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**New York State Department of Environmental Conservation**

# Site Number 7-04-009A

## Vestal Water Supply Site Quarterly Report

Second Quarter 2012

October 2012

ARCADIS MALCOLM PIRNIE

Bruce Nelson, CPG
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**Vestal Water Supply Site**
**Quarterly Report**

**Second Quarter 2012**

Site Number 7-04-009A

Prepared for:
New York State Department of
Environmental Conservation

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Our Ref.:
00266352.0000

Date:
October 2012

ARCADIS MALCOLM PIRNIE

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## 1. Introduction

The New York State Department of Environmental Conservation (NYSDEC) has issued a Work Assignment (# D004443-4) to Malcolm Pirnie, Inc. (Malcolm Pirnie) for Operation, Maintenance, and Monitoring at the Vestal Water Supply Site in New York State (Site # 7-04-009A). Malcolm Pirnie has prepared this Quarterly Report in accordance with the NYSDEC-approved Work Plan to summarize site activities.

## 2. Site Description

The Vestal Water Supply (Site 1-1) Site is located on Pumphouse Road, Vestal, Broome County, New York (Figure 2-1), along the southern bank of the Susquehanna River. Well 1-1 is located just south of the Susquehanna River and northwest of an industrial park located along Stage Road. Until 1980, Well 1-1 was the main source of water for Water District 1, which provides drinking water for several areas of the Town of Vestal. Currently, there are two other production wells, Wells 1-2A and 1-3 that function as the main source of water for Water District 1. Well 1-1A was installed in 1993 to replace Well 1-1 and is currently being used to pump and treat groundwater, which is then discharged to the Susquehanna River.

## 3. Operation and Maintenance

Malcolm Pirnie has maintained continuous operation of the groundwater treatment plant at the Vestal Water Supply Site. This includes the operation, maintenance, and influent/effluent sampling in accordance with the operations and maintenance (O&M) manual (Final Operation and Maintenance Manual, Long-Term Response, Operable Unit (OU) 1, Vestal Well 1-1 Site, Vestal, New York) (Tetra Tech EC, Inc., 2006) (Final O&M Manual). As indicated in the Work Assignment, no work was performed on the Vestal Water Supply (Site 1-1) soil vapor extraction system.

As part of managing the Vestal Water Supply Site, Malcolm Pirnie has a subcontract with Environmental Compliance, Inc. (ECI), who has unique knowledge of operating the groundwater treatment plant. ECI provides materials, labor, equipment, and supervision to maintain continuous operation of the groundwater treatment plant.

A variable frequency drive (VFD) was installed in February 2009 to provide soft-start operation for the Well 1-1A replacement well pump motor and reduced torque on the Certa-Lock® PVC drop pipe. The VFD also provides energy savings by allowing the well pump motor to be operated at a reduced speed. Compared to the full load rating of the pump motor and at an estimated energy cost of $0.083 per kilo-watt (KW) the VFD (at the current setting of 51 hertz) has the potential to provide an estimated annual energy cost savings up to $9,000.

### 3.1 System Operation

As indicated in the ECI Monthly Reports and O&M Logs (Appendix A), the groundwater treatment system generally ran uninterrupted during the second quarter, 2012. However, the groundwater treatment plant was shut down for two days in June while Well 1-1A was being developed. Discussion of the well development procedures is provided in Section 3.2.

Table 3-1 and Figure 3-1 summarize groundwater treatment system flow rates from the Monthly Reports and System O&M Logs. As shown in Table 3-1, the groundwater treatment system flow rate for Well 1-1A decreased from an average of 154 gallons per minute (GPM) in April 2012 to an average of 145 GPM in May 2012. In June 2012, the flow decreased to a low of 132 GPM. Following development of Well 1-1A, the flow increased to approximately 167 GPM. The Average flow for the month of June was 150 GPM. As shown on Table 3-1, approximately 19,174,000 gallons of water were

treated during the second quarter 2012 operating period, a decrease of approximately 16 percent compared to the previous quarter.

### 3.2 Well Development

Well development procedures for Well 1-1A were performed on June 19 and 20, 2012 by Subsurface Technologies due to decreased well yield. Well 1-1A was shut down on June 19, 2012. Subsurface Technologies injected approximately 4,000 pounds of liquid and vapor phase carbon dioxide (CO2) through the AquaGard well maintenance pipe (Figure 3-2) using their patented Aqua Freed® process. Well 1-1A operation resumed on June 20, 2012.

#### 3.2.1 Well Performance

Pre and Post-development well performance were evaluated based on the specific capacity of the well, where:

*Specific Capacity = Flow (GPM)/drawdown (feet (ft))*

Prior to well development, the specific capacity for Well 1-1A was calculated to be approximately 3 GPM/ft. Post-development well performance was evaluated two days following the $CO_2$ injection on June 21, 2012 to allow time for residual $CO_2$ to be removed from the capture zone of the well. Well 1-1A was shut down for approximately six hours prior to gauging the static water level in the well. The pump was then turned on and flow measured using the treatment plant's digital flow meter while pumping levels were measured in the well casing. Based on the flow measurement (170 GPM) and well draw down (33 feet), the post-development specific capacity was approximately 5.2 GPM/ft.

Previous reports have indicated that the digital flow meter may be under-estimating flow by as much as 150 GPM (Malcolm Pirnie, 2010a). Therefore, since the specific capacity of the well is directly proportional to flow, the actual specific capacity for Well 1-1A is likely to be greater than reported. However, post-development well performance testing conducted in August 2010 indicate that the specific capacity of Well 1-1A following development was approximately 17 GPM/ft at a similar flow rate (Malcolm Pirnie, 2010b). This suggests that the latest well development was not as effective as previous efforts at improving well yield. Therefore, additional development efforts may be required to improve the performance of the well to historical levels.

Due to continued reductions in yield, Well 1-1A should be developed quarterly as presented in the NYSDEC Schedule 211 forms (June 2011). However, the well maintenance activities have been postponed at the direction of NYSDEC until a Remedial Site Optimization (RSO) evaluation can be completed.

### 3.3 Influent – Effluent Sampling

Second quarter 2012 influent and effluent groundwater samples were collected from the Well 1-1A treatment system in accordance with the Work Plan. Influent and effluent groundwater samples were sent to TestAmerica Laboratories following chain-of-custody protocols for analysis of volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method 8260B. The laboratory analytical reporting forms are provided in Appendix B. The laboratory analytical data for the previous year of treatment plant samples are summarized in Tables 3-2 (influent VOCs) and Table 3-3 (effluent VOCs); Figure 3-3 presents the Well 1-1A treatment plant total influent VOC concentrations over time.

As shown in Table 3-2, influent groundwater samples collected from the Well 1-1A treatment system during the second quarter 2012 contained 1,1,1 trichloroethane, 1,1 dichloroethene, 1,1, dichloroethene, cis-1,2 dichloroethene, trichloroethene, and vinyl chloride at concentrations that exceed the corresponding NYSDEC Class GA Standards. Figure 3-2 shows that the total VOC concentrations detected in the April, May, and June Well 1-1A influent samples (185 µg/L, 271 µg/L, and 353 µg/L, respectively) were within the range of previous sampling events.

Table 3-3 shows that VOCs were not detected in any of the second quarter 2012 effluent samples collected from the treatment system.

Based on influent sample concentrations and total flow volumes from the Well 1-1A treatment system, approximately 43 pounds of VOCs were removed by the treatment system during the second quarter 2012 operating period.

## 4. Groundwater Monitoring

Groundwater monitoring wells were sampled in accordance with the Work Plan during the second quarter, 2011. The results of the sampling event were submitted to the NYSDEC with the second quarter 2011 Vestal Water Supply Site Quarterly Report and Annual Groundwater Monitoring Summary. An iso-concentration map showing the total VOCs concentrations in June 2011 samples collected from the wells in the shallow groundwater monitoring well network is provided in Appendix C. The next annual groundwater monitoring event is scheduled for the third quarter of 2012.

## 5. Recommendations

Recommendations for revised instrumentation and controls have been presented to the NYSDEC in the PRR (Malcolm Pirnie, 2010).

The effluent discharge line from the clear well to the NYSDEC Flood Management Area has a significant accumulation of precipitate and should be replaced. A scope of work and bid proposal package was prepared and submitted to the NYSDEC in October 2011 for review.

Based on well inspections performed during the second quarter, 2011 (Vestal Water Supply Site Quarterly Report and Annual Groundwater Monitoring Summary, 2011), the protective casings for groundwater monitoring wells 4009-1 and 4009-6 are damaged and should be replaced.

The cathodic corrosion protection system has not had routine maintenance since March 2009. Costs for a corrosion engineering evaluation were approved by the NYSDEC in an August 2011 Schedule 211 approval letter. The corrosion assessment by PCA Engineering should be performed to evaluate if the existing corrosion protection system is operating effectively and to provide any recommendations to further protect sub-surface infrastructure from corrosion-related damages.

Due to continued reductions in well performance from Well 1-1A, AquaGard well maintenance should be performed quarterly.

## 6. Summary

With the exception of being shut down for two days for well development procedures, the Vestal Well 1-1A groundwater treatment system ran uninterrupted during the second quarter, 2012.

Well 1-1A was developed with CO2 using the AquaFreed procedure on June 18 and 19, 2012. Limited improvements in specific capacity were measured following development. The post-development specific capacity was 5.2 GPM/ft.

The average flow rate through the treatment system during the second quarter, 2012, was 150 GPM, a decrease of approximately 25 GPM from the previous quarter. Total flow through the treatment system from April to June 2012 was approximately 19.2-million gallons. Based on monthly influent and effluent sampling, the treatment system successfully removes VOCs from groundwater extracted from the capture zone. Approximately 43 pounds of VOCs were removed by the treatment system during the second quarter, 2012 operational period.

The next groundwater sampling event is scheduled to be completed during the third quarter, 2012.

## 7. References

ARCADIS / Malcolm Pirnie, 2011. Vestal Water Supply Site Quarterly Report and Annual Groundwater Monitoring Summary, Second Quarter 2011. Site Number 7-04-009A.

Malcolm Pirnie, 2010a, Periodic Review Report, Vestal Water Supply Site, Site Number 7-04-009A.

Malcolm Pirnie, 2010b. Vestal Water Supply Site Quarterly Report, Second and Third Quarter 2010. Site Number 7-04-009A.

Tetra Tech EC, Inc., 2006, Final Operation and Maintenance Manual, Long-Term Response, Operable Unit 1, Vestal Well 1-1 Site, Vestal, New York.

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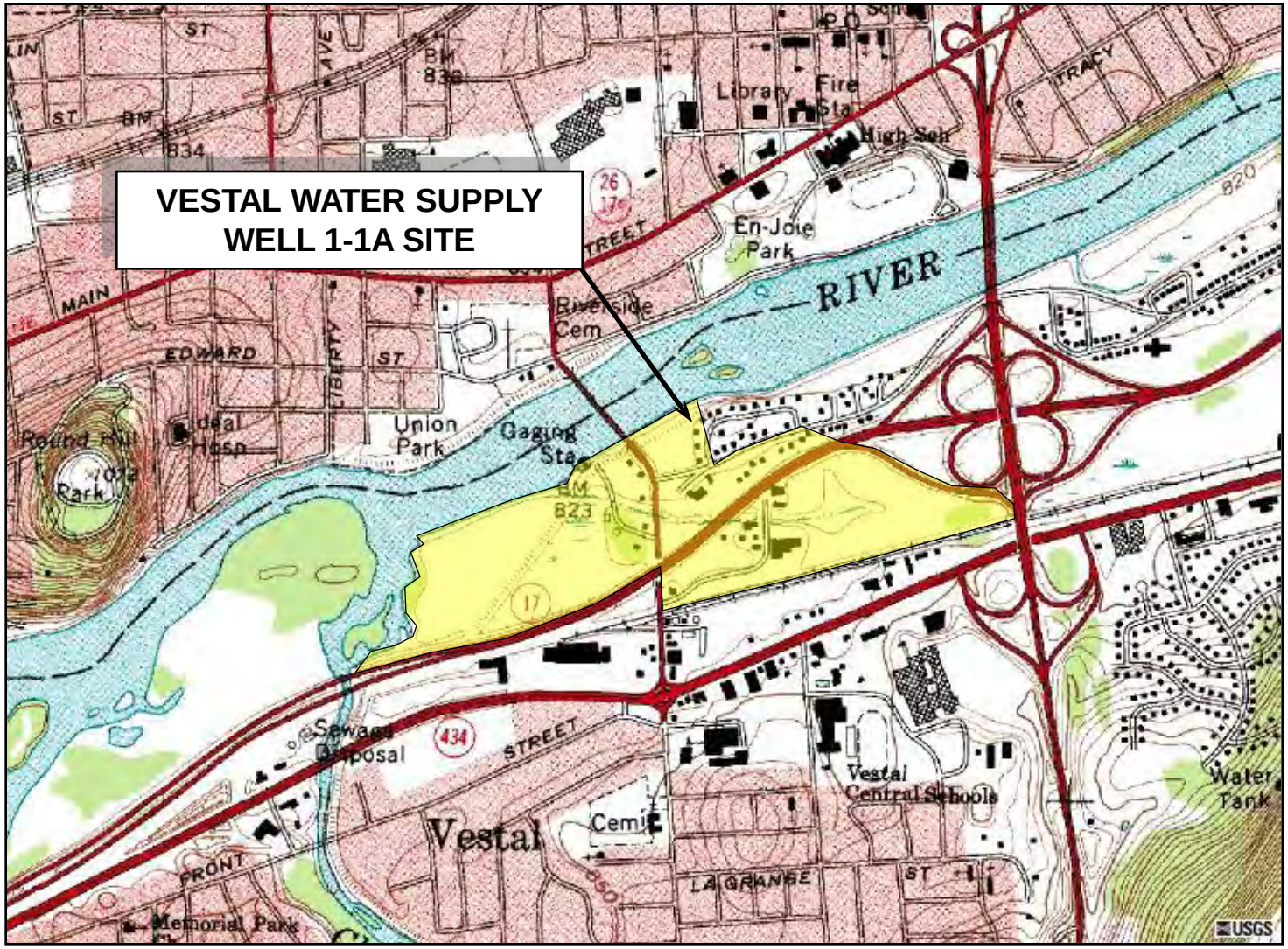
Figure 2-1
**SITE LOCATION**
Vestal Water Supply Site
Vestal, New York
Site Number 7-04-009A

0 2,000 ft




Source: USGS 7.5-minute Series Topographic Quadrangle, Endicott (1988).

g:\project\0266352\file\reports\Figure 2-1.ppt

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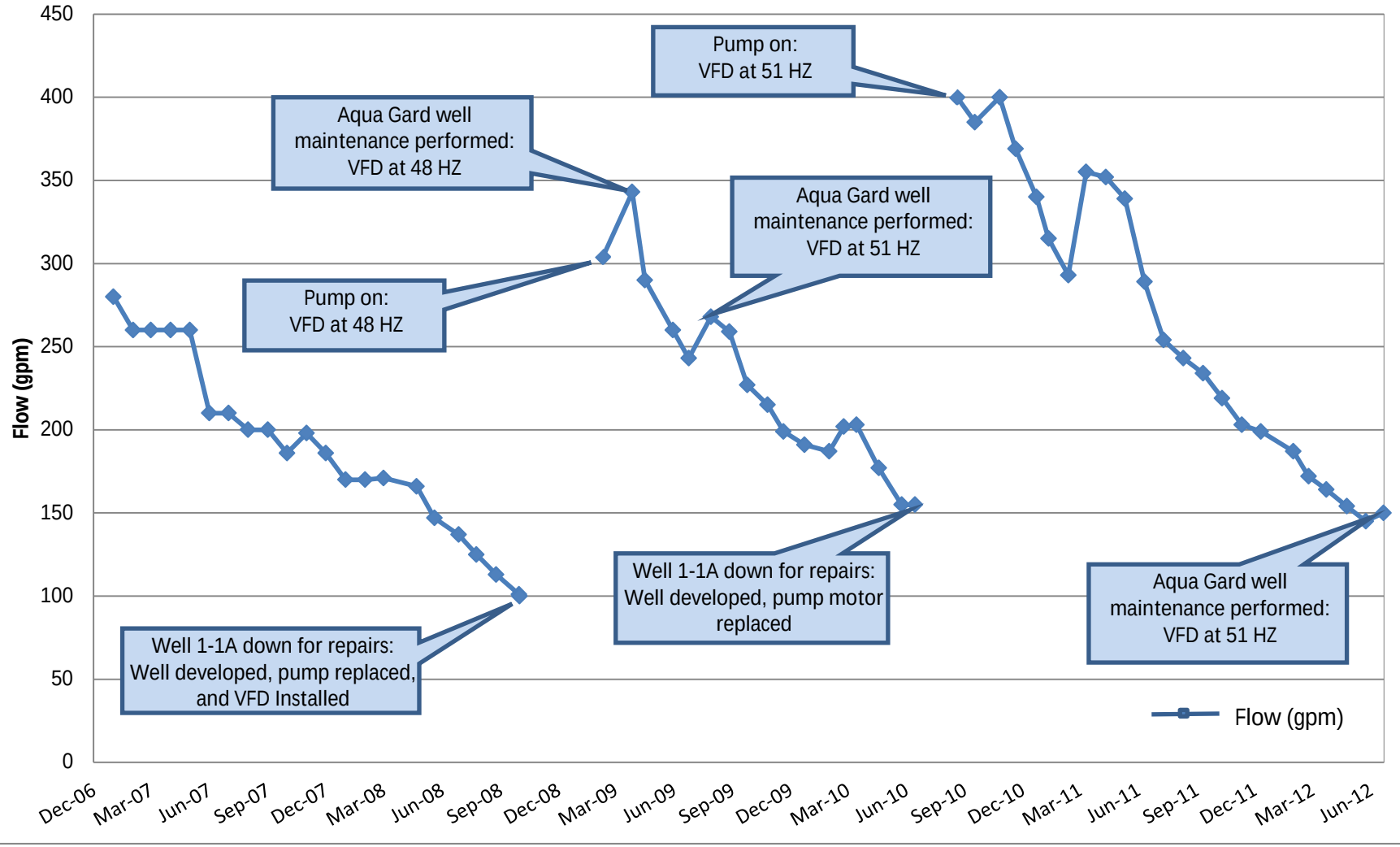
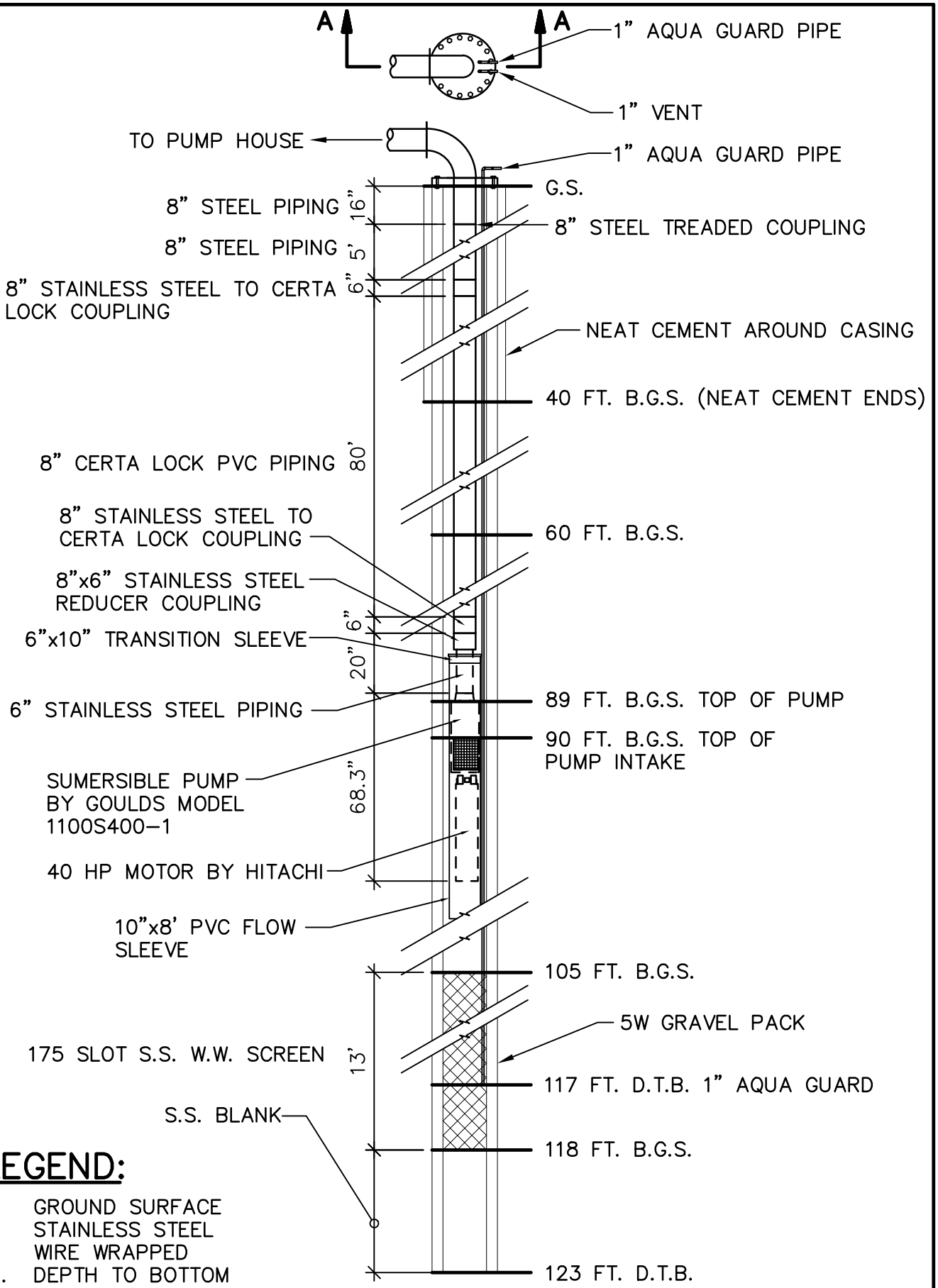
**Figure 3-1**
**Well 1-1A Treatment Plant Flow**
**Vestal Water Supply Site**
**NYSDEC Site Number 7-04-009A**






## LEGEND:

| | |
|---|---|
| G.S. | GROUND SURFACE |
| S.S. | STAINLESS STEEL |
| W.W. | WIRE WRAPPED |
| D.T.B. | DEPTH TO BOTTOM |
| B.G.S. | BELOW GROUND SURFACE |

**SECTION A-A**

SOURCE: WELL DETAILS: LAYNE CHRISTENSEN WELL LOG (1993)

MALCOLM PIRNIE

NYSDEC STANDBY CONTRACT NO. D004443-4
NYSDEC SITE NO. 7-04-009
VESTAL WATER SUPPLY
VESTAL, NEW YORK

WELL 1-1A
DETAIL AND SECTION
NOT TO SCALE

MALCOLM PIRNIE, INC.
DECEMBER 2010
FIGURE 3-2

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**Figure 3-3**
**Well 1-1A Treatment Plant Total VOCs Concentrations**
**Vestal Water Supply Site**
**NYSDEC Site Number 7-04-009A**

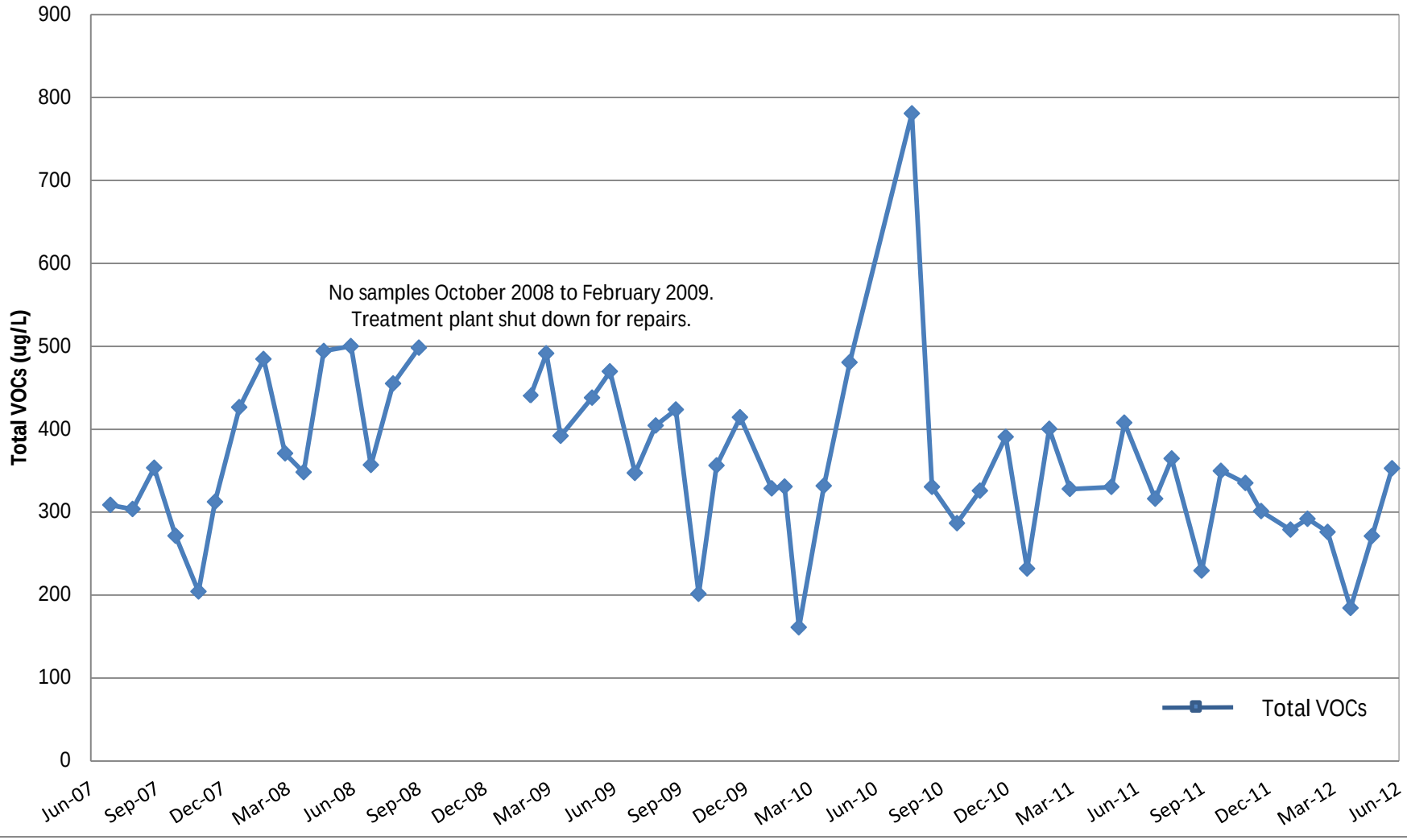


**TABLE 3-1**
**WELL 1-1A FLOW SUMMARY**
**VESTAL WATER SUPPLY**
**VESTAL, NEW YORK**
**NYSDEC SITE NO. 7-04-009A**

| Date | System Operation[1] (days/month) | Pumping Rate[1] (gpm) | Total Flow[2] (gallons) | Quarterly Flow (gallons) |
|---|---|---|---|---|
| January-07 | 31 | 280 | 12,499,200 | |
| February-07 | 28 | 260 | 10,483,200 | 33,840,000 |
| March-07 | 29 (3) | 260 | 10,857,600 | |
| April-07 | 30 | 260 | 11,232,000 | |
| May-07 | 31 | 260 | 11,606,400 | 31,910,400 |
| June-07 | 30 | 210 | 9,072,000 | |
| July-07 | 31 | 210 | 9,374,400 | |
| August-07 | 31 | 200 | 8,928,000 | 26,942,400 |
| September-07 | 30 | 200 | 8,640,000 | |
| October-07 | 31 | 186 | 8,303,040 | |
| November-07 | 29 | 198 | 8,268,480 | 24,874,560 |
| December-07 | 31 | 186 | 8,303,040 | |
| January-08 | 31 | 170 | 7,588,800 | |
| February-08 | 29 | 170 | 7,099,200 | 22,321,440 |
| March-08 | 31 | 171 | 7,633,440 | |
| April-08 | 30 | 166 | 7,171,200 | |
| May-08 | 31 | 147 | 6,562,080 | 19,651,680 |
| June-08 | 30 | 137 | 5,918,400 | |
| July-08 | 31 | 125 | 5,580,000 | |
| August-08 | 31 | 113 | 5,044,320 | 14,987,520 |
| September-08 | 30 | 101 | 4,363,200 | |
| October-08 | 6 (4) | 100 | 864,000 | |
| November-08 | 0 (4) | 0 | 0 | 864,000 |
| December-08 | 0 (4) | 0 | 0 | |
| January-09 | 0 (4) | 0 | 0 | |
| February-09 | 19 (4) | 304 | 8,317,440 | 22,641,120 |
| March-09 | 29 (3) | 343 | 14,323,680 | |
| April-09 | 30 | 290 | 12,528,000 | |
| May-09 | 30 (5) | 260 | 11,232,000 | 34,257,600 |
| June-09 | 30 | 243 | 10,497,600 | |
| July-09 | 29 (4) | 268 | 11,191,680 | |
| August-09 | 29 (5) | 259 | 10,815,840 | 31,160,160 |
| September-09 | 28 (5) | 227 | 9,152,640 | |
| October-09 | 31 | 215 | 9,597,600 | |
| November-09 | 30 (5) | 199 | 8,596,800 | 26,720,640 |
| December-09 | 31 | 191 | 8,526,240 | |
| **Total Flow (2007)** | | | **117,567,360** | |
| **Total Flow (2008)** | | | **65,750,400** | |
| **Total Flow (2009)** | | | **93,790,080** | |

Notes:
1 - From Environmental Compliance, Inc. O&M Reports and Malcolm Pirnie, Inc. field notes.
2 - Calculated assuming system operating 24-hours per day
3 - System shut down for flooding
4 - System shut down for repairs
5 - System down due to power failure
gpm - Gallons per minute

**TABLE 3-1**
**WELL 1-1A FLOW SUMMARY**
**VESTAL WATER SUPPLY**
**VESTAL, NEW YORK**
**NYSDEC SITE NO. 7-04-009A**

| Date | System Operation[1] (days/month) | Pumping Rate[1] (gpm) | Total Flow[2] (gallons) | Quarterly Flow (gallons) |
|---|---|---|---|---|
| January-10 | 25 (3) | 187 | 6,732,000 | |
| February-10 | 28 | 202 | 8,144,640 | 23,938,560 |
| March-10 | 31 | 203 | 9,061,920 | |
| April-10 | 30 | 177 | 7,646,400 | |
| May-10 | 31 | 155 | 6,919,200 | 16,128,000 |
| June-10 | 7 (4) | 155 | 1,562,400 | |
| July-10 | 0 (4) | 0 | 0 | |
| August-10 | 12 (4) | 400 | 6,912,000 | 23,544,000 |
| September-10 | 30 | 385 | 16,632,000 | |
| October-10 | 31 | 400 | 17,856,000 | |
| November-10 | 28 (5) | 369 | 14,878,080 | 47,911,680 |
| December-10 | 31 | 340 | 15,177,600 | |
| January-11 | 31 | 315 | 14,061,600 | |
| February-11 | 27 (5) | 293 | 11,391,840 | 40,278,240 |
| March-11 | 29 (3) | 355 | 14,824,800 | |
| April-11 | 26 (3) | 352 | 13,178,880 | |
| May-11 | 29 (3) | 339 | 14,156,640 | 39,820,320 |
| June-11 | 30 | 289 | 12,484,800 | |
| July-11 | 29 (5) | 254 | 10,607,040 | |
| August-11 | 29 (3) | 243 | 10,147,680 | 29,178,720 |
| September-11 | 25 (3) | 234 | 8,424,000 | |
| October-11 | 31 | 219 | 9,776,160 | |
| November-11 | 30 | 203 | 8,769,600 | 27,429,120 |
| December-11 | 31 | 199 | 8,883,360 | |
| January-12 | 31 | 187 | 8,347,680 | |
| February-12 | 29 | 172 | 7,182,720 | 22,851,360 |
| March-12 | 31 | 164 | 7,320,960 | |
| April-12 | 30 | 154 | 6,652,800 | |
| May-12 | 31 | 145 | 6,472,800 | 19,173,600 |
| June-12 | 28 (4) | 150 | 6,048,000 | |
| **Total Flow (2010)** | | | **111,522,240** | |
| **Total Flow (2011)** | | | **136,706,400** | |
| **Total Flow (2012)** | | | **42,024,960** | |

Notes:
1 - From Environmental Compliance, Inc. O&M Reports and Malcolm Pirnie, Inc. field notes.
2 - Calculated assuming system operating 24-hours per day
3 - System shut down for flooding
4 - System shut down for repairs
5 - System down due to power failure
gpm - Gallons per minute

**TABLE 3-2**
**SUMMARY OF GROUNDWATER TREATMENT SYSTEM VOCS (INFLUENT)**
**VESTAL WATER SUPPLY**
**VESTAL, NEW YORK**
**NYSDEC SITE #7-04-009A**

| Sample ID<br>Sampling Date<br>Matrix<br>Units | NYSDEC GA Standard ug/L | WELL 1A-INF 6/13/2011 WATER ug/L | WELL 1A-INF 7/26/2011 WATER ug/L | WELL 1A-INF 8/18/2011 WATER ug/L | WELL 1A-INF 9/29/2011 WATER ug/L | WELL 1A-INF 10/26/2011 WATER ug/L | WELL 1A-INF 11/29/2011 WATER ug/L | WELL 1A-INF 12/21/2011 WATER ug/L | WELL 1A-INF 1/31/2012 WATER ug/L | WELL 1A-INF 2/24/2012 WATER ug/L | WELL 1A-INF 3/23/2012 WATER ug/L | WELL 1A-INF 4/24/2012 WATER ug/L | WELL 1A-INF 5/24/2012 WATER ug/L | WELL 1A-INF 6/21/2012 WATER ug/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VOCs** | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 5 | **240** | **180** | **200** | **120** | **190** | **200** D | **150** | **160** | **150** | **140** | **98** | **130** | **190** |
| 1,1,2,2-Tetrachloroethane | 5 | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| 1,1,2-Trichloroethane | 1 | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| 1,1-Dichloroethane | 5 | **26** | **20** | **24** | **17** | **23** | **19** | **22** | **19** | **19** | **21** | **14** | **20** | **25** |
| 1,1-Dichloroethene | 5 | **20** | **13** | **17** | **11** | **16** | **23** | **18** | **22** | **27** | **17** | **8.7** | **20** | **16** |
| 1,2-Dichloroethane | 0.6 | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| 1,2-Dichloropropane | 5 | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| 2-Butanone (MEK) | 50 | 8 U | 20 U | 20 U | 10 U | 10 U | 10 U | 20 U | 20 U | 20 U | 20 U | 20 U | 20 U | 20 U |
| 2-Hexanone | | 8 U | 20 U | 20 U | 10 U | 10 U | 5 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Methyl-2-pentanone (MIBK) | | 8 U | 20 U | 9.7 J | 10 U | 10 U | 5 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Acetone | | 4.8 J B | 20 U | 11 J | 10 U | 2.7 J | 10 U | 20 U | 20 U | 20 U | 20 U | 20 U | 20 U | 20 U |
| Benzene | 1 | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Bromodichloromethane | 50 | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Bromoform | | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Bromomethane | 5 | 4 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Carbon disulfide | | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Carbon tetrachloride | 5 | 2 U * | 10 U | 10 U * | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Chlorobenzene | 5 | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Chloroethane | 5 | 4 U | 10 U | 10 U | 5 U | 5 U | 0.49 J | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Chloroform | 7 | 0.71 J B | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Chloromethane | | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| cis-1,2-Dichloroethene | 5 | **52** | **46** | **51** | **37** | **57** | **42** | **51** | **35** | **44** | **45** | **29** | **45** | **56** |
| cis-1,3-Dichloropropene | 0.4 | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Dibromochloromethane | 50 | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Ethylbenzene | 5 | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Methylene Chloride | 5 | 8 U | 10 U | 4 J B | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Styrene | 5 | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Tetrachloroethene | 5 | 2 U * | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Toluene | 5 | 2 U * | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| trans-1,2-Dichloroethene | 5 | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| trans-1,3-Dichloropropene | 0.4 | 2 U | 10 U | 10 U | 5 U | 5 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |
| Trichloroethene | 5 | **61** | **51** | **55** | **39** | **53** | **45** | **53** | **37** | **46** | **46** | **30** | **48** | **58** |
| Vinyl chloride | 2 | **8.7** | **6.2 J** | **7.8 J** | **5.5** | **8.1** | **5.5** | **7.1** | **5.7** | **5.9** | **7.1** | **4.8** | **8.1** | **7.8** |
| Xylenes, Total | 5 | 4 U | 10 U | 10 U | 5 U | 5 U | 2 U | 4 U | 4 U | 4 U | 4 U | 4 U | 4 U | 4 U |
| Total VOCs | | 408 | 316 | 365 | 230 | 350 | 335 | 301 | 279 | 292 | 276 | 185 | 271 | 353 |

Notes

- Concentration exceeds corresponding NYSDEC Class GA Standard.

U - Not detected at the indicated concentration.
J - Estimated concentration.
M - Manual integrated compound.
B - Analyte found in associated blank as well as the sample.
E - Concentration exceeds instrument calibration range.
D - Laboratory Dilution.
* - MS or MSD exceeded control limits.

**TABLE 3-3**
**SUMMARY OF GROUNDWATER TREATMENT SYSTEM VOCS (EFFLUENT)**
**VESTAL WATER SUPPLY**
**VESTAL, NEW YORK**
**NYSDEC SITE #7-04-009A**

| Sample ID<br>Sampling Date<br>Matrix<br>Units | NYSDEC GA Standard ug/L | WELL 1A-EFF 6/16/2011 WATER ug/L | WELL 1A-EFF 7/26/2011 WATER ug/L | WELL 1A-EFF 8/18/2011 WATER ug/L | WELL 1A-EFF 9/29/2011 WATER ug/L | WELL 1A-EFF 10/23/2011 WATER ug/L | WELL 1A-EFF 11/29/2011 WATER ug/L | WELL 1A-EFF 12/21/2011 WATER ug/L | WELL 1A-EFF 1/31/2012 WATER ug/L | WELL 1A-EFF 2/24/2012 WATER ug/L | WELL 1A-EFF 3/23/2012 WATER ug/L | WELL 1A-EFF 4/26/2012 WATER ug/L | WELL 1A-EFF 5/24/2012 WATER ug/L | WELL 1A-EFF 6/21/2012 WATER ug/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 5 | 0.99 | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1,2,2-Tetrachloroethane | 5 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1,2-Trichloroethane | 1 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethane | 5 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethene | 5 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloroethane | 0.6 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dichloropropane | 5 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Butanone (MEK) | 50 | 2 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Hexanone | | 2 U | 10 U | 10 U | 10 U | 10 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 4-Methyl-2-pentanone (MIBK) | | 2 U | 10 U | 10 U | 10 U | 10 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Acetone | | 2 U | 10 U | 10 U | 10 U | 1.5 J | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzene | 1 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Bromodichloromethane | 50 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Bromoform | | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Bromomethane | 5 | 1 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Carbon disulfide | | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Carbon tetrachloride | 5 | 0.5 U | 5 U | 5 U * | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chlorobenzene | 5 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloroethane | 5 | 1 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloroform | 7 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloromethane | | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| cis-1,2-Dichloroethene | 5 | 0.32 J | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| cis-1,3-Dichloropropene | 0.4 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dibromochloromethane | 50 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Ethylbenzene | 5 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Methylene Chloride | 5 | 2 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Styrene | 5 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Tetrachloroethene | 5 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Toluene | 5 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| trans-1,2-Dichloroethene | 5 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| trans-1,3-Dichloropropene | 0.4 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Trichloroethene | 5 | 0.19 J | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Vinyl chloride | 2 | 0.5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Xylenes, Total | 5 | 1 U | 5 U | 5 U | 5 U | 5 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U |

Notes
U - Not detected at the indicated concentration.
J - Estimated concentration.
M - Manual integrated compound.
B - Analyte found in associated blank as well as the sample.
* - MS or MSD exceeded control limits.

ARCADIS MALCOLM PIRNIE

## Appendix A

Monthly Reports and System Operation and Maintenance Logs

**ENVIRONMENTAL COMPLIANCE, INC.**
101 Mount Bethel Rd.
Warren, New Jersey 07059
908-754-1700
908-754-1866 (fax)
http://www.eci-nj.com
j.jimenez@eci-nj.com (email)

# Vestal Well 1-1 Monthly Report
# April 2012

## SECTION I – SUMMARY OF ACTIVITIES

System ran entire month without interruption. System operated without issues at a rate of 155 GPM at beginning of month and 153 GPM at end of the month.

## SECTION II – MONTHLY OPERATIONS & MAINTENANCE

- Checked and adjusted belts
- Lubricated equipment, as needed
- Changed filters
- Routine inspection of site
- Cleaned up grounds
- Mowed Lawn

## SECTION III – REPAIR WORK COMPLETED

- None

## SECTION IV – REPAIR WORK NEEDED

- None

## SECTION V – RECOMMENDATIONS

- None

**ENVIRONMENTAL COMPLIANCE, INC.**
101 Mount Bethel Rd.
Warren, New Jersey 07059
908-754-1700
908-754-1866 (fax)
http://www.eci-nj.com
j.jimenez@eci-nj.com (email)

# Vestal Well 1-1 Monthly Report
# May 2012

## SECTION I – SUMMARY OF ACTIVITIES

System ran entire month without interruption. System operated without issues at a rate of 146 GPM at beginning of month and 143 GPM at end of the month.

## SECTION II – MONTHLY OPERATIONS & MAINTENANCE

- Checked and adjusted belts
- Lubricated equipment, as needed
- Changed filters
- Routine inspection of site
- Cleaned up grounds
- Mowed Lawn

## SECTION III – REPAIR WORK COMPLETED

- None

## SECTION IV – REPAIR WORK NEEDED

- None

## SECTION V – RECOMMENDATIONS

- None

**ENVIRONMENTAL COMPLIANCE, INC.**
101 Mount Bethel Rd.
Warren, New Jersey 07059
908-754-1700
908-754-1866 (fax)
http://www.eci-nj.com
j.jimenez@eci-nj.com (email)

# Vestal Well 1-1 Monthly Report
# June 2012

## SECTION I – SUMMARY OF ACTIVITIES

System ran entire month without interruption. The well was injected mid month with CO2 by Arcadis increasing flow rates from 132 GPM to 167 GPM.

## SECTION II – MONTHLY OPERATIONS & MAINTENANCE

- Checked and adjusted belts
- Lubricated equipment, as needed
- Changed filters
- Routine inspection of site
- Cleaned up grounds
- Mowed Lawn

## SECTION III – REPAIR WORK COMPLETED

- None

## SECTION IV – REPAIR WORK NEEDED

- None

## SECTION V – RECOMMENDATIONS

- None

| ENVIRONMENTAL COMPLIANCE, INC. | | | | | | VESTAL WELL 1-1 MONTHLY O & M LOG | | | | | | | | | | | | | April 2012 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DAY** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** | **26** | **27** | **28** | **29** | **30** | **31** |
| **TIME** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **WELL HOUSE** | | X | X | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | X | | X | |
| PRE LUBE LINE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PUMP MOTOR OIL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **CHEMICAL BUILDING** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SUMP PUMP | | X | X | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | X | | X | |
| DISCHARGE VALVES | | X | X | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | X | | X | |
| FLOW METER (GPM)* | | | | 155 | | | | | | | 155 | | | | | | | 154 | | | | | | | 153 | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **CHLORINE ROOM** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENERAL CONDITION | | X | X | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | X | | X | |
| TOWER PACKING INSP. | | X | X | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | X | | X | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **MAIN PUMPHOUSE** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BLOWER AND MOTOR | | X | X | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | X | | X | |
| BLOWER AIR FILTERS | | X | X | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | X | | X | |
| ALARM / CONTROL PANEL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CLEARWELL LEVEL | | X | X | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | X | | X | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **OTHER*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GROUNDS | | X | X | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | X | | X | |
| INGROUND TANK LEVEL | | X | X | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | | X | X | X | X | X | X | | X | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

***Unadjusted Meter Reading**

| ENVIRONMENTAL COMPLIANCE, INC. | | | | | | VESTAL WELL 1-1 MONTHLY O & M LOG | | | | | | | | | | | | | | | | | May 2012 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DAY** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** | **26** | **27** | **28** | **29** | **30** | **31** |
| **TIME** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **WELL HOUSE** | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X |
| PRE LUBE LINE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PUMP MOTOR OIL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **CHEMICAL BUILDING** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SUMP PUMP | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X |
| DISCHARGE VALVES | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X |
| FLOW METER (GPM)* | | | 146 | | | | | | | 145 | | | | | | | 145 | | | | | | | | 143 | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **CHLORINE ROOM** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENERAL CONDITION | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X |
| TOWER PACKING INSP. | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **MAIN PUMPHOUSE** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BLOWER AND MOTOR | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X |
| BLOWER AIR FILTERS | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X |
| ALARM / CONTROL PANEL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CLEARWELL LEVEL | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **OTHER*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GROUNDS | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X |
| INGROUND TANK LEVEL | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

***Unadjusted Meter Reading**

**ENVIRONMENTAL COMPLIANCE, INC.** **VESTAL WELL 1-1 MONTHLY O & M LOG** **June 2012**

| DAY | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TIME** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **WELL HOUSE** | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | |
| PRE LUBE LINE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PUMP MOTOR OIL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **CHEMICAL BUILDING** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SUMP PUMP | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | |
| DISCHARGE VALVES | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | |
| FLOW METER (GPM)* | | | | | 132 | | | | | | 132 | | | | | | | | | 167 | | | | | | | 163 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **CHLORINE ROOM** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENERAL CONDITION | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | |
| TOWER PACKING INSP. | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **MAIN PUMPHOUSE** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BLOWER AND MOTOR | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | |
| BLOWER AIR FILTERS | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | |
| ALARM / CONTROL PANEL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CLEARWELL LEVEL | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **OTHER*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GROUNDS | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | |
| INGROUND TANK LEVEL | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

***Unadjusted Meter Reading**

ARCADIS MALCOLM PIRNIE

## Appendix B

Analytical Reporting Forms

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 480-19087-1

Job Description: NYSDEC-Standby VESTAL

For:
Malcolm Pirnie, Inc. Invoice to Arcadis
855 Route 146
Suite 210
Clifton Park, NY 12065

Attention: Mr. Jeremy Wyckoff

Approved for release.
Joe Giacomazza
Project Administrator
5/2/2012 2:10 PM

Designee for
Sally Hoffman
Project Manager II
sally.hoffman@testamericainc.com
05/02/2012

The test results in this report meet all NELAP requirements for analytes for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this test report should be directed to the TestAmerica Project Manager who has signed this report. TestAmerica Buffalo NELAC Certifications: CADPH 01169CA, FLDOH E87672, ILEPA 200003, KSDOH E-10187, LADEQ 30708, MDH 036-999-337, NHELAP 2973, NJDEP NY455, NHDOH 10026, ORELAP NY200003, PADEP 68-00281, TXCEQ T-104704412-10-1

# Table of Contents

# Table of Contents

**Job Narrative**
**480-19087-1**

**Receipt**
The samples were received on 4/25/2012 9:00 AM; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 2.80 C.

**GC/MS VOA**
Method 8260B: The following sample was diluted due to the abundance of target analytes: WELL 1-1A INF (480-19087-1). Elevated reporting limits (RLs) are provided.

Method 8260B: The following compound was outside control limits in the continuing calibration verification (CCV) associated with batch 62407: trans-1,4-Dichloro-2-butene. This compound is not classified as Calibration Check Compounds (CCCs) in the reference method, and the laboratory defaults to in-house and/or project-specific criteria for evaluation. Due to the large number of analytes contained in the CCV, the laboratory's SOP allows for six analytes to be outside limits; therefore, the data have been reported.

No other analytical or quality issues were noted.

## SAMPLE SUMMARY

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-19087-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 480-19087-1 | WELL 1-1A INF | Water | 04/24/2012 1210 | 04/25/2012 0900 |
| 480-19087-2 | WELL 1-1A EFF | Water | 04/24/2012 1215 | 04/25/2012 0900 |
| 480-19087-3 | TRIP BLANK | Water | 04/24/2012 0000 | 04/25/2012 0900 |

## EXECUTIVE SUMMARY - Detections

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-19087-1

| Lab Sample ID / Analyte | Client Sample ID | Result | Qualifier | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **480-19087-1** | **WELL 1-1A INF** | | | | | |
| 1,1,1-Trichloroethane | | 98 | | 2.0 | ug/L | 8260B |
| 1,1-Dichloroethane | | 14 | | 2.0 | ug/L | 8260B |
| 1,1-Dichloroethene | | 8.7 | | 2.0 | ug/L | 8260B |
| cis-1,2-Dichloroethene | | 29 | | 2.0 | ug/L | 8260B |
| Trichloroethene | | 30 | | 2.0 | ug/L | 8260B |
| Vinyl chloride | | 4.8 | | 2.0 | ug/L | 8260B |

# METHOD SUMMARY

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-19087-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix Water** | | | |
| Volatile Organic Compounds (GC/MS) | TAL BUF | SW846 8260B | |
| Purge and Trap | TAL BUF | | SW846 5030B |

**Lab References:**

TAL BUF = TestAmerica Buffalo

**Method References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-19087-1

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 8260B | Hill, Leah | LH |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-19087-1

**Client Sample ID:** **WELL 1-1A INF**

Lab Sample ID: 480-19087-1
Client Matrix: Water

Date Sampled: 04/24/2012 1210
Date Received: 04/25/2012 0900

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 480-62407 | Instrument ID: | HP5975T |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | T7654.D |
| Dilution: | 2.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 05/01/2012 0047 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 05/01/2012 0047 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | 98 | | 1.6 | 2.0 |
| 1,1,2,2-Tetrachloroethane | 2.0 | U | 0.42 | 2.0 |
| 1,1,2-Trichloroethane | 2.0 | U | 0.46 | 2.0 |
| 1,1-Dichloroethane | 14 | | 0.76 | 2.0 |
| 1,1-Dichloroethene | 8.7 | | 0.58 | 2.0 |
| 1,2-Dibromoethane | 2.0 | U | 1.5 | 2.0 |
| 1,2-Dichloroethane | 2.0 | U | 0.42 | 2.0 |
| 1,2-Dichloropropane | 2.0 | U | 1.4 | 2.0 |
| 2-Hexanone | 10 | U | 2.5 | 10 |
| 2-Butanone (MEK) | 20 | U | 2.6 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 10 | U | 4.2 | 10 |
| Acetone | 20 | U | 6.0 | 20 |
| Benzene | 2.0 | U | 0.82 | 2.0 |
| Bromodichloromethane | 2.0 | U | 0.78 | 2.0 |
| Bromoform | 2.0 | U | 0.52 | 2.0 |
| Bromomethane | 2.0 | U | 1.4 | 2.0 |
| Carbon disulfide | 2.0 | U | 0.38 | 2.0 |
| Carbon tetrachloride | 2.0 | U | 0.54 | 2.0 |
| Chlorobenzene | 2.0 | U | 1.5 | 2.0 |
| Dibromochloromethane | 2.0 | U | 0.64 | 2.0 |
| Chloroethane | 2.0 | U | 0.64 | 2.0 |
| Chloroform | 2.0 | U | 0.68 | 2.0 |
| Chloromethane | 2.0 | U | 0.70 | 2.0 |
| cis-1,2-Dichloroethene | 29 | | 1.6 | 2.0 |
| cis-1,3-Dichloropropene | 2.0 | U | 0.72 | 2.0 |
| Ethylbenzene | 2.0 | U | 1.5 | 2.0 |
| Methylene Chloride | 2.0 | U | 0.88 | 2.0 |
| Styrene | 2.0 | U | 1.5 | 2.0 |
| Tetrachloroethene | 2.0 | U | 0.72 | 2.0 |
| Toluene | 2.0 | U | 1.0 | 2.0 |
| trans-1,2-Dichloroethene | 2.0 | U | 1.8 | 2.0 |
| trans-1,3-Dichloropropene | 2.0 | U | 0.74 | 2.0 |
| Trichloroethene | 30 | | 0.92 | 2.0 |
| Vinyl chloride | 4.8 | | 1.8 | 2.0 |
| Xylenes, Total | 4.0 | U | 1.3 | 4.0 |
| m,p-Xylene | 4.0 | U | 1.3 | 4.0 |
| o-Xylene | 2.0 | U | 1.5 | 2.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 102 | | 66 - 137 |
| Toluene-d8 (Surr) | 102 | | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 105 | | 73 - 120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-19087-1

**Client Sample ID:** **WELL 1-1A EFF**

Lab Sample ID: 480-19087-2
Client Matrix: Water

Date Sampled: 04/24/2012 1215
Date Received: 04/25/2012 0900

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 480-62407 | Instrument ID: | HP5975T |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | T7655.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 05/01/2012 0111 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 05/01/2012 0111 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | 1.0 | U | 0.82 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.23 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.38 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.29 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.73 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.72 | 1.0 |
| 2-Hexanone | 5.0 | U | 1.2 | 5.0 |
| 2-Butanone (MEK) | 10 | U | 1.3 | 10 |
| 4-Methyl-2-pentanone (MIBK) | 5.0 | U | 2.1 | 5.0 |
| Acetone | 10 | U | 3.0 | 10 |
| Benzene | 1.0 | U | 0.41 | 1.0 |
| Bromodichloromethane | 1.0 | U | 0.39 | 1.0 |
| Bromoform | 1.0 | U | 0.26 | 1.0 |
| Bromomethane | 1.0 | U | 0.69 | 1.0 |
| Carbon disulfide | 1.0 | U | 0.19 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.27 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.75 | 1.0 |
| Dibromochloromethane | 1.0 | U | 0.32 | 1.0 |
| Chloroethane | 1.0 | U | 0.32 | 1.0 |
| Chloroform | 1.0 | U | 0.34 | 1.0 |
| Chloromethane | 1.0 | U | 0.35 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.81 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.36 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.74 | 1.0 |
| Methylene Chloride | 1.0 | U | 0.44 | 1.0 |
| Styrene | 1.0 | U | 0.73 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.36 | 1.0 |
| Toluene | 1.0 | U | 0.51 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.90 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.37 | 1.0 |
| Trichloroethene | 1.0 | U | 0.46 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.90 | 1.0 |
| Xylenes, Total | 2.0 | U | 0.66 | 2.0 |
| m,p-Xylene | 2.0 | U | 0.66 | 2.0 |
| o-Xylene | 1.0 | U | 0.76 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 97 | | 66 - 137 |
| Toluene-d8 (Surr) | 101 | | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 107 | | 73 - 120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-19087-1

**Client Sample ID:** **TRIP BLANK**

Lab Sample ID: 480-19087-3
Client Matrix: Water

Date Sampled: 04/24/2012 0000
Date Received: 04/25/2012 0900

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 480-62407 | Instrument ID: | HP5975T |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | T7656.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 05/01/2012 0134 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 05/01/2012 0134 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | 1.0 | U | 0.82 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.23 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.38 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.29 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.73 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.72 | 1.0 |
| 2-Hexanone | 5.0 | U | 1.2 | 5.0 |
| 2-Butanone (MEK) | 10 | U | 1.3 | 10 |
| 4-Methyl-2-pentanone (MIBK) | 5.0 | U | 2.1 | 5.0 |
| Acetone | 10 | U | 3.0 | 10 |
| Benzene | 1.0 | U | 0.41 | 1.0 |
| Bromodichloromethane | 1.0 | U | 0.39 | 1.0 |
| Bromoform | 1.0 | U | 0.26 | 1.0 |
| Bromomethane | 1.0 | U | 0.69 | 1.0 |
| Carbon disulfide | 1.0 | U | 0.19 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.27 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.75 | 1.0 |
| Dibromochloromethane | 1.0 | U | 0.32 | 1.0 |
| Chloroethane | 1.0 | U | 0.32 | 1.0 |
| Chloroform | 1.0 | U | 0.34 | 1.0 |
| Chloromethane | 1.0 | U | 0.35 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.81 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.36 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.74 | 1.0 |
| Methylene Chloride | 1.0 | U | 0.44 | 1.0 |
| Styrene | 1.0 | U | 0.73 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.36 | 1.0 |
| Toluene | 1.0 | U | 0.51 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.90 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.37 | 1.0 |
| Trichloroethene | 1.0 | U | 0.46 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.90 | 1.0 |
| Xylenes, Total | 2.0 | U | 0.66 | 2.0 |
| m,p-Xylene | 2.0 | U | 0.66 | 2.0 |
| o-Xylene | 1.0 | U | 0.76 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 97 | | 66 - 137 |
| Toluene-d8 (Surr) | 99 | | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 101 | | 73 - 120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-19087-1

## Surrogate Recovery Report

**8260B Volatile Organic Compounds (GC/MS)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | DCA %Rec | TOL %Rec | BFB %Rec |
|---|---|---|---|---|
| 480-19087-1 | WELL 1-1A INF | 102 | 102 | 105 |
| 480-19087-2 | WELL 1-1A EFF | 97 | 101 | 107 |
| 480-19087-3 | TRIP BLANK | 97 | 99 | 101 |
| MB 480-62407/5 | | 101 | 106 | 109 |
| LCS 480-62407/4 | | 93 | 98 | 102 |

| Surrogate | Acceptance Limits |
|---|---|
| DCA = 1,2-Dichloroethane-d4 (Surr) | 66-137 |
| TOL = Toluene-d8 (Surr) | 71-126 |
| BFB = 4-Bromofluorobenzene (Surr) | 73-120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-19087-1

**Method Blank - Batch: 480-62407**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 480-62407/5 | Analysis Batch: | 480-62407 | Instrument ID: | HP5975T |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | T7653.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 05/01/2012 0016 | Units: | ug/L | Final Weight/Volume: | 5 mL |
| Prep Date: | 05/01/2012 0016 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | 1.0 | U | 0.82 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.23 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.38 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.29 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.73 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.72 | 1.0 |
| 2-Hexanone | 5.0 | U | 1.2 | 5.0 |
| 2-Butanone (MEK) | 10 | U | 1.3 | 10 |
| 4-Methyl-2-pentanone (MIBK) | 5.0 | U | 2.1 | 5.0 |
| Acetone | 10 | U | 3.0 | 10 |
| Benzene | 1.0 | U | 0.41 | 1.0 |
| Bromodichloromethane | 1.0 | U | 0.39 | 1.0 |
| Bromoform | 1.0 | U | 0.26 | 1.0 |
| Bromomethane | 1.0 | U | 0.69 | 1.0 |
| Carbon disulfide | 1.0 | U | 0.19 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.27 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.75 | 1.0 |
| Dibromochloromethane | 1.0 | U | 0.32 | 1.0 |
| Chloroethane | 1.0 | U | 0.32 | 1.0 |
| Chloroform | 1.0 | U | 0.34 | 1.0 |
| Chloromethane | 1.0 | U | 0.35 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.81 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.36 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.74 | 1.0 |
| Methylene Chloride | 1.0 | U | 0.44 | 1.0 |
| Styrene | 1.0 | U | 0.73 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.36 | 1.0 |
| Toluene | 1.0 | U | 0.51 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.90 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.37 | 1.0 |
| Trichloroethene | 1.0 | U | 0.46 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.90 | 1.0 |
| Xylenes, Total | 2.0 | U | 0.66 | 2.0 |
| m,p-Xylene | 2.0 | U | 0.66 | 2.0 |
| o-Xylene | 1.0 | U | 0.76 | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 101 | 66 - 137 |
| Toluene-d8 (Surr) | 106 | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 109 | 73 - 120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-19087-1

**Lab Control Sample - Batch: 480-62407**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 480-62407/4 | Analysis Batch: | 480-62407 | Instrument ID: | HP5975T |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | T7652.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 04/30/2012 2352 | Units: | ug/L | Final Weight/Volume: | 5 mL |
| Prep Date: | 04/30/2012 2352 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 1,1-Dichloroethane | 25.0 | 22.0 | 88 | 71 - 129 | |
| 1,1-Dichloroethene | 25.0 | 18.9 | 76 | 65 - 138 | |
| 1,2-Dichloroethane | 25.0 | 22.4 | 90 | 75 - 127 | |
| Benzene | 25.0 | 22.4 | 90 | 71 - 124 | |
| Chlorobenzene | 25.0 | 23.2 | 93 | 72 - 120 | |
| cis-1,2-Dichloroethene | 25.0 | 22.0 | 88 | 74 - 124 | |
| Ethylbenzene | 25.0 | 22.4 | 90 | 77 - 123 | |
| Tetrachloroethene | 25.0 | 25.3 | 101 | 74 - 122 | |
| Toluene | 25.0 | 22.9 | 92 | 70 - 122 | |
| trans-1,2-Dichloroethene | 25.0 | 23.1 | 92 | 73 - 127 | |
| Trichloroethene | 25.0 | 21.8 | 87 | 74 - 123 | |
| m,p-Xylene | 50.0 | 48.8 | 98 | 76 - 122 | |
| o-Xylene | 25.0 | 23.1 | 92 | 76 - 122 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 93 | 66 - 137 |
| Toluene-d8 (Surr) | 98 | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 102 | 73 - 120 |

## DATA REPORTING QUALIFIERS

Client: Malcolm Pirnie, Inc. Invoice to Arcadis Job Number: 480-19087-1

| Lab Section | Qualifier | Description |
|---|---|---|
| GC/MS VOA | | |
| | U | Analyzed for but not detected. |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-19087-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS VOA** | | | | | |
| **Analysis Batch:480-62407** | | | | | |
| LCS 480-62407/4 | Lab Control Sample | T | Water | 8260B | |
| MB 480-62407/5 | Method Blank | T | Water | 8260B | |
| 480-19087-1 | WELL 1-1A INF | T | Water | 8260B | |
| 480-19087-2 | WELL 1-1A EFF | T | Water | 8260B | |
| 480-19087-3 | TRIP BLANK | T | Water | 8260B | |

**Report Basis**

T = Total

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-19087-1

## Laboratory Chronicle

**Lab ID:** 480-19087-1 **Client ID:** WELL 1-1A INF

Sample Date/Time: 04/24/2012 12:10 Received Date/Time: 04/25/2012 09:00

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | 480-19087-A-1 | | 480-62407 | | 05/01/2012 00:47 | 2 | TAL BUF | LH |
| A:8260B | 480-19087-A-1 | | 480-62407 | | 05/01/2012 00:47 | 2 | TAL BUF | LH |

**Lab ID:** 480-19087-2 **Client ID:** WELL 1-1A EFF

Sample Date/Time: 04/24/2012 12:15 Received Date/Time: 04/25/2012 09:00

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | 480-19087-A-2 | | 480-62407 | | 05/01/2012 01:11 | 1 | TAL BUF | LH |
| A:8260B | 480-19087-A-2 | | 480-62407 | | 05/01/2012 01:11 | 1 | TAL BUF | LH |

**Lab ID:** 480-19087-3 **Client ID:** TRIP BLANK

Sample Date/Time: 04/24/2012 00:00 Received Date/Time: 04/25/2012 09:00

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | 480-19087-A-3 | | 480-62407 | | 05/01/2012 01:34 | 1 | TAL BUF | LH |
| A:8260B | 480-19087-A-3 | | 480-62407 | | 05/01/2012 01:34 | 1 | TAL BUF | LH |

**Lab ID:** MB **Client ID:** N/A

Sample Date/Time: N/A Received Date/Time: N/A

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | MB 480-62407/5 | | 480-62407 | | 05/01/2012 00:16 | 1 | TAL BUF | LH |
| A:8260B | MB 480-62407/5 | | 480-62407 | | 05/01/2012 00:16 | 1 | TAL BUF | LH |

**Lab ID:** LCS **Client ID:** N/A

Sample Date/Time: N/A Received Date/Time: N/A

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | LCS 480-62407/4 | | 480-62407 | | 04/30/2012 23:52 | 1 | TAL BUF | LH |
| A:8260B | LCS 480-62407/4 | | 480-62407 | | 04/30/2012 23:52 | 1 | TAL BUF | LH |

**Lab References:**

TAL BUF = TestAmerica Buffalo

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-19087-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| **17_COMP_WRK_00014** | 05/11/12 | 03/11/12 | Methanol, Lot DE997 | 20 mL | 17COMP_STK_00046 | 500 uL | 1,1-Dichloroethane | 50 ug/mL |
| | | | | | | | 1,1-Dichloroethene | 50 ug/mL |
| | | | | | | | 1,2-Dichloroethane | 50 ug/mL |
| | | | | | | | Benzene | 50 ug/mL |
| | | | | | | | Chlorobenzene | 50 ug/mL |
| | | | | | | | cis-1,2-Dichloroethene | 50 ug/mL |
| | | | | | | | Ethylbenzene | 50 ug/mL |
| | | | | | | | m,p-Xylene | 100 ug/mL |
| | | | | | | | o-Xylene | 50 ug/mL |
| | | | | | | | Tetrachloroethene | 50 ug/mL |
| | | | | | | | Toluene | 50 ug/mL |
| | | | | | | | trans-1,2-Dichloroethene | 50 ug/mL |
| | | | | | | | Trichloroethene | 50 ug/mL |
| | | | | | | | Xylenes, Total | 150 ug/mL |
| .17COMP_STK_00046 | 03/31/14 | Ultra Scientific, Lot CJ-0518 | | | (Purchased Reagent) | | 1,1-Dichloroethane | 2000 ug/mL |
| | | | | | | | 1,1-Dichloroethene | 2000 ug/mL |
| | | | | | | | 1,2-Dichloroethane | 2000 ug/mL |
| | | | | | | | Benzene | 2000 ug/mL |
| | | | | | | | Chlorobenzene | 2000 ug/mL |
| | | | | | | | cis-1,2-Dichloroethene | 2000 ug/mL |
| | | | | | | | Ethylbenzene | 2000 ug/mL |
| | | | | | | | m,p-Xylene | 4000 ug/mL |
| | | | | | | | o-Xylene | 2000 ug/mL |
| | | | | | | | Tetrachloroethene | 2000 ug/mL |
| | | | | | | | Toluene | 2000 ug/mL |
| | | | | | | | trans-1,2-Dichloroethene | 2000 ug/mL |
| | | | | | | | Trichloroethene | 2000 ug/mL |
| | | | | | | | Xylenes, Total | 6000 ug/mL |
| **60COMP_WRK_00025** | 06/12/12 | 04/12/12 | Methanol, Lot DF233 | 20 mL | 60 COMP_STK_00013 | 1 mL | 1,1,1,2-Tetrachloroethane | 100 ug/mL |
| | | | | | | | 1,1,1-Trichloroethane | 100 ug/mL |
| | | | | | | | 1,1,2,2-Tetrachloroethane | 100 ug/mL |
| | | | | | | | 1,1,2-Trichloroethane | 100 ug/mL |
| | | | | | | | 1,1-Dichloroethane | 100 ug/mL |
| | | | | | | | 1,1-Dichloroethene | 100 ug/mL |
| | | | | | | | 1,1-Dichloropropene | 100 ug/mL |
| | | | | | | | 1,2,3-Trichlorobenzene | 100 ug/mL |
| | | | | | | | 1,2,3-Trichloropropane | 100 ug/mL |
| | | | | | | | 1,2,4-Trichlorobenzene | 100 ug/mL |
| | | | | | | | 1,2,4-Trimethylbenzene | 100 ug/mL |
| | | | | | | | 1,2-Dibromo-3-Chloropropane | 100 ug/mL |
| | | | | | | | 1,2-Dibromoethane | 100 ug/mL |
| | | | | | | | 1,2-Dichlorobenzene | 100 ug/mL |
| | | | | | | | 1,2-Dichloroethane | 100 ug/mL |
| | | | | | | | 1,2-Dichloropropane | 100 ug/mL |
| | | | | | | | 1,3,5-Trimethylbenzene | 100 ug/mL |
| | | | | | | | 1,3-Dichlorobenzene | 100 ug/mL |
| | | | | | | | 1,3-Dichloropropane | 100 ug/mL |
| | | | | | | | 1,4-Dichlorobenzene | 100 ug/mL |
| | | | | | | | 2,2-Dichloropropane | 100 ug/mL |
| | | | | | | | 2-Chlorotoluene | 100 ug/mL |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-19087-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | 4-Chlorotoluene | 100 ug/mL |
| | | | | | | | 4-Isopropyltoluene | 100 ug/mL |
| | | | | | | | Benzene | 100 ug/mL |
| | | | | | | | Bromobenzene | 100 ug/mL |
| | | | | | | | Bromodichloromethane | 100 ug/mL |
| | | | | | | | Bromoform | 100 ug/mL |
| | | | | | | | Bromomethane | 100 ug/mL |
| | | | | | | | Carbon tetrachloride | 100 ug/mL |
| | | | | | | | Chlorobenzene | 100 ug/mL |
| | | | | | | | Chlorobromomethane | 100 ug/mL |
| | | | | | | | Chloroethane | 100 ug/mL |
| | | | | | | | Chloroform | 100 ug/mL |
| | | | | | | | Chloromethane | 100 ug/mL |
| | | | | | | | cis-1,2-Dichloroethene | 100 ug/mL |
| | | | | | | | cis-1,3-Dichloropropene | 100 ug/mL |
| | | | | | | | Dibromochloromethane | 100 ug/mL |
| | | | | | | | Dibromomethane | 100 ug/mL |
| | | | | | | | Dichlorodifluoromethane | 100 ug/mL |
| | | | | | | | Ethylbenzene | 100 ug/mL |
| | | | | | | | Hexachlorobutadiene | 100 ug/mL |
| | | | | | | | Isopropylbenzene | 100 ug/mL |
| | | | | | | | m,p-Xylene | 200 ug/mL |
| | | | | | | | Methylene Chloride | 100 ug/mL |
| | | | | | | | n-Butylbenzene | 100 ug/mL |
| | | | | | | | N-Propylbenzene | 100 ug/mL |
| | | | | | | | Naphthalene | 100 ug/mL |
| | | | | | | | o-Xylene | 100 ug/mL |
| | | | | | | | sec-Butylbenzene | 100 ug/mL |
| | | | | | | | Styrene | 100 ug/mL |
| | | | | | | | tert-Butylbenzene | 100 ug/mL |
| | | | | | | | Tetrachloroethene | 100 ug/mL |
| | | | | | | | Toluene | 100 ug/mL |
| | | | | | | | trans-1,2-Dichloroethene | 100 ug/mL |
| | | | | | | | trans-1,3-Dichloropropene | 100 ug/mL |
| | | | | | | | Trichloroethene | 100 ug/mL |
| | | | | | | | Trichlorofluoromethane | 100 ug/mL |
| | | | | | | | Vinyl chloride | 100 ug/mL |
| | | | | | | | Xylenes, Total | 300 ug/mL |
| .60 COMP_STK_00013 | 07/31/14 | | Ultra Scientific, Lot CH-1896 | | (Purchased Reagent) | | 1,1,1,2-Tetrachloroethane | 2000 ug/mL |
| | | | | | | | 1,1,1-Trichloroethane | 2000 ug/mL |
| | | | | | | | 1,1,2,2-Tetrachloroethane | 2000 ug/mL |
| | | | | | | | 1,1,2-Trichloroethane | 2000 ug/mL |
| | | | | | | | 1,1-Dichloroethane | 2000 ug/mL |
| | | | | | | | 1,1-Dichloroethene | 2000 ug/mL |
| | | | | | | | 1,1-Dichloropropene | 2000 ug/mL |
| | | | | | | | 1,2,3-Trichlorobenzene | 2000 ug/mL |
| | | | | | | | 1,2,3-Trichloropropane | 2000 ug/mL |
| | | | | | | | 1,2,4-Trichlorobenzene | 2000 ug/mL |
| | | | | | | | 1,2,4-Trimethylbenzene | 2000 ug/mL |
| | | | | | | | 1,2-Dibromo-3-Chloropropane | 2000 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-19087-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | 1,2-Dibromoethane | 2000 ug/mL |
| | | | | | | | 1,2-Dichlorobenzene | 2000 ug/mL |
| | | | | | | | 1,2-Dichloroethane | 2000 ug/mL |
| | | | | | | | 1,2-Dichloropropane | 2000 ug/mL |
| | | | | | | | 1,3,5-Trimethylbenzene | 2000 ug/mL |
| | | | | | | | 1,3-Dichlorobenzene | 2000 ug/mL |
| | | | | | | | 1,3-Dichloropropane | 2000 ug/mL |
| | | | | | | | 1,4-Dichlorobenzene | 2000 ug/mL |
| | | | | | | | 2,2-Dichloropropane | 2000 ug/mL |
| | | | | | | | 2-Chlorotoluene | 2000 ug/mL |
| | | | | | | | 4-Chlorotoluene | 2000 ug/mL |
| | | | | | | | 4-Isopropyltoluene | 2000 ug/mL |
| | | | | | | | Benzene | 2000 ug/mL |
| | | | | | | | Bromobenzene | 2000 ug/mL |
| | | | | | | | Bromodichloromethane | 2000 ug/mL |
| | | | | | | | Bromoform | 2000 ug/mL |
| | | | | | | | Bromomethane | 2000 ug/mL |
| | | | | | | | Carbon tetrachloride | 2000 ug/mL |
| | | | | | | | Chlorobenzene | 2000 ug/mL |
| | | | | | | | Chlorobromomethane | 2000 ug/mL |
| | | | | | | | Chloroethane | 2000 ug/mL |
| | | | | | | | Chloroform | 2000 ug/mL |
| | | | | | | | Chloromethane | 2000 ug/mL |
| | | | | | | | cis-1,2-Dichloroethene | 2000 ug/mL |
| | | | | | | | cis-1,3-Dichloropropene | 2000 ug/mL |
| | | | | | | | Dibromochloromethane | 2000 ug/mL |
| | | | | | | | Dibromomethane | 2000 ug/mL |
| | | | | | | | Dichlorodifluoromethane | 2000 ug/mL |
| | | | | | | | Ethylbenzene | 2000 ug/mL |
| | | | | | | | Hexachlorobutadiene | 2000 ug/mL |
| | | | | | | | Isopropylbenzene | 2000 ug/mL |
| | | | | | | | m,p-Xylene | 4000 ug/mL |
| | | | | | | | Methylene Chloride | 2000 ug/mL |
| | | | | | | | n-Butylbenzene | 2000 ug/mL |
| | | | | | | | N-Propylbenzene | 2000 ug/mL |
| | | | | | | | Naphthalene | 2000 ug/mL |
| | | | | | | | o-Xylene | 2000 ug/mL |
| | | | | | | | sec-Butylbenzene | 2000 ug/mL |
| | | | | | | | Styrene | 2000 ug/mL |
| | | | | | | | tert-Butylbenzene | 2000 ug/mL |
| | | | | | | | Tetrachloroethene | 2000 ug/mL |
| | | | | | | | Toluene | 2000 ug/mL |
| | | | | | | | trans-1,2-Dichloroethene | 2000 ug/mL |
| | | | | | | | trans-1,3-Dichloropropene | 2000 ug/mL |
| | | | | | | | Trichloroethene | 2000 ug/mL |
| | | | | | | | Trichlorofluoromethane | 2000 ug/mL |
| | | | | | | | Vinyl chloride | 2000 ug/mL |
| | | | | | | | Xylenes, Total | 6000 ug/mL |
| **8260+_SS_WRK_00025** | 06/12/12 | 04/12/12 | Methanol, Lot DF233 | 20 mL | 2-CLEVE_SS_00057 | 1 mL | 2-Chloroethyl vinyl ether | 500 mg/L |
| | | | | | 2-CLEVE_SS_00058 | 1 mL | 2-Chloroethyl vinyl ether | 500 mg/L |

Lab Name: TestAmerica Buffalo Job No.: 480-19087-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | 8260+#1 SS_ST_00059 | 1 mL | 1,1,2-Trichloro-1,2,2-trifluoroethane | 100 mg/L |
| | | | | | | | Acetonitrile | 4000 mg/L |
| | | | | | | | Carbon disulfide | 100 mg/L |
| | | | | | | | Cyclohexane | 100 mg/L |
| | | | | | | | Ethyl methacrylate | 100 mg/L |
| | | | | | | | Methyl acetate | 100 mg/L |
| | | | | | | | Methyl tert-butyl ether | 100 mg/L |
| | | | | | | | Methylcyclohexane | 100 mg/L |
| | | | | | | | Tetrahydrofuran | 500 mg/L |
| | | | | | | | trans-1,4-Dichloro-2-butene | 500 mg/L |
| | | | | | 8260+#1 SS_ST_00060 | 1 mL | 1,1,2-Trichloro-1,2,2-trifluoroethane | 100 mg/L |
| | | | | | | | Acetonitrile | 4000 mg/L |
| | | | | | | | Carbon disulfide | 100 mg/L |
| | | | | | | | Cyclohexane | 100 mg/L |
| | | | | | | | Ethyl methacrylate | 100 mg/L |
| | | | | | | | Methyl acetate | 100 mg/L |
| | | | | | | | Methyl tert-butyl ether | 100 mg/L |
| | | | | | | | Methylcyclohexane | 100 mg/L |
| | | | | | | | Tetrahydrofuran | 500 mg/L |
| | | | | | | | trans-1,4-Dichloro-2-butene | 500 mg/L |
| | | | | | 8260+#2 SS_ST_00058 | 1 mL | 2-Butanone (MEK) | 500 mg/L |
| | | | | | | | 2-Hexanone | 500 mg/L |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 500 mg/L |
| | | | | | | | Acetone | 500 mg/L |
| | | | | | | | Iodomethane | 100 mg/L |
| | | | | | | | Vinyl acetate | 500 mg/L |
| | | | | | 8260+#2 SS_ST_00059 | 1 mL | 2-Butanone (MEK) | 500 mg/L |
| | | | | | | | 2-Hexanone | 500 mg/L |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 500 mg/L |
| | | | | | | | Acetone | 500 mg/L |
| | | | | | | | Iodomethane | 100 mg/L |
| | | | | | | | Vinyl acetate | 500 mg/L |
| | | | | | 8260+#3SS_STK_00043 | 1 mL | Acrolein | 2000 mg/L |
| | | | | | | | Acrylonitrile | 500 mg/L |
| | | | | | 8260+#3SS_STK_00044 | 1 mL | Acrolein | 2000 mg/L |
| | | | | | | | Acrylonitrile | 500 mg/L |
| .2-CLEVE SS_00057 | 04/30/13 | | Ultra Scientific, Lot CG-0850 | | (Purchased Reagent) | | 2-Chloroethyl vinyl ether | 5000 ug/mL |
| .2-CLEVE SS_00058 | 04/30/13 | | Ultra Scientific, Lot CG-0850 | | (Purchased Reagent) | | 2-Chloroethyl vinyl ether | 5000 ug/mL |
| .8260+#1 SS_ST_00059 | 10/31/12 | | Supelco, Lot LB88224 | | (Purchased Reagent) | | 1,1,2-Trichloro-1,2,2-trifluoroethane | 1000 ug/mL |
| | | | | | | | Acetonitrile | 40000 ug/mL |
| | | | | | | | Carbon disulfide | 1000 ug/mL |
| | | | | | | | Cyclohexane | 1000 ug/mL |
| | | | | | | | Ethyl methacrylate | 1000 ug/mL |
| | | | | | | | Methyl acetate | 1000 ug/mL |
| | | | | | | | Methyl tert-butyl ether | 1000 ug/mL |
| | | | | | | | Methylcyclohexane | 1000 ug/mL |
| | | | | | | | Tetrahydrofuran | 5000 ug/mL |

Lab Name: TestAmerica Buffalo Job No.: 480-19087-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | trans-1,4-Dichloro-2-butene | 5000 ug/mL |
| .8260+#1 SS_ST_00060 | 10/31/12 | | Supelco, Lot LB88224 | | (Purchased Reagent) | | 1,1,2-Trichloro-1,2,2-trifluoroethane | 1000 ug/mL |
| | | | | | | | Acetonitrile | 40000 ug/mL |
| | | | | | | | Carbon disulfide | 1000 ug/mL |
| | | | | | | | Cyclohexane | 1000 ug/mL |
| | | | | | | | Ethyl methacrylate | 1000 ug/mL |
| | | | | | | | Methyl acetate | 1000 ug/mL |
| | | | | | | | Methyl tert-butyl ether | 1000 ug/mL |
| | | | | | | | Methylcyclohexane | 1000 ug/mL |
| | | | | | | | Tetrahydrofuran | 5000 ug/mL |
| | | | | | | | trans-1,4-Dichloro-2-butene | 5000 ug/mL |
| .8260+#2 SS_ST_00058 | 01/31/13 | | Supelco, Lot LB90517 | | (Purchased Reagent) | | 2-Butanone (MEK) | 5000 ug/mL |
| | | | | | | | 2-Hexanone | 5000 ug/mL |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 5000 ug/mL |
| | | | | | | | Acetone | 5000 ug/mL |
| | | | | | | | Iodomethane | 1000 ug/mL |
| | | | | | | | Vinyl acetate | 5000 ug/mL |
| .8260+#2 SS_ST_00059 | 01/31/13 | | Supelco, Lot LB90517 | | (Purchased Reagent) | | 2-Butanone (MEK) | 5000 ug/mL |
| | | | | | | | 2-Hexanone | 5000 ug/mL |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 5000 ug/mL |
| | | | | | | | Acetone | 5000 ug/mL |
| | | | | | | | Iodomethane | 1000 ug/mL |
| | | | | | | | Vinyl acetate | 5000 ug/mL |
| .8260+#3SS_STK_00043 | 02/01/14 | | Supelco, Lot LB90736 | | (Purchased Reagent) | | Acrolein | 20000 ug/mL |
| | | | | | | | Acrylonitrile | 5000 ug/mL |
| .8260+#3SS_STK_00044 | 02/01/14 | | Supelco, Lot LB90736 | | (Purchased Reagent) | | Acrolein | 20000 ug/mL |
| | | | | | | | Acrylonitrile | 5000 ug/mL |
| **T_8260_IS_00018** | 06/05/12 | 04/05/12 | P&T Methanol, Lot DF369 | 10 mL | MV_IS_STK_00162 | 500 uL | 1,4-Dichlorobenzene-d4 | 125 ug/mL |
| | | | | | | | 1,4-Difluorobenzene | 125 ug/mL |
| | | | | | | | Chlorobenzene-d5 | 125 ug/mL |
| .MV_IS_STK_00162 | 08/31/16 | | Restek, Lot A083969 | | (Purchased Reagent) | | 1,4-Dichlorobenzene-d4 | 2500 ug/mL |
| | | | | | | | 1,4-Difluorobenzene | 2500 ug/mL |
| | | | | | | | Chlorobenzene-d5 | 2500 ug/mL |
| **T_8260_Surr_00018** | 06/05/12 | 04/05/12 | P&T Methanol, Lot DE407 | 10 mL | MV_SURR_STK_00186 | 500 uL | 1,2-Dichloroethane-d4 (Surr) | 125 ug/mL |
| | | | | | | | 4-Bromofluorobenzene (Surr) | 125 ug/mL |
| | | | | | | | Toluene-d8 (Surr) | 125 ug/mL |
| .MV_SURR_STK_00186 | 10/31/14 | | Ultra Scientific, Lot CH-2969 | | (Purchased Reagent) | | 1,2-Dichloroethane-d4 (Surr) | 2500 ug/mL |
| | | | | | | | 4-Bromofluorobenzene (Surr) | 2500 ug/mL |
| | | | | | | | Toluene-d8 (Surr) | 2500 ug/mL |
| **T_8260_Surr_00019** | 06/19/12 | 04/19/12 | P&T Methanol, Lot DE407 | 10 mL | MV_SURR_STK_00179 | 500 uL | 1,2-Dichloroethane-d4 (Surr) | 125 ug/mL |
| | | | | | | | 4-Bromofluorobenzene (Surr) | 125 ug/mL |
| | | | | | | | Toluene-d8 (Surr) | 125 ug/mL |
| .MV_SURR_STK_00179 | 10/31/14 | | Ultra Scientific, Lot CH-2969 | | (Purchased Reagent) | | 1,2-Dichloroethane-d4 (Surr) | 2500 ug/mL |
| | | | | | | | 4-Bromofluorobenzene (Surr) | 2500 ug/mL |
| | | | | | | | Toluene-d8 (Surr) | 2500 ug/mL |

# Certification Summary

Client: Malcolm Pirnie, Inc. Invoice to Arcadis
Project/Site: NYSDEC-Standby VESTAL

TestAmerica Job ID: 480-19087-1

| Laboratory | Authority | Program | EPA Region | Certification ID |
|---|---|---|---|---|
| TestAmerica Buffalo | Arkansas DEQ | State Program | 6 | 88-0686 |
| TestAmerica Buffalo | California | NELAC | 9 | 1169CA |
| TestAmerica Buffalo | Connecticut | State Program | 1 | PH-0568 |
| TestAmerica Buffalo | Florida | NELAC | 4 | E87672 |
| TestAmerica Buffalo | Georgia | State Program | 4 | 956 |
| TestAmerica Buffalo | Georgia | State Program | 4 | N/A |
| TestAmerica Buffalo | Illinois | NELAC | 5 | 100325 / 200003 |
| TestAmerica Buffalo | Iowa | State Program | 7 | 374 |
| TestAmerica Buffalo | Kansas | NELAC | 7 | E-10187 |
| TestAmerica Buffalo | Kentucky | State Program | 4 | 90029 |
| TestAmerica Buffalo | Kentucky (UST) | State Program | 4 | 30 |
| TestAmerica Buffalo | Louisiana | NELAC | 6 | 02031 |
| TestAmerica Buffalo | Maine | State Program | 1 | NY0044 |
| TestAmerica Buffalo | Maryland | State Program | 3 | 294 |
| TestAmerica Buffalo | Massachusetts | State Program | 1 | M-NY044 |
| TestAmerica Buffalo | Michigan | State Program | 5 | 9937 |
| TestAmerica Buffalo | Minnesota | NELAC | 5 | 036-999-337 |
| TestAmerica Buffalo | New Hampshire | NELAC | 1 | 2337 |
| TestAmerica Buffalo | New Hampshire | NELAC | 1 | 68-00281 |
| TestAmerica Buffalo | New Jersey | NELAC | 2 | NY455 |
| TestAmerica Buffalo | New York | NELAC | 2 | 10026 |
| TestAmerica Buffalo | North Dakota | State Program | 8 | R-176 |
| TestAmerica Buffalo | Oklahoma | State Program | 6 | 9421 |
| TestAmerica Buffalo | Oregon | NELAC | 10 | NY200003 |
| TestAmerica Buffalo | Pennsylvania | NELAC | 3 | 68-00281 |
| TestAmerica Buffalo | Tennessee | State Program | 4 | TN02970 |
| TestAmerica Buffalo | Texas | NELAC | 6 | T104704412-08-TX |
| TestAmerica Buffalo | USDA | Federal | | P330-08-00242 |
| TestAmerica Buffalo | Virginia | NELAC | 3 | 460185 |
| TestAmerica Buffalo | Virginia | State Program | 3 | 278 |
| TestAmerica Buffalo | Washington | State Program | 10 | C1677 |
| TestAmerica Buffalo | West Virginia DEP | State Program | 3 | 252 |
| TestAmerica Buffalo | Wisconsin | State Program | 5 | 998310390 |

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 480-20521-1

Job Description: NYSDEC-Standby VESTAL

For:
Malcolm Pirnie, Inc. Invoice to Arcadis
855 Route 146
Suite 210
Clifton Park, NY 12065

Attention: Mr. Jeremy Wyckoff

Approved for release.
Sally Hoffman
Project Manager II
6/4/2012 11:22 AM

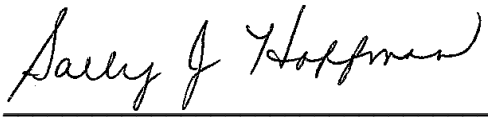
Sally Hoffman
Project Manager II
sally.hoffman@testamericainc.com
06/04/2012

The test results in this report meet all NELAP requirements for analytes for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this test report should be directed to the TestAmerica Project Manager who has signed this report. TestAmerica Buffalo NELAC Certifications: CADPH 01169CA, FLDOH E87672, ILEPA 200003, KSDOH E-10187, LADEQ 30708, MDH 036-999-337, NHELAP 2973, NJDEP NY455, NHDOH 10026, ORELAP NY200003, PADEP 68-00281, TXCEQ T-104704412-10-1

Job Number: 480-20521-1

Job Description: NYSDEC-Standby VESTAL

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed within the body of this report. Release of the data contained in this sample data package and in the electronic data deliverable has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.



Approved for release.
Sally Hoffman
Project Manager II
6/4/2012 11:22 AM

Sally Hoffman

# Table of Contents

# Table of Contents

**Job Narrative**
**480-20521-1**

**Comments**
No additional comments.

**Receipt**
The samples were received on 5/25/2012 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6º C.

**GC/MS VOA**
Method(s) 8260B: The following sample was diluted due to the abundance of target analytes: WELL 1-1A INF (480-20521-1). Elevated reporting limits (RLs) are provided.

No other analytical or quality issues were noted.

## SAMPLE SUMMARY

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-20521-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 480-20521-1 | WELL 1-1A INF | Water | 05/24/2012 1310 | 05/25/2012 0900 |
| 480-20521-2 | WELL 1-1A EFF | Water | 05/24/2012 1315 | 05/25/2012 0900 |
| 480-20521-3 | TRIP BLANK | Water | 05/24/2012 0000 | 05/25/2012 0900 |

## EXECUTIVE SUMMARY - Detections

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-20521-1

| Lab Sample ID / Analyte | Client Sample ID | Result | Qualifier | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **480-20521-1** | **WELL 1-1A INF** | | | | | |
| 1,1,1-Trichloroethane | | 130 | | 2.0 | ug/L | 8260B |
| 1,1-Dichloroethane | | 20 | | 2.0 | ug/L | 8260B |
| 1,1-Dichloroethene | | 20 | | 2.0 | ug/L | 8260B |
| cis-1,2-Dichloroethene | | 45 | | 2.0 | ug/L | 8260B |
| Trichloroethene | | 48 | | 2.0 | ug/L | 8260B |
| Vinyl chloride | | 8.1 | | 2.0 | ug/L | 8260B |

# METHOD SUMMARY

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-20521-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix Water** | | | |
| Volatile Organic Compounds (GC/MS) | TAL BUF | SW846 8260B | |
| Purge and Trap | TAL BUF | | SW846 5030B |

**Lab References:**

TAL BUF = TestAmerica Buffalo

**Method References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-20521-1

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 8260B | Coder, David | DC |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-20521-1

**Client Sample ID:** **WELL 1-1A INF**

Lab Sample ID: 480-20521-1
Client Matrix: Water

Date Sampled: 05/24/2012 1310
Date Received: 05/25/2012 0900

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 480-66350 | Instrument ID: | HP5973S |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | S14584.D |
| Dilution: | 2.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 05/30/2012 1832 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 05/30/2012 1832 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | 130 | | 1.6 | 2.0 |
| 1,1,2,2-Tetrachloroethane | 2.0 | U | 0.42 | 2.0 |
| 1,1,2-Trichloroethane | 2.0 | U | 0.46 | 2.0 |
| 1,1-Dichloroethane | 20 | | 0.76 | 2.0 |
| 1,1-Dichloroethene | 20 | | 0.58 | 2.0 |
| 1,2-Dibromoethane | 2.0 | U | 1.5 | 2.0 |
| 1,2-Dichloroethane | 2.0 | U | 0.42 | 2.0 |
| 1,2-Dichloropropane | 2.0 | U | 1.4 | 2.0 |
| 2-Hexanone | 10 | U | 2.5 | 10 |
| 2-Butanone (MEK) | 20 | U | 2.6 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 10 | U | 4.2 | 10 |
| Acetone | 20 | U | 6.0 | 20 |
| Benzene | 2.0 | U | 0.82 | 2.0 |
| Bromodichloromethane | 2.0 | U | 0.78 | 2.0 |
| Bromoform | 2.0 | U | 0.52 | 2.0 |
| Bromomethane | 2.0 | U | 1.4 | 2.0 |
| Carbon disulfide | 2.0 | U | 0.38 | 2.0 |
| Carbon tetrachloride | 2.0 | U | 0.54 | 2.0 |
| Chlorobenzene | 2.0 | U | 1.5 | 2.0 |
| Dibromochloromethane | 2.0 | U | 0.64 | 2.0 |
| Chloroethane | 2.0 | U | 0.64 | 2.0 |
| Chloroform | 2.0 | U | 0.68 | 2.0 |
| Chloromethane | 2.0 | U | 0.70 | 2.0 |
| cis-1,2-Dichloroethene | 45 | | 1.6 | 2.0 |
| cis-1,3-Dichloropropene | 2.0 | U | 0.72 | 2.0 |
| Ethylbenzene | 2.0 | U | 1.5 | 2.0 |
| Methylene Chloride | 2.0 | U | 0.88 | 2.0 |
| Styrene | 2.0 | U | 1.5 | 2.0 |
| Tetrachloroethene | 2.0 | U | 0.72 | 2.0 |
| Toluene | 2.0 | U | 1.0 | 2.0 |
| trans-1,2-Dichloroethene | 2.0 | U | 1.8 | 2.0 |
| trans-1,3-Dichloropropene | 2.0 | U | 0.74 | 2.0 |
| Trichloroethene | 48 | | 0.92 | 2.0 |
| Vinyl chloride | 8.1 | | 1.8 | 2.0 |
| Xylenes, Total | 4.0 | U | 1.3 | 4.0 |
| m,p-Xylene | 4.0 | U | 1.3 | 4.0 |
| o-Xylene | 2.0 | U | 1.5 | 2.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 103 | | 66 - 137 |
| Toluene-d8 (Surr) | 108 | | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 106 | | 73 - 120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-20521-1

**Client Sample ID:** **WELL 1-1A EFF**

Lab Sample ID: 480-20521-2
Client Matrix: Water

Date Sampled: 05/24/2012 1315
Date Received: 05/25/2012 0900

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 480-66350 | Instrument ID: | HP5973S |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | S14585.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 05/30/2012 1854 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 05/30/2012 1854 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | 1.0 | U | 0.82 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.23 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.38 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.29 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.73 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.72 | 1.0 |
| 2-Hexanone | 5.0 | U | 1.2 | 5.0 |
| 2-Butanone (MEK) | 10 | U | 1.3 | 10 |
| 4-Methyl-2-pentanone (MIBK) | 5.0 | U | 2.1 | 5.0 |
| Acetone | 10 | U | 3.0 | 10 |
| Benzene | 1.0 | U | 0.41 | 1.0 |
| Bromodichloromethane | 1.0 | U | 0.39 | 1.0 |
| Bromoform | 1.0 | U | 0.26 | 1.0 |
| Bromomethane | 1.0 | U | 0.69 | 1.0 |
| Carbon disulfide | 1.0 | U | 0.19 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.27 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.75 | 1.0 |
| Dibromochloromethane | 1.0 | U | 0.32 | 1.0 |
| Chloroethane | 1.0 | U | 0.32 | 1.0 |
| Chloroform | 1.0 | U | 0.34 | 1.0 |
| Chloromethane | 1.0 | U | 0.35 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.81 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.36 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.74 | 1.0 |
| Methylene Chloride | 1.0 | U | 0.44 | 1.0 |
| Styrene | 1.0 | U | 0.73 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.36 | 1.0 |
| Toluene | 1.0 | U | 0.51 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.90 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.37 | 1.0 |
| Trichloroethene | 1.0 | U | 0.46 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.90 | 1.0 |
| Xylenes, Total | 2.0 | U | 0.66 | 2.0 |
| m,p-Xylene | 2.0 | U | 0.66 | 2.0 |
| o-Xylene | 1.0 | U | 0.76 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 102 | | 66 - 137 |
| Toluene-d8 (Surr) | 106 | | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 105 | | 73 - 120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-20521-1

**Client Sample ID:** **TRIP BLANK**

Lab Sample ID: 480-20521-3
Client Matrix: Water

Date Sampled: 05/24/2012 0000
Date Received: 05/25/2012 0900

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 480-66350 | Instrument ID: | HP5973S |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | S14586.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 05/30/2012 1916 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 05/30/2012 1916 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | 1.0 | U | 0.82 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.23 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.38 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.29 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.73 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.72 | 1.0 |
| 2-Hexanone | 5.0 | U | 1.2 | 5.0 |
| 2-Butanone (MEK) | 10 | U | 1.3 | 10 |
| 4-Methyl-2-pentanone (MIBK) | 5.0 | U | 2.1 | 5.0 |
| Acetone | 10 | U | 3.0 | 10 |
| Benzene | 1.0 | U | 0.41 | 1.0 |
| Bromodichloromethane | 1.0 | U | 0.39 | 1.0 |
| Bromoform | 1.0 | U | 0.26 | 1.0 |
| Bromomethane | 1.0 | U | 0.69 | 1.0 |
| Carbon disulfide | 1.0 | U | 0.19 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.27 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.75 | 1.0 |
| Dibromochloromethane | 1.0 | U | 0.32 | 1.0 |
| Chloroethane | 1.0 | U | 0.32 | 1.0 |
| Chloroform | 1.0 | U | 0.34 | 1.0 |
| Chloromethane | 1.0 | U | 0.35 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.81 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.36 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.74 | 1.0 |
| Methylene Chloride | 1.0 | U | 0.44 | 1.0 |
| Styrene | 1.0 | U | 0.73 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.36 | 1.0 |
| Toluene | 1.0 | U | 0.51 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.90 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.37 | 1.0 |
| Trichloroethene | 1.0 | U | 0.46 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.90 | 1.0 |
| Xylenes, Total | 2.0 | U | 0.66 | 2.0 |
| m,p-Xylene | 2.0 | U | 0.66 | 2.0 |
| o-Xylene | 1.0 | U | 0.76 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 103 | | 66 - 137 |
| Toluene-d8 (Surr) | 106 | | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 104 | | 73 - 120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-20521-1

## Surrogate Recovery Report

**8260B Volatile Organic Compounds (GC/MS)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | DCA %Rec | TOL %Rec | BFB %Rec |
|---|---|---|---|---|
| 480-20521-1 | WELL 1-1A INF | 103 | 108 | 106 |
| 480-20521-2 | WELL 1-1A EFF | 102 | 106 | 105 |
| 480-20521-3 | TRIP BLANK | 103 | 106 | 104 |
| MB 480-66350/5 | | 102 | 106 | 107 |
| LCS 480-66350/4 | | 101 | 106 | 107 |

| Surrogate | Acceptance Limits |
|---|---|
| DCA = 1,2-Dichloroethane-d4 (Surr) | 66-137 |
| TOL = Toluene-d8 (Surr) | 71-126 |
| BFB = 4-Bromofluorobenzene (Surr) | 73-120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-20521-1

**Method Blank - Batch: 480-66350**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 480-66350/5 | Analysis Batch: | 480-66350 | Instrument ID: | HP5973S |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | S14566.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 05/30/2012 1106 | Units: | ug/L | Final Weight/Volume: | 5 mL |
| Prep Date: | 05/30/2012 1106 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | 1.0 | U | 0.82 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.23 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.38 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.29 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.73 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.72 | 1.0 |
| 2-Hexanone | 5.0 | U | 1.2 | 5.0 |
| 2-Butanone (MEK) | 10 | U | 1.3 | 10 |
| 4-Methyl-2-pentanone (MIBK) | 5.0 | U | 2.1 | 5.0 |
| Acetone | 10 | U | 3.0 | 10 |
| Benzene | 1.0 | U | 0.41 | 1.0 |
| Bromodichloromethane | 1.0 | U | 0.39 | 1.0 |
| Bromoform | 1.0 | U | 0.26 | 1.0 |
| Bromomethane | 1.0 | U | 0.69 | 1.0 |
| Carbon disulfide | 1.0 | U | 0.19 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.27 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.75 | 1.0 |
| Dibromochloromethane | 1.0 | U | 0.32 | 1.0 |
| Chloroethane | 1.0 | U | 0.32 | 1.0 |
| Chloroform | 1.0 | U | 0.34 | 1.0 |
| Chloromethane | 1.0 | U | 0.35 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.81 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.36 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.74 | 1.0 |
| Methylene Chloride | 1.0 | U | 0.44 | 1.0 |
| Styrene | 1.0 | U | 0.73 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.36 | 1.0 |
| Toluene | 1.0 | U | 0.51 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.90 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.37 | 1.0 |
| Trichloroethene | 1.0 | U | 0.46 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.90 | 1.0 |
| Xylenes, Total | 2.0 | U | 0.66 | 2.0 |
| m,p-Xylene | 2.0 | U | 0.66 | 2.0 |
| o-Xylene | 1.0 | U | 0.76 | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 102 | 66 - 137 |
| Toluene-d8 (Surr) | 106 | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 107 | 73 - 120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-20521-1

**Lab Control Sample - Batch: 480-66350**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 480-66350/4 | Analysis Batch: | 480-66350 | Instrument ID: | HP5973S |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | S14565.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 05/30/2012 1044 | Units: | ug/L | Final Weight/Volume: | 5 mL |
| Prep Date: | 05/30/2012 1044 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 1,1-Dichloroethane | 25.0 | 23.1 | 92 | 71 - 129 | |
| 1,1-Dichloroethene | 25.0 | 21.5 | 86 | 65 - 138 | |
| 1,2-Dichloroethane | 25.0 | 24.3 | 97 | 75 - 127 | |
| Benzene | 25.0 | 24.7 | 99 | 71 - 124 | |
| Chlorobenzene | 25.0 | 25.4 | 102 | 72 - 120 | |
| cis-1,2-Dichloroethene | 25.0 | 24.6 | 98 | 74 - 124 | |
| Ethylbenzene | 25.0 | 25.1 | 100 | 77 - 123 | |
| Tetrachloroethene | 25.0 | 26.2 | 105 | 74 - 122 | |
| Toluene | 25.0 | 24.7 | 99 | 70 - 122 | |
| trans-1,2-Dichloroethene | 25.0 | 25.4 | 102 | 73 - 127 | |
| Trichloroethene | 25.0 | 24.2 | 97 | 74 - 123 | |
| m,p-Xylene | 50.0 | 51.4 | 103 | 76 - 122 | |
| o-Xylene | 25.0 | 25.4 | 102 | 76 - 122 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 101 | 66 - 137 |
| Toluene-d8 (Surr) | 106 | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 107 | 73 - 120 |

## DATA REPORTING QUALIFIERS

Client: Malcolm Pirnie, Inc. Invoice to Arcadis Job Number: 480-20521-1

| Lab Section | Qualifier | Description |
|---|---|---|
| GC/MS VOA | | |
| | U | Analyzed for but not detected. |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-20521-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS VOA** | | | | | |
| **Analysis Batch:480-66350** | | | | | |
| LCS 480-66350/4 | Lab Control Sample | T | Water | 8260B | |
| MB 480-66350/5 | Method Blank | T | Water | 8260B | |
| 480-20521-1 | WELL 1-1A INF | T | Water | 8260B | |
| 480-20521-2 | WELL 1-1A EFF | T | Water | 8260B | |
| 480-20521-3 | TRIP BLANK | T | Water | 8260B | |

**Report Basis**

T = Total

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-20521-1

## Laboratory Chronicle

**Lab ID:** 480-20521-1 **Client ID:** WELL 1-1A INF

Sample Date/Time: 05/24/2012 13:10 Received Date/Time: 05/25/2012 09:00

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | 480-20521-A-1 | | 480-66350 | | 05/30/2012 18:32 | 2 | TAL BUF | DC |
| A:8260B | 480-20521-A-1 | | 480-66350 | | 05/30/2012 18:32 | 2 | TAL BUF | DC |

**Lab ID:** 480-20521-2 **Client ID:** WELL 1-1A EFF

Sample Date/Time: 05/24/2012 13:15 Received Date/Time: 05/25/2012 09:00

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | 480-20521-A-2 | | 480-66350 | | 05/30/2012 18:54 | 1 | TAL BUF | DC |
| A:8260B | 480-20521-A-2 | | 480-66350 | | 05/30/2012 18:54 | 1 | TAL BUF | DC |

**Lab ID:** 480-20521-3 **Client ID:** TRIP BLANK

Sample Date/Time: 05/24/2012 00:00 Received Date/Time: 05/25/2012 09:00

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | 480-20521-A-3 | | 480-66350 | | 05/30/2012 19:16 | 1 | TAL BUF | DC |
| A:8260B | 480-20521-A-3 | | 480-66350 | | 05/30/2012 19:16 | 1 | TAL BUF | DC |

**Lab ID:** MB **Client ID:** N/A

Sample Date/Time: N/A Received Date/Time: N/A

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | MB 480-66350/5 | | 480-66350 | | 05/30/2012 11:06 | 1 | TAL BUF | DC |
| A:8260B | MB 480-66350/5 | | 480-66350 | | 05/30/2012 11:06 | 1 | TAL BUF | DC |

**Lab ID:** LCS **Client ID:** N/A

Sample Date/Time: N/A Received Date/Time: N/A

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | LCS 480-66350/4 | | 480-66350 | | 05/30/2012 10:44 | 1 | TAL BUF | DC |
| A:8260B | LCS 480-66350/4 | | 480-66350 | | 05/30/2012 10:44 | 1 | TAL BUF | DC |

**Lab References:**

TAL BUF = TestAmerica Buffalo

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-20521-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| **17_COMP_WRK_00016** | 07/30/12 | 05/04/12 | Methanol, Lot DF369 | 20 mL | 17COMP_STK_00075 | 500 uL | 1,1-Dichloroethane | 50 ug/mL |
| | | | | | | | 1,1-Dichloroethene | 50 ug/mL |
| | | | | | | | 1,2-Dichloroethane | 50 ug/mL |
| | | | | | | | Benzene | 50 ug/mL |
| | | | | | | | Chlorobenzene | 50 ug/mL |
| | | | | | | | cis-1,2-Dichloroethene | 50 ug/mL |
| | | | | | | | Ethylbenzene | 50 ug/mL |
| | | | | | | | m,p-Xylene | 100 ug/mL |
| | | | | | | | o-Xylene | 50 ug/mL |
| | | | | | | | Tetrachloroethene | 50 ug/mL |
| | | | | | | | Toluene | 50 ug/mL |
| | | | | | | | trans-1,2-Dichloroethene | 50 ug/mL |
| | | | | | | | Trichloroethene | 50 ug/mL |
| | | | | | | | Xylenes, Total | 150 ug/mL |
| .17COMP_STK_00075 | 03/31/14 | Ultra Scientific, Lot CJ-0518 | | | (Purchased Reagent) | | 1,1-Dichloroethane | 2000 ug/mL |
| | | | | | | | 1,1-Dichloroethene | 2000 ug/mL |
| | | | | | | | 1,2-Dichloroethane | 2000 ug/mL |
| | | | | | | | Benzene | 2000 ug/mL |
| | | | | | | | Chlorobenzene | 2000 ug/mL |
| | | | | | | | cis-1,2-Dichloroethene | 2000 ug/mL |
| | | | | | | | Ethylbenzene | 2000 ug/mL |
| | | | | | | | m,p-Xylene | 4000 ug/mL |
| | | | | | | | o-Xylene | 2000 ug/mL |
| | | | | | | | Tetrachloroethene | 2000 ug/mL |
| | | | | | | | Toluene | 2000 ug/mL |
| | | | | | | | trans-1,2-Dichloroethene | 2000 ug/mL |
| | | | | | | | Trichloroethene | 2000 ug/mL |
| | | | | | | | Xylenes, Total | 6000 ug/mL |
| **60COMP_WRK_00026** | 06/27/12 | 04/27/12 | Methanol, Lot DF369 | 20 mL | 60 COMP_STK_00009 | 1 mL | 1,1,1,2-Tetrachloroethane | 100 ug/mL |
| | | | | | | | 1,1,1-Trichloroethane | 100 ug/mL |
| | | | | | | | 1,1,2,2-Tetrachloroethane | 100 ug/mL |
| | | | | | | | 1,1,2-Trichloroethane | 100 ug/mL |
| | | | | | | | 1,1-Dichloroethane | 100 ug/mL |
| | | | | | | | 1,1-Dichloroethene | 100 ug/mL |
| | | | | | | | 1,1-Dichloropropene | 100 ug/mL |
| | | | | | | | 1,2,3-Trichlorobenzene | 100 ug/mL |
| | | | | | | | 1,2,3-Trichloropropane | 100 ug/mL |
| | | | | | | | 1,2,4-Trichlorobenzene | 100 ug/mL |
| | | | | | | | 1,2,4-Trimethylbenzene | 100 ug/mL |
| | | | | | | | 1,2-Dibromo-3-Chloropropane | 100 ug/mL |
| | | | | | | | 1,2-Dibromoethane | 100 ug/mL |
| | | | | | | | 1,2-Dichlorobenzene | 100 ug/mL |
| | | | | | | | 1,2-Dichloroethane | 100 ug/mL |
| | | | | | | | 1,2-Dichloropropane | 100 ug/mL |
| | | | | | | | 1,3,5-Trimethylbenzene | 100 ug/mL |
| | | | | | | | 1,3-Dichlorobenzene | 100 ug/mL |
| | | | | | | | 1,3-Dichloropropane | 100 ug/mL |
| | | | | | | | 1,4-Dichlorobenzene | 100 ug/mL |
| | | | | | | | 2,2-Dichloropropane | 100 ug/mL |
| | | | | | | | 2-Chlorotoluene | 100 ug/mL |

Lab Name: TestAmerica Buffalo Job No.: 480-20521-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | 4-Chlorotoluene | 100 ug/mL |
| | | | | | | | 4-Isopropyltoluene | 100 ug/mL |
| | | | | | | | Benzene | 100 ug/mL |
| | | | | | | | Bromobenzene | 100 ug/mL |
| | | | | | | | Bromodichloromethane | 100 ug/mL |
| | | | | | | | Bromoform | 100 ug/mL |
| | | | | | | | Bromomethane | 100 ug/mL |
| | | | | | | | Carbon tetrachloride | 100 ug/mL |
| | | | | | | | Chlorobenzene | 100 ug/mL |
| | | | | | | | Chlorobromomethane | 100 ug/mL |
| | | | | | | | Chloroethane | 100 ug/mL |
| | | | | | | | Chloroform | 100 ug/mL |
| | | | | | | | Chloromethane | 100 ug/mL |
| | | | | | | | cis-1,2-Dichloroethene | 100 ug/mL |
| | | | | | | | cis-1,3-Dichloropropene | 100 ug/mL |
| | | | | | | | Dibromochloromethane | 100 ug/mL |
| | | | | | | | Dibromomethane | 100 ug/mL |
| | | | | | | | Dichlorodifluoromethane | 100 ug/mL |
| | | | | | | | Ethylbenzene | 100 ug/mL |
| | | | | | | | Hexachlorobutadiene | 100 ug/mL |
| | | | | | | | Isopropylbenzene | 100 ug/mL |
| | | | | | | | m,p-Xylene | 200 ug/mL |
| | | | | | | | Methylene Chloride | 100 ug/mL |
| | | | | | | | n-Butylbenzene | 100 ug/mL |
| | | | | | | | N-Propylbenzene | 100 ug/mL |
| | | | | | | | Naphthalene | 100 ug/mL |
| | | | | | | | o-Xylene | 100 ug/mL |
| | | | | | | | sec-Butylbenzene | 100 ug/mL |
| | | | | | | | Styrene | 100 ug/mL |
| | | | | | | | tert-Butylbenzene | 100 ug/mL |
| | | | | | | | Tetrachloroethene | 100 ug/mL |
| | | | | | | | Toluene | 100 ug/mL |
| | | | | | | | trans-1,2-Dichloroethene | 100 ug/mL |
| | | | | | | | trans-1,3-Dichloropropene | 100 ug/mL |
| | | | | | | | Trichloroethene | 100 ug/mL |
| | | | | | | | Trichlorofluoromethane | 100 ug/mL |
| | | | | | | | Vinyl chloride | 100 ug/mL |
| .60 COMP_STK_00009 | 07/31/14 | | Ultra Scientific, Lot CH-1896 | | (Purchased Reagent) | | 1,1,1,2-Tetrachloroethane | 2000 ug/mL |
| | | | | | | | 1,1,1-Trichloroethane | 2000 ug/mL |
| | | | | | | | 1,1,2,2-Tetrachloroethane | 2000 ug/mL |
| | | | | | | | 1,1,2-Trichloroethane | 2000 ug/mL |
| | | | | | | | 1,1-Dichloroethane | 2000 ug/mL |
| | | | | | | | 1,1-Dichloroethene | 2000 ug/mL |
| | | | | | | | 1,1-Dichloropropene | 2000 ug/mL |
| | | | | | | | 1,2,3-Trichlorobenzene | 2000 ug/mL |
| | | | | | | | 1,2,3-Trichloropropane | 2000 ug/mL |
| | | | | | | | 1,2,4-Trichlorobenzene | 2000 ug/mL |
| | | | | | | | 1,2,4-Trimethylbenzene | 2000 ug/mL |
| | | | | | | | 1,2-Dibromo-3-Chloropropane | 2000 ug/mL |
| | | | | | | | 1,2-Dibromoethane | 2000 ug/mL |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-20521-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | 1,2-Dichlorobenzene | 2000 ug/mL |
| | | | | | | | 1,2-Dichloroethane | 2000 ug/mL |
| | | | | | | | 1,2-Dichloropropane | 2000 ug/mL |
| | | | | | | | 1,3,5-Trimethylbenzene | 2000 ug/mL |
| | | | | | | | 1,3-Dichlorobenzene | 2000 ug/mL |
| | | | | | | | 1,3-Dichloropropane | 2000 ug/mL |
| | | | | | | | 1,4-Dichlorobenzene | 2000 ug/mL |
| | | | | | | | 2,2-Dichloropropane | 2000 ug/mL |
| | | | | | | | 2-Chlorotoluene | 2000 ug/mL |
| | | | | | | | 4-Chlorotoluene | 2000 ug/mL |
| | | | | | | | 4-Isopropyltoluene | 2000 ug/mL |
| | | | | | | | Benzene | 2000 ug/mL |
| | | | | | | | Bromobenzene | 2000 ug/mL |
| | | | | | | | Bromodichloromethane | 2000 ug/mL |
| | | | | | | | Bromoform | 2000 ug/mL |
| | | | | | | | Bromomethane | 2000 ug/mL |
| | | | | | | | Carbon tetrachloride | 2000 ug/mL |
| | | | | | | | Chlorobenzene | 2000 ug/mL |
| | | | | | | | Chlorobromomethane | 2000 ug/mL |
| | | | | | | | Chloroethane | 2000 ug/mL |
| | | | | | | | Chloroform | 2000 ug/mL |
| | | | | | | | Chloromethane | 2000 ug/mL |
| | | | | | | | cis-1,2-Dichloroethene | 2000 ug/mL |
| | | | | | | | cis-1,3-Dichloropropene | 2000 ug/mL |
| | | | | | | | Dibromochloromethane | 2000 ug/mL |
| | | | | | | | Dibromomethane | 2000 ug/mL |
| | | | | | | | Dichlorodifluoromethane | 2000 ug/mL |
| | | | | | | | Ethylbenzene | 2000 ug/mL |
| | | | | | | | Hexachlorobutadiene | 2000 ug/mL |
| | | | | | | | Isopropylbenzene | 2000 ug/mL |
| | | | | | | | m,p-Xylene | 4000 ug/mL |
| | | | | | | | Methylene Chloride | 2000 ug/mL |
| | | | | | | | n-Butylbenzene | 2000 ug/mL |
| | | | | | | | N-Propylbenzene | 2000 ug/mL |
| | | | | | | | Naphthalene | 2000 ug/mL |
| | | | | | | | o-Xylene | 2000 ug/mL |
| | | | | | | | sec-Butylbenzene | 2000 ug/mL |
| | | | | | | | Styrene | 2000 ug/mL |
| | | | | | | | tert-Butylbenzene | 2000 ug/mL |
| | | | | | | | Tetrachloroethene | 2000 ug/mL |
| | | | | | | | Toluene | 2000 ug/mL |
| | | | | | | | trans-1,2-Dichloroethene | 2000 ug/mL |
| | | | | | | | trans-1,3-Dichloropropene | 2000 ug/mL |
| | | | | | | | Trichloroethene | 2000 ug/mL |
| | | | | | | | Trichlorofluoromethane | 2000 ug/mL |
| | | | | | | | Vinyl chloride | 2000 ug/mL |
| **60COMP_WRK_00028** | 07/24/12 | 05/24/12 | Methanol, Lot DF369 | 20 mL | 60 COMP_STK_00011 | 1 mL | 1,1,1-Trichloroethane | 100 ug/mL |
| | | | | | | | 1,1,2,2-Tetrachloroethane | 100 ug/mL |
| | | | | | | | 1,1,2-Trichloroethane | 100 ug/mL |
| | | | | | | | 1,1-Dichloroethane | 100 ug/mL |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-20521-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | 1,1-Dichloroethene | 100 ug/mL |
| | | | | | | | 1,2-Dibromoethane | 100 ug/mL |
| | | | | | | | 1,2-Dichloroethane | 100 ug/mL |
| | | | | | | | 1,2-Dichloropropane | 100 ug/mL |
| | | | | | | | Benzene | 100 ug/mL |
| | | | | | | | Bromodichloromethane | 100 ug/mL |
| | | | | | | | Bromoform | 100 ug/mL |
| | | | | | | | Bromomethane | 100 ug/mL |
| | | | | | | | Carbon tetrachloride | 100 ug/mL |
| | | | | | | | Chlorobenzene | 100 ug/mL |
| | | | | | | | Chloroethane | 100 ug/mL |
| | | | | | | | Chloroform | 100 ug/mL |
| | | | | | | | Chloromethane | 100 ug/mL |
| | | | | | | | cis-1,2-Dichloroethene | 100 ug/mL |
| | | | | | | | cis-1,3-Dichloropropene | 100 ug/mL |
| | | | | | | | Dibromochloromethane | 100 ug/mL |
| | | | | | | | Ethylbenzene | 100 ug/mL |
| | | | | | | | m,p-Xylene | 200 ug/mL |
| | | | | | | | Methylene Chloride | 100 ug/mL |
| | | | | | | | o-Xylene | 100 ug/mL |
| | | | | | | | Styrene | 100 ug/mL |
| | | | | | | | Tetrachloroethene | 100 ug/mL |
| | | | | | | | Toluene | 100 ug/mL |
| | | | | | | | trans-1,2-Dichloroethene | 100 ug/mL |
| | | | | | | | trans-1,3-Dichloropropene | 100 ug/mL |
| | | | | | | | Trichloroethene | 100 ug/mL |
| | | | | | | | Vinyl chloride | 100 ug/mL |
| | | | | | | | Xylenes, Total | 300 ug/mL |
| .60 COMP_STK_00011 | 07/31/14 | | Ultra Scientific, Lot CH-1896 | | (Purchased Reagent) | | 1,1,1-Trichloroethane | 2000 ug/mL |
| | | | | | | | 1,1,2,2-Tetrachloroethane | 2000 ug/mL |
| | | | | | | | 1,1,2-Trichloroethane | 2000 ug/mL |
| | | | | | | | 1,1-Dichloroethane | 2000 ug/mL |
| | | | | | | | 1,1-Dichloroethene | 2000 ug/mL |
| | | | | | | | 1,2-Dibromoethane | 2000 ug/mL |
| | | | | | | | 1,2-Dichloroethane | 2000 ug/mL |
| | | | | | | | 1,2-Dichloropropane | 2000 ug/mL |
| | | | | | | | Benzene | 2000 ug/mL |
| | | | | | | | Bromodichloromethane | 2000 ug/mL |
| | | | | | | | Bromoform | 2000 ug/mL |
| | | | | | | | Bromomethane | 2000 ug/mL |
| | | | | | | | Carbon tetrachloride | 2000 ug/mL |
| | | | | | | | Chlorobenzene | 2000 ug/mL |
| | | | | | | | Chloroethane | 2000 ug/mL |
| | | | | | | | Chloroform | 2000 ug/mL |
| | | | | | | | Chloromethane | 2000 ug/mL |
| | | | | | | | cis-1,2-Dichloroethene | 2000 ug/mL |
| | | | | | | | cis-1,3-Dichloropropene | 2000 ug/mL |
| | | | | | | | Dibromochloromethane | 2000 ug/mL |
| | | | | | | | Ethylbenzene | 2000 ug/mL |
| | | | | | | | m,p-Xylene | 4000 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-20521-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Methylene Chloride | 2000 ug/mL |
| | | | | | | | o-Xylene | 2000 ug/mL |
| | | | | | | | Styrene | 2000 ug/mL |
| | | | | | | | Tetrachloroethene | 2000 ug/mL |
| | | | | | | | Toluene | 2000 ug/mL |
| | | | | | | | trans-1,2-Dichloroethene | 2000 ug/mL |
| | | | | | | | trans-1,3-Dichloropropene | 2000 ug/mL |
| | | | | | | | Trichloroethene | 2000 ug/mL |
| | | | | | | | Vinyl chloride | 2000 ug/mL |
| | | | | | | | Xylenes, Total | 6000 ug/mL |
| **8260+_SS_WRK_00025** | 06/12/12 | 04/12/12 | Methanol, Lot DF233 | 20 mL | 2-CLEVE SS_00057 | 1 mL | 2-Chloroethyl vinyl ether | 500 mg/L |
| | | | | | 2-CLEVE SS_00058 | 1 mL | 2-Chloroethyl vinyl ether | 500 mg/L |
| | | | | | 8260+#1 SS_ST_00059 | 1 mL | 1,1,2-Trichloro-1,2,2-trifluoroethane | 100 mg/L |
| | | | | | | | Acetonitrile | 4000 mg/L |
| | | | | | | | Carbon disulfide | 100 mg/L |
| | | | | | | | Cyclohexane | 100 mg/L |
| | | | | | | | Ethyl methacrylate | 100 mg/L |
| | | | | | | | Methyl acetate | 100 mg/L |
| | | | | | | | Methyl tert-butyl ether | 100 mg/L |
| | | | | | | | Methylcyclohexane | 100 mg/L |
| | | | | | | | Tetrahydrofuran | 500 mg/L |
| | | | | | | | trans-1,4-Dichloro-2-butene | 500 mg/L |
| | | | | | 8260+#1 SS_ST_00060 | 1 mL | 1,1,2-Trichloro-1,2,2-trifluoroethane | 100 mg/L |
| | | | | | | | Acetonitrile | 4000 mg/L |
| | | | | | | | Carbon disulfide | 100 mg/L |
| | | | | | | | Cyclohexane | 100 mg/L |
| | | | | | | | Ethyl methacrylate | 100 mg/L |
| | | | | | | | Methyl acetate | 100 mg/L |
| | | | | | | | Methyl tert-butyl ether | 100 mg/L |
| | | | | | | | Methylcyclohexane | 100 mg/L |
| | | | | | | | Tetrahydrofuran | 500 mg/L |
| | | | | | | | trans-1,4-Dichloro-2-butene | 500 mg/L |
| | | | | | 8260+#2 SS_ST_00058 | 1 mL | 2-Butanone (MEK) | 500 mg/L |
| | | | | | | | 2-Hexanone | 500 mg/L |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 500 mg/L |
| | | | | | | | Acetone | 500 mg/L |
| | | | | | | | Iodomethane | 100 mg/L |
| | | | | | | | Vinyl acetate | 500 mg/L |
| | | | | | 8260+#2 SS_ST_00059 | 1 mL | 2-Butanone (MEK) | 500 mg/L |
| | | | | | | | 2-Hexanone | 500 mg/L |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 500 mg/L |
| | | | | | | | Acetone | 500 mg/L |
| | | | | | | | Iodomethane | 100 mg/L |
| | | | | | | | Vinyl acetate | 500 mg/L |
| | | | | | 8260+#3SS_STK_00043 | 1 mL | Acrolein | 2000 mg/L |
| | | | | | | | Acrylonitrile | 500 mg/L |
| | | | | | 8260+#3SS_STK_00044 | 1 mL | Acrolein | 2000 mg/L |
| | | | | | | | Acrylonitrile | 500 mg/L |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-20521-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| .2-CLEVE SS_00057 | 04/30/13 | | Ultra Scientific, Lot CG-0850 | | (Purchased Reagent) | | 2-Chloroethyl vinyl ether | 5000 ug/mL |
| .2-CLEVE SS_00058 | 04/30/13 | | Ultra Scientific, Lot CG-0850 | | (Purchased Reagent) | | 2-Chloroethyl vinyl ether | 5000 ug/mL |
| .8260+#1 SS_ST_00059 | 10/31/12 | | Supelco, Lot LB88224 | | (Purchased Reagent) | | 1,1,2-Trichloro-1,2,2-trifluoroethane | 1000 ug/mL |
| | | | | | | | Acetonitrile | 40000 ug/mL |
| | | | | | | | Carbon disulfide | 1000 ug/mL |
| | | | | | | | Cyclohexane | 1000 ug/mL |
| | | | | | | | Ethyl methacrylate | 1000 ug/mL |
| | | | | | | | Methyl acetate | 1000 ug/mL |
| | | | | | | | Methyl tert-butyl ether | 1000 ug/mL |
| | | | | | | | Methylcyclohexane | 1000 ug/mL |
| | | | | | | | Tetrahydrofuran | 5000 ug/mL |
| | | | | | | | trans-1,4-Dichloro-2-butene | 5000 ug/mL |
| .8260+#1 SS_ST_00060 | 10/31/12 | | Supelco, Lot LB88224 | | (Purchased Reagent) | | 1,1,2-Trichloro-1,2,2-trifluoroethane | 1000 ug/mL |
| | | | | | | | Acetonitrile | 40000 ug/mL |
| | | | | | | | Carbon disulfide | 1000 ug/mL |
| | | | | | | | Cyclohexane | 1000 ug/mL |
| | | | | | | | Ethyl methacrylate | 1000 ug/mL |
| | | | | | | | Methyl acetate | 1000 ug/mL |
| | | | | | | | Methyl tert-butyl ether | 1000 ug/mL |
| | | | | | | | Methylcyclohexane | 1000 ug/mL |
| | | | | | | | Tetrahydrofuran | 5000 ug/mL |
| | | | | | | | trans-1,4-Dichloro-2-butene | 5000 ug/mL |
| .8260+#2 SS_ST_00058 | 01/31/13 | | Supelco, Lot LB90517 | | (Purchased Reagent) | | 2-Butanone (MEK) | 5000 ug/mL |
| | | | | | | | 2-Hexanone | 5000 ug/mL |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 5000 ug/mL |
| | | | | | | | Acetone | 5000 ug/mL |
| | | | | | | | Iodomethane | 1000 ug/mL |
| | | | | | | | Vinyl acetate | 5000 ug/mL |
| .8260+#2 SS_ST_00059 | 01/31/13 | | Supelco, Lot LB90517 | | (Purchased Reagent) | | 2-Butanone (MEK) | 5000 ug/mL |
| | | | | | | | 2-Hexanone | 5000 ug/mL |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 5000 ug/mL |
| | | | | | | | Acetone | 5000 ug/mL |
| | | | | | | | Iodomethane | 1000 ug/mL |
| | | | | | | | Vinyl acetate | 5000 ug/mL |
| .8260+#3SS_STK_00043 | 02/01/14 | | Supelco, Lot LB90736 | | (Purchased Reagent) | | Acrolein | 20000 ug/mL |
| | | | | | | | Acrylonitrile | 5000 ug/mL |
| .8260+#3SS_STK_00044 | 02/01/14 | | Supelco, Lot LB90736 | | (Purchased Reagent) | | Acrolein | 20000 ug/mL |
| | | | | | | | Acrylonitrile | 5000 ug/mL |
| **8260+_SS_WRK_00027** | 07/24/12 | 05/24/12 | Methanol, Lot DF369 | 20 mL | 8260+#1 SS_ST_00056 | 1 mL | Carbon disulfide | 100 mg/L |
| | | | | | 8260+#1 SS_ST_00061 | 1 mL | Carbon disulfide | 100 mg/L |
| | | | | | 8260+#2 SS_ST_00063 | 1 mL | 2-Butanone (MEK) | 500 mg/L |
| | | | | | | | 2-Hexanone | 500 mg/L |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 500 mg/L |
| | | | | | | | Acetone | 500 mg/L |
| | | | | | 8260+#2 SS_ST_00064 | 1 mL | 2-Butanone (MEK) | 500 mg/L |
| | | | | | | | 2-Hexanone | 500 mg/L |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 500 mg/L |
| | | | | | | | Acetone | 500 mg/L |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-20521-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| .8260+#1 SS_ST_00056 | 10/31/12 | | Supelco, Lot LB88224 | | (Purchased Reagent) | | Carbon disulfide | 1000 ug/mL |
| .8260+#1 SS_ST_00061 | 10/31/12 | | Supelco, Lot LB88224 | | (Purchased Reagent) | | Carbon disulfide | 1000 ug/mL |
| .8260+#2 SS_ST_00063 | 01/31/13 | | Supelco, Lot LB90517 | | (Purchased Reagent) | | 2-Butanone (MEK) | 5000 ug/mL |
| | | | | | | | 2-Hexanone | 5000 ug/mL |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 5000 ug/mL |
| | | | | | | | Acetone | 5000 ug/mL |
| .8260+#2 SS_ST_00064 | 01/31/13 | | Supelco, Lot LB90517 | | (Purchased Reagent) | | 2-Butanone (MEK) | 5000 ug/mL |
| | | | | | | | 2-Hexanone | 5000 ug/mL |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 5000 ug/mL |
| | | | | | | | Acetone | 5000 ug/mL |
| **S_8260_IS_00024** | 06/19/12 | 04/19/12 | P&T Methanol, Lot DF369 | 10 mL | MV_IS_STK_00158 | 500 uL | 1,4-Dichlorobenzene-d4 | 125 ug/mL |
| | | | | | | | 1,4-Difluorobenzene | 125 ug/mL |
| | | | | | | | Chlorobenzene-d5 | 125 ug/mL |
| .MV_IS_STK_00158 | 10/19/12 | | Restek, Lot A083969 | | (Purchased Reagent) | | 1,4-Dichlorobenzene-d4 | 2500 ug/mL |
| | | | | | | | 1,4-Difluorobenzene | 2500 ug/mL |
| | | | | | | | Chlorobenzene-d5 | 2500 ug/mL |
| **S_8260_Surr_00018** | 06/19/12 | 04/19/12 | P&T Methanol, Lot DF369 | 10 mL | MV_SURR_STK_00197 | 500 uL | 1,2-Dichloroethane-d4 (Surr) | 125 ug/mL |
| | | | | | | | 4-Bromofluorobenzene (Surr) | 125 ug/mL |
| | | | | | | | Toluene-d8 (Surr) | 125 ug/mL |
| .MV_SURR_STK_00197 | 10/19/12 | | Ultra Scientific, Lot CH-2969 | | (Purchased Reagent) | | 1,2-Dichloroethane-d4 (Surr) | 2500 ug/mL |
| | | | | | | | 4-Bromofluorobenzene (Surr) | 2500 ug/mL |
| | | | | | | | Toluene-d8 (Surr) | 2500 ug/mL |
| **S_8260_Surr_00022** | 07/22/12 | 05/22/12 | P&T Methanol, Lot DF700 | 10 mL | MV_SURR_STK_00198 | 500 uL | 1,2-Dichloroethane-d4 (Surr) | 125 ug/mL |
| | | | | | | | 4-Bromofluorobenzene (Surr) | 125 ug/mL |
| | | | | | | | Toluene-d8 (Surr) | 125 ug/mL |
| .MV_SURR_STK_00198 | 11/15/12 | | Ultra Scientific, Lot CH-2969 | | (Purchased Reagent) | | 1,2-Dichloroethane-d4 (Surr) | 2500 ug/mL |
| | | | | | | | 4-Bromofluorobenzene (Surr) | 2500 ug/mL |
| | | | | | | | Toluene-d8 (Surr) | 2500 ug/mL |

# Certification Summary

Client: Malcolm Pirnie, Inc. Invoice to Arcadis
Project/Site: NYSDEC-Standby VESTAL

TestAmerica Job ID: 480-20521-1

| Laboratory | Authority | Program | EPA Region | Certification ID |
|---|---|---|---|---|
| TestAmerica Buffalo | Arkansas DEQ | State Program | 6 | 88-0686 |
| TestAmerica Buffalo | California | NELAC | 9 | 1169CA |
| TestAmerica Buffalo | Connecticut | State Program | 1 | PH-0568 |
| TestAmerica Buffalo | Florida | NELAC | 4 | E87672 |
| TestAmerica Buffalo | Georgia | State Program | 4 | 956 |
| TestAmerica Buffalo | Georgia | State Program | 4 | N/A |
| TestAmerica Buffalo | Illinois | NELAC | 5 | 100325 / 200003 |
| TestAmerica Buffalo | Iowa | State Program | 7 | 374 |
| TestAmerica Buffalo | Kansas | NELAC | 7 | E-10187 |
| TestAmerica Buffalo | Kentucky | State Program | 4 | 90029 |
| TestAmerica Buffalo | Kentucky (UST) | State Program | 4 | 30 |
| TestAmerica Buffalo | Louisiana | NELAC | 6 | 02031 |
| TestAmerica Buffalo | Maine | State Program | 1 | NY0044 |
| TestAmerica Buffalo | Maryland | State Program | 3 | 294 |
| TestAmerica Buffalo | Massachusetts | State Program | 1 | M-NY044 |
| TestAmerica Buffalo | Michigan | State Program | 5 | 9937 |
| TestAmerica Buffalo | Minnesota | NELAC | 5 | 036-999-337 |
| TestAmerica Buffalo | New Hampshire | NELAC | 1 | 2337 |
| TestAmerica Buffalo | New Hampshire | NELAC | 1 | 68-00281 |
| TestAmerica Buffalo | New Jersey | NELAC | 2 | NY455 |
| TestAmerica Buffalo | New York | NELAC | 2 | 10026 |
| TestAmerica Buffalo | North Dakota | State Program | 8 | R-176 |
| TestAmerica Buffalo | Oklahoma | State Program | 6 | 9421 |
| TestAmerica Buffalo | Oregon | NELAC | 10 | NY200003 |
| TestAmerica Buffalo | Pennsylvania | NELAC | 3 | 68-00281 |
| TestAmerica Buffalo | Tennessee | State Program | 4 | TN02970 |
| TestAmerica Buffalo | Texas | NELAC | 6 | T104704412-08-TX |
| TestAmerica Buffalo | USDA | Federal | | P330-08-00242 |
| TestAmerica Buffalo | Virginia | NELAC | 3 | 460185 |
| TestAmerica Buffalo | Virginia | State Program | 3 | 278 |
| TestAmerica Buffalo | Washington | State Program | 10 | C1677 |
| TestAmerica Buffalo | West Virginia DEP | State Program | 3 | 252 |
| TestAmerica Buffalo | Wisconsin | State Program | 5 | 998310390 |

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 480-21709-1

Job Description: NYSDEC-Standby VESTAL

For:
Malcolm Pirnie, Inc. Invoice to Arcadis
855 Route 146
Suite 210
Clifton Park, NY 12065

Attention: Mr. Jeremy Wyckoff

Approved for release.
Joe Giacomazza
Project Administrator
7/2/2012 12:43 PM

Designee for
Sally Hoffman
Project Manager II
sally.hoffman@testamericainc.com
07/02/2012

The test results in this report meet all NELAP requirements for analytes for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this test report should be directed to the TestAmerica Project Manager who has signed this report. TestAmerica Buffalo NELAC Certifications: CADPH 01169CA, FLDOH E87672, ILEPA 200003, KSDOH E-10187, LADEQ 30708, MDH 036-999-337, NHELAP 2973, NJDEP NY455, NHDOH 10026, ORELAP NY200003, PADEP 68-00281, TXCEQ T-104704412-10-1

# Table of Contents

# Table of Contents

**Job Narrative**
**480-21709-1**

**Comments**
No additional comments.

**Receipt**
The samples were received on 6/22/2012 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8º C.

**GC/MS VOA**
Method 8260B: The following sample was diluted due to the abundance of target analytes: WELL 1-A INF (480-21709-1). Elevated reporting limits (RLs) are provided.

No other analytical or quality issues were noted.

## SAMPLE SUMMARY

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-21709-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 480-21709-1 | WELL 1-A INF | Water | 06/21/2012 0000 | 06/22/2012 0900 |
| 480-21709-2 | WELL 1-A EFF | Water | 06/21/2012 0000 | 06/22/2012 0900 |
| 480-21709-3 | TRIP BLANK | Water | 06/21/2012 0000 | 06/22/2012 0900 |

## EXECUTIVE SUMMARY - Detections

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-21709-1

| Lab Sample ID / Analyte | Client Sample ID | Result | Qualifier | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **480-21709-1** | **WELL 1-A INF** | | | | | |
| 1,1,1-Trichloroethane | | 190 | | 2.0 | ug/L | 8260B |
| 1,1-Dichloroethane | | 25 | | 2.0 | ug/L | 8260B |
| 1,1-Dichloroethene | | 16 | | 2.0 | ug/L | 8260B |
| cis-1,2-Dichloroethene | | 56 | | 2.0 | ug/L | 8260B |
| Trichloroethene | | 58 | | 2.0 | ug/L | 8260B |
| Vinyl chloride | | 7.8 | | 2.0 | ug/L | 8260B |

# METHOD SUMMARY

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-21709-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix Water** | | | |
| Volatile Organic Compounds (GC/MS) | TAL BUF | SW846 8260B | |
| Purge and Trap | TAL BUF | | SW846 5030B |

**Lab References:**

TAL BUF = TestAmerica Buffalo

**Method References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-21709-1

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 8260B | Larson, Renee | RL |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-21709-1

**Client Sample ID:** **WELL 1-A INF**

Lab Sample ID: 480-21709-1
Client Matrix: Water

Date Sampled: 06/21/2012 0000
Date Received: 06/22/2012 0900

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 480-70449 | Instrument ID: | HP5973C |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | C20302.D |
| Dilution: | 2.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 06/29/2012 0222 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 06/29/2012 0222 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | 190 | | 1.6 | 2.0 |
| 1,1,2,2-Tetrachloroethane | 2.0 | U | 0.42 | 2.0 |
| 1,1,2-Trichloroethane | 2.0 | U | 0.46 | 2.0 |
| 1,1-Dichloroethane | 25 | | 0.76 | 2.0 |
| 1,1-Dichloroethene | 16 | | 0.58 | 2.0 |
| 1,2-Dibromoethane | 2.0 | U | 1.5 | 2.0 |
| 1,2-Dichloroethane | 2.0 | U | 0.42 | 2.0 |
| 1,2-Dichloropropane | 2.0 | U | 1.4 | 2.0 |
| 2-Hexanone | 10 | U | 2.5 | 10 |
| 2-Butanone (MEK) | 20 | U | 2.6 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 10 | U | 4.2 | 10 |
| Acetone | 20 | U | 6.0 | 20 |
| Benzene | 2.0 | U | 0.82 | 2.0 |
| Bromodichloromethane | 2.0 | U | 0.78 | 2.0 |
| Bromoform | 2.0 | U | 0.52 | 2.0 |
| Bromomethane | 2.0 | U | 1.4 | 2.0 |
| Carbon disulfide | 2.0 | U | 0.38 | 2.0 |
| Carbon tetrachloride | 2.0 | U | 0.54 | 2.0 |
| Chlorobenzene | 2.0 | U | 1.5 | 2.0 |
| Dibromochloromethane | 2.0 | U | 0.64 | 2.0 |
| Chloroethane | 2.0 | U | 0.64 | 2.0 |
| Chloroform | 2.0 | U | 0.68 | 2.0 |
| Chloromethane | 2.0 | U | 0.70 | 2.0 |
| cis-1,2-Dichloroethene | 56 | | 1.6 | 2.0 |
| cis-1,3-Dichloropropene | 2.0 | U | 0.72 | 2.0 |
| Ethylbenzene | 2.0 | U | 1.5 | 2.0 |
| Methylene Chloride | 2.0 | U | 0.88 | 2.0 |
| Styrene | 2.0 | U | 1.5 | 2.0 |
| Tetrachloroethene | 2.0 | U | 0.72 | 2.0 |
| Toluene | 2.0 | U | 1.0 | 2.0 |
| trans-1,2-Dichloroethene | 2.0 | U | 1.8 | 2.0 |
| trans-1,3-Dichloropropene | 2.0 | U | 0.74 | 2.0 |
| Trichloroethene | 58 | | 0.92 | 2.0 |
| Vinyl chloride | 7.8 | | 1.8 | 2.0 |
| Xylenes, Total | 4.0 | U | 1.3 | 4.0 |
| m,p-Xylene | 4.0 | U | 1.3 | 4.0 |
| o-Xylene | 2.0 | U | 1.5 | 2.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 96 | | 66 - 137 |
| Toluene-d8 (Surr) | 100 | | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 100 | | 73 - 120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-21709-1

**Client Sample ID:** **WELL 1-A EFF**

Lab Sample ID: 480-21709-2
Client Matrix: Water

Date Sampled: 06/21/2012 0000
Date Received: 06/22/2012 0900

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 480-70449 | Instrument ID: | HP5973C |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | C20303.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 06/29/2012 0248 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 06/29/2012 0248 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | 1.0 | U | 0.82 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.23 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.38 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.29 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.73 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.72 | 1.0 |
| 2-Hexanone | 5.0 | U | 1.2 | 5.0 |
| 2-Butanone (MEK) | 10 | U | 1.3 | 10 |
| 4-Methyl-2-pentanone (MIBK) | 5.0 | U | 2.1 | 5.0 |
| Acetone | 10 | U | 3.0 | 10 |
| Benzene | 1.0 | U | 0.41 | 1.0 |
| Bromodichloromethane | 1.0 | U | 0.39 | 1.0 |
| Bromoform | 1.0 | U | 0.26 | 1.0 |
| Bromomethane | 1.0 | U | 0.69 | 1.0 |
| Carbon disulfide | 1.0 | U | 0.19 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.27 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.75 | 1.0 |
| Dibromochloromethane | 1.0 | U | 0.32 | 1.0 |
| Chloroethane | 1.0 | U | 0.32 | 1.0 |
| Chloroform | 1.0 | U | 0.34 | 1.0 |
| Chloromethane | 1.0 | U | 0.35 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.81 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.36 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.74 | 1.0 |
| Methylene Chloride | 1.0 | U | 0.44 | 1.0 |
| Styrene | 1.0 | U | 0.73 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.36 | 1.0 |
| Toluene | 1.0 | U | 0.51 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.90 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.37 | 1.0 |
| Trichloroethene | 1.0 | U | 0.46 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.90 | 1.0 |
| Xylenes, Total | 2.0 | U | 0.66 | 2.0 |
| m,p-Xylene | 2.0 | U | 0.66 | 2.0 |
| o-Xylene | 1.0 | U | 0.76 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 95 | | 66 - 137 |
| Toluene-d8 (Surr) | 98 | | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 99 | | 73 - 120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-21709-1

**Client Sample ID:** **TRIP BLANK**

Lab Sample ID: 480-21709-3
Client Matrix: Water

Date Sampled: 06/21/2012 0000
Date Received: 06/22/2012 0900

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 480-70449 | Instrument ID: | HP5973C |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | C20304.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 06/29/2012 0313 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | 06/29/2012 0313 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | 1.0 | U | 0.82 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.23 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.38 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.29 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.73 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.72 | 1.0 |
| 2-Hexanone | 5.0 | U | 1.2 | 5.0 |
| 2-Butanone (MEK) | 10 | U | 1.3 | 10 |
| 4-Methyl-2-pentanone (MIBK) | 5.0 | U | 2.1 | 5.0 |
| Acetone | 10 | U | 3.0 | 10 |
| Benzene | 1.0 | U | 0.41 | 1.0 |
| Bromodichloromethane | 1.0 | U | 0.39 | 1.0 |
| Bromoform | 1.0 | U | 0.26 | 1.0 |
| Bromomethane | 1.0 | U | 0.69 | 1.0 |
| Carbon disulfide | 1.0 | U | 0.19 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.27 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.75 | 1.0 |
| Dibromochloromethane | 1.0 | U | 0.32 | 1.0 |
| Chloroethane | 1.0 | U | 0.32 | 1.0 |
| Chloroform | 1.0 | U | 0.34 | 1.0 |
| Chloromethane | 1.0 | U | 0.35 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.81 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.36 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.74 | 1.0 |
| Methylene Chloride | 1.0 | U | 0.44 | 1.0 |
| Styrene | 1.0 | U | 0.73 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.36 | 1.0 |
| Toluene | 1.0 | U | 0.51 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.90 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.37 | 1.0 |
| Trichloroethene | 1.0 | U | 0.46 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.90 | 1.0 |
| Xylenes, Total | 2.0 | U | 0.66 | 2.0 |
| m,p-Xylene | 2.0 | U | 0.66 | 2.0 |
| o-Xylene | 1.0 | U | 0.76 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 95 | | 66 - 137 |
| Toluene-d8 (Surr) | 98 | | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 98 | | 73 - 120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-21709-1

## Surrogate Recovery Report

**8260B Volatile Organic Compounds (GC/MS)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | DCA %Rec | TOL %Rec | BFB %Rec |
|---|---|---|---|---|
| 480-21709-1 | WELL 1-A INF | 96 | 100 | 100 |
| 480-21709-2 | WELL 1-A EFF | 95 | 98 | 99 |
| 480-21709-3 | TRIP BLANK | 95 | 98 | 98 |
| MB 480-70449/5 | | 94 | 101 | 100 |
| LCS 480-70449/4 | | 96 | 100 | 102 |

| Surrogate | Acceptance Limits |
|---|---|
| DCA = 1,2-Dichloroethane-d4 (Surr) | 66-137 |
| TOL = Toluene-d8 (Surr) | 71-126 |
| BFB = 4-Bromofluorobenzene (Surr) | 73-120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-21709-1

**Method Blank - Batch: 480-70449**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 480-70449/5 | Analysis Batch: | 480-70449 | Instrument ID: | HP5973C |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C20286.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 06/28/2012 1922 | Units: | ug/L | Final Weight/Volume: | 5 mL |
| Prep Date: | 06/28/2012 1922 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | 1.0 | U | 0.82 | 1.0 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,1,2-Trichloroethane | 1.0 | U | 0.23 | 1.0 |
| 1,1-Dichloroethane | 1.0 | U | 0.38 | 1.0 |
| 1,1-Dichloroethene | 1.0 | U | 0.29 | 1.0 |
| 1,2-Dibromoethane | 1.0 | U | 0.73 | 1.0 |
| 1,2-Dichloroethane | 1.0 | U | 0.21 | 1.0 |
| 1,2-Dichloropropane | 1.0 | U | 0.72 | 1.0 |
| 2-Hexanone | 5.0 | U | 1.2 | 5.0 |
| 2-Butanone (MEK) | 10 | U | 1.3 | 10 |
| 4-Methyl-2-pentanone (MIBK) | 5.0 | U | 2.1 | 5.0 |
| Acetone | 10 | U | 3.0 | 10 |
| Benzene | 1.0 | U | 0.41 | 1.0 |
| Bromodichloromethane | 1.0 | U | 0.39 | 1.0 |
| Bromoform | 1.0 | U | 0.26 | 1.0 |
| Bromomethane | 1.0 | U | 0.69 | 1.0 |
| Carbon disulfide | 1.0 | U | 0.19 | 1.0 |
| Carbon tetrachloride | 1.0 | U | 0.27 | 1.0 |
| Chlorobenzene | 1.0 | U | 0.75 | 1.0 |
| Dibromochloromethane | 1.0 | U | 0.32 | 1.0 |
| Chloroethane | 1.0 | U | 0.32 | 1.0 |
| Chloroform | 1.0 | U | 0.34 | 1.0 |
| Chloromethane | 1.0 | U | 0.35 | 1.0 |
| cis-1,2-Dichloroethene | 1.0 | U | 0.81 | 1.0 |
| cis-1,3-Dichloropropene | 1.0 | U | 0.36 | 1.0 |
| Ethylbenzene | 1.0 | U | 0.74 | 1.0 |
| Methylene Chloride | 1.0 | U | 0.44 | 1.0 |
| Styrene | 1.0 | U | 0.73 | 1.0 |
| Tetrachloroethene | 1.0 | U | 0.36 | 1.0 |
| Toluene | 1.0 | U | 0.51 | 1.0 |
| trans-1,2-Dichloroethene | 1.0 | U | 0.90 | 1.0 |
| trans-1,3-Dichloropropene | 1.0 | U | 0.37 | 1.0 |
| Trichloroethene | 1.0 | U | 0.46 | 1.0 |
| Vinyl chloride | 1.0 | U | 0.90 | 1.0 |
| Xylenes, Total | 2.0 | U | 0.66 | 2.0 |
| m,p-Xylene | 2.0 | U | 0.66 | 2.0 |
| o-Xylene | 1.0 | U | 0.76 | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 94 | 66 - 137 |
| Toluene-d8 (Surr) | 101 | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 100 | 73 - 120 |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-21709-1

**Lab Control Sample - Batch: 480-70449**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 480-70449/4 | Analysis Batch: | 480-70449 | Instrument ID: | HP5973C |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C20285.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 06/28/2012 1852 | Units: | ug/L | Final Weight/Volume: | 5 mL |
| Prep Date: | 06/28/2012 1852 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 1,1-Dichloroethane | 25.0 | 24.7 | 99 | 71 - 129 | |
| 1,1-Dichloroethene | 25.0 | 24.0 | 96 | 65 - 138 | |
| 1,2-Dichloroethane | 25.0 | 25.4 | 102 | 75 - 127 | |
| Benzene | 25.0 | 24.4 | 98 | 71 - 124 | |
| Chlorobenzene | 25.0 | 25.1 | 100 | 72 - 120 | |
| cis-1,2-Dichloroethene | 25.0 | 24.4 | 98 | 74 - 124 | |
| Ethylbenzene | 25.0 | 24.9 | 100 | 77 - 123 | |
| Tetrachloroethene | 25.0 | 25.2 | 101 | 74 - 122 | |
| Toluene | 25.0 | 24.5 | 98 | 70 - 122 | |
| trans-1,2-Dichloroethene | 25.0 | 23.7 | 95 | 73 - 127 | |
| Trichloroethene | 25.0 | 24.9 | 100 | 74 - 123 | |
| m,p-Xylene | 50.0 | 50.0 | 100 | 76 - 122 | |
| o-Xylene | 25.0 | 24.9 | 100 | 76 - 122 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 96 | 66 - 137 |
| Toluene-d8 (Surr) | 100 | 71 - 126 |
| 4-Bromofluorobenzene (Surr) | 102 | 73 - 120 |

## DATA REPORTING QUALIFIERS

Client: Malcolm Pirnie, Inc. Invoice to Arcadis Job Number: 480-21709-1

| Lab Section | Qualifier | Description |
|---|---|---|
| GC/MS VOA | | |
| | U | Analyzed for but not detected. |

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-21709-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS VOA** | | | | | |
| **Analysis Batch:480-70449** | | | | | |
| LCS 480-70449/4 | Lab Control Sample | T | Water | 8260B | |
| MB 480-70449/5 | Method Blank | T | Water | 8260B | |
| 480-21709-1 | WELL 1-A INF | T | Water | 8260B | |
| 480-21709-2 | WELL 1-A EFF | T | Water | 8260B | |
| 480-21709-3 | TRIP BLANK | T | Water | 8260B | |

**Report Basis**

T = Total

Client: Malcolm Pirnie, Inc. Invoice to Arcadis

Job Number: 480-21709-1

## Laboratory Chronicle

**Lab ID:** 480-21709-1 **Client ID:** WELL 1-A INF

Sample Date/Time: 06/21/2012 00:00 Received Date/Time: 06/22/2012 09:00

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | 480-21709-A-1 | | 480-70449 | | 06/29/2012 02:22 | 2 | TAL BUF | RL |
| A:8260B | 480-21709-A-1 | | 480-70449 | | 06/29/2012 02:22 | 2 | TAL BUF | RL |

**Lab ID:** 480-21709-2 **Client ID:** WELL 1-A EFF

Sample Date/Time: 06/21/2012 00:00 Received Date/Time: 06/22/2012 09:00

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | 480-21709-A-2 | | 480-70449 | | 06/29/2012 02:48 | 1 | TAL BUF | RL |
| A:8260B | 480-21709-A-2 | | 480-70449 | | 06/29/2012 02:48 | 1 | TAL BUF | RL |

**Lab ID:** 480-21709-3 **Client ID:** TRIP BLANK

Sample Date/Time: 06/21/2012 00:00 Received Date/Time: 06/22/2012 09:00

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | 480-21709-A-3 | | 480-70449 | | 06/29/2012 03:13 | 1 | TAL BUF | RL |
| A:8260B | 480-21709-A-3 | | 480-70449 | | 06/29/2012 03:13 | 1 | TAL BUF | RL |

**Lab ID:** MB **Client ID:** N/A

Sample Date/Time: N/A Received Date/Time: N/A

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | MB 480-70449/5 | | 480-70449 | | 06/28/2012 19:22 | 1 | TAL BUF | RL |
| A:8260B | MB 480-70449/5 | | 480-70449 | | 06/28/2012 19:22 | 1 | TAL BUF | RL |

**Lab ID:** LCS **Client ID:** N/A

Sample Date/Time: N/A Received Date/Time: N/A

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:5030B | LCS 480-70449/4 | | 480-70449 | | 06/28/2012 18:52 | 1 | TAL BUF | RL |
| A:8260B | LCS 480-70449/4 | | 480-70449 | | 06/28/2012 18:52 | 1 | TAL BUF | RL |

**Lab References:**

TAL BUF = TestAmerica Buffalo

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-21709-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| **60COMP_WRK_00029** | 08/21/12 | 06/21/12 | Methanol, Lot DG256 | 20 mL | 60 COMP_STK_00010 | 1 mL | 1,1,1,2-Tetrachloroethane | 100 ug/mL |
| | | | | | | | 1,1,1-Trichloroethane | 100 ug/mL |
| | | | | | | | 1,1,2,2-Tetrachloroethane | 100 ug/mL |
| | | | | | | | 1,1,2-Trichloroethane | 100 ug/mL |
| | | | | | | | 1,1-Dichloroethane | 100 ug/mL |
| | | | | | | | 1,1-Dichloroethene | 100 ug/mL |
| | | | | | | | 1,1-Dichloropropene | 100 ug/mL |
| | | | | | | | 1,2,3-Trichlorobenzene | 100 ug/mL |
| | | | | | | | 1,2,3-Trichloropropane | 100 ug/mL |
| | | | | | | | 1,2,4-Trichlorobenzene | 100 ug/mL |
| | | | | | | | 1,2,4-Trimethylbenzene | 100 ug/mL |
| | | | | | | | 1,2-Dibromo-3-Chloropropane | 100 ug/mL |
| | | | | | | | 1,2-Dibromoethane | 100 ug/mL |
| | | | | | | | 1,2-Dichlorobenzene | 100 ug/mL |
| | | | | | | | 1,2-Dichloroethane | 100 ug/mL |
| | | | | | | | 1,2-Dichloropropane | 100 ug/mL |
| | | | | | | | 1,3,5-Trimethylbenzene | 100 ug/mL |
| | | | | | | | 1,3-Dichlorobenzene | 100 ug/mL |
| | | | | | | | 1,3-Dichloropropane | 100 ug/mL |
| | | | | | | | 1,4-Dichlorobenzene | 100 ug/mL |
| | | | | | | | 2,2-Dichloropropane | 100 ug/mL |
| | | | | | | | 2-Chlorotoluene | 100 ug/mL |
| | | | | | | | 4-Chlorotoluene | 100 ug/mL |
| | | | | | | | 4-Isopropyltoluene | 100 ug/mL |
| | | | | | | | Benzene | 100 ug/mL |
| | | | | | | | Bromobenzene | 100 ug/mL |
| | | | | | | | Bromodichloromethane | 100 ug/mL |
| | | | | | | | Bromoform | 100 ug/mL |
| | | | | | | | Bromomethane | 100 ug/mL |
| | | | | | | | Carbon tetrachloride | 100 ug/mL |
| | | | | | | | Chlorobenzene | 100 ug/mL |
| | | | | | | | Chlorobromomethane | 100 ug/mL |
| | | | | | | | Chloroethane | 100 ug/mL |
| | | | | | | | Chloroform | 100 ug/mL |
| | | | | | | | Chloromethane | 100 ug/mL |
| | | | | | | | cis-1,2-Dichloroethene | 100 ug/mL |
| | | | | | | | cis-1,3-Dichloropropene | 100 ug/mL |
| | | | | | | | Dibromochloromethane | 100 ug/mL |
| | | | | | | | Dibromomethane | 100 ug/mL |
| | | | | | | | Dichlorodifluoromethane | 100 ug/mL |
| | | | | | | | Ethylbenzene | 100 ug/mL |
| | | | | | | | Hexachlorobutadiene | 100 ug/mL |
| | | | | | | | Isopropylbenzene | 100 ug/mL |
| | | | | | | | m,p-Xylene | 200 ug/mL |
| | | | | | | | Methylene Chloride | 100 ug/mL |
| | | | | | | | n-Butylbenzene | 100 ug/mL |
| | | | | | | | N-Propylbenzene | 100 ug/mL |
| | | | | | | | Naphthalene | 100 ug/mL |
| | | | | | | | o-Xylene | 100 ug/mL |
| | | | | | | | sec-Butylbenzene | 100 ug/mL |

Lab Name: TestAmerica Buffalo Job No.: 480-21709-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Styrene | 100 ug/mL |
| | | | | | | | tert-Butylbenzene | 100 ug/mL |
| | | | | | | | Tetrachloroethene | 100 ug/mL |
| | | | | | | | Toluene | 100 ug/mL |
| | | | | | | | trans-1,2-Dichloroethene | 100 ug/mL |
| | | | | | | | trans-1,3-Dichloropropene | 100 ug/mL |
| | | | | | | | Trichloroethene | 100 ug/mL |
| | | | | | | | Trichlorofluoromethane | 100 ug/mL |
| | | | | | | | Vinyl chloride | 100 ug/mL |
| | | | | | | | Xylenes, Total | 300 ug/mL |
| .60 COMP_STK_00010 | 07/31/14 | | Ultra Scientific, Lot CH-1896 | | (Purchased Reagent) | | 1,1,1,2-Tetrachloroethane | 2000 ug/mL |
| | | | | | | | 1,1,1-Trichloroethane | 2000 ug/mL |
| | | | | | | | 1,1,2,2-Tetrachloroethane | 2000 ug/mL |
| | | | | | | | 1,1,2-Trichloroethane | 2000 ug/mL |
| | | | | | | | 1,1-Dichloroethane | 2000 ug/mL |
| | | | | | | | 1,1-Dichloroethene | 2000 ug/mL |
| | | | | | | | 1,1-Dichloropropene | 2000 ug/mL |
| | | | | | | | 1,2,3-Trichlorobenzene | 2000 ug/mL |
| | | | | | | | 1,2,3-Trichloropropane | 2000 ug/mL |
| | | | | | | | 1,2,4-Trichlorobenzene | 2000 ug/mL |
| | | | | | | | 1,2,4-Trimethylbenzene | 2000 ug/mL |
| | | | | | | | 1,2-Dibromo-3-Chloropropane | 2000 ug/mL |
| | | | | | | | 1,2-Dibromoethane | 2000 ug/mL |
| | | | | | | | 1,2-Dichlorobenzene | 2000 ug/mL |
| | | | | | | | 1,2-Dichloroethane | 2000 ug/mL |
| | | | | | | | 1,2-Dichloropropane | 2000 ug/mL |
| | | | | | | | 1,3,5-Trimethylbenzene | 2000 ug/mL |
| | | | | | | | 1,3-Dichlorobenzene | 2000 ug/mL |
| | | | | | | | 1,3-Dichloropropane | 2000 ug/mL |
| | | | | | | | 1,4-Dichlorobenzene | 2000 ug/mL |
| | | | | | | | 2,2-Dichloropropane | 2000 ug/mL |
| | | | | | | | 2-Chlorotoluene | 2000 ug/mL |
| | | | | | | | 4-Chlorotoluene | 2000 ug/mL |
| | | | | | | | 4-Isopropyltoluene | 2000 ug/mL |
| | | | | | | | Benzene | 2000 ug/mL |
| | | | | | | | Bromobenzene | 2000 ug/mL |
| | | | | | | | Bromodichloromethane | 2000 ug/mL |
| | | | | | | | Bromoform | 2000 ug/mL |
| | | | | | | | Bromomethane | 2000 ug/mL |
| | | | | | | | Carbon tetrachloride | 2000 ug/mL |
| | | | | | | | Chlorobenzene | 2000 ug/mL |
| | | | | | | | Chlorobromomethane | 2000 ug/mL |
| | | | | | | | Chloroethane | 2000 ug/mL |
| | | | | | | | Chloroform | 2000 ug/mL |
| | | | | | | | Chloromethane | 2000 ug/mL |
| | | | | | | | cis-1,2-Dichloroethene | 2000 ug/mL |
| | | | | | | | cis-1,3-Dichloropropene | 2000 ug/mL |
| | | | | | | | Dibromochloromethane | 2000 ug/mL |
| | | | | | | | Dibromomethane | 2000 ug/mL |
| | | | | | | | Dichlorodifluoromethane | 2000 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-21709-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Ethylbenzene | 2000 ug/mL |
| | | | | | | | Hexachlorobutadiene | 2000 ug/mL |
| | | | | | | | Isopropylbenzene | 2000 ug/mL |
| | | | | | | | m,p-Xylene | 4000 ug/mL |
| | | | | | | | Methylene Chloride | 2000 ug/mL |
| | | | | | | | n-Butylbenzene | 2000 ug/mL |
| | | | | | | | N-Propylbenzene | 2000 ug/mL |
| | | | | | | | Naphthalene | 2000 ug/mL |
| | | | | | | | o-Xylene | 2000 ug/mL |
| | | | | | | | sec-Butylbenzene | 2000 ug/mL |
| | | | | | | | Styrene | 2000 ug/mL |
| | | | | | | | tert-Butylbenzene | 2000 ug/mL |
| | | | | | | | Tetrachloroethene | 2000 ug/mL |
| | | | | | | | Toluene | 2000 ug/mL |
| | | | | | | | trans-1,2-Dichloroethene | 2000 ug/mL |
| | | | | | | | trans-1,3-Dichloropropene | 2000 ug/mL |
| | | | | | | | Trichloroethene | 2000 ug/mL |
| | | | | | | | Trichlorofluoromethane | 2000 ug/mL |
| | | | | | | | Vinyl chloride | 2000 ug/mL |
| | | | | | | | Xylenes, Total | 6000 ug/mL |
| **8260+_SS_WRK_00027** | 07/24/12 | 05/24/12 | Methanol, Lot DF369 | 20 mL | 2-CLEVE SS_00053 | 1 mL | 2-Chloroethyl vinyl ether | 500 mg/L |
| | | | | | 2-CLEVE SS_00054 | 1 mL | 2-Chloroethyl vinyl ether | 500 mg/L |
| | | | | | 8260+#1 SS_ST_00056 | 1 mL | 1,1,2-Trichloro-1,2,2-trifluoroethane | 100 mg/L |
| | | | | | | | Acetonitrile | 4000 mg/L |
| | | | | | | | Carbon disulfide | 100 mg/L |
| | | | | | | | Cyclohexane | 100 mg/L |
| | | | | | | | Ethyl methacrylate | 100 mg/L |
| | | | | | | | Methyl acetate | 100 mg/L |
| | | | | | | | Methyl tert-butyl ether | 100 mg/L |
| | | | | | | | Methylcyclohexane | 100 mg/L |
| | | | | | | | Tetrahydrofuran | 500 mg/L |
| | | | | | | | trans-1,4-Dichloro-2-butene | 500 mg/L |
| | | | | | 8260+#1 SS_ST_00061 | 1 mL | 1,1,2-Trichloro-1,2,2-trifluoroethane | 100 mg/L |
| | | | | | | | Acetonitrile | 4000 mg/L |
| | | | | | | | Carbon disulfide | 100 mg/L |
| | | | | | | | Cyclohexane | 100 mg/L |
| | | | | | | | Ethyl methacrylate | 100 mg/L |
| | | | | | | | Methyl acetate | 100 mg/L |
| | | | | | | | Methyl tert-butyl ether | 100 mg/L |
| | | | | | | | Methylcyclohexane | 100 mg/L |
| | | | | | | | Tetrahydrofuran | 500 mg/L |
| | | | | | | | trans-1,4-Dichloro-2-butene | 500 mg/L |
| | | | | | 8260+#2 SS_ST_00063 | 1 mL | 2-Butanone (MEK) | 500 mg/L |
| | | | | | | | 2-Hexanone | 500 mg/L |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 500 mg/L |
| | | | | | | | Acetone | 500 mg/L |
| | | | | | | | Iodomethane | 100 mg/L |
| | | | | | | | Vinyl acetate | 500 mg/L |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-21709-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | 8260+#2 SS_ST_00064 | 1 mL | 2-Butanone (MEK) | 500 mg/L |
| | | | | | | | 2-Hexanone | 500 mg/L |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 500 mg/L |
| | | | | | | | Acetone | 500 mg/L |
| | | | | | | | Iodomethane | 100 mg/L |
| | | | | | | | Vinyl acetate | 500 mg/L |
| | | | | | 8260+#3SS_STK_00056 | 1 mL | Acrolein | 2000 mg/L |
| | | | | | | | Acrylonitrile | 500 mg/L |
| | | | | | 8260+#3SS_STK_00057 | 1 mL | Acrolein | 2000 mg/L |
| | | | | | | | Acrylonitrile | 500 mg/L |
| .2-CLEVE SS_00053 | 04/30/13 | | Ultra Scientific, Lot CG-0850 | | (Purchased Reagent) | | 2-Chloroethyl vinyl ether | 5000 ug/mL |
| .2-CLEVE SS_00054 | 04/30/13 | | Ultra Scientific, Lot CG-0850 | | (Purchased Reagent) | | 2-Chloroethyl vinyl ether | 5000 ug/mL |
| .8260+#1 SS_ST_00056 | 10/31/12 | | Supelco, Lot LB88224 | | (Purchased Reagent) | | 1,1,2-Trichloro-1,2,2-trifluoroethane | 1000 ug/mL |
| | | | | | | | Acetonitrile | 40000 ug/mL |
| | | | | | | | Carbon disulfide | 1000 ug/mL |
| | | | | | | | Cyclohexane | 1000 ug/mL |
| | | | | | | | Ethyl methacrylate | 1000 ug/mL |
| | | | | | | | Methyl acetate | 1000 ug/mL |
| | | | | | | | Methyl tert-butyl ether | 1000 ug/mL |
| | | | | | | | Methylcyclohexane | 1000 ug/mL |
| | | | | | | | Tetrahydrofuran | 5000 ug/mL |
| | | | | | | | trans-1,4-Dichloro-2-butene | 5000 ug/mL |
| .8260+#1 SS_ST_00061 | 10/31/12 | | Supelco, Lot LB88224 | | (Purchased Reagent) | | 1,1,2-Trichloro-1,2,2-trifluoroethane | 1000 ug/mL |
| | | | | | | | Acetonitrile | 40000 ug/mL |
| | | | | | | | Carbon disulfide | 1000 ug/mL |
| | | | | | | | Cyclohexane | 1000 ug/mL |
| | | | | | | | Ethyl methacrylate | 1000 ug/mL |
| | | | | | | | Methyl acetate | 1000 ug/mL |
| | | | | | | | Methyl tert-butyl ether | 1000 ug/mL |
| | | | | | | | Methylcyclohexane | 1000 ug/mL |
| | | | | | | | Tetrahydrofuran | 5000 ug/mL |
| | | | | | | | trans-1,4-Dichloro-2-butene | 5000 ug/mL |
| .8260+#2 SS_ST_00063 | 01/31/13 | | Supelco, Lot LB90517 | | (Purchased Reagent) | | 2-Butanone (MEK) | 5000 ug/mL |
| | | | | | | | 2-Hexanone | 5000 ug/mL |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 5000 ug/mL |
| | | | | | | | Acetone | 5000 ug/mL |
| | | | | | | | Iodomethane | 1000 ug/mL |
| | | | | | | | Vinyl acetate | 5000 ug/mL |
| .8260+#2 SS_ST_00064 | 01/31/13 | | Supelco, Lot LB90517 | | (Purchased Reagent) | | 2-Butanone (MEK) | 5000 ug/mL |
| | | | | | | | 2-Hexanone | 5000 ug/mL |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 5000 ug/mL |
| | | | | | | | Acetone | 5000 ug/mL |
| | | | | | | | Iodomethane | 1000 ug/mL |
| | | | | | | | Vinyl acetate | 5000 ug/mL |
| .8260+#3SS_STK_00056 | 02/01/14 | | Supelco, Lot LB90736 | | (Purchased Reagent) | | Acrolein | 20000 ug/mL |
| | | | | | | | Acrylonitrile | 5000 ug/mL |
| .8260+#3SS_STK_00057 | 02/01/14 | | Supelco, Lot LB90736 | | (Purchased Reagent) | | Acrolein | 20000 ug/mL |
| | | | | | | | Acrylonitrile | 5000 ug/mL |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-21709-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| **8260+_SS_WRK_00028** | 08/19/12 | 05/24/12 | Methanol, Lot DG256 | 20 mL | 8260+#1 SS_ST_00062 | 1 mL | Carbon disulfide | 100 mg/L |
| | | | | | 8260+#1 SS_ST_00063 | 1 mL | Carbon disulfide | 100 mg/L |
| | | | | | 8260+#2 SS_ST_00066 | 1 mL | 2-Butanone (MEK) | 500 mg/L |
| | | | | | | | 2-Hexanone | 500 mg/L |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 500 mg/L |
| | | | | | | | Acetone | 500 mg/L |
| | | | | | 8260+#2 SS_ST_00067 | 1 mL | 2-Butanone (MEK) | 500 mg/L |
| | | | | | | | 2-Hexanone | 500 mg/L |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 500 mg/L |
| | | | | | | | Acetone | 500 mg/L |
| .8260+#1 SS_ST_00062 | 04/30/13 | | Supelco, Lot LB91821 | | (Purchased Reagent) | | Carbon disulfide | 1000 ug/mL |
| .8260+#1 SS_ST_00063 | 04/30/13 | | Supelco, Lot LB91821 | | (Purchased Reagent) | | Carbon disulfide | 1000 ug/mL |
| .8260+#2 SS_ST_00066 | 01/31/13 | | Supelco, Lot LB90517 | | (Purchased Reagent) | | 2-Butanone (MEK) | 5000 ug/mL |
| | | | | | | | 2-Hexanone | 5000 ug/mL |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 5000 ug/mL |
| | | | | | | | Acetone | 5000 ug/mL |
| .8260+#2 SS_ST_00067 | 01/31/13 | | Supelco, Lot LB90517 | | (Purchased Reagent) | | 2-Butanone (MEK) | 5000 ug/mL |
| | | | | | | | 2-Hexanone | 5000 ug/mL |
| | | | | | | | 4-Methyl-2-pentanone (MIBK) | 5000 ug/mL |
| | | | | | | | Acetone | 5000 ug/mL |
| **C_8260_IS_00015** | 07/24/12 | 05/24/12 | P&T Methanol, Lot DE997 | 10 mL | MV_IS_STK_00151 | 500 uL | 1,4-Dichlorobenzene-d4 | 125 ug/mL |
| | | | | | | | 1,4-Difluorobenzene | 125 ug/mL |
| | | | | | | | Chlorobenzene-d5 | 125 ug/mL |
| .MV_IS_STK_00151 | 08/31/16 | | Restek, Lot A083969 | | (Purchased Reagent) | | 1,4-Dichlorobenzene-d4 | 2500 ug/mL |
| | | | | | | | 1,4-Difluorobenzene | 2500 ug/mL |
| | | | | | | | Chlorobenzene-d5 | 2500 ug/mL |
| **C_8260_Surr_00015** | 07/24/12 | 05/24/12 | P&T Methanol, Lot DE369 | 10 mL | MV_SURR_STK_00214 | 500 uL | 1,2-Dichloroethane-d4 (Surr) | 125 ug/mL |
| | | | | | | | 4-Bromofluorobenzene (Surr) | 125 ug/mL |
| | | | | | | | Toluene-d8 (Surr) | 125 ug/mL |
| .MV_SURR_STK_00214 | 10/31/14 | | Ultra Scientific, Lot CH-2969 | | (Purchased Reagent) | | 1,2-Dichloroethane-d4 (Surr) | 2500 ug/mL |
| | | | | | | | 4-Bromofluorobenzene (Surr) | 2500 ug/mL |
| | | | | | | | Toluene-d8 (Surr) | 2500 ug/mL |

# Certification Summary

Client: Malcolm Pirnie, Inc. Invoice to Arcadis
Project/Site: NYSDEC-Standby VESTAL

TestAmerica Job ID: 480-21709-1

| Laboratory | Authority | Program | EPA Region | Certification ID |
|---|---|---|---|---|
| TestAmerica Buffalo | Arkansas DEQ | State Program | 6 | 88-0686 |
| TestAmerica Buffalo | California | NELAC | 9 | 1169CA |
| TestAmerica Buffalo | Connecticut | State Program | 1 | PH-0568 |
| TestAmerica Buffalo | Georgia | State Program | 4 | 956 |
| TestAmerica Buffalo | Georgia | State Program | 4 | N/A |
| TestAmerica Buffalo | Illinois | NELAC | 5 | 200003 |
| TestAmerica Buffalo | Iowa | State Program | 7 | 374 |
| TestAmerica Buffalo | Kansas | NELAC | 7 | E-10187 |
| TestAmerica Buffalo | Kentucky | State Program | 4 | 90029 |
| TestAmerica Buffalo | Kentucky (UST) | State Program | 4 | 30 |
| TestAmerica Buffalo | Maine | State Program | 1 | NY00044 |
| TestAmerica Buffalo | Maryland | State Program | 3 | 294 |
| TestAmerica Buffalo | Michigan | State Program | 5 | 9937 |
| TestAmerica Buffalo | Minnesota | NELAC | 5 | 036-999-337 |
| TestAmerica Buffalo | New Hampshire | NELAC | 1 | 2337 |
| TestAmerica Buffalo | New Hampshire | NELAC | 1 | 2973 |
| TestAmerica Buffalo | New Jersey | NELAC | 2 | NY455 |
| TestAmerica Buffalo | New York | NELAC | 2 | 10026 |
| TestAmerica Buffalo | North Dakota | State Program | 8 | R-176 |
| TestAmerica Buffalo | Oklahoma | State Program | 6 | 9421 |
| TestAmerica Buffalo | Oregon | NELAC | 10 | NY200003 |
| TestAmerica Buffalo | Pennsylvania | NELAC | 3 | 68-00281 |
| TestAmerica Buffalo | Tennessee | State Program | 4 | TN02970 |
| TestAmerica Buffalo | Texas | NELAC | 6 | T104704412-11-2 |
| TestAmerica Buffalo | USDA | Federal | | P330-11-00386 |
| TestAmerica Buffalo | Virginia | NELAC | 3 | 460185 |
| TestAmerica Buffalo | Washington | State Program | 10 | C784 |
| TestAmerica Buffalo | West Virginia DEP | State Program | 3 | 252 |
| TestAmerica Buffalo | Wisconsin | State Program | 5 | 998310390 |

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

ARCADIS MALCOLM PIRNIE

## Appendix C

June 2011 Iso-Concentration Map

N.

N. MAIN ST.

OLD VESTAL RD.

GROUNDWATER TREATMENT PLANT

WELL 1-1A

WELL 1-1

SUSQUEHANNA RIVER

PUMPHOUSE RD.

WELL 1-3

WELL 1-2 & 1-2A

4009-10 **2**

4009-11A **1**

4009-11

4009-9 **5**

4009-15

4009-12

4009-12A **42**

4009-5 **98**

4009-4 **47**

4009-3 **141**

4009-16A

4009-16

4009-7 **674**

4009-8 **1692**

4009-18

4009-20

4009-21

4009-19

4009-17

4009-13A

4009-13

4009-14

4009-2 **33**

4009-1 **8**

STAGE RD.

4009-6

NYS RTE. 17

NYS RTE. 434

100

500

1000

1500

NOTE:
ALL CONCENTRATIONS MEASURED IN ug/l.

150 0 150 300

SCALE: 1" = 300'

## LEGEND:

- TOTAL VOCS ISOCONCENTRATION LINE
- ESTIMATED ISOCONCENTRATION LINE (LIMITED DATA)
- 4009-2 — APPROXIMATE MONITORING WELL LOCATION
- **1037** — TOTAL VOCS CONCENTRATION
- RAILROAD TRACKS
- ROADWAY/DRIVEWAY
- BUILDING
- EDGE OF RIVER

ARCADIS
Infrastructure · Water · Environment · Buildings

NYSDEC STANDBY CONTRACT NO. D004443-4
NYSDEC SITE NO. 7-04-009
VESTAL WATER SUPPLY
VESTAL, NEW YORK

TOTAL VOC CONCENTRATIONS (JUNE 2011)
SCALE: 1" = 300'

ARCADIS-US, INC.
SEPTEMBER 2011
FIGURE 4-4