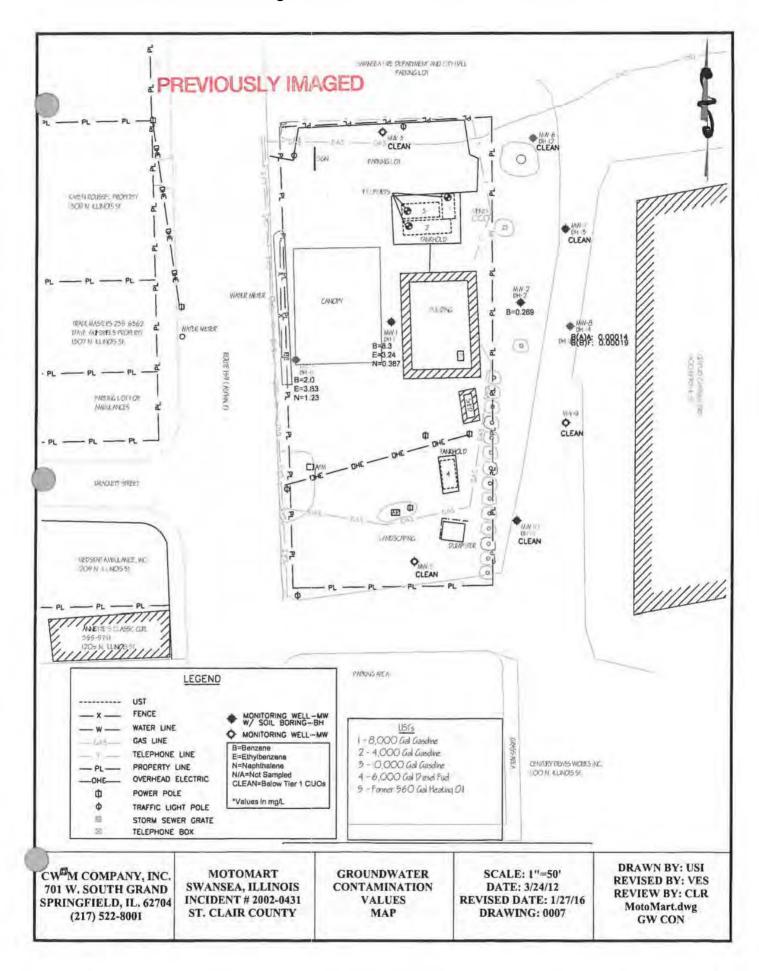


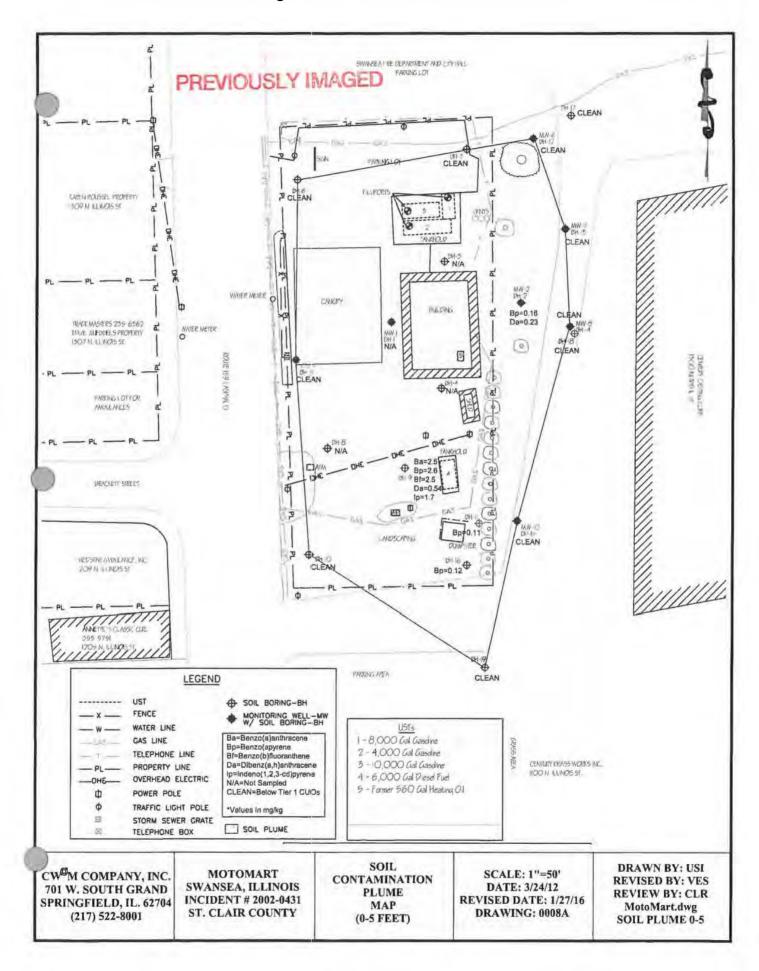


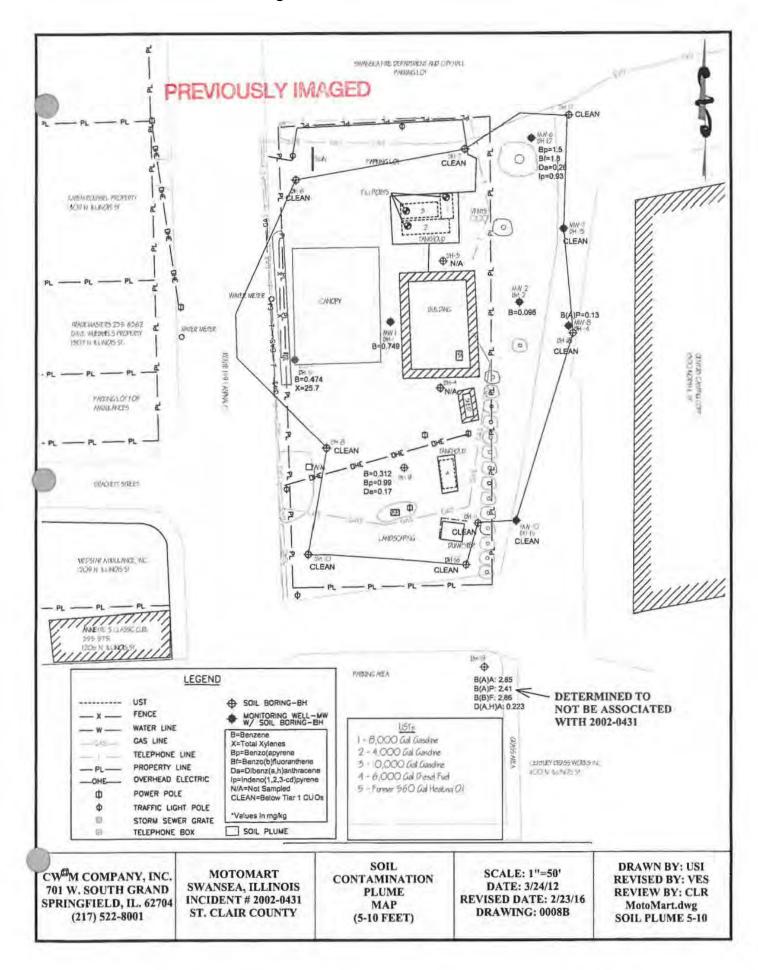


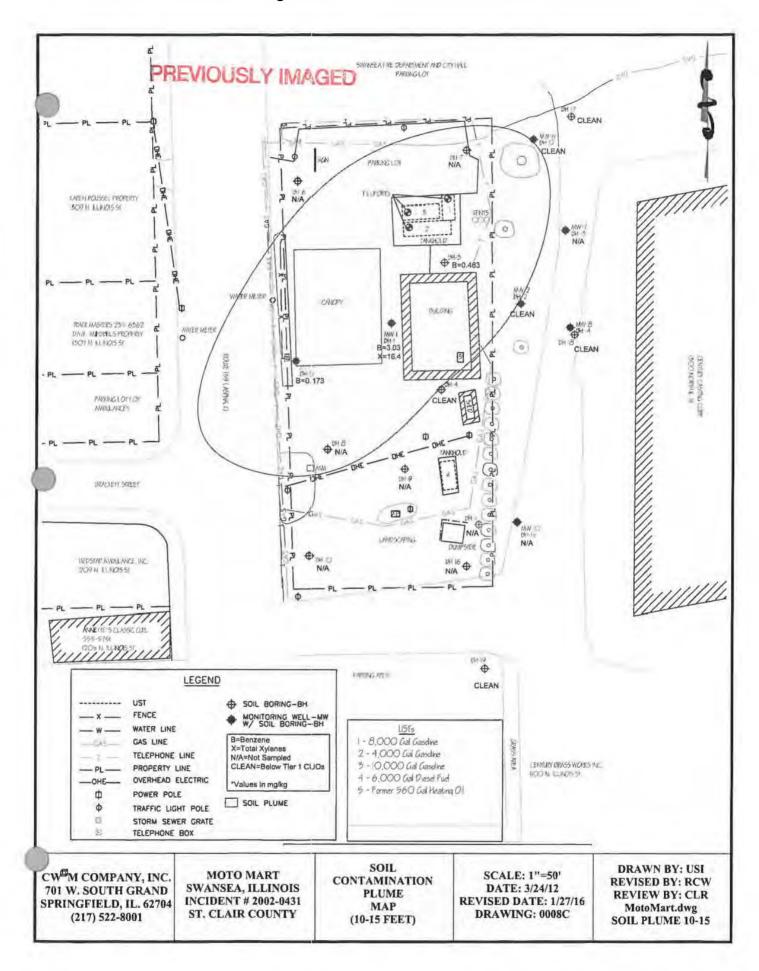


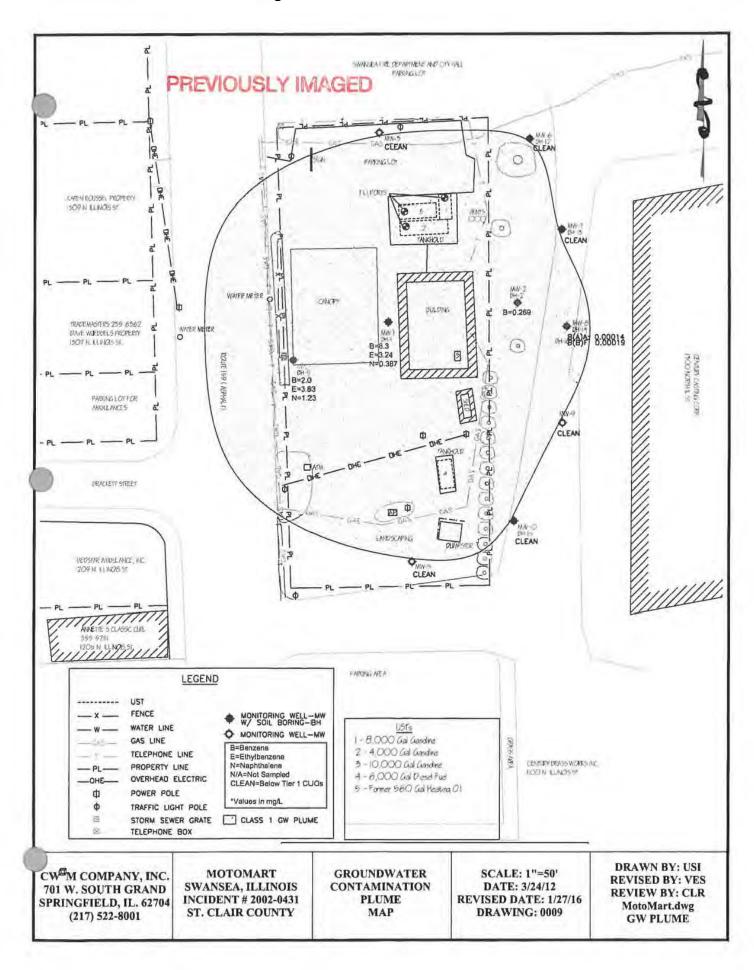


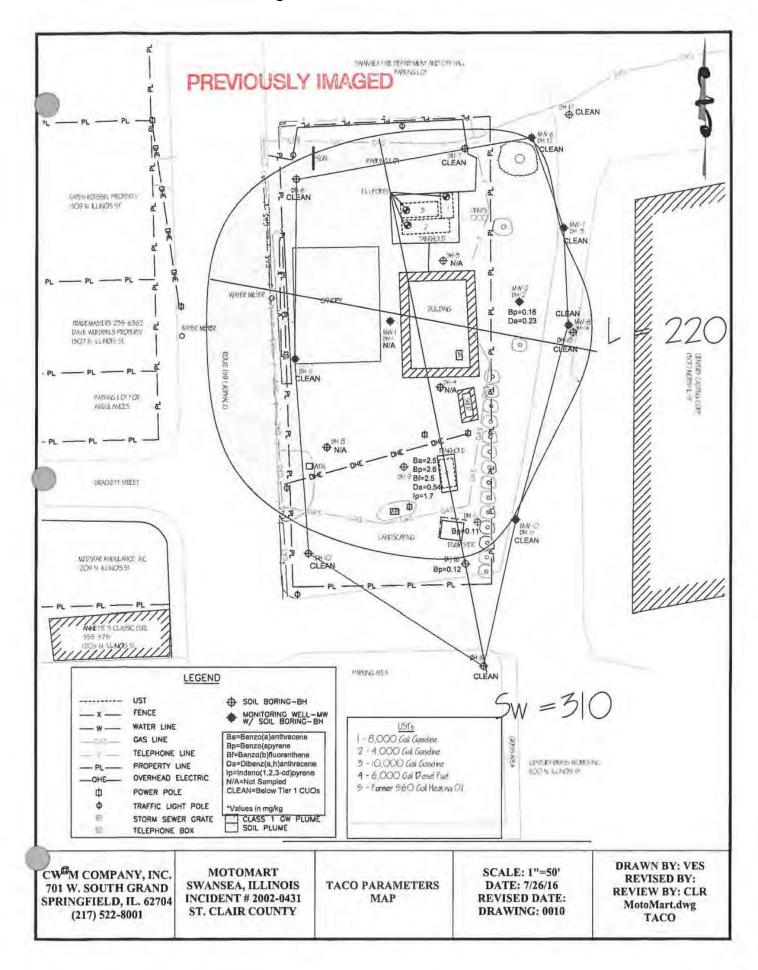


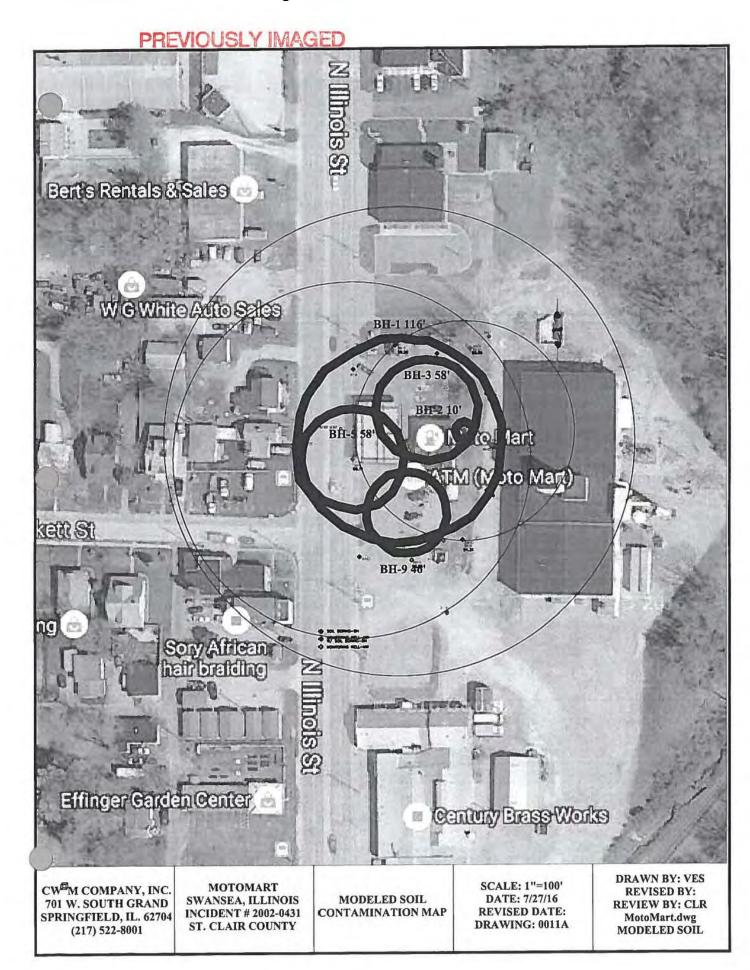


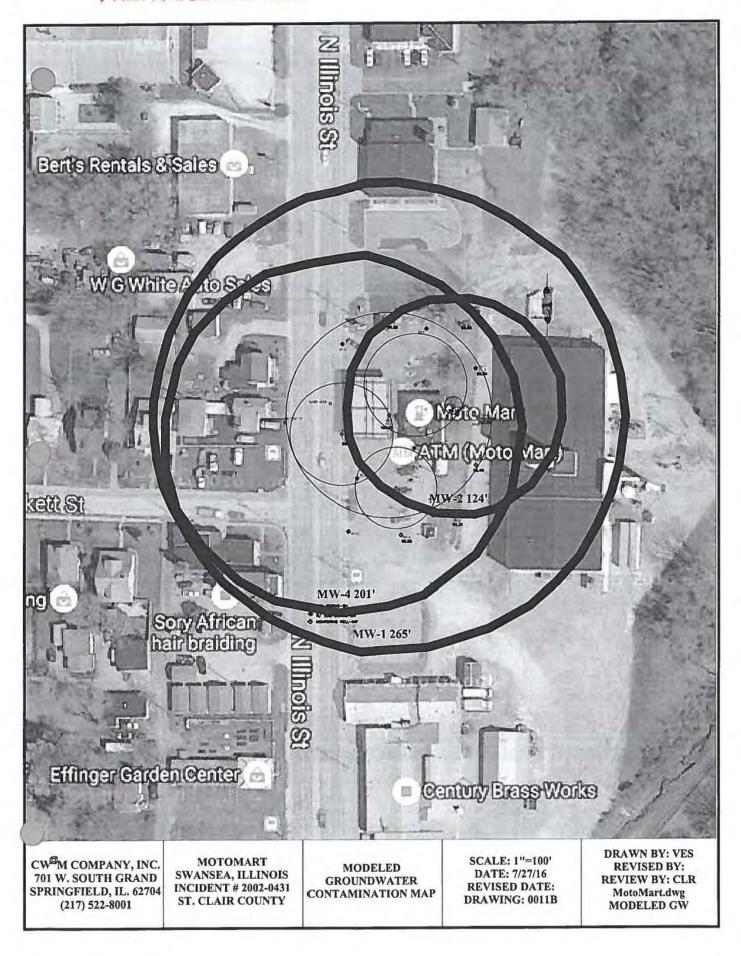


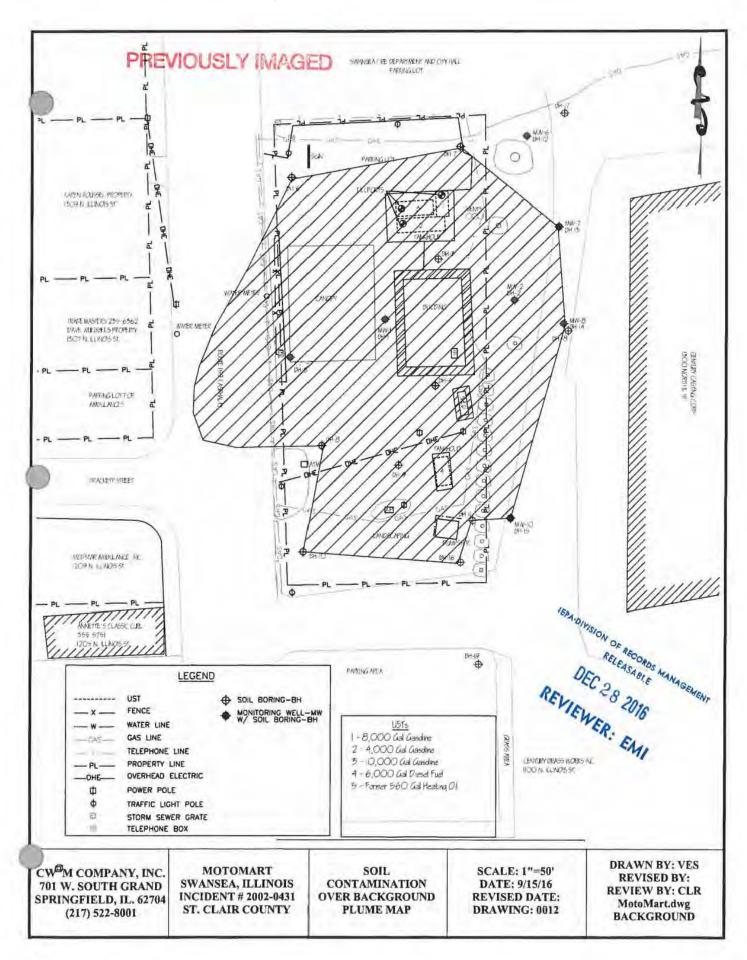












#### PREVIOUSLY IMAGED

# APPENDIX C

#### **OSFM ELIGIBILITY DETERMINATION**

CORRECTIVE ACTION PLAN
MOTOMART
SWANSEA, ILLINOIS

printed 07/07/2010

#### PREVIOUSLY IMAGED

1806032 JB



#### Office of the Illinois State Fire Marshal

"Partnering With the Fire Service to Protect Illinois"

CERTIFIED MAIL - RECEIPT REQUESTED #7006 2150 0004 2745 6290

December 22, 2006

Moto Mart. Inc. 721 W. Main Street P.O. Box 122 Belleville, IL 62222-0122

In Re:

Facility No. 6-011102 IEMA Incident No. 02-0431 Swannes Moto Mart 1324 N. Illinois Street Swanson, St. Clair Co., IL.

#### Dear Applicant:

-. 1

The Reimburgement Eligibility and Deductible Application received on December 20, 2006 for the above referenced occurrence has been reviewed. The following determinations have been made based upon this review.

It has been determined that you are eligible to seek payment of costs in excess of \$15,000. The costs must be in response to the occurrence referenced above and associated with the following tanks:

#### Ellerble Tanks

Tank 5 560 gallon Heating Oil

You must contact the Illinois Environmental Protection Agency to receive a packet of Agency billing forms for submitting your request for payment.

An owner or operator is eligible to access the Underground Storage Tank Fund if the sligibility requirements are satisfied:

- Neither the owner nor the operator is the United States Government, 1.
- The track does not contain fuel which is exempt from the Motor Feel Tax Law, 2
- The costs were incurred as a result of a confirmed release of any of the following substances: 3, .

"Fire!", as defined in Section 1.19 of the Motor Fuel Tax Law a literature programme to the contraction of the co

Aviation fael

Heating of

# PREVIOUSLY INIAGED

# Keroser

Used off, which has been refined from crude oil used in a motor vehicle, as defined in Section 1.3 of the Motor Fuel Tax Law.

- The owner or operator registered the tank and paid all fees in secondarce with the statements and registered requirements of the Gasoline Storage Act.
- LA be eligible for payment Section. Costs of corrective action or indemnification incurred before providing that notification shall not The owner or operator notified the Illinois Emergency Management Agency of a confirmed release, the costs were incurred after the notification and the costs were a result of a release of a substance listed in this
- 0 written agreement, or court order. The costs have not already been paid to the owner or operator under a private insurance policy, other
- The costs were associated with "connective action".

This constitutes the final decision as it relates to your eligibility and deductibility. We reserve the right to change the deductible determination should additional information that would change the determination become available. An underground storage took owner or operator stay appeal the decision to the Illinois Polintion Control Board (Board), pursuant to Section 57.9 (c) (2). An owner or operator who seeks to appeal the decision shall file a petition to a bearing before the Board within 35 days of the date of malling of the final decision, (35 Illinois Administrative Code 105.102(a) (2)).

For information regarding the filing of an appeal, please contact

Dorothy Gram, Clerk Hinois Politation Control Board State of Himois Center 100 West Randolph, Suize 11-500 Chicago, Hinois 60601 (312) 814-3620

The following tents are also listed for this site:

Tack 1 8,000 gallon Gasoline
Tank 2 4,000 gallon Gasoline
Tank 3 10,000 gallon Gasoline
Tank 4 6,000 gallon Diesel Fuel

be eligible to seek payment of convertive action costs associated with these tanks if it is determined that there has been a release from one or more of these tanks. Once it is determined that there has been a release from one or more of these tanks you may submit a separate application for an eligibility determination to seek corrective action costs. associated with this/these tanks Your application indicates that there has not been a release from these tanks under this incident number.

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# APPENDIX D

# CORRECTIVE ACTION PLAN BUDGET AND CERTIFICATION

CORRECTIVE ACTION PLAN MOTOMART SWANSEA, ILLINOIS

#### PREVIOUSLY IMAGED

. I further certify that the costs set forth in

#### Owner/Operator and Licensed Professional Engineer/Geologist Budget Certification Form

I hereby certify that I intend to seek payment from the UST Fund for costs incurred while performing corrective action

this budget are for necessary activities and are reasonable and accurate to the best of my knowledge and belief. I

activities for Leaking UST incident 2002-0431

	also certify that the costs included in this budget are not 415 ILCS 5/57, no costs are included in this budget costs exceed Subpart H: Maximum Payment Amounts Appendix E Personnel Titles and Rates of 35 III. Adm. payment from the Fund pursuant to 35 III. Adm. Code amendment. Such ineligible costs include but are not	that are not descri s, Appendix D Sam Code 732 or 734. 732.606 or 734.63	ibed in the corre ople Handling ar I further certify	ective action plan, a nd Analysis amount that costs ineligible	nd no s, and e for
	Costs associated with ineligible tanks.				
	Costs associated with site restoration (e.g., p			. 0	
	Costs associated with utility replacement (e.g. Costs incurred prior to IEMA notification.	J., sewers, electric	al, telephone, e	tc.).	
	Costs associated with planned tank pulls.				
	Legal fees or costs.  Costs incurred prior to July 28, 1989.				
	Costs associated with installation of new US	Ts or the repair of	existing USTs.		
	Owner/Operator: Moto, Inc.				
	Authorized Representative: Rob Whittington		Title: Enviror	mental Manager	
	BA 7/14	(Agent)	Date: 9	halis	
g)	Signature: Wat Af hollington	(1)gen ()	Date:	128/16	_
	Subscribed and sworn to before me the 284 Lda	ay of Sciols	Marie British	holomin	6.
		13	Helen I	M ODell DER	FIVE
	Selenem O'Oell	Seal	Notary Public, St. Clair	County	tion II W New York
	(Notary Public)	73	My Commission Ex	pires June 20, 2017	1 1 2016
	In addition, I certify under penalty of law that all activiti	ies that are the sul	piect of this plan	budget de report	WROI
	conducted under my supervision or were conducted up	nder the supervision	on of another Lic	censed Professiona	I Engineer
	or Licensed Professional Geologist and reviewed by me prepared under my supervision; that, to the best of my				
	or report has been completed in accordance with the E	Environmental Pro	tection Act [415	ILCS 5], 35 III. Adn	n. Code
	732 or 734, and generally accepted standards and pra accurate and complete. I am aware there are significant				
	to the Illinois EPA, including but not limited to fines, im				
	Environmental Protection Act [415 ILCS 5/44 and 57,1	17].	-	FEE BE	(b)
		1.5541	0 C C-1 1 1 2	8	
	L.P.E./L.P.G.; Vince E. Smith	L.P.E./L.F	P.G. Seal:	/ GM10 \	A
	L.P.E./L.P.G. Signature:		Date: 10	X3//3/452343	1
	Subscribed and sworn to before me the 3rd da	ay of Octobe	er 2016		1.
	(1)		-	16 E 181919	

The Illinois EPA is authorized to require this information under 415 ILCS 5/1. Disclosure of this information is required. Failure to do so may result in the delay or denial of any budget or payment requested hereunder.

Seal:



# Illinois Environmental Protection Agency

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

# General Information for the Budget and Billing Formspreviously IMAGED

LPC #:	1631405021	County:	St. Clair	
City: Sv	/ansea	Site Name:	MotoMart - Swansea	
Site Add	ress: 1324 North Illinois Street (Route 15	9		
IEMA In	cident No.: 2002-0431			
IEMA N	otification Date: Apr 3, 2002			
Date this	form was prepared: Sep 15, 2016			
This for	m is being submitted as a (check one,	if applicable	e):	
$\boxtimes$	Budget Proposal			
	Budget Amendment (Budget amendmen	its must incl	ude only the costs over	the previous budget.)
	Billing Package			100 6 000000000
	Please provide the name(s) and date(s)	of report(s)	documenting the costs	requested:
	Name(s):			PECEN/E
	Date(s):			
Thie na	Date(s):			OCT 1 1 2016
	kage is being submitted for the site ac			
	kage is being submitted for the site ac			
	kage is being submitted for the site ac			
	kage is being submitted for the site ac	tivities indi		
	kage is being submitted for the site acdim. Code 734:  Early Action	tivities indi		
35 III. A	im. Code 734: Early Action Free Product Removal after Early Action Site Investigation	tivities indi	cated below:	IEPA/BO
35 III. A	im. Code 734: Early Action Free Product Removal after Early Action Site Investigation	tivities indi	cated below:	IEPA/BO
35 III. A	Im. Code 734: Early Action Free Product Removal after Early Action Site Investigation	tivities indi	cated below:	IEPA/BO
35 III. A	Im. Code 734: Early Action Free Product Removal after Early Action Site Investigation	tivities indi	cated below:	IEPA/BO
35 III. A	Im. Code 734: Early Action Free Product Removal after Early Action Site Investigation	tivities indi	cated below:	IEPA/BO
35 III. A	Im. Code 734:  Early Action Free Product Removal after Early Action Site Investigation	tivities indi	cated below:	IEPA/BO
35 III. A	Im. Code 734: Early Action Free Product Removal after Early Action Site Investigation	tivities indi	cated below:	IEPA/BO
35 III. A	Exage is being submitted for the site addinguished for the site adding	tivities indi	cated below:	IEPA/BO
35 III. A	Im. Code 734:  Early Action Free Product Removal after Early Action Site Investigation	tivities indi	cated below:	IEPA/BO

LPC 630 Rev. 1/2007

The following address will be used as the mailing address for checks and any final determination letters

#### PREVIOUSLY IMAGED

#### General Information for the Budget and Billing Forms

Pay to the order of: Moto, Inc.							
Send in care of: CW M Company, Inc.							
Address: P.O. Box 571							
City: Carlinville		State: IL	Zip: 6	2626			
The payee is the: Own	ner 🛛 Ope	erator (Check or	ne or both.)				
2411	11.11		M/O must b	e submitted.			
Signature of the owner or opera	etor of the UST(s)	(required)		o print off a W-9 Fo			
Number of petroleum USTs in I	Illinois presently	owned or operated by th					
parent or joint stock company of or joint stock company of the or			ny owned by any p	parent, subsidiary			
Fewer than 101:	☐ 101 or	more: 🖾					
Number of USTs at the site: 5	(Nu	umber of USTs includes	USTs presently at	the site and USTs			
have been removed.)							
have been removed.)							
	a IEMA for this s	eite: 1					
Number of incidents reported to		10 / 102 10 1124	002-0431				
		10 / 102 10 1124	002-0431				
Number of incidents reported to	the site due to re	eleases from USTs: 20					
Number of incidents reported to	the site due to re	eleases from USTs: 20		ocated at the site.			
Number of incidents reported to	the site due to re	d at the site and tanks th		Type of Relea			
Number of incidents reported to Incident Numbers assigned to Please list all tanks that have e	the site due to re	eleases from USTs: 20	nat are presently lo	Type of Relea Tank Leak / Ove			
Number of incidents reported to Incident Numbers assigned to Please list all tanks that have e	the site due to re	d at the site and tanks th	nat are presently lo	Type of Relea Tank Leak / Ove			
Number of incidents reported to Incident Numbers assigned to Please list all tanks that have e	the site due to re ever been located Size (gallons)	d at the site and tanks the	nat are presently lo	Type of Relea Tank Leak / Ove			
Number of incidents reported to Incident Numbers assigned to Please list all tanks that have e Product Stored in UST  Gasoline	size (gallons)	d at the site and tanks the Did UST have a release?	nat are presently lo	Type of Relea Tank Leak / Ove			
Number of incidents reported to Incident Numbers assigned to Please list all tanks that have e Product Stored in UST  Gasoline Gasoline	Size (gallons)	d at the site and tanks the Did UST have a release?  Yes No Yes No No	nat are presently lo	Type of Relea Tank Leak / Ove			
Number of incidents reported to Incident Numbers assigned to Please list all tanks that have e Product Stored in UST  Gasoline Gasoline Gasoline	size (gallons)  10,000  8,000  4,000	d at the site and tanks the Did UST have a release?  Yes No Yes No Yes No Yes No No	nat are presently lo	Type of Relea Tank Leak / Ove			
Number of incidents reported to Incident Numbers assigned to Please list all tanks that have e Product Stored in UST  Gasoline Gasoline Diesel Fuel	size (gallons)  10,000  8,000  4,000  6,000	d at the site and tanks the Did UST have a release?  Yes No Yes	Incident No.	Type of Relea Tank Leak / Ove Piping Leak			
Number of incidents reported to Incident Numbers assigned to Please list all tanks that have e Product Stored in UST  Gasoline Gasoline Diesel Fuel	size (gallons)  10,000  8,000  4,000  6,000	d at the site and tanks the Did UST have a release?  Yes No No Yes No	Incident No.	Type of Relea Tank Leak / Ove Piping Leak			
Number of incidents reported to Incident Numbers assigned to Please list all tanks that have e Product Stored in UST  Gasoline Gasoline Diesel Fuel	size (gallons)  10,000  8,000  4,000  6,000	d at the site and tanks the Did UST have a release?  Yes No No Yes No No Yes No	Incident No.	Type of Relea Tank Leak / Ove Piping Leak			

#### **Budget Summary**

#### PREVIOUSLY IMAGED

Choose the applicable regulation: 6 734 C 732

734	Free Product	Stage 1 Site Investigation	Stage 2 Site Investigation	Stage 3 Site Investigation	Corrective Action
					Proposed
Drilling and Monitoring Well Costs Form	\$	\$	\$	\$	\$ 2,033.75
Analytical Costs Form	\$	\$	\$	\$	\$ 1,661.72
Remediation and Disposal Costs Form	\$	\$	\$	\$	\$
UST Removal and Abandonment Costs Form	\$	\$	\$	\$	\$
Paving, Demolition, and Well Abandonment Costs Form	\$	\$	\$	\$	\$ 2,191.00
Consulting Personnel Costs Form	\$	\$	\$	\$	\$ 38,571.22
Consultant's Materials Costs Form	\$	\$	\$	\$	\$ 1,492.50
Handling Charges Form	the Illinois EPA.	es will be determ The amount of a h the Handling Ch	llowable handling		
Total	\$	\$	\$	\$	\$ 45,950.19

# Drilling and Monitoring Well Costs Form PREVIOUSLY IMAGED

#### 1. Drilling

Number of Borings to Be Drilled	Type HSA/PUSH/ Injection	Depth (feet) of Each Boring	Total Feet Drilled	Reason for Drilling
1	HSA	5.00	5.00	Vapor Intrusion Assessment
1	PUSH	15.00	15.00	Soil investigation
1	PUSH	10.00	10.00	Soil investigation

Subpart H
minimum payment
amount applies.

	Total Feet	Rate per Foot (\$)	Total Cost (\$)
Total Feet via HSA:	5.00	28.79	143.95
Total Feet via PUSH:	25.00	22.53	563.25
Total Feet for Injection via PUSH:		18,59	
		Total Drilling Costs:	1,877.30

#### 2. Monitoring / Recovery Wells

Number of Wells	Type of Well HSA / PUSH / 4" or 6" Recovery / 8" Recovery	Diameter of Well (inches)	Depth of Well (feet)	Total Feet of Wells to Be Installed (\$)
1	4" or 6" Recovery	4.00	5.00	5.00

Well Installation	Total Feet	Rate per Foot (\$)	Total Cost (\$)
Total Feet via HSA:			
Total Feet via PUSH:			
Total Feet of 4" or 6" Recovery:	5.00	31.29	156.45
Total Feet of 8" or Greater Recovery:			
		Total Well Costs:	156.45

Total Drilling and Monitoring Well Costs:	\$2,033.75

#### **Analytical Costs Form**

Laboratory Analysis	Number of Samples		Cost (\$) per Analysis		Total per Parameter
Chemical Analysis					
BETX Soil with MTBE EPA 8260	4	X	106.38	=	\$425.52
BETX Water with MTBE EPA 8260		X		=	
COD (Chemical Oxygen Demand)		X		=	
Corrosivity		Х		=	
Flash Point or Ignitability Analysis EPA 1010		X		=	
Fraction Organic Carbon Content (foc) ASTM-D 2974-00		Х		=	
Fat, Oil, & Grease (FOG)		Х		=	
LUST Pollutants Soil - analysis must include volatile, base/ neutral, polynuclear aromatics and metals list in Section 732. Appendix B and 734.Appendix B		х		=	
Dissolved Oxygen (DO)		Х		=	
Paint Filter (Free Liquids)		Х		=	
PCB / Pesticides (combination)		Х		=	
PCBs		Х		=	
Pesticides		Х		=	
Н		Х		=	
Phenol		Х		-	
Polynuclear Aromatics PNA, or PAH SOIL EPA 8270	4	Х	190.24	=	\$760.96
Polynuclear Aromatics PNA, or PAH WATER EPA 8270		х		=	
Reactivity		X		=	
SVOC - Soil (Semi-Volatile Organic Compounds)		Х		=	
SVOC - Water (Semi-Volatile Organic Compounds)		Х		=	
TKN (Total Kjeldahl) "nitrogen"		Х		=	
TPH (Total Petroleum Hydrocarbons)		Х		=	
VOC (Volatile Organic Compounds) - Soil (Non-Aqueous)		х		=	
VOC (Volatile Organic Compounds) - Water		Х		-	
	1	Х	300.00	-	\$300.00
Vapor Intrusion Sampling		Х		=	
		х		=	
		Х		=	
		Х		=	
Geo-Technical Analysis	1				
Soil Bulk Density (pb) ASTM D2937-94		X		=	
Ex-situ Hydraulic Conductivity / Permeability		Х		=	
Moisture Content (w) ASTM D2216-92 / D4643-93		X		=	
Porosity		X		==	
Rock Hydraulic Conductivity Ex-situ	1	X		=	
Sieve / Particle Size Analysis ASTM D422-63 / D1140-54		X		=	
Soil Classification ASTM D2488-90 / D2487-90		X		=	
Soil Particle Density (p <sub>s</sub> ) ASTM D854-92		X		=	
Contraction Delicity (PS) Alexini Boot of		X		-	
		X		=	
		X		-	

#### **Analytical Costs Form**

#### PREVIOUSLY IMAGED

Metals Analysis					
Soil preparation fee for Metals TCLP Soil (one fee per soil sample)		X		=	
Soil preparation fee for Metals Total Soil (one fee per soil sample)		X		=	
Water preparation fee for Metals Water (one fee per water sample)	*	X		=	
Arsenic TCLP Soil		Х		=	
Arsenic Total Soil		X		=	
Arsenic Water		X		=	
Barium TCLP Soil		X		=	
Barium Total Soil		X		=	
Barium Water		X		=	
Cadmium TCLP Soil		Х		=	
Cadmium Total Soil		X		=	
Cadmium Water		X		=	
Chromium TCLP Soil		X		=	
Chromium Total Soil		X		=	
Chromium Water		X		=	
Cyanide TCLP Soil		X		=	
Cyanide Total Soil		X		=	
Cyanide Water		X		=	
Iron TCLP Soil		X		=	
Iron Total Soil		X		=	
Iron Water		X		=	
Lead TCLP Soil		X		=	
Lead Total Soil		X		=	
Lead Water		X		=	
Mercury TCLP Soil		X		=	
Mercury Total Soil		X		=	
Mercury Water		X		=	
Selenium TCLP Soil		X		=	
Selenium Total Soil		X		=	
Selenium Water		X		=	
Silver TCLP Soil		X		=	
Silver Total Soil		X		=	
Silver Water		X		=	
Metals TCLP Soil (a combination of all metals) RCRA		X		=	
Metals Total Soil (a combination of all metals) RCRA		X		=	
Metals Water (a combination of all metals) RCRA		X		=	
		Х		=	
		X		=	
		X		=	
		X		=	
Other	-	1 1	40.50		650.00
EnCore® Sampler, purge-and-trap sampler, or equivalent sampling device	4	X	12.52	=	\$50.08
Sample Shipping per sampling event <sup>1</sup>	2	X	62.58	=	\$125.10

<sup>&</sup>lt;sup>1</sup>A sampling event, at a minimum, is all samples (soil and groundwater) collected in a calendar day.

Total Analytical Costs: \$ 1,661.72

#### Paving, Demolition, and Well Abandonment Costs Form

#### PREVIOUSLY IMAGED

#### A. Concrete and Asphalt Placement/Replacement

Number of Square Feet	Asphalt or Concrete	Thiickness (inches)	Cost (\$) per Square Foot	Replacement or Placement for an Engineered Barrier	Total Cost

Total Concrete and Asphalt	
Placement/Replacement Costs:	

#### B. Building Destruction or Dismantling and Canopy Removal

Item to Be Destroyed, Dismantled, or Removed	Unit Cost (\$)	Total Cost (\$)

Total Building Destruction or Dismantling and	
Canopy Removal Costs:	

#### Paving, Demolition, and Well Abandonment Costs Form

#### PREVIOUSLY IMAGED

#### C. Well Abandonment

Monitoring Well ID #	Type of Well (HSA / PUSH / Recovery)	Depth of Well (feet)	Cost (\$) per Foot	Total Cost
MW-1	HSA	20.00	12.52	\$250.40
MW-2	HSA	20.00	12.52	\$250.40
MW-3	HSA	15.00	12.52	\$187.80
MW-4	HSA	20.00	12.52	\$250.40
MW-5	HSA	20.00	12.52	\$250.40
MW-6	HSA	20.00	12.52	\$250.40
MW-7	HSA	15.00	12.52	\$187.80
MW-8	HSA	15.00	12.52	\$187.80
MW-9	HSA	15.00	12.52	\$187.80
MW-10	HSA	15.00	12.52	\$187.80

Total Monitoring Well Abandonment Costs:	\$2,191.00

	Total Paving, Demolition, and Well Abandonment Costs:	\$2 101 00
ij	1	\$2,191.00

#### Consulting Personnel Costs Form

Employee Nam	ie	Personnel Title	Hours	Rate* (\$)	<b>Total Cost</b>	
Remediation Category		Task				
		Senior Project Manager	6,00	125.15	\$750.9	
CCAP	Report Co	ordination / Technical Oversight / Com	pliance			
		Senior Prof. Engineer	3.00	162.70	\$488.1	
CCAP	Report Re	view and Certification				
		Engineer III	36.00	125.15	\$4,505.4	
CCAP	Corrective	Action Design / Report Development /	IEPA Correspon	dence		
		Senior Draftperson/CAD	6.00	75.08	\$450.4	
CCAP	Drafting ar	nd Editing Maps for Report				
		Senior Admin. Assistant	2.00	56.32	\$112.6	
CCAP	Report Co	mpilation, Assembly, and Distribution				
		Engineer III	8.00	125.15	\$1,001.2	
TACO 2 or 3	TACO GW	Modeling / Plume Delineation				
		Engineer III	12.00	125.15	\$1,501.8	
TACO 2 or 3	TACO Tier	2 Calculations / Development of CUO	s			
		Senior Project Manager	4.00	125.15	\$500.6	
TACO 2 or 3	TACO Tior	2 Evaluation / Calculation / Modeling		-		

Employee Name		Personnel Title	Hours	Rate* (\$)	<b>Total Cost</b>	
Remediation Category		Task				
		Senior Project Manager	6.00	125.15	\$750.9	
CCAP-Budget	Budget Con	npliance / Technical Oversight				
		Engineer III	18.00	125.15	\$2,252.7	
CCAP-Budget	Budget Cale	culations / Design				
		Senior Prof. Engineer	3.00	162.70	\$488.1	
CCAP-Budget	Budget Rev	iew & Certification				
		Senior Admin. Assistant	2.00	56.32	\$112,6	
CCAP-Budget	Budget Con	npilation, Assembly, and Distribution				
		Senior Prof. Engineer	6,00	162.70	\$976.20	
CA-Pay	Reimbursen	nent Review and Certification (CAP,	Drilling, Closure S	ubmittals)		
		Senior Acct. Technician	30.00	68.83	\$2,064.9	
CA-Pay	Reimbursen	nent Preparation (CAP, Drilling, Clos	ure Submittals)			
		Senior Admin. Assistant	4.00	56.32	\$225.28	
CA-Pay	Reimbursen	nent Compilation, Assembly, and Dis	tribution (CAP, Dr	illing, Closure Sub	mittals)	
		Senior Project Manager	12.00	125.15	\$1,501.80	
CA-Pay		nent Compliance / Technical Oversig			0	

Employee Nam	ie	Personnel Title	Hours	Rate* (\$)	<b>Total Cost</b>	
Remediation Category		Task				
			-			
		Senior Project Manager	8.00	125.15	\$1,001.20	
CACR	Report Cod	ordination / Technical Oversight / Comp	oliance			
		Senior Prof. Engineer	4.00	162.70	\$650.80	
CACR	Report Rev	view and Certification	4.00	102.70	4000.01	
		Senior Admin. Assistant	2.00	56.32	\$112.64	
CACR	Report Cor	mpilation, Assembly, and Distribution	2.00	00.52	W112.04	
		Engineer III	36.00	125.15	\$4,505.40	
CACR	Report Pre	paration / Development	00.00	120.10	\$4,000.4t	
		Senior Admin. Assistant	2.00	56.32	\$112.64	
CACR	NFR Recor	ding / Correspondence with Village / S		30.32	W112.0	
		Senior Project Manager	2.00	125.15	\$250.30	
CACR	NFR Revie	w / IEPA Correspondence		1 122.10	4-1-2.20	

Employee Nam	ie	Personnel Title	Hours	Rate* (\$)	<b>Total Cost</b>	
Remediation Category		Task				
		Engineer III	24.00	125.15	\$3,003.6	
ELUC	Groundwate	r Ordinance Development / Meetings	with City, Ordina	nce Notifications		
		Senior Project Manager	6.00	125.15	\$750.9	
ELUC	Groundwate	r Ordinance Negotiation Corresponde	ence and Notifica	tions		
		Senior Admin. Assistant	2.00	56.32	\$112.6	
ELUC	Groundwater	r Ordinance Correspondence / Notific	ations			
		Senior Project Manager	6.00	125.15	\$750.9	
HAA	HAA IDOT R	leview / Coordination				
		Engineer III	24.00	125.15	\$3,003.6	
HAA	HAA IDOT D	evelopment / Correspondence				
		Senior Draftperson/CAD	4.00	75.08	\$300.3	
HAA	HAA Drawing	gs				
		Senior Admin. Assistant	2,00	56.32	\$112.6	
НАА	HAA Compile	ation, Assembly, and Distribution				

Employee Nam	e	Personnel Title	Hours	Rate* (\$)	Total Cost	
Remediation Category		Task				
		Senior Project Manager	4.00	125.15	\$500.60	
CCA-Field	Field Prepar	ration, Sicheduling, Arrangements / Co	oordination for In-		es	
		Engineer III	16,00	125,15	\$2,002.4	
CCA-Field	Drilling / Vap	por Sampling and preparations				
		Engineer II	14.00	106.38	\$1,489.33	
CCA-Field	Drilling / Vap	por Sampling				
		Senior Admin. Assistant	2.00	56.32	\$112.64	
CCA-Field	Arrangemen	ts for Investigation, Utilities/JULIE, So	cheduling			
		Engineer III	4.00	125.15	\$500.60	
CCA-Field	Borelogs, SI	Documentation, Analytical Entry				
		Senior Project Manager	2.00	125.15	\$250.30	
CCA-Field	Reviewing, E	Evaluating Analytical Results / SI Doc	umentation, Field	d Data		
		Senior Project Manager	6.00	125.15	\$750.90	
CCA-Field	Off-Site SI C	coordination				
		Erigineer III	4.00	125.15	\$500.60	
CCA-Field	Off-Site Prop	perty Owner Notification / Results Rep	port			
		Senior Admin. Assistant	2.00	56.32	\$112.64	
CCA-Field	The second	perty Owner Drilling Notification and R				

<sup>\*</sup>Refer to the applicable Maximum Payment Amounts document.

Total of Consulting Personnel Costs	\$38,571.22
Total of consulting I croomici costs	\$38,5/1.22

#### **Consultant's Materials Costs Form**

Materials, Equipment	, or Field Purchase	Time or Amount Used	Rate (\$)	Unit	Total Cost
Remediation Category		Description/J	Justification		
Copies		600.00	.15	/each	\$90.00
CCAP	Copies of Plan and Rep	port / Draft Plan			
Postage		3.00	6.00	/each	\$18.00
CCAP	Report/ Forms/ Draft/ D	Distribution			
Copies		300.00	.15	/each	\$45.00
CCAP-Budget	Copies of Budget/ Draf	t			
Postage		3,00	6.00	/each	\$18.00
CCAP-Budget	Budget Distribution				
Copies		800.00	.15	/each	\$120.00
CACR	Copies of Completion F	Report and Attachments	s/ Draft		
Postage		3.00	6.00	/each	\$18.00
CACR	Completion Report Dist	tribution/ Draft			
Copies		1,200.00	.15	/each	\$180.00
CA-Pay	Copies of Reimbursem	ent Claims			
Postage		6.00	6.00	/each	\$36.00
CA-Pay	Reimbursement Distrib	ution/ Forms			
Field Purchase		1.00	68.00	/each	\$68.00
CACR	NFR Recording Fees			-	

Materials, Equipment	, or Field Purchase	Time or Amount Used	Rate (\$)	Unit	Total Cost
Remediation Category		Description/J	lustification		
Postage		4.00	6.00	/each	\$24.00
CACR	NFR Recording / Corre	spondence/ County/ IE	PA/ Client		
Copies		150.00	.15	/each	\$22.5
CACR	NFR / Recording / Sub	mittal / IEPA Correspon	dence		
Copies		150.00	.15	/each	\$22.5
ELUC	Ordinance Submittal ar	nd Notifications		10	
Postage		8.00	6.00	/each	\$48.0
ELUC	Ordinance Submittal ar	nd Notifications			
Mileage		400.00	.65	/mile	\$260.0
CCA-Field	2 Round Trips from Spr	ringfield Office to Site (I	Orilling/ Vapor Sa	ampling)	
Water Level Indicator		1.00	28.00	/day	\$28.0
CCA-Field	Test for Groundwater D	During Drilling Activities			
Disposable Gloves		1.00	16.00	/box	\$16.0
CCA-Field	Disposable Latex Glove	es for Soil and Vapor Sa	ampling		
PID Rental		1.00	148.00	/day	\$148.0
CCA-Field	Test VOC Levels in Soi	l Samples			

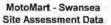
Materials, Equipment	, or Field Purchase	Time or Amount Used	Rate (\$)	Unit	Total Cost
Remediation Category		Description/	Justification		
Shroud supplies, canister and re	gulator rental	1.00	200.00	/each	\$200.0
CCA-Field	Shroud construction ar	nd operation materials,	rental of gas cani	ster and reg	ulator
Measuring Wheel		1.00	18.00	/day	\$18.0
CCA-Field	Locating soil borings a	nd vapor well			
Postage		8.00	6.00	/each	\$48.0
НАА	HAA Correspondence	/ Execution / Distributio	n		
Copies		250.00	.15	/each	\$37.5
HAA	HAA Correspondence	/ Execution / Distribution	n	791	
Postage		2.00	6.00	/each	\$12.0
CCA-Field	Postage for Off-Site Pr	operty Owner Drilling C	oordination / SI F	Results Repo	rt
Copies		100.00	.15	/each	\$15.0
CCA-Field	Copies for Off-Site Pro	perty Owner Drilling Co	ordination / SI Re	esults Report	
					400000
		Total of Consultant	iviaterials Cost	9	\$1,492.5

# APPENDIX E

# TACO VARIABLES AND EQUATIONS & HYDRAULIC CONDUCTIVITY CALCULATIONS

PREVIOUSLY IMAGED

CORRECTIVE ACTION PLAN MOTOMART SWANSEA, ILLINOIS



Soil CUOs

3	Tier 1	Tier 1	Appendix A	Tier 1	Tier 2	Tier 2
	Residential	I/ C	Table H	CW	CW	I/C
	with GW	without GW	Background			without GW
Parameter	Class I CUO					
Benzene	0.03	1.6		2.2	4.52	3.21
Ethylbenzene	13.0	400		58	10,202	389.64
Toluene	12.0	650		42	371.27	371.29
Total Xylenes	5.6	320		5.6	46.17	46.17
Benzo(a)anthracene	0.9	8.	1.8	170		
Benzo(a)pyrene	0.09	0.8	2.1	17		
Benzo(b)fluoranthene	0.9	8.	2.1	170		
Dibenz(a,h)anthracene	0.09	0.8	0.42	17		
Indeno(1,2,3-cd)pyrene	0.9	8.	1.6	170		
All values in mg/kg			1			

Summary of Tier 2 Calculations MotoMart - Swansea 2002-0431 07/26/16

#### Table 3

Tier 1 Objectives

				Her I Obje								
	Benzene		Toluene		Ethylbenzen	e	Total Xylene	5	Naphthalen	e	MTBE	
Residential Ingestion	12	rng/kg	16,000	mg/kg	7,800	mg/kg	16,000	mg/kg	1,600	mg/kg	780	mg/kg
Inhalation	0.8	mg/kg	650	mg/kg	400	mg/kg	320	mg/kg	170	mg/kg	8,800	mg/kg
Migration Class 1	0.03	mg/kg	12	mg/kg	13	mg/kg	150	mg/kg	12	mg/kg	0.32	mg/kg
Migration Class 2	0.17	mg/kg	29	mg/kg	19	mg/kg	150	mg/kg	18	mg/kg	0,32	mg/kg
Industrial/Commercial Ingestion	100	mg/kg	410,000	mg/kg	200,000	mg/kg	410,000	mg/kg	41,000	mg/kg	20,000	mg/kg
Inhalation	1,60	mg/kg	650	mg/kg	400	mg/kg	320	mg/kg	270	mg/kg	8,800	mg/kg
Construction Worker Ingestion	2,300	mg/kg	410,000	mg/kg	20,000	mg/kg	41,000	mg/kg	4,100	mg/kg	2,000	mg/kg
Inhalation	2.20	mg/kg	42	mg/kg	58	mg/kg	5.6	mg/kg	1.80	mg/kg	140	mg/kg
Soil Saturation	580	mg/kg	290	mg/kg	150	mg/kg	110	mg/kg	100.57	mg/kg	8,400	mg/kg

Tier 2 SSL Objectives

	Benzene	Equation	Toluene	Equation	Ethylbenzene	Equation	Total Xylenes	Equation	Naphthalene	Equation	MTBE	
Residential Ingestion	11,64	S-2	6,257	S-1	7,821	S-1	15,643	S-1	1,564	S-1	782.1	5-1
Inhalation	1.68	S-6	1/20/09/8/02/11.	S-4	111550055111	S-4	IIIN KARABALLI.	S-4	150.72	S-4	1174469474111.	S-4
Migration Mass-Limit Class 1	0.43	S-28	85.50	S-28	59.85	S-28	LIBERARY III.	S-28	11.97	5-28	5.98	S-28
Migration Class 1	0.070	S-17	26.73	S-17	32,09	S-17	III BEEN III	S-17	9.08	S-17	0.58	S-17
Industrial-Commercial Ingestion	104.06	S-2	1,635,200	S-1	204,400	S-1	408,800	S-1	40,880	S-1	20,440	S-1
Inhalation	3.21	S-6	116838383	S-4	111888888111	S-4	UNESSESSION.	S-4	239.96	S-4	172489978411.	S-4
Migration Mass-Limit Class 1	0.43	S-28	85.50	S-28	59.85	S-28	111804931111	S-28	11.97	S-28	5.98	S-28
Migration Class 1	0.070	S-17	26.73	S-17	32,09	S-17	111188282111	S-17	9.08	S-17	0.58	S-17
Construction Worker Ingestion	2,258.21	S-3	163,236	S-1	10,202	S-1	81,618	S-1	122,427	S-1	20,405	S-1
Inhalation	4.52	S-7	371.27	S-5	11/8/05/09/11/	S-5	46.17	S-5	1.55	S-5	318.31	S-5
Soil Saturation	1,255,70	S-29	708.29	S-29	389.64	S-29	300 12	S-29	100.57	S-29	21,018,97	S-29

all values are in mg/kg

Groundwater Contaminate Concentration Exceedances at Surface Water or Set Back Zone (mg/L)

	Benzene	Equation	Toluene	Equation	Ethylbenzene	Equation	Total Xylenes	Equation	Naphthalene	Equation	MTBE	
Result	#DIV/01	R-26	#DIV/0!	R-26	#DIV/0!	R-26	#DIV/01	R-28			#DIV/01	R-26
Surface Water Objective	0.86		0.6		0.014		0.36			1 - 3		

Version #25/2015

#### PREVIOUSLY IMAGED

#### Section 742.APPENDIX A: General

Section 742.TABLE H Concentrations of Polynuclear Aromatic Hydrocarbon Chemicals in Background Soils

Chemical Name	Chicago <sup>a</sup> mg/kg	Metropolitan Areas <sup>b</sup> (mg/kg)	Non-Metropolitan Areas <sup>c</sup> (mg/kg)
2-Methylnaphthalene		0.14	0.29
Acenaphthene	0.09	0.13	0,04
Acenaphthylene	0.03	0.07	0.04
Anthracene	0.25	0.40	0.14
Benzo(a)anthracene	1.1	1.8	0.72
Benzo(a)pyrene	1.3	2.1	0.98
Benzo(b)fluoranthene	1,5	2.1	0.70
Benzo(g,h,i)perylene	0.68	1.7	0.84
Benzo(k)fluoranthene	0.99	1.7	0.63
Chrysene	1.2	2.7	1.1
Dibenzo(a,h)anthracene	0.20	0.42	0.15
Fluoranthene	2.7	4.1	1.8
Fluorene	0.10	0.18	0.04
Indeno(1,2,3-c,d)pyrene	0.86	1.6	0.51
Naphthalene	0.04	0.20	0.17
Phenanthrene	1.3	2.5	0.99
Pyrene	1.9	3.0	1.2

<sup>&</sup>lt;sup>a</sup> Chicago means within the corporate limits of the City of Chicago.

(Source: Appendix A, Table H renumbered to Appendix A, Table I and new Appendix A, Table H Added at 31 Ill. Reg. 4063, effective February 23, 2007)

<sup>&</sup>lt;sup>b</sup> Metropolitan area means a populated area, as defined in Section 742.200, (other than the City of Chicago) that is located within any county in a Metropolitan Statistical Area listed in Appendix A, Table G, footnote a.

<sup>&</sup>lt;sup>c</sup> Non-Metropolitan area means a populated area, as defined in Section 742.200, that is not located within any county in a Metropolitan Statistical Area listed in Appendix A, Table G, footnote a.

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

IEMA Incident # (6- or 8-digit):	2002	2-0431	EPA LPC # (10-digit):	1631405021
Site Name: MotoMart - Swans	ea			
Site Address (not a P.O. Box):	1324 North II	linois		
City: Swansea	County:	St. Clair	Zip Code	: 62221
record and a second				
Leaking UST Technical File				
Leaking UST Technical File  Tier 2 Calculation Information				
Tier 2 Calculation Information				
		7,8,9,10,17,18,19,2	0,21,22,24	
Tier 2 Calculation Information	S28): <u>S5,6,7</u>		0,21,22,24	
Tier 2 Calculation Information Equation(s) Used (ex: S12,S17, Contact Information for Individual	S28): <u>S5,6,7</u>		0,21,22,24	
Tier 2 Calculation Information Equation(s) Used (ex: S12,S17,	S28): <u>S5,6,7</u>		0,21,22,24	
Tier 2 Calculation Information Equation(s) Used (ex: S12,S17, Contact Information for Individual	S28): <u>S5,6,7</u>		0,21,22,24 	
Tier 2 Calculation Information Equation(s) Used (ex: S12,S17, Contact Information for Individual CWM Company, Inc., VES	S28): <u>S5,6,7</u>	ned Calculations:		

/// / / / / / / / / / / / / / / / / /	
- Mass Limit Acreage other than defaults m	rust always be rounded up.
- Failure to use site-specific parameters wh	nere allowed could affect payment from the UST Fu
- Maps depicting source width, plume dime	ensions, distance, etc. must also be submitted.

AT (ingestion)	= Residential = 6	yr
	Con. Worker = 0.115	yr
AT (inhalation)	= Residential = 30	уг
	Con. Worker = 0.115	уг
AT <sub>c</sub>	= 70	yr
BW	= Res. (NonCarcinogen) = 15	kg
	Res. (Carcinogen) = 70	kg
	Con. Worker = 70	kg
C <sub>set</sub> =	Benzene = 1255.7	mg/kg
	Toluene = 708,287	mg/kg
	Ethylbenzene = 389,639	mg/kg
	Total Xylenes = 300.123	mg/kg
	MTBE = 21018.967	mg/kg
	Naphthalene = 100,568	mg/kg
		mg/kg

da		=	3.048	m
ds		=	3.048	m
DA	=	Benzene	= 0.00129967021009136	cm <sup>2</sup> /s
		Tolue	ne = 0,000790137682765876	cm <sup>2</sup> /s
		Ethylbenze	ne = 0.000474802231720363	cm <sup>2</sup> /s
		Xylen	es = 0,000327009464361197	cm <sup>2</sup> /s
		MTE	BE = 0.000268730620195097	cm <sup>2</sup> /s
		Naphthale	ne = 1.62697528722497E-05	cm <sup>2</sup> /s
				cm <sup>2</sup> /s
				cm <sup>2</sup> /s
				cm <sup>2</sup> /s
				cm <sup>2</sup> /s

Cw	=	Benzene = 0.1	mg/L
		Toluene = 20	mg/L
		Ethylbenzene = 32,087	
		Total Xylenes = 545,678	
		MTBE = 0.576	27.74
		Naphthalene = 9 083	
		Ivapinitaletie - 5 odo	mg/L
			mg/L
			250 1
			mg/L
ď	=	10.135	mg/L
			m
ED (inhalation of	=	Residential = 30	yr.
carcinogens)		Con. Worker = 1	yr
ED (ingestion of	=	Residential = 6	yr.
noncarcinogens)		Con. Worker = 1	yr
ED (inhalation of	=	Residential = 30	yr
noncarcinogens)		Con. Worker = 1	yr
ED (ingestion of	=	Residential = 30	yr
groundwater)		Con. Worker = 1	yr
ED <sub>M-L</sub>	=	70	yr
EF	=	Residential = 350	d/yr
		Con. Worker = 30	d/yr
F(x)	=	0.194	unitless
foc	=	0,0058	g/g
GW <sub>obj</sub>	=	Benzene = 0.005	mg/L
		Toluene = 1	mg/L
		Ethylbenzene = 0.7	mg/L
		Total Xylenes = 10	
		MTBE = 0.07	mg/L
		Naphthalene = 0.14	mg/L
			mg/L
H.	=	Benzene = 0.23	unitless
		Toluene = 0.271	unitiess
		Ethylbenzene = 0.324	unitless
		Total Xylenes = 0.271	unitless
		MTBE = 0.0241	unitless
		Naphthalene = 0.0198	unitless
		Charles and the Market	unilless
			unitless
			unitless
			unitless
i	=	0.084137931	m/m
- 1	=	0.3	m/yr
IM-L	=	0.18	m/yr
IF <sub>soil-adj</sub>	=	114	(mg-yr)/(kg-
IR <sub>soil</sub>	=	Residential = 200	mg/d

	-	Benzene = 0.088	cm²/s	
D <sub>i</sub>	-			
		Toluene = 0.087		
		Ethylbenzene = 0.075		
		Total Xylenes = 0.0735		
		MTBE = 0.102		
		Naphthalene = 0.0000075		
			cm <sup>2</sup> /s	
			cm <sup>2</sup> /s	
			cm <sup>2</sup> /s	
			cm <sup>2</sup> /s	
D <sub>w</sub>	=	Benzene = 0.0000102		
		Toluene = 0,0000086	cm²/s	
		Ethylbenzene = 0,0000078	cm <sup>2</sup> /s	
		Total Xylenes = 0.00000923	cm <sup>2</sup> /s	
		MTBE = 0.000011	cm <sup>2</sup> /s	
		Naphthalene = 0.0000075		
		Valentherena consessor	cm <sup>2</sup> /s	
			cm²/s	
			cm²/s	
			cm <sup>2</sup> /s	
DF	=	4 574000425	unitless	
ED (ingestion of	=	1.574829435		
carcinogens	-	Con. Worker = 1	yr yr	
Koc	=	Benzene = 50		
100		Toluene = 158		
		Ethylbenzene = 320		
		Total Xylenes = 398		
		MTBE = 11.5		
		Naphthalene = 500		
		110000000000000000000000000000000000000	cm3/g or L/kg	
			cm3/g or L/kg	
			cm3/g or L/kg	
			cm <sup>3</sup> /g or L/kg	
Ks	=	540	m/yr	
1	=	67.056	m	
PEF	=	07.000	m³/kg	
PEF'	=		m³/kg	
Q/C (VF equations)	=	Residential = 68.81	(g/m <sup>2</sup> -s)/(kg/m <sup>3</sup>	
aro (vi oquations)		Con. Worker = 85.81	(g/m <sup>2</sup> -s)/(kg/m <sup>2</sup>	
Q/C (PEF equations)	=	Com tromer contr	(g/m <sup>2</sup> -s)/(kg/m <sup>3</sup> )	
RfC (mg/m³)		Chronic Sub	chronic	
Benzene	=		0.08	
Toluene	=	5	5	
Ethylbenzene	=	1	9	
Total Xylenes	=	0,1	0,4	
MTBE	=	3	2.5	
Naphthalene	=	0.003	0.003	
	=		NA	
	=		NA	
			NA	
	=		NA	

Incident #	2002-0431
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lR <sub>w</sub>		=	Residential = 2	L/d
K		=	13.56048	m/yr
K <sub>a</sub> (non-loniz		=	Benzene = 0.29	cm <sup>1</sup> /g or L/kg
organcis	)		Toluene = 0.9164	(xn²/g or L/kg
			Ethylbenzene = 1.856	cm²/g or L/kg
			Total Xylenes = 2,3084	ram²/g or L/kg
			MTBE = 0.0667	(sm²/g or L/kg
			Naphthalene = 2.9	cam <sup>3</sup> /g or L/kg
				cm²/g or L/kg
				izm <sup>1</sup> /g or L/kg izm <sup>1</sup> /g or L/kg
				tam <sup>2</sup> /g or L/kg
K <sub>d</sub> (ionizing org	ranicel	=		cm²/g or L/kg
K <sub>d</sub> (inorgan		-		cm <sup>2</sup> /g or L/kg
VF'	_	_	- Wa-1	m <sup>3</sup> /kg
VE	=	-	Benzene = 413,79	
			uene = 530.696	m <sup>3</sup> /kg
			Ibenzene = 684.606	m³/kg
			al Xylenes = 824.93	m³/kg
		M	TBE = 909,994	m <sup>3</sup> /kg
	Naph	nthal	ene = 3698.341	m <sup>3</sup> /kg
				m <sup>3</sup> /kg
				m <sup>3</sup> /kg
				m <sup>3</sup> /kg
				m³/kg
VM <sub>M-L</sub>	=		#VALUE!	m³/kg
- INNEL			#VALUEI	m³/kg
			#VALUE!	m³/kg
			#VALUE!	m³/kg
				m <sup>3</sup> /kg
			#VALUE!	
			#VALUE!	m³/kg
				m <sup>3</sup> /kg
				m <sup>3</sup> /kg
				m <sup>3</sup> /kg
				m <sup>3</sup> /kg
VF'M-L	=		#VALUE	m³/kg
			#VALUE	m <sup>3</sup> /kg
			#VALUE!	m <sup>3</sup> /kg
			#VALUE!	m³/kg
			#VALUE!	m <sup>3</sup> /kg
				m <sup>3</sup> /kg
			#VALUEI	
				m <sup>3</sup> /kg
				m³/kg
				m <sup>3</sup> /kg
				m <sup>3</sup> /kg
η		=	0,619	L-pore/L-soll
$\theta_a$		=	0.292	Lair/Lsoil

RfD <sub>o</sub> mg/(kg-d)		Chronic	Subchronic
Benzene	=	0.004	0.012
Toluene	=	0.08	0.8
Ethylbenzene	=	0.1	0.05
Total Xylenes	=		0,4
MTBE	=	0.01	0.1
Naphthalene	=	0.02	0.6
	=		NA
	=		NA
	=		NA
S	=	Benzene =	the state of the s
		Toluene =	
		Ethylbenzene =	
		Total Xylenes =	
		MTBE = 5	
		Naphthalene	
			mg/L
			mg/L
			mg/L
DE.	=	Danzasa = C	mg/L
SFa	-		),055 (mg/kg-d)
			= NA (mg/kg-d)
		Ethylbenzene = 0	
		Total Xylenes	= NA (mg/kg-d) = NA (mg/kg-d)
		Naphthalene	= NA (mg/kg-d)
			(mg/kg-d)
			(mg/kg-d)* (mg/kg-d)*
Т	-	Residential = 9.5	(mg/kg-d)* E08 s
	-	Con. Worker = 3.6 x	
T <sub>M-L</sub>	12	30	yr
THQ	=	1	unitless
TR	=	1.00E-06	unitless
Um	=	4.69	m/s
URF	=	Benzene = 7.8 x	
Ut	=	11.32	m/s
V	=	0,5	unitless
VF =		Benzene = 539	
		Toluene = 69	
		Ethylbenzene = 891	
		Total Xylenes = 1074	
		MTBE = 1185	
		Naphthalene = 4817	3
			m <sup>3</sup> /kg
			m <sup>3</sup> /kg
			m <sup>3</sup> /kg
			m³/kg

Incident # 2002-0	=	0.327	L.water/Lsoil
Pb	=	0.967	kg/l or g/cm3
ρs	=	2.54	g/cm <sup>3</sup>
Pw	=	1	g/cm <sup>3</sup>
1/(2b+3)	=	0.085	unitless

### PREVIOUSLY IMAGED

## Illinois Enviromental Protection Agency Leaking Underground Storage Tank Program RBCA input Parameters for Use with Tier 2 Calculations

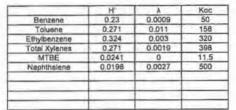
EMA Incident # (6- or 8-digit):	2002-04	31	EPA LPC # (10-digit):	1631405021
ike Name: MotoMart - Swanse	8			
ille Address (not a P.O. Box):	1324 North Illinois			
ity: Swansea	County:	St. Clair	Zip Code	62221
eaking UST Technical File				
ler 2 Calculation Information				
ior & Calculation intermediate			na pignar	
to the latest the state of the latest the la				
quation(s) Used (ex: R12,R14.F	R16, R17, F	R18,R19, R21, R22,	R23, R24,R26	
quation(s) Used (ex: R12,R14,f	A STATE OF THE STA		R23, R24,R26	
contact Information for Individua	A STATE OF THE STA		R23, R24,R26	
contact Information for Individua	A STATE OF THE STA	alculations:		
contact Information for Individua	A STATE OF THE STA		R23, R24,R26	
contact Information for Individua	Who Performed Ca	alculations:		
contact information for individual WM Company, Inc., VES and Use: Residential croundwater: X Class I	Who Performed Ca	alculations:	Loamy Sand	
contact Information for Individual  CWM Company, Inc., VES  and Use: Residential  Groundwater: X Class I  Mass Limit: Yes X	Who Performed Ca	Soll Type:  Class II  Yes, then Specify A	Loamy Sand	
contact information for Individual WM Company, Inc., VES and Use: Residential Groundwater: X Class I	Who Performed Ca	Soll Type.	Loamy Sand	
contact information for Individual  WM Company, Inc., VES  and Use: Residential  Froundwater: X Class I  tass Limit: Yes X  bijective from S17 used in R267	Who Performed Ca	Soil Type:  Class II  Yes, then Specify Ar	Loamy Sand	

AT <sub>e</sub>	=	70	уг
ATa	-	Residential = 30	yr
		Con. Worker = 0.115	yr.
BW	- 4	70	yr
Canuca	- 2	See Attached	mg/L
Cpt		See Attached	mg/L
d	=	100	cm

erf	=	See Attached	unitless
l <sub>oc</sub>	=	0.0058	9/9
GW <sub>mmp</sub>	-	See Attached	mg/L
GW <sub>source</sub>	=	See Attached	mg/L
Н'	=	See Attached	cm3/cm³_
1	+	0.084137931	cm/cm
	=	30	cm/yr
IR <sub>as</sub>	=	20	m³/d
IR <sub>ent</sub>	-	Residential = 100	mg/d
IPS AGE	-	Con. Worker = 480	mg/d
IR.		Residential = 2	L/d
К	-	3.715	cm/d
		1356,048	cm/yr
Kac	=	See Attached	cm³/g or L/kg
K <sub>s</sub> (non-ionizing organics)	=	See Attached	cm <sup>3</sup> weed good
k <sub>a</sub> (sercing sigance)	*	Not Applicable	cm <sup>3</sup> man / O sea
K <sub>e</sub> (inerganica)	=	Not Applicable	cm <sup>2</sup> /Pros
L,	=	100	cm
LF	=	See Attached	ingl_ kimple_
M	=	0.5	mg/cm <sup>2</sup>
Pe	=	6.9 - 10 14	g/cm²-s
RAF <sub>d</sub>	=	0.5	unitiess
a,	=	See Attached	cm
o,	=	See Attached	cm
a,	, ti	See Attached	cm
A	=	See Attached	d-1
π		3.1416	
1		9.46 108	5

Day		See Allached	cm²/s
Diverse	- =	See Attached	cm²/s
D. eff	=	See Altached	crn²/s
ED		Residential = 30	yr
ED	-	Con. Worker = 1	yr
EF	-	Residential = 350	d/yr
		Con. Worker = 30	d/yr

RAF <sub>d</sub> (PNAs)		0.05	unitless
RAF <sub>d</sub> (inorganics)	=	0	unitless
RAF <sub>a</sub>	=	1	unitleas
RBSL <sub>ab</sub> (carcinoginic)	=	See Attached	µg/m <sup>3</sup>
RBSL (nencaronograd)		See Attached	µg/m³
RfD <sub>i</sub>		See Attached	mg/kg-d
SA		3,160	cm²/d
Sa	=	200,0	cm
S.	=	9,448.8	cm
SF,	=	See Attached	(mg/kg-d) <sup>-1</sup>
SF,		See Attached	(mg/kg-d) <sup>-1</sup>
THO	=	1	unitiess
TR	2	1.00E-08	unitless
U	=	0.7269	cm/d
Use	=	225	cm/s
Ugw	=	1356.132	cm/y
VFp	=	3.97133E-12	kg/m³
VF same	=	See Attached	(mg/m²_)/mg/se_ w sg/
VF <sub>as</sub>	=	See Attached	kg/m3
W	=		cm
W		0.286	Gwater/Dook
Ő <sub>at</sub>	=	200	cm
ōg₩	=	200	cm .
B <sub>as</sub>	=	0.153438	cm3 /cm3
θ,,,,	=	0.276562	cm³_Jcm³_
θ <sub>r</sub>	2	0.43	cm³/cm³
Pe	4	0.967	g/cm <sup>3</sup>
Pw		1	g/cm <sup>3</sup>



	Capres from	Benzene R26					erf: 5_/(4	erf; s_/(2
Location	S17 (mg/L)	C(x) (mg/L)	X (cm)	a, (cm)	a, (cm)	a <sub>z</sub> (cm)	√[n, · X])	√[α, X])
BH1	0.217	0.005	3535.68	353.568	117.856	17.6784	0.99999977	0.6113504
BH2	0.007	0.005	304.8	30.48	10.16	1.524	1	1
ВНЗ	0.033	0.005	1767.84	176.784	58.928	8.8392	1	0.9153170
BH5	0.034	0.005	1767.84	176.784	58.928	8.8392	1	0.9153170
BH9	0.022	0.005	1402.08	140.208	46.736	7.0104	1	0.9702883
				1				
	5							

			Benzene R	26 Modeled C	Broundwater		
Location	C(x) (mg/L)	X (cm)	a, (cm)	a <sub>y</sub> (cm)	a <sub>t</sub> (cm)	en: s_/(4 √(a, XI)	erf: s, / (2 √[a, X])
MW1	8.300	8077.2	807.72	269,24	40,386	0.97650755	0.29409279
MW2	0.269	3779.52	377.952	125.984	18.8976	0.99999871	0.5800175
MW4	2.000	6126.48	612,648	204.216	30.6324	0.99717928	0.38117227

		hylbenzene R	20 Modeled	Gloundwate	HOIL VELUCE	i modeled 3	erf; 5_1(4	erf: s_/(2
Location	C <sub>source</sub> from S17 (mg/L)	C(x) (mg/L)	X (cm)	a <sub>s</sub> (cm)	a, (cm)	α <sub>2</sub> (cm)	√[a, X])	√[o, X])
							_	
	-							
		-						
		-			-			
		F						
_							-	
						3		

			Ethylbenzene	R26 Modele	d Groundwat	er	
Location	C(x) (mg/L)	X (cm)	a <sub>x</sub> (cm)	a <sub>y</sub> (cm)	a, (cm)	√(a, x)	√[σ, X])
MW1	3.240	457.2	45.72	15.24	2.286	1	1
MW4	3.830	487.68	48,768	16.256	2.4384	1	1
				-			
_	1						-
	-	_					
					57		

	To from	tai Xylenes F	26 Modeled	Groundwate	from Vertic	Modeled S	OIIS	Taka ia
Location	Caputa from	C/w /mmc :	V Inm	- (	- /	n fami	erf: 5,/(4	erf; s, /(2
Location	517 (mg/L)	C(x) (mg/L)	X (cm)	a, (cm)	a, (cm)	a <sub>1</sub> (cm)	√[α, X])	√[α, · X])
BH1 BH5	0.3005					-		
DIJU	0.4710							
				5				
						-		
						-		8
				- 1	-			
		1		H		2		
				1				
	-							
						_	-	
	-	_			-	-		
			-	-				
_		Ŧ	otal Vulance	R26 Modele	Coundwat			
			Otal Aylelles	NEG INOGER	Olouliowa	OI.		
							arf 6 1/2	
Location	C(x) (mg/L)	X (cm)	n. (cm)	a (cm)	n. (cm)	erf: 5,/(4-	erf: s_/(2	
Location	C(x) (mg/L)	X (cm)	a, (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)		erf: s/(2 ([a, · X])	
Location	C(x) (mg/L)	X (cm)	a, (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	erf: S_/(2 \([a, · X])	
Location	C(x) (mg/L)	X (cm)	a <sub>r</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	erf: S <sub>a</sub> /(2 √(a, · X))	
Location	C(x) (mg/L)	X (cm)	a, (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	erf: S <sub>e</sub> / (2 √(a, - X))	
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	erf: s./(2 	
Location	C(x) (mg/L)	X (cm)	a, (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	eff: s_/(2 \([a, \ X])	
Location	C(x) (mg/L)	X (cm)	a, (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	eff: s_/(2 ([a,-X])	
Location	C(x) (mg/L)	X (cm)	a <sub>r</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	ed: s_/(2 √[a, · X])	
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	ed: s_/(2 √[a,·X])	
Location	C(x) (mg/L)	X (cm)	a <sub>e</sub> (cm)	a, (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	erf: s./(2 \[a, \x)	
Location	C(x) (mg/L)	X (cm)	a, (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	erf: 5_/(2- 	
Location	C(x) (mg/L)	X (cm)	o <sub>z</sub> (cm)	a, (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	erf: s_/(2	
Location	C(x) (mg/L)	X (cm)	a, (cm)	a, (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	erf: s_/(2	
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	enf: s_/(2	PREVIOUSLY
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	enf: s_/(2	PREVIOUSLY IMAGE
Location	C(x) (mg/L)	X (cm)	a, (cm)	a, (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	enf: s_/(2	PREVIOUSLY IMAGE
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	erf: s_/(2	PREVIOUSLY IMAGE
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a <sub>r</sub> (cm)	a <sub>2</sub> (cm)	erf: 5,/(4-	enf: s_/(2	PREVIOUSLY IMAGE
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a, (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	enf: s_/(2	PREVIOUSLY IMAGE
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	enf: s_/(2	PREVIOUSLY IMAGE
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a <sub>r</sub> (cm)	a <sub>2</sub> (cm)	erf: 5,/(4-	enf: s_/(2	PREVIOUSLY IMAGE
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a, (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	enf: s_/(2	PREVIOUSLY IMAGE
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a, (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	enf: s_/(2	PREVIOUSLY IMAGE
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	ef: s_/(2	PREVIOUSLY IMAGE
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a <sub>r</sub> (cm)	a <sub>2</sub> (cm)	erf: 5,/(4-	enf: s_/(2	PREVIOUSLY IMAGE
Location	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a, (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-	enf: s_/(2	PREVIOUSLY IMAGE

	C <sub>source</sub> from	1				110000	erf: 5,/(4	erf; S., / (2
Location	S17 (mg/L)	C(x) (mg/L)	X (cm)	a <sub>x</sub> (cm)	a <sub>y</sub> (cm)	a* (cw)	√[a, X])	√[a, X])
								-
-								
								1
		-						
						-		
					-			
					-			

		- 0	Naphthalene	R26 Modeles	Groundwat	er	
ion	C(x) (mg/L)	X (cm)	a <sub>x</sub> (cm)	a <sub>y</sub> (cm)	a <sub>2</sub> (cm)	erf: S., / (4 - √[a, : X])	erf: S_/(2 √[a, X])
1	0.387	304.8	30.48	10.16	1.524	1	1
4	1.230	731,52	73.152	24.384	3.6576	1	0.99996909
1							
-							
-	-						
-							
-							
				1 1			
			-				

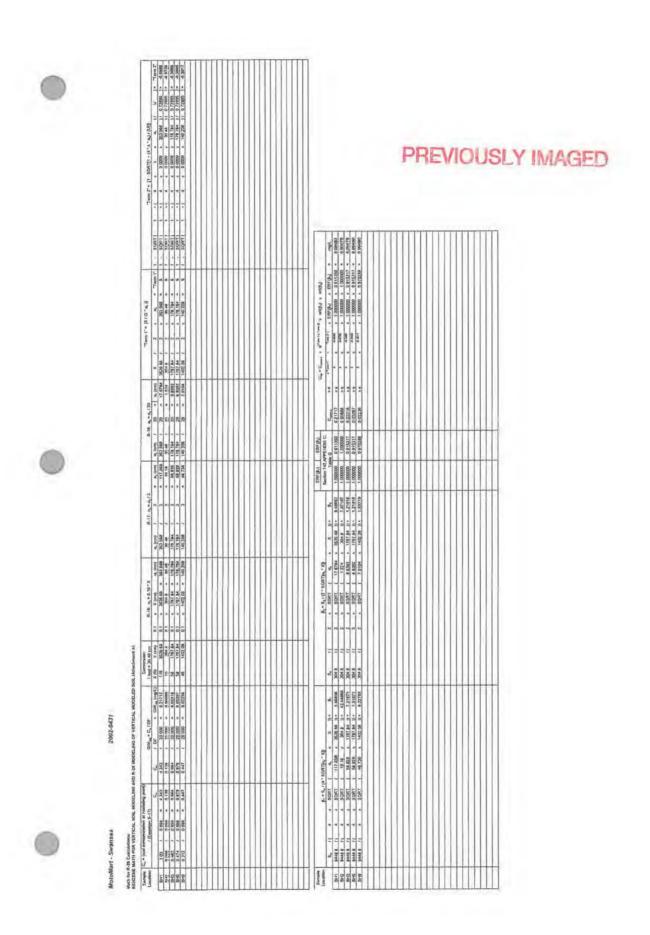
Location	C <sub>source</sub> from S17 (mg/L)	C(x) (mg/L)	X (cm)	a <sub>s</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: S. / (4 √[a, X])	erf: s_/(2- - (a, -X))
BH9	0.0001							
						6		
					= = 5			
			1					
						1		
						erf: S <sub>4</sub> /(4-	erf; s_/(2-	
Location	C(x) (mg/L)	X (cm)	σ <sub>x</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: s./(4- √(a, ×1)	erf; s_ / (2 *[a, X])	
Location	C(x) (mg/L)	X (cm)	a <sub>x</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: s.,/(4- √[a, ×])	erf: s. / (2 \[a, X])	
Location	C(x) (mg/L)	X (cm)	a <sub>x</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: S <sub>*</sub> /(4- √[a, X])	erf: s., / (2: \[a, X])	
Location	C(x) (mg/L)	X (cm)	σ <sub>x</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: 5, / (4- √[a,-X])	erf; S_ / (2 \[a, X])	
Location	C(x) (mg/L)	X (cm)	σ <sub>z</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: s., / (4- √[a,-X])	erf: s_/(2- √(a, X))	
Location	C(x) (mg/L)	X (cm)	σ <sub>a</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: 5, / (4- √[a, ×])	erf: s_ / (2 √[a, X])	
Location	C(x) (mg/L)	X (em)	o, (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: 5./(4- √[a,-X])	erf; s., / (2 √(a, X))	
Location	C(x) (mg/L)	X (em)	a <sub>z</sub> (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4- √[a,-X])	erf; s_ / (2- √(a, -X))	
Location	C(x) (mg/L)	X (em)	a, (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4- √[a,-X])	erf; s_ / (2- √(a, -X))	
Location	C(x) (mg/L)	X (em)	a, (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4- √[a,-X])	erf; s_ / (2- √(a, -X))	
Location	C(x) (mg/L)	X (em)	g <sub>s</sub> (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4- √[a,-X])	erf; s_ / (2- √(a, -X))	
Location	C(x) (mg/L)	X (cm)	g <sub>s</sub> (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4- √[a,-X])	erf; s_/(2- √(a,-X))	
Location	C(x) (mg/L)	X (cm)	g <sub>s</sub> (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4- √[a,-X])	erf; s_ / (2 - √(a, - X))	PREVIOUSLY IMAGE
Location	C(x) (mg/L)	X (em)	g <sub>s</sub> (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4- √[a,-X])	erf; s_ / (2- √(a, -X))	PREVIOUSLY IMAGE
Location	C(x) (mg/L)	X (cm)	g <sub>s</sub> (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-\([a,-X])	erf; s_ / (2 - √(a, - X))	and the second second
Location	C(x) (mg/L)	X (cm)	g <sub>s</sub> (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5,/(4-\([a,-X])	erf; s_ / (2 - √(a, - X))	PREVIOUSLY IMAGE
Location	C(x) (mg/L)	X (cm)	g <sub>s</sub> (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5./(4\[a, X])	erf; s_ / (2 - √(a, - X))	and the second second
Location	C(x) (mg/L)	X (cm)	g <sub>s</sub> (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5./(4	erf; s_ / (2 - √(a, - X))	and the second second
Location	C(x) (mg/L)	X (cm)	g <sub>z</sub> (cm)	a <sub>r</sub> (cm)	a <sub>z</sub> (cm)	erf: 5./(4	erf; s_/(2- √[a₂-X])	and the second second

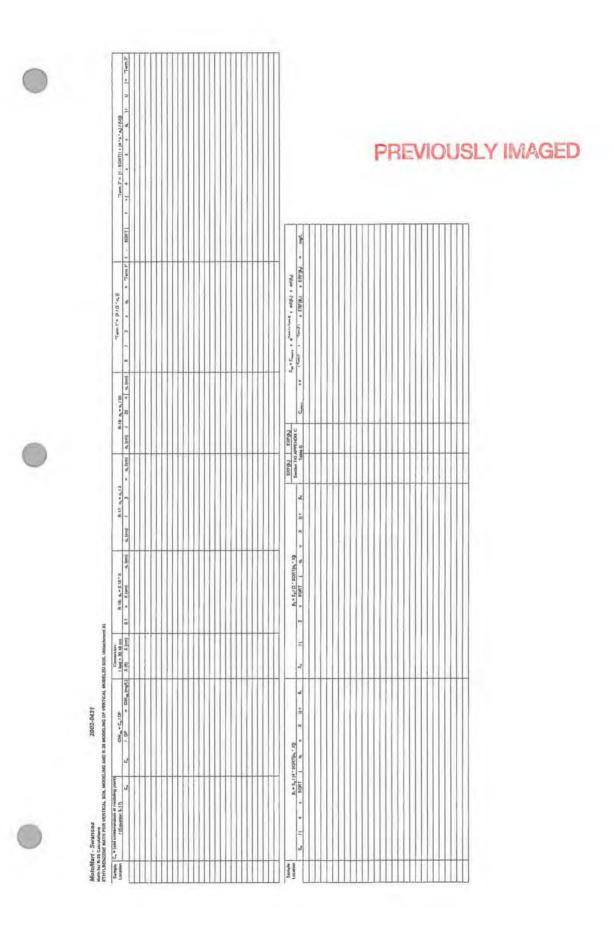
Location	S17 (mg/L)	C(x) (mg/L)	X (cm)	a <sub>z</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf; S_1(4	erf: s_/(2
BH2	0.0000							
BH9	0.0000							
BH11	0.0000				L.			
BH12	0.0000							
BH14	0.0000							
BH16	0.0000							
								-
						1		-
Location	C(x) (mg/L)	X (cm)	a, (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: s, / (4	erf: s_/(2	

ocation	C(x) (mg/L)	X (cm)	a <sub>s</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: s, / (4	erf; s_/(2 √(a, X))
				_	_		
_	-						
_							
_							
_	-						
				3			

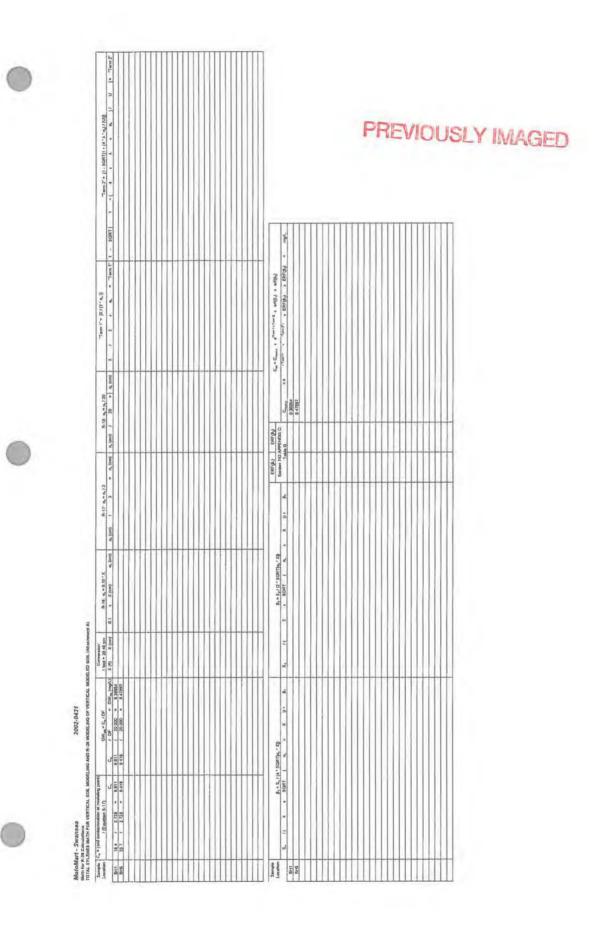
Location	S17 (mg/L)	C(x) (mg/L)	X (cm)	a, (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: S_/(4 √[a, X])	erf: S_/(2 √[a, X])
BH2	0.0000							
BH9	0.0000							
BH12	0,0000							
- /- /-	Cto town 1	M (am)	- ()	- ()	- ()	erf; s_/(4 -	erf; s, / (2	

Location	C(x) (mg/L)	X (cm)	a <sub>x</sub> (cm)	a <sub>y</sub> (cm)	a <sub>z</sub> (cm)	erf: s. / (4 · · · · · · · · · · · · · · · · · ·	erf; S <sub>e</sub> / (2 √[a <sub>1</sub> · X])
					-		
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			-				
	1						-
			-				
_			-				

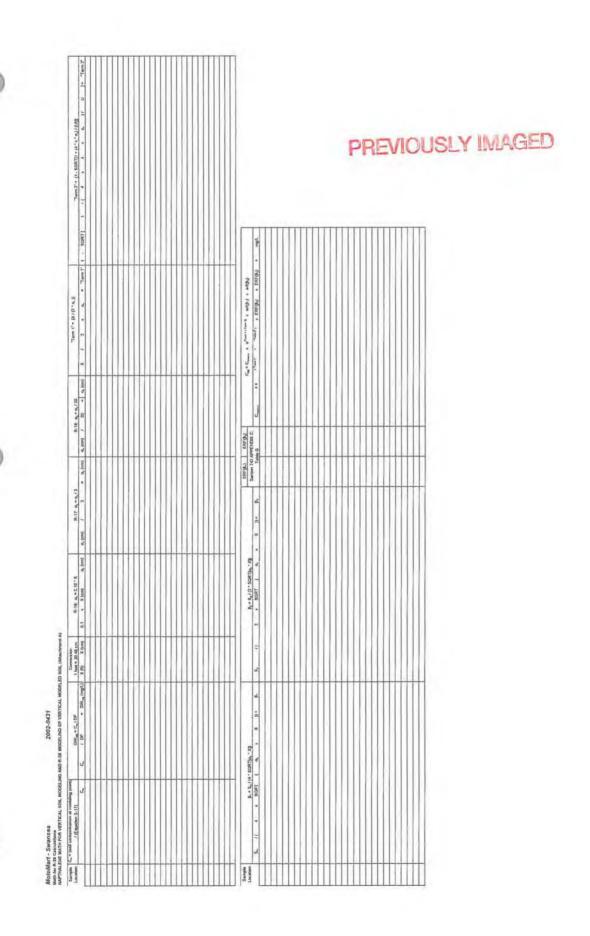




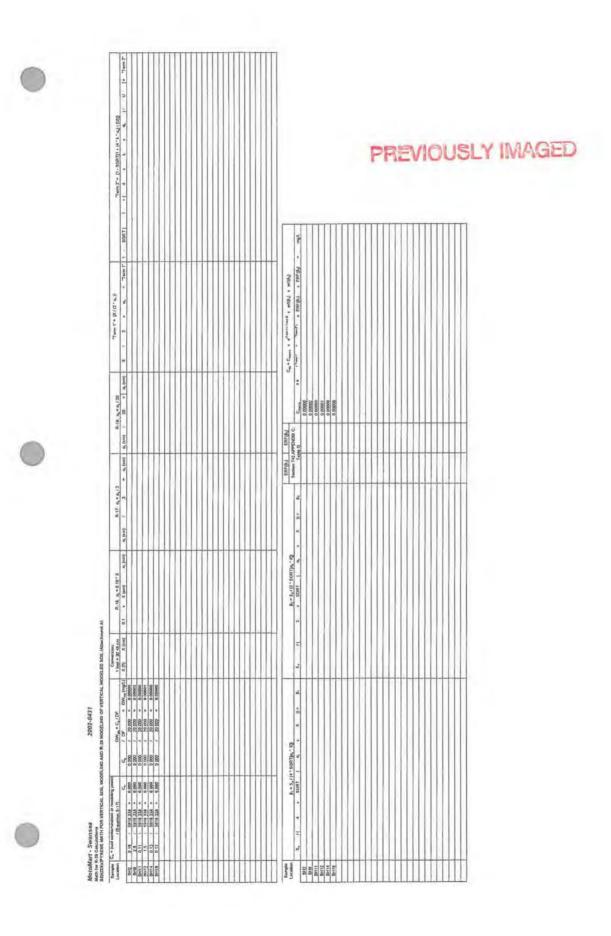
8.75 (200) 8.75 (200) 8.75 (200) 8.75 (200) 8.75 (200) 8.75 (200) 8.75 (200) 8.75 (200) 8.75 (200)	Ka = ka   Farity   Ka = ka   F	26. (1 2 1504), 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1967-254   Ref. a. e   1967-254   Ref. a. e	R. 18, 18, 20, 10, 15, 15, 15, 15, 15, 15, 15, 15, 15, 15	3 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2



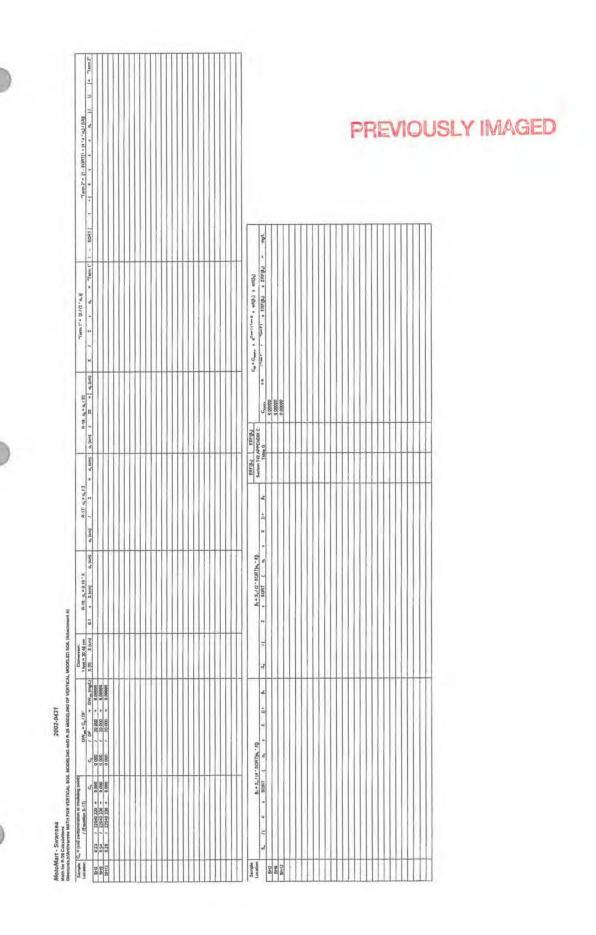
A 1 1001   3 1 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Sample Location (TW Vean	COV Vehan	1 Spg = 30 48 cm X (ft) X (sm)	R.18. n, = 0.10° X 0.1 x X (ort) n, fami	R-17: c <sub>1</sub> =c <sub>2</sub> /3 c <sub>2</sub> (tert) / 3 = 1	1 (4.18. n <sub>4</sub> = n <sub>4</sub>   250 m <sub>4</sub>   (200)	Territ = [5/13'44)	- Tabe 1 - 10811	IORT! 1	TamaT = [1 : 2007]1 - (4 · A · A) / (5)]
S. 15 4 1 100T ( S. 1 8 J) P. D. 2, 16 2 1500T ( S. 1 8 J) P.	T									
\$. 17 4 2 1997   5 2 3 3 4 2 4 2 1997   5 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3										
\$. 17. 4 * 1507 1 * 3 * 1507 1	T									
\$, 15	T									
5. 1/2 4 1. Edith, 30 8 30 10 2. Edith, 30 10 10 10 10 10 10 10 10 10 10 10 10 10										
2, 17 4 1 104 1 2, 18 104 1 2,	T									
5. If 4 a 104T ( 5, 10 * 260T ( 5, 10 * P. B. 104T ( 5 * 104T ( 5, 10 * 104T ( 5,	T									
5. 1; 4 a 104T ( 5, a x )) b p. 2, (4 2 104T ( 15, a x )) b p.	1									
5. 1/1 1 1.00Th - 20 1 1 2 1.00Th - 20 1 1 2 1.00Th - 20 1 2 1	Ħ									
5. 1; 4 . 1077 ( 1.2 1007 ) 2. 1; 3 . 1077 ( 1.3 1007 ) 2. 1; 4 . 1077 ( 1.3 1077 ) 2. 1; 5 . 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	T									
5. 1/2 4 2.5077 (1.2077) 2. K 3) 2. K 3. (1. 3 15007) 1. B. B. B. B. B. B. Steel Control Carbon	П									
5. 17 4 1 100T 1 1 2 10T 1 2 10T 1 2 10T 1 2 10T 1 2 1 1	T									
S. 2; 4 a 104T (S. 2 K R) B. B. 3, 11 2 156T ( S. 2 K R) B. B. Comp. 18 17 17 17 17 17 17 17 17 17 17 17 17 17	Savedle L	penter		F. + S. / (4 * 50479c. * X)		5, + S. / D. S. D. S. / D.		ERGRA ERF	The state of	j
				a sour a	* K 11+	11 3	* X 15* Pr	Section 144.APTERIOR		as these tests a catch, a catch, a cont.
			Ш							
		I							+	
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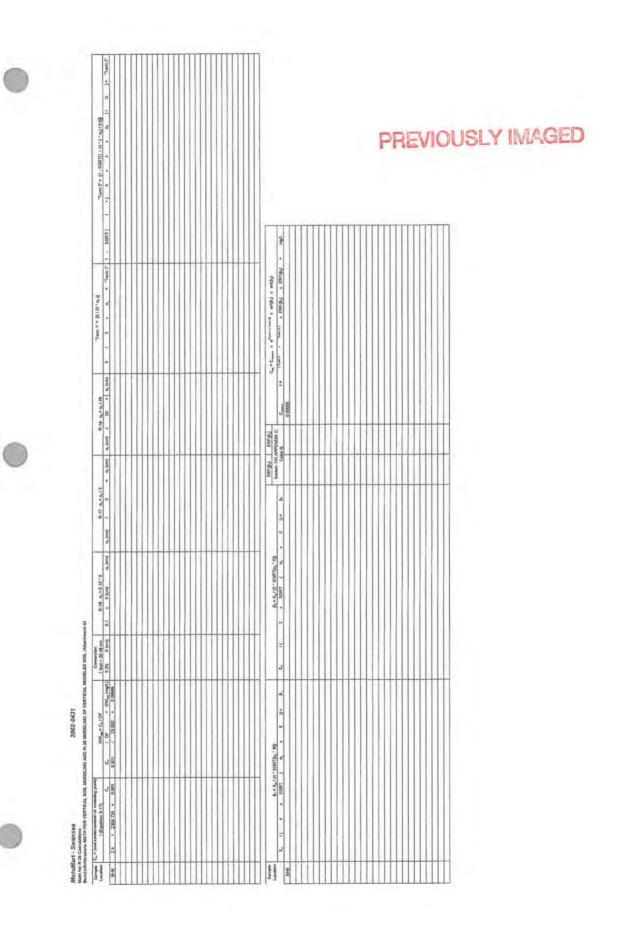
(W)	N = 8,1 (* 100 Ph. *)   N = 1   N =
7 10 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	
8 (7em V 1 - 2001)	
P = = = = = = = = = = = = = = = = = = =	(1990) 1 - 1990 1 - 1

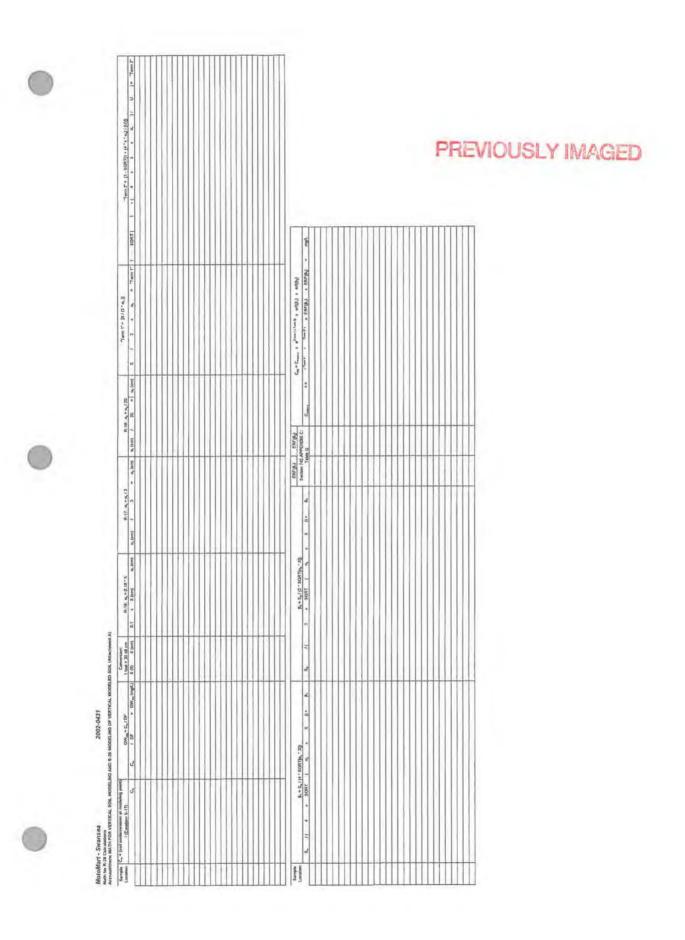


8.4 th, th, co th to X	4 3300T ( a, a X ))* B, E, I(2' 200TG, Y) ( a, a X ))* B, E, I(1' 3' 2500TG, Y) ( a, a X ))* B,
	3 × 8600 ( (G. 10. 1000) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )
G, (kiril) e, (kiril) f 3 e s, (kiril)	- X 3 2.



+	Sarryles Corvolate Communication (Communication Computer Corvolate Treatment Corvolation Communication Communicati	Frite m, = 0.10 · X. (2m)	$R_1(\xi rrt)$ $f_1$ $g_2$ $g_3$ $f_2$ $g_4$ $g_{11}(\xi rrt)$ $g_4(\xi rrt)$ $g_4(\xi rrt)$ $f_1$ $g_2(\xi rrt)$ $f_2$	H-18 a, a, 120	Territ (X)	12.0.3) 13. 1. 1. 2061	Twee 2 * (1 - 508T) > (4 * 5 - 50.00)
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Sarrole Location		B 2,744 - 30879, - 3,0		5, * 5, (7 · 30RT)4, * x)		ERFOR ERFOR	5-5
	÷	4 * \$087 ( E <sub>1</sub>	я ж ж я	1111	¥ *	e e	Compared to the compared to th





Location CW Vision	1 Seet = 30 45 cm   X (ft)   X (cm)	R-18: a, e 0.10 · X 0.1 · X (see) a, (cm)	R. (tm) 1 3 = 1	3 G, (em) / 25	Tarm 1"= [X10"4,1) X   2 s at, = Term 1" t + 5087;	7 - 1 1 mer.	Term 7 - 1 - 2087] - (4 - 4 - 6) (Q)
+							
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					100	ESPORT ERPORT	
Semple Location		B 2./(4 - 30917e, - X)				Section 742 APPENDIX C. Table	
	7		×.	5 <sub>6</sub> (( 2 +50RT (	п, е X )) • Ве	ø	Cases as them? testing a ENGLA a ENGLA, a might
1							

A Incident # (	6 or 8 digit)	2002-0431						
PA LPC # (10 dl	git)	1631405021						
Ite Name:		MotoMart - Swansea						
ilte Address:		1324 North Illinois						
Ity:		Swansea						
county:		St. Clair						
Ip Code:		62221						
SL Equations U	sed:	\$5,6,7,8,9,10,17,18,19,20,2	1,22,24					
RBCA Equations	Used:	R-1, R-2, R3						
contact information fo	or Individual who Performed Calc	dat CWM Company, Inc., VES						
and Use:		Residential & Construct	tion Worker					
Objective from S1	17 used in R26:	No						
Groundwater:		Class 1						
	Limit Equations:	Standard Equations		If Mass Limit, then Specifiy Acres:				
	ume for Mass Limit Eq.:	0.00			< use this # abo			
ate Data is Ente		July 26, 2016						
Entry	Description							
60.4	Holcomb Bulk Density (pc Dry Soil Bulk Density (g/cr	f), or n or kg/L): 1.5, or Gravel =2.0,	Shelby Tube Sand = 1.8, Sift =					
2.54	ps - Soil Particle Density		Reference					
0.619	Total Soil Porosity		0.619	0.619				
0.327	Water Filled Porosity		0.327	0.327				
0.292	Air Filled Porosity		0.292	0.327				
0.430	87 - Total Soil Porosity (RI	201	-					
- 19 3/12				25, Sand = 0.32 Silt = 0.40 Clay = 0.36	The same of the			
0.286	w - Average Soll Moisture USDA Soil Classification (		0.1. or. Subsurface	Sail (top 1m) = 0.1; Subsurface Soll (below 1 m) =				
Loamy Sand	USUA SOII CIRESTICATION	PICK FOR LIST)	-	2 1172 00	Entry			
0.00580	Fractional Organic Carbo	on (foc) in g/g		Organic Matter (%): Organic Matter (mg/kg):				
				Total Organic Carbon (g/g):	0.0058			
4.30E-05	Average Hydraulic Conductiv				177			
4.30E-05	Falling Hydraulic Conductivity		1					
	Rising Hydraulic Conductivity	(cm/sec)		Hydraulic Gradient Calculation	S			
0.08414	Hydraulic Gradient (0 02 for	sites with no groundwater)	Meters	MW-3	92.10			
10	da - Aquifer Thickness (ft)		3.048 m	MW-7	82.34			
10	d Depth of Source (ft) (Vertical	Thickness of Contamination)	3,048 m	Distance:	116			
	X - Distance along the centerline setback zone or surface water fro groundwater flow (ft) (RBCA)	of the groundwater plume emenating to m the source in the direction of	0 cm	5136100.				
220	L - Source Length Parallel	to Groundwater Flow (ft)	67.056 m					
310	Sw. Source Width -horizon		9448.8 cm					
C(x) - Concentre		idwater at distance X from the se		Surface Water				
	Benzene	MTBE						
	Toluene							
	Ethylbenzene							
	Total Xylenes							
	Chemicals of Con	cern						
Benzene	Naphthalene		1					
Toluene		Chrysene						
Ethylbenzene		Benzo(k)fluoranthene						
Total Xylenes		Indeno(1,2,3-cd)pyrene	1					
		The state of the s	1					
MTBE								

Groundwater Ingestion Equations

Cset Equations
Fugitive Dust Equations
Ingestion Equations

	Text discussion for "f", L, d <sub>a</sub> , d <sub>s</sub> , S <sub>w</sub> , S <sub>d</sub>
Hydraulic Gradient	The <b>Hydraulic Gradient</b> (i) was determined from an onsite survey of each of the groundwater monitoring wells. The riser elevations were determined and the depth to groundwater was noted in each well. This data was used to generate a potentiometric flow map with contour lines which show potentiometric head. A corresponding flow line, perpendicular to the contour lines, was determined between two known points of groundwater elevation. The hydraulic gradient was determined by the difference in elevation divided by the length of flow between the points.
Source Length	The Source Length Parallel to Groundwater Flow (L) was determined from the site map and analytical results. A value of 45.1104 m was used to encompass the length of contamination parallel to groundwater flow. This value is the distance between soil borings BH-1 and BH-2.
Aquifer Thickness	The Aquifer Thickness (d <sub>n</sub> ) is a site specific value determined by the length of the monitoring well screen. The Aquifer Thickness value used in the modeling equations was 3,048 meters.
Depth of Source	The Depth of Source (d <sub>3</sub> ) was determined from the analytical results and soil boring logs. A value of 3.048 m was used to encompass the vertical thickness of contamination based upon a clean soil sample at BH-1A, "hot" samples at BH-2B and BH-2C, and a clean soil sample at BH-2D. Thus the vertical thickness of soil contamination has been determined to be 3.048 m.
Source Width	The source width perpendicular to groundwater flow direction in the Horizontal Plane $(S_w)$ was determined from the site map and analytical results. A value of 3566, I6 cm was used to encompass the width of contamination in the horizontal plane. This value is the distance between clean wells MW-4 and and MW-6.
Source Depth	The source width perpendicular to groundwater flow direction in the Vertical Plane (S <sub>d</sub> ) was determined from the soil boring logs and analytical results. A value of 304.8 cm was used to encompass the width of contamination in the vertical plane based on the depths of contamination present and the PID readings from the bore logs.

Distance (X)

			BENZ	ENE				
	Soll Exceeds					Groundwater Exceeds	ances	
Location	Soil Concentration (mg/kg)	X (ft)	Gw <sub>obj</sub> (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	(ft)	G(x) (mg/L
BH1	3.03	116	0.217	0.0049	MW1	8,300	265	0.004
BH2	0.096	10	0.007	0.0048	MW2	0,269	124	0.004
ВН3	0.463	58	0.033	0.0048	MW4	2,000	201	0.004
BH5	0.474	58	0.034	0.0049				
BH9	0.312	46	0.022	0.0048				
					-			
								-
								9
					1			

			Tolu	епе				
	Soll Exceed					Groundwater Exceeds		
Location	Soil Concentration (mg/kg)	X (ft)	Gw <sub>obj</sub> (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	(ft)	C(x) (mg/L
								-

			Ethylbe	nzene				
	Soll Exceeds					Groundwater Exceeds	nces	-
Location	Soil Concentration (mg/kg)	X (配)	Gw <sub>sbj</sub> (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x) (mg/L
					MW1	3.240	15	0,639
					MW4	3.830	16	0,687
						3		
								-
			-		1 -			
					100			-
				-				
		-						1

			Total X	/lenes				
	Soll Exceed					Groundwater Exceeds		
Location	Soil Concentration (mg/kg) 16.4	X (ft)	GW <sub>obj</sub> (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x) (mg/L
BH1	16.4		0.300543354					
BH5	25.7		0.471					
					1			-
					-			
			11					
								1
								-
		_			1		_	-

			MTE	3E		The second second second		
	Soll Exceed:	ances				Groundwater Exceeds		
Location	Soil Concentration (mg/kg)	X (ft)	GW <sub>obj</sub> (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x) (mg/l
			0					
					1			
				_				
				L				
			1					

			Naphth	alene	-			
	Soil Exceed					Groundwater Exceeds		
Location	Soil Concentration (mg/kg)	X (ft)	Gw <sub>abj</sub> (mg/L) R:26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x) (mg/L)
					MW1	0.387	10	0.1386
					MVV4	1.230	24	0.1332
_		0-			-			-

			Benzo[a]	pyrene				
	Soll Exceeds					Groundwater Exceeds	nces	
Location	Soil Concentration (mg/kg)	X (ft)	Gw <sub>obj</sub> (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x) (mg/L
BH2	0,16	1.0	0.000001352	(rigita)	200011011	Suitasita di la	111/	1.000
BH9	2.6		0.000021973					
BH11	0.11		0.000000930					
BH12	1.5		0.000012677		-			
BH14	0.13		0.000001099			3		
BH16	0.12		0.000001014					
								1
			-		-			1

			Dibenz[a,h]a	inthracene				
	Soll Exceed					Groundwater Exceeds		
Location	Soil Concentration (mg/kg)	X (ft)	Gw <sub>obj</sub> (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (fl)	C(x) (mg/L
BH2	0.23	107	0.000000522	1			1.7	1
BH9	0.54		0.000001225					
BH12	0.26		0.000000590					
		-						-
	+	_			1		_	1

	Lead			
	Soll Exceeds			
Location	Soil Concentration (mg/kg)	X (ft)	Gw <sub>obj</sub> (mg/L) R26 Csource	C(x) (mg/L)
				-
		-		

			Benz[a]an	thracene				
	Soll Exceed					Groundwater Exceeds		
Location	Soil Concentration (mg/kg)	X (ft)	Gw <sub>obj</sub> (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	(ft)	C(x) (mg/L
BH9	Concentration (mg/kg) 2.5		0.000054142					
_								
						1		
-					1			1
						-		
								-
					1 - 10			
					-			
					-			
								1

			Acenapl	nthene				
	Soll Exceed					Groundwater Exceeds		
Location	Soil Concentration (mg/kg)	X (ft)	Gw <sub>obj</sub> (mg/L) R26 Csource	C(x) (mg/L)	Location	Groundwater Concentration (mg/L)	X (ft)	C(x) (mg/L
				-				
							-	
	1	_		_	1			-

### Tier 2 Industrial/Commercial Calculations for Benzene MotoMart-Swansea 2002-0431

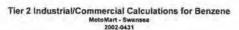
0.967 p 2.54 p 0.292 6 0.327 6 0.619 n 0.0841379 i			Value to be used in									Date Com Ver	piled: wor. 8/25	07/26/16			
Organi 0.967 p 2.54 p 0.292 6 0.327 6 0.619 n 0.0841379 i	Bulk Density -> 60.4	Converted	Value to he used to									yer	DOM: BASS	2013			
0.967 p 2.54 p 0.292 6 0.327 6 0.619 n 0841379 i	nic Matter (%) -> 0		Make to be used to														
0.967 p. 2.54 p. 0.292 6 0.327 6 0.619 n. 0841379 i							0.968		DA Soli Clas			1.0	-	-			
2.54 p 0.292 6 0.327 6 0,619 n 0841379 i	p <sub>a</sub> - Dry Soil Bulk Density	FOC % (0.58 conversion	0.000		anko Matter (re		0		mg/kg (0.58 a		0.000	foc conversion	lo g/g:	0.000	1		
0.292 6 0.327 6 0,619 7 0841379 1				1.5 or.	Gravel = 2	0; Sand	= 1.8; SIII	1.6; Clay	= 1.7; or Site	Specific			1333				
0.327 6 0,619 g 0841379 i	ps - Soll Particle Density			2.65 0	r, Site Speci	fic											
0,619 n	O Air Filled Soil Porosity	0.292	Value from S-21	Top 1	meter = 0.21	B; below	1 meter =	0.13; Grave	= 0.05; San	d = 0.14; Sit	=0.24; Clay =	D.19; or Calculated \	/alue (Si	21)			
0841379 1	Ow - Water Filled Soil Porosity	0.327	Value from S-20	Top 1	meter = 0.15	5; below	1 meter =	0.30; Grave	= 0.20; San	d = 0.18; Sir	=0.16; Clay =	0.17; or Calculated \	/alue (Si	20)			
	g - SSL Total Soil Porosity	0.619	Value from S-24			25 San	d = 0.32; S	in = 0.40; C	lay = 0.36; o	c Calculated	Value (S24)						
D DOE 160	- Hydraulic Gradient				pecific						23 Mar 4						
	foc - Total Organic Carbon (g/g)								r Site Specifi								
	DF - Dilution Factor	1.575	Value from S-22				s less than	20, then 20	default is us	sed, elso cal	culated value i	used					
	d - Mixing Zone (m)	10.135	Value from S-25		alculated va								_				
	d, - Depth of source (m)		feet = 10		of Source (			11 90 010									
	K - Hydraulic Conductivity (m/yr)	cm/sec =			pecific	3.73	2E+00	cm/d	1.36E+0	3 cm/r U	se cm/d for R1	5, R19, & R26, cm/y	v for R24				
	L - Source Length Parallel to Groun	dwater Flow (m)	feet = 220		pecific (m)												
	d, - Aquifer Thickness (m)		feet = 10		pecific (m)												
0.3	I - Infiltration Rate (m/yr)				Illinois												
540 K	K Saturated Hydraulic Conductiv	fty		See T	able K for In												
0,005 G	GW - Groundwater Remediation	Objective Class 1			0.025	GW.	Groundwa	ler Remedia	ation Objective	e Class 2							
0.085 1	1/(26+3) - Exponent for S20				able K for In							and the same of the					
	BW - Body Weight			Resid	ential = 70 to	carcinog	enic); 15 (r	on-carcino	genic); indus	inal/Comme	rcial = 70; Con	struction Worker = 70	RBCA	= 70			
114 15	IF Age Adjusted Soil Ingestio	n Factor for Carcinogens		114													
50 IF	IR. Soil Ingestion Rate			Residential = 200; Industrial/Commercial = 50; Construction Worker = 480													
	SF, -Oral Slope Factor			Bertzine = 0.055													
7774	IR, -Daily Water Ingestion Rate			David	antial = 2: In	duet ein 1/1	Commerci	1-1				_					
	S - Solubility in Water			Residential = 2; Industrial/Commercial = 1  Benzene = 1750													
				Residential = 10-8. Industrial/Commercial = 10-4. Construction Worker = 10-4 at point of human exposure													
	TR - Target Cancer Risk			Residential = 10 ** Industrial/Commercial = 10 ** Construction Worker = 10 ** at point of human exposure  70													
	AT <sub>c</sub> -Average Time for Carcinogen				THE RESERVE	-		_					_				
	URF - Inhalation Unit Risk Factor				me =7 8 x 1		1100	11									
	EF - Exposure Frequency	as & Conference		Rosidential = 350; Industrial/Commercial = 250; Construction Worker = 30  Residential = 30; Industrial/Commercial = 25; Construction Worker = 1													
	ED - Exposure Duration for Inhalat Q/C - Inverse of the mean concent		400 200 000	Residential = 30; Industrial/Commercial = 25; Construction Worker = 1  Residential = 68.61; Industrial/Commercial = 85.61; Construction Worker = 85.61; or Table H													
	T - Exposure Interval	ation at the center of a squ	are source	Residential = 68.81; Industrial/Commercial = 85.81; Construction Worker = 85.81; or Table H  Residential = 9.5 x10 <sup>6</sup> ; Industrial/Commercial = 7.9 x 10 <sup>6</sup> ; Construction Worker = 3.5 x 10 <sup>6</sup>													
	Tue - Exposure Interval for Mail Lin	ut Materilla elles Festes Fest	ella- cac	38	minim - u S	LID, IN	usulav Cui	III WELL CHAIL	JA IU CU	ISTITUTED AN	UIAEI - 2.5 A. I						
	ED Exposure Duration for Migration			70	_		_	_					_				
				0.18	_	_	_		_				_				
	ML - Infiltration Rate for Migration I	o Groundwater Mass-Limit	Equation SZ8	_		_											
	D <sub>i</sub> - Diffusivity in Air				880.0 = ans												
	H' - Henry's Law Constant				ene = 0.228	_											
1.02E-05 E	D <sub>w</sub> - Diffusivity in Water			31,31,114	ene = 9.8 x 1	0.											
50 K	K <sub>sc</sub> - Organic Carbon Partition Coe	fficient		Benze	ene = 58.9												
		ART Man								_			_				
noustrial/Co	ommercial Ingestion Tier II Benze	V x AT, x 365	1.0E-06		70		70		365			* #F-AD					
5-3 =		EF x ED x IRsoil	0.055	*		X	_	×				= 18E+00	=	104.058	mg/k		
	St, x 10 ° x	EF X EU X INSOII	0,055	×	1.00E-06	x	250	×	25	x	50	1.72E-02					
Construction	Worker Ingestion Tier II Benzen																
S-3 =	TR x BV	V x AT, x 365	1.0E-06	x	70	X	70	x	365				-	2258.21	mg/l		
3-3-	Sf. x 10	x EF x (Rsoll	0.055	×	1.00E-06	×	30	x	480			7.92E-04	-	2200,21	mg/		

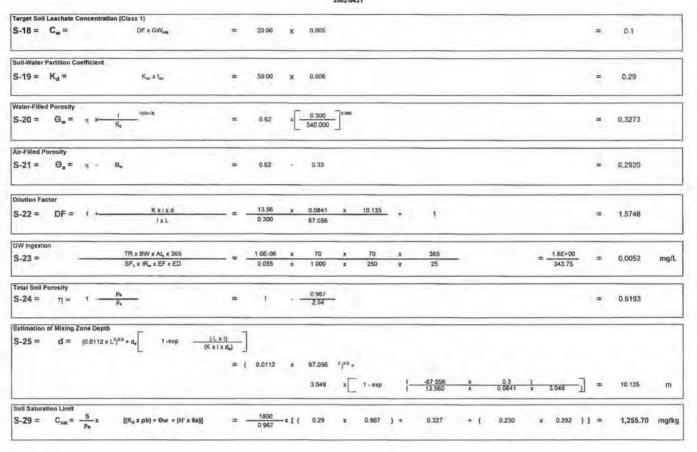
Tier 2 I-C (Benzene)

#### Tier 2 Industrial/Commercial Calculations for Benzene MotoMart - Swansea 2002-0431

								2002-0	431										
ndustrial/Co	mmercla	Inhalation	Tier II Benzene Objective																
S-6 =		TR x ATc x 365			1.0E-06	X	70	- 8	365						_ =	0.02555	=	3.213	mg/k
757			URF x 1000 x EF x ED x 1/VF		7,80E-06	×	1000	×	250	×	25		(1/	6.13E+03	)	7.95E-03		44.5	
Construction	Worker	Inhalation T	ler II Benzene Objective																
S-7 =			TR x ATc x 365	_ = -	1 0E+05	×	70	8	365					43-44		0.02555		4.518	mg/kg
3-1 -		1	URF x 1000 x EF x ED x 1/VF		7.80E-05	x	1000	x	30	×	4	,	(1/	4.14E+01	1	5.66E-03		4.010	ingra
RESIDENTIA	L OR CC	MMERCIAL										-							
S-8 = VF	VF=	Q	(3.14 x DA x T) 1/2 x 10-4	_ =	85.91	1.	3.14	4	1.30E-03		7.90E+08	) "	×	0,0001		15,4075	=	6129.7565	
		C	(2 x p <sub>0</sub> x D <sub>A</sub> )			(	2	×	0 967	×	1.30E-03	)				0.0025			
Construction	Worker		2.00.2.000.00						A Print		14.1								
5-8 = VF	VF =	Q x-	(3.14 x DA x T) 1/2 x 10-4	- =	85 81	E (	3 14	*	1,30E-03		3.60E+06	) "	x .	0.0001	_ =			413,7909	
	7	C	(2 x 0 , x DA)			(	2	×	0.967	*	1.306-03	)				0,0025			
Equation for	Derivation	on of Volatili	zation Factor - Construction Worker	-				-				-							_
S-9 =	VF' =			- =	413.7909												=	41.3791	
			10		10														
Equation for	Derivation		ent Diffusivity																
S-10 =	D <sub>a</sub> =		(0,333 x D, x H) + (0,233 x D,)	_ x		1													
			n'		(ph x Ka)	+ 0,, + 1	0, x H)												
					( 1.66E-02		0.088		0.230	1. (	0.024	12 .		1.02E-05	1				
				= -	1.000-02	^	0.066	^		1832	0.024	12 3		1,022-03		t.			
										1-					-		=	1.30E-03	
				Li	0.967	x	0.29	1.	0.33	+ (	0.292	3		0.230	)				
Sall Compor	nent of th	e Migration	to Groundwater Cleanup Objective	(Class 1) 0, x H)	1				-		3 232			107					
S-17 =	C	×	Ke +	pb pb	=		0.1	×	0.29	+ 1-	0.327	- 4		0,292 0,967	×	D.230	7 =	0.070	mg/kg
		L			7			1_	-					U.MI			-1		

Tier 2 I-C (Benzene)



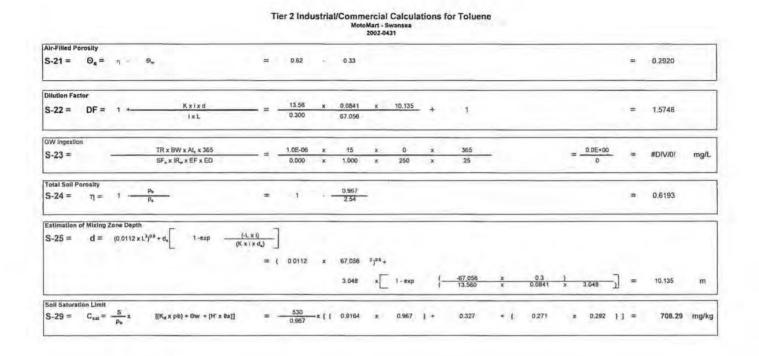


Fier 2 I-C (Benzene)

### Tier 2 Industrial/Commercial Calculations for Toluene MotoMart - Swansea

		SSL	SSL & RBCA				Moto	2002-04							Date Com	plied:	07/26/16		
nput Value		RECA	IRIS/HEAST													son 875	2015		
Holcomb	's Bulk Density				to be used in t				0.967515		USDA Soil Class				1/4	100			
	anic Matter (%)		FOC % (0,58 conversion	1)->	0.000		nic Matter (4		0		OC mg/kg (0.58 or		0.000	1	oc conversion t	0 0/9:	0.000	100	
	pb - Dry Soil B			_					= 1.8 SH =	1 B. Cis	y = 1.7; or Site 5	Specific	-			-			
0.292	Da - Soil Partic		0,292	Links	from S-21		Site Spe		Y makes n	14.00		- W - 4: PH	-5.24 51	0.10	- Cut- data d M	Chic Ima			
			0,292		from S-21						vel = 0.05; Sand								
0.327	n - SSL Total	ed Soil Porosity	0.819		from 5-24						vei = 0.20; Sand Clay = 0.36, or				or Carcounta v.	mine (25	U)	_	
	1 - Hydraulic G		0,019	Value	trotti 3-24	Site Sp		0.23, 541	10 = 0 32, 51	- 0 40	, Cury - 0.36, Ci	Calculated	value (524 or	R231				_	
0.006		anic Carbon (g/g)						005, Sub	surface Soil	= 0.002	or Site Specific								
20,000	DF - Dilution F		1.575	Value	from 5-22						20 default is use		ulated value i	s used				-335	
	d - Mixing Zon		10.135		from S-25		liculated v				H-1 1,00		***************************************						
3,048	d, - Depth of s			feet :				_	thickness of	_				_					
13.56		onductivity (m/yr				Site Sp		3.7	2E+00	cm/d	1.36E+03	contyr U	se crive for R1	15 R19	& R25, cm/yr	for R24			
67,056			oundwater Flow (m)		= 220		ecific (m)							_				_	
3,048	d Aquifer Th			feet :	= 10		ecific (m)					_				_			
0,3	I - Infiltration R		41.56				Illinois	a continue	CO.	_	_			_					
540		Hydraulic Condu					ble K for I			- Prince in	diation Objective			_					
0.085			on Objective Class 1				2.5 ble K for I			r reme	diation Objective	e Class 2						_	
15	1/(2b+3) - Exp BW - Body We									w.comb	nogenic); industr	ial/Commer	rial = 70° Com	steuetio	n Worker = 70	RBCA:	70	_	
114			stion Factor for Carcinogens		_	114		Total ani Mari	amon to tra	17.02121	magariney, manager	and the same of th			ii ii dina _ ta	1			
50	IR -Soll Inge		statistical latination and	-		7.7.1	ntial = 200	) lodestr	ial/Commerc	(a) = 50	Construction W	forker = 480				_			
1.		er Ingestion Rate							Commercial		Contraction of								
530	S - Solublity in						e = 526	ildustitos.	O CHARLEST COM										
1.0E-06	TR - Target Ca							e: Industr	aVCommerc	ial = 10	Construction \	Worker = 10	d to triog ta *	uman e	exposure				
250	EF - Exposure										0; Construction V								
25			elation for Non-Cartinogens	-							Construction Wo								
15,63			entration at the center of a squ	are sou	rce						15.81; Construct								
7.90E+08	T - Exposure I		The same of the same	- No of Par	ath.		ntial = 9.5	x10", inc	dustriaVCom	mercial	= 7.9 x 10 <sup>a</sup> ; Con	struction W	orker = 3 5 x 1	O.	_			_	
30			Limit Volatilization Factor Equ			70												_	
70 0.18			tion to Groundwater Mass-Limit E on to Groundwater Mass-Limit			0.18	-		_	_		_		_					
0.18			on to Groundwater Mass-Limit	Equano	n 528	211	e = 0.087	_		_									
	D <sub>L</sub> - Diffusivity H' - Henry's La				_		e = 0.067			_		_				_		_	
0.271 8.60E-06	D Offusivity			_			e = 8.6 x 1	10-6	_					_				-	
25			cinogens in Ingestion Equation						Commercial	= 25 0	onstruction Wor	ker = 0.115		_	_	_			
25	AT - Average	Time for Non-Car	cinogens in Inhalation Equation	n							Construction Wo								
1	THQ - Target	tazard Quotient				1													
5		n Reference Con	centration				c = 6; Sub			_									
0.0	RfD, - Oral Re	ference Dose				Chronic ≈ 0.06; Subchronic = 0.8													
158.00	K <sub>se</sub> - Organic I	arbon Partition C	Coefficient			Toluen	e = 182												
Industrial/C	Commercial ing		tion Objectives for Non-Carc	nogeni	c Contaminar	its		-	11-4-					5 3	Village.			_	
S-1 =	_		x BW x AT x 365	- =	1	X	70	X	25	X	365			- =	538750	=	1635200	mg/kg	
		10" x (1/R	MD X EF X ED X IR		0.000001	x 1/	0.8	x	250	×	25	×	50		0.390625				
Construction	on Worker Inne	stion Remediation	on Objectives for Non-Caroli	noenk	Contaminant														
Section Section 1	On storage mige		x BW x AT x 365	in Restine	1	*	70	×	0.115		365				2938.25				
5-1 =	_		(D) x EF x ED x IR.	- =	0.000001	x 1/	0.8	×	30	×	1	X	480	=	0.018	=	163236	mg/kg	
							-												
inhalation !	Non-Carcinone	nic Residential.	Ind/Commercial					-											
S-4 =			HQ x AT x 365	-	1	×	25	×	365					-	9125	=	57389,346	mq/k	
2.4		EP×E	Dx(1/RIC * 1NF)		250	×	25	× 1/	5	K 1/	7861.554232				0.159002			100	
			D-B-AND								Tier	2 Inhalati	on Objectiv	e can	not exceed S	Soil Sa	turation Limi	it	
Inhalation I	Non-Carcinoge	nic Construction	Worker	-		-	-	-				-		-		-			
S-5 =	-		HQ x AT x 365		- 1	x	0.115	×	365					_ =	41.975	=	371.266	mg/k	
	0	EFRE	Dx(1/RICx1/VF)		30	×	1	* 3/	5	*1/	53.06963729				0.113059		2111075	1713371	
												-							
RESIDENT	TAL OR COMM		Man - Till and				2.44		7000 61		7.005.05	y in x	0.0000		10.0174				
5-8=	VF =	-x- (3	(2 × n <sub>0</sub> = T) 1/2 × 10 <sup>-9</sup>	- =	85.81	x.L	3.14		7,90E-04		7.90E+08	1 ×	0.0001	_=	12.0134	=	7861.5542		
	-		(2 × pa + Da)			(	3		0.967	×	7.90E-04	)			1.53E-03				

Tier 2 I-C (Toluene)



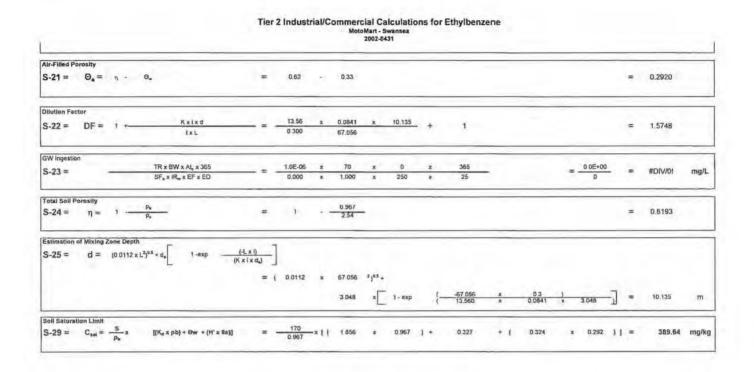
Tier 2 I-C (Toluene)

# Tier 2 Industrial/Commercial Calculations for Ethylbenzene

Takku S								2002-04										
CONTRACTOR OF		SSL RBCA	SSL & RBCA IRIS/HEAST													piled.	07/26/16	
put Values	4	110001	(Intrastruction)												7.00	DAT 22.3	014	
	's Bulk Donsity -				be used in				0 967515		USDA Soil Clas							
	anic Matter (%) -		FOC % (0.58 conversion)	->	0.000		nic Mutter (1		0		OC mg/kg (0.58 c		0.000	1	oc conversion I	o g/g:	0.000	
	pb - Dry Soll Bu								= 18:5世=	1.5 Cla	sy = 1.7, or Site	Specific		-				
	ps - Soil Partick						Site Spec		400000000	-	3 - 2 as	100000		2.72	Charles and the			_
	O <sub>A</sub> - Air Filled S		0.292		from 5-21						ivel = 0.05; San							
	Ow - Water Fille		0,327		from S-20						ivel = 0.20; San			D.17, c	or Calculated V	alue (520	)	
	n-SSL Total 5		0.619	Value	from 5-24			1.25; San	d = 0.32; SI	1 = 0.40	; Clay = 0.36; or	Calculated	Value (524)					
	1 - Hydraulic Gra					Site Sp		NA P. L	- P-1									
	foc - Total Orga DF - Dilution Fa		1,575	Maties !	from S-22						or Site Specific		and the band of the first of the			_		_
	d - Mixing Zone		10.135	Value	from S-25		iculated v		a less man	zo, men	20 default is us	ed, esse case	counted Asine I	s used		_		-
	d Depth of so		10.155	feet =					hickness of	coelam	ication	_	_					
				4 30E-			-	2000	Management of the Control of the Con	-								_
	K - Hydraulic Co					Site Sp		3./	2E+00	om/d	1.38⊑+0	3 CITUYI JU	160 CHIVE FOR PC	15, K18	1, & R25, cm/yr	FOF HC24		
67.056			oundwater Flow (m)	feet =			ecific (m)	_		_								_
	d Aquiter This			feet =	10		ecific (m)											
0.3	1 - Infiltration Ra					0 3 for												
540		fydraulic Condu				_	ble K for I											
			on Objective Class 1				1			er Reme	ediation Objectiv	e Class 2						
0.085	1/(2b+3) - Expo						ble K for I											
70	BW - Body Wei						ntial = 70	carcinog	enic); 15 (no	n-carcin	nogenic); Indust	rial/Comme	rcial = 70; Con	structio	n Worker = 70;	RBCA =	70	
114			stion Factor for Carcinogens			114		_										
50	IR -Soll Inges	tion Rate				Reside	ntial = 200	: Industri	ial/Commerc	ial = 50	Construction V	Vorker = 480	)					
1	IR., -Daily Wate	r Ingestion Rate				Reside	ntiat = 2, h	dustrial	Commercial	E1								
170	S - Solubility in	Water				Elhyibe	enzene = 1	69										
	TR - Target Car								aVCommerc	izi = 10	a; Construction	Worker = 10	of h	uman e	exposure			
250	EF - Exposure i	requency				Reside	ntial = 350	Industri	al/Commerc	ial = 25	0; Construction	Worker = 30	)					
25	ED - Exposure I	Duration for Inha	lation for Non-Carcinogens	3.00		Reside	ntiai = 30,	Industria	//Commercia	1 = 25;	Construction We	orker = 1						
18.63	Q/C - Inverse of	the mean conc	entration at the center of a squa	re soun	te e	Reside	nlial = 68	31; Indus	trial/Comme	rcial = 8	5 81; Construct	ion Worker	= 85.81; or Tat	ble H				
7.90E+08	T - Exposure In	lerval				Reside	ntial = 9.5	x10"; Inc	dustrial/Com	mercial	= 79 x 10°, Cor	struction W	orker = 3.6 x 1	D <sub>e</sub>				
30	Tue - Exposure	Interval for Mail	Limit Volatilization Factor Equa	tion 526	6	30												
70	EDus - Exposure	Duration for Migra	tion to Groundwater Mass-Limit Eq.	ation 52	8	70					-							
0.18	les - Infiltration	Rate for Migratio	on to Groundweter Mass-Limit E	quation	528	0.18												
	D Diffusivity in					Ethylbe	nzene = 0	075	-									
	H' - Henry's Lav						nzene = D											
	D Diffusivity						nzene = 7			_								
25			cinogens in Ingestion Equation							= 25.0	construction Wo	war = 0 115		_				
25			cinogens in inhalation Equation			Reside	ntial = 30	Industria	VConmerci:	al = 25°	Construction W	orker = 0.12	5					
1	THQ - Target H		THE STATE OF THE S			1		A STATE OF THE STA	G G G T T T T T T T T T T T T T T T T T		Salara de la constanta de la c							
1		Reference Con	centration			Chroni	= 1; Sub	fironic =	9									
0.1	RID Oral Refe						0 = 8 1; Se											
	K Organic C		coefficient				nzene = 3	- C-	-							_		
To To Section							The series — S	-		_								
	ommercial inge		ion Objectives for Non-Carcin x BW x AT x 365	ogenic	Contaminar	its	70		25		385				638750			
3-1=	_		IDJ x EF x ED x IR	=	0.000001	x 1/	0.1	2	250	×	25	- 1	50	- =	3.125	=	204400	mg
		io wine	IDD XET X ED XING		D. LANGES	* 41	0.1		230	^	4.5		30		3.123			
	- Wester Inner	tine Damadiati	on Objectives for Non-Carcine	esple ?	antaminant													
	on Worker Inges		x BW x AT x 365	genic L	ontaminam		70	-	0,115	0	365				2938.25			
5-1=	_		UDA) = EF = ED = IR.	=	0.000001	W.	0.05		30	- 8	303		ann	- =	0.288	=	10202	ITIC
		10 #11/6	JUAN TEP TEU TING		0.000001	¥ 1/	0.05	×	30	*	1	*	480		0,288			
		la Backinski	ladiComments!			_							-					
ibala# *	Here Carelina		Ind/Commercial		1	×	25	×	365						9125			
	Von-Carcinogen		D x (1/RtC x 1/VF)	=	250	x	25	x 1/	1	K 1/	10141 5287			=	0.615278	=	14807	mg
	Von-Carcinogen				240	*	23	X.U		K 17			on Oblectiv	o can	not exceed S	Sall Sat	uration tim	10
	Non-Carcinogen		e a financia in tri y							_	7,16.7	E IIIII	on objectiv	o cuit	TOT BACCOCA C	Jon Da.	III MEION ENIN	
	Non-Carcinogen		e a finone a stroy	_														
5-4 =	Non-Carcinogen	EF x E	Worker	-	- 1	4	90.0		(222)						Na sais		Zonaka.	
S-4 =		EF x E	Worker HQ x AT x 365		4	A	0.115	*	365					_ =	41,975		862.091	ma
5-4 =		EF x E	Worker	-	30	A N	0.115	x 1/	365 9	× 1/	58.46056775 Tier		on Oblectiv	— =	0.04869	= Soil Sat		10.0
5-4 = nhalation N 5-5 =	Non-Carsinogen	EF x E	Worker HQ x AT x 365		30	A N	0.115	× 1/		× 1/			on Objectiv	e can		= Soil Sat		10.0
i-4 = ihalation N i-5 =		EF x E	1 Worker 10 x AT x 385 D z (1/RIC x 1/VF)		1 30	À N	· ·	x 1/	g		Tier			- =	0,04869 not exceed \$	= Soil Sat		
5-4 = nhalation N 5-5 =	Non-Carsinogen	EF x E	Worker HQ x AT x 365		1 30 85.81	* C	0.115	x 1/		x 1/			on Objectiv	e can	0.04869	= Soil Sat		

Fier 2 I-C (Ethylbenzene)

#### Tier 2 Industrial/Commercial Calculations for Ethylbenzene MotoMart - Swansea 2002-0431 (3.14 x DA x T) 12 x 10" 3.14 x 4.75E-04 x 3.60E+06 ) 12 x 0.0001 = 684,6067 (2 x p4 x D4) 0.967 x 4.75E-04 ) 9.18E-04 Equation for Derivation of Volatilization Factor - Construction Worker = 68.4607 Equation for Derivation of Apparent Diffusivity (p+ x Kd) + (+ (0, x H) = 1.66E-02 x 0.075 0.0242 x = 4.75E-04 1.858 )+ 0.33 0.292 0.324 32.068 Target Soll Leachate Concentration (Class 1) 14 S-18 = C. = DF x GW ... 20,00 x 0.700 Soil-Water Partition Coefficient S-19 = Ku = 320 00 X 0 006 = 1.856 Km x Inc S-20 = 0, = D:3273



Tier 2 I-C (Ethylbertrene)

# Tier 2 Industrial/Commercial Calculations for Total Xylenes MotoMart - Swanzea MotoMart - Swanzea

								0431									
	SSU	SSL & RBCA IRISAHEAST						. 154						Data Comp	illed a 8/25/20	07/26/16	
put Values						_									20.007		
	s's Bulk Density -> 60.4			to be used in				0.967515		ISDA Soil Classii			_				
	anic Matter (%) -> 0	FOC % (0,58 conver	tion) ->	0.000				0		DC mg/kg (0.58 cor		0,000		foc conversion Is	n g/g	0.000	
	Pb - Dry Soil Bulk Density							d = 1.8; Silt =	1.6; C	ay = 1.7; or Site \$	Spacific						_
	os - Soil Particle Density		1777	177. 2740		Site Spe		10.10.0		77 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	- Walt		2.72		Jan.		
	0 Air Filled Soil Porosity	0.25		from S-21										or Calculated Val			_
	Ow - Water Filled Soll Porc			from S-20										or Calculated Val	ue (520	)	
	η - SSL Total Soll Porosity	0,81	9 Value	from S-24			D.25; Sa	and = $0.32$ ; S	III = 0.4	0; Clay = 0.35; or	Calculate	d Value (524)					
	I - Hydraulic Gradient	744	_		Site S				0.00		_					_	
	foc - Total Organic Carbon	(g/g) 1.5	VE 1630	from S-22						2; or Site Specific		Mirchel St.			_	_	_
	d - Moung Zone (m)	10.1		from S-25		skutated v		is less than	20, me	n 20 default is us	ca, eise c	archialed And	C IS USE	NG.	_		_
	d Depth of source (m)	19.1	feet:					I thickness o	Leonias	nlastinal	_		_				
				7-	Site Si				_		Conta la	be a seld from the	15 016	, & R26. cm/yr for	rin.		-
	K - Hydraulic Conductivity		1.00					2E+00	cm/d	1.362+03	ctinAt Ir	ise cityd for K	15, 1018	A R25. CHINY IO	PG24		
	L · Source Length Parallel	in Groundwater Flow (m)		= 220		ecific (m)			_		_					_	_
	d Aquifer Thickness (m)		ten	= 10		ecific (m)											_
	1 - Infiltration Rate (m/yr)				0.3 for								_		_	_	_
540	K Saturated Hydraulic C				See Ti	ble K for											
	GW <sub>ald</sub> - Groundwater Remi					10			r Reme	diation Objective	Class 2						
	1/(2b+3) - Exponent for S2	0				ble K for											
	BW - Body Weight					ntial = 70	(carcino	genic); 15 (r	on-care	inogenic); Industr	daVComm	ercial = 70; C	onstruct	lion Wasker = 70, F	RBCA =	70	
114	IF Age Adjusted Soil	Ingestion Factor for Carcinogen	4		114											_	
50	IR Soil ingestion Rate				Reside	ntial = 20	0; Indust	na/Commer	clat = 5	0: Construction W	orker = 4	80					
1	IR, -Daily Water Ingestion	Rate			Reside	ntial = 2:	Industria	VCommercia	1=1								
	S - Solubility in Water			-	Total )	ylenes =	186		-				_				
	TR - Target Cancer Risk							rial/Comme	cial = 1	0 <sup>4</sup> Construction	Worker =	10* at point o	humar	n exposure			
	EF - Exposure Frequency									50: Construction							
		Inhalation for Non-Carcinogens		-						Construction Wo			-				
		concentration at the center of a		irce	Reside	nliai = 68	B1; Indu	strial/Comm	ercial =	65.61, Construct	on Works	f = 85.81; or 1	able H				
90E+08	T - Exposure Interval		00000		Reside	ntial = 9 5	x104; in	ndustrial/Con	mercla	1= 7.9 x 10 Con	struction	Worker = 3.6 )	10 <sup>8</sup>				
30	Tuy - Exposure Interval for	Mail Limit Volatilization Factor	Equation S	26	30												
70		Migration to Groundwater Mass-Lim			70												
0.18		gration to Groundwater Mass-Li			0.18												
0.074	D Diffusivily in Air	gration to Groundwiller france Cr	mi cquant	11.040		ylenes =	0.029		_	_							
	H' - Henry's Law Constant		_			ylenes =			_		_		_		_		
	D Diffusivity In Water		_			yienes =		0-6	_				_		_		
25		Company to be selled for the	dina						1 - 25	Construction Wor	bar = 0.1		_		_	_	_
25		-Carcinogens In Ingestion Equa -Carcinogens In Inhalation Equ		_						Construction We			_		_		
	THO - Target Hazard Quet		BUILDE	_	1	THIM! - GO	, arduan	as Continue	1111 - 212	Constitution	ALUA - C.	110					
0.1	RfC - inhalation Reference		-		Chron	c = 0.1: S	asbelvroni	c=0.4	-				-		-00		
0.2	RID Oral Reference Dos					c = 0.2; S										-	-
398.00	K Organic Carbon Parti		_			(vienes =		10 - 0,0			_			_			
290.00	In - Organic Carbon Parti	ion Coefficient	_		1 OINT /	Alches -	2,00			_					_		_
dustrial/C	Commercial logestion Rem	ediation Objectives for Non-C	arcinggen	c Contamina	nts										_		_
5-1 =		THQ x BW x AT x 365	=	1	×	70	×	25	.8	365			-	638750	-	408800	mg/l
-1-	10-3	TIRIDO X EF X ED X IRson		0.000007	2.11	0.2	X	250	-3	25	×	50		1.5625	-	400000	mgn
CA											_		_				
-	on Worker Ingestion Reme	diation Objectives for Non-Car	cinogenic	Contaminan	ts		-	100	_		_		_	The State of the S			
onstructio	The state of the s	diation Objectives for Non-Car THQ x BW x AT x 365		1	×	70	×	0.115	×	365				2938,25	-	81618	mal
-N-	The state of the s	diation Objectives for Non-Car THQ x BW x AT x 365 (TRID <sub>a</sub> ) x EF x ED x IR <sub>set</sub>	rcinogenic	Contaminar 1 0 000001	×	70 0.4	×	0.115	×	365	*	480		2938,25 0.036	=	81618	mg/
onstructio	The state of the s	THO x BW x AT x 365		1	×		X.	0.115	×	365	*	480		2938,25 0.036	п	81618	mg/
onstructio	- 10	THO X BW X AT X 365		1	×		×	0.115	×	365	1	480		2938.25 0.036	7	81618	mg/
onstructio	The state of the s	THQ x BW x AT x 365  (TIRIDa) Y EF X ED X IR to a  ttal, Ind/Commercial		0 000001	X 1/	0.4	×	30	X	365	*	480		0.036	al.		
onstruction	Non-Carcinogenic Resider	THQ x BW x AT x 365  (TRID) x EF X ED X IR <sub>set</sub> ttal, ind/Commercial  THQ x AT x 365		1	X 1/	25	x x x 1/	365	× 1/		*	480		9125	п	81618 1784.155	mg/
nstructio -1 = helation M	Non-Carcinogenic Resider	THQ x BW x AT x 365  (TIRIDa) Y EF X ED X IR to a  ttal, Ind/Commercial		0 000001	X 1/	0.4	x x x 1/	30	×V	12220.23734	2 Inhala	480		0.036	=	1784.155	
onstruction in the latest on its second in the latest on i	Non-Carcinogenic Resider	THO x BW x AT x 365 (1/RRID <sub>x</sub> ) x EF x ELY X IR <sub>set</sub> Ital, Ind/Commercial THO x AT x 365 F x ED x (1/R/C x 1/VF)		1	X 1/	25		365	×V	12220.23734	z 2 Inhala	480 tion Object		9125 5 114466951	=	1784.155	
onstruction halation h	Non-Carcinogenic Resider	THO X BW X AT X 365 (THRO) Y EF X ED X IN set  ttal, Ind/Commercial THO X AT X 365 F X ED X (1/R/C X 1/VF)  ction Worker		1	X 1/	0.4 25 25		365 0.1	×V	12220.23734	z 2 Inhala	480 tion Object		9125 5 114466951 nnot exceed Sc	=	1784.155	
onstruction in the interest on	Non-Carcinogenic Resider E Non-Carcinogenic Constru	THO X BW X AT X 355  (TARIU) Y EF- X ED X IR <sub>set</sub> Ital, ind/Commercial  THO X AT X 355  F X ED X (1/R/C X 1/VF)  ction Worker  THO X AT X 355		1 250	X 1/	25	x 1/	365 0.1		12220.23734 Tier	z 2 Inhala	480 tion Object		9125 5 114466951 nnot exceed Sc	=	1784.155	mg/
onstruction in the state of the	Non-Carcinogenic Resider E Non-Carcinogenic Constru	THO X BW X AT X 365 (THRO) Y EF X ED X IN set  ttal, Ind/Commercial THO X AT X 365 F X ED X (1/R/C X 1/VF)  ction Worker		1	X 1/	0.4 25 25	x 1/	365 0.1	× 1/	12220.23734	z 2 Inhala	480		9125 5 114466951 nnot exceed Sc	=	1784.155 uration Limit	
onstruction And a later of the	Non-Carcinogenic Resider E Non-Carcinogenic Constru E	THO X BW X AT X 355  (TARIU) Y EF- X ED X IR <sub>set</sub> Ital, ind/Commercial  THO X AT X 355  F X ED X (1/R/C X 1/VF)  ction Worker  THO X AT X 355		1 250	X 1/	0.4 25 25	x 1/	365 0.1		12220.23734 Tier	z 2 Inhala	480 tion Object		9125 5 114466951 nnot exceed Sc	=	1784.155 uration Limit	mg/
onstruction in the state of the	Non-Carcinogenic Resider  E  Non-Carcinogenic Constru  E  TAL OR COMMERCIAL	THO X BW X AT X 355 (THRID) Y EF X ED X IR set  tital, ind/Commercial THO X AT X 365 F X ED X (1/RIC X 1/VF)  ction Worker THO X AT X 365 F X ED X (1/RIC X 1/VF)		1 250	X 1/	25 25 25	x 1/	365 0.1 365 0.4		12220.23734 Tier B2.49304706				9125 5 114466951 Finot exceed Sc 41,975 0,909167532	=	1784.155 uration Limit	mg
onstruction in the interest of	Non-Carcinogenic Resider  E  Non-Carcinogenic Constru  E  TAL OR COMMERCIAL	THO X BW X AT X 355  (TARIU) Y EF- X ED X IR <sub>set</sub> Ital, ind/Commercial  THO X AT X 355  F X ED X (1/R/C X 1/VF)  ction Worker  THO X AT X 355		1 250	X 1/	0.4 25 25	x 1/	365 0.1		12220.23734 Tier	2 Inhala	480 tion Object		9125 5 114466951 nnot exceed Sc	=	1784.155 uration Limit	mg

Ter 2 I-C (Xylenes)

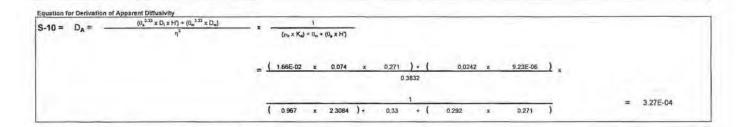
0.5217

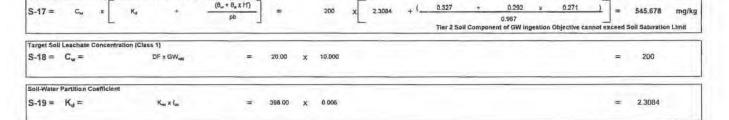
6.32E-04

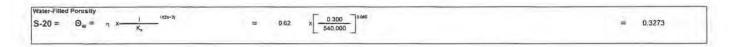
824.9305

= 82.4930

# Tier 2 Industrial/Commercial Calculations for Total Xylenes MotoMan - Swanses 2002-0431 Construction Worker S-B = VF = $\frac{Q}{C} \times \frac{(3.14 \times D_A \times T)^{1/2} \times 10^4}{(2 \times p_B \times D_A)} = 85.81 \times \frac{\sqrt{3.14} \times 3.27E-04}{\sqrt{2} \times 0.967} \times 3.27E-04$ Equation for Derivation of Volatilitzation Factor - Construction Worker

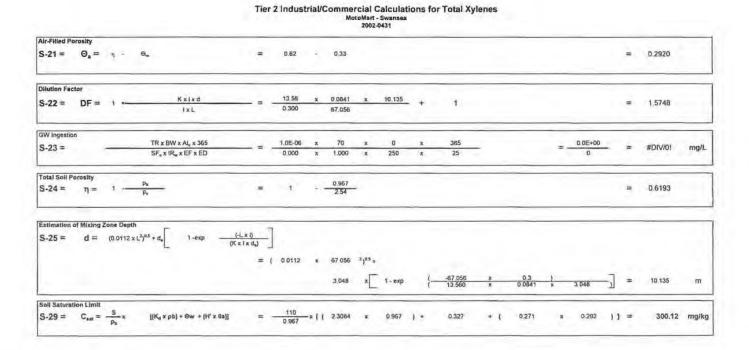






19

Soil Component of the Migration to Groundwater Cleanup Objective (Class 1)



Fier 2 I-C (Xylenes)

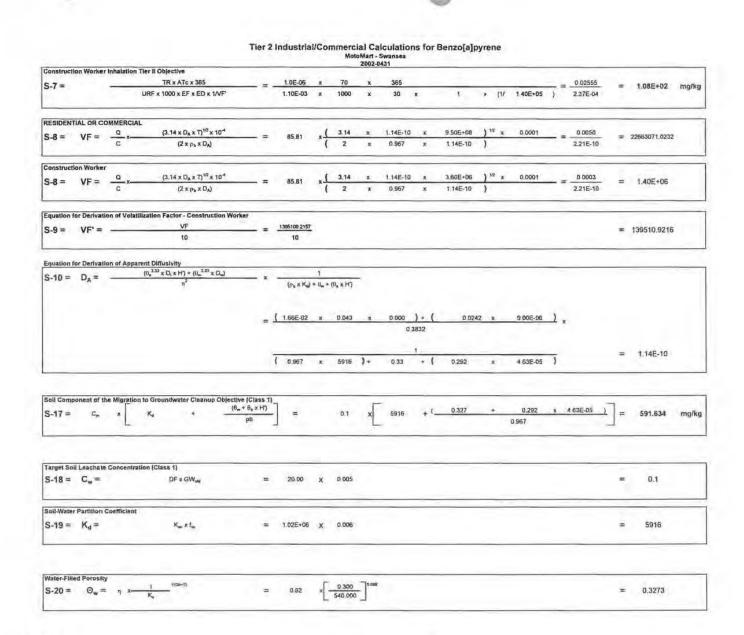
12

#### Tier 2 Industrial/Commercial Calculations for Benzo[a]pyrene MotoMart - Swanzaa 2002-0431

nput Values		SSL																	
		RSCA	SSL & REGA													Date Com	ipilėd:	07/26/16	
11-1		100,001						_								**	YMONT NY 2.	Parta	
	s Bulk Density ->				e to be used in				0.967515		SDA Soli Cia								
	inic Matter (%) ->		FOC % (0.58 conve	ersion) ->	0.000		ink Matter (n		0		C mg/kg (0.56			0,000	- Te	oc conversion	lo g/g:	0.000	
	Pb - Dry Soil Bulk								1 = 1 B. S	# = 1 6, Cla	y = 1.7 or 5	the Specif	ic.						
	ps - Soil Particle						or, Site Spec						-			-			
0.292	O Air Filled So	I Porosity			e from 5-21											), or Calculate			
0.327	Ow - Water Filled	Soil Porosity	0.	127 Valu	ie from 5-20	Top 1	meter = 0.1	5, below	w 1 meter	= 0.30, Gra	vel = 0.20; 5	Sand = 0.1	18, Sin =	0.15, Clay	- D 17	or Calculate	d Value	(S20)	
	η-SSL Total So		0.	519 Valu	ie from S-24			25, Sa	nd = 0 32	SH = 0 40	Clay = 0 38	or Calcu	ulated V	alue (S24)					
	I - Hydraulic Grad				200		pecific							-					
	foc - Total Organ										or Site Spe			1					
	DF - Dilution Fac				ie from S-22				is loss th	an 20, then	20 default is	s used, els	se calcu	lated valu	e is use	ed			
	d - Mixing Zone (				ie from S-25		alculated v		-	-					-				
	K - Hydraulic Cor				E-05		pacific	3.7	2E+00	cmid	1.36E+	03 cm/y	F Use C	anvid for R	15, R1	9, 5 R26 cm/	Vr for H	4	
			roundwater Flow (m)		! = 220		pecific (m)	_			_								
	da - Aquifer Thick			feet	1= 10		pecific (m)												
	I - Infiltration Rate						r Illinois												
	K, - Saturated Hy						able K for I												
0,005	GWas - Groundw	ater Remediati	ion Objective Class 1							ater Remed	lation Objec	tive Class	2						
	1/(2b+3) - Expon						able K for I												
	BW - Body Weigi			-			ential = 70	carcino	genic); 15	(non-carci	nogenic); Inc	dustrial/Co	ommerci	al = 70; C	nnstruc	tion Worker =	70, RB	A = 70	
114	IF and -Age Adju	isted Soll Inge	stion Factor for Carcinoge	ns		114													
50	IR Soil Ingest	on Rate				Resid	iential = 200	i; Indust	rial/Comm	nercial = 50	Construction	n Worker	= 480						
7.3	SFOral Slop F	actor				Bertz	o[a]Pyrana :	7.3						2000					
	IRDaily Water						ential = 2 h		I/Commai	relai = 1									
	S - Solubility in V			_			olalpyrene =			Comp - 1			_	_					
212212	TR - Target Cane									namini - 10	6 Construct	ion Morks	sr = 10ª	at point a	fhuma	n avanture			
	AT <sub>e</sub> -Average Tir					75	etimai - 10	# 31 HOUSE	THECHI	Michal - 10	- Constitue	PULL YACKE	10	at point c	Libring	II stappostin			
							4.0000000000	A Wallet	.5	_	_	_	_				_		
	URF - Inhalation		or	_			* wnerwq[a]c			71.00	0; Construct	100.0	- 0.0	_	_		_		
	EF - Exposure Fi		slation to Carcinogens		-						Construction				_	_	_		_
			entration at the center of	smuare tr	VIICE						S.81; Const			85 B1			-		
	T - Exposure Inte		entranon at the center of	a aquare so	MILE						= 7 9 x 10°				100	-			
	D <sub>i</sub> - Diffusivity in			_			o[a]pyrene =		dusquare	LING LINE	- I SA IO	CONSUGER	MAIL WELL	101 - 0.0	. 10				_
				_						_				_	_		_		_
	H'-Henry's Law			_			o(a)pyrene =					_		_					_
	Dw - Diffusivity in						o(a)pyrane =												
1020000	K <sub>m</sub> - Organic Ca	rbon Partition C	Spefficient			Benz	o(a)pyrana =	1,020,0	000	_			_		_		_		_
ndustriaVC	ommercial inges																		
3-3 =		TRX	BW x AT <sub>e</sub> x 365		1.0E-06	. 8	70	8	70	x	365				- 4	1.8E+00	-	0.784	mg/
5-3 =		SL k 10	* x EF x ED x IRsoil		7.300	×	1.00E-08	×	250		25			50		2.28E+00	-	0.704	myr
		2,40,19					1.002 00		2.00	-				0.0					
	- West (	an The H Chie	401-4												_				
onstructio	on Worker ingesti		BW x AT, x 365		10000		-		***										
5-3 =	_			_ =	1.0E-06	×	70	X	70	X	365	_			=	1.8E+00	=	17.01	mg/
		SI. x	10° x EF x IRsoil		7 300	×	1.00E-08	×	30	*	480					1 05E-01			
			Manthe																
- Austria	Management II I Tol																		
ndustriaVC	commercial inhal	The second second							1000										
industriaVC	ommercial Inhali	The second second	R × ATc × 365		1.05-06	x	70	x	365						_=	0.02555	=	B.42E+01	mgl

1

Tier 2 I-C (BaP)



2

Tier 2 I-C (BaP)

PCB 17-044 R. 189

#### Tier 2 Industrial/Commercial Calculations for Benzo[a]pyrene MotoMart - Swansea 2002-0431 Air-Filled Porosity S-21 = Oa = n - Oa 0.2920 Dilution Factor 13 56 0.0841 Kxixd 1.5748 IXL 0.300 67.056 GW Ingestion TR x BW x AL x 365 1.0E-06 x 70 = 1.8E+00 45625 S-23 = 0.0000 mg/L SF, x IR, x EF x ED 7.300 x 1.000 x Total Soil Porosity S-24 = 0.6193 Estimation of Mixing Zone Depth (Kxixda) d = (0.0112 x L2)05 + d. = ( 0.0112 x 67.056 3)05+ Soll Saturation Limit = 1.62E-03 x [ ( 5916 x 0.967 ) + [[Ka x pb) + 0w + (H' x 8a)] 0.327 + ( 4.63E-05 z 0.292 ) ] = 9.58 mg/kg

2

Tier 2 I-C (BaP)

#### Tier 2 Industrial/Commercial Calculations for Dibenz[a,h]anthracene MotoMart - Swansea 2002-0431

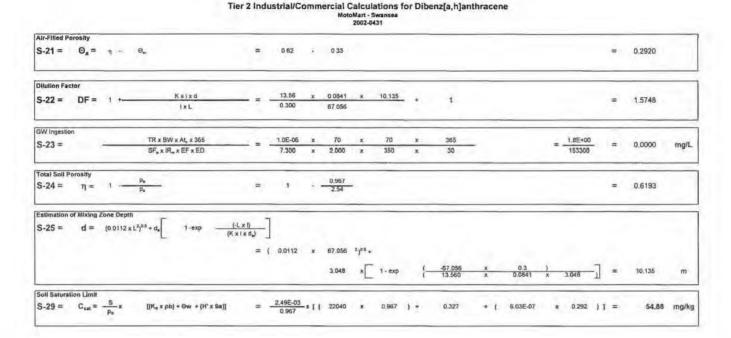
Page		SSL ] [	SSL & RBCA				2002-04	131					Date Com	niladi	07/26/16	
Processing   State Centary = 10   Proc No. 05   Convented value to be lead in accoldation when   20   State (register)   10   Proc (reg	No.															
October   Marker (N)		Il Denetry at 50 4	Conveder	Value to be used	n calcul	lation sheet	- I	0.9675151	115	IDA SAII Cla	exification 1	oamu Sand		_		
1,500 c Graves   2,0 Start = 1 E Still = 16 C Lay = 1.7 to site Specific													I for conversion	to ala: I	0.000	1
25.50   Particle Density			1 - F It I I I I I I I I I I I I I I I I I	4 . 1								01000	The collinging	10 10 11	0.000	-
0.202  G., An Filled Scale Processing								u - / u. Oiii	- 1.0. 018	y - 111. Di Gi	пс срасте					
0.327   Oil - Witter Filled Soil Plensity			0.292	Value from S-21				w i meter	0.13 Gm	vel = 0.05 S	and = 0.14	SH =0 24 Ch	v = D 19 or Calculates	d Value /3	521)	
0.815   1.7 total Scale Procusty																
Dest 1797   Engineering Continuent   Size Specific														N AHIMP I	31.01	
Doc   Total Criganic Carrion (ptg)			5.015	V4000 IIOII 0-24			J. 2.0, 138	muz - water	DIII - 0 40	, chay - U and	, DI CEDECIMI	an Amon lear				
20   F. Diktion Factor							006, Sub	bsurface Si	oil = 0.002	or Site Spec	ific					
13.55048   X - Hydraulic Conductivity (Intyr)			1,575	Value from S-22								calculated value	ue is used			
1.   Source Length Parallel to Grounowater Flow (m)   feet = 20   Site Specific (m)	35169 d-	Mixing Zone (m)	10.135	Value from S-25	2; or	calculated v	alua									
3.04.6   X - Nauther Thickness (m)	6048 K	Hydraulic Conductivity (m/yr)	cm/sec =	4,30E-05	Site S	Specific	3.72	2E+00	can/d	1 36E+0	3 cm/yr	Use cm/d for F	R15, R19, & R26. cm/	yr for R24	(	
394.8. B. W. Secure Width - Noticeal plane (cm) feel = 10  1948.8. Deve Secure Width - Noticeal plane (cm) feel = 3 10  200.223 (2) Set - Source Width - Noticeal plane (cm) feel = 3 10  200.231 (2) Set - Source with perpendicular to groundwriter flow direction in control plane  200.231 (2) Set - Source with - Noticeal plane (cm) feel = 8.599  200.231 (2) Set - Source with - Noticeal plane (cm) feel = 8.599  200.231 (2) Set - Source with - Noticeal plane (cm) feel = 8.599  200.231 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.231 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.231 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.231 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.231 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.231 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.231 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.232 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.233 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.234 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.235 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.235 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.235 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.235 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.235 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.235 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.235 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.235 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.235 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.235 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.235 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.235 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.235 (2) Set - Source with - Noticeal plane (cm) feel = 8.099  200.235 (2) Set - Source with - Noticeal plane (cm)	056 L-	Source Length Parallel to Groun	ndwater Flow (m)	feet = 220	Site !	Specific (m)										
Sevice Source with "refused plane (cm)   feel = 3.10   Source with perspendicular to groundwater flow direction in hostocraft plane (2002.21)   Self-Control (1902.21)	048 d.	Aquiter Thickness (m)		feet = 10	She S	Specific (m)										
Sevice Source with "refused plane (cm)   feel = 3.10   Source with perspendicular to groundwater flow direction in hostocraft plane (2002.21)   Self-Control (1902.21)	4.8 X	Distance along CL of GW Plum	e (cm)	Teal = 10	Dista	nce along ti	ne center	dine of the	proundwat	er plume em	anating fron	n a Source Th	e x direction is the dir	ection of	gw flow	
2439.4   W - Wolf of source area (cm)   feet = 80   Width of Source Area Parallel to Direction to Wind or Groundwater Movement				feei = 310												
0.0009   A. Fiest Order Degradulion Constant   Benzene = 0.0009     0.7. Warker Density   1     0.1   W. Ayerage soli moleture content   0.1 or, Surface Soli = 0.1, Subsurface soli = 0.2, or Site Specific     0.3   Intification Rate (m/hy)   0.3 for filmois     0.4   Grounweater Molety Zone Thickness (cmi)   200     0.5   Grounweater Molety Zone Thickness (cmi)   200     0.5   Gw_ Grounweater Molety Zone Thickness (cmi)   200     0.05   Gw_ Grounweater Molety Conductivity   See Table K for Input Values     0.05   Gw_ Grounweater Molety Zone Thickness (cmi)   200     0.05   Gw_ Grounweater Zone Thickness (cmi)   200	22312 Se	- Source with - vertical plane (or	m)	feet = 6,569	Soun	ce with perp	endicula	er to ground	twater flow	direction in v	vertical plan	ō				
1				feet = 80				railel to Dir	ection to V	Vind or Groun	ndwater Mov	rement				
0.1 or, Surface Soil = 0.1, Subsurface aoil = 0.2, or Site Specific 0.3 i Infilitation Rate (m/m)			nt			ene = 0.000	9		-							
1 - Infiltration Rate (m/m)	1 100	Water Density			1											
1 - Infiltration Rate (cm/hy)							oH = 0.1	Subsurfac	ce 30)) = 0.	2, or Site Sp	ecific					
1.00   1.00																
See Table K for Input Values						r Illinois			_					_		_
0.005																
10.085   1/(2b+3) - Exponent for \$20   See Table K for Input Values	3.0				See	Table K for	input Val	lues								
114   Foot-and Service   114   114   Foot-and Service   114			Objective Class 1						ter Remed	iation Object	ive Class 2					
114														-53		
200   R <sub>set</sub>   Soil Ingestion Rate						dential = 70	fcarcino	igenic), 15	(non-carcin	nogenic); Ind	ustna//Comr	nescial = 70, C	Construction Worker =	70; RBC/	A = 70	
1.3   SF or Creal Stop Factor   Dibertole_Ajamthraceope = 7.3     2   IR_ Cality Water Ingestion Rate   Residential = 21 industrial/Commercial = 1     0.00249   Solubility in Water   Dibertole_Ajamthraceope = 0.00249     0.000001   TR - Target Cancer Risk   Residential = 10° \( \text{, industrial/Commercial} = 10° \( \text{, Construction Worker} = 10° \) at point of human expositive     70   AT_2-Average Time for Carcinogens   70     350   EF - Exposure Frequency   Residential = 10° \( \text{, industrial/Commercial} = 250 \), Construction Worker = 30     30   ED - Exposure Duration for inhatation to Carcinogens   Residential = 350 \), Industrial/Commercial = 250, Construction Worker = 30     30   ED - Exposure Duration for inhatation to Carcinogens   Residential = 350 \), Industrial/Commercial = 250, Construction Worker = 1     68.81   D/C - Inverse of the mean concentration at the center of a square source   Residential = 68.81; Industrial/Commercial = 7.9 x 10° \), Construction Worker = 85.81     950000000   T - Exposure Interval   Residential = 9.8 x 1; Industrial/Commercial = 7.9 x 10° \), Construction Worker = 3.6 x 10°     9000000   T - Exposure Interval   Politicistry in Air   Dibertole_Ajamthraceon = 0.0202     0.0020   D_1 Piticistry in Air   Dibertole_Ajamthraceon = 5.0 x 10°     0.0020   D_1 Piticistry in Water   Dibertole_Ajamthraceon = 5.0 x 10°     0.10020   D_1 Districtry in Water   Dibertole_Ajamthraceon = 5.00249     0.10030   AT - Average Time for Non-Carcinogens in ingestion Equation   Dibertole_Ajamthraceon = 0.00249     0.0030   Ric - Inhatation Reference Concentration   Dibertole_Ajamthraceon = 0.00249     0.0030   Ric - Inhatation Reference Concentration   Dibertole_Ajamthraceon = 0.00249     0.0030   Ric - Inhatation Reference Concentration   Dibertole_Ajamthraceon = 0.00249     0.0030   Ric - Inhatation Reference Concentration   Dibertole_Ajamthraceon = 0.00249     0.0030   Ric - Inhatation Reference Concentration   Dibertole_Ajamthraceon = 0.00249     0.0030   Ric - Inhatation Refere	14 JF.	-Aga Adjusted Soil Ingestion	in Factor for Cardinogens		114											
2   IR, Daily Water Ingestion Rate	00 IR	-Soil Ingestion Rate			Resid	dential = 200	); Industr	rial/Commi	ercial = 50;	Construction	n Worker = 4	160				
0.00249 S - Solubility in Water 0.000001 TR - Target Cancer Risk Residential = 10 <sup>-4</sup> , Industrial/Commercial = 10 <sup>-4</sup> , Construction Worker = 10 <sup>-8</sup> at point of human expositive 70 AT <sub>2</sub> Average Time for Carcinogens 70 [IRF - Installation Unit Risk Factor Dibercial, highlithracene = 9.8 x10 <sup>-4</sup> 350 [EF - Exposure Frequency Provided P	3 SF	-Oral Slop Factor			Dipe	rezia,hjanino	желе =	7.3								-
0.00249 S - Solubility in Water 0.000001 TR - Target Cancer Risk Residential = 10 <sup>-4</sup> , Industrial/Commercial = 10 <sup>-4</sup> , Construction Worker = 10 <sup>-8</sup> at point of human expositive 70 AT <sub>2</sub> Average Time for Carcinogens 70 [IRF - Installation Unit Risk Factor Dibercial, highlithracene = 9.8 x10 <sup>-4</sup> 350 [EF - Exposure Frequency Provided P	2 IR	-Daily Water Ingestion Rate			Resid	dential = 2:	industrial	//Commerc	iai = 1							
0 000001 TR - Target Cancer Risk Residential = 10 ⁴, Industrial/Commercial = 10 ⁴, Construction Worker = 10 ⁴ at point of human expositive 70 AT₂ - Average Time for Carcinogens 70  Dibenz[a, Injunificacene = 8.8 x 10⁴  Dibenz[a, Injunificacene = 8.8 x 10⁴  Residential = 250; Construction Worker = 30  Dibenz[a, Injunificacene = 3.8 x 10⁴  Residential = 250; Construction Worker = 30  Dibenz[a, Injunificacene = 3.8 x 10⁴  Residential = 250; Construction Worker = 30  Dibenz[a, Injunificacene = 3.8 x 10⁴  Dibenz[a, Injunific																
70 ATAverage Time for Carcinogens 70  300 EF - Exposure Frequency Residential = 350, industrial/Commercial = 250; Construction Worker = 30  301 EF - Exposure Frequency Residential = 350, industrial/Commercial = 250; Construction Worker = 30  302 EF - Exposure Duration for Inhabition to Carcinogens Residential = 350, industrial/Commercial = 250; Construction Worker = 35 ER									ercial = 10	* Constructi	on Worker =	10 at point	of human exposure			
Dibertic				-			1300000		-				The state of the s			
350   EF - Exposure Frequency   Residential = 350, Industrial/Commercial = 250; Construction Worker = 30						nyla hlanitir	acene a	8 8 × 10 <sup>2</sup>								-
30 ED. Exposure Duration for Inhatation to Carcinogens Residential = 30; Industrial/Commercial = 25; Construction Worker ≥ 1  88.81									ercial = 25	0: Construction	on Worker =	30		_		
Set   Discription   Construction			ion to Cardinopens									-				
Residential = 9.5 x 10 <sup>4</sup> , Industrial/Commercial = 7.9 x 10 <sup>4</sup> , Construction Worker = 3.6 x 10 <sup>4</sup>   Disert[a, h]anthracene = 0.0202   Disert[a, h]anthracene = 0.0204   Disert[a, h]anthracene = 0.02049				are source								er = 85.81				
Dibert2 a, n anthracene = 0.0202													x 10 <sup>6</sup>			
8.03E-07   H'- Henry's Law Constant   Diberts s, Nanthracene = 6.03 x 10 <sup>-7</sup>										3,6 2, 10, 10	30100000000	7100125				
5.18E-06 D <sub>a</sub> - Diffusivity in Water 6 AT - Average Time for Non-Carcinogens in ingestion Equation 30 AT - Average Time for Non-Carcinogens in ingestion Equation 10 Tit-0 - Target Hazard Quotient 10 0.003 RIC - Inhalation Reference Concentration 20 0.003 RIC - Inhalation Reference Concentration 20 0.003 RIC - Organic Carbon Partillion Coefficient 20 0.0049 20 0											-			_		
6 AT - Average Time for Non-Carcinogens in ingestion Equation 30 AT - Average Time for Non-Carcinogens in Inhalation Equation 1 TNO - Target Itazard Guotient 1 Dibert 2, hjanthracene = 0 00249 0 003 RIC - Inhalation Reference Concentration 1 Dibert 2, hjanthracene = 0 00249 0 003 RIC - Inhalation Reference Concentration 1 Dibert 2, hjanthracene = 0 00249 0 003 RIC - Inhalation Reference Concentration 1 Dibert 2, hjanthracene = 0 00249 0 Dibert 2, hjanthracene = 0 00249 0 Dibert 2, hjanthracene = 0 00249 0 Dibert 2, hjanthracene = 3 800000 0 Dibert 2, hjanthracene														_		_
30   AT - Average Time for Non-Carcinogens in Inhatation Equation   Dibertz[a,h]anthracene = 0 00249     1   THO - Target Hazard Quotient   Dibertz[a,h]anthracene = 0 00249     3800000   K Organic Carbon Partition Conficient   Dibertz[a,h]anthracene = 0 00249     3800000   K Organic Carbon Partition Coefficient   Dibertz[a,h]anthracene = 3800000     3800000   Telegraphic Carbon Partition Coefficient   Dibertz[a,h]a			count in locarting Equation						_	_			-			
1 THO_Target Hazard Quotient									_	_				~	_	_
0.003   RC - Inhalation Reference Concentration   Diberate, hamiltones = 0.00249			Mena ut minamenti Ednatio	it						_						
3800000   K Organic Carbon Partillon Coefficient   Dibenzia,hjamihracena = 3800000     1.05-06   x   70   x   365   = 1.85+00     2.3 =   Si_8 x 10^4 x EF x ED x (Raoi)   = 7.300   x   1.005-06   x   350   x   30   x   50   3.835+00     2.5 =   Si_8 x 10^4 x EF x ED x (Raoi)   = 7.300   x   1.005-06   x   350   x   30   x   50   3.835+00     2.5 =   Si_8 x 10^4 x EF x ED x (Raoi)   = 7.300   x   1.005-06   x   350   x   30   x   50   3.835+00     2.5 =   Si_8 x 10^4 x EF x ED x (Raoi)   = 7.300   x   1.005-06   x   350   x   30   x   50   3.835+00     3.5 =   Si_8 x 10^4 x EF x ED x (Raoi)   = 7.300   x   1.005-06   x   350   x   30   x   50   3.835+00     3.5 =   Si_8 x 10^4 x EF x ED x (Raoi)   = 7.300   x   1.005-06   x   350   x   30   x   50   3.835+00     3.5 =   Si_8 x 10^4 x EF x ED x (Raoi)   = 7.300   x   1.005-06   x   350   x   30   x   50   3.835+00     3.5 =   Si_8 x 10^4 x EF x ED x (Raoi)   = 7.300   x   1.005-06   x   350   x   30   x   50   3.835+00     3.5 =   Si_8 x 10^4 x EF x ED x (Raoi)   = 7.300   x   1.005-06   x   350   x   30   x   50   3.835+00     3.5 =   Si_8 x 10^4 x EF x ED x (Raoi)   = 7.300   x   1.005-06   x   350   x   30   x   50   3.835+00     3.5 =   Si_8 x 10^4 x EF x ED x (Raoi)   = 7.300   x   1.005-06   x   350   x   30   x   50   3.835+00     3.5 =   Si_8 x 10^4 x EF x ED x (Raoi)   = 7.300   x   1.005-06   x   350   x   30   x   50   3.835+00     3.5 =   Si_8 x 10^4 x EF x ED x (Raoi)   = 7.300   x   1.005-06   x   350   x   30   x   50   3.835+00     3.5 =   Si_8 x 10^4 x EF x ED x (Raoi)   = 7.300   x   1.005-06   x   350   x   30   x   50   x   30   x			ntration													
S-3 = TR x BW x AT <sub>x</sub> x 365 = 1.0E-06 x 70 x 70 x 365 = 1.8E+00 = 7.300 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 1,				~												
S-3 = TR x BW x AT <sub>x</sub> x 365 = 1.0E-06 x 70 x 70 x 365 = 1.8E+00 = 7.300 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 250 x 30 x 50 = 3.83E+00 = 0.00E-06 x 1,00E-06 x 1,	strial/Com	mercial Ingestion Tier II Oblect	the			_		_						_		
Sri, x 10 <sup>4</sup> x EF x ED x (Raoi) 7.300 x 1,00E-06 x 350 x 30 x 50 3 85E+00  Construction Worker Ingestion Tier II Objective TR y BW x 57 x 765				1.0E-06	×	70	×	70	×	365			1.8E+00		w 267	
TR + RW + AT + 165	-	Sf, x 10 <sup>-6</sup> x	EF x ED x IRaoii				*		8		.*	50		=	0.467	mg/k
TR + RW + AT + 165	struction \	lorker ingestion Tier ii Oblecti	ve		_									_		
				1.0E-00	2	70	*	70	*	365			1.8E+00			
5-3 St, x 10 <sup>4</sup> x EF x (Rsoll 7.300 x 1,005-06 x 30 x 480 1,055-01	=	\$1 + 10	4 + FF + tRenit		_		-		-					=	17.01	mg/i

Tier 2 I-C (DBA)

#### Tier 2 Industrial/Commercial Calculations for Dibenz[a,h]anthracene MotoMart - Swansea 2002-0431

Industrial/Comm																					
nine string column	ercial Inhali	ation Tier II O	bjective													_					
S-6 =	_		R x ATc x 365		= -	1 0E-06	×	70	x	365						_ =	0.025	55	=	1.01E+02	ma/k
		URF x 1	000 x EF x ED x 1/VF	2		1.20E-03	×	1000	x	350	×	30	,	(1/	4.96E+07	1	2.54E-	04		1.012102	III gra
Construction Wo	orker inhalat	tion Tier II Ob	jective				_									-					
S-7 =		- 1	R x ATc x 365		= _	1.0E-06	X	70	×	365						_=	0.025	55	=	2.70E+02	mg/ki
200		URF x 10	000 x EF x ED x 1/VF			1.20E-03	×	1000		30	×	1	3	(1/	3.81E+05	)	9.46E	05			
RESIDENTIAL OF	R COMMER	CIAL																	_		
se ve	- 0		1.14 x Da x T) 10 x 10	*	-	68.81	.1	3 14	- 3	1.54E-11	×	9.50E+08	) "	Z X	0.0001		0.001	5	-	49579012 7947	
3-0- 41	C		1.14 x D <sub>A</sub> x T) 10 x 10 d (2 x p <sub>A</sub> x D <sub>A</sub> )		-	55.01	. (	2	×	0.967	×	1.54E-11	)				2,97E	11		455/30/2/54/	
Construction Wo	orker								_	73 % %			-		- 200						
SA= VF	= 0	x (:	(2 x (1 x D <sub>A</sub> )	•	=	85 B1	1	3.14	×	1.54E-11	x	3.60E+06	) "	2 2	0,0001	_ =	0.000	11	-	3.81F+06	
	C		(2 × 1 × DA)				(	2	×	0.967	x	1.54E-11	)				2.97E	11		3,81E+06	
Equation for Der	ivation of V	olatilization F	actor - Construction	Worker										_					-		_
S-9 = VF'	-	10.00.00	VF	100	_	3809042.8													=	380604.28	
3-3 V			10	_		10													-	300004.20	
Equation for Deri	ivation of A	oparent Diffu	slvitv																		
0.40 - D	_	(0, 2.23 x	Sivity_ D <sub>1</sub> x H') + (θ <sub>w</sub> <sup>2 23</sup> x D <sub>w</sub> ) η <sup>2</sup>	)	NE.		1	-													
5-10 - DA			n²		* .	(po = Ka)	+ 11, + 1	0, xH)													
1																					
									ж	0.000	)+(	0.024	12 1	×.	5.18E-06	1 .					
									ĸ	0.000 D;	) + (	0.024	12 1	k	5.18E-06	1 x					
									x	D,000	) + (	0.024	12 1	×.	5.18E-06	) x					
					= 1	1.65E-02	×	0.020		0;	1					) x				1.54E-11	
					= 1		×			0.000 0.33	) + ( 3832 1 + (	0.024		k K	5 18E-06 5 03E-07	) ×			п	1.54E-11	
					£ = 1	1.65E-02	×	0.020		0;	1					) x				1.54E-11	
Soll Component	of the Migra	ation to Groun	ndwater Cleanup Ob	ojective (Cias	= 1	1.66E-02 0.967	x	0.020 22040	)+	0.33	1 + (	0.292	3	r	6 035-07	7		ี่	_		
Soil Component	of the Migra	ation to Groun		ojective (Cias	= 1	1.66E-02 0.967	x	0.020 22040	)+	0.33	1 + (		3	r	6 035-07	7			_	1.54E-11 2204.034	mg/k
S-17 = 0	С., х	K.	ndwater Cleanup Ob +	ojective (Cias	= 1	1.66E-02 0.967	x	0.020 22040	)+	0.33	1 + (	0.292	3	r	6 035-07	7		1	_		mg/k
S-17 = C	C <sub>w</sub> x	K <sub>a</sub>	ndwater Cleanup Ob + .	plective (Class (θ <sub>w</sub> + θ <sub>s</sub> × ) pb	= 1	0.967	×	22040 0,1	)+	0.33	1 + (	0.292	3	r	6 035-07	7				2204.034	mg/k
S-17 = C	C <sub>w</sub> x	K.	ndwater Cleanup Ob + .	plective (Class (θ <sub>w</sub> + θ <sub>s</sub> × ) pb	= 1	1.66E-02 0.967	x	0.020 22040	)+	0.33	1 + (	0.292	3	r	6 035-07	7			_		mg/k
S-17 = C	C <sub>w</sub> x	K <sub>4</sub>	ndwater Cleanup Ob + .	plective (Class (θ <sub>w</sub> + θ <sub>s</sub> × ) pb	= 1	0.967	×	22040 0,1	)+	0.33	1 + (	0.292	3	r	6 035-07	7		_1]		2204.034	mg/k
S-17 = C  Target Soll Leact S-18 = C <sub>w</sub> Soll-Water Partiti	C <sub>w</sub> x	K <sub>4</sub>	ndwater Cleanup Ob + .	ojective (Class (6 <sub>m</sub> + 6 <sub>a</sub> × ) pb	= 1	0.967	x	22040 0,1	)+	0.33	1 + (	0.292	3	r	6 035-07	7		_1]		2204.034	mg/k
Soil Component S-17 = ( Target Soil Leact S-18 = C <sub>w</sub> Soil-Water Parilit S-19 = K <sub>d</sub>	C <sub>w</sub> x	K <sub>d</sub> miration (Class	ndwater Cleanup Ob + .s. 1) DF x GW	ojective (Class (6 <sub>m</sub> + 6 <sub>a</sub> × ) pb	= 1	1.66E-02 0.967 = 20.00	x	0.020 22040 0,1	)+	0.33	1 + (	0.292	3	r	6 035-07	7				2204.034	mg/k
S-17 = $C_w$ Target Soil Leact S-18 = $C_w$ Soil-Water Partiti S-19 = $K_d$ Water-Filled Porc	thate Concerns	K <sub>a</sub>	ndwater Cleanup Ob + .ss 1] DF x GW <sub>odg</sub> K <sub>rec</sub> x f <sub>rec</sub>	ojective (Class (0 <sub>w</sub> ≠ 0 <sub>x</sub> x) pb	= ((((ss1))))	0.967 20 00	x x	0.020	)+ x	0.33	1 + (	0.292	3	r	6 035-07	7				2204.034 0.1 22040	mg/k
S-17 = C  Target Soll Leact S-18 = C <sub>w</sub> Soll-Water Partiti	thate Concerns	K <sub>a</sub>	ndwater Cleanup Ob + .ss 1] DF x GW <sub>odg</sub> K <sub>rec</sub> x f <sub>rec</sub>	ojective (Class (0 <sub>w</sub> ≠ 0 <sub>x</sub> x) pb	= ((((ss1))))	1.66E-02 0.967 = 20.00	x x	0.020	)+ x	0.33	1 + (	0.292	3	r	6 035-07	7		_1]		2204.034	mg/l

Tier 2 I-C (DBA)



4

Tier 2 I-C (DBA)

# APPENDIX F

# **ANALYTICAL RESULTS**

PREVIOUSLY IMAGED

CORRECTIVE ACTION PLAN
MOTOMART
SWANSEA, ILLINOIS

## MotoMart - Swansea Site Assessment Data

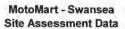
## **Waste Characterization**

	Location	M 8	M 10
X	Date	4/3/2002	4/3/2002
	Depth	2.5'	2.5'
Parameter	Class I CUO		
Benzene	0.03	0.531	0.444
Ethylbenzene	13.0	2.32	1.74
Toluene	12.0	0.721	<0.002
Total Xylenes	5.6	5.26	2.77
MTBE	0.32		
Acenaphthene	570.0	ND	ND
Acenaphtylene	15.0	4.1	4.4
Anthracene	12,000.0	ND	ND
Benzo(a)anthracene	0.9	ND	0.19
Benzo(a)pyrene	0.09	ND	ND
Benzo(b)fluoranthene	0.9	ND	ND
Benzo(g,h,i)perylene	2,300.0	ND	ND
Benzo(k)fluoranthene	9.0	ND	ND
Chrysene	88.0	ND	ND
Dibenz(a,h)anthracene	0.09	ND	ND
Fluoranthene	4,300.0	2.5	0.8
Fluorene	560.0	0.17	0.27
Indeno(1,2,3-cd)pyrene	0.9	ND	ND
Naphthalene	1.8	2.8	3.8
Phenanthrene	140.0	1.9	2.
Pyrene	2,300.0	ND	1.1

MotoMart - Swansea Site Assessment Data

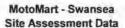
Stage 1 Soil - 9.6.06

								C	Y		
	Location	BH-1A	BH-1B	BH-2A	BH-2B	BH-2C	BH-3	BH-4	BH-5A	BH-5B	BH-5C
	Date	9/6/2006	9/6/2006	9/6/2006	9/6/2006	9/6/2006	9/6/2006	9/6/2006	9/6/2006	9/6/2006	9/6/2006
	Depth	10"	12'	4'	8,	14'	13'	14'	4'	9'	13'
Parameter	Class I CUO										
Benzene	0.03	0.749	3.03	0.025	0.096	0.001	0.463	ND	0.001	0.474	0.173
Ethylbenzene	13.0	0.039	6.01	ND	0.274	ND	ND	ND	ND	9.86	2.62
Toluene	12.0	ND									
Total Xylenes	5.6	0.037	16.4	0.012	ND	ND	ND	ND	ND	25.7	1.76
MTBE	0.32										
Acenaphthene	570.0	ND									
Acenaphtylene	15.0	ND	ND	0.058	ND						
Anthracene	12,000.0	ND	ND	0.045	ND	ND	ND	0.021	ND	ND	ND
Benzo(a)anthracene	0.9	ND	ND	0.012	ND	ND	ND	0.044	ND	ND	ND
Benzo(a)pyrene	0.09	ND	ND	0.16	ND	ND	ND	0.054	ND	ND	ND
Benzo(b)fluoranthene	0,9	ND	ND	0.18	ND	ND	ND	0.054	ND	ND	ND
Benzo(g,h,i)perylene	2,300.0	ND	ND	0.13	0.17	ND	ND	0.017	ND	ND	ND
Benzo(k)fluoranthene	9.0	ND	ND	0.1	ND	ND	ND	0.023	ND	ND	ND
Chrysene	88.0	ND	ND	0.19	ND.	ND	ND	0.058	ND	ND	ND
Dibenz(a,h)anthracene	0.09	ND	ND	0.23	ND						
Fluoranthene	4,300.0	ND	ND	0.46	ND	ND	ND	0.15	ND	ND	ND
Fluorene	560.0	ND									
Indeno(1,2,3-cd)pyrene	0.9	ND	ND	0.12	ND	ND	ND	0.025	ND	ND	ND
Naphthalene	1.8	ND	ND	ND	ND	ND	ND	0.11	ND	0.15	0.18
Phenanthrene	140.0	ND	ND	0.25	ND	ND	ND	0.11	ND	0.014	0.014
Pyrene	2,300.0	ND	ND	0.3	ND	ND	ND	0.11	ND	ND	ND



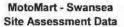
Stage 1 GW - 10.5.06

	Location	MW-1	MW-2	MW-3	MW-4	MW-5
	Date	10/5/2006	10/5/2006	10/5/2006	10/5/2006	10/5/2006
Parameter	Class I CUO		-1.5		7	
Benzene	0.005	8.3	0.269	ND	2.	ND
Ethylbenzene	0.7	3.24	0.036	ND	3.83	ND
Toluene	1.0	ND	0.01	ND	0.122	ND
Total Xylenes	10.0	5.24	0.019	ND	8.77	ND
MTBE	0.07	0.048	0.037	ND	ND	0.032
Acenaphthene	0.42	ND	ND	ND	ND	ND
Acenaphtylene	0.010	ND	ND	ND	ND	ND
Anthracene	2.1	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.00013	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.0002	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	0.00018	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	0.00076	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	0.00017	ND	ND	ND	ND	ND
Chrysene	0.0015	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	0.0003	ND	ND	ND	ND	ND
Fluoranthene	0.28	ND	ND	ND	ND	ND
Fluorene	0.28	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.00043	ND	ND	ND	ND	ND
Naphthalene	0.14	0.387	ND	ND	1.23	ND
Phenanthrene	0.0064	0.002	0.001	ND	0.003	ND
Pyrene	0.21	ND	ND	ND	ND	ND



Stage 2 Soil - 5.10.07

	Location	BH-6A	BH-6B	BH-7A	BH-7B	BH-8	BH-9A	BH-9B
	Date	5/10/2007	5/10/2007	5/10/2007	5/10/2007	5/10/2007	5/10/2007	5/10/2007
	Depth	4-5'	6-7'	4-5'	6-7'	7-8'	3-4'	7-8'
Parameter	Class I CUO							100
Benzene	0.03	ND	ND	ND	0.001	ND	ND	0.312
Ethylbenzene	13.0	ND	ND	ND	ND	ND	ND	0.195
Toluene	12.0	ND						
Total Xylenes	5.6	ND	ND	ND	ND	ND	ND	0.31
MTBE	0.32							
Acenaphthene	570.0	ND	ND	ND	ND	ND	0.41	0.11
Acenaphtylene	15.0	ND	ND	ND	ND	ND	0.94	0.21
Anthracene	12,000.0	ND	ND	ND	ND	ND	1.2	0.25
Benzo(a)anthracene	0.9	ND	0.011	ND	ND	ND	2.5	0.79
Benzo(a)pyrene	0.09	0.012	0.024	0.02	ND	ND	2.6	0.99
Benzo(b)fluoranthene	0.9	ND	0.03	0.016	ND	ND	2.5	0.84
Benzo(g,h,i)perylene	2,300.0	ND	0.046	ND	ND	ND	1.8	0.42
Benzo(k)fluoranthene	9.0	ND	ND	ND	ND	ND	1.3	0.47
Chrysene	88.0	ND	0.021	ND	ND	ND	2.9	0.88
Dibenz(a,h)anthracene	0.09	ND	ND	ND	ND	ND	0.54	0.17
Fluoranthene	4,300.0	ND	0.058	0.029	ND	ND	8.	2.1
Fluorene	560.0	ND	ND	ND	ND	ND	0.21	0.38
Indeno(1,2,3-cd)pyrene	0.9	ND	0.019	ND	ND	ND	1.7	0.52
Naphthalene	1.8	ND	ND	ND	ND	ND	0.23	0.2
Phenanthrene	140.0	0.012	0.025	0.18	ND	ND	5.2	0.93
Pyrene	2,300.0	0.012	0.032	0.18	ND	ND	4.7	1.5



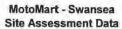
Stage 2 Soil - 7.25.07

	Location	BH-10A	BH-10B	BH-11A	BH-11B
	Date	7/25/2007	7/25/2007	7/25/2007	7/25/2007
	Depth	4'	9'	4'	8"
Parameter	Class I CUO				
Benzene	0.03	0.004	0.006	ND	ND
Ethylbenzene	13.0	ND	ND	ND	ND
Toluene	12.0	0.01	0.011	ND	ND
Total Xylenes	5.6	0.007	0.008	0.015	ND
MTBE	0.32				
Acenaphthene	570.0	ND	ND	ND	ND
Acenaphtylene	15.0	ND	ND	0.23	ND
Anthracene	12,000.0	ND	ND	0.015	ND
Benzo(a)anthracene	0.9	ND	ND	0.042	ND
Benzo(a)pyrene	0.09	ND	ND	0.11	ND
Benzo(b)fluoranthene	0.9	ND	ND	0.087	ND
Benzo(g,h,i)perylene	2,300.0	ND	ND	0.018	ND
Benzo(k)fluoranthene	9.0	ND	ND	0.074	ND
Chrysene	0.88	ND	ND	0.078	ND
Dibenz(a,h)anthracene	0.09	ND	ND	ND	ND
Fluoranthene	4,300.0	ND	ND	0.42	ND
Fluorene	560.0	ND	ND	0.059	ND
Indeno(1,2,3-cd)pyrene	0.9	ND	ND	0.042	ND
Naphthalene	1.8	ND	ND	ND	ND
Phenanthrene	140.0	ND	ND	0.4	ND
Pyrene	2,300.0	ND	ND	0.1	ND

MotoMart - Swansea Site Assessment Data

Stage 3 Soil - 11.19.08

	Location	BH-12A	BH-12B	BH-12C	BH-13A	BH-13B	BH-14A	BH-14B	BH-15A	BH-15B	BH-16A	BH-16B
	Date	11/19/2008	11/19/2008	11/19/2008	11/19/2008	11/19/2008	11/19/2008	11/19/2008	11/19/2008	11/19/2008	11/19/2008	11/19/2008
	Depth	4'	8'	12'	4'	8'	4'	8'	4'	8'	4'	8'
Parameter	Class I CUO									1000		1000
Benzene	0.03	ND	0.002	ND	ND	ND						
Ethylbenzene	13.0	ND										
Toluene	12.0	ND	0.001	ND	ND	ND						
Total Xylenes	5.6	ND										
MTBE	0.32			100								
Acenaphthene	570.0	ND										
Acenaphtylene	15.0	ND										
Anthracene	12,000.0	ND	0.15	ND	ND	ND	ND	0.02	ND	ND	ND	ND
Benzo(a)anthracene	0.9	0.029	0.75	0.047	ND	0.025	0.032	0.13	ND	ND	0.063	0.051
Benzo(a)pyrene	0.09	0.033	1.5	0.077	ND	0.037	0.053	0.13	ND	ND	0.12	0.08
Benzo(b)fluoranthene	0.9	0.045	1.8	0.058	ND	0.025	0.028	0.12	ND	ND	0.087	0.06
Benzo(g,h,i)perylene	2,300.0	0.013	1.3	0.043	ND	0.015	0.036	0.078	ND	ND	0.042	0.039
Benzo(k)fluoranthene	9.0	ND										
Chrysene	88.0	0.049	1.5	0.08	ND	0.039	0.051	0.21	ND	ND	0.082	0.076
Dibenz(a,h)anthracene	0.09	ND	0.26	ND								
Fluoranthene	4,300.0	0.15	2.8	0.23	ND	0.09	0.11	0.55	ND	ND	0.23	0.22
Fluorene	560.0	ND										
Indeno(1,2,3-cd)pyrene	0.9	0.028	0.93	0.043	ND	0.024	0.029	0.073	ND	ND	0.061	0.043
Naphthalene	1.8	ND										
Phenanthrene	140.0	0.099	0.8	0.14	ND	0.034	0.046	0.25	ND	ND	0.1	0.12
Pyrene	2,300.0	0.1	2.4	0.13	ND	0.08	0.081	0.4	ND	ND	0.14	0.12



Stage 3 GW - 12.2.08

	Location	MW-6	MW-7	MW-9	MW-10
	Date	12/2/2008	12/2/2008	12/2/2008	12/2/2008
Parameter	Class I CUO				
Benzene	0.005	ND	ND	ND	ND
Ethylbenzene	0.7	ND	ND	ND	ND
Toluene	1.0	ND	ND	ND	ND
Total Xylenes	10.0	ND	ND	ND	ND
MTBE	0.07	4. 5. 1			
Acenaphthene	0.42	ND	ND	ND	ND
Acenaphtylene	0.010	ND	ND	ND	ND
Anthracene	2.1	ND	ND	ND	ND
Benzo(a)anthracene	0.00013	ND	ND	ND	ND
Benzo(a)pyrene	0.0002	ND	ND	ND	ND
Benzo(b)fluoranthene	0.00018	ND	ND	ND	ND
Benzo(g,h,i)perylene	0.00076	ND	ND	ND	ND
Benzo(k)fluoranthene	0.00017	ND	ND	ND	ND
Chrysene	0.0015	ND	ND	ND	ND
Dibenz(a,h)anthracene	0.0003	ND	ND	ND	ND
Fluoranthene	0.28	ND	ND	ND	ND
Fluorene	0.28	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.00043	ND	ND	ND	ND
Naphthalene	0.14	ND.	ND	ND	ND
Phenanthrene	0.0064	ND	ND	ND	ND
Pyrene	0.21	ND	ND	ND	ND

MotoMart - Swansea Site Assessment Data

Stage 3 Soil - 9.3.15

	Location	BH-17	BH-17	BH-17	BH-18	BH-18	BH-18	BH-19	BH-19	BH-19
	Date	9/3/2015	9/3/2015	9/3/2015	9/3/2015	9/3/2015	9/3/2015	9/3/2015	9/3/2015	9/3/2015
	Depth	2.5'	7.5	12.5*	2.5	7.5'	12.5	2.5'	7.5'	12.5'
Parameter	Class I CUO									
Acenaphthene	570.0	ND	0.265	ND						
Acenaphtylene	15.0	ND	ND	ND	0.004	ND	0.006	ND	0.183	ND
Anthracene	12,000.0	0.006	ND	ND	0.012	ND	0.012	0.006	0.913	ND
Benzo(a)anthracene	0.9	0.047	ND	ND	0.123	ND	0.061	0.031	2.85	0.027
Benzo(a)pyrene	0.09	0.065	ND	ND	0.141	ND	0.063	0.034	2.41	0.026
Benzo(b)fluoranthene	0.9	0.109	ND	ND	0.195	ND	0.093	0.046	2.86	0.044
Benzo(g,h,i)perylene	2,300.0	0.038	ND	ND	0.064	ND	0.033	0.017	0.955	0.019
Benzo(k)fluoranthene	9.0	0.039	ND	ND	0.067	ND	0.035	0.015	1.18	0.017
Chrysene	88.0	0.068	ND	ND	0.116	ND	0.069	0,036	2.28	0.032
Dibenz(a,h)anthracene	0.09	0.01	ND	ND	0.018	ND	0.009	0.004	0.223	ND
Fluoranthene	4,300.0	0.096	ND	ND	0.159	ND	0.139	0.056	6.95	0,067
Fluorene	560.0	ND	ND	ND	ND	ND	0.004	ND	0.32	ND
Indeno(1,2,3-cd)pyrene	0.9	0.034	ND	ND	0.068	ND	0.031	0.014	0.858	0.016
Naphthalene	1.8	ND	ND	ND	ND	ND	ND	0.005	0.138	ND
Phenanthrene	140.0	0.036	ND.	ND.	0.055	ND	0.071	0.039	4.42	0.026
Pyrene	2,300.0	0.086	ND	ND	0.146	ND:	0.117	0.06	5.49	0.056

## MotoMart - Swansea Site Assessment Data

Stage 3 GW - 9.3.15

	Location	MW-8
	Date	9/3/2015
Parameter	Class I CUO	
Benzene	0.005	ND
Ethylbenzene	0.7	ND
Toluene	1.0	ND
Total Xylenes	10.0	ND
Acenaphthene	0.42	ND
Acenaphtylene	0.010	ND
Anthracene	2.1	ND
Benzo(a)anthracene	0.00013	0.00014
Benzo(a)pyrene	0.0002	0.00011
Benzo(b)fluoranthene	0.00018	0.00019
Benzo(g,h,i)perylene	0.00076	0.00010
Benzo(k)fluoranthene	0.00017	ND
Chrysene	0.0015	0.00014
Dibenz(a,h)anthracene	0.0003	ND
Fluoranthene	0.28	0.00022
Fluorene	0.28	ND
Indeno(1,2,3-cd)pyrene	0.00043	ND
Naphthalene	0.14	ND
Phenanthrene	0.0064	0.00012
Pyrene	0.21	0.00017

# APPENDIX G

# **OFF-SITE AFFIDAVITS**

PREVIOUSLY IMAGED

CORRECTIVE ACTION PLAN MOTOMART SWANSEA, ILLINOIS

# PREVIOUSLY IMAGED

In accordance with the 415 ILCS 5/57-57.17, I do solemnly swear that every effort has been attempted in order to gain access to properties west of the Moto, Inc. facility in Swansea, Illinois, owned by Medstar Ambulance, Inc., Sparta, Illinois. The Moto, Inc. facility property is located at 1324 North Illinois Street, Swansea, Illinois and has been assigned Incident number 2002-0431. The Medstar Ambulance, Inc. properties are identified as 1209 North Illinois Street, and a parking lot located north of 1209 North Illinois in Swansea, Illinois located adjacent to the west side of Illinois Street. The access requests have been completed for the purposes of site investigation and remediation of the Moto, Inc. property. The following is the attempt that has been made and the neighboring property owner's response to the attempt.

- A request for access was dated January 25, 2008 and sent via Certified Mail #7006 2760 0000 6494 4991 to Medstar Ambulance. The letter was received January 26, 2008. This letter included the language required by 35 Illinois Administrative Code 742.350 b).
- A second request for access was dated March 25, 2008 and sent via Certified Mail #7006 2760 0000 6494 4328 to Medstar Ambulance. The letter was received March 28, 2008.
   This letter included the language required by 35 Illinois Administrative Code 742.350 b).
- A third request for access was dated January 14, 2009 and sent via Certified Mail #7008 0500 0001 2051 2540 to Medstar Ambulance. The letter was received January 16, 2009. This letter included the language required by 35 Illinois Administrative Code 742.350 b).
- · To date, no response to the requests has been received.

Copies of the requests and proof of delivery are attached.

Owner/Operator; _	Rob Whittingto	on		Title:	Agent
Signature:	and Withing	4	Date:	7/6/16	
Subscribed and swo	orn to before me the	6th	day of	July	, 2016
Delen C	1 Cell		Seal:	Official Helen M Notary Public, S	ODell tate of Illinois
(	Notary Public)			Rt. Clair C	Jounty Fes June 20, 2017

# PREVIOUSLY IMAGED

In accordance with the 415 ILCS 5/57-57.17, I do solemnly swear that every effort has been attempted in order to gain access to the property west of the Moto, Inc. facility in Swansea, Illinois, owned by Ms. Karen Roussel, Waddell, Arizona. The Moto, Inc. facility property is located at 1324 North Illinois Street, Swansea, Illinois and has been assigned Incident number 2002-0431. The Roussel property is identified 1309 North Illinois Street, Swansea, Illinois located adjacent to the west side of Illinois Street. The access requests have been completed for the purposes of site investigation and remediation of the Moto, Inc. property. The following is the attempt that has been made and the neighboring property owner's response to the attempt.

- A request for access was dated January 14, 2009 and sent via Certified Mail #7008 0500 0001 2051 2557 to Karen Roussel. This letter included the language required by 35 Illinois Administrative Code 742.350 b).
- · To date, no response to the request has been received.

Copies of the requests and proof of delivery are attached.

Owner/Operator:	Rob Whittington		Title:	Agent
Signature:	Olst Withington	Date:	1/4/16	
Subscribed and sworn	to before me the 645	_ day of	uly	_, 2016
Jolen 1	M. O'Qul otary Public)	Seal:	Notary	Official Seal Helen M ODell Public, State of Illinois St. Clair County sion Expires June 20, 2017

# PREVIOUSLY IMAGED

In accordance with the 415 ILCS 5/57-57.17, I do solemnly swear that every effort has been attempted in order to gain access to the property west of the Moto, Inc. facility in Swansea, Illinois, owned by Mr. Dave Wuebbels, Belleville, Illinois. The Moto, Inc. facility property is located at 1324 North Illinois Street, Swansea, Illinois and has been assigned Incident number 2002-0431. The Wuebbels property is identified 1307 North Illinois Street, Swansea, Illinois located adjacent to the west side of Illinois Street. The access requests have been completed for the purposes of site investigation and remediation of the Moto, Inc. property. The following is the attempt that has been made and the neighboring property owner's response to the attempt.

- A request for access was dated January 14, 2009 and sent via Certified Mail #7008 0500 0001 2051 2533 to Dave Wuebbels. The letter was received January 15, 2009. This letter included the language required by 35 Illinois Administrative Code 742,350 b).
- · To date, no response to the request has been received.

Copies of the requests and proof of delivery are attached.

Owner/Operator:	Rob Whittington		Title:	Agent
Signature:	Det Withoff	Date:	7/6/13	
Subscribed and sworm	to before me the 64h	day of	July	_, 2016
Willen W	otary Public)	Seal;	Notary Pu 自t.	Official Seal plen M ODell blic, State of Illinois Clair County n Expires June 20, 2017

## PREVIOUSLY IMAGED

LEAKING UST TECHNICAL REVIEW NOTES

Reviewed by: Shirlene South

File Heading: LPC # 1631405021 Co. St. Clair

Date Reviewed: 3/8/07

Swansea/ Moto Mart, Inc

Re-reviewed: 7/10/2012 Reviewed: 7/1/2016 Re-Reviewed: 11/18/16

IEMA Date: 04/03/02

Leaking UST Incident No. 20020431

H. Oil

LUST Technical File

Under: 734

PRP: MotoMart, Inc.

Attn: Joseph Hooten Rob Whittington Env Mang

Consultant: CWM USI Attn: Vince Smith

P.O. Box 122 Belleville, Ill 62222

701 s. grand Ave Springfield, Il 62704

618/233-6754

217-522-8001

Document(s) Reviewed:

SIP I AND SIP II

#### General Site Information:

Site subject to: Title 734

IEMA date(s) 4/03/02			Reimbursement (Y/N/unknown): Y			
UST System removed (Y/N): Y			ID»			
Encountered Groundwater (Y/N): Y			tion completion			
	The second of th		WAP (Y/N): Y			
ation	MTBE > 40	ppb (Y_N);«D	ate»			
as of 7/25/16	VI: Y 7/25/	16	RTK-Y 7/26/16			
Release	Cause	Removed	Eligibility			
Y	Tank leak	Y	Y			
N		N	N/A			
N		N	N/A			
N		N	N/A			
N		N	N/A			
	ation e as of 7/25/16 Release Y N N	OSFM Fac. I  I): Y  SWAP mapp date: 3/09/20  Site placeme 38.526140/-8  ation  Pas of 7/25/16  Release  Y  N  N  N  N	OSFM Fac. ID #: «OSFM_ I): Y  SWAP mapping and evalua date: 3/09/2007  Site placement correct in SY 38.526140/-89.983725  ation  MTBE > 40 ppb (Y_N): «December of 7/25/16  Release  VI: Y 7/25/16  Removed  Y  N  N  N  N  N  N			

<sup>\*</sup>at issuance of CAP will need to finish filing out E & J Reporting Form

#### Review Notes:

From D/ ware

7/16/02-45 day report

560 g H.Oil / fuel ??

Removed 5 yds3 of contaminated fill and native soil

Small amount of odorous water emptied in to tank pit after removal of tank

Did not recharge,

45 day reports states

gw-Y. sheen-Y,

F.P. N

8/8/02-Letter from EPA 7/28/06-Elect to Proceed IEPA-DIVISION OF RECORDS MANAGEMENT RELEASABLE

DEC 28 2016

REVIEWER: EMI

# PREVIOUSLY IMAGED

## 3/8/07- Summary of Sip Stage I and Budget

- GEI collected 2 soil samples, one beneath the tank and one from the claysoil beneath the clay seam
- USI advanced 5 SB's and 5 MW's. Results exceeded TACO TI c.u.obj's for BTEX and PNA's, and GW ClassI obj's
- · The site is primarily silty clay
- Hy . Con.(K) -4.030 X10<sup>-5</sup> cm/sec
- No community wells with in 2500' radius and no privte wells locted w/in 200', no regulated recharge areas or well head protection w/in setback
- Proposal for obtaining Teir 2 obj's

HY/ cond (K)
Soil bulk density

Soil bulk density(Pb)

Soil particle(Ps) Moisture Content(w)

Organic carbon content(foc)

Four additional soil borings(6-,7,8, and 9). Two of these sb's will be to the nw and ne of the tank hold along those property lines. Along with two contingency boring to the south if needed during stage III

Will install monitoring wells during Stage III investigation for off-site, since they are already at property boudaries.

#### Budgets

Stage I	(Proposed)	(Actual)
Drilling and Monitoring Well costs Form:	\$4,615.00	\$-
Analytical Costs Form:	\$4,100.39	\$-
Remediation and Disposal Costs Form:	\$1,541.88	\$-
UST Removal and abandonment Costs Form:	<b>\$</b> -	\$-
Paving, Demolition and Well Abandonment Costs Form:	\$-	\$-
Consulting Fees Form:	\$3,932.58	S-
Total Proposed Budget	\$14,189.85	\$-
L.P.E./L.P.G. Certification:		

# PREVIOUSLY IMAGED

Joseph Kelly 11/30/07

## IEPA Recommendation/Comments:

Requesting information for the following:

- Actual source of the contamination and of the MTBE > 40 ppb\*
- Tank and pipe tightness results since 2002.

## Response Due:

6/13/07

\* sent required email to D. Clay and HAA

SLS:sls\

### Document(s) Reviewed:

SIP Stage II & III

### Review Notes:

SII-6 sb's were advanced, BH-9 and BH-11 were found to exceed objectives. 5 mw's were advanced

## Proposed:

SIII- 6 add'l borings BH12-17 to define off-site

9(3) add'l mw.s to define gw contamination, BH12-17, will be converted from sb'ing to mw. will be off-site and one will be to the south

Stage II	(Proposed)	(Actual)
Drilling and Monitoring Well costs Form:	\$2,775.33	\$
Analytical Costs Form:	\$5.001.83	\$
Remediation and Disposal Costs Form:	\$770.94	\$
UST Removal and abandonment Costs Form:	\$-	\$
Paving, Demolition and Well Abandonment Costs Form:	\$-	\$
Consulting Fees Form:	\$12,697.65	\$
Total Proposed Budget	\$21,245.75	S

## L.P.E./L.P.G. Certification:

Joseph Kelly

# PREVIOUSLY IMAGED

11/30/07

### IEPA Recommendation/Comments:

## Response Due:

2/13/08

\* sent required email to D. Clay and HAA

SLS:sls\

Document(s) Reviewed: 7/3/2012

SIP stage III CW3M is the new consultant

#### Review Notes:

Soil – has been delineated for btex but not pna's. Proposing three soil borings to the east. Access has been denied to the west. The plume goes off-site into the neighboring property and into the street (RT 159) to the west.

BH-1, 2, 3, 5, 9,11,12 &16-9 & 12 had PNA's

GW-propose only sampling mw-8 as have not been able to get a sample as yet.

MW-1, 2, 4, BH-9, 11, 12, & 14, off site

7/9/12-Spoke to Vince Smith to clarify the reports statement of completing previously approved work pertaining to GW they only plan on sampling mw-8.

The report is only 100 pages in to with 10 pages being the budget so The plan is narrowed down to 100 pages, 3x's (\$50-\$20=\$30) The budget to 10 pages, 3x's\_(\$20-\$17=\$3) And the reimbursement generously 30 pages, 3x's.(\$50-\$35=\$15) In total \$72 adjusted in the consultant material costs

L.P.E./L.P.G. Certification:

Vince Smith

IEPA Recommendation/Comments:

Approve plan with modified budget

Response Due:

8/14/2012

sls\

PREVIOUSLY IMAGED

Document Reviewed: Stage 3 SIP and budget amendment

Dated: 10/15 Received: 10/27/15

Last report received in July of 2012 Watch budget for rates used

#### Review Notes:

Two soil borings are being proposed to delineate extent of soil contamination off-site for PNA's

The 3 PNA's are BaA, BaP, BbF and Di(a,h)BA theses are locate on the south and east properties, due to the poorly marked map(failed to show bldg, to the south or grassy area to the south) it is difficult to say exactly where they plan to place them. The area is gravel per google satellite map. Cannot see where it would be coming from off-site

And a gw sample from mw-8 which after two dry attempts and 1 event where it had exceedences. (that barely qualified)

Gw map is drawn incorrectly plume goes out into HWY 159 there is a clean mw at the edge of the property, there are multiple borings and mw marked incorrectly or plume not drawn and one bh-5 needs to be delineated so I called Vince Smith and asked him to have it corrected and send me new maps. Some say it is not sampled, but are rather no exceedences. And BH-19 needs to be delineated and they ask for 2 more borings to delineate and yet map is marked clean??? Putting to the side and hoping I get a map quickly.]

1-27/16--Have received new maps (all of them redone)

The two proposed boring are for delineating BH-19(it is decided that the contamination at BH-19 is unrelated to this incident and is from another source, but another boring/mw is required to delineate BH-5/mw-4 on the west property boundary which has soil exceedance, (yet the gw plume is drawn out into the street, because of the soil/gw exceedance)

The plan will require modification of an additional SB/mw in the street (?) in order to delineate BH-5/mw-4

Soil	ft.	В	E	T	X	BaP	DiB	Nap	In	BbF	
Bh-1	10	749	-	8	-	9	-	-			#1
BH-1	12	3.03	5	-	16.4	2	-	-			
BH-2	4	9	-	4	2	٠	0.23	-			
BH-2	8	.096	-	-	-	-	12	3			
BH-3	13	0.463	-	-		-	-	-			
BH-5	9	.474			25.7	4	4	~			

Page 6	PREVIO	USL)	1MA	GED						
BH-9 3-4		-	4			.54		1.7		#2
Bh-9 7-8	.312	-	5	~	.99	.17				
BH-114	-	-	9	ż	.11	-		11-11		
BH-128	-	18			1.5	.26	-	.93	1.8	#3
BH-19 7.5	-	-	-	×	2.41	.223	BaA 2	.85(out	OF ROOM	M)
GW Mw-1	B 8.3	E 3.24	T	X	NAP	STA	GE #1			
Mw-2	.269	-	-		-					
Mw-4 2	3.83	-	8	1.23						
MW-5?										
MW-6	+		-		-	STA	GE #3			
	BaA		BaP	DiB	Nap	In	BbF			
MW-8	.0001	4	8	-	9	5	.000	1		

Drilling and Monitoring Costs	\$1,486.97	\$.00	\$.00
Analytical costs	\$1,454.82	\$602.25	\$852.57
Remediation and Disposal Costs	\$.00	\$.00	\$.00
Ust Removal and Abandonment Costs	\$0.00	\$.00	\$.00
Paving, Demo, and Well Abandonment	\$0.00	\$.00	\$.00
Consulting Personnel Costs Form	\$14,520.87	\$.00	\$.00
Consulting Materials Costs Form	\$695.00	\$.00	\$.00
Total Budget	\$18,777.23	\$.00	\$18,174.98

Subtracted the costs for 3 of the PNA soil cost sand encore sample kits 6 X 188.36=\$1,130.16; 3x 188.36=\$ 565.08 6 x 12.39=\$74.34; 3 x 12.39=\$37.17

There will be additional cost for mw which will be received in an amended report The costs for the drilling was subpart H and would not change.

## L.P.E./L.P.G. Certification:

Vince Smith

### IEPA Recommendation/Comments:

Modify plan to delineate east of BH-5 / mw-4 which has soil and gw exceedences. No boring is needed south of BH-19 and can go ahead and check mw-8(gw) Budget is modified

## Response Due:

2/24/16-120 days Completed: 2-29-16

Page 7

# PREVIOUSLY IMAGED

sls\

Document Reviewed: SICR 7/5/16

Dated: April 1 2016 Received: April 4, 2016

-State that they will be including a soil gas sample in the CAP, unless the IEPA decides otherwise.

\_

#### Review Notes:

Hy C(K)=1.30 x 10<sup>-5</sup> Soil bulk Density(pb)=60.4lb/ft3 or (0.967cm/sec) Soil particle Density (ps)=2.54 g/cm3 Moisture content(w)=2.86 FOC=0.0058g/g Classification=Loamy sand

Soil: BZ, XY, BaP, DiBenzo A,h

GW: BZ, ETBZ, Nap

Soil is delineated for 0-5 feet

Soil is (?) delineated 5-10 feet, BH-19 has PNA's and is not delineated and BH-5 has BTEX at same depth and not delineated. Apparently access was denied

Requested copied of the access denial s and Vince smith emailed me copies of these and are attached to the front cover of the report.

Gw is Class I

There is no GW ordinance in effect, there is a limited gw ordinance just north east of the site. There is likely contamination in the roadway(HWY 159) but all the properties to the west have denied access.

The contamination south of the site is likely from the copper smelt as it is higher in concentration to that found on the property.

This went to the managers meeting and it was decided to question whether or not one boring could be put in the ROW, appears it cannot also requested modeling which V. Smith provided.

Pertaining to the budget:

# PREVIOUSLY IMAGED

Page 8

There are costs such as PID, measuring wheel, camera, bailers and oversight/technical review that presently would be either eliminated as indirect costs or reduced to more reasonable rates. Since the proposed budgets were approved the costs stand as submitted.

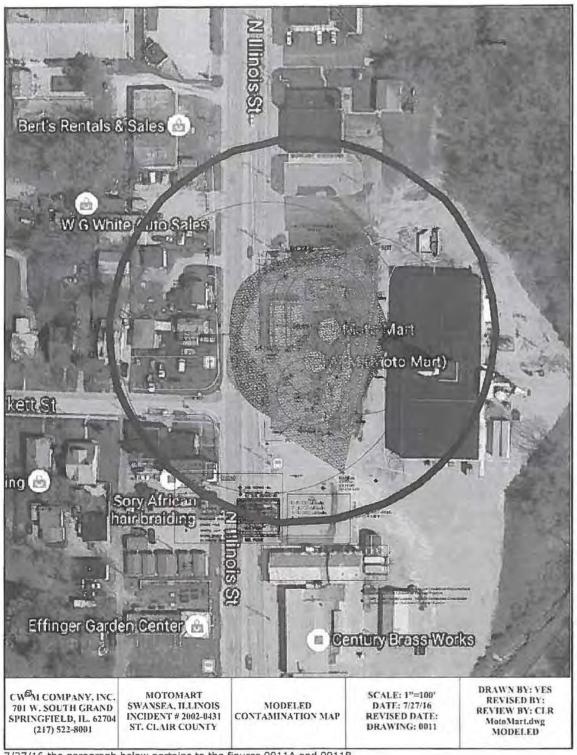
	total	USI Part I	CWM Part of part ISICR	CWM Part 3	CWM Part 4
Drilling and Monitoring Costs	\$4,911.28	\$3,536.20	\$1,375,08	\$1,375.08	\$.00
Analytical costs	\$6,093.09	\$4,100.65	\$1,992,44	\$1,992.44	\$.00
Remediation and Disposal Costs	\$.00	\$	\$.00	\$.00	\$.00
Ust Removal and Abandonment Costs	\$0.00	\$.00	\$.00	\$.00	\$.00
Paving, Demo, and Well Abandonment	\$0.00	\$.00	\$.00	\$.00	\$.00
Consulting Personnel Costs Form	\$41,825.73	\$13,451.43	\$9,456.42*(**)	\$11,509.30	\$7,620.32
Consulting Materials Costs Form	\$1,445.35	\$739,35	\$49.50	\$418.00	\$238.50
Total Budget	\$54,487.19	\$21,827.63	\$15,083.08	\$15,294.82	\$7,858.82

## 2\*105.87=211.74

exceeds the original approved budget of 8 hours for projects cost review/ approval, reimbursement package review for Sr. PM (\*\*) 9456.42-211.74=\$9.244.68 is approved

# PREVIOUSLY IMAGED

Page 9

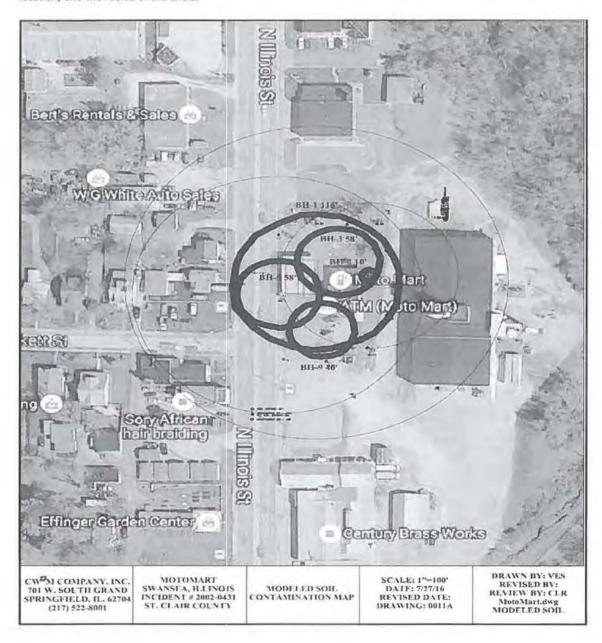


7/27/16 the paragraph below pertains to the figures 0011A and 0011B Shirlene,

# PREVIOUSLY IMAGED

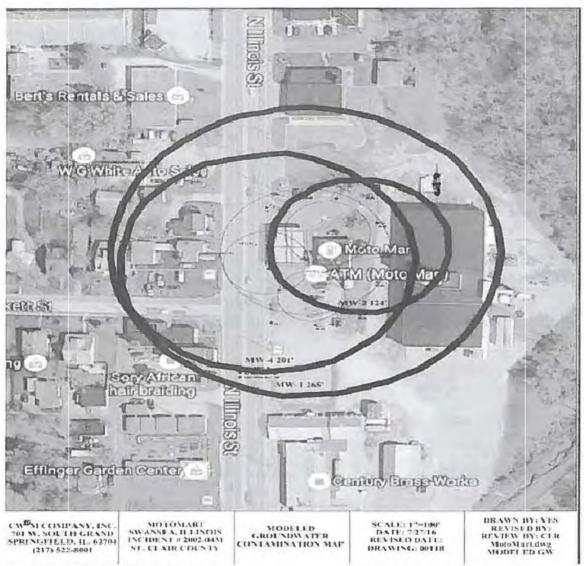
Page 10

Sorry for the confusion. Since the groundwater contamination modeling controlled, for the locations where there was both soil and water contamination, only the groundwater radii were used previously, and as I said before, groundwater at MW-1 defines the ultimate modeled boundary. On the attached drawings the dark lines are the modeled soil (drawing 0011A) or water (drawing 0011B) contamination, while the thin lines are the opposite (modeled groundwater on 0011A, modeled soil on 0011B). Each of the dark lines has an identifier for the sample location, and the radius of the circle.



# PREVIOUSLY IMAGED

Page 11



#### L.P.E./L.P.G. Certification:

Vince Smith

IEPA Recommendation/Comments: approve with budget modifications. Response Due:

8/2/16-120 days Completed: 7-26-16

sls\

PREVIOUSLY IMAGED

Page 12

9-22-16 spoke to Vince smith about the CAP not be submitted due to Val sending a email about VN letters. He said client has report and it should be in-house in the next week or so.

Document Reviewed: CAP/Budget

Dated: 10/3/16 Received: 10/11/16

Reviewed 12/--/16
Review Notes:

In this cap is a vapor intrusion investigation and some resampling of on-site and off-site contamination that would require remediation or additional institutional controls.

The former heating oil was where the new bldg, is now. Hy C(K)=1.30 x 10<sup>-5</sup> now 4.30 x 10-5 cm/sec?? why different Soil bulk Density(pb)=60.4lb/ft3 or (0.967cm/sec) Soil particle Density (ps)=2.54 g/cm3 Moisture content(w)=2.86 FOC=0.0058g/g Classification=Loamy sand

Soil: BZ, XY, BaP, DiBenzo A,h

GW: BZ, ETBZ, Nap

#### Corrective Action Summary

Soil-Tier 1 extends off site to the east and west. BH-9 will require additional remediation, and the off-site soil contamination to the east will require additional remediation.

GW- MW-1, MW-2, MW-4 and MW-8 tier 1 has been exceeded. The plume covers much of the same area as the soil plume, extending slightly further to the east. It is proposed that a gw ordinance be used, effectively eliminating the migration to gw pathway.

Vapor intrusion pathway has not been investigated previously and in proposed in this CAP.

Soil remediation obj's

Parameter	TACO Tier 1-CUO mg/kg	Tier 2 CUO's
Benzene	0.03	3.21
Ethylbenzene	13.0	389.64
Toluene	12.0	371.29
MTBE	5.6	46.17

BaA, BaP, BbF, DiB(ah)A and Indeno replaced by background values.

Page 13

# PREVIOUSLY IMAGED

Parameter	BH-9	TACO Tier 1-CUO industrial/commercial	Tier 1 CUO's Construction mg/kg
B(a) anthracene	2.5	7.84	18
Benzo(a)pyrene	2.6	0.784	17.01
Benzo(b) fluoranthene	2.5	8	170
Dibenzop(a,h)anthracene	0.54	0.467	17.01
Inden(1,2,3-cd)pyrene	1.7	8	170

Check to see if Tier 2 values were less or equal to tier 1

Soil need to be addressed on three parcels the site itself, off-site to the east and the ROW (RT. 159). From report

Where is map of where proposed boring / mw are going and is VI necessary? Received one bu email on 12/8/16 from V. smith

Proposing:

734 Budget Pr	oposed / Modified / Final		
Drilling and Monitoring Costs	\$2,033.75	\$.00	\$2,033.75
Analytical costs	\$1,661.72	\$.00	\$1,661.72
Remediation and Disposal Costs	\$0.00	\$.00	\$.00
Ust Removal and Abandonment Costs	\$0.00	\$.00	\$.00
Paving, Demo, and Well Abandonment	\$2,191.00	\$.00	\$2,191.00
Consulting Personnel Costs Form	\$38,571.22	\$23,240.42	\$15,330.80
Consulting Materials Costs Form	\$1,492.50	\$901.50	\$591.00
Total Budget	\$45,950.19	\$26.332.92	\$19,617.27

Except for measuring wheel; sr pm reimbursement which were cut, other costs can be submitted in a plan that is consistent to the plan with documentation. As stated before these were discussed with vince smith. So work related to the proposed boring including vI are approved. Some could not be separated

therefore are delayed in approval with next submittal

L.P.E./L.P.G. Certification:

Vince Smith

#### **IEPA Recommendation/Comments:**

Response Due: 2/28/17-120 days Completed: 1-14-16

sis

Page 14 PREVIOUSLY IMAGED

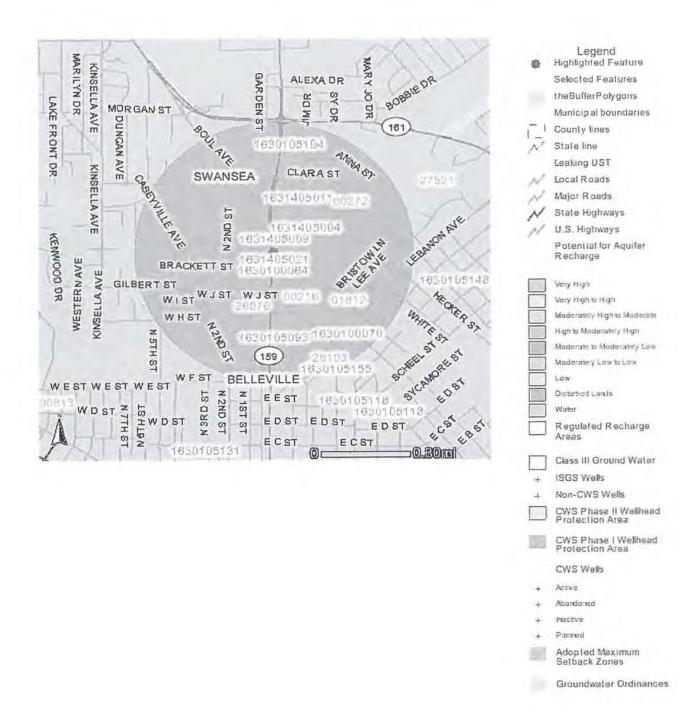
12/9/16 – spoke to Vince smith about teh three proposed boring and having possible excavation or ELUC proposed for corrective action, that first the Agency would need to see the results of the borings before approving a CAP. Those should be in the next submittal, which should be very similar to the one in-house.

Allowing drilling, analytical, and field costs at this time. the MW abandonment, consultant costs TACO, CACR, ELUC, HAA are all cut at this time. The soil gas sample costs need to be broken down for approval from agency.

Inc# 20020431 - 3/08/2007 MotoMart, Inc. Swansea / St. Clair Co.

Page 15

## FREVIOUSLY IMAGED



#### South, Shirlene

From:

vince@cwmcompany.com

Sent:

Thursday, December 08, 2016 9:19 AM

To:

South, Shirlene

Subject: Attachments: [External] Motomart - Swansea 2002-0431 CAP

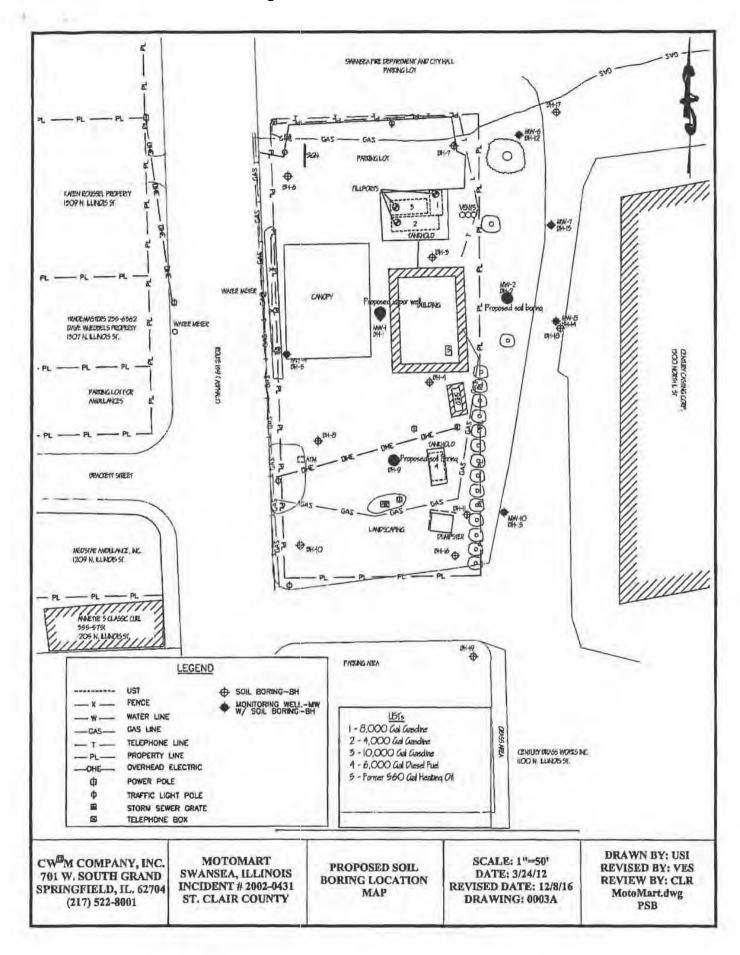
Moto Swansea - Proposed SB map.pdf

#### Shirlene,

As you requested, we have prepared and attached a proposed soil boring map showing the two proposed soil boring locations and the vapor intrusion sampling well location. If you need any other information, let us know.

1

Vince E. Smith, P.E. Sr. Environmental Engineer CWM Company, Inc. 701 W. South Grand Ave. Springfield, IL 62704 217-522-8001 Fax 217-522-8009 vince@cwmcompany.com



#### South, Shirlene

From:

vince@cwmcompany.com

Sent:

Thursday, December 08, 2016 10:02 AM

To:

South, Shirlene

Subject:

RE: [External] Motomart - Swansea 2002-0431 CAP

#### Shirlene,

Yes, it is labeled "Proposed vapor well", located between the station building and the canopy.

#### Vince

----- Original Message -----

Subject: RE: [External] Motomart - Swansea 2002-0431 CAP From: "South, Shirlene" <Shirlene.South@Illinois.gov>

Date: Thu, December 08, 2016 8:25 am

To: "vince@cwmcompany.com" <vince@cwmcompany.com>

Is the VI boring on here?

From: vince@cwmcompany.com [mailto:vince@cwmcompany.com]

Sent: Thursday, December 08, 2016 9:19 AM

To: South, Shirlene

Subject: [External] Motomart - Swansea 2002-0431 CAP

#### Shirlene,

As you requested, we have prepared and attached a proposed soil boring map showing the two proposed soil boring locations and the vapor intrusion sampling well location. If you need any other information, let us know.

Vince E. Smith, P.E. Sr. Environmental Engineer CWM Company, Inc. 701 W. South Grand Ave. Springfield, IL 62704 217-522-8001 Fax 217-522-8009 vince@cwmcompany.com

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CAP

1631405021/ MotoMart-Swansea	DATE	December 9, 2016	
Swansea/ St. Clair			
1324 N. Illinois St (RT 159)	REVIEWER	sls	
inc# 2002-0431			
LEAKING LIST TECH EILE			

	REQUESTED	DEDUCTED	APPROVED
Drilling and Monitoring Well Cost	\$2,033.75	\$0.00	\$2,033.75
ANALYTICAL	\$1,661.72	\$0.00	\$1,661.72
Remediation and Disposal	\$0.00	\$0.00	\$0.00
ust removal and abandonment	\$0.00	\$0.00	\$0.00
paving, Demolition and Well abandonment	\$2,191.00	\$2,191.00	\$0.00
Consultant Cost	\$38,571.22	\$23,240.42	\$15,330.80
CONSULTANT'S MATERIALS	\$1,492.50	\$901.50	\$591.00
TOTAL	\$45,950.19	\$26,332.92	\$19,617.27

**DEDUCTIONS - EXPLANATION** 

(AMOUNT DEDUCTED) - REASON

hours\*rate

deduction

reason

Paving , Demo and MW abandonment

MW-1-MW-10 only those not removed by an possible excavation

personnel costs			6307.52
CCAP			3003.6
sR. PMreport coor/techoversight/compliand	c∈ 6*125.15	750.9	3604.34
sr. PE-report review and cert	3*162.70	488.1	1501.8
englli-CA design/reprt dev/IEPA corres	36*125.15	4,505.40	*
SR DRAFT-draft/edit/CAD	6*75.08	450.48	6532.98
SR Admin Asst-reprt compl/assembly/distru 2*56.32		112.64	20950.24
total		6307.52	
TACO			
englll- gwmodeling/plume delination	8*125.15	1001.2	paying for one time only
eng III-tier 2 calc/dev cuo's	12*125.15	1,501.80	
sr PM-tier 2 eval/calc/modeling review/	4*125.15	500.6	
assessment	total	3,003.60	

CAP

CCAP-Budget			
SR. PM-budget compliance/tech oversight 6*125.15		750.9	
englll-budget calc/desigh	18*125.15	2,252.70	
SR PE-budger review/cert	3*162.70	488.1	
sr admin asst-budget compl/assembly/d	istru 2*56.32	112.64	
total		3604.34	
CA-PAY			
SR PE- budget review/cert(CAP, Drilling	6*162.70	976.2	
closure submittal			
SR ACCT Techreim prep(cap/DR/Cl subm	it 30*68.83	2,064.90	
Sr Ad Asst-RE compliation, Ass/Dist/()	4*56.32	225.28	
Sr PM-RE comp/tech oversight()	12*125.15	1,501.80	**: cut per BB 17/31/30
total		3,791.98	2290.18
CACR			
Sr PM-reprt coor/tech oversight /compli	ance8*125.15	1,001.20	
sr PE-reprt review and cert	4*162.70	650.8	
SR Admin Asst-reprt compl/assembly/di	stru 2*56.32	112.64	
ENG III-report prep/development	36*125.15	4,505.40	
sr admin asst-NFR recording/corres	2*56.32	112.64	**was off by 100.00
w/ village			rose called and I had the 100.00
sR PM-NFR review/IEPA correspondence	2*125.15	250.3	
total		6,632.98	
ELUC			
ENGIII-gw ord dev/meeting/notification	24*125.15	3,003.60	
SR PM- gw ord negotiations/notific	6*125.15	750.9	
Sr Ad asst-gw ord corres/ notifications	2*56.32	112.64	
sR PM-HAA IDOT review/ COOR	6*125.15	750.9	
ENGIII-HAA IDOT Dev/ corres	24*125.15	3,003.60	
SR Draft/CAD-HAA drawing	4*75.08	300.32	
Sr. ad Asst- HAA compliation/ Ass Dist	2*56.32	112.64	
total		8,034.60	
CCA-field			
SR PM-field prep, sched/arrang/coor	4*125.15	500.6	
ENGIII-dr/VI sampland prep	16*125.15	2,002.40	
ENG II-Drilling/VI sampling	14*106.38	1,489.32	
SR AD Asst- arangfor Invest, utilities	2*56.32	112.64	
ulie scheduling			
ENG III-borlogs, SI Doc, Analytical entry	4*125.15	500.5	
sR PM-reviewin. Eval analytical/sl Doc	2*125.15	250.3	
field data			
Sr PM-off-site SI coor	5*125.15	750.9	
ENG III-off-site notifation/result reports	4*125.15	500.6	
sR Ad asst-off-site PO drilling notif and re		112.64	
total CCA		6220	

CAP

Material Costs				
CCAP		7.3		
CCAP-copies of plan and report/draft pl		90		
postage-report/forms/ draft/dist	3*6	18		
copiesbudget - budget / draft	300*.15	45		
postage-rbudget dist	3*6	18		
total		171		
CACR				262
copies -completion report dist/ draft	800*.15	120		639.5
postge-copies report dist	3*6	18		901.5
Material costs cont.				
CA-PAY			cut	
ca-copies of RE c;aim	1200*.15	180		200
postage	5*6	36		18
NFR recording	58*1	68		262
total		284		42.0
2/22				171
CACR	Air	100		138
postage -NFR	4*6	24		284
NFR-recordin/submittal / IEPA corres	150*.15	22.5		46.5
total		46.5		639.5
ELUC				
copies- ordinca submittal;/notifica	150*.15	22.5		
2 round trip from spfld-VI/ Drillling	400*0.54(not 0.65)	-44		
water level	28*1	28		
gloves	1*16	16		
PID	1*148	148	000 000 000 000	
vI shroud, OH, canister/regualtor CCA Field	1*200	200	cut,17/30/31	
measuring wheel-vi	1*18	18	CUT,31	
postage-HAA	8*6	48		
copies-HAA corres/exec/dist	250*.15	37.5		
postage-CCA -filed off-site po dril/s resu	ilts:2*6	12		
copies-off-site**	100*.15	15		
total		501		

green is for Items being addressed in this report and budget. Does not signify whether they are being approved

drilling
analytical
eluc , HAA
field costs, minus shroud(\$200), measuring wheel

make sure Rob Miluer is contacted and is at the site and the time is noted for the three wells.

P:\20020431 12-9-16 BUDGET SHEETS.xlsx

CAP

## PREVIOUSLY IMAGED

#### Environmental Justice (EJ) Area Reporting Form for Leaking UST Program Sites

Reviewed by: Shirlene South Re: LPC #1631405021 – St. Clair County

Date Reviewed: 12-14-16 Swansea/ MotoMart Inc.

1324 North Illinois Street (Rt 159)

Incident No. 20020431 LUST Technical File

For a site located in an EJ area, as defined on the EJ GIS map, the information listed below will be provided by the Leaking UST Section's assigned project manager to the EJ Officer as soon as possible <u>upon receipt</u> of all Corrective Action Plans (CAPs) and Completion Reports (CACRs). For subsequent amended CAPs, if no substantial change in remedial effort is proposed then an additional memo is not

necessary.

Request for Review of	Leaking UST Program Site Located in EJ Area		
Item	Complete field below for known items at time of requirements (leave blank if unknown)		
Duning Manager Manage	Shirlene South		
Project Manager Name			
BOL ID#	1631405021		
Site Name	MotoMart-Swansea		
Site Address (Street Address)	1324 North Illinois Street(RT. 159)		
Site City	Swansea		
Site County	St. Clair		
UST Owner or Operator Name	MotoMart		
UST Owner or Operator Contact	Rob Whittington		
UST Owner or Operator Phone	618/233-6754		
<u>Description of Facility</u> : Previous Use of Site and Current/Proposed Use of Site	Gas station		
Proposed Corrective Action	possible excavation		
Land Use after Corrective Action	Gas station		
Engineered Barriers Used			
Institutional Controls Used	HAA, groundwater ordinance, ELUC, Ind/ Com land use		
Contaminants of Concern			
Is there off-site contamination as a result of the release?	yes IEPA-DIVISION		
Was site referred to CEG for Right- to-Know notifications? If yes, have notifications been sent, and who is the assigned Community Relations Coordinator?	no    Sepa-division of Records Management		
Other Relevant Information: Enforcement, citizen complaint, public interest, etc.	EMI		
Date CAP/CACR Received	10/3/16		
Date Request for Review Sent to EJ Officer			



IGET NOTITIOGRAND AVENUE EAST, P.O. BOX19176, STRINGHAD, ILLINOIS 62794-9276 • (217) 282-3397

BRUCE RAUNER, GOVERNOR

ALEC MESSINA, ACTING DIRECTOR

## PREVIOUSLY IMAGED

217/524-3300

CERTIFIED MAIL 7014 2120 0002 3292 2094

DEC 2 0 2016

Moto Inc.

Attn: Rob Whittington, Environmental Manager

P.O. Box 122

Belleville, Illinois 62222

Re: LPC #1631405021 - St. Clair County

Swansea/ MotoMart-Swansea 1324 North Illinois (Route 159) Leaking UST Incident No. 20020431

Leaking UST Technical File

RELEASABLE

JAN 1 1 2017

REVIEWER: JKS

Dear Mr. Whittington

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the Corrective Action Plan (plan) submitted for the above-referenced incident. This plan, dated October 3, 2016 was received by the Illinois EPA on October 11, 2016. Citations in this letter are from the Environmental Protection Act (415 ILCS 5) (Act) and Title 35 of the Illinois Administrative Code (35 Ill. Adm. Code).

The Illinois EPA requires modification of the plan; therefore, the plan is conditionally approved with the Illinois EPA's modifications. The following modifications are necessary, in addition to those provisions already outlined in the plan, to demonstrate compliance with Title XVI of the Act (Sections 57.7(b)(2) and 57.7(c) of the Act and 35 Ill. Adm. Code 734.505(b) and 734.510(a)):

Without results from the proposed soil boring (resampling for BH-2 and BH-9), monitoring well installation and soil vapor investigation in the area of MW-1, the Illinois EPA cannot approve the plan as submitted. Subsequently, the Illinois EPA only approves the two soil borings (collection and analysis of additional soil samples), installation of one groundwater monitoring well and performance of a soil vapor investigation.

Please note that all activities associated with the remediation of this release proposed in the plan must be executed in accordance with all applicable regulatory and statutory requirements, including compliance with the proper permits.

4302 N. Main St., Rockfard, IL 61103 (815) 987-7760 595 S. State, Elgin, IL 60123 (847) 608-3131 2125 S. First St., Champaign, IL 61820 [217) 278-5800 2009 Mall St., Collinsville, IL 62234 (618) 346-5120 9511 Harrison St., Des Plaines, IL 6001 6 (847) 294-4000 412 SW Weithington St., Suite D, Paarto, IL 61 602 (309) 671-3022 2309 W, Molin St., Suite 116, Marton, IL 62959 (618) 993-7200 100 W. Randolph, Suite 10-300, Chicago, IL 60601

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Page 2

In addition, the budget is modified pursuant to Sections 57.7(b)(3) and 57.7(c) of the Act and 35 Ill. Adm. Code 734.505(b) and 734.510(b). Based on the modifications listed in Section 2 of Attachment A, the amounts listed in Section 1 of Attachment A have been approved. Please note that the costs must be incurred in accordance with the approved plan. Be aware that the amount of payment from the Fund may be limited by Sections 57.7(c), 57.8(d), 57.8(e), and 57.8(g) of the Act, as well as 35 Ill. Adm. Code 734.630 and 734.655.

If the owner or operator agrees with the Illinois EPA's modifications, submittal of an amended plan and/or budget, if applicable, is not required (Section 57.7(c) of the Act).

NOTE: Pursuant to Section 57.8(a)(5) of the Act, if payment from the Fund will be sought for any additional costs that may be incurred as a result of the Illinois EPA's modifications, an amended budget must be submitted. Amended plans and/or budgets must be submitted and approved prior to the issuance of a No Further Remediation (NFR) Letter. Costs associated with a plan or budget that have not been approved prior to the issuance of an NFR Letter will not be paid from the Fund.

Further, pursuant to 35 Ill. Adm. Code 734.145, it is required that the Illinois EPA be notified of field activities prior to the date the field activities take place. This notice must include a description of the field activities to be conducted; the name of the person conducting the activities; and the date, time, and place the activities will be conducted. This notification of field activities may be done by telephone, facsimile, or electronic mail—and must be provided at least two weeks prior to the scheduled field activities.

Besides providing at least two weeks' notice to Leaking UST Section staff in Springfield, notification must be provided to Rob Mileur either by telephone at (618) 993-7223 or by e-mail at Robert. Mileur@illinois.gov.

Pursuant to Sections 57.7(b)(5) and 57.12(c) and (d) of the Act and 35 Ill. Adm. Code 734.100 and 734.125, the Illinois EPA requires that a Corrective Action Completion Report that achieves compliance with applicable remediation objectives be submitted within 30 days after completion of the plan to:

Illinois Environmental Protection Agency Bureau of Land - #24 Leaking Underground Storage Tank Section 1021 North Grand Avenue East Post Office Box 19276 Springfield, IL 62794-9276

Please submit all correspondence in duplicate and include the Re; block shown at the beginning of this letter.

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Page 3

If within four years after the approval of this plan, compliance with the applicable remediation objectives has not been achieved and a Corrective Action Completion Report has not been submitted, the Illinois EPA requires the submission of a status report pursuant to Section 57.7(b)(6) of the Act.

An underground storage tank system owner or operator may appeal this decision to the Illinois Pollution Control Board. Appeal rights are attached.

If you have any questions or need further assistance, please contact Shirlene South at 217/558-0347.

Sincerely,

Stephen A. Colantino Acting Unit Manager

Leaking Underground Storage Tank Section

Division of Remediation Management

Bureau of Land

SAC:sls:SS\

Attachment: Attachment A

c: vince@cwmcompany.com (electronic copy),

BOL File



#### Appeal Rights

An underground storage tank owner or operator may appeal this final decision to the Illinois Pollution Control Board pursuant to Sections 40 and 57.7(c)(4) of the Act by filing a petition for a hearing within 35 days after the date of issuance of the final decision. However, the 35-day period may be extended for a period of time not to exceed 90 days by written notice from the owner or operator and the Illinois EPA within the initial 35-day appeal period. If the owner or operator wishes to receive a 90-day extension, a written request that includes a statement of the date the final decision was received, along with a copy of this decision, must be sent to the Illinois EPA as soon as possible.

For information regarding the filing of an appeal, please contact:

John Therriault, Assistant Clerk Illinois Pollution Control Board James R. Thompson Center 100 West Randolph, Suite 11-500 Chicago, IL 60601 312/814-3620

For information regarding the filing of an extension, please contact:

Illinois Environmental Protection Agency Division of Legal Counsel 1021 North Grand Avenue East Post Office Box 19276 Springfield, IL 62794-9276 217/782-5544

## PREVIOUSLY IMAGED

#### Attachment A

Re: LPC #1631405021 – St. Clair County Swansea/ MotoMart-Swansea 1324 North Illinois (Route 159) Leaking UST Incident No. 20020431 Leaking UST Technical File

#### SECTION 1

As a result of Illinois EPA's modification(s) in Section 2 of this Attachment A, the following amounts are approved:

\$2,033.75	Drilling and Monitoring Well Costs
\$1,661.72	Analytical Costs
\$0.00	Remediation and Disposal Costs
\$0.00	UST Removal and Abandonment Costs
\$0.00	Paving, Demolition, and Well Abandonment Costs
\$15,330.81	Consulting Personnel Costs
\$609.00	Consultant's Materials Costs

Handling charges will be determined at the time a billing package is reviewed by the Illinois EPA. The amount of allowable handling charges will be determined in accordance with Section 57.1(a) of the Environmental Protection Act (Act) and 35 Illinois Administrative Code (35 Ill. Adm. Code) 734.635.

#### **SECTION 2**

\$2,191.00 for costs for well abandonment, which exceed the minimum requirements necessary to comply with the Act. Costs associated with site investigation and corrective action activities and associated materials or services exceeding the minimum requirements necessary to comply with the Act are not eligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(o).

These costs may be included in an amended corrective action plan and be reviewed at that time

\$21,738.62 for costs for personnel that are inconsistent with the associated technical plan.
One of the overall goals of the financial review is to assure that costs associated with
materials, activities, and services are consistent with the associated technical plan. Such
costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act
and 35 Ill. Adm. Code 734.510(b).

These costs may be included in an amended corrective action plan and be reviewed at that time.

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\$1,501.80 for costs for personnel, which exceed the minimum requirements necessary to comply with the Act. Costs associated with site investigation and corrective action activities and associated materials or services exceeding the minimum requirements necessary to comply with the Act are not eligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(o).

Senior Project Manager costs for reimbursement compliance/technical oversight(CAP, Drilling, Closure submittals)

In addition, for costs for corrective action –pay which lack supporting documentation. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(cc). Since there is no supporting documentation of costs, the Illinois EPA cannot determine that costs will not be used for activities in excess of those necessary to meet the minimum requirements of Title XVI of the Act. Therefore, such costs are not approved pursuant to Section 57.7(c)(3) of the Act because they may be used for site investigation or corrective action activities in excess of those required to meet the minimum requirements of Title XVI of the Act.

Also, for site investigation or corrective action costs for corrective action-pay that are not reasonable as submitted. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(dd).

4. \$639.50 for costs for material cost that are inconsistent with the associated technical plan. One of the overall goals of the financial review is to assure that costs associated with materials, activities, and services are consistent with the associated technical plan. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.510(b).

These costs may be included in an amended corrective action plan and be reviewed at that time.

- \$200.00 for costs for material costs that are inconsistent with the associated technical plan. One of the overall goals of the financial review is to assure that costs associated with materials, activities, and services are consistent with the associated technical plan. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.510(b).
  - The Illinois EPA is requesting documentation for the shroud construction and operation materials, rental of gas canister and regulator prior to approving these costs as was discussed in the phone conversation on December 9, 2016 with the project manager.
- 5. \$18 for indirect corrective action costs for a measuring wheel charged as direct costs. Such costs are ineligible for payment from the Fund pursuant to 35 III. Adm. Code 734.630(v). In addition, such costs are not approved pursuant to 35 III. Adm. Code 734.630(dd) and Section 57.7(c)(3) of the Act because they are not reasonable

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\$44.00 for costs for mileage, which lack supporting documentation. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(cc). Since there is no supporting documentation of costs, the Illinois EPA cannot determine that costs will not be used for activities in excess of those necessary to meet the minimum requirements of Title XVI of the Act. Therefore, such costs are not approved pursuant to Section 57.7(c)(3) of the Act because they may be used for site investigation or corrective action activities in excess of those required to meet the minimum requirements of Title XVI of the Act.

The current federal rate for mileage is \$0.54, therefore the cost as been adjusted to reflect this in the budget.

sls:SS\

#### **CERTIFICATE OF SERVICE**

I, the undersigned, on affirmation state the following:

That I have served the attached **CERTIFICATE OF RECORD ON APPEAL and the accompanying documents comprising the entire record of the Respondent's decision** by e-mail upon Patrick D. Shaw at the e-mail address of pdshawllaw@gmail.com and upon Hearing Officer Carol Webb at the e-mail address of Carol.Webb@Illinois.gov.

That my e-mail address is Scott.Sievers@Illinois.gov.

That the number of pages in the e-mail transmission is two-hundred and thirty-nine (239).

That the e-mail transmission took place before 5:00 p.m. on the date of March 9, 2017.

/s/Scott B. Sievers March 9, 2017