

Life Sciences  
600 South Wagner Road  
Ann Arbor, MI 48103-9019 USA  
734.665.0651 phone

July 15, 2013

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JACKSON DISTRICT OFFICE

Ms. Sybil Kolon  
Michigan Department of Environmental Quality  
Environmental Response Division  
Jackson District Office Building  
301 E. Louis Glick Highway  
Jackson, Michigan 49210

Re: **Quarterly Progress Report**  
**2nd Quarter, 2013**  
April 1, 2013 to June 31, 2013

Dear Ms. Kolon:

Please find enclosed the Quarterly Progress Report for the period of April 1, 2013 to June 30, 2013.

Should you have any questions regarding this document, please contact me at 734-913-6130.

Sincerely,

Farsad Fotouhi  
Vice President  
Corporate Environmental Engineering

cc: Ms. Celeste R. Gill, MDAG  
Michael Caldwell, Esq.



**2nd Quarter, 2013**

**(April, May, June)**

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Summary of activity during this quarter

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Mass Reduction

6/10/13 - 6/14/13 – Treatment & Extraction were shut down for Pond cleaning.

6/11/13-6/12/13 - TW-17 (E ) was turned on briefly for the Pond cleaning.

6/15/13 - 6/17/13 TW-2 (C3) was shut down for maintenance.

6/19/13 - Marshy extraction was shut down briefly for maintenance.

### ***Field Activities***

6/10/13-6/14/13 Red Pond cleaned

### **Submittals/Responses**

04/16/13 PLS submitted Discharge Monitoring Report (DMR) electronically to DEQ

04/18/13 PLS submitted Monthly Monitoring Report (NPDES) to DEQ  
PLS submitted 1<sup>st</sup> Quarter 2013 Report to DEQ

04/22/13 PLS submitted Analysis of Water Level and Quality Changes after Extraction Well  
Flow Modifications to DEQ

05/14/13 PLS submitted Discharge Monitoring Report (DMR) electronically to DEQ  
PLS submitted Monthly Monitoring Report (NPDES) to DEQ

05/22/13 PLS submitted Analysis of 1,4-Dioxane at MW-103 to DEQ

06/18/13 PLS submitted Discharge Monitoring Report (DMR) electronically to DEQ  
PLS submitted Monthly Monitoring Report (NPDES) to DEQ

### **Anticipated Major Activities for the Next Quarter**

- Install new extraction well (LB-4) at Evergreen
- Evaluate termination and plugging of LB-2 and LB-3
- Evaluate the operation and startup of TW-15

### *Quarterly Performance Analysis*

For the months of April, May, June 2013, over 340 pounds of 1,4-dioxane were removed and 75,330,609 gallons of water were extracted from the contaminated aquifers, treated and discharged. The total mass of 1,4-dioxane removed since May 1997 is over 89,150 pounds and the total volume of water discharged since May 1997 is over 6.8 billion gallons.

In general, the performance of the operation was as expected, purging and treating contaminated groundwater to the existing allowable capacities.

# **Mass Reduction**

**MASS REDUCTION SUMMARY**  
**Mass Removed Per Month (lb)**

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
Month	Mass Removed from Unit E Only	Mass Removed from Southwest Only	Mass Removed from Marshy Only	Mass Removed from Units C3 and D2 Only	Mass Removed from Unit D0	Total Mass Removed from Units E, D2, C3, D0, Southwest and Marshy
Aug-00	0	0	8	366		374
Sep-00	0	0	9	332		341
Oct-00	0	5	9	583		597
Nov-00	0	3	12	1160		1175
Dec-00	0	0	10	1040		1050
Jan-01	0	0	7	816		823
Feb-01	0	0	7	1056		1063
Mar-01	0	0	11	1379		1390
Apr-01	0	0	9	1140		1149
May-01	0	1	8	990		999
Jun-01	0	2	8	933		943
Jul-01	0	2	10	1121		1133
Aug-01	0	2	13	1018		1033
Sep-01	0	1	9	909		919
Oct-01	0	5	8	896		909
Nov-01	0	4	5	827		836
Dec-01	0	6	4	768		778
Jan-02	0	6	5	753		764
Feb-02	0	4	6	691		701
Mar-02	0	7	7	663		677
Apr-02	0	6	7	682		695
May-02	100	9	7	898		1014
Jun-02	94	9	6	889		998
Jul-02	56	10	7	640		713
Aug-02	53	8	6	745		812
Sep-02	51	8	6	860		925
Oct-02	33	6	4	603		646
Nov-02	57	8	5	880		950
Dec-02	48	9	5	842		904
Jan-03	45	8	6	839		898
Feb-03	37	6	6	767		816
Mar-03	44	8	7	763		822
Apr-03	39	8	3	716		766
May-03	36	13	5	725		779
Jun-03	34	15	5	683		737
Jul-03	29	15	5	678		727
Aug-03	31	15	6	676		728
Sep-03	27	16	5	644		692
Oct-03	34	17	5	701		757
Nov-03	26	12	5	663		706
Dec-03	29	14	6	635		684
Jan-04	28	15	6	667		716
Feb-04	8	11	5	485		509
Mar-04	23	14	7	573		617
Apr-04	27	15	6	537		585
May-04	16	10	5	439		470
Jun-04	21	11	5	499		536
Jul-04	36	12	5	506		559

**MASS REDUCTION SUMMARY**  
**Mass Removed Per Month (lb)**

A	B	C	D	E	F	G
Month	Mass Removed from Unit E Only	Mass Removed from Southwest Only	Mass Removed from Marshy Only	Mass Removed from Units C3 and D2 Only	Mass Removed from Unit D0	Total Mass Removed from Units E, D2, C3, D0, Southwest and Marshy
Aug-04	54	12	5	480		551
Sep-04	34	9	5	382		430
Oct-04	30	10	5	358		403
Nov-04	30	9	5	395		439
Dec-04	33	11	5	442		491
Jan-05	29	11	4	404		448
Feb-05	26	9	4	390		429
Mar-05	27	9	4	409		450
Apr-05	33	4	3	396		436
May-05	27	8	2	364		401
Jun-05	31	9	3	361		404
Jul-05	31	8	1	279		319
Aug-05	12	6	2	275		295
Sep-05	13	8	2	327		350
Oct-05	16	6	3	297		322
Nov-05	13	7	4	291		315
Dec-05	12	8	4	325		349
Jan-06	115	7	3	308		433
Feb-06	144	7	3	290		444
Mar-06	148	8	3	331		490
Apr-06	125	7	3	291		426
May-06	137	9	3	402		551
Jun-06	119	5	2	329		456
Jul-06	107	8	3	310		427
Aug-06	104	8	2	307		421
Sep-06	97	9	3	300		409
Oct-06	93	9	3	327		432
Nov-06	80	7	2	268		357
Dec-06	68	6	2	238		314
Jan-07	91	8	2	305		406
Feb-07	84	8	2	284		378
Mar-07	91	8	3	306		408
Apr-07	84	8	2	280		374
May-07	82	8	2	288		380
Jun-07	81	8	2	279		370
Jul-07	66	8	2	256		332
Aug-07	73	8	2	270		353
Sep-07	77	8	2	247		334
Oct-07	73	8	2	244		327
Nov-07	68	8	2	263		341
Dec-07	69	8	2	260		339
Jan-08	65	7	2	237		311
Feb-08	53	6	2	203		264
Mar-08	56	7	2	220		285
Apr-08	54	7	2	200		263
May-08	55	7	2	206		270
Jun-08	52	6	2	195		256
Jul-08	39	1	2	139		181



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**Mass Removed Per Month (lb)**

A	B	C	D	E	F	G
Month	Mass Removed from Unit E Only	Mass Removed from Southwest Only	Mass Removed from Marshy Only	Mass Removed from Units C3 and D2 Only	Mass Removed from Unit D0	Total Mass Removed from Units E, D2, C3, D0, Southwest and Marshy
Aug-08	50	7	2	198		256
Sep-08	43	5	2	177		227
Oct-08	45	5	2	187		239
Nov-08	45	7	2	197		251
Dec-08	45	5	2	187		239
Jan-09	39	8	2	124		173
Feb-09	34	8	2	122		164
Mar-09	35	8	2	122		166
Apr-09	32	6	1	119		158
May-09	45	7	2	201		254
Jun-09	39	5	1	157		202
Jul-09	38	5	1	152		196
Aug-09	39	7	2	202		250
Sep-09	36	6	2	223		267
Oct-09	36	8	2	206		251
Nov-09	32	7	1	167		208
Dec-09	32	8	1	171		212
Jan-10	34	8	1	175		219
Feb-10	30	7	1	161		198
Mar-10	33	7	1	173		214
Apr-10	33	7	1	175		216
May-10	33	7	1	176		217
Jun-10	29	6	1	130		165
Jul-10	20	7	1	171		200
Aug-10	23	7	1	188		220
Sep-10	21	6	1	148		177
Oct-10	24	7	2	185		218
Nov-10	18	6	2	151		176
Dec-10	26	6	2	164		198
Jan-11	25	6	2	163		195
Feb-11	25	7	2	165		198
Mar-11	27	8	2	174		209
Apr-11	22	6	1	143		171
May-11	20	5	1	138		164
Jun-11	17	5	1	104		127
Jul-11	15	4	1	92		112
Aug-11	14	2	1	80		97
Sep-11	16	6	1	98		121
Oct-11	17	6	1	113		137
Nov-11	33	6	1	105		145
Dec-11	45	6	1	98		150
Jan-12	46	6	1	103		156
Feb-12	40	5	1	89		135
Mar-12	43	5	1	94	0.017	142
Apr-12	47	6	1	105	0.000	159
May-12	47	6	1	100	0.000	154
Jun-12	42	6	0.3	99	0.029	148
Jul-12	30	6	0.1	102	0.000	138

**MASS REDUCTION SUMMARY**  
**Mass Removed Per Month (lb)**

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
<b>Month</b>	<b>Mass Removed from Unit E Only</b>	<b>Mass Removed from Southwest Only</b>	<b>Mass Removed from Marshy Only</b>	<b>Mass Removed from Units C3 and D2 Only</b>	<b>Mass Removed from Unit D0</b>	<b>Total Mass Removed from Units E, D2, C3, D0, Southwest and Marshy</b>
Aug-12	29	6	0.0	75	0.000	109
Sep-12	32	5	0.1	62	0.029	100
Oct-12	27	5	0.0	57	0.000	88
Nov-12	33	4	0.0	62	0.000	99
Dec-12	31	3	0.0	52	0.020	86
Jan-13	46	3	0.0	54	0.000	103
Feb-13	46	3	0.0	47	0.000	95
Mar-13	53	3	0.0	53	0.029	109
Apr-13	46	5	0.1	61	0.000	113
May-13	57	8	1.0	60	0.000	126
Jun-13	43	7	0.7	52	0.029	102
<b>Total to date</b>	<b>6165</b>	<b>1070</b>	<b>518</b>	<b>58943</b>	<b>0.153</b>	<b>66697</b>

**MASS REDUCTION DETAIL BY AQUIFIER**

**April 1 - April 30, 2013**

Extraction Well	Month To Date Gallons Extracted	Month To Date Average Daily Flow Rate GPM	Month To Date Average Daily Pounds Removed	Month To Date Pounds Removed	Month To Date Average Concentration ppb
<b>C3</b>					
TW-1	-	0	0.0	0.0	103
TW-2 (Dolph)	538,881	12	0.0	0.3	75
TW-3	-	0	0.0	0.0	8
TW-6	-	0	0.0	0.0	43
TW-10	-	0	0.0	0.0	300
TW-14	-	0	0.0	0.0	19
TW-20	2,060,779	48	0.5	14.8	860
MW-22	-	0.0	0.0	0.0	2000
<i>Sub-Totals</i>	2,599,660	60	1	15	
<b>Marshy</b>					
PW-1	28,178	1	0.0	0.1	852
<i>Sub-Totals</i>	28,178	1	0	0	
<b>E</b>					
TW-11	1,331,458	31	0.1	2.5	226
TW-12	-	0	0.0	0.0	21
TW-17	-	0	0.0	0.0	420
TW-18	6,194,585	143	0.4	12.6	244
TW-19	4,123,292	95	1.0	31.2	906
MW-64	-	0	0.0	0.0	42
<i>Sub-Totals</i>	11,649,335	270	2	46	
<b>Southwest</b>					
Active Wells	1,050,128	24	0.2	4.9	556
MW-10d	-	0.0	0.0	0.0	752
MW-75	-	0	0.0	0.0	500
MW-45d	-	0.0	0.0	0.0	985
<i>Sub-Totals</i>	1,050,128	24	0	5	
<b>D0</b>					
Ann Arbor Cleaning	-			0.000	69
<i>Sub-Totals</i>	-			0.000	
<b>D2</b>					
LB-1	2,438,983	56	0.4	12.9	634
LB-3	1,660,512	38	0.2	5.8	416
HW-S	-	0	0.0	0.0	630
TW-5	2,183,453	51	0.6	17.8	978
TW-9	1,057,611	24	0.2	6.6	751
TW-21	2,314,057	54	0.1	3.0	162
MW-11D	-	0	0.0	0.0	160
<i>Sub-Totals</i>	9,654,616	223	2	46	
<b>Overall Totals</b>	24,981,917	578	3.8	112.5	

\*SW Active = TW-8, TW-22

**MASS REDUCTION DETAIL BY AQUIFIER**

**May 1 - May 31, 2013**

Extraction Well	Month To Date Gallons Extracted	Month To Date Average Daily Flow Rate GPM	Month To Date Average Daily Pounds Removed	Month To Date Pounds Removed	Month To Date Average Concentration ppb
<b>C3</b>					
TW-1	251	0	0.0	0.0	105
TW-2 (Dolph)	538,909	12	0.0	0.4	88
TW-3	-	0	0.0	0.0	8
TW-6	-	0	0.0	0.0	49
TW-10	-	0	0.0	0.0	303
TW-14	1,348	0	0.0	0.0	20
TW-20	2,195,193	49	0.6	17.1	935
MW-22	-	0.0	0.0	0.0	1971
<b>Sub-Totals</b>	<b>2,735,701</b>	<b>61</b>	<b>1</b>	<b>18</b>	
<b>Marshy</b>					
PW-1	120,252	3	0.0	1.0	984
<b>Sub-Totals</b>	<b>120,252</b>	<b>3</b>	<b>0</b>	<b>1</b>	
<b>E</b>					
TW-11	1,313,409	29	0.1	2.2	204
TW-12	-	0	0.0	0.0	23
TW-17	1,022	0	0.0	0.0	438
TW-18	6,816,999	153	0.5	16.6	291
TW-19	5,127,544	115	1.2	37.8	884
MW-64	-	0	0.0	0.0	47
<b>Sub-Totals</b>	<b>13,258,974</b>	<b>297</b>	<b>2</b>	<b>57</b>	
<b>Southwest</b>					
Active Wells	1,629,752	37	0.3	7.9	580
MW-10d	-	0.0	0.0	0.0	771
MW-75	-	0	0.0	0.0	530
MW-45d	-	0.0	0.0	0.0	722
<b>Sub-Totals</b>	<b>1,629,752</b>	<b>37</b>	<b>0</b>	<b>8</b>	
<b>D0</b>					
Ann Arbor Cleaning	-			0.000	71
<b>Sub-Totals</b>	<b>-</b>			<b>0.000</b>	
<b>D2</b>					
LB-1	3,082,843	69	0.5	16.3	634
LB-3	396,520	9	0.0	1.4	416
HW-S	-	0	0.0	0.0	630
TW-5	2,228,035	50	0.5	14.6	787
TW-9	1,114,927	25	0.2	7.7	826
TW-21	2,270,790	51	0.1	2.6	144
MW-11D	-	0	0.0	0.0	160
<b>Sub-Totals</b>	<b>9,093,115</b>	<b>204</b>	<b>1</b>	<b>43</b>	
<b>Overall Totals</b>	<b>26,837,794</b>	<b>601</b>	<b>4.1</b>	<b>125.7</b>	

\*SW Active = TW-8, TW-22

**MASS REDUCTION DETAIL BY AQUIFIER**

June 1 - June 30, 2013

	Extraction Well	Month To Date Gallons Extracted	Month To Date Average Daily Flow Rate GPM	Month To Date Average Daily Pounds Removed	Month To Date Pounds Removed	Month To Date Average Concentration ppb
<b>C3</b>						
	TW-1	-	0	0.0	0.0	120
	TW-2 (Dolph)	339,896	8	0.0	0.2	85
	TW-3	-	0	0.0	0.0	8
	TW-6	-	0	0.0	0.0	58
	TW-10	-	0	0.0	0.0	320
	TW-14	-	0	0.0	0.0	24
	TW-20	1,519,394	35	0.4	12.2	964
	MW-22	-	0.0	0.0	0.0	1090
	<u>Sub-Totals</u>	<u>1,859,290</u>	<u>43</u>	<u>0</u>	<u>12</u>	
<b>Marshy</b>						
	PW-1	89,212	2	0.0	0.7	960
	<u>Sub-Totals</u>	<u>89,212</u>	<u>2</u>	<u>0</u>	<u>1</u>	
<b>E</b>						
	TW-11	834,459	19	0.0	1.3	193
	TW-12	-	0	0.0	0.0	33
	TW-17	26,218	1	0.0	0.1	560
	TW-18	5,865,651	136	0.5	15.3	314
	TW-19	3,837,721	89	0.9	25.9	803
	MW-64	-	0	0.0	0.0	49
	<u>Sub-Totals</u>	<u>10,564,049</u>	<u>245</u>	<u>1</u>	<u>43</u>	
<b>Southwest</b>						
	Active Wells	1,350,511	31	0.2	6.7	591
	MW-10d	-	0.0	0.0	0.0	1330
	MW-75	-	0	0.0	0.0	1304
	MW-45d	-	0.0	0.0	0.0	630
	<u>Sub-Totals</u>	<u>1,350,511</u>	<u>31</u>	<u>0</u>	<u>7</u>	
<b>D0</b>						
	Ann Arbor Cleaning	42,000			0.029	82
	<u>Sub-Totals</u>	<u>42,000</u>			<u>0.029</u>	
<b>D2</b>						
	LB-1	3,763,118	87	0.7	20.4	652
	LB-3	-	0	0.0	0.0	416
	HW-S	-	0	0.0	0.0	630
	TW-5	1,694,509	39	0.4	11.0	778
	TW-9	887,604	21	0.2	5.9	798
	TW-21	1,912,215	44	0.1	2.3	147
	MW-11D	-	0	0.0	0.0	160
	<u>Sub-Totals</u>	<u>8,257,446</u>	<u>191</u>	<u>1</u>	<u>40</u>	
<b>Overall Totals</b>		<b>22,177,119</b>	<b>513</b>	<b>3.4</b>	<b>102.3</b>	

\*SW Active = TW-8, TW-22