



311716

**FAX**

Date: 8/1/2008

To: Beth Mead O'Brien

Fax # (517) 335-4887

Company: MDEQ ERD

From: Mike Ringelberg

Ext. #: (616) 975-4596

Location: **GRAND RAPIDS, MI**  
5555 Glenwood Hills Parkway SE  
Suites 200-300  
Grand Rapids, MI 49512

Sending from Fax #:  
616-942-6499

Project #: 34815

Subject: MDEQ TSRR Battle Creek, Daily Log Sheets for July

Comments:

Hello Beth

Here are the TSRR Battle Creek daily log sheets for July. The system has been operating quite well this month. The system continues to operate in a modified enhanced (30-40%) normal operation (EW #2 @ 28, EW 3R @45, EW 6 @ 35 and EW 8 @ 12).

The entire system shut down briefly during an afternoon storm on the 2<sup>nd</sup> of July. EW 3R did not automatically restart and was restarted the following day. Down time for EW 3R was 17 hours.

Mike

If you do not receive 18 pages (including cover page),  
please call us as soon as possible @ (616) 942-9600



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**MONITORING and EQUIPMENT INSPECTION DATA SHEET**

**GROUNDWATER TREATMENT SYSTEM - TSRR BATTLE CREEK, MI**

| Groundwater Extraction Wells |              |     |           |       |          |       |                         |                       |                  |
|------------------------------|--------------|-----|-----------|-------|----------|-------|-------------------------|-----------------------|------------------|
| Date/time                    | Wells        |     | Flow Rate |       | MAX Flow |       | Total Flow<br>(gallons) | Hours of<br>Operation | Drawdown<br>(ft) |
|                              | on/off       |     | (gpm)     | (psi) | (gpm)    | (psi) |                         |                       |                  |
| 7/2/08                       | EW-2         | on  | 33.7      | 19    |          |       | 2634876                 | 23035.7               | 21.9             |
| 10:00                        | EW-3R        | ✓   | 34.0      | 29    |          |       | 885958                  | 18780.5               | 26.2             |
|                              | EW-4         | OFF | 0         | 0     |          |       | 3969433                 | 00000.0               | 39.8             |
|                              | EW-5         | "   | 0         | 0     |          |       | 8812993                 | 28747.5               |                  |
|                              | EW-6         | on  | 27.6      | 21    |          |       | 580847                  | 66282.0               |                  |
|                              | EW-7         | OFF | 0         | 0     |          |       | 4503437                 | 16597.7               |                  |
|                              | EW-8         | on  | 23.0      | 17    |          |       | 9716620                 | 39574.9               |                  |
|                              | EW-9         | OFF | 0         | 0     |          |       | 8589499                 | 25572.7               |                  |
|                              | Total System |     |           | 118.3 | 16       |       |                         |                       |                  |

| Air Stripper                        |   |                   |
|-------------------------------------|---|-------------------|
| Pressure loss in packing            | 1 | 6.50 (inches H2O) |
| Air Intake (check)                  |   | Yes (yes/no)      |
| Air discharge temp. (before heater) | 2 | 53° (degrees F)   |
| Air discharge temp. (after heater)  | 3 | 60° (degrees F)   |
| Blower (check)                      |   | Yes (yes/no)      |
| Blower Inlet Pressure               | 4 | 6.75 (inches H2O) |
| Blower Outlet Pressure              | 7 | 4.20 (inches H2O) |
| Effluent pH (monthly)               |   | 8.03              |
| Hours of operation (blower)         | 6 | 23991.3 (hours)   |

| Vapor Phase Carbon             |    |                   |
|--------------------------------|----|-------------------|
| Primary Carbon Vessel          |    |                   |
| Inlet Pressure (blower outlet) | 7  | 4.20 (inches H2O) |
| Outlet Pressure                | 8  | 2.40 (inches H2O) |
| Pressure Loss (subtract)       |    | 1.80 (inches H2O) |
| Secondary Carbon Vessel        |    |                   |
| Inlet Pressure                 | 9  | 1.40 (inches H2O) |
| Outlet Pressure                | 10 | 0 (inches H2O)    |
| Pressure Loss (subtract)       |    | 1.40 (inches H2O) |

| Outfall         |              |                    |
|-----------------|--------------|--------------------|
| Check Discharge | Yes (yes/no) | Clean (clear or ?) |

Notes:

*All systems checked OK*

Inspected By:

*R. E. Klein*

Date:

*7/2/08*

**MONITORING and EQUIPMENT INSPECTION DATA SHEET**

**GROUNDWATER TREATMENT SYSTEM - TSRR BATTLE CREEK, MI**

| Groundwater Extraction Wells |              |     |           |       |          |       |                         |                       |                  |
|------------------------------|--------------|-----|-----------|-------|----------|-------|-------------------------|-----------------------|------------------|
| Date/time                    | Wells        |     | Flow Rate |       | MAX Flow |       | Total Flow<br>(gallons) | Hours of<br>Operation | Drawdown<br>(ft) |
|                              | on/off       |     | (gpm)     | (psi) | (gpm)    | (psi) |                         |                       |                  |
| 7/3/08                       | EW-2         | ON  | 33.5      | 18    |          |       | 2689506                 | 23062.1               | -21.6            |
| 12:00                        | EW-3R        | "   | 34.3      | 29    |          |       | 902121                  | 18788.6               | -25.1            |
|                              | EW-4         | OFF | 0         | 0     |          |       | 3969433                 | 06000.0               | -39.8            |
|                              | EW-5         | "   | 0         | 0     |          |       | 8812893                 | 28747.5               |                  |
|                              | EW-6         | ON  | 28.4      | 21    |          |       | 625946                  | 16308.3               |                  |
|                              | EW-7         | OFF | 0         | 0     |          |       | 4503437                 | 16597.7               |                  |
|                              | EW-8         | ON  | 32.4      | 17    |          |       | 9757446                 | 89601.3               |                  |
|                              | EW-9         | OFF | 0         | 0     |          |       | 8589499                 | 25572.7               |                  |
|                              | Total System |     | 119.6     |       |          |       |                         |                       |                  |

| Air Stripper                        |   |                   |
|-------------------------------------|---|-------------------|
| Pressure loss in packing            | 1 | 6.00 (inches H2O) |
| Air Intake (check)                  |   | Yes (yes/no)      |
| Air discharge temp. (before heater) | 2 | 57° (degrees F)   |
| Air discharge temp. (after heater)  | 3 | 58° (degrees F)   |
| Blower (check)                      |   | Yes (yes/no)      |
| Blower Inlet Pressure               | 4 | 6.75 (inches H2O) |
| Blower Outlet Pressure              | 7 | 4.20 (inches H2O) |
| Effluent pH (monthly)               |   |                   |
| Hours of operation (blower)         | 6 | 24077.6 (hours)   |

| Vapor Phase Carbon             |    |                   |
|--------------------------------|----|-------------------|
| Primary Carbon Vessel          |    |                   |
| Inlet Pressure (blower outlet) | 7  | 4.20 (inches H2O) |
| Outlet Pressure                | 8  | 2.50 (inches H2O) |
| Pressure Loss (subtract)       |    | 1.70 (inches H2O) |
| Secondary Carbon Vessel        |    |                   |
| Inlet Pressure                 | 9  | 1.40 (inches H2O) |
| Outlet Pressure                | 10 | 0 (inches H2O)    |
| Pressure Loss (subtract)       |    | 1.40 (inches H2O) |

| Outfall         |     |                             |
|-----------------|-----|-----------------------------|
| Check Discharge | Yes | (yes/no) Clear (clear or ?) |

Notes: EW-3R OFF! Low level alarm received at 5:PM 7/2/08  
 Restart OK @ 12:00 pm 7/3/08 Set Flow rate  
 from 34.3 gpm to 32.0 gpm  
 All other systems checked OK  
 Inspected By: *R. Rubin* Date: 7/3/08

**MONITORING and EQUIPMENT INSPECTION DATA SHEET**

**GROUNDWATER TREATMENT SYSTEM - TSRR BATTLE CREEK, MI**

| Groundwater Extraction Wells |              |        |           |       |          |       |                         |                       |                  |
|------------------------------|--------------|--------|-----------|-------|----------|-------|-------------------------|-----------------------|------------------|
| Date/time                    | Wells        | on/off | Flow Rate |       | MAX Flow |       | Total Flow<br>(gallons) | Hours of<br>Operation | Drawdown<br>(ft) |
|                              |              |        | (gpm)     | (psi) | (gpm)    | (psi) |                         |                       |                  |
| 7/7/08                       | EW-2         | ON     | 30.4      | 17.5  |          |       | 2875217                 | 23159.7               | -21.2            |
| 2:30                         | EW-3R        | U      | 32.0      | 28    |          |       | 1090305                 | 18886.1               | -25.2            |
|                              | EW-4         | OFF    | 0         | 0     |          |       | 3969433                 | 00000.0               | -39.8            |
|                              | EW-5         | U      | 0         | 0     |          |       | 8812993                 | 28747.5               |                  |
|                              | EW-6         | ON     | 27.7      | 21    |          |       | 790415                  | 66405.9               |                  |
|                              | EW-7         | OFF    | 0         | 0     |          |       | 4503437                 | 16597.7               |                  |
|                              | EW-8         | ON     | 19.8      | 17    |          |       | 9882857                 | 39898.9               |                  |
|                              | EW-9         | OFF    | 0         | 0     |          |       | 8589499                 | 28572.7               |                  |
|                              | Total System |        | 109.9     | 16    |          |       |                         |                       |                  |

  

| Air Stripper                        |   |                   |
|-------------------------------------|---|-------------------|
| Pressure loss in packing            | 1 | 6.50 (inches H2O) |
| Air Intake (check)                  |   | Yes (yes/no)      |
| Air discharge temp. (before heater) | 2 | 52° (degrees F)   |
| Air discharge temp. (after heater)  | 3 | 100° (degrees F)  |
| Blower (check)                      |   | Yes (yes/no)      |
| Blower Inlet Pressure               | 4 | 6.75 (inches H2O) |
| Blower Outlet Pressure              | 7 | 4.20 (inches H2O) |
| Effluent pH (monthly)               |   |                   |
| Hours of operation (blower)         | 6 | 2414.8 (hours)    |

  

| Vapor Phase Carbon             |    |                   |
|--------------------------------|----|-------------------|
| Primary Carbon Vessel          |    |                   |
| Inlet Pressure (blower outlet) | 7  | 4.20 (inches H2O) |
| Outlet Pressure                | 8  | 2.50 (inches H2O) |
| Pressure Loss (subtract)       |    | 1.70 (inches H2O) |
| Secondary Carbon Vessel        |    |                   |
| Inlet Pressure                 | 9  | 1.40 (inches H2O) |
| Outlet Pressure                | 10 | 0 (inches H2O)    |
| Pressure Loss (subtract)       |    | 1.40 (inches H2O) |

  

| Outfall         |     |                             |
|-----------------|-----|-----------------------------|
| Check Discharge | Yes | (yes/no) Clear (clear or ?) |

Notes:

Collected water samples for a eff.

All systems checked OK

Set EW-3R to 34 gpm EW-2 is now at max.

Inspected By:

R. Elkin

Date:

7/7/08

**MONITORING and EQUIPMENT INSPECTION DATA SHEET**

**GROUNDWATER TREATMENT SYSTEM - TSRR BATTLE CREEK, MI**

| Groundwater Extraction Wells |                     |           |       |          |       |                         |                       |                  |
|------------------------------|---------------------|-----------|-------|----------|-------|-------------------------|-----------------------|------------------|
| Date/time                    | Wells<br>on/off     | Flow Rate |       | MAX Flow |       | Total Flow<br>(gallons) | Hours of<br>Operation | Drawdown<br>(ft) |
|                              |                     | (gpm)     | (psi) | (gpm)    | (psi) |                         |                       |                  |
| 7-9-08 9:00                  | EW-2                | 30.7      | 17    |          |       | 2954139                 | -21.2                 | 23202.7          |
|                              | EW-3R               | 34.2      | 29    | ↑39      | 27    | 1177903                 | -25.5                 | 18929.2          |
|                              | EW-4 OFF            | 0         | 0     |          |       | <del>3969433</del>      | <del>680000</del>     | -39.8            |
|                              | EW-5 OFF            | 0         | 0     |          |       | 8812993                 | 28747.5               |                  |
|                              | EW-6                | 27.4      | 20    | ↑35      | 16    | 861159                  | 66449.0               |                  |
|                              | EW-7 OFF            | 0         | 0     |          |       | 4503437                 | 16597.7               |                  |
|                              | EW-8                | 18.9      | 17    |          |       | 9932883                 | 39741.9               |                  |
|                              | EW-9 OFF            | 0         | 0     |          |       | 8589499                 | 25572.7               |                  |
|                              | <b>Total System</b> |           | 16    |          |       |                         |                       |                  |

**Air Stripper**

|                                     |         |              |
|-------------------------------------|---------|--------------|
| Pressure loss in packing            | 6.5     | (inches H2O) |
| Air Intake (check)                  | yes     | (yes/no)     |
| Air discharge temp. (before heater) | 53      | (degrees F)  |
| Air discharge temp. (after heater)  | 58      | (degrees F)  |
| Blower (check)                      | yes     | (yes/no)     |
| Blower Inlet Pressure               | 7.0     | (inches H2O) |
| Blower Outlet Pressure              | 4.0     | (inches H2O) |
| Effluent pH (monthly)               |         |              |
| Hours of operation (blower)         | 24158.3 | (hours)      |

**Vapor Phase Carbon**

|                                |     |              |
|--------------------------------|-----|--------------|
| <b>Primary Carbon Vessel</b>   |     |              |
| Inlet Pressure (blower outlet) | 4.0 | (inches H2O) |
| Outlet Pressure                | 2.5 | (inches H2O) |
| Pressure Loss (subtract)       | 1.5 | (inches H2O) |
| <b>Secondary Carbon Vessel</b> |     |              |
| Inlet Pressure                 | 1.4 | (inches H2O) |
| Outlet Pressure                | 0   | (inches H2O) |
| Pressure Loss (subtract)       | 1.4 | (inches H2O) |

**Outfall**

|  |     |          |       |               |
|--|-----|----------|-------|---------------|
| Check Discharge                          | yes | (yes/no) | clear | (clear or ?)  |
| EW #3 visual observation of Free Product |     | (yes/no) |       | (clear br FP) |

Notes: Running OK - EW # 8 Falling in output - wide open  
 ↑ EW 6 to 35 gpm + ↑ 3R to 39 gpm

~ SITE PRE CONSTRUCTION (SVE) here @ 10:00

Inspected By: Mike Ringelberg

Date: 7-9-08

**MONITORING and EQUIPMENT INSPECTION DATA SHEET**

**GROUNDWATER TREATMENT SYSTEM - TSRR BATTLE CREEK, MI**

| Groundwater Extraction Wells |              |     |           |       |          |       |                         |                       |                  |
|------------------------------|--------------|-----|-----------|-------|----------|-------|-------------------------|-----------------------|------------------|
| Date/time                    | Wells        |     | Flow Rate |       | MAX Flow |       | Total Flow<br>(gallons) | Hours of<br>Operation | Drawdown<br>(ft) |
|                              | on/off       |     | (gpm)     | (psi) | (gpm)    | (psi) |                         |                       |                  |
| 7-11-08                      | EW-2         | on  | 29.71     | 17.5  | 17.5     | 17.5  | 3037246                 | 23248.8               | -21.3            |
| 7:AM                         | EW-3         | on  | 39.41     | 27    | 27       | 27    | 1287060                 | 18975.2               | -27.1            |
|                              | EW-4         | OFF | 0         | 0     | 0        | 0     | 3969433                 | 00000.0               | -39.8            |
|                              | EW-5         | OFF | 0         | 0     | 0        | 0     | 8812993                 | 28747.5               |                  |
|                              | EW-6         | on  | 38.30     | 17    | 17       | 17    | 965411                  | 66495.1               |                  |
|                              | EW-7         | OFF | 0         | 0     | 0        | 0     | 4503437                 | 16597.7               |                  |
|                              | EW-8         | on  | 18.22     | 17    | 17       | 17    | 9983812                 | 39788.1               |                  |
|                              | EW-9         | OFF | 0         | 0     | 0        | 0     | 8589499                 | 25572.8               |                  |
|                              | Total System |     | 125.6     | 16    | 16       | 16    |                         |                       |                  |

**Air Stripper**

|                                     |   |         |              |
|-------------------------------------|---|---------|--------------|
| Pressure loss in packing            | 1 | 6.5     | (inches H2O) |
| Air Intake (check)                  |   | yes     | (yes/no)     |
| Air discharge temp. (before heater) | 2 | 52      | (degrees F)  |
| Air discharge temp. (after heater)  | 3 | 59      | (degrees F)  |
| Blower (check)                      |   | yes     | (yes/no)     |
| Blower Inlet Pressure               | 4 | 7.0     | (inches H2O) |
| Blower Outlet Pressure              | 7 | 4.0     | (inches H2O) |
| Effluent pH (monthly)               |   |         |              |
| Hours of operation (blower)         | 6 | 24204.8 | (hours)      |

**Vapor Phase Carbon**

|                                |    |     |              |
|--------------------------------|----|-----|--------------|
| Primary Carbon Vessel          |    |     |              |
| Inlet Pressure (blower outlet) | 7  | 4.0 | (inches H2O) |
| Outlet Pressure                | 8  | 2.3 | (inches H2O) |
| Pressure Loss (subtract)       |    | 1.7 | (inches H2O) |
| Secondary Carbon Vessel        |    |     |              |
| Inlet Pressure                 | 9  | 1.2 | (inches H2O) |
| Outlet Pressure                | 10 | 0   | (inches H2O) |
| Pressure Loss (subtract)       |    | 1.2 | (inches H2O) |

**Outfall**

|  |     |          |       |               |
|--|-----|----------|-------|---------------|
| Check Discharge                          | yes | (yes/no) | clean | (clear or ?)  |
| EW #3 visual observation of Free Product |     | (yes/no) |       | (clear or FP) |

Notes: EW-3 - ↑ 45.0 GPM - Increased Flow 39 → 45  
 EW-6 - ↓ 35.0 GPM - Decreased Flow 38 → 35  
 System OK

Inspected By:

*John Schiffer*

Date:

7-11-08

**MONITORING and EQUIPMENT INSPECTION DATA SHEET**

**GROUNDWATER TREATMENT SYSTEM - TSRR BATTLE CREEK, MI**

| Groundwater Extraction Wells |        |     |           |       |          |       |                         |                       |                  |
|------------------------------|--------|-----|-----------|-------|----------|-------|-------------------------|-----------------------|------------------|
| Date/time                    | Wells  |     | Flow Rate |       | MAX Flow |       | Total Flow<br>(gallons) | Hours of<br>Operation | Drawdown<br>(ft) |
|                              | on/off |     | (gpm)     | (psi) | (gpm)    | (psi) |                         |                       |                  |
| 7/14/08                      | EW-2   | ON  | 29.6      | 17.5  |          |       | 3173429                 | 23325.6               | -21.5            |
| 12:00                        | EW-3R  | ON  | 46.0      | 25    |          |       | 1497526                 | 19052.0               | -28.9            |
|                              | EW-4   | OFF | 0         | 0     |          |       | 3969433                 | 02000.0               | -39.8            |
|                              | EW-5   | OFF | 0         | 0     |          |       | 8812993                 | 28747.5               |                  |
|                              | EW-6   | ON  | 35.7      | 18    |          |       | 1129854                 | 66571.9               |                  |
|                              | EW-7   | OFF | 0         | 0     |          |       | 4503437                 | 16597.7               |                  |
|                              | EW-8   | ON  | 17.7      | 17    |          |       | 66128                   | 39866.8               |                  |
|                              | EW-9   | OFF | 0         | 0     |          |       | 8601485                 | 25572.7               |                  |
| Total System                 |        |     | 129.0     | 16    |          |       |                         |                       |                  |

| Air Stripper                        |   |                   |
|-------------------------------------|---|-------------------|
| Pressure loss in packing            | 1 | 6.00 (inches H2O) |
| Air Intake (check)                  |   | Yes (yes/no)      |
| Air discharge temp. (before heater) | 2 | 54° (degrees F)   |
| Air discharge temp. (after heater)  | 3 | 60° (degrees F)   |
| Blower (check)                      |   | Yes (yes/no)      |
| Blower Inlet Pressure               | 4 | 7.25 (inches H2O) |
| Blower Outlet Pressure              | 7 | 4.00 (inches H2O) |
| Effluent pH (monthly)               |   |                   |
| Hours of operation (blower)         | 6 | 2428.2 (hours)    |

| Vapor Phase Carbon             |    |                   |
|--------------------------------|----|-------------------|
| Primary Carbon Vessel          |    |                   |
| Inlet Pressure (blower outlet) | 7  | 4.00 (inches H2O) |
| Outlet Pressure                | 8  | 2.30 (inches H2O) |
| Pressure Loss (subtract)       |    | 1.70 (Inches H2O) |
| Secondary Carbon Vessel        |    |                   |
| Inlet Pressure                 | 9  | 1.30 (inches H2O) |
| Outlet Pressure                | 10 | 0 (inches H2O)    |
| Pressure Loss (subtract)       |    | 1.30 (inches H2O) |

| Outfall         |     |                                    |
|-----------------|-----|------------------------------------|
| Check Discharge | Yes | (yes/no) <u>Clear</u> (clear or ?) |

Notes: All systems checked OK  
Grass mowed at site.

Inspected By: R. Griffin

Date: 7/14/08

**MONITORING and EQUIPMENT INSPECTION DATA SHEET**

**GROUNDWATER TREATMENT SYSTEM - TSRR BATTLE CREEK, MI**

| Groundwater Extraction Wells |              |     |           |       |          |       |                         |                       |                  |
|------------------------------|--------------|-----|-----------|-------|----------|-------|-------------------------|-----------------------|------------------|
| Date/time                    | Wells        |     | Flow Rate |       | MAX Flow |       | Total Flow<br>(gallons) | Hours of<br>Operation | Drawdown<br>(ft) |
|                              | on/off       |     | (gpm)     | (psi) | (gpm)    | (psi) |                         |                       |                  |
| 7/17/08                      | EW-2         | ON  | 29.2      | 17.5  |          |       | 3301190                 | 23398.0               | -21.5            |
| 12:30                        | EW-3R        | 11  | 45.5      | 25    |          |       | 1696534                 | 19124.4               | -29.0            |
|                              | EW-4         | OFF | 0         | 0     |          |       | 3969433                 | 60000.0               | -39.8            |
|                              | EW-5         | 11  | 0         | 0     |          |       | 8812993                 | 28747.5               |                  |
|                              | EW-6         | ON  | 35.3      | 18    |          |       | 1284027                 | 46644.3               |                  |
|                              | EW-7         | OFF | 0         | 0     |          |       | 4503437                 | 16597.7               |                  |
|                              | EW-8         | ON  | 16.8      | 17    |          |       | 140907                  | 39937.2               |                  |
|                              | EW-9         | OFF | 0         | 0     |          |       | 8607485                 | 25572.7               |                  |
|                              | Total System |     | 126.8     | 16    |          |       |                         |                       |                  |

| Air Stripper                        |   |                     |
|-------------------------------------|---|---------------------|
| Pressure loss in packing            | 1 | 7.40 (inches (H2O)) |
| Air Intake (check)                  |   | Yes (yes/no)        |
| Air discharge temp. (before heater) | 2 | 55° (degrees F)     |
| Air discharge temp. (after heater)  | 3 | 62° (degrees F)     |
| Blower (check)                      |   | Yes (yes/no)        |
| Blower Inlet Pressure               | 4 | 7.25 (inches (H2O)) |
| Blower Outlet Pressure              | 7 | 4.00 (inches (H2O)) |
| Effluent pH (monthly)               |   |                     |
| Hours of operation (blower)         | 6 | 24353.6 (hours)     |

| Vapor Phase Carbon             |    |                   |
|--------------------------------|----|-------------------|
| Primary Carbon Vessel          |    |                   |
| Inlet Pressure (blower outlet) | 7  | 4.00 (inches H2O) |
| Outlet Pressure                | 8  | 2.30 (inches H2O) |
| Pressure Loss (subtract)       |    | 1.70 (inches H2O) |
| Secondary Carbon Vessel        |    |                   |
| Inlet Pressure                 | 9  | 1.40 (inches H2O) |
| Outlet Pressure                | 10 | 0 (inches H2O)    |
| Pressure Loss (subtract)       |    | 1.40 (inches H2O) |

| Outfall         |     |                                    |
|-----------------|-----|------------------------------------|
| Check Discharge | Yes | (yes/no) <u>Clean</u> (clear or ?) |

Notes:

*All systems checked OK*

Inspected By:

*R. E. Egan*

Date:

*7/17/08*



**MONITORING and EQUIPMENT INSPECTION DATA SHEET**

**GROUNDWATER TREATMENT SYSTEM - TSRR BATTLE CREEK, MI**

| Groundwater Extraction Wells |              |     |           |       |          |       |                         |                       |                  |
|------------------------------|--------------|-----|-----------|-------|----------|-------|-------------------------|-----------------------|------------------|
| Date/time                    | Wells        |     | Flow Rate |       | MAX Flow |       | Total Flow<br>(gallons) | Hours of<br>Operation | Drawdown<br>(ft) |
|                              | on/off       |     | (gpm)     | (psi) | (gpm)    | (psi) |                         |                       |                  |
| 7-18-08                      | EW-2         | on  | 29.58     | 17.5  |          |       | 333 4207                | 23416.7               | -21.6            |
| 7:00 AM                      | EW-3R        | on  | 45.60     | 24    |          |       | 174 76 99               | 19143.1               | -29.0            |
|                              | EW-4         | OFF | 0         | 0     |          |       | 396 94 33               | 00000.0               | -39.8            |
|                              | EW-5         | OFF | 0         | 0     |          |       | 881 2993                | 28747.5               |                  |
|                              | EW-6         | on  | 35.16     | 18    |          |       | 132 3524                | 66662.9               |                  |
|                              | EW-7         | OFF | 0         | 0     |          |       | 450 3437                | 16597.7               |                  |
|                              | EW-8         | on  | 16.62     | 17    |          |       | 159 615                 | 39955.9               |                  |
|                              | EW-9         | OFF | 0         | 0     |          |       | 860 1485                | 25572.8               |                  |
|                              | Total System |     | 126.96    | 16.2  |          |       |                         |                       |                  |

| Air Stripper                        |   |                   |
|-------------------------------------|---|-------------------|
| Pressure loss in packing            | 1 | 7.00 (inches H2O) |
| Air Intake (check)                  |   | Yes (yes/no)      |
| Air discharge temp. (before heater) | 2 | 53.0 (degrees F)  |
| Air discharge temp. (after heater)  | 3 | 59.0 (degrees F)  |
| Blower (check)                      |   | Yes (yes/no)      |
| Blower Inlet Pressure               | 4 | 7.50 (inches H2O) |
| Blower Outlet Pressure              | 7 | 4.00 (inches H2O) |
| Effluent pH (monthly)               |   |                   |
| Hours of operation (blower)         | 6 | 24372.3 (hours)   |

| Vapor Phase Carbon             |    |                   |
|--------------------------------|----|-------------------|
| Primary Carbon Vessel          |    |                   |
| Inlet Pressure (blower outlet) | 7  | 4.0 (inches H2O)  |
| Outlet Pressure                | 8  | 2.4 (inches H2O)  |
| Pressure Loss (subtract)       |    | 1.6 (inches H2O)  |
| Secondary Carbon Vessel        |    |                   |
| Inlet Pressure                 | 9  | 1.30 (inches H2O) |
| Outlet Pressure                | 10 | 0 (inches H2O)    |
| Pressure Loss (subtract)       |    | 1.30 (inches H2O) |

| Outfall         |     |     |                    |
|-----------------|-----|-----|--------------------|
| Check Discharge | yes | yes | Clear (clear or ?) |

Notes:

*System checked - OK*

Inspected By:

*[Signature]*

Date:

*7-18-08*

**MONITORING and EQUIPMENT INSPECTION DATA SHEET**

**GROUNDWATER TREATMENT SYSTEM - TSRR BATTLE CREEK, MI**

| Groundwater Extraction Wells |              |        |           |       |          |       |                         |                       |                  |
|------------------------------|--------------|--------|-----------|-------|----------|-------|-------------------------|-----------------------|------------------|
| Date/time                    | Wells        | on/off | Flow Rate |       | MAX Flow |       | Total Flow<br>(gallons) | Hours of<br>Operation | Drawdown<br>(ft) |
|                              |              |        | (gpm)     | (psi) | (gpm)    | (psi) |                         |                       |                  |
| 7/21/08                      | EW-2         | ON     | 29.3      | 17    |          |       | 3465226                 | 23491.0               | -21.6            |
| 9:30 AM                      | EW-3R        | U      | 45.2      | 24    |          |       | 1950437                 | 19217.4               | -29.1            |
|                              | EW-4         | OFF    | 0         | 0     |          |       | 3969433                 | 00000.0               | -39.8            |
|                              | EW-5         | U      | 0         | 0     |          |       | 8812993                 | 28747.5               |                  |
|                              | EW-6         | ON     | 35.1      | 18    |          |       | 1479672                 | 166737.2              |                  |
|                              | EW-7         | OFF    | 0         | 0     |          |       | 4503437                 | 16597.7               |                  |
|                              | EW-8         | ON     | 13.3      | 17    |          |       | 229522                  | 40000.2               |                  |
|                              | EW-9         | OFF    | 0         | 0     |          |       | 8601485                 | 25572.7               |                  |
|                              | Total System |        | 122.9     | 16    |          |       |                         |                       |                  |

| Air Stripper                        |   |                   |
|-------------------------------------|---|-------------------|
| Pressure loss in packing            | 1 | 7.00 (inches H2O) |
| Air Intake (check)                  |   | Yes (yes/no)      |
| Air discharge temp. (before heater) | 2 | 54° (degrees F)   |
| Air discharge temp. (after heater)  | 3 | 60° (degrees F)   |
| Blower (check)                      |   | Yes (yes/no)      |
| Blower Inlet Pressure               | 4 | 7.25 (inches H2O) |
| Blower Outlet Pressure              | 7 | 4.00 (inches H2O) |
| Effluent pH (monthly)               |   |                   |
| Hours of operation (blower)         | 6 | 24446.6 (hours)   |

| Vapor Phase Carbon             |    |                   |
|--------------------------------|----|-------------------|
| Primary Carbon Vessel          |    |                   |
| Inlet Pressure (blower outlet) | 7  | 4.00 (inches H2O) |
| Outlet Pressure                | 8  | 2.40 (inches H2O) |
| Pressure Loss (subtract)       |    | 1.60 (inches H2O) |
| Secondary Carbon Vessel        |    |                   |
| Inlet Pressure                 | 9  | 1.40 (inches H2O) |
| Outlet Pressure                | 10 | 0 (inches H2O)    |
| Pressure Loss (subtract)       |    | 1.40 (inches H2O) |

| Outfall         |     |                             |
|-----------------|-----|-----------------------------|
| Check Discharge | Yes | (yes/no) Clear (clear or ?) |

Notes: All systems checked OK  
 Conducting annual sampling of monitoring wells and EW wells  
 Beth O'Brien (AIDEQ) took samples to state Lab.  
 Inspected By: R. Elmer Date: 7/21/08

**MONITORING and EQUIPMENT INSPECTION DATA SHEET**

**GROUNDWATER TREATMENT SYSTEM - TSRR BATTLE CREEK, MI**

| Groundwater Extraction Wells |              |        |           |       |          |       |                         |                       |                  |
|------------------------------|--------------|--------|-----------|-------|----------|-------|-------------------------|-----------------------|------------------|
| Date/time                    | Wells        | on/off | Flow Rate |       | MAX Flow |       | Total Flow<br>(gallons) | Hours of<br>Operation | Drawdown<br>(ft) |
|                              |              |        | (gpm)     | (psi) | (gpm)    | (psi) |                         |                       |                  |
| 7/24/08                      | EW-2         | on     | 29.1      | 17    |          |       | 3596584                 | 23545.7               | -21.5            |
| 12:30                        | EW-3R        | on     | 45.3      | 24    |          |       | 2154577                 | 19292.1               | -29.1            |
|                              | EW-4         | off    | 0         | 0     |          |       | 3970675                 | 00000.6               | -39.8            |
|                              | EW-5         | off    | 0         | 0     |          |       | 8813536                 | 28749.1               |                  |
|                              | EW-6         | on     | 34.8      | 18    |          |       | 1634688                 | 66812.0               |                  |
|                              | EW-7         | off    | 0         | 0     |          |       | 4504024                 | 16599.3               |                  |
|                              | EW-8         | on     | 11.9      | 17    |          |       | 284207                  | 42104.9               |                  |
|                              | EW-9         | off    | 0         | 0     |          |       | 8601774                 | 25574.4               |                  |
|                              | Total System |        | 121.1     | 16    |          |       |                         |                       |                  |

**Air Stripper**

|                                     |   |         |              |
|-------------------------------------|---|---------|--------------|
| Pressure loss in packing            | 1 | 7.00    | (inches H2O) |
| Air Intake (check)                  |   | yes     | (yes/no)     |
| Air discharge temp. (before heater) | 2 | 56°     | (degrees F)  |
| Air discharge temp. (after heater)  | 3 | 60°     | (degrees F)  |
| Blower (check)                      |   | yes     | (yes/no)     |
| Blower Inlet Pressure               | 4 | 7.25    | (inches H2O) |
| Blower Outlet Pressure              | 7 | 4.00    | (inches H2O) |
| Effluent pH (monthly)               |   |         |              |
| Hours of operation (blower)         | 6 | 24521.4 | (hours)      |

**Vapor Phase Carbon**

|                                |    |      |              |
|--------------------------------|----|------|--------------|
| Primary Carbon Vessel          |    |      |              |
| Inlet Pressure (blower outlet) | 7  | 4.00 | (inches H2O) |
| Outlet Pressure                | 8  | 2.30 | (inches H2O) |
| Pressure Loss (subtract)       |    | 1.70 | (inches H2O) |
| Secondary Carbon Vessel        |    |      |              |
| Inlet Pressure                 | 9  | 1.40 | (inches H2O) |
| Outlet Pressure                | 10 | 0    | (inches H2O) |
| Pressure Loss (subtract)       |    | 1.40 | (inches H2O) |

**Outfall**

|                 |     |          |       |              |
|-----------------|-----|----------|-------|--------------|
| Check Discharge | yes | (yes/no) | clear | (clear or ?) |
|-----------------|-----|----------|-------|--------------|

Notes: All systems checked OK  
Grass has been cut at site.

Inspected By: *R. Skim*

Date: 7/24/08

**MONITORING and EQUIPMENT INSPECTION DATA SHEET**

**GROUNDWATER TREATMENT SYSTEM - TSRR BATTLE CREEK, MI**

| Groundwater Extraction Wells |              |        |           |       |          |       |                         |                       |                  |
|------------------------------|--------------|--------|-----------|-------|----------|-------|-------------------------|-----------------------|------------------|
| Date/time                    | Wells        | on/off | Flow Rate |       | MAX Flow |       | Total Flow<br>(gallons) | Hours of<br>Operation | Drawdown<br>(ft) |
|                              |              |        | (gpm)     | (psi) | (gpm)    | (psi) |                         |                       |                  |
|                              | EW-2         | ON     | 28.8      | 17    |          |       | 2629724                 | 23584.8               | -21.5            |
|                              | EW-3R        | ON     | 45.1      | 24    |          |       | 2206232                 | 19311.2               | -29.0            |
|                              | EW-4         | OFF    | 0         | 0     |          |       | 3970675                 | 00001.6               | -39.8            |
|                              | EW-5         | OFF    | 0         | 0     |          |       | 8813536                 | 28749.0               |                  |
|                              | EW-6         | ON     | 34.7      | 17.5  |          |       | 1676368                 | 66831.1               |                  |
|                              | EW-7         | OFF    | 0         | 0     |          |       | 4504024                 | 16599.3               |                  |
|                              | EW-8         | ON     | 13.2      | 16.5  |          |       | 297536                  | 40121.8               |                  |
|                              | EW-9         | OFF    | 0         | 0     |          |       | 8609639                 | 25574.4               |                  |
|                              | Total System |        | 121.8     | 16    |          |       |                         |                       |                  |

| Air Stripper                        |   |                   |
|-------------------------------------|---|-------------------|
| Pressure loss in packing            | 1 | 7.00 (inches H2O) |
| Air Intake (check)                  |   | yes (yes/no)      |
| Air discharge temp. (before heater) | 2 | 52 (degrees F)    |
| Air discharge temp. (after heater)  | 3 | 57 (degrees F)    |
| Blower (check)                      |   | yes (yes/no)      |
| Blower Inlet Pressure               | 4 | 7.50 (inches H2O) |
| Blower Outlet Pressure              | 7 | 4.00 (inches H2O) |
| Effluent pH (monthly)               |   |                   |
| Hours of operation (blower)         | 6 | 24540 (hours)     |

| Vapor Phase Carbon             |    |                   |
|--------------------------------|----|-------------------|
| Primary Carbon Vessel          |    |                   |
| Inlet Pressure (blower outlet) | 7  | 4.00 (inches H2O) |
| Outlet Pressure                | 8  | 2.30 (inches H2O) |
| Pressure Loss (subtract)       |    | 1.70 (inches H2O) |
| Secondary Carbon Vessel        |    |                   |
| Inlet Pressure                 | 9  | 1.40 (inches H2O) |
| Outlet Pressure                | 10 | 0 (inches H2O)    |
| Pressure Loss (subtract)       |    | 1.40 (inches H2O) |

| Outfall         |     |  |
|-----------------|-----|--|
| Check Discharge | yes | (yes/no) <u>yes - Clear</u><br><small>(clear or ?)</small> |

Notes: EW-9 - WAS showing FLOW And gal Increase  
I opened And closed VALVE - OK  
ALSO Note EW-4 - Hour meter shows Time Increase?  
System checked - OK

Inspected By: John Schiff Date: 7-25-08

**MONITORING and EQUIPMENT INSPECTION DATA SHEET**

**GROUNDWATER TREATMENT SYSTEM - TSRR BATTLE CREEK, MI**

| Groundwater Extraction Wells |              |        |           |       |          |       |            |           |          |
|------------------------------|--------------|--------|-----------|-------|----------|-------|------------|-----------|----------|
| Date/time                    | Wells        | on/off | Flow Rate |       | MAX Flow |       | Total Flow | Hours of  | Drawdown |
|                              |              |        | (gpm)     | (psi) | (gpm)    | (psi) | (gallons)  | Operation | (ft)     |
| 7/28/08                      | EW-2         | ON     | 28.5      | 17.5  |          |       | 3764152    | 23662.7   | -21.5    |
| 1:00                         | EW-3R        | "      | 45.2      | 24    |          |       | 2417033    | 19389.1   | -29.0    |
|                              | EW-4         | OFF    | 0         | 0     |          |       | 3970625    | 00001.7   | -39.8    |
|                              | EW-5         | "      | 0         | 0     |          |       | 8813536    | 28749.1   |          |
|                              | EW-6         | ON     | 34.0      | 17.5  |          |       | 1837581    | 66908.9   |          |
|                              | EW-7         | OFF    | 0         | 0     |          |       | 4504024    | 16599.3   |          |
|                              | EW-8         | ON     | 12.3      | 17    |          |       | 355305     | 40199.6   |          |
|                              | EW-9         | OFF    | 0         | 0     |          |       | 8609639    | 25574.4   |          |
|                              | Total System |        | 150       | 16    |          |       |            |           |          |

  

| Air Stripper                        |   |                   |
|-------------------------------------|---|-------------------|
| Pressure loss in packing            | 1 | 7.75 (inches H2O) |
| Air Intake (check)                  |   | Yes (yes/no)      |
| Air discharge temp. (before heater) | 2 | 55 (degrees F)    |
| Air discharge temp. (after heater)  | 3 | 60 (degrees F)    |
| Blower (check)                      |   | Yes (yes/no)      |
| Blower Inlet Pressure               | 4 | 7.50 (inches H2O) |
| Blower Outlet Pressure              | 7 | 4.00 (inches H2O) |
| Effluent pH (monthly)               |   |                   |
| Hours of operation (blower)         | 6 | 24618.3 (hours)   |

  

| Vapor Phase Carbon             |    |                   |
|--------------------------------|----|-------------------|
| Primary Carbon Vessel          |    |                   |
| Inlet Pressure (blower outlet) | 7  | 4.00 (inches H2O) |
| Outlet Pressure                | 8  | 2.30 (inches H2O) |
| Pressure Loss (subtract)       |    | 1.70 (inches H2O) |
| Secondary Carbon Vessel        |    |                   |
| Inlet Pressure                 | 9  | 1.40 (inches H2O) |
| Outlet Pressure                | 10 | 0 (inches H2O)    |
| Pressure Loss (subtract)       |    | 1.40 (inches H2O) |

  

| Outfall         |      |                                    |
|-----------------|------|------------------------------------|
| Check Discharge | Y.ES | (yes/no) <u>Clear</u> (clear or ?) |

Notes: All systems checked OK

Inspected By: *R. Elmer*

Date: 7/28/08

**MONITORING and EQUIPMENT INSPECTION DATA SHEET**

**GROUNDWATER TREATMENT SYSTEM - TSRR BATTLE CREEK, MI**

| Groundwater Extraction Wells |       |        |           |       |          |       |                         |                       |                  |
|------------------------------|-------|--------|-----------|-------|----------|-------|-------------------------|-----------------------|------------------|
| Date/time                    | Wells | on/off | Flow Rate |       | MAX Flow |       | Total Flow<br>(gallons) | Hours of<br>Operation | Drawdown<br>(ft) |
|                              |       |        | (gpm)     | (psi) | (gpm)    | (psi) |                         |                       |                  |
| 7/31/08                      | EW-2  | on     | 28.0      | 17    |          |       | 3886256                 | 23734.9               | -21.5            |
| 1:00                         | EW-3R | on     | 44.9      | 24    |          |       | 2611500                 | 19461.3               | -28.8            |
|                              | EW-4  | OFF    | 0         | 0     |          |       | 3970675                 | 0001.7                | -39.8            |
|                              | EW-5  | on     | 0         | 0     |          |       | 8813536                 | 28749.1               |                  |
|                              | EW-6  | on     | 35.2      | 17    |          |       | 1990134                 | 66881.2               |                  |
|                              | EW-7  | OFF    | 0         | 0     |          |       | 4504024                 | 16599.3               |                  |
|                              | EW-8  | on     | 11.9      | 17    |          |       | 407686                  | 40271.9               |                  |
|                              | EW-9  | OFF    | 0         | 0     |          |       | 8609639                 | 25574.4               |                  |
| Total System                 |       |        | 120.0     | 16    |          |       |                         |                       |                  |

| Air Stripper                        |   |                   |
|-------------------------------------|---|-------------------|
| Pressure loss in packing            | 1 | 7.00 (inches H2O) |
| Air Intake (check)                  |   | Yes (yes/no)      |
| Air discharge temp. (before heater) | 2 | 55° (degrees F)   |
| Air discharge temp. (after heater)  | 3 | 60° (degrees F)   |
| Blower (check)                      |   | Yes (yes/no)      |
| Blower Inlet Pressure               | 4 | 7.75 (inches H2O) |
| Blower Outlet Pressure              | 7 | 4.00 (inches H2O) |
| Effluent pH (monthly)               |   |                   |
| Hours of operation (blower)         | 6 | 24190.6 (hours)   |

| Vapor Phase Carbon             |    |                   |
|--------------------------------|----|-------------------|
| Primary Carbon Vessel          |    |                   |
| Inlet Pressure (blower outlet) | 7  | 4.00 (inches H2O) |
| Outlet Pressure                | 8  | 2.30 (inches H2O) |
| Pressure Loss (subtract)       |    | 1.70 (inches H2O) |
| Secondary Carbon Vessel        |    |                   |
| Inlet Pressure                 | 9  | 1.40 (inches H2O) |
| Outlet Pressure                | 10 | 0 (inches H2O)    |
| Pressure Loss (subtract)       |    | 1.40 (inches H2O) |

| Outfall         |     |                             |
|-----------------|-----|-----------------------------|
| Check Discharge | Neg | (yes/no) Clear (clear or ?) |

Notes: All systems checked OK

Inspected By: *R. E. Klein*

Date: 7/31/08

**MONITORING and EQUIPMENT INSPECTION DATA SHEET**

**GROUNDWATER TREATMENT SYSTEM - TSRR BATTLE CREEK, MI**

| Groundwater Extraction Wells |        |     |           |       |          |       |                         |                       |                    |
|------------------------------|--------|-----|-----------|-------|----------|-------|-------------------------|-----------------------|--------------------|
| Date/time                    | Wells  |     | Flow Rate |       | MAX Flow |       | Total Flow<br>(gallons) | Hours of<br>Operation | Drawdown<br>(ft)   |
|                              | on/off |     | (gpm)     | (psi) | (gpm)    | (psi) |                         |                       |                    |
| 8-1-08                       | EW-2   | ON  | 28.0      | 17    |          |       | 3916849                 | 23752.8               | 21.5               |
| 7:00 AM                      | EW-3R  | ON  | 44.7      | 24    |          |       | 2659474                 | 19479.2               | 28.9               |
|                              | EW-4   | OFF | 0         | 0     |          |       | 3976675                 | 80001.7               | 39.8               |
|                              | EW-5   | OFF | 0         | 0     |          |       | 8813536                 | 28749.0               | <del>66999.0</del> |
|                              | EW-6   | ON  | 35.1      | 17    |          |       | 2027906                 | 66999.0               |                    |
|                              | EW-7   | OFF | 0         | 0     |          |       | 4504024                 | 16599.3               |                    |
|                              | EW-8   | ON  | 11.9      | 17    |          |       | 420555                  | 40289.7               |                    |
|                              | EW-9   | OFF | 0         | 0     |          |       | 8609639                 | 25574.4               |                    |
| Total System                 |        |     |           | 16    |          |       |                         |                       |                    |

| Air Stripper                        |   |                   |
|-------------------------------------|---|-------------------|
| Pressure loss in packing            | 1 | 7 (inches H2O)    |
| Air Intake (check)                  |   | Yes (yes/no)      |
| Air discharge temp. (before heater) | 2 | 52° (degrees F)   |
| Air discharge temp. (after heater)  | 3 | 59° (degrees F)   |
| Blower (check)                      |   | Yes (yes/no)      |
| Blower Inlet Pressure               | 4 | 7.50 (inches H2O) |
| Blower Outlet Pressure              | 7 | 4.00 (inches H2O) |
| Effluent pH (monthly)               |   |                   |
| Hours of operation (blower)         | 6 | 24708.4 (hours)   |

| Vapor Phase Carbon             |    |                   |
|--------------------------------|----|-------------------|
| Primary Carbon Vessel          |    |                   |
| Inlet Pressure (blower outlet) | 7  | 4.00 (inches H2O) |
| Outlet Pressure                | 8  | 2.30 (inches H2O) |
| Pressure Loss (subtract)       |    | 1.70 (inches H2O) |
| Secondary Carbon Vessel        |    |                   |
| Inlet Pressure                 | 9  | 1.40 (inches H2O) |
| Outlet Pressure                | 10 | 0 (inches H2O)    |
| Pressure Loss (subtract)       |    | 1.40 (inches H2O) |

| Outfall         |     |                             |
|-----------------|-----|-----------------------------|
| Check Discharge | Yes | (yes/no) Clear (clear or ?) |

Notes: System OK - Tower Inspection Lower Hatch media looks OK - little crusty took pictures  
 System down 8:00 - 9:00  
 Removed equipment from Blower Flow Control Rooms.

Inspected By: *John Schaffer*  
*Mike Ringelberg* Date: 8-1-08