

file

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

April 16, 2009

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

RECEIVED  
APR 17 2009  
MDEQ - RRD  
JACKSON DISTRICT OFFICE

Re: **Quarterly Progress Report**  
**1<sup>st</sup> Quarter, 2009**  
January 1, 2009 to March 31, 2009

Dear Ms. Kolon:

Please find enclosed the Quarterly Progress Report for the period of January 1, 2009 to March 31, 2009.

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  
Alan Wasserman, Esq.  
Michael Caldwell, Esq.



**1st Quarter, 2009**

**(January, February, March)**

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Unit E Potentiometric Surface Contour Map – March 17, 2009

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*large maps not available on-line,  
hard copies at Information Repositories*

## *Summary of Activity*

CEB = Central Environmental Building  
C3 = C3 aquifer  
D2 = D2 aquifer  
E = E aquifer  
SW = Southwest Property Area  
Maple = Maple Road

### *Treatment Activities*

01/05/09 - System-1B was shut down for maintenance on System-1A.

01/05/09 - 01/31/09 - TW-14 (C3) was shut down to adjust the Pond level.

01/05/09 - 01/26/09 - TW-20 (C3) was shut down to adjust the Pond level.

01/05/09 - 01/29/09 - TW-10 (C3) was shut down to adjust the Pond level.

01/05/09 - 01/31/09 - TW-17 (E) was shut down to adjust Pond level.

01/06/09 - HZ-S & TW-9 (D2), TW-2, TW-6, TW-10, TW-14, TW-20 (C3), SW, PW-1 (Marshy),  
and TW-18 (E) were shut down briefly to adjust the Pond level.

01/06/09 - System-2A was shut down for maintenance on System-1A.

01/06/09 - 01/31/09 - System-1A was shut down for repairs.

01/07/09 – Maple was shut down briefly for maintenance.

01/17/09 – Maple was shut down briefly for maintenance.

01/24/09 – Maple was shut down briefly for sensor repairs.

01/26/09 - 01/31/09 - TW-6 (C3) was shut down to adjust the Pond level.

01/29/09 - 01/31/09 - AE-3 (D2) was shut down for the Evergreen study.

02/01/09-02/28/09 – System-1A was shut down for repairs.

02/01/09-02/05/09 - TW-14 (C3) was shut down to adjust the Pond level.

02/01/09-02/17/09 - AE-3 (D2) was shut down for the Evergreen study.

02/05/09-02/17/09 - LB-1 & LB-3 (D2) were shut down for the Evergreen study.

02/17/09-02/28/09 - TW-10 & TW-14 (C3) were shut down to adjust the Pond level.

02/20/09 - Maple system was shut down for maintenance.

02/24/09 - Maple system was shut down for maintenance.

02/28/09 - TW-20 (C3) was shut down for maintenance.

03/01/09 - 03/05/09 - TW-6 & TW-10 (C3) were utilized while TW-20 (C3) was down for maintenance.

03/01/09 - 03/31/09 – System-1A was shut down for maintenance.

03/02/09 - 03/05/09 and 03/12/09 - 03/13/09 - TW-9 (D2) was shut down to adjust the Pond level.

03/11/09 - 03/12/09 - TW-20 (C3) was down to adjust the Pond level.

03/12/09 – System-1B & System-2A were shut down for maintenance.

03/12/09 - 03/14/09 – Maple system was shut down periodically for maintenance.

### ***Field Activities***

01/21/09 – 02/16/09 - Water level testing study under reduced flow conditions Evergreen Area

### **Submittals/Responses**

01/13/09      PLS submitted draft well logs to MDEQ: PLS 08-07, MW-119, MW-120s &d, MW-121s & d, MW-122 s & d

01/14/09      PLS submitted Maple Interim Response Operation Report to MDEQ  
PLS submitted Monthly Monitoring Report (NPDES) to MDEQ  
PLS submitted Discharge Monitoring Report (DMR) electronically to MDEQ  
PLS submitted 4th Quarter 2008 Report to MDEQ

01/16/09      PLS submitted gamma log for MW-121 to MDEQ

02/12/09      PLS submitted Maple Interim Response Operation Report to MDEQ  
PLS submitted Monthly Monitoring Report (NPDES) to MDEQ  
PLS submitted Discharge Monitoring Report (DMR) electronically to MDEQ

03/18/09      MDEQ correspondence to PLS re: Well Identification Plan Response, dated October 24, 2008

03/20/09      PLS submitted Report on Water Level Testing Under Reduced Flow Conditions – Evergreen Area to MDEQ  
PLS submitted Maple Interim Response Operation Report to MDEQ  
PLS submitted Monthly Monitoring Report (NPDES) to MDEQ  
PLS submitted Discharge Monitoring Report (DMR) electronically to MDEQ

3/31/09 PLS submitted well logs to MDEQ: PLS 08-07, MW-119, MW-120s &d, MW-121s & d, MW-122 s & d and gamma logs: MW-119, MW-120, MW-121, MW-122

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

- Install new set of monitoring wells for the Evergreen Study
- Work with MDEQ toward completion of the Global Remediation Plan
- Rehabilitate injection wells IW-3, IW-4, IW-5 and LB-1
- Connect residential homes at 685 & 697 S. Wagner Road to municipal water service

### **Quarterly Performance Analysis**

For the months of January, February, and March 2009, over 500 pounds of 1,4-dioxane were removed and 100,870,831 gallons of water were extracted from the contaminated aquifers, treated and discharged. The total mass of 1,4-dioxane removed since May 1997 is 79,751 pounds and the total volume of water discharged since May 1997 is over 4.9 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 DETAIL BY AQUIFER**

**January 1 - January 31, 2009**

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	172
TW-2 (Dolph)	2,493,737	56	0.1	1.8	88
TW-3	-	0	0.0	0.0	66
TW-6	602,088	13	0.0	0.6	110
TW-10	1,040,823	23	0.3	8.5	988
TW-14	748,421	17	0.0	0.8	131
TW-20	688,527	15	0.4	13.7	2349
MW-22	-	0.0	0.0	0.0	4296
<i>Sub-Totals</i>	5,573,596	125	1	25	
<b>Marshy</b>					
PW-1	235,133	5	0.1	2.0	1016
<i>Sub-Totals</i>	235,133	5	0	2	
<b>E</b>					
TW-11	-	0	0.0	0.0	263
TW-12	-	0	0.0	0.0	17
TW-17	934,933	21	0.0	0.8	105
TW-18	11,390,560	255	1.2	38.4	404
MW-64	-	0	0.0	0.0	62
<i>Sub-Totals</i>	12,325,493	276	1	39	
<b>Southwest</b>					
Active Wells*	1,841,817	41	0.3	8.4	546
MW-10d	-	0.0	0.0	0.0	1173
MW-75	-	0	0.0	0.0	70
MW-45d	-	0.0	0.0	0.0	307
<i>Sub-Totals</i>	1,841,817	41	0	8	
<b>D2</b>					
LB-1	4,174,321	94	0.5	16.9	485
LB-3	3,736,215	84	0.5	15.8	508
AE-3	613,878	14	0.0	0.5	102
HW-S	1,068,582	24	0.3	8.6	966
TW-5	4,126,697	92	1.0	32.5	945
TW-9	2,224,307	50	0.8	24.6	1324
MW-11d	-	0	0.0	0.0	293
<i>Sub-Totals</i>	15,944,000	357	3	99	
<b>Overall Totals</b>	35,920,039	805	5.6	173.0	

\*SW Active = TW-8, TW-13, MW-50



**MASS REDUCTION DETAIL BY AQUIFIER**

**February 1 - February 28, 2009**

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	172
TW-2 (Dolph)	2,301,945	57	0.1	1.8	95
TW-3	-	0	0.0	0.0	66
TW-6	-	0	0.0	0.0	109
TW-10	2,060,233	51	0.6	16.3	948
TW-14	1,289,484	32	0.0	1.4	130
TW-20	1,701,843	42	1.0	27.1	1911
MW-22	-	0.0	0.0	0.0	4296
<i>Sub-Totals</i>	<i>7,353,505</i>	<i>182</i>	<i>2</i>	<i>47</i>	
<b>Marshy</b>					
PW-1	198,367	5	0.1	1.5	932
<i>Sub-Totals</i>	<i>198,367</i>	<i>5</i>	<i>0</i>	<i>2</i>	
<b>E</b>					
TW-11	-	0	0.0	0.0	263
TW-12	-	0	0.0	0.0	17
TW-17	-	0	0.0	0.0	105
TW-18	10,215,716	253	1.2	33.6	394
MW-64	-	0	0.0	0.0	62
<i>Sub-Totals</i>	<i>10,215,716</i>	<i>253</i>	<i>1</i>	<i>34</i>	
<b>Southwest</b>					
Active Wells	1,608,495	40	0.3	7.5	562
MW-10d	-	0.0	0.0	0.0	1173
MW-75	-	0	0.0	0.0	70
MW-45d	-	0.0	0.0	0.0	307
<i>Sub-Totals</i>	<i>1,608,495</i>	<i>40</i>	<i>0</i>	<i>8</i>	
<b>D2</b>					
LB-1	2,003,660	50	0.3	8.6	516
LB-3	1,583,217	39	0.2	6.6	500
AE-3	253,531	6	0.0	0.2	101
HW-S	968,214	24	0.3	7.3	905
TW-5	3,714,183	92	1.1	30.3	979
TW-9	2,016,722	50	0.8	22.0	1305
MW-11d	-	0	0.0	0.0	293
<i>Sub-Totals</i>	<i>10,539,527</i>	<i>261</i>	<i>3</i>	<i>75</i>	
<b>Overall Totals</b>	<b>29,915,610</b>	<b>742</b>	<b>5.9</b>	<b>164.4</b>	

\*SW Active = TW-8, TW-13, MW-50

**MASS REDUCTION DETAIL BY AQUIFER**

**March 1 - March 31, 2008**

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	172
TW-2 (Dolph)	2,499,381	56	0.1	2.0	94
TW-3	-	0	0.0	0.0	66
TW-6	5,347	0	0.0	0.0	130
TW-10	370,388	8	0.1	2.5	822
TW-14	-	0	0.0	0.0	130
TW-20	1,660,071	37	0.8	26.3	1895
MW-22	-	0.0	0.0	0.0	4296
<i>Sub-Totals</i>	<i>4,535,187</i>	<i>102</i>	<i>1</i>	<i>31</i>	
<b>Marshv</b>					
PW-1	217,344	5	0.1	1.9	1032
<i>Sub-Totals</i>	<i>217,344</i>	<i>5</i>	<i>0</i>	<i>2</i>	
<b>E</b>					
TW-11	-	0	0.0	0.0	263
TW-12	-	0	0.0	0.0	17
TW-17	-	0	0.0	0.0	105
TW-18	11,314,388	253	1.1	34.7	368
MW-64	-	0	0.0	0.0	62
<i>Sub-Totals</i>	<i>11,314,388</i>	<i>253</i>	<i>1</i>	<i>35</i>	
<b>Southwest</b>					
Active Wells	1,687,205	38	0.2	7.5	531
MW-10d	-	0.0	0.0	0.0	1173
MW-75	-	0	0.0	0.0	70
MW-45d	-	0.0	0.0	0.0	307
<i>Sub-Totals</i>	<i>1,687,205</i>	<i>38</i>	<i>0</i>	<i>7</i>	
<b>D2</b>					
LB-1	4,468,103	100	0.6	19.2	516
LB-3	3,352,387	75	0.5	14.5	517
AE-3	671,064	15	0.0	0.5	92
HW-S	1,073,046	24	0.3	8.1	900
TW-5	3,596,943	81	0.9	28.5	950
TW-9	1,960,735	44	0.7	20.3	1240
MW-11d	-	0	0.0	0.0	293
<i>Sub-Totals</i>	<i>15,122,278</i>	<i>339</i>	<i>3</i>	<i>91</i>	
<b>Overall Totals</b>	<b>32,876,402</b>	<b>736</b>	<b>5.4</b>	<b>165.9</b>	

\*SW Active = TW-8, TW-13, MW-50

**MASS REDUCTION SUMMARY**

Mass Removed Per Month

(lb)

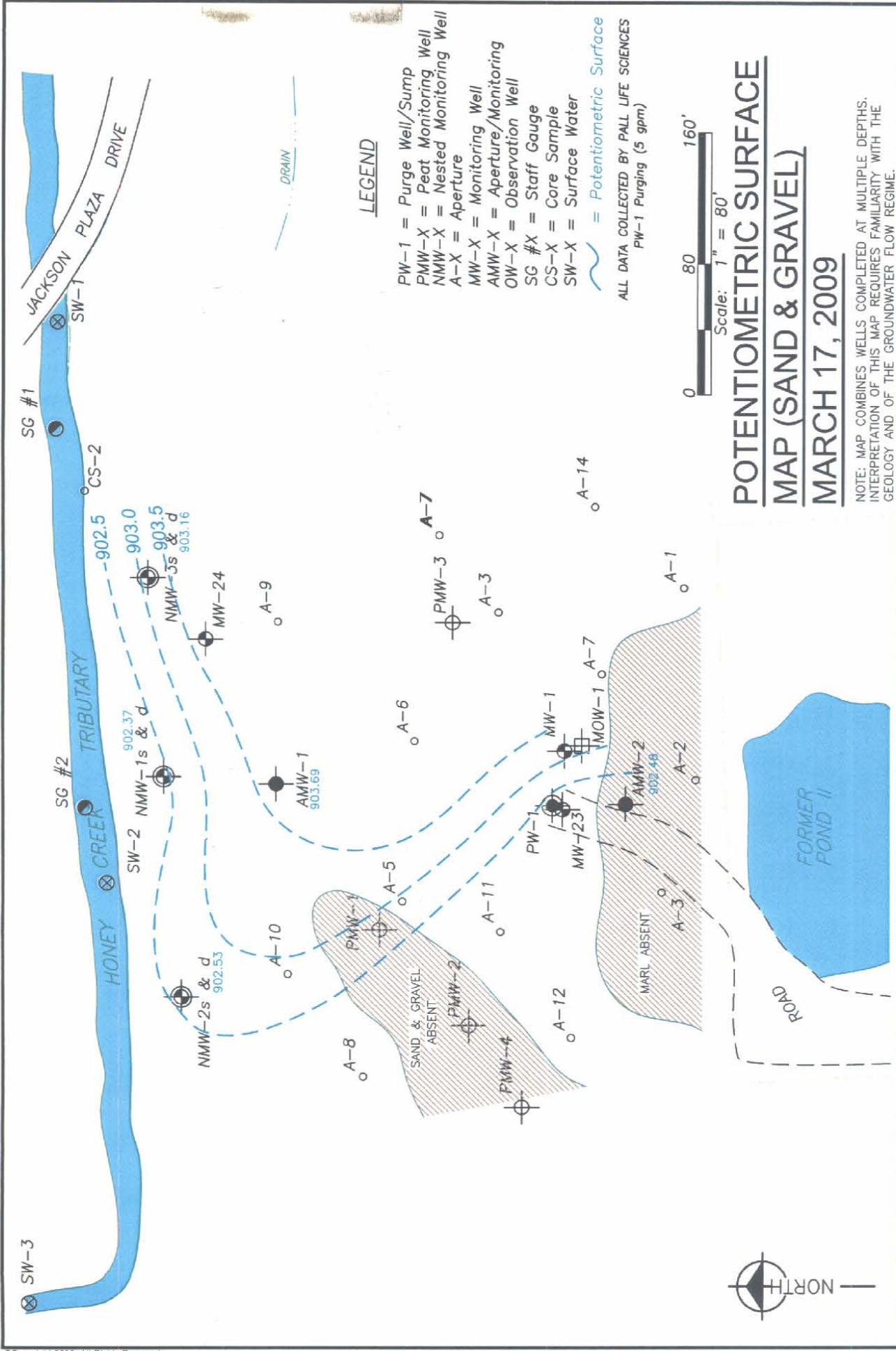
A	B	C	D	E	F
Month	Mass Removed from Unit E Only	Mass Removed from Southwest Only	Mass Removed from Marshy Only	Mass Removed from Units C3 and D2 Only	Total Mass Removed from Units E, D2, C3, Southwest and Marshy
Aug-00	0	0	8	366	374
Sep-00	0	0	9	332	341
Oct-00	0	5	9	583	597
Nov-00	0	3	12	1160	1175
Dec-00	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
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

MASS REDUCTION SUMMARY					
Mass Removed Per Month					
(lb)					
A	B	C	D	E	F
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	Total Mass Removed from Units E, D2, C3, Southwest and Marshy
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
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
Total to date	4499	779	469	52548	58294

# Maps

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# POTENTIOMETRIC SURFACE MAP (SAND & GRAVEL) MARCH 17, 2009

NOTE: MAP COMBINES WELLS COMPLETED AT MULTIPLE DEPTHS. INTERPRETATION OF THIS MAP REQUIRES FAMILIARITY WITH THE GEOLOGY AND OF THE GROUNDWATER FLOW REGIME.

**fish & h**  
 engineers  
 scientists  
 architects  
 constructors

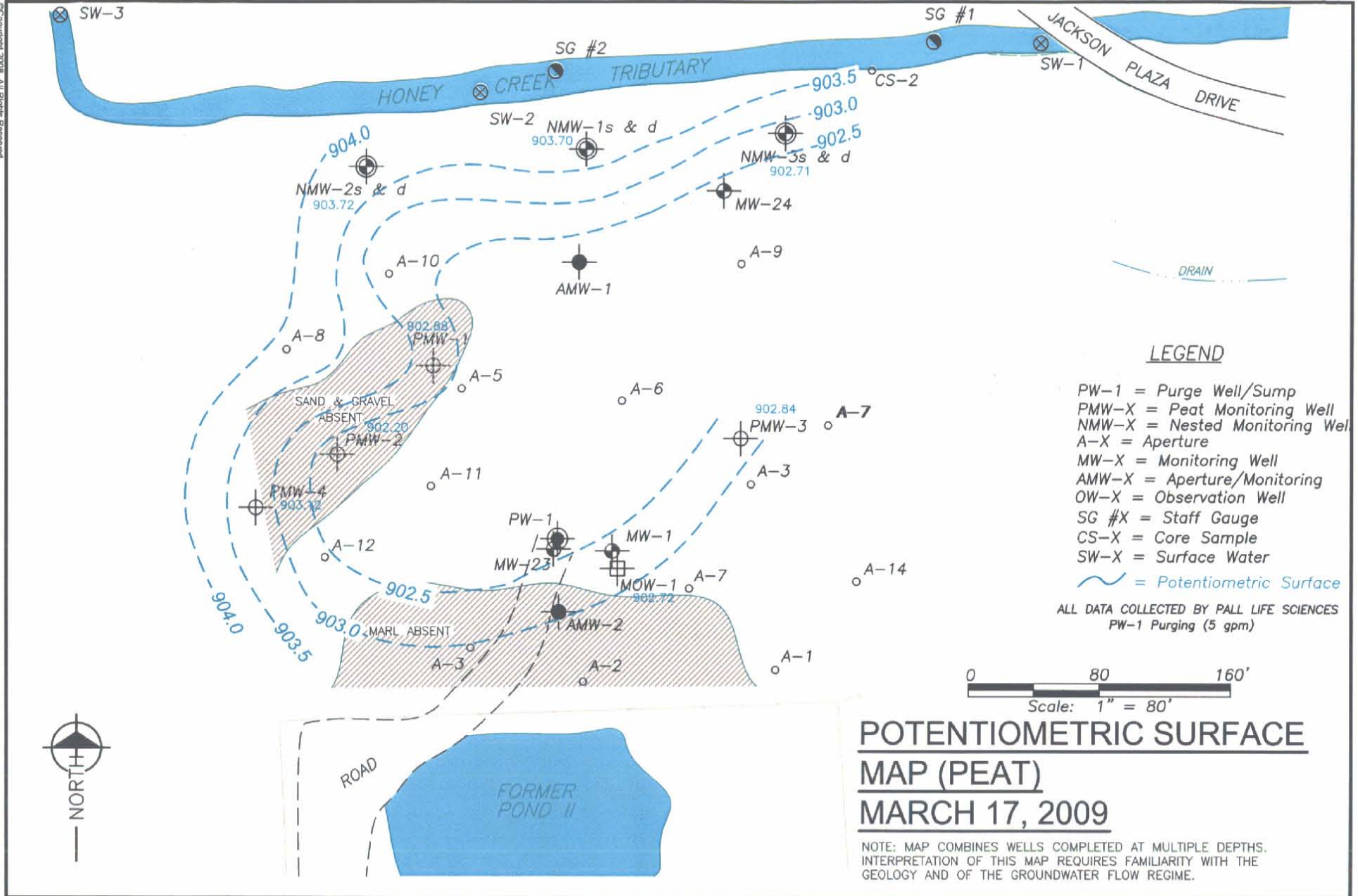
fishbeck, thompson,  
 carr & huber, inc.

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

**Pall Life Sciences**  
 Scio Twp., Washtenaw County, Michigan  
 Quarterly Report

PROJECT NO.  
 F96502

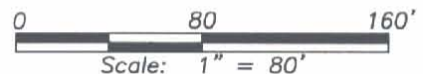
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**LEGEND**

- PW-1 = Purge Well/Sump
- PMW-X = Peat Monitoring Well
- NMW-X = Nested Monitoring Well
- A-X = Aperture
- MW-X = Monitoring Well
- AMW-X = Aperture/Monitoring
- OW-X = Observation Well
- SG #X = Staff Gauge
- CS-X = Core Sample
- SW-X = Surface Water
- ~ = Potentiometric Surface

ALL DATA COLLECTED BY PALL LIFE SCIENCES  
 PW-1 Purging (5 gpm)



**POTENTIOMETRIC SURFACE  
 MAP (PEAT)  
 MARCH 17, 2009**

NOTE: MAP COMBINES WELLS COMPLETED AT MULTIPLE DEPTHS. INTERPRETATION OF THIS MAP REQUIRES FAMILIARITY WITH THE GEOLOGY AND OF THE GROUNDWATER FLOW REGIME.

<p style="text-align: center;">NORTH</p>	<p><b>Pall Life Sciences</b>                  Scio Twp., Washtenaw County, Michigan</p> <p><b>Quarterly                  Report</b></p>	<p>Hard copy is                  intended to be                  8.5 X 11 when                  plotted. Scale(s)                  indicated and                  graphic quality may                  not be accurate for                  any other size.</p>	<p>fishbeck, thompson,                  carr &amp; huber, inc.</p> <p><b>constructors</b></p> <p><b>architects</b></p> <p><b>scientists</b></p> <p><b>engineers</b></p>
<p>PROJECT NO.                  F96502</p>			



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**ftc&h**  
engineers  
scientists  
architects  
constructors

fishbeck, thompson,  
carr & huber, inc.

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graphic quality may  
not be accurate for  
any other size.

**Pall Life Sciences**  
Scio Twp., Washtenaw County, Michigan  
Quarterly  
Report



NOTE: MAP COMBINES WELLS COMPLETED AT MULTIPLE DEPTHS.  
INTERPRETATION OF THIS MAP REQUIRES FAMILIARITY WITH THE GEOLOGY  
AND OF THE GROUNDWATER FLOW REGIME.

- LEGEND**
- ⊕ -PURGE WELL
  - ⊗ -TEMPORARY PURGE WELL
  - ⊙ -MONITORING WELL
  - ⊛ -SPRAY IRRIGATION FIELD PURGE WELL
  - ⊙ -HYDROGEOLOGIC TEST HOLE
  - ~ -POTENTIOMETRIC SURFACE CONTOUR (Feet amsl)
  - 882.83 -POTENTIOMETRIC SURFACE ELEVATION (Feet amsl)

**POTENTIOMETRIC  
SURFACE MAP  
SOUTHWEST PROPERTY  
MARCH 17, 2009**

PROJECT NO.  
F96502



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 USER: ADE  
 PLOT INFO:



NOTE: MAP COMBINES WELLS COMPLETED AT MULTIPLE DEPTHS.  
 INTERPRETATION OF THIS MAP REQUIRES FAMILIARITY WITH THE GEOLOGY  
 AND OF THE GROUNDWATER FLOW REGIME.

- LEGEND**
- PURGE WELL
  - TEMPORARY PURGE WELL
  - MONITORING WELL
  - SPRAY IRRIGATION FIELD PURGE WELL
  - HYDROGEOLOGIC TEST HOLE
  - 1,4-DIOXANE ISOCONCENTRATION CONTOUR (ug/L)
  - 1,4-DIOXANE CONCENTRATION (ug/L)



**1,4-DIOXANE ISOCONCENTRATION  
 CONTOUR MAP  
 OCTOBER 2008-MARCH 2009**

**fic&h**  
 engineers  
 scientists  
 architects  
 constructors

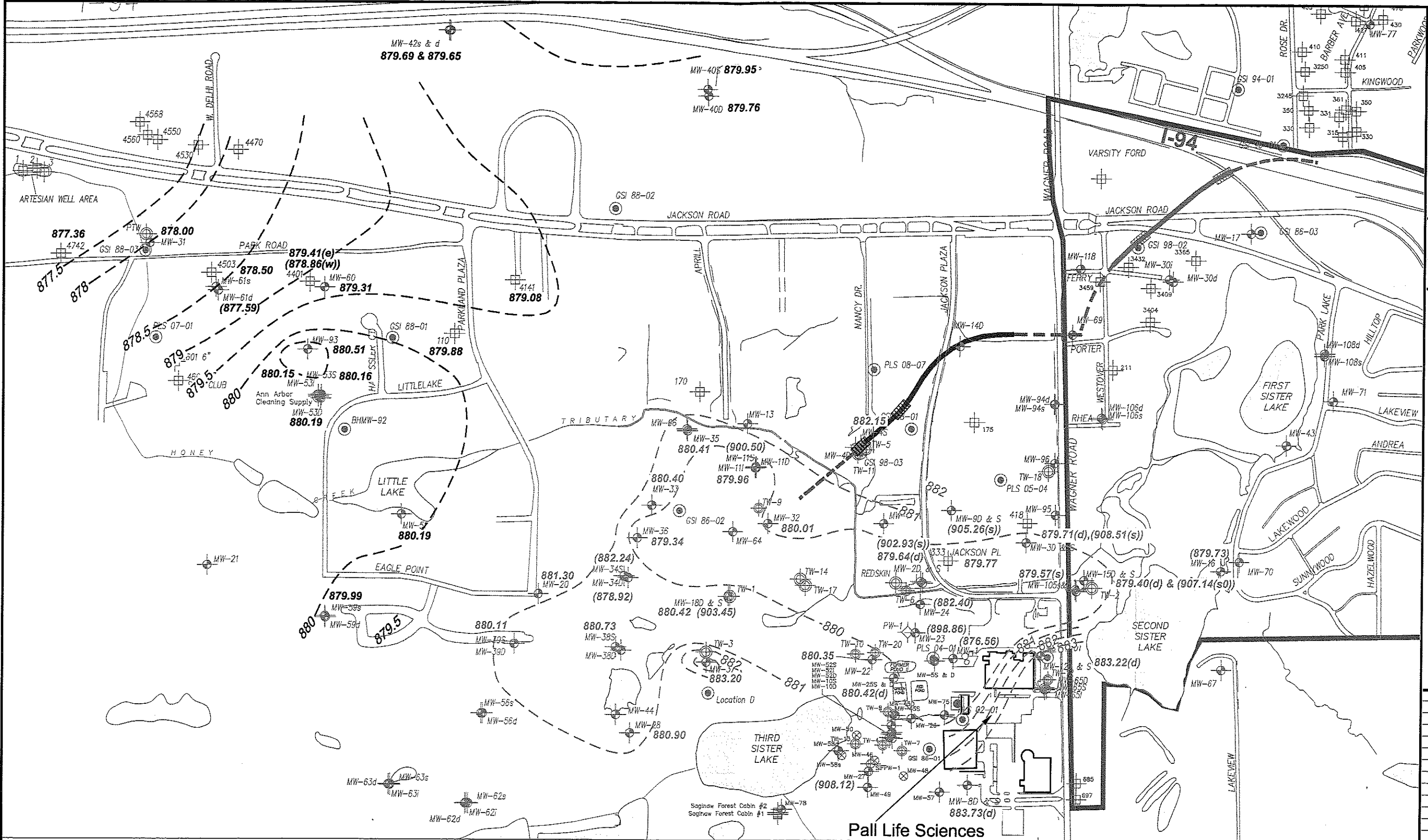
fishbeck, thompson,  
 carr & huber, inc.  
 Hard copy is  
 intended to be  
 8.5"x11" when  
 plotted. Scale(s)  
 indicated and  
 graphic quality may  
 not be accurate for  
 any other size.

**Pall Life Sciences**  
 Scio Twp., Washtenaw County, Michigan  
 Quarterly  
 Report

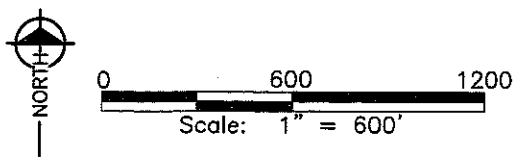
PROJECT NO.  
 F96502

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- LEGEND**
- MONITOR WELL
  - RESIDENTIAL WELL
  - PURGE WELL
  - HYDROGEOLOGIC TEST BORING
  - UV/OX TREATMENT SYSTEM
  - TEMPORARY PURGE WELL
  - SURFACE WATER ELEVATION POINT
  - Unit C3 POTENTIOMETRIC SURFACE CONTOUR (Feet amsl) 1.0' INTERVAL
  - Unit D0 POTENTIOMETRIC SURFACE CONTOUR (Feet amsl) 0.5' INTERVAL



**UNIT D<sub>0</sub> & C<sub>3</sub> AQUIFERS  
POTENTIOMETRIC SURFACE  
CONTOUR MAP  
MARCH 17, 2009**

NOTES: MAP COMBINES WELLS COMPLETED AT MULTIPLE DEPTHS. INTERPRETATION OF THIS MAP REQUIRES FAMILIARITY WITH THE GEOLOGY AND OF THE GROUNDWATER FLOW REGIME.

**fic&h**  
engineers  
scientists  
architects  
constructors

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**Pall Life Sciences**  
Scio Twp., Washtenaw County, Michigan

Quarterly Report

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