

# BURGESS & NIPLE

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5085 Reed Rd. | Columbus, OH 43220 | 614.459.2050

Mr. Michael B. Nixon  
Superintendent  
City of Lancaster, Ohio  
Water/Water Pollution Control  
800 Lawrence Street  
Lancaster, OH 43130-9401

Re: Statistical Analysis –  
October 2017 Monitoring Event  
Lancaster Miller Park Source Water  
Assessment and Protection Program

December 20, 2017

Dear Mr. Nixon:

Burgess & Niple, Inc. (B&N) has prepared this report regarding the City of Lancaster, Ohio (City) Miller Park Source Water Assessment and Protection (SWAP) program (also known as the Wellhead Protection Program) to present the results of the latest statistical analyses completed on groundwater quality data obtained from the monitoring wells included in the SWAP program groundwater monitoring network. The City's SWAP program for their Miller Park Wellfield was endorsed by the Ohio Environmental Protection Agency (EPA) on April 18, 1997 (one of the first in the State of Ohio) along with the associated Groundwater Monitoring Plan. One of the objectives of the SWAP program is to establish and monitor the groundwater quality within one-year and five-year time-of-travel zones around the Miller Park Wellfield. Groundwater sampling was conducted quarterly for the first two years of implementation of the groundwater monitoring program. Subsequently, semiannual groundwater sampling was initiated in 1998. After 10 years of monitoring, the Superintendent of Water for the City has determined the sampling frequency in which the SWAP monitoring well network is sampled, which has typically been completed on a semiannual basis.

The groundwater monitoring program includes sampling of groundwater monitoring wells positioned around the Miller Park Wellfield and analyzing those samples for a designated list of potential constituents of concern (COCs). The analytical results are compared to U.S. EPA Primary and Secondary Maximum Contaminant Levels (MCLs) and Action Levels. These procedures are consistent with the Ohio EPA standards typical for a SWAP program in Ohio.

The City proactively initiated statistical analysis of the groundwater quality data in 2016 due to concerns regarding arsenic concentrations in groundwater within the vicinity of the Miller Park potable water supply wellfield. Specifically, the City received complaints that groundwater quality may have been impacted by construction activities associated with the new County Jail site at 342 W. Wheeling Street in Lancaster, Ohio, which is located along the south side of the Miller Park wellfield. B&N submitted a letter dated December 8, 2015 to the City that documented that arsenic is naturally occurring in groundwater within the Wisconsin Epoch glacial deposits. These glacial deposits are distributed throughout the Midwest and underlie the Miller Park Wellfield and surrounding area. The letter also stated that multiple Central Ohio municipalities have naturally occurring arsenic concentrations in groundwater within the sand and gravel aquifer that are above the U.S. EPA Primary MCL of 10 micrograms per liter ( $\mu\text{g/l}$ ). Concentrations in the vicinity of the Miller Park potable water supply wellfield have been documented to be more than 5 times higher than the U.S. EPA Primary MCL in the pre-treatment groundwater. However, some of the lowest arsenic concentrations have been reported in the vicinity of the new County Jail site. Although elevated concentrations of arsenic have been documented in the SWAP program monitoring wells and the City potable water supply wells, the existing treatment process at the City's water treatment facility has been effective at reducing these

naturally occurring concentrations within the sand and gravel aquifer to levels that are below the U.S. EPA Primary MCL in finished drinking water prior to distribution to the community. Completion of these statistical analyses will provide the City with an indication as to whether their water treatment process may need to be reevaluated to make sure the treated potable water supply continues to meet the applicable regulatory water quality standards.

The Groundwater Monitoring Plan for the Miller Park Wellfield defines a groundwater monitoring network of eight shallow monitoring wells (MW-1S, MW-2, MW-3, MW-4S, MW-5S, MW-6S, MW-7, and MW-8) and four deep monitoring wells (MW-1D, MW-4D, MW-5D, and MW-6D). Two additional monitoring wells (MW-9S within the shallow zone and MW-9D within the deep zone) were added to the monitoring network in 2015 to evaluate groundwater quality migrating toward the Miller Park Wellfield from the new County Jail site. **Figure 1** included in **Attachment 1** displays each of the monitoring well locations. The monitoring wells are sampled semiannually and analyzed for a list of various metals, inorganics, and volatile organic compounds (VOCs).

Statistical analyses were completed to identify trends of concentrations of those constituents that are monitored semiannually and have a U.S. EPA Primary MCL, which could pose a threat to human health or the environment. These parameters include antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, mercury, selenium, thallium, and various VOCs. Except for arsenic, barium, cyanide, and selenium, concentrations of each of the COCs were reported below the laboratory detection limit in each of the monitoring wells during the October 2017 monitoring event and were, thus, not evaluated. The following are the U.S. EPA Primary MCLs for the constituents detected in one or more of the monitoring wells during the most recent monitoring event:

Parameter	U.S. EPA Primary MCL
Arsenic	10 µg/l
Barium	2,000 µg/l
Cyanide	0.2 mg/l
Selenium	50 µg/l

The following summarizes the parameters detected and statistically evaluated during the October 2017 monitoring event by monitoring well:

Well	Parameter
<b>Shallow Zone</b>	
MW-1S	Arsenic and Barium
MW-2	Barium
MW-3	Arsenic and Barium
MW-4S	Arsenic and Barium
MW-5S	Barium and Cyanide
MW-6S	Barium
MW-7	Arsenic and Barium
MW-8	Barium and Selenium
MW-9S	Arsenic and Barium
<b>Deep Zone</b>	
MW-1D	Arsenic and Barium
MD-4D	Barium
MW-5D	Arsenic and Barium
MW-6D	Arsenic and Barium
MW-9D	Arsenic and Barium

Groundwater quality data were analyzed using Mann-Kendall trend analyses and time-versus-concentration plots. These statistical analyses were performed to identify trends and determine whether groundwater migrating towards the wellfield is a concern. Below are the results and discussions of these analyses. **Tables 1 and 2 in Attachment 2** include the historical groundwater quality data for the shallow zone and deep zone monitoring network, respectively, since 1995.

### **Regulatory Limit Exceedances**

Of the analytical results reported for the October 2017 monitoring event, the following concentrations exceeded the respective U.S. EPA Primary MCL:

Well	Parameter	Concentration	MCL
MW-3	Arsenic	30 µg/l	10 µg/l
MW-4S	Arsenic	11 µg/l	10 µg/l

As discussed above, naturally occurring arsenic concentrations have previously been documented to be above the U.S. Primary MCL within the sand and gravel deposits in the region. Historical arsenic concentrations have ranged from 1.9 µg/l to 39 µg/l in MW-3 and from 1.7 µg/l to 57 µg/l in MW-4S. The October 2017 arsenic results fall within the range of historical concentrations for both of the respective wells.

### **Mann-Kendall Trend Analyses**

In order to determine whether there is evidence of a statistically significant increasing or decreasing trend in concentrations, two-tailed Mann-Kendall trend analyses were completed. Analytical results reported from the initiation of the groundwater monitoring program in October 1995 through the most recent monitoring event were assessed to identify overall trends in concentration. Trends were determined to be statistically significant if the two-tailed test for an increasing trend or the two-tailed test for a decreasing trend was at or below an alpha of 0.02 (0.01 for each test). Copies of the two-tailed Mann-Kendall trend analyses are included in **Attachment 3**.

Based upon the trend analyses, the following constituents were identified to have an overall statistically increasing trend in concentration since October 1995:

#### Shallow Wells:

- Barium in MW-1S, MW-2, MW-4S, MW-8, and MW-9S;
- Selenium in MW-8; and,

#### Deep Wells

- Barium in MW-1D.

For those tests that were identified to indicate an overall statistically increasing trend since initiating the monitoring program, subsequent tests were completed on the ten most recent results to determine whether a statistical trend is evident over the latest sample data. Except for barium in MW-2 and MW-9S, no evidence of a statistically significant increasing trends were present, indicating that concentrations of these constituents have generally recently stabilized.

Evidence of overall groundwater quality improvements were identified by the determination of statistically significant decreasing trends in concentration for arsenic in MW-9S and MW-5D and barium in MW-5S and MW-6D.

### Time-Versus-Concentration Plots

The methodology of the Mann-Kendall trend analysis identifies the number of higher results compared to the number of lower results and determines whether there is statistical evidence that there are a significant amount of higher or lower results than the other. However, the test does not account for the magnitude in the difference of the individual results. Time-versus-concentration plots were constructed for each of the detected constituents with U.S. EPA Primary MCLs that were determined to have an overall statistically increasing trend during the October 2017 monitoring event. These plots provide a means to visually assess whether one or more historical values may be the cause of an overall increasing trend. Additional time-versus-concentration plots were completed on only the ten most recent results. Copies of the time-versus-concentration plots are provided in **Attachment 4**.

Based upon the time-versus-concentration plots, the following conclusions were made:

- The barium result reported for MW-1S in July 1996 (<200 µg/l) generated a lower concentration compared to the remaining data set when entered into the database as one-half the detection limit, which causes subsequent results to be viewed as an increasing trend. Upon looking at the 10 most recent results, only a slight increasing trend in concentrations is visually observed and the Mann-Kendall trend test concluded that there was no recent statistically significant increasing trend. Results (160 µg/l to 228 µg/l) are well below the U.S. EPA Primary MCL of 2,000 µg/l.
- Disregarding the result reported for MW-2 in July 1996 (<200 µg/l) that was entered as one-half the detection limit, barium concentrations reported between April 2015 and October 2017 (50 µg/l to 74 µg/l) appear to be higher than previous results (14 µg/l to 50 µg/l). Upon looking at the 10 most recent results, an increasing trend in concentrations is also visually observed and was concluded to be statistically significant. However, results (14 µg/l to 74 µg/l) remain to be well below the U.S. EPA Primary MCL of 2,000 µg/l.
- Barium concentrations reported for MW-4S appear to be increasing, both from the beginning of sampling as well as the 10 most recent results. However, the July 2017 (675 µg/l) and October 2017 (627 µg/l) results were both lower than the April 2017 concentration (721 µg/l), and all historical results (409 µg/l to 721 µg/l) remain to be less than one half the U.S. EPA Primary MCL of 2,000 µg/l.
- The barium result reported for MW-8 in July 1996 (<200 µg/l) generated a higher concentration compared to the remaining data set when entered into the database as one-half the detection limit, and an overall increasing trend is observed. Upon looking at the 10 most recent results, a recent increasing trend is also observed. However, concentrations only vary between 45 µg/l and 65 µg/l, which are well below the U.S. EPA Primary MCL of 2,000 µg/l, and the Mann-Kendall trend test concluded that there was no recent statistically significant increasing trend.
- Barium concentrations in MW-9S depict an overall increasing trend. However, data has only been collected from this well since April 2015, the well has been sampled on a more frequent basis than semiannually, and the increasing trend may be a result of seasonal fluctuations. Concentrations (393 µg/l to 571 µg/l) remain to be less than one half the U.S. EPA Primary MCL of 2,000 µg/l.
- Barium results reported for MW-1D since 1995 depict an overall increasing trend. Upon looking at the 10 most recent results, an increasing trend in concentrations is also visually observed. However, the Mann-Kendall trend test on the 10 most recent results concluded that there was no recent statistically significant increasing trend and all historical results (230 µg/l to 373 µg/l) are well below the U.S. EPA Primary MCL of 2,000 µg/l.

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- The selenium concentrations reported for MW-8 had a stretch of results reported as  $<5.0 \mu\text{g/l}$  between February 1997 and May 2001, which generated an overall increasing trend for subsequent detected concentrations. When looking at the 10 most recent results, a decreasing trend in concentrations is observed. All concentrations ( $<5.0 \mu\text{g/l}$  to  $16.6 \mu\text{g/l}$ ) are well below the U.S. EPA Primary MCL of  $50 \mu\text{g/l}$ .

### Conclusions

The latest arsenic concentrations reported for MW-3 and MW-4S exceeded the U.S. EPA Primary MCL. However, based upon the Mann-Kendall trend analyses, no statistically significant increasing trends in arsenic concentrations were identified in these wells. As discussed above and in the December 8, 2015 letter, arsenic is a naturally occurring element in the subsurface of the Midwest. Although elevated concentrations of arsenic have been documented in the SWAP program monitoring wells and the City potable water supply wells, the existing treatment process at the City's water treatment facility has been effective at reducing these naturally occurring concentrations within the sand and gravel aquifer to levels that are below the U.S. EPA Primary MCL in finished drinking water prior to distribution to the community.

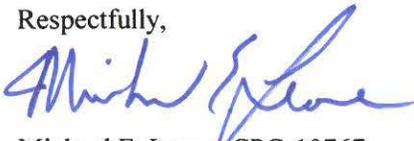
Although barium concentrations were determined to have a statistically significant increasing trend in MW-1S, MW-2, MW-4S, MW-8, MW-9S, and MW-1D, the 10 most recent analytical results concluded that there were no recent trends in MW-1S, MW-4S, MW-8, or MW-1D. The time-versus-concentration plots generated for both the entire data sets and the 10 most recent results for barium in MW-2 and MW-9S depict increasing trends; however, all barium results in MW-2 and MW-9S have been less than one half the U.S. EPA Primary MCL of  $2,000 \mu\text{g/l}$ . Also, data has only been collected from MW-9S since April 2015 and the well has been sampled on a more frequent basis than semiannually, which may have generated an increasing trend as a result of seasonal fluctuations.

Selenium concentrations in MW-8 had a stretch of results reported as  $<5.0 \mu\text{g/l}$  between February 1997 and May 2001, which generated an overall increasing trend for subsequent detected concentrations. Upon looking at the 10 most recent results, a decreasing trend in concentrations is observed. All results have been well below the U.S. EPA Primary MCL of  $50 \mu\text{g/l}$ .

There is no indication that concentrations of antimony, beryllium, cadmium, chromium, mercury, thallium, or any of the various organic compounds with U.S. EPA Primary MCLs monitored as part of the City's SWAP program for the Miller Park Wellfield will pose an issue with the City's water treatment facility, as each of these COCs was nondetect in each of the monitoring wells during the October 2017 monitoring event. Based upon the statistical analyses and time-versus-concentration plots completed on the detected arsenic, barium, and selenium results, it does not appear that groundwater quality surrounding the Miller Park Wellfield is changing at a rate that would cause the need to reevaluate the water treatment facility operations at this time as long as current treatment procedures remain in place. Moreover, based upon the data gathered to date, there is no indication of a release in the vicinity of the Miller Park Wellfield that would pose an immediate threat to the ability of the City's water treatment facility to meet Primary Drinking Water Standards.

If you have any questions, please do not hesitate to call.

Respectfully,



Michael E. Leone, CPG-10767  
Project Director

MEL:cmc  
Attachments

**ATTACHMENT 1**

**FIGURES**



**ATTACHMENT 2**

**TABLES**

**Table 1**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Shallow Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-1S																																	
			10/18/95	1/15/96	4/22/96	7/29/96	2/11/97	4/28/97	7/7/97	10/7/97	6/24/98	12/16/98	7/20/99	4/27/00	11/27/00	5/30/01	10/17/01	5/7/02	10/31/02	5/19/03	11/12/03	5/12/04	10/26/04	12/13/04	5/4/05	11/2/05	4/24/06	10/26/06	5/7/07	11/14/07	6/17/08	10/30/08	7/8/09	3/31/15		
<b>INORGANICS</b>																																				
ALUMINUM	ug/L	50 to 200 (S)	<50	<b>180</b>	<50	<200	<500	<500	<500	<500	<500	<500	<b>51</b>	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<25
ANTIMONY	ug/L	6 (P)	<5	<5	<5	<60	<b>4.00</b>	<4	<b>4.20</b>	<b>7.60</b>	<4	<4	<4	<4.0	<b>4.00</b>	<4	<4	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	--	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<4
ARSENIC	ug/L	10 (P)	<b>6.0</b>	<b>6.0</b>	<b>6.0</b>	<10	<b>9.7</b>	<b>8.4</b>	<b>6.4</b>	<b>8.4</b>	<b>7.2</b>	<b>8.0</b>	<b>9.1</b>	<b>6.4</b>	<b>6.0</b>	<b>10.0</b>	<b>12.0</b>	<b>6.8</b>	<b>6.5</b>	<b>5.5</b>	<b>6.2</b>	<b>5.9</b>	<b>6.3</b>	--	<b>6.5</b>	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<b>10.5</b>	<b>5.4</b>	<5.0	<b>4.0</b>	
BARIUM	ug/L	2,000 (P)	<b>180</b>	<b>170</b>	<b>160</b>	<200	<b>170</b>	<b>190</b>	<b>228</b>	<b>179</b>	<b>216</b>	<b>201</b>	<b>184</b>	<b>192</b>	<b>175</b>	<b>227</b>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<b>207</b>	
BERYLLIUM	ug/L	4 (P)	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<b>1.00</b>	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1	
CADMIUM	ug/L	5 (P)	<5	<5	<5	<5	<1	<1	<5.0	<5.0	<5.0	<5.0	<5.0	<5	<5	<5	<5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1	
CALCIUM	mg/L	--	<b>110</b>	<b>110</b>	<b>150</b>	<b>145</b>	<b>120</b>	<b>110</b>	<b>120</b>	<b>107</b>	<b>260</b>	<b>117</b>	<b>122</b>	<b>125</b>	<b>120</b>	<b>140</b>	<b>120</b>	<b>117</b>	<b>127</b>	<b>130</b>	<b>135</b>	<b>144</b>	<b>136</b>	--	<b>161</b>	<b>147</b>	<b>140</b>	<b>140</b>	<b>142</b>	<b>158</b>	<b>146</b>	<b>156</b>	<b>145</b>	<b>194</b>		
CHROMIUM	ug/L	100 (P)	<20	<20	<20	<10	<2	<2	<5.0	<5.0	<5.0	<5.0	<5.0	<5	<10	<10	<10	<5	<5	<5	<5	<5	<5	--	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5	
COBALT	ug/L	--	<20	<20	<20	<50	<100	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50	<10	<10	<20	<50	<50	<50	<50	<50	<50	<50	--	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25	
COPPER	ug/L	1,000 (S) / 1,300 (A)	<10	<10	<10	<25	<20	<20	<10	<10	<b>31.0</b>	<b>13.0</b>	<20	<10	<10	<10	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<50
CYANIDE	mg/L	0.2 (P)	<0.005	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
IRON	ug/L	300 (S)	<b>2400</b>	<b>3,000</b>	<b>2,500</b>	<b>2,000</b>	<b>3,200</b>	<b>2,600</b>	<b>2,590</b>	<b>2,400</b>	<b>2,400</b>	<b>2,800</b>	<b>2,500</b>	<b>3,100</b>	<b>3,010</b>	<b>3,340</b>	<b>3,830</b>	<b>2,800</b>	<b>2,840</b>	<b>2,870</b>	<b>2,930</b>	<b>3,580</b>	<b>2,030</b>	--	<b>3,120</b>	<b>1,610</b>	<b>1,510</b>	<b>1,170</b>	<b>1,950</b>	<b>1,550</b>	<b>2,410</b>	<b>885</b>	<b>2,720</b>	<b>755</b>		
LEAD	ug/L	15 (A)	<2	<2	<3	<3	<2	<2	<2	<2	<2	<2	<2	<2.0	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	--	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5		
MAGNESIUM	mg/L	--	<b>34.0</b>	<b>37.0</b>	<b>45.0</b>	<b>39.0</b>	<b>37.0</b>	<b>38.0</b>	<b>36.0</b>	<b>36.0</b>	<b>76.0</b>	<b>40.0</b>	<b>38.0</b>	<b>41.9</b>	<b>38.0</b>	<b>44.0</b>	<b>45.0</b>	<b>41.7</b>	<b>41.9</b>	<b>40.2</b>	<b>40.4</b>	<b>45.9</b>	<b>46.0</b>	--	<b>50.8</b>	<b>49.2</b>	<b>48.4</b>	<b>46.6</b>	<b>46.2</b>	<b>52.9</b>	<b>49.2</b>	<b>51.8</b>	<b>48.2</b>	<b>46.5</b>		
MANGANESE	ug/L	50 (S)	<b>200</b>	<b>220</b>	<b>510</b>	<b>500</b>	<b>260</b>	<b>300</b>	<b>270</b>	<b>200</b>	<b>319</b>	<b>213</b>	<b>215</b>	<b>267</b>	<b>270</b>	<b>320</b>	<b>320</b>	<b>273</b>	<b>251</b>	<b>299</b>	<b>253</b>	<b>364</b>	<b>309</b>	--	<b>385</b>	<b>506</b>	<b>401</b>	<b>489</b>	<b>488</b>	<b>721</b>	<b>456</b>	<b>661</b>	<b>448</b>	<b>281</b>		
MERCURY	ug/L	2 (P)	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		
NICKEL	ug/L	--	<20	<20	<20	<40	<40	<40	<20.0	<20.0	<20.0	<20.0	<20	<10	<10	<10	<20	<20	<20	<20	<20	<20	<20	--	<20	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
POTASSIUM	mg/L	--	<b>2.8</b>	<b>3.1</b>	<b>3.6</b>	<5	<b>3.0</b>	<b>3.8</b>	<b>3.4</b>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<b>5.7</b>	
SELENIUM	ug/L	50 (P)	<5	<5	<4	<5	<5	<5	<5	<5	<5	<5	<5	<5.0	<5	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5	
SILVER	ug/L	100 (S)	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	
SODIUM	mg/L	--	<b>51</b>	<b>56</b>	<b>62</b>	<b>56</b>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<b>132</b>	
SULFIDE	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	<b>1.0</b>	<1	<b>2.0</b>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<b>2.1</b>	<1.0	<0.05	
THALLIUM	ug/L	2 (P)	<2	<2	<2	<10	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1	<1	<1	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	--	<1.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.5		
TIN	ug/L	--	--	--	--	--	--	--	--	--	--	--	<100	<b>60.00</b>	<50	<50	<100	<100	<100	<100	<100	<100	<100	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<10		
VANADIUM	mg/L	--	<0.01	<0.01	<0.01	<0.05	<1	<1	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.025		
ZINC	ug/L	5,000 (S)	<b>30</b>	<b>10</b>	<b>10</b>	<b>21</b>	<10	<10	<10	<10	<b>10</b>	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	--	<20	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<10		
<b>VOC'S (METHOD 8260)</b>																																				
Acetone	ug/l	--	<50	<50	<50	<5	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	--	<50	<10	<10	<10	<10	<10	<10	<10	<10	<5.0		
Carbon Disulfide	ug/L	--	<5	<5	<5	<1	<10	<10	<10	<10	<10	<10	<10	<100	<100	<100	<10	<10	<10	<10	<10	<10	<10	--	<50	<1	<1	<1	<1	<1	<1	<1	<5.0			
MTBE	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5.0		
<b>FIELD PARAMETERS</b>																																				
pH	S.U.	6.5-8.5 (S)	<b>7.20</b>	<b>7.10</b>	<b>7.10</b>	<b>7.50</b>	<b>7.20</b>	<b>7.40</b>	<b>7.20</b>	<b>7.40</b>	<b>7.10</b>	<b>7.40</b>	<b>7.10</b>	<b>7.90</b>	<b>6.93</b>	<b>6.80</b>	<b>7.20</b>	<b>7.40</b>	<b>7.13</b>	<b>6.96</b>	<b>6.95</b>	<b>6.52</b>	<b>6.98</b>	--	<b>7.02</b>	<b>7.02</b>	<b>6.98</b>	<b>7.01</b>	<b>6.98</b>	<b>7.02</b>	<b>7.02</b>	<b>6.84</b>	<b>7.02</b>	<b>6.98</b>		
CONDUCTIVITY	umhos/cm	--	<b>751</b>	<b>847</b>	<b>1,087</b>	<b>870</b>	<b>1,175</b>	<b>1,050</b>	<b>1,100</b>	<b>1,000</b>	<b>980</b>	<b>1,000</b>	<b>940</b>	<b>1,060</b>	<b>1,169</b>	<b>1,040</b>	<b>1,120</b>	<b>960</b>	<b>1,035</b>	<b>851</b>	<b>1,105</b>	<b>871</b>	<b></b>													

**Table 1 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Shallow Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-1S (continued)			
			4/14/16	10/18/16	4/12/17	10/12/17
<b>INORGANICS</b>						
ALUMINUM	ug/L	50 to 200 (S)	<25	<25	<25	<25
ANTIMONY	ug/L	6 (P)	<4	<4	<4	<4
ARSENIC	ug/L	10 (P)	<b>3.0</b>	<3.0	<3.0	<b>4.0</b>
BARIIUM	ug/L	2,000 (P)	<b>191</b>	<b>214</b>	<b>199</b>	<b>199</b>
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1
CADMIUM	ug/L	5 (P)	<1	<1	<1	<1
CALCIUM	mg/L	--	<b>154</b>	<b>174</b>	<b>170</b>	<b>150</b>
CHROMIUM	ug/L	100 (P)	<5	<5	<5	<5
COBALT	ug/L	--	<25	<25	<25	<25
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50
CYANIDE	mg/L	0.2 (P)	<0.010	<0.010	<0.010	<0.010
IRON	ug/L	300 (S)	<80	<b>214</b>	<b>535</b>	<b>736</b>
LEAD	ug/L	15 (A)	<5	<5	<5	<5
MAGNESIUM	mg/L	--	<b>51.8</b>	<b>59.4</b>	<b>54.4</b>	<b>48.8</b>
MANGANESE	ug/L	50 (S)	<b>270</b>	<b>270</b>	<b>260</b>	<b>226</b>
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0
POTASSIUM	mg/L	--	<b>5.7</b>	<b>5.2</b>	<b>6.1</b>	<b>5.9</b>
SELENIUM	ug/L	50 (P)	<5	<5	<5	<5
SILVER	ug/L	100 (S)	<10	<10	<10	<10
SODIUM	mg/L	--	<b>123</b>	<b>139</b>	<b>122</b>	<b>124</b>
SULFIDE	mg/L	--	<0.05	<0.05	<0.05	<0.05
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5
TIN	ug/L	--	<10	<10	<10	<10
VANADIUM	mg/L	--	<0.025	<0.025	<0.025	<0.025
ZINC	ug/L	5,000 (S)	<10	<b>15</b>	<10	<10
<b>VOC'S (METHOD 8260)</b>						
Acetone	ug/l	--	<1.0	<5.0	<5.0	<5.0
Carbon Disulfide	ug/L	--	<1.0	<1.0	<1.0	<1.0
MTBE	ug/L	--	<1.0	<1.0	<1.0	<1.0

FIELD PARAMETERS						
pH	S.U.	6.5-8.5 (S)	<b>6.86</b>	<b>6.91</b>	<b>6.96</b>	<b>6.92</b>
CONDUCTIVITY	umhos/cm	--	<b>1,605</b>	<b>1,157</b>	<b>1,005</b>	<b>1,723</b>
TEMPERATURE	°C	--	<b>17.2</b>	<b>19.1</b>	<b>18.3</b>	<b>17.9</b>

(P) = Ohio EPA Primary Maximum Contaminant Level

(S) = Secondary Maximum Contaminant Level

(A) = Action Level

NA = NOT ANALYZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.



**Table 1 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Shallow Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-2 (continued)			
			4/21/16	10/18/16	4/13/17	10/12/17
<b>INORGANICS</b>						
ALUMINUM	ug/L	50 to 200 (S)	<25	<25	<25	<25
ANTIMONY	ug/L	6 (P)	<4	<4	<4	<4
ARSENIC	ug/L	10 (P)	<3.0	<3.0	<3.0	<3.0
BARIUM	ug/L	2,000 (P)	<b>55</b>	<b>50</b>	<b>67</b>	<b>68</b>
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1
CADMIUM	ug/L	5 (P)	<1	<1	<1	<1
CALCIUM	mg/L	--	<b>131</b>	<b>130</b>	<b>124</b>	<b>120</b>
CHROMIUM	ug/L	100 (P)	<5	<5	<5	<5
COBALT	ug/L	--	<25	<25	<25	<25
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50
CYANIDE	mg/L	0.2 (P)	<0.010	<0.010	<0.010	<0.010
IRON	ug/L	300 (S)	<b>136</b>	<80	<80	<80
LEAD	ug/L	15 (A)	<5	<5	<5	<5
MAGNESIUM	mg/L	--	<b>45.4</b>	<b>42.1</b>	<b>39.3</b>	<b>37.7</b>
MANGANESE	ug/L	50 (S)	<b>226</b>	<b>200</b>	<b>297</b>	<b>427</b>
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0
POTASSIUM	mg/L	--	<b>7.7</b>	<b>6.6</b>	<b>8.4</b>	<b>8.2</b>
SELENIUM	ug/L	50 (P)	<5	<5	<5	<5
SILVER	ug/L	100 (S)	<10	<10	<10	<10
SODIUM	mg/L	--	<b>51</b>	<b>57</b>	<b>42</b>	<b>40</b>
SULFIDE	mg/L	--	<0.05	<0.05	<b>0.1</b>	<b>0.1</b>
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5
TIN	ug/L	--	<10	<10	<10	<10
VANADIUM	mg/L	--	<0.025	<0.025	<0.025	<0.025
ZINC	ug/L	5,000 (S)	<10	<b>15</b>	<b>16</b>	<10
<b>VOC'S (METHOD 8260)</b>						
Acetone	ug/l	--	<1.0	<5.0	<5.0	<5.0
Carbon Disulfide	ug/L	--	<1.0	<1.0	<1.0	<1.0
MTBE	ug/L	--	<1.0	<1.0	<1.0	<1.0

<b>FIELD PARAMETERS</b>						
pH	S.U.	6.5-8.5 (S)	<b>7.16</b>	<b>7.07</b>	<b>7.03</b>	<b>6.94</b>
CONDUCTIVITY	umhos/cm	--	<b>1,039</b>	<b>776</b>	<b>731</b>	<b>993</b>
TEMPERATURE	°C	--	<b>17.5</b>	<b>21.7</b>	<b>16.3</b>	<b>17.3</b>

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NA = NOT ANALYZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.



**Table 1 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Shallow Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-3 (continued)			
			4/15/16	10/18/16	4/12/17	10/12/17
<b>INORGANICS</b>						
ALUMINUM	ug/L	50 to 200 (S)	<25	<25	<25	<25
ANTIMONY	ug/L	6 (P)	<4	<4	<4	<4
ARSENIC	ug/L	10 (P)	15.0	7.9	39.0	30.0
BARIUM	ug/L	2,000 (P)	228	198	279	235
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1
CADMIUM	ug/L	5 (P)	<1	<1	<1	<1
CALCIUM	mg/L	--	97.4	99.2	83.6	91.1
CHROMIUM	ug/L	100 (P)	<5	<5	<5	<5
COBALT	ug/L	--	<25	<25	<25	<25
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50
CYANIDE	mg/L	0.2 (P)	<0.010	<0.010	<0.010	<0.010
IRON	ug/L	300 (S)	<80	<80	<80	<80
LEAD	ug/L	15 (A)	<5	<5	<5	<5
MAGNESIUM	mg/L	--	28.4	29.0	22.7	24.6
MANGANESE	ug/L	50 (S)	233	191	195	229
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0
POTASSIUM	mg/L	--	<2.0	<2.0	<2	<2
SELENIUM	ug/L	50 (P)	<5	<5	<5	<5
SILVER	ug/L	100 (S)	<10	<10	<10	<10
SODIUM	mg/L	--	6.9	10.6	25.2	10.5
SULFIDE	mg/L	--	0.8	0.3	6.4	9.1
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5
TIN	ug/L	--	<10	<10	<10	<10
VANADIUM	mg/L	--	<0.025	<0.025	<0.025	<0.025
ZINC	ug/L	5,000 (S)	<10	<10	<10	<10
<b>VOC'S (METHOD 8260)</b>						
Acetone	ug/l	--	<1.0	<5.0	22.8	<5.0
Carbon Disulfide	ug/L	--	<1.0	<1.0	<1.0	<1.0
MTBE	ug/L	--	<1.0	<1.0	<1.0	<1.0

<b>FIELD PARAMETERS</b>						
pH	S.U.	6.5-8.5 (S)	7.41	7.47	7.37	7.40
CONDUCTIVITY	umhos/cm	--	638	497	508	568
TEMPERATURE	°C	--	16.4	21.8	17.4	18.4

(P) = Ohio EPA Primary Maximum Contaminant Level

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(A) = Action Level

NA = NOT ANALYZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.

**Table 1 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Shallow Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-4S																																				
			10/17/95	1/16/96	4/24/96	7/29/96	2/11/97	4/28/97	7/7/97	10/6/97	6/24/98	12/16/98	7/20/99	4/27/00	11/27/00	5/30/01	10/17/01	5/7/02	10/30/02	5/19/03	11/12/03	5/11/04	10/26/04	5/3/05	10/31/05	4/24/06	10/25/06	5/7/07	11/14/07	6/17/08	10/29/08	7/8/09	3/31/15	2/17/16	3/16/16	4/13/16			
<b>INORGANICS</b>																																							
ALUMINUM	ug/L	50 to 200 (S)	70	210	<50	<200	<500	<500	<500	<500	<500	660	<50	<50	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<25	<25	<25	<25
ANTIMONY	ug/L	6 (P)	<5	<5	<5	<60	6.5	<4	<4	8.0	<4	<4	<4	<4.0	<4	<4	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<4	<4	<4	<4		
ARSENIC	ug/L	10 (P)	3.0	6.0	22.0	14.7	17.0	34.0	1.7	18.0	19.0	10.0	11.0	11.6	7.0	17.0	14.0	15.2	8.6	11.6	9.8	12.2	9.4	16.5	19.2	18.3	21.4	28.0	57.0	53.4	32.0	34.8	19.0	15.0	15.0	7.0			
BARIUM	ug/L	2,000 (P)	420	420	570	660	560	520	604	458	<10.0	469	532	487	409	531	455	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	707	635	676	609		
BERYLLIUM	ug/L	4 (P)	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0		
CADMIUM	ug/L	5 (P)	<5	<5	<5	<5	<1	<1	<5.0	<5.0	<5.0	<5.0	<5.0	<5	<5	<5	<5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
CALCIUM	mg/L	--	140	130	130	152	140	130	140	122	130	136	154	131	140	150	140	131	144	164	160	159	152	164	149	172	183	179	153	157	174	156	208	178	176	180			
CHROMIUM	ug/L	100 (P)	<20	<20	<20	<10	<2	<2	<5.0	<5.0	<5.0	<5.0	<5.0	<5	<10	<10	<10	<5	<5	<5	<5	<5	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0		
COBALT	ug/L	--	<20	<20	<20	<50	<100	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50	<10	<10	<20	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50		
COPPER	ug/L	1,000 (S) / 1,300 (A)	<10	<10	<10.0	<25.0	<20.0	<20.0	10.0	<10.0	16.0	<10.0	<20.0	<20.0	<10.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
CYANIDE	mg/L	0.2 (P)	<0.005	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050			
IRON	ug/L	300 (S)	4,100	6,900	9,700	9,500	11,000	10,000	8,200	8,600	10,000	10,000	9,400	8,700	10,300	9,700	8,940	8,600	9,590	7,530	9,180	8,860	9,140	10,000	11,900	11,800	12,600	12,000	12,400	12,000	11,800	1,080	4,580	2,730	198				
LEAD	ug/L	15 (A)	<2	<5	<3	<3	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0			
MAGNESIUM	mg/L	--	33.0	31.0	31.0	34.0	31.0	32.0	32.0	31.0	29.0	29.0	33.0	31.6	32.0	35.0	35.0	33.4	34.9	37.9	35.1	36.7	37.3	38.0	35.4	42.3	41.8	39.3	36.3	35.8	39.6	34.6	33.7	43.0	42.3	43.0			
MANGANESE	ug/L	50 (S)	310	260	360	370	320	340	310	260	303	267	256	279	250	310	260	273	235	266	218	271	247	262	283	336	333	388	376	435	356	362	383	330	347	335			
MERCURY	ug/L	2 (P)	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		
NICKEL	ug/L	--	<20	<20	<20	<40	<40	<40	<20.0	<20.0	<20.0	<20.0	<20.0	<20	<10	<10	<10	<20	<20	<20	<20	<20	<20	<20	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0		
POTASSIUM	mg/L	--	11.0	9.2	8.3	11.0	11.0	9.6	10.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	14.2	14.2	14.0	14.1
SELENIUM	ug/L	50 (P)	<5	<5	<4	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0		
SILVER	ug/L	100 (S)	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
SODIUM	mg/L	--	48.0	42.0	39.0	43.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	49.1	49.0	52.4	47.0	
SULFIDE	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	1.0	1.0	2.0	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
THALLIUM	ug/L	2 (P)	<2	<2	<2	<10	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1	<1	<1	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.5	<1.5	<1.5	<1.5		
TIN	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	<50	<50	<50	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100			
VANADIUM	mg/L	--	<0.01	<0.01	<0.01	<0.05	<1	<1	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		
ZINC	ug/L	5,000 (S)	20	20	10	23	<10	11	10	<10	<10	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0		
<b>VOC'S (METHOD 8260)</b>																																							
Acetone	ug/l	--	<50	<50	<50	<5	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<50	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Carbon Disulfide	ug/L	--	7	<5	<5	2	<10	<10	<10	<10	<10	<10	<10	<10	<100	<100	<100	<10	<10	<10	<10	<10	<10	<50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
MTBE	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5.0	<1.0	<1.0	<1.0
<b>FIELD PARAMETERS</b>																																							
pH	S.U.	6.5-8.5 (S)	7.20	7.10	7.20	7.10	7.10	7.30	7.10	7.00	7.00	7.10	7.10	7.00	6.88	6.60	7.20	7.10	6.96	6.90	7.00	6.42	6.98	7.03	7.02	6.94	6.98	6.98	7.00	7.00	6.83	7.00	6.99	6.84	6.90	6.85			
CONDUCTIVITY	umhos/cm	--	871	858	913	890	1,100	1,100	1,100	975	1,050	1,100	1,050	1,110	1,207	990	1,150	980	1,123	1,069	741	920	1,121	828	923	838	746	746	781	803	636	1,114	1,133	1,450	1,290	1,379			
TEMPERATURE	°C	--	17.2	16.1	16.7	18.3	13.3	12.8	13.3	15.0	13.9	14.4	--	13.3	12.3	13.9	14.9	14.3	15.0	14.2	15.5	14.7	15.4	14.3	16.2	15.0	15.9	15.9	16.4	15.1	16.0	16.5	14.3	17.0	17.1	16.2			

(P) = Ohio EPA Primary Maximum Contaminant Level  
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(A) = Action Level  
NA = NOT ANALYZED  
Shaded parameters have Primary MCL.  
Shaded results exceed Primary MCL.

**Table 1 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Shallow Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-4S (continued)											
			5/18/16	6/8/16	7/20/16	8/17/16	9/21/16	10/19/16	11/9/16	12/21/16	1/18/17	4/19/17	7/19/17	10/11/17
<b>INORGANICS</b>														
ALUMINUM	ug/L	50 to 200 (S)	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
ANTIMONY	ug/L	6 (P)	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
ARSENIC	ug/L	10 (P)	<b>7.0</b>	<b>6.0</b>	<b>6.5</b>	<b>9.2</b>	<b>11.6</b>	<b>14.0</b>	<b>11.3</b>	<b>12.2</b>	<b>10.7</b>	<b>9.4</b>	<b>9.7</b>	<b>11.0</b>
BARIIUM	ug/L	2,000 (P)	<b>557</b>	<b>607</b>	<b>685</b>	<b>699</b>	<b>666</b>	<b>712</b>	<b>686</b>	<b>675</b>	<b>690</b>	<b>721</b>	<b>675</b>	<b>627</b>
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
CADMIUM	ug/L	5 (P)	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
CALCIUM	mg/L	--	<b>165</b>	<b>179</b>	<b>175</b>	<b>178</b>	<b>181</b>	<b>178</b>	<b>179</b>	<b>183</b>	<b>184</b>	<b>178</b>	<b>180</b>	<b>167</b>
CHROMIUM	ug/L	100 (P)	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
COBALT	ug/L	--	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
CYANIDE	mg/L	0.2 (P)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
IRON	ug/L	300 (S)	<b>274</b>	<b>1,540</b>	<b>129</b>	<b>1,100</b>	<b>801</b>	<b>4,260</b>	<b>1,830</b>	<b>1,560</b>	<b>1,210</b>	<b>750</b>	<b>1,780</b>	<b>1,660</b>
LEAD	ug/L	15 (A)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MAGNESIUM	mg/L	--	<b>42.9</b>	<b>40.2</b>	<b>39.3</b>	<b>44.9</b>	<b>42.8</b>	<b>45.2</b>	<b>41.8</b>	<b>41.5</b>	<b>42.6</b>	<b>41.8</b>	<b>40.0</b>	<b>37.0</b>
MANGANESE	ug/L	50 (S)	<b>347</b>	<b>336</b>	<b>368</b>	<b>377</b>	<b>393</b>	<b>383</b>	<b>402</b>	<b>419</b>	<b>459</b>	<b>450</b>	<b>338</b>	<b>334</b>
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
POTASSIUM	mg/L	--	<b>14.0</b>	<b>14.6</b>	<b>14.5</b>	<b>14.0</b>	<b>14.0</b>	<b>14.4</b>	<b>13.7</b>	<b>15.1</b>	<b>15.4</b>	<b>14.9</b>	<b>15.0</b>	<b>14.8</b>
SELENIUM	ug/L	50 (P)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
SILVER	ug/L	100 (S)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
SODIUM	mg/L	--	<b>47.8</b>	<b>47.3</b>	<b>45.9</b>	<b>53.7</b>	<b>52.8</b>	<b>59.9</b>	<b>48.9</b>	<b>54.4</b>	<b>53.5</b>	<b>46.7</b>	<b>49.0</b>	<b>45.0</b>
SULFIDE	mg/L	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<b>0.1</b>	<0.05	<b>0.1</b>	<0.05	<0.05
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
TIN	ug/L	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
VANADIUM	mg/L	--	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
ZINC	ug/L	5,000 (S)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<b>12</b>	<b>14</b>	<10
<b>VOC'S (METHOD 8260)</b>														
Acetone	ug/l	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon Disulfide	ug/L	--	<1.0	<1.0	<1.0	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MTBE	ug/L	--	<1.0	<1.0	<b>2.0</b>	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
<b>FIELD PARAMETERS</b>														
pH	S.U.	6.5-8.5 (S)	<b>7.01</b>	<b>6.75</b>	<b>6.79</b>	<b>6.98</b>	<b>6.94</b>	<b>6.90</b>	<b>6.82</b>	<b>6.89</b>	<b>6.82</b>	<b>6.97</b>	<b>7.08</b>	<b>6.72</b>
CONDUCTIVITY	umhos/cm	--	<b>1,075</b>	<b>1,193</b>	<b>1,382</b>	<b>1,295</b>	<b>1,083</b>	<b>1,263</b>	<b>1,097</b>	<b>1,053</b>	<b>1,134</b>	<b>1,049</b>	<b>1,370</b>	<b>1,253</b>
TEMPERATURE	°C	--	<b>16.1</b>	<b>16.2</b>	<b>16.7</b>	<b>16.8</b>	<b>17.1</b>	<b>17.2</b>	<b>16.2</b>	<b>16.5</b>	<b>16.5</b>	<b>16.4</b>	<b>18.3</b>	<b>19.4</b>

(P) = Ohio EPA Primary Maximum Contaminant Level  
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(A) = Action Level  
NA = NOT ANALYZED  
Shaded parameters have Primary MCL.  
Shaded results exceed Primary MCL.



**Table 1 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Shallow Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-5S (continued)			
			4/12/16	10/18/16	4/10/17	10/12/17
<b>INORGANICS</b>						
ALUMINUM	ug/L	50 to 200 (S)	<25	<25	<25	<25
ANTIMONY	ug/L	6 (P)	<4	<4	<4	<4
ARSENIC	ug/L	10 (P)	<3.0	<3.0	<3.0	<3.0
BARIUM	ug/L	2,000 (P)	<b>240</b>	<b>230</b>	<b>232</b>	<b>222</b>
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1
CADMIUM	ug/L	5 (P)	<1	<1	<1	<1
CALCIUM	mg/L	--	<b>169</b>	<b>178</b>	<b>173</b>	<b>150</b>
CHROMIUM	ug/L	100 (P)	<5	<5	<5	<5
COBALT	ug/L	--	<25	<25	<25	<25
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50
CYANIDE	mg/L	0.2 (P)	<0.010	<0.010	<0.010	<b>0.023</b>
IRON	ug/L	300 (S)	<80	<b>139</b>	<80	<b>978</b>
LEAD	ug/L	15 (A)	<5	<5	<5	<5
MAGNESIUM	mg/L	--	<b>40.6</b>	<b>40.8</b>	<b>38.1</b>	<b>34.3</b>
MANGANESE	ug/L	50 (S)	<b>179</b>	<b>188</b>	<b>204</b>	<b>170</b>
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0
POTASSIUM	mg/L	--	<b>3.4</b>	<b>3.2</b>	<b>3.6</b>	<b>3.3</b>
SELENIUM	ug/L	50 (P)	<5	<5	<5	<5
SILVER	ug/L	100 (S)	<10	<10	<10	<10
SODIUM	mg/L	--	<b>28.6</b>	<b>35.7</b>	<b>33.6</b>	<b>32.2</b>
SULFIDE	mg/L	--	--	<0.05	<0.05	<0.05
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5
TIN	ug/L	--	<10	<10	<10	<10
VANADIUM	mg/L	--	<0.025	<0.025	<0.025	<0.025
ZINC	ug/L	5,000 (S)	<10	<b>47</b>	<b>11</b>	<10
<b>VOC'S (METHOD 8260)</b>						
Acetone	ug/l	--	<1.0	<5.0	<5.0	<5.0
Carbon Disulfide	ug/L	--	<1.0	<1.0	<1.0	<1.0
MTBE	ug/L	--	<1.0	<1.0	<1.0	<1.0

<b>FIELD PARAMETERS</b>						
pH	S.U.	6.5-8.5 (S)	<b>7.08</b>	<b>7.11</b>	<b>7.10</b>	<b>7.07</b>
CONDUCTIVITY	umhos/cm	--	<b>993</b>	<b>734</b>	<b>799</b>	<b>1,083</b>
TEMPERATURE	°C	--	<b>15.0</b>	<b>16.8</b>	<b>17.3</b>	<b>17.3</b>

(P) = Ohio EPA Primary Maximum Contaminant Level

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(A) = Action Level

NA = NOT ANALYZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.

**Table 1 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Shallow Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-6S																															
			10/18/95	1/15/96	4/24/96	7/30/96	2/11/97	4/28/97	7/7/97	10/7/97	6/24/98	12/16/98	7/20/99	4/27/00	11/27/00	5/30/01	10/17/01	5/7/02	10/30/02	5/19/03	11/12/03	5/11/04	10/26/04	5/3/05	10/31/05	4/24/06	10/25/06	5/7/07	11/14/07	6/17/08	10/29/08	7/8/09	4/1/15	
<b>INORGANICS</b>																																		
ALUMINUM	ug/L	50 to 200 (S)	110	<50	<50	<200	<500	<500	<500	<500	<500	NS	NS	NS	NS	NS	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<25
ANTIMONY	ug/L	6 (P)	<5	<5	<5	<60	4.40	<4	<4	7.60	<4.0	NS	NS	NS	NS	NS	NS	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<4	
ARSENIC	ug/L	10 (P)	<3	<3	<3	<10	<5	<5	<5	<5	<5	NS	NS	NS	NS	NS	NS	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<3.0	
BARIUM	ug/L	2,000 (P)	51	46	100	<200.0	<100.0	<100.0	53	43	58	NS	NS	NS	NS	NS	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	81	
BERYLLIUM	ug/L	4 (P)	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	NS	NS	NS	NS	NS	NS	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1	
CADMIUM	ug/L	5 (P)	<5	<5	<5	<5	<1	<1	<5.0	<5.0	<5.0	NS	NS	NS	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1	
CALCIUM	mg/L	--	99	99	110	107	110	110	110	98	98	NS	NS	NS	NS	NS	NS	114	113	107	120	123	120	118	115	114	117	111	107	122	116	103	115	
CHROMIUM	ug/L	100 (P)	<20	<20	<20	<10	<2	<2	<5.0	<5.0	<5.0	NS	NS	NS	NS	NS	NS	<5	<5	<5	<5	<5	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5	
COBALT	ug/L	--	<20	<20	<20	<50	<100	<100	<50.0	<50.0	<50.0	NS	NS	NS	NS	NS	NS	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<25	
COPPER	ug/L	1,000 (S) / 1,300 (A)	<10	<10	<10	<25	<20	<20	<10	<10	<10	NS	NS	NS	NS	NS	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<50	
CYANIDE	mg/L	0.2 (P)	<0.005	--	--	--	<0.01	<0.01	<0.01	<0.01	0.01	NS	NS	NS	NS	NS	NS	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
IRON	ug/L	300 (S)	400	30.00	60.00	101	<30.0	<30.0	4.00	<5.0	<5.0	NS	NS	NS	NS	NS	NS	73.00	<30	<30	<30	<30	<30	<30	<100	<100	<100	<100	<100	<100	<100	<100	<80	
LEAD	ug/L	15 (A)	<2	<2	<3	<3	<2	<2	<2	<2	<2	NS	NS	NS	NS	NS	NS	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5	
MAGNESIUM	mg/L	--	26.0	27.0	30.0	29.0	29.0	30.0	28.0	27.0	28.0	NS	NS	NS	NS	NS	NS	33.0	30.7	28.3	30.1	32.4	32.6	31.1	32.1	32.8	31.5	29.8	29.7	34.1	32.7	29.8	26.3	
MANGANESE	ug/L	50 (S)	300	280	250	138	280	260	180	220	236	NS	NS	NS	NS	NS	NS	229	355	121	311	85	154	125	154	103	149	82	159	111	146	92	223	
MERCURY	ug/L	2 (P)	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NS	NS	NS	NS	NS	NS	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
NICKEL	ug/L	--	<20	<20	<20	<40	<40	<40	<20.0	<20.0	<20.0	NS	NS	NS	NS	NS	NS	<20	<20	<20	<20	<20	<20	<20	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
POTASSIUM	mg/L	--	4.1	4.0	4.1	6.1	4.2	4.5	4.2	--	--	NS	NS	NS	NS	NS	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.9	
SELENIUM	ug/L	50 (P)	9	9	12	10	6	<5	<5	<5	<5	NS	NS	NS	NS	NS	NS	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	6	<5.0	5	<5.0	<5		
SILVER	ug/L	100 (S)	<10	<10	<10	<10	<1	<1	<1	<1	<1	NS	NS	NS	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	
SODIUM	mg/L	--	70.0	73.0	59.0	57.0	--	--	--	--	--	NS	NS	NS	NS	NS	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.7	
SULFIDE	mg/L	--	--	--	--	--	--	--	--	--	--	NS	NS	NS	NS	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.40	<1.0	<0.05	
THALLIUM	ug/L	2 (P)	<2	<2	<2	<10	<1.5	<1.5	<1.5	<1.5	<1.5	NS	NS	NS	NS	NS	NS	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.5	
TIN	ug/L	--	--	--	--	--	--	--	--	--	--	NS	NS	NS	NS	NS	NS	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<10	
VANADIUM	mg/L	--	<0.01	<0.01	<0.01	<0.05	<1	<1	<0.05	<0.05	<0.05	NS	NS	NS	NS	NS	NS	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.025	
ZINC	ug/L	5,000 (S)	20	20	10	<20	<10	14	<10	<10	<10	NS	NS	NS	NS	NS	NS	<20	<20	<20	<20	<20	<20	<20	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<10	
<b>VOC'S (METHOD 8260)</b>																																		
Acetone	ug/l	--	<50	<50	<50	<5	<100	<100	<100	<100	<100	NS	NS	NS	NS	NS	NS	<100	<100	<100	<100	<100	<100	<100	<50	<10	<10	<10	<10	<10	<10	<10	<10	
Carbon Disulfide	ug/L	--	<5	<5	<5	<1	<10	<10	<10	<10	<10	NS	NS	NS	NS	NS	NS	<10	<10	<10	<10	<10	<10	<10	<50	<1	<1	<1	<1	<1	<1	<1	<10	
MTBE	ug/L	--	--	--	--	--	--	--	--	--	--	NS	NS	NS	NS	NS	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<10	
<b>FIELD PARAMETERS</b>																																		
pH	S.U.	6.5-8.5 (S)	7.50	7.50	7.50	7.50	7.40	7.60	7.50	7.60	7.60	NS	NS	NS	NS	NS	NS	7.50	7.25	7.23	7.17	6.69	7.26	7.30	7.23	7.20	7.26	7.26	7.28	7.30	7.09	7.29	7.26	
CONDUCTIVITY	umhos/cm	--	764	800	823	760	1,000	1,000	1,000	975	940	NS	NS	NS	NS	NS	NS	980	1,042	811	1,162	903	1,056	745	960	808	694	694	713	684	587	967	1,002	
TEMPERATURE	°C	--	17.2	15.0	12.8	16.7	12.8	12.2	13.9	13.9	14.4	NS	NS	NS	NS	NS	NS	13.8	14.3	13.8	14.8	14.1	14.9	14.1	15.9	14.2	15.5	15.5	15.7	14.6	15.4	15.9	15.1	

\* Sample dates 12/16/98 through 10/17/01 - Not Sampled due to vandalism.

(P) = Ohio EPA Primary Maximum Contaminant Level

(S) = Secondary Maximum Contaminant Level

(A) = Action Level

NA = NOT ANALYZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.

**Table 1 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Shallow Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-6S (continued)			
			4/12/16	10/18/16	4/10/17	10/11/17
<b>INORGANICS</b>						
ALUMINUM	ug/L	50 to 200 (S)	<25	<25	<25	<25
ANTIMONY	ug/L	6 (P)	<4	<4	<4	<4
ARSENIC	ug/L	10 (P)	<3.0	<3.0	<3.0	<3.0
BARIUM	ug/L	2,000 (P)	<b>72</b>	<b>87</b>	<b>103</b>	<b>96</b>
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1
CADMIUM	ug/L	5 (P)	<1	<1	<1	<1
CALCIUM	mg/L	--	<b>115</b>	<b>110</b>	<b>122</b>	<b>113</b>
CHROMIUM	ug/L	100 (P)	<5	<5	<5	<5
COBALT	ug/L	--	<25	<25	<25	<25
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50
CYANIDE	mg/L	0.2 (P)	<0.010	<0.010	<0.010	<0.010
IRON	ug/L	300 (S)	<80	<80	<80	<80
LEAD	ug/L	15 (A)	<5	<5	<5	<5
MAGNESIUM	mg/L	--	<b>33.4</b>	<b>34.3</b>	<b>33.8</b>	<b>32.0</b>
MANGANESE	ug/L	50 (S)	<b>305</b>	<b>243</b>	<b>237</b>	<b>227</b>
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0
POTASSIUM	mg/L	--	<b>6.3</b>	<b>5.6</b>	<b>6.6</b>	<b>6.3</b>
SELENIUM	ug/L	50 (P)	<5	<5	<5	<5
SILVER	ug/L	100 (S)	<10	<10	<10	<10
SODIUM	mg/L	--	<b>78.8</b>	<b>90.7</b>	<b>92.4</b>	<b>97.0</b>
SULFIDE	mg/L	--	--	<0.05	<0.05	<0.05
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5
TIN	ug/L	--	<10	<10	<10	<10
VANADIUM	mg/L	--	<0.025	<0.025	<0.025	<0.025
ZINC	ug/L	5,000 (S)	<10	<b>17</b>	<10	<10
<b>VOC'S (METHOD 8260)</b>						
Acetone	ug/l	--	<1.0	<5.0	<5.0	<5.0
Carbon Disulfide	ug/L	--	<1.0	<1.0	<1.0	<1.0
MTBE	ug/L	--	<1.0	<1.0	<1.0	<1.0

<b>FIELD PARAMETERS</b>						
pH	S.U.	6.5-8.5 (S)	<b>7.14</b>	<b>7.20</b>	<b>7.10</b>	<b>7.12</b>
CONDUCTIVITY	umhos/cm	--	<b>975</b>	<b>764</b>	<b>800</b>	<b>1,188</b>
TEMPERATURE	°C	--	<b>15.9</b>	<b>17.7</b>	<b>17.3</b>	<b>18.3</b>

(P) = Ohio EPA Primary Maximum Contaminant Level

(S) = Secondary Maximum Contaminant Level

(A) = Action Level

NA = NOT ANALYZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.



**Table 1 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Shallow Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-7 (continued)			
			4/12/16	10/18/16	4/10/17	10/11/17
<b>INORGANICS</b>						
ALUMINUM	ug/L	50 to 200 (S)	<25	<25	<25	<25
ANTIMONY	ug/L	6 (P)	<4	<4	<4	<4
ARSENIC	ug/L	10 (P)	<b>4.0</b>	<b>4.1</b>	<b>4.1</b>	<b>8.0</b>
BARIIUM	ug/L	2,000 (P)	<b>51</b>	<b>45</b>	<b>49.5</b>	<b>51</b>
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1
CADMIUM	ug/L	5 (P)	<1	<1	<1	<1
CALCIUM	mg/L	--	NA	<b>188</b>	<b>217</b>	<b>157</b>
CHROMIUM	ug/L	100 (P)	<5	<5	<5	<5
COBALT	ug/L	--	<25	<25	<25	<25
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50
CYANIDE	mg/L	0.2 (P)	<0.010	<0.010	<0.010	<0.010
IRON	ug/L	300 (S)	<b>322</b>	<b>455</b>	<b>1,380</b>	<b>4,120</b>
LEAD	ug/L	15 (A)	<5	<5	<5	<5
MAGNESIUM	mg/L	--	<b>40.2</b>	<b>39.0</b>	<b>38.0</b>	<b>34.0</b>
MANGANESE	ug/L	50 (S)	<b>370</b>	<b>392</b>	<b>401</b>	<b>327</b>
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0
POTASSIUM	mg/L	--	<b>4.2</b>	<b>3.9</b>	<b>4.4</b>	<b>4.4</b>
SELENIUM	ug/L	50 (P)	<5	<5	<5	<5
SILVER	ug/L	100 (S)	<10	<10	<10	<10
SODIUM	mg/L	--	<b>57.6</b>	<b>58.3</b>	<b>60.7</b>	<b>58.0</b>
SULFIDE	mg/L	--	--	<0.05	<0.05	<0.05
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5
TIN	ug/L	--	<10	<10	<10	<10
VANADIUM	mg/L	--	<0.025	<0.025	<0.025	<0.025
ZINC	ug/L	5,000 (S)	<10	<10	<10	<10
<b>VOC'S (METHOD 8260)</b>						
Acetone	ug/l	--	<1.0	<5.0	<5.0	<5.0
Carbon Disulfide	ug/L	--	<1.0	<1.0	<1.0	<1.0
MTBE	ug/L	--	<1.0	<1.0	<1.0	<1.0

<b>FIELD PARAMETERS</b>						
pH	S.U.	6.5-8.5 (S)	<b>6.88</b>	<b>6.94</b>	<b>6.94</b>	<b>6.84</b>
CONDUCTIVITY	umhos/cm	--	<b>1,250</b>	<b>876</b>	<b>896</b>	<b>1,266</b>
TEMPERATURE	°C	--	<b>16.6</b>	<b>18.4</b>	<b>17.3</b>	<b>19.1</b>

(P) = Ohio EPA Primary Maximum Contaminant Level

(S) = Secondary Maximum Contaminant Level

(A) = Action Level

NA = NOT ANALZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.

**Table 1 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Shallow Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-8																																
			10/20/95	1/16/96	4/23/96	7/31/96	2/11/97	4/28/97	7/8/97	10/22/97	6/25/98	12/29/98	7/29/99	4/27/00	11/28/00	5/31/01	10/19/01	5/8/02	11/1/02	5/20/03	11/13/03	5/11/04	11/12/04	5/3/05	10/31/05	4/24/06	10/25/06	5/7/07	11/15/07	6/17/08	11/4/08	7/8/09	4/1/15		
<b>INORGANICS</b>																																			
ALUMINUM	ug/L	50 to 200 (S)	<50	<50	<50	<200	<500	<500	<500	<500	<500	--	<50	<b>53</b>	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<25
ANTIMONY	ug/L	6 (P)	<5	<5	<5	<60	<4	<4	<4	<b>12.0</b>	<4	<b>4.10</b>	<4	<4.0	<4	<4	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<4		
ARSENIC	ug/L	10 (P)	<3	<3	<3	<10	<5	<5	<5	<5	<5	<5	<5.0	<5	<5.0	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<3.0		
BARIUM	ug/L	2,000 (P)	<b>50</b>	<b>46</b>	<b>45</b>	<200	<100	<100	<b>55</b>	<b>49</b>	<b>64</b>	<b>50</b>	<b>57</b>	<b>51</b>	<b>48</b>	<b>54</b>	<b>64</b>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<b>64</b>		
BERYLLIUM	ug/L	4 (P)	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1			
CADMIUM	ug/L	5 (P)	<5	<5	<5	<5	<1	<1	<5.0	<5.0	<5.0	<5.0	<5.0	<5	<5	<5	<5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1			
CALCIUM	mg/L	--	<b>120</b>	<b>110</b>	<b>110</b>	<b>125</b>	<b>120</b>	<b>110</b>	<b>110</b>	<b>122</b>	<b>101</b>	--	<b>130</b>	<b>107</b>	<b>120</b>	<b>110</b>	<b>130</b>	<b>91</b>	<b>110</b>	<b>101</b>	<b>110</b>	<b>112</b>	<b>129</b>	<b>135</b>	<b>139</b>	<b>132</b>	<b>133</b>	<b>124</b>	<b>134</b>	<b>115</b>	<b>111</b>	<b>125</b>	<b>142</b>		
CHROMIUM	ug/L	100 (P)	<20	<20	<20	<10	<2	<2	<5.0	<5.0	<5.0	<b>17.00</b>	<5.0	<5	<10	<10	<10	<5	<5	<5	<5	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5			
COBALT	ug/L	--	<20	<20	<20	<50	<100	<100	<50.0	<50.0	<50.0	<50.0	<50	<10	<10	<20	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<25			
COPPER	ug/L	1,000 (S) / 1,300 (A)	<10	<10	<10	<25	<20	<20	<10	<10	<b>23</b>	<b>20</b>	<b>22</b>	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<50			
CYANIDE	mg/L	0.2 (P)	<0.005	--	--	--	<0.01	<0.01	<0.01	<0.01	<b>0.01</b>	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<b>0.01</b>	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.040			
IRON	ug/L	300 (S)	<b>20</b>	<b>70</b>	<b>70</b>	<b>119</b>	<30	<30	<b>13</b>	<b>13</b>	<50	--	<30	<30	<50	<50	<30	<30	<30	<30	<30	<30	<100	<100	<100	<100	<100	<100	<100	<100	<80				
LEAD	ug/L	15 (A)	<2	<5	<3	<3	<2	<2	<2	<2	<2	<2	<2	<2.0	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5				
MAGNESIUM	mg/L	--	<b>32.0</b>	<b>31.0</b>	<b>31.0</b>	<b>34.0</b>	<b>30.0</b>	<b>31.0</b>	<b>31.0</b>	<b>30.0</b>	<b>34.0</b>	--	<b>34.0</b>	<b>30.1</b>	<b>31.0</b>	<b>29.0</b>	<b>36.0</b>	<b>27.3</b>	<b>31.5</b>	<b>27.3</b>	<b>29.0</b>	<b>30.3</b>	<b>35.5</b>	<b>36.9</b>	<b>40.1</b>	<b>38.6</b>	<b>38.4</b>	<b>33.3</b>	<b>38.1</b>	<b>31.8</b>	<b>31.1</b>	<b>35.1</b>	<b>31.4</b>		
MANGANESE	ug/L	50 (S)	<b>200</b>	<b>260</b>	<b>14</b>	<15	<b>180</b>	<b>90</b>	<b>140</b>	<b>160</b>	<b>71</b>	--	<b>194</b>	<b>173</b>	<b>200</b>	<b>170</b>	<b>250</b>	<b>181</b>	<b>167</b>	<b>158</b>	<b>168</b>	<b>176</b>	<b>188</b>	<b>223</b>	<b>272</b>	<b>208</b>	<b>268</b>	<b>222</b>	<b>267</b>	<b>254</b>	<b>232</b>	<b>281</b>	<b>212</b>		
MERCURY	ug/L	2 (P)	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20			
NICKEL	ug/L	--	<20	<20	<20	<40	<40	<40	<20.0	<20.0	<20.0	<20.0	<20	<10	<10	<10	<20	<20	<20	<20	<20	<20	<20	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0			
POTASSIUM	mg/L	--	<b>3.8</b>	<b>4.1</b>	<b>3.8</b>	<b>4.8</b>	<b>4.9</b>	<b>5.1</b>	<b>4.6</b>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<b>5.8</b>			
SELENIUM	ug/L	50 (P)	<b>15.0</b>	<b>10.0</b>	<b>5.0</b>	<b>13.4</b>	<5	<5	<5	<5	<5	<5	<5.0	<5	<5	<b>9.0</b>	<b>8.2</b>	<b>8.5</b>	<b>8.2</b>	<b>9.8</b>	<b>10.2</b>	<b>11.0</b>	<b>9.2</b>	<b>15.2</b>	<b>8.2</b>	<b>11.6</b>	<b>13.6</b>	<b>11.1</b>	<b>14.6</b>	<b>11.8</b>	<b>16.6</b>	<b>12.0</b>			
SILVER	ug/L	100 (S)	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10				
SODIUM	mg/L	--	<b>45.0</b>	<b>46.0</b>	<b>36.0</b>	<b>48.0</b>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<b>78.9</b>			
SULFIDE	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.05			
THALLIUM	ug/L	2 (P)	<2	<2	<2	<10	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1	<1	<1	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.5			
TIN	ug/L	--	--	--	--	--	--	--	--	--	--	--	<50	<50	<50	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<10				
VANADIUM	mg/L	--	<0.01	<0.01	<0.01	<0.05	<1	<1	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.025				
ZINC	ug/L	5,000 (S)	<10	<b>10.0</b>	<b>10.0</b>	<20	<10	<10	<10	<10	<b>11.0</b>	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<10				
<b>VOC'S (METHOD 8260)</b>																																			
Acetone	ug/l	--	<50	<50	<50	<5	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<50	<10	<10	<10	<10	<10	<10	<10	<10	<1.0			
Carbon Disulfide	ug/L	--	<5	<5	<5	<1	<10	<10	<10	<10	<10	<10	<100	<100	<100	<10	<10	<10	<10	<10	<10	<10	<50	<1	<1	<1	<1	<1	<1	<1	<1.0				
MTBE	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<1.0			
<b>FIELD PARAMETERS</b>																																			
pH	S.U.	6.5-8.5 (S)	<b>7.30</b>	<b>7.50</b>	<b>7.40</b>	<b>7.90</b>	<b>7.20</b>	<b>7.50</b>	<b>6.90</b>	<b>7.50</b>	<b>7.10</b>	<b>7.10</b>	<b>7.10</b>	<b>7.10</b>	<b>7.04</b>	<b>6.80</b>	<b>7.20</b>	<b>7.60</b>	<b>7.27</b>	<b>7.19</b>	<b>7.24</b>	<b>6.70</b>	<b>7.16</b>	<b>7.16</b>	<b>7.11</b>	<b>7.10</b>	<b>7.16</b>	<b>7.16</b>	<b>7.26</b>	<b>7.08</b>	<b>7.18</b>	<b>7.18</b>	<b>7.16</b>		
CONDUCTIVITY	umhos/cm	--	<b>776</b>	<b>738</b>	<b>808</b>	<b>830</b>	<b>1,100</b>	<b>1,050</b>	<b>1,000</b>	<b>1,000</b>	<b>860</b>	<b>980</b>	<b>930</b>	<b>930</b>	<b>1,052</b>	<b>970</b>	<b>1,110</b>	<b>910</b>	<b>1,005</b>	<b>760</b>	<b>1,084</b>	<b>920</b>	<b>1,254</b>	<b>883</b>	<b>1,165</b>	<b>1,010</b>	<b>830</b>	<b>830</b>	<b>845</b>	<b>713</b>	<b>559</b>	<b>1,091</b>	<b>969</b>		
TEMPERATURE	°C	--	<b>17.8</b>	<b>12.8</b>	<b>18.9</b>	<b>16.7</b>	<b>12.8</b>	<b>13.3</b>	<b>14.4</b>	<b>13.9</b>	<b>15.0</b>	--	--	<b>13.9</b>	<b>11.8</b>	<b>14.4</b>	<b>14.9</b>	<b>14.3</b>	<b>15.9</b>	<b>15.2</b>	<b>14.8</b>	<b>15.2</b>	<b>16.0</b>	<b>15.1</b>	<b>17.2</b>	<b>15.2</b>	<b>16.6</b>	<b>16.6</b>	<b>15.7</b>	<b>16.2</b>	<b>16.7</b>	<b>16.9</b>	<b>15.9</b>		

(P) = Ohio EPA Primary Maximum Contaminant Level  
(S) = Secondary Maximum Contaminant Level  
(A) = Action Level  
NA = NOT ANALYZED  
Shaded parameters have Primary MCL.  
Shaded results exceed Primary MCL.

**Table 1 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Shallow Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-8 (continued)			
			4/13/16	10/18/16	4/10/17	10/12/17
<b>INORGANICS</b>						
ALUMINUM	ug/L	50 to 200 (S)	<25	<25	<25	<25
ANTIMONY	ug/L	6 (P)	<4	<4	<4	<4
ARSENIC	ug/L	10 (P)	<3.0	<3.0	<3.0	<3.0
BARIUM	ug/L	2,000 (P)	65	58	62	54
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1
CADMIUM	ug/L	5 (P)	<1	<1	<1	<1
CALCIUM	mg/L	--	127	116	126	112
CHROMIUM	ug/L	100 (P)	<5	<5	<5	<5
COBALT	ug/L	--	<25	<25	<25	<25
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50
CYANIDE	mg/L	0.2 (P)	<0.010	<0.010	<0.010	<0.010
IRON	ug/L	300 (S)	<80	<80	<80	<80
LEAD	ug/L	15 (A)	<5	<5	<5	<5
MAGNESIUM	mg/L	--	37.2	35.1	35.8	30.6
MANGANESE	ug/L	50 (S)	205	236	202	206
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0
POTASSIUM	mg/L	--	6.2	5.7	6.3	5.2
SELENIUM	ug/L	50 (P)	8.0	10.2	8.0	10.0
SILVER	ug/L	100 (S)	<10	<10	<10	<10
SODIUM	mg/L	--	80.6	95.3	88.5	62.6
SULFIDE	mg/L	--	--	<0.05	<0.05	<0.05
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5
TIN	ug/L	--	<10	<10	<10	<10
VANADIUM	mg/L	--	<0.025	<0.025	<0.025	<0.025
ZINC	ug/L	5,000 (S)	<10	<10	<10	14.0
<b>VOC'S (METHOD 8260)</b>						
Acetone	ug/l	--	<1.0	<5.0	<5.0	<5.0
Carbon Disulfide	ug/L	--	<1.0	<1.0	<1.0	<1.0
MTBE	ug/L	--	<1.0	<1.0	<1.0	<1.0

FIELD PARAMETERS						
pH	S.U.	6.5-8.5 (S)	7.05	7.21	7.18	7.15
CONDUCTIVITY	umhos/cm	--	1,213	781	852	1,000
TEMPERATURE	°C	--	18.0	19.3	18.4	17.5

(P) = Ohio EPA Primary Maximum Contaminant Level

(S) = Secondary Maximum Contaminant Level

(A) = Action Level

NA = NOT ANALYZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.

**Table 1 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Shallow Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-9S																								
			4/15/15	10/7/15	10/20/15	11/4/15	11/18/15	12/2/15	12/16/15	1/20/16	2/17/16	3/16/16	4/13/16	5/18/16	6/8/16	7/20/16	8/17/16	9/21/16	10/19/16	11/9/16	12/21/16	1/18/17	4/19/17	7/19/17	10/11/17		
<b>INORGANICS</b>																											
ALUMINUM	ug/L	50 to 200 (S)	<25	<150	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
ANTIMONY	ug/L	6 (P)	<3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	
ARSENIC	ug/L	10 (P)	5.0	9.0	7.0	6.0	6.0	7.0	5.0	11.0	7.0	6.0	5.0	4.0	3.9	5.5	5.4	6.2	5.5	5.8	4.8	4.5	4.1	5.0			
BARIUM	ug/L	2,000 (P)	399	459	405	413	393	419	422	475	474	502	494	451	480	484	491	489	521	529	537	540	571	569	504		
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
CADMIUM	ug/L	5 (P)	<5	<5	<5	<1	<5	<5	<5	<5	<5	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
CALCIUM	mg/L	--	166	163	142	144	144	157	164	179	160	159	165	146	156	148	161	162	170	176	177	179	181	170	165		
CHROMIUM	ug/L	100 (P)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
COBALT	ug/L	--	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25		
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	
CYANIDE	mg/L	0.2 (P)	<0.040	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
IRON	ug/L	300 (S)	446	1,830	1,660	293	139	798	689	2,160	925	331	80	146	80	86	328	181	1,490	502	538	430	85	<80	312		
LEAD	ug/L	15 (A)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
MAGNESIUM	mg/L	--	44.3	44.0	39.1	42.4	45.6	46.0	44.5	50.8	48.7	49.3	49.4	45.9	43.2	42.6	46.1	45.3	51.0	49.3	50.2	52.3	51.8	49.6	48.0		
MANGANESE	ug/L	50 (S)	204	142	133	128	144	147	140	140	131	135	124	132	125	117	127	129	125	128	137	123	119	100	110		
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.27	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
POTASSIUM	mg/L	--	30.1	19.4	17.8	17.6	16.9	16.8	16.9	18.2	17.6	17.9	18.1	16.7	18.2	17.5	15.2	15.5	15.9	15.4	17.1	17.5	18.7	19.0	16.2		
SELENIUM	ug/L	50 (P)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
SILVER	ug/L	100 (S)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
SODIUM	mg/L	--	302	272	243	212	176	188	184	166	196	210	183	207	222	202	219	198	194	180	173	156	168	180	172		
SULFIDE	mg/L	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	
TIN	ug/L	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
VANADIUM	mg/L	--	<0.025	<0.010	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	
ZINC	ug/L	5,000 (S)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	14	<10	<10	<10	<10	<10	10.3	<10		
<b>VOC'S (METHOD 8260)</b>																											
Acetone	ug/l	--	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.8	<5.0	<5.0	<5		
Carbon Disulfide	ug/L	--	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1		
MTBE	ug/L	--	<1.0	<1.0	<2.0	--	1.1	1.5	1.2	1.2	1.3	<1.0	1.8	1.1	1.3	<1.0	1.4	<5	1.3	1.2	1.2	1.6	1.1	1.0	1.5		
<b>FIELD PARAMETERS</b>																											
pH	S.U.	6.5-8.5 (S)	6.95	6.97	7.00	6.97	6.96	6.88	6.89	6.85	6.93	6.92	6.85	7.00	6.82	6.84	6.97	6.93	6.92	6.88	6.93	--	6.99	7.07	6.80		
CONDUCTIVITY	umhos/cm	--	2,280	2,340	2,170	2,010	1,941	1,947	1,970	1,870	2,060	1,949	2,140	1,606	1,777	2,001	1,764	1,544	1,750	1,489	1,317	--	1,328	2,180	2,270		
TEMPERATURE	°C	--	18.1	17.4	17.1	17.4	17.4	17.1	18.0	16.9	17.2	17.6	17.4	17.3	17.7	18.1	17.8	18.2	18.2	17.0	16.7	16.8	17.7	19.1	18.1		

(P) = Ohio EPA Primary Maximum Contaminant Level  
(S) = Secondary Maximum Contaminant Level  
(A) = Action Level  
NA = NOT ANALYZED  
Shaded parameters have Primary MCL.  
Shaded results exceed Primary MCL.

**Table 2  
City of Lancaster, Ohio  
Miller Park Wellfield  
Historical Groundwater Quality Data  
Deep Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-1D																															
			10/18/95	1/15/96	4/22/96	7/29/96	2/12/97	4/28/97	7/7/97	10/22/97	6/24/98	12/16/98	7/20/99	8/24/00	11/27/00	5/30/01	10/18/01	5/7/02	10/31/02	5/19/03	11/12/03	5/12/04	10/26/04	5/4/05	11/2/05	4/26/06	10/26/06	5/7/07	11/14/07	6/17/08	10/30/08	7/8/09	3/31/15	
<b>INORGANICS</b>																																		
ALUMINUM	ug/L	50 to 200 (S)	<50	<50	<b>240</b>	<200	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<25
ANTIMONY	ug/L	6 (P)	<5	<5	<5	<60	<b>6.80</b>	<4	<4	<b>6.10</b>	<4	<4	<4	<4.0	<4	<4	<4	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
ARSENIC	ug/L	10 (P)	<3	<b>5</b>	<b>14</b>	<10	<b>14</b>	<b>16</b>	<b>12</b>	<b>14</b>	<b>14</b>	<b>12</b>	<b>13</b>	<b>8.7</b>	<b>11</b>	<b>14</b>	<b>14</b>	<b>9.4</b>	<b>8.8</b>	<b>8.8</b>	<b>9.4</b>	<b>9.1</b>	<b>11</b>	<b>11</b>	<b>9.9</b>	<b>11.4</b>	<b>11.7</b>	<b>11.4</b>	<b>11.9</b>	<b>15.9</b>	<b>14</b>	<b>7.6</b>	<b>6.0</b>	
BARIUM	ug/L	2,000 (P)	<b>230</b>	<b>230</b>	<b>230</b>	<b>280</b>	<b>230</b>	<b>240</b>	<b>247</b>	<b>240</b>	<b>280</b>	<b>242</b>	<b>232</b>	<b>312</b>	<b>291</b>	<b>306</b>	<b>251</b>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<b>373</b>
BERYLLIUM	ug/L	4 (P)	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1
CADMIUM	ug/L	5 (P)	<5	<5	<5	<5	<1	<1	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<5	<5	<5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1
CALCIUM	mg/L	--	<b>110</b>	<b>100</b>	<b>100</b>	<b>132</b>	<b>100</b>	<b>110</b>	<b>110</b>	<b>111</b>	<b>110</b>	<b>110</b>	<b>113</b>	<b>127</b>	<b>130</b>	<b>120</b>	<b>100</b>	<b>106</b>	<b>99</b>	<b>101</b>	<b>108</b>	<b>119</b>	<b>106</b>	<b>117</b>	<b>99</b>	<b>128</b>	<b>141</b>	<b>128</b>	<b>119</b>	<b>112</b>	<b>116</b>	<b>102</b>	<b>143</b>	
CHROMIUM	ug/L	100 (P)	<20	<20	<20	<10	<2	<2	<5.0	<5.0	<5.0	<5.0	<5.0	<5	<10	<10	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5
COBALT	ug/L	--	<20	<20	<20	<50	<100	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50	<10	<10	<20	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<25	
COPPER	ug/L	1,000 (S) / 1,300 (A)	<10	<10	<10	<25	<20	<20	<10	<10	<10	<10	<10	<20	<20	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<50
CYANIDE	mg/L	0.2 (P)	<0.005	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
IRON	ug/L	300 (S)	<b>180</b>	<b>2,700</b>	<b>3,300</b>	<b>3,700</b>	<b>3,700</b>	<b>3,500</b>	<b>3,300</b>	<b>3,100</b>	<b>4,100</b>	<b>3,400</b>	<b>3,100</b>	<b>4,080</b>	<b>4,240</b>	<b>3,980</b>	<b>3,510</b>	<b>3,250</b>	<b>2,960</b>	<b>2,950</b>	<b>2,830</b>	<b>3,340</b>	<b>3,080</b>	<b>3,130</b>	<b>3,050</b>	<b>3,820</b>	<b>4,180</b>	<b>3,800</b>	<b>3,840</b>	<b>3,570</b>	<b>3,570</b>	<b>3,080</b>	<b>421</b>	
LEAD	ug/L	15 (A)	<2	<2	<3	<3	<2	<2	<2	<2	<2	<2	<2	<2.0	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5	
MAGNESIUM	mg/L	--	<b>29.0</b>	<b>31.0</b>	<b>31.0</b>	<b>36.0</b>	<b>29.0</b>	<b>29.0</b>	<b>30.0</b>	<b>28.0</b>	<b>34.0</b>	<b>30.0</b>	<b>30.0</b>	<b>35.5</b>	<b>34.0</b>	<b>32.0</b>	<b>30.0</b>	<b>31.5</b>	<b>27.6</b>	<b>27.6</b>	<b>28.1</b>	<b>31.1</b>	<b>29.3</b>	<b>30.9</b>	<b>27.7</b>	<b>35.0</b>	<b>40.3</b>	<b>35.0</b>	<b>34.3</b>	<b>32.1</b>	<b>33.8</b>	<b>30.4</b>	<b>33.8</b>	
MANGANESE	ug/L	50 (S)	<b>68</b>	<b>66</b>	<b>70</b>	<b>70</b>	<b>63</b>	<b>68</b>	<b>58</b>	<b>57</b>	<b>66</b>	<b>51</b>	<b>49</b>	<b>66</b>	<b>70</b>	<b>70</b>	<b>60</b>	<b>53</b>	<b>46</b>	<b>49</b>	<b>44</b>	<b>58</b>	<b>48</b>	<b>65</b>	<b>50</b>	<b>75</b>	<b>73</b>	<b>67</b>	<b>64</b>	<b>71</b>	<b>68</b>	<b>71</b>	<b>97</b>	
MERCURY	ug/L	2 (P)	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<b>0.25</b>	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
NICKEL	ug/L	--	<20	<20	<20	<40	<40	<40	<20.0	<20.0	<20.0	<20.0	<20.0	<20	<10	<10	<10	<20	<20	<20	<20	<20	<20	<20	<20	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
POTASSIUM	mg/L	--	<b>2.5</b>	<b>2.6</b>	<b>2.9</b>	<5	<b>2.5</b>	<b>2.6</b>	<b>2.3</b>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<b>8.0</b>
SELENIUM	ug/L	50 (P)	<5	<5	<4	<5	<5	<5	<5	<5	<5	<5	<5	<5.0	<5	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5	
SILVER	ug/L	100 (S)	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	
SODIUM	mg/L	--	<b>23</b>	<b>29</b>	<b>25</b>	<b>25</b>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<b>76</b>
SULFIDE	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<b>2.00</b>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.05	
THALLIUM	ug/L	2 (P)	<2	<2	<2	<10	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1	<1	<1	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.5	
TIN	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	<50	<50	<50	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<10		
VANADIUM	mg/L	--	<0.01	<0.01	<0.01	<0.05	<1	<1	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.025		
ZINC	ug/L	5,000 (S)	<b>30</b>	<b>60</b>	<b>30</b>	<20	<10	<10	<10	<10	<10	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<10	
<b>VOC'S (METHOD 8260)</b>																																		
Acetone	ug/L	--	<50	<50	<50	<5	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<50	<10	<10	<10	<10	<10	<10	<10	<10	<5.0	
2-Butanone (MEK)	ug/L	--	<50	<50	<50	<5	<50	<50	<50	<50	<50	<50	<50	<100	<100	<100	<50	<50	<50	<50	<50	<50	<50	<50	<10	<10	<10	<10	<10	<10	<10	<10	<5.0	
Carbon Disulfide	ug/L	--	<5	<5	<5	<b>2</b>	<10	<10	<10	<10	<10	<10	<10	<100	<100	<100	<10	<10	<10	<10	<10	<10	<50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5.0	
Chloroform	ug/L	80 (P)	<5	<5	<5	<1	<5	<2	<2	<5	<5	<5	<5	<5.0	<5.0	<5.0	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1.0		
MTBE	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5.0
<b>FIELD PARAMETERS</b>																																		
pH	S.U.	6.5-8.5 (S)	<b>7.30</b>	<b>7.50</b>	<b>7.20</b>	<b>7.50</b>	<b>7.40</b>	<b>7.40</b>	<b>7.20</b>	<b>7.50</b>	<b>7.00</b>	<b>7.20</b>	<b>7.20</b>	<b>7.18</b>	<b>7.02</b>	<b>6.70</b>	<b>7.50</b>	<b>7.40</b>	<b>7.31</b>	<b>7.29</b>	<b>7.19</b>	<b>6.70</b>	<b>7.23</b>	<b>7.29</b>	<b>7.24</b>	<b>7.16</b>	<b>7.17</b>	<b>7.19</b>	<b>7.17</b>	<b>7.20</b>	<b>6.99</b>	<b>7.21</b>	--	
CONDUCTIVITY	umhos/cm	--	<b>663</b>	<b>847</b>	<b>730</b>	<b>750</b>	<b>830</b>	<b>870</b>	<b>840</b>	<b>760</b>	<b>870</b>	<b>800</b>	<b>680</b>	<b>886</b>	<b>1,007</b>	<b>810</b>	<b>820</b>	<b>770</b>	<b>732</b>	<b>657</b>	<b>775</b>	<b>659</b>	<b>781</b>	<b>579</b>	<b>813</b>	<b>732</b>	<b>681</b>	<b>668</b>	<b>705</b>	<b>635</b>	<b>586</b>	<b>789</b>	--	
TEMPERATURE	°C	--	<b>18.3</b>	<b>8.89</b>	<b>17.2</b>	<b>19.4</b>	<b>12.2</b>	<b>13.3</b>	<b>13.9</b>	<b>12.8</b>	<b>14.4</b>	<b>13.3</b>	NM	<b>19.7</b>	<b>10.9</b>	<b>15.5</b>	<b>13.2</b>	<b>13.75</b>	<b>13.4</b>	<b>14.5</b>	<b>14.0</b>	<b>14.8</b>	<b>14.2</b>	<b>14.1</b>	<b>14.4</b>	<b>14.3</b>	<b>13.9</b>	<b>15.0</b>	<b>14.3</b>	<b>15.2</b>	<b>14.6</b>	<b>16.1</b>	--	

(P) = Ohio EPA Primary Maximum Contaminant Level

(S) = Secondary Maximum Contaminant Level

(A) = Action Level

NA = NOT ANALYZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.

\* MW-1D was damaged by construction operations located in front of Tasty Made prior to the October 2016 monitoring event. The day before sampling, the casing pipe

**Table 2 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Deep Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-1D (continued)			
			4/14/16	10/18/16	4/12/17	10/12/17
<b>INORGANICS</b>						
ALUMINUM	ug/L	50 to 200 (S)	<25	<25	<25	<25
ANTIMONY	ug/L	6 (P)	<4	<4	<4	<4
ARSENIC	ug/L	10 (P)	5.0	3.7	3.8	5.0
BARIUM	ug/L	2,000 (P)	332	279	314	298
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1
CADMIUM	ug/L	5 (P)	<1	<1	<1	<1
CALCIUM	mg/L	--	126	119	116	117
CHROMIUM	ug/L	100 (P)	<5	<5	<5	<5
COBALT	ug/L	--	<25	<25	<25	<25
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50
CYANIDE	mg/L	0.2 (P)	<0.010	<0.010	<0.010	<0.010
IRON	ug/L	300 (S)	<80	<80	102	381
LEAD	ug/L	15 (A)	<5	<5	<5	<5
MAGNESIUM	mg/L	--	40.0	36.1	33.8	33.5
MANGANESE	ug/L	50 (S)	102	100	119	117
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0
POTASSIUM	mg/L	--	8.2	6.8	8.5	7.1
SELENIUM	ug/L	50 (P)	<5	<5	<5	<5
SILVER	ug/L	100 (S)	<10	<10	<10	<10
SODIUM	mg/L	--	69	73	69	50
SULFIDE	mg/L	--	<0.05	<0.05	<0.05	<0.05
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5
TIN	ug/L	--	<10	<10	<10	<10
VANADIUM	mg/L	--	<0.025	<0.025	<0.025	<0.025
ZINC	ug/L	5,000 (S)	<10	96	10	<10
<b>VOC'S (METHOD 8260)</b>						
Acetone	ug/L	--	<1.0	<5.0	<5.0	<5.0
2-Butanone (MEK)	ug/L	--	<5.0	9.0*	<5.0	<5.0
Carbon Disulfide	ug/L	--	<1.0	<1.0	<1.0	<1.0
Chloroform	ug/L	80 (P)	<1.0	<1.0	<1.0	<1.0
MTBE	ug/L	--	<1.0	<1.0	<1.0	<1.0

<b>FIELD PARAMETERS</b>						
pH	S.U.	6.5-8.5 (S)	7.09	7.20	7.15	7.10
CONDUCTIVITY	umhos/cm	--	1,155	790	743	1,002
TEMPERATURE	°C	--	15.9	18.5	15.9	16.4

(P) = Ohio EPA Primary Maximum Contaminant Level

(S) = Secondary Maximum Contaminant Level

(A) = Action Level

NA = NOT ANALZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.



**Table 2 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Deep Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-4D (continued)											
			5/18/16	6/8/16	7/20/16	8/17/16	9/21/16	10/19/16	11/9/16	12/21/16	1/18/17	4/19/17	7/19/17	10/11/17
<b>INORGANICS</b>														
ALUMINUM	ug/L	50 to 200 (S)	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
ANTIMONY	ug/L	6 (P)	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
ARSENIC	ug/L	10 (P)	5	4	3.4	3.9	3.8	3.5	3.6	3.6	3.2	4.2	4.4	<3.0
BARIIUM	ug/L	2,000 (P)	267	287	297	294	281	284	282	278	271	286	285	273
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
CADMIUM	ug/L	5 (P)	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
CALCIUM	mg/L	--	91.6	96.1	99.7	96.8	94.8	97.6	99.3	99.2	99.2	102	95.6	98.0
CHROMIUM	ug/L	100 (P)	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
COBALT	ug/L	--	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
CYANIDE	mg/L	0.2 (P)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
IRON	ug/L	300 (S)	<80	<80	<80	<80	<80	473	99	<80	<80	<80	<80	<80
LEAD	ug/L	15 (A)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MAGNESIUM	mg/L	--	31.7	29.7	28.9	31.4	30.3	30.9	30.1	29.5	29.4	30.3	30.9	30.0
MANGANESE	ug/L	50 (S)	249	235	242	246	242	233	232	247	234	231	210	215
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
POTASSIUM	mg/L	--	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
SELENIUM	ug/L	50 (P)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
SILVER	ug/L	100 (S)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
SODIUM	mg/L	--	14.9	14.1	13.2	14.1	14.8	16.4	15	13	12.7	13.4	12.2	11
SULFIDE	mg/L	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
TIN	ug/L	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
VANADIUM	mg/L	--	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
ZINC	ug/L	5,000 (S)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	17	<10
<b>VOC'S (METHOD 8260)</b>														
Acetone	ug/L	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Butanone (MEK)	ug/L	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon Disulfide	ug/L	--	<1.0	<1.0	<1.0	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	ug/L	80 (P)	<1.0	<1.0	<1.0	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MTBE	ug/L	--	<1.0	<1.0	<1.0	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
<b>FIELD PARAMETERS</b>														
pH	S.U.	6.5-8.5 (S)	7.37	7.19	7.22	7.36	7.34	7.30	7.27	7.39	7.23	7.34	7.52	7.22
CONDUCTIVITY	umhos/cm	--	583	672	760	682	572	681	611	580	657	632	701	679
TEMPERATURE	°C	--	15.7	16.0	16.3	16.1	16.6	15.9	15.0	14.8	14.9	16.2	17.9	17.8

(P) = Ohio EPA Primary Maximum Contaminant Level

(S) = Secondary Maximum Contaminant Level

(A) = Action Level

NA = NOT ANALYZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.

**Table 2 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Deep Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-5D																										
			10/19/95	1/17/96	4/22/96	7/30/96	2/12/97	4/29/97	7/7/97	10/21/97	6/24/98	12/16/98	7/20/99	8/24/00	11/27/00	5/30/01	10/19/01	6/3/02	5/20/03	11/12/03	5/25/04	10/27/04	5/3/05	11/1/05	6/17/08	4/9/15			
<b>INORGANICS</b>																													
ALUMINIUM	ug/L	50 to 200 (S)	<50	<50	<b>90</b>	<200	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	
ANTIMONY	ug/L	6 (P)	<5	<5	<5	<60	<b>4.20</b>	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	
ARSENIC	ug/L	10 (P)	<b>7</b>	<b>27</b>	<b>22</b>	<b>14.6</b>	<b>47</b>	<b>47</b>	<b>49</b>	<b>44</b>	<b>42</b>	<b>53</b>	<b>24.2</b>	<b>41</b>	<b>34</b>	<b>42</b>	<b>29.5</b>	<b>26.3</b>	<b>26.4</b>	<b>24.5</b>	<b>28.8</b>	<b>27.5</b>	<b>32.3</b>	<b>38.7</b>	<b>11</b>				
BARIIUM	ug/L	2,000 (P)	<b>120</b>	<b>190</b>	<b>110</b>	<200	<b>160</b>	<b>180</b>	<b>180</b>	<b>170</b>	<b>179</b>	<b>170</b>	<b>168</b>	<b>175</b>	<b>163</b>	<b>183</b>	<b>169</b>	--	--	--	--	--	--	--	--	--	--	<b>134</b>	
BERYLLIUM	ug/L	4 (P)	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CADMIUM	ug/L	5 (P)	<5	<5	<5	<5	<1	<1	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CALCIUM	mg/L	--	<b>72.0</b>	<b>73.0</b>	<b>69.0</b>	<b>74.0</b>	<b>72.0</b>	<b>74.0</b>	<b>75.0</b>	<b>79.0</b>	<b>62.0</b>	<b>77.0</b>	<b>77.0</b>	<b>73.7</b>	<b>82.0</b>	<b>84.0</b>	<b>77.0</b>	<b>109.0</b>	<b>81.6</b>	<b>88.1</b>	<b>82.6</b>	<b>79.8</b>	<b>87.5</b>	<b>81.3</b>	<b>81.3</b>	<b>79.2</b>			
CHROMIUM	ug/L	100 (P)	<20	<20	<20	<10	<2	<2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
COBALT	ug/L	--	<20	<20	<20	<50	<100	<100	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
COPPER	ug/L	1,000 (S) / 1,300 (A)	<10	<10	<10	<25	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	--	--	--	--	--	--	--	--	--	--	<50	
CYANIDE	mg/L	0.2 (P)	<0.005	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
IRON	ug/L	300 (S)	<b>1,500</b>	<b>4,100</b>	<b>3,100</b>	<b>2,600</b>	<b>8,400</b>	<b>8,200</b>	<b>7,500</b>	<b>7,100</b>	<b>8,200</b>	<b>7,700</b>	<b>7,600</b>	<b>7,540</b>	<b>8,270</b>	<b>8,230</b>	<b>7,870</b>	<b>7,080</b>	<b>7,260</b>	<b>6,980</b>	<b>7,100</b>	<b>7,130</b>	<b>7,090</b>	<b>7,730</b>	<b>7,490</b>	<b>80</b>			
LEAD	ug/L	15 (A)	<2	<3	<3	<3	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
MAGNESIUM	mg/L	--	<b>24.0</b>	<b>25.0</b>	<b>25.0</b>	<b>26.0</b>	<b>25.0</b>	<b>26.0</b>	<b>26.0</b>	<b>26.0</b>	<b>23.0</b>	<b>27.0</b>	<b>26.0</b>	<b>24.9</b>	<b>26.0</b>	<b>27.0</b>	<b>28.0</b>	<b>33.0</b>	<b>27.3</b>	<b>28.4</b>	<b>24.9</b>	<b>28.0</b>	<b>28.9</b>	<b>28.6</b>	<b>27.8</b>	<b>30.0</b>			
MANGANESE	ug/L	50 (S)	<b>270</b>	<b>240</b>	<b>240</b>	<b>240</b>	<b>290</b>	<b>310</b>	<b>290</b>	<b>280</b>	<b>313</b>	<b>292</b>	<b>291</b>	<b>316</b>	<b>330</b>	<b>340</b>	<b>330</b>	<b>317</b>	<b>303</b>	<b>287</b>	<b>293</b>	<b>284</b>	<b>292</b>	<b>315</b>	<b>351</b>	<b>283</b>			
MERCURY	ug/L	2 (P)	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<b>4.00</b>	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
NICKEL	ug/L	--	<20	<20	<20	<40	<40	<40	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
POTASSIUM	mg/L	--	<b>1.40</b>	<b>1.10</b>	<b>1.20</b>	<5	<b>1.00</b>	<b>1.00</b>	<b>0.91</b>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<2.0		
SELENIUM	ug/L	50 (P)	<5	<4	<4	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
SILVER	ug/L	100 (S)	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
SODIUM	mg/L	--	<b>4.9</b>	<b>5.3</b>	<b>7.2</b>	<b>9.1</b>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5.0	
SULFIDE	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
THALLIUM	ug/L	2 (P)	<2	<2	<2	<10	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
TIN	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	<50	<50	<50	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
VANADIUM	mg/L	--	<0.01	<0.01	<0.01	<0.05	<1	<1	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
ZINC	ug/L	5,000 (S)	<b>20.00</b>	<10	<b>20.00</b>	<20	<10	<b>21.00</b>	<10	<10	<10	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
<b>VOC'S (METHOD 8260)</b>																													
Acetone	ug/L	--	<50	<50	<50	<5	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<5.0
2-Butanone (MEK)	ug/L	--	<50	<50	<50	<5	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<5.0
Carbon Disulfide	ug/L	--	<5	<b>6</b>	<5	<b>2</b>	<10	<10	<10	<10	<10	<10	<10	<10	<100	<100	<100	<10	<10	<10	<10	<10	<50	<1	<1	<1	<1.0		
Chloroform	ug/L	80 (P)	<5	<5	<5	<1	<5	<2	<2	<5	<5	<5	<5	<5	<5.0	<5.0	<5.0	<5	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1.0	
MTBE	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<1.0	
<b>FIELD PARAMETERS</b>																													
pH	S.U.	6.5-8.5 (S)	<b>7.50</b>	<b>7.70</b>	<b>7.30</b>	<b>7.70</b>	<b>7.70</b>	<b>7.80</b>	<b>6.80</b>	<b>7.60</b>	<b>7.40</b>	<b>7.50</b>	<b>7.50</b>	<b>7.38</b>	<b>7.36</b>	<b>6.60</b>	<b>7.50</b>	<b>7.47</b>	<b>7.30</b>	<b>7.48</b>	<b>7.58</b>	<b>7.39</b>	<b>7.54</b>	<b>7.49</b>	<b>7.52</b>	--			
CONDUCTIVITY	umhos/cm	--	<b>413</b>	<b>367</b>	<b>470</b>	<b>450</b>	<b>600</b>	<b>640</b>	<b>600</b>	<b>560</b>	<b>570</b>	<b>600</b>	<b>530</b>	<b>570</b>	<b>630</b>	<b>580</b>	<b>600</b>	<b>590</b>	<b>554</b>	<b>650</b>	<b>581</b>	<b>623</b>	<b>450</b>	<b>632</b>	<b>477</b>	--			
TEMPERATURE	°C	--	<b>16.1</b>	<b>16.1</b>	<b>17.8</b>	<b>16.1</b>	<b>11.7</b>	<b>10.0</b>	<b>13.3</b>	<b>12.8</b>	<b>13.3</b>	<b>13.3</b>	NM	<b>18.8</b>	<b>10.2</b>	<b>13.3</b>	<b>13.2</b>	<b>14.1</b>	<b>13.4</b>	<b>13.2</b>	<b>13.7</b>	<b>13.2</b>	<b>13.6</b>	<b>13.9</b>	<b>14.1</b>	--			

(P) = Ohio EPA Primary Maximum Contaminant Level  
(S) = Secondary Maximum Contaminant Level  
(A) = Action Level  
NA = NOT ANALYZED  
Shaded parameters have Primary MCL.  
Shaded results exceed Primary MCL.

**Table 2 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Deep Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-5D (continued)			
			4/12/16	10/18/16	4/10/17	10/12/17
<b>INORGANICS</b>						
ALUMINUM	ug/L	50 to 200 (S)	<25	<25	<25	<25
ANTIMONY	ug/L	6 (P)	<4	<4	<4	<4
ARSENIC	ug/L	10 (P)	15	12.5	14.5	10
BARIUM	ug/L	2,000 (P)	115	111	117	114
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1
CADMIUM	ug/L	5 (P)	<1	<1	<1	<1
CALCIUM	mg/L	--	87.4	93.0	91.7	87.7
CHROMIUM	ug/L	100 (P)	<5	<5	<5	<5
COBALT	ug/L	--	<25	<25	<25	<25
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50
CYANIDE	mg/L	0.2 (P)	<0.010	<0.010	<0.010	<0.010
IRON	ug/L	300 (S)	<80	<80	<80	176
LEAD	ug/L	15 (A)	<5	<5	<5	<5
MAGNESIUM	mg/L	--	31.4	33.5	31.3	29.1
MANGANESE	ug/L	50 (S)	283	287	301	272
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0
POTASSIUM	mg/L	--	<2	<2	<2	<2
SELENIUM	ug/L	50 (P)	<5	<5	<5	<5
SILVER	ug/L	100 (S)	<10	<10	<10	<10
SODIUM	mg/L	--	5	7.2	6.1	5.8
SULFIDE	mg/L	--	--	<0.05	<0.05	<0.05
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5
TIN	ug/L	--	<10	<10	<10	<10
VANADIUM	mg/L	--	<0.025	<0.025	<0.025	<0.025
ZINC	ug/L	5,000 (S)	<10	<10	<10	<10
<b>VOC'S (METHOD 8260)</b>						
Acetone	ug/L	--	<1.0	<5.0	<5.0	<5.0
2-Butanone (MEK)	ug/L	--	<5.0	<5.0	<5.0	<5.0
Carbon Disulfide	ug/L	--	<1.0	<1.0	<1.0	<1.0
Chloroform	ug/L	80 (P)	<1.0	<1.0	<1.0	<1.0
MTBE	ug/L	--	<1.0	<1.0	<1.0	<1.0
<b>FIELD PARAMETERS</b>						
pH	S.U.	6.5-8.5 (S)	7.48	7.47	7.21	7.44
CONDUCTIVITY	umhos/cm	--	573	478	512	637
TEMPERATURE	°C	--	14.7	15.3	16.6	15.0

(P) = Ohio EPA Primary Maximum Contaminant Level

(S) = Secondary Maximum Contaminant Level

(A) = Action Level

NA = NOT ANALZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.



**Table 2 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Deep Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-6D (continued)			
			4/12/16	10/18/16	4/10/17	10/11/17
<b>INORGANICS</b>						
ALUMINUM	ug/L	50 to 200 (S)	<25	<25	<25	<25
ANTIMONY	ug/L	6 (P)	<4	<4	<4	<4
ARSENIC	ug/L	10 (P)	<b>7</b>	<b>5.4</b>	<b>5.7</b>	<b>5.0</b>
BARIIUM	ug/L	2,000 (P)	<b>212</b>	<b>205</b>	<b>209</b>	<b>210</b>
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1
CADMIUM	ug/L	5 (P)	<1	<1	<1	<1
CALCIUM	mg/L	--	<b>102</b>	<b>113</b>	<b>101</b>	<b>115</b>
CHROMIUM	ug/L	100 (P)	<5	<5	<5	<5
COBALT	ug/L	--	<25	<25	<25	<25
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50
CYANIDE	mg/L	0.2 (P)	<0.010	<0.010	<0.010	<0.010
IRON	ug/L	300 (S)	<80	<80	<80	<b>102</b>
LEAD	ug/L	15 (A)	<5	<5	<5	<5
MAGNESIUM	mg/L	--	<b>34.4</b>	<b>37.6</b>	<b>37.1</b>	<b>37.0</b>
MANGANESE	ug/L	50 (S)	<b>48</b>	<b>54</b>	<b>54</b>	<b>44</b>
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0
POTASSIUM	mg/L	--	<b>2.8</b>	<b>2.4</b>	<b>2.5</b>	<b>2.3</b>
SELENIUM	ug/L	50 (P)	<5	<5	<5	<5
SILVER	ug/L	100 (S)	<10	<10	<10	<10
SODIUM	mg/L	--	<b>37.2</b>	<b>33.4</b>	<b>25.2</b>	<b>19.0</b>
SULFIDE	mg/L	--	--	<0.05	<0.05	<0.05
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5
TIN	ug/L	--	<10	<10	<10	<10
VANADIUM	mg/L	--	<0.025	<0.025	<0.025	<0.025
ZINC	ug/L	5,000 (S)	<10	<b>25</b>	<10	<10
<b>VOC'S (METHOD 8260)</b>						
Acetone	ug/L	--	<1.0	<5.0	<5.0	<5.0
2-Butanone (MEK)	ug/L	--	<5.0	<5.0	<5.0	<5.0
Carbon Disulfide	ug/L	--	<1.0	<1.0	<1.0	<1.0
Chloroform	ug/L	80 (P)	<1.0	<1.0	<1.0	<1.0
MTBE	ug/L	--	<1.0	<1.0	<1.0	<1.0

<b>FIELD PARAMETERS</b>						
pH	S.U.	6.5-8.5 (S)	<b>7.28</b>	<b>7.36</b>	<b>7.20</b>	<b>7.21</b>
CONDUCTIVITY	umhos/cm	--	<b>767</b>	<b>600</b>	<b>626</b>	<b>834</b>
TEMPERATURE	°C	--	<b>16.2</b>	<b>16.7</b>	<b>16.8</b>	<b>17.2</b>

(P) = Ohio EPA Primary Maximum Contaminant Level

(S) = Secondary Maximum Contaminant Level

(A) = Action Level

NA = NOT ANALZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.

**Table 2 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Deep Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	MW-9D																							
			4/15/15	10/7/15	10/20/15	11/4/15	11/18/15	12/2/15	12/16/15	1/20/16	2/17/16	3/16/16	4/13/16	5/18/16	6/8/16	7/20/16	8/17/16	9/21/16	10/19/16	11/9/16	12/21/16	1/18/17	4/19/17	7/19/17	10/11/17	
<b>INORGANICS</b>																										
ALUMINUM	ug/L	50 to 200 (S)	<25	<150	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
ANTIMONY	ug/L	6 (P)	<3	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
ARSENIC	ug/L	10 (P)	7	8	8	6	9	9	6	13	9	8	7	5	6	6.1	7.7	6.4	6.5	6.3	5.5	6.3	6.8	6.0		
BARIUM	ug/L	2,000 (P)	74	78	73	74	135	123	68	108	94	91	82	89	127	111	108	102	83	84	87.7	82.5	104	132	111	
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
CADMIUM	ug/L	5 (P)	<5	<5	<5	<1	<5	<5	<5	<5	<5	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
CALCIUM	mg/L	--	123	118	109	108	149	145	126	133	125	120	113	114	139	134	136	124	114	118	126	117	134	140	127	
CHROMIUM	ug/L	100 (P)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
COBALT	ug/L	--	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
CYANIDE	mg/L	0.2 (P)	<0.040	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
IRON	ug/L	300 (S)	934	298	1,200	<80	374	1,570	321	1,830	687	258	<80	<80	80	<80	141	391	996	342	297	149	<80	<80	174	
LEAD	ug/L	15 (A)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MAGNESIUM	mg/L	--	34.7	33.0	29.8	31.7	39.4	37.3	32.9	34.7	34.2	34.0	33.0	34.9	35.5	33.1	36.5	35.0	33.2	33.2	35.1	33.1	35.4	35.2	35.0	
MANGANESE	ug/L	50 (S)	339	261	276	241	370	392	318	308	328	286	227	297	356	322	344	348	306	268	312	257	312	342	283	
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
POTASSIUM	mg/L	--	6.8	3.2	3.2	3.0	7.2	7.7	4.3	5.4	4.5	4.1	3.5	4.3	7.5	8.2	6.9	7.7	6.8	5.5	6.1	4.9	7.2	12.1	9.2	
SELENIUM	ug/L	50 (P)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
SILVER	ug/L	100 (S)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
SODIUM	mg/L	--	69.1	22.0	22.7	20.0	87.5	99.6	56.4	62.7	50.2	46.6	20.0	40.5	95.6	97.3	76.2	88.4	60.5	42.9	41.0	25.8	59.0	95.6	90.0	
SULFIDE	mg/L	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
TIN	ug/L	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
VANADIUM	mg/L	--	<0.025	<0.010	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
ZINC	ug/L	5,000 (S)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	17.0	<10	11.0	<10	<10	<10	<10	<10
<b>VOC'S (METHOD 8260)</b>																										
Acetone	ug/L	--	<5.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Butanone (MEK)	ug/L	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon Disulfide	ug/L	--	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	ug/L	80 (P)	<1.0	1.5	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MTBE	ug/L	--	<1.0	<1.0	<2.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
<b>FIELD PARAMETERS</b>																										
pH	S.U.	6.5-8.5 (S)	7.11	7.21	7.20	7.20	7.07	6.94	7.05	7.04	7.00	7.11	7.12	7.23	6.90	6.95	7.07	7.02	7.05	7.04	7.17	7.02	7.06	6.64	7.00	
CONDUCTIVITY	umhos/cm	--	993	810	829	815	1,309	1,415	1,230	1,274	1,103	922	790	798	1,264	1,350	1,127	994	1,008	803	776	810	910	1,307	1,271	
TEMPERATURE	°C	--	16.7	16.1	15.8	16.0	16.7	16.5	15.9	15.2	15.6	16.0	15.7	16.1	16.6	16.9	17.0	16.7	16.3	15.6	15.3	15.1	16.2	18.5	17.1	

(P) = Ohio EPA Primary Maximum Contaminant Level  
(S) = Secondary Maximum Contaminant Level  
(A) = Action Level  
NA = NOT ANALYZED  
Shaded parameters have Primary MCL.  
Shaded results exceed Primary MCL.





**Table 2 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Deep Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	PW-19														PW-20															
			2/23/16	3/23/16	4/14/16	5/18/16	6/8/16	7/15/16	8/16/16	9/23/16	10/18/16	11/10/16	12/12/16	1/23/17	4/14/17	7/20/17	10/11/17	2/23/16	3/23/16	4/14/16	5/18/16	6/8/16	7/15/16	8/16/16	9/23/16	10/18/16	11/10/16	12/12/16	1/23/17	4/14/17	7/20/17	10/19/17
<b>INORGANICS</b>																																
ALUMINUM	ug/L	50 to 200 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
ANTIMONY	ug/L	6 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
ARSENIC	ug/L	10 (P)	12	12	10.7	4.9	6.3	3.8	8.6	3.9	4.4	5.6	8.0	5.6	7.3	14.6	14.0	13.2	10	7.4	3.2	<3.0	5.0	<3.0	6.8	4.4	6.9	4.8	3.9	<3.0	5.7	3.5
BARIIUM	ug/L	2,000 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
BERYLLIUM	ug/L	4 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
CADMIUM	ug/L	5 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
CALCIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
CHROMIUM	ug/L	100 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
COBALT	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
COPPER	ug/L	1,000 (S) / 1,300 (A)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
CYANIDE	mg/L	0.2 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
IRON	ug/L	300 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
LEAD	ug/L	15 (A)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
MAGNESIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
MANGANESE	ug/L	50 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
MERCURY	ug/L	2 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
NICKEL	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
POTASSIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
SELENIUM	ug/L	50 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
SILVER	ug/L	100 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
SODIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
SULFIDE	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
THALLIUM	ug/L	2 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
TIN	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
VANADIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
ZINC	ug/L	5,000 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
<b>VOC'S (METHOD 8260)</b>																																
Acetone	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
2-Butanone (MEK)	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Carbon Disulfide	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Chloroform	ug/L	80 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
MTBE	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
<b>FIELD PARAMETERS</b>																																
pH	S.U.	6.5-8.5 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
CONDUCTIVITY	umhos/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
TEMPERATURE	°C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		

(P) = Ohio EPA Primary Maximum Contaminant Level  
(S) = Secondary Maximum Contaminant Level  
(A) = Action Level  
NA = NOT ANALYZED  
Shaded parameters have Primary MCL.  
Shaded results exceed Primary MCL.

**Table 2 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Deep Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	PW-22														
			2/19/16	3/23/16	4/14/16	5/18/16	6/8/16	7/15/16	8/16/16	9/23/16	10/18/16	11/10/16	12/12/16	1/23/17	4/14/17	7/20/17	10/11/17
<b>INORGANICS</b>																	
ALUMINUM	ug/L	50 to 200 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANTIMONY	ug/L	6 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ARSENIC	ug/L	10 (P)	14.1	11	7.8	3.1	5.4	<3.0	6.5	3.4	4.6	6.7	4.2	4.2	6.3	12.6	12
BARIUM	ug/L	2,000 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BERYLLIUM	ug/L	4 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CADMIUM	ug/L	5 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CALCIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CHROMIUM	ug/L	100 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COBALT	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COPPER	ug/L	1,000 (S) / 1,300 (A)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CYANIDE	mg/L	0.2 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IRON	ug/L	300 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LEAD	ug/L	15 (A)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAGNESIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MANGANESE	ug/L	50 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MERCURY	ug/L	2 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
NICKEL	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
POTASSIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SELENIUM	ug/L	50 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SILVER	ug/L	100 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SODIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SULFIDE	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
THALLIUM	ug/L	2 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TIN	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VANADIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ZINC	ug/L	5,000 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>VOC'S (METHOD 8260)</b>																	
Acetone	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone (MEK)	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon Disulfide	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	ug/L	80 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MTBE	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>FIELD PARAMETERS</b>																	
pH	S.U.	6.5-8.5 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CONDUCTIVITY	umhos/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TEMPERATURE	°C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

(P) = Ohio EPA Primary Maximum Contaminant Level  
(S) = Secondary Maximum Contaminant Level  
(A) = Action Level  
NA = NOT ANALZED  
Shaded parameters have Primary MCL.  
Shaded results exceed Primary MCL.

**Table 2 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Deep Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	PW-23																			
			9/1/15	10/20/15	11/6/15	12/16/15	1/20/16	2/17/16	3/16/16	4/13/16	5/18/16	6/8/16	7/20/16	8/17/16	9/21/16	10/19/16	11/9/16	12/21/16	1/23/17	4/19/17	7/20/17	10/11/17
<b>INORGANICS</b>																						
ALUMINUM	ug/L	50 to 200 (S)	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
ANTIMONY	ug/L	6 (P)	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	
ARSENIC	ug/L	10 (P)	7	9	7	9	8	11	20	9	9	5	5.7	7.4	6.9	15.7	10.1	8.0	7.3	4.2	8.3	5.0
BARIIUM	ug/L	2,000 (P)	79	74	69	84	81	85	85	72	71	154	113	89	88	89	84	81.4	75.4	125	84	84
BERYLLIUM	ug/L	4 (P)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
CADMIUM	ug/L	5 (P)	<5	<5	<5	<5	<5	<5	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	<1	
CALCIUM	mg/L	--	136	134	138	140	134	129	141	135	126	116	120	135	118	158	138	127	124	118	128	126
CHROMIUM	ug/L	100 (P)	<10	<10	<10	<10	<10	<10	<5	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	
COBALT	ug/L	--	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
COPPER	ug/L	1,000 (S) / 1,300 (A)	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	
CYANIDE	mg/L	0.2 (P)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
IRON	ug/L	300 (S)	<80	460	<80	292	782	1,400	2,420	131	490	<80	<80	241	281	2,160	1,350	885	821	<80	113	476
LEAD	ug/L	15 (A)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
MAGNESIUM	mg/L	--	36.3	37.4	35.8	36.0	37.9	37.6	39.7	37.8	38.4	35.4	35.1	37.6	34.4	41.5	36.7	33.5	33.4	35.0	32.7	33.0
MANGANESE	ug/L	50 (S)	270	279	263	260	220	241	286	253	272	164	169	249	236	269	259	249	237	187	195	204
MERCURY	ug/L	2 (P)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
NICKEL	ug/L	--	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	
POTASSIUM	mg/L	--	5.8	5.9	5.4	5.6	5.1	4.9	5.7	5.6	5.0	4.3	3.6	4.6	4.3	5.4	5.1	5.3	5.2	5.1	4.8	4.8
SELENIUM	ug/L	50 (P)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
SILVER	ug/L	100 (S)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
SODIUM	mg/L	--	67.8	67.0	66.4	66.9	55.6	58.0	69.9	61.4	70.7	41.4	40.2	66.7	60.3	89.6	83.0	83.4	76.8	48.8	63.7	57.0
SULFIDE	mg/L	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
THALLIUM	ug/L	2 (P)	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	
TIN	ug/L	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
VANADIUM	mg/L	--	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	
ZINC	ug/L	5,000 (S)	28.0	22.0	<10	<10	<10	<10	12.0	<10	<10	<10	<10	<10	<10	52.0	11.0	<10	<10	<10	<10	
<b>VOC'S (METHOD 8260)</b>																						
Acetone	ug/L	--	<1.0	<2.0	<2.0	<1.0	<1.0	2.3	<1.0	<1.0	<5.0	<5.0	<5.0	7.5	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
2-Butanone (MEK)	ug/L	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
Carbon Disulfide	ug/L	--	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Chloroform	ug/L	80 (P)	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
MTBE	ug/L	--	<1.0	<2.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>FIELD PARAMETERS</b>																						
pH	S.U.	6.5-8.5 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
CONDUCTIVITY	umhos/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
TEMPERATURE	°C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

(P) = Ohio EPA Primary Maximum Contaminant Level  
(S) = Secondary Maximum Contaminant Level  
(A) = Action Level  
NA = NOT ANALZED  
Shaded parameters have Primary MCL.  
Shaded results exceed Primary MCL.

**Table 2 (continued)  
City of Lancaster, Ohio  
Miller Park Wellfield  
Historical Groundwater Quality Data  
Deep Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	PW-25								PW-26															
			2/23/16	3/23/16	4/14/16	5/18/16	6/8/16	7/15/16	7/20/17	10/23/17	2/23/16	3/23/16	4/14/16	5/18/16	6/8/16	7/15/16	8/16/16	9/23/16	10/18/16	11/10/16	12/12/16	1/23/17	4/14/17	7/20/17	10/11/17	
<b>INORGANICS</b>																										
ALUMINUM	ug/L	50 to 200 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANTIMONY	ug/L	6 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ARSENIC	ug/L	10 (P)	12.9	12	9	5	5.5	<3.0	8.9	3.0	13.7	11	7.8	3.7	4.1	6.1	8.3	6.6	5.7	7.4	4.5	5.2	10.0	10.5	11.0	
BARIUM	ug/L	2,000 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BERYLLIUM	ug/L	4 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
CADMIUM	ug/L	5 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
CALCIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
CHROMIUM	ug/L	100 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
COBALT	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
COPPER	ug/L	1,000 (S) / 1,300 (A)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
CYANIDE	mg/L	0.2 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
IRON	ug/L	300 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
LEAD	ug/L	15 (A)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MAGNESIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MANGANESE	ug/L	50 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MERCURY	ug/L	2 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
NICKEL	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
POTASSIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
SELENIUM	ug/L	50 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
SILVER	ug/L	100 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
SODIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
SULFIDE	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
THALLIUM	ug/L	2 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
TIN	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
VANADIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
ZINC	ug/L	5,000 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
<b>VOC'S (METHOD 8260)</b>																										
Acetone	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
2-Butanone (MEK)	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Carbon Disulfide	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Chloroform	ug/L	80 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MTBE	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
<b>FIELD PARAMETERS</b>																										
pH	S.U.	6.5-8.5 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
CONDUCTIVITY	umhos/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
TEMPERATURE	°C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

(P) = Ohio EPA Primary Maximum Contaminant Level

(S) = Secondary Maximum Contaminant Level

(A) = Action Level

NA = NOT ANALYZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.

**Table 2 (continued)**  
**City of Lancaster, Ohio**  
**Miller Park Wellfield**  
**Historical Groundwater Quality Data**  
**Deep Zone**

PARAMETERS	Units	MCL/SMCL/ ACTION LEVEL	PW-27														PW-28													
			2/23/16	3/24/16	4/14/16	5/18/16	6/8/16	7/15/16	8/16/16	9/23/16	10/18/16	11/10/16	12/12/16	1/23/17	4/14/17	7/20/17	2/19/16	3/23/16	4/14/16	5/18/16	6/8/16	7/15/16	8/16/16	9/23/16	10/18/16	11/10/16	12/12/16	4/14/17	7/20/17	
<b>INORGANICS</b>																														
ALUMINUM	ug/L	50 to 200 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
ANTIMONY	ug/L	6 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
ARSENIC	ug/L	10 (P)	13.5	18	9	4.3	3.7	4.7	8.0	5.5	4.9	7.7	8.5	<3.0	5.5	15.0	14	11	6.3	4.9	4.7	3.7	5.1	5.2	3.9	6.8	5.2	4.2	13.0	
BARIUM	ug/L	2,000 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
BERYLLIUM	ug/L	4 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
CADMIUM	ug/L	5 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
CALCIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
CHROMIUM	ug/L	100 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
COBALT	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
COPPER	ug/L	1,000 (S) / 1,300 (A)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
CYANIDE	mg/L	0.2 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
IRON	ug/L	300 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
LEAD	ug/L	15 (A)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MAGNESIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MANGANESE	ug/L	50 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MERCURY	ug/L	2 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
NICKEL	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
POTASSIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
SELENIUM	ug/L	50 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
SILVER	ug/L	100 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
SODIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
SULFIDE	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
THALLIUM	ug/L	2 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
TIN	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
VANADIUM	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
ZINC	ug/L	5,000 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
<b>VOC'S (METHOD 8260)</b>																														
Acetone	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
2-Butanone (MEK)	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Carbon Disulfide	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Chloroform	ug/L	80 (P)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MTBE	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
<b>FIELD PARAMETERS</b>																														
pH	S.U.	6.5-8.5 (S)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
CONDUCTIVITY	umhos/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
TEMPERATURE	°C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

(P) = Ohio EPA Primary Maximum Contaminant Level

(S) = Secondary Maximum Contaminant Level

(A) = Action Level

NA = NOT ANALZED

Shaded parameters have Primary MCL.

Shaded results exceed Primary MCL.



**ATTACHMENT 3**

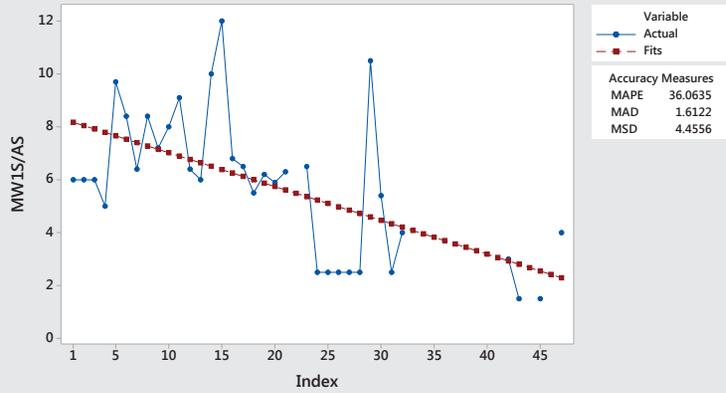
**MANN-KENDALL TREND ANALYSES**

**ATTACHMENT 4**

**TIME-VERSUS-CONCENTRATION PLOTS**

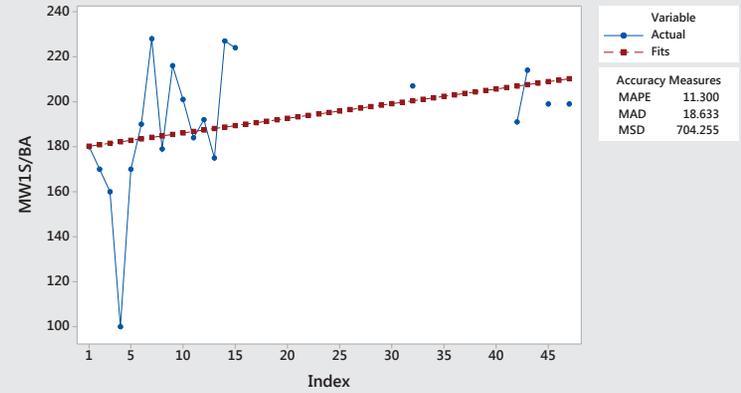
Trend Analysis Plot for MW1S/AS

Linear Trend Model  
 $Y_t = 8.300 - 0.1278 \times t$



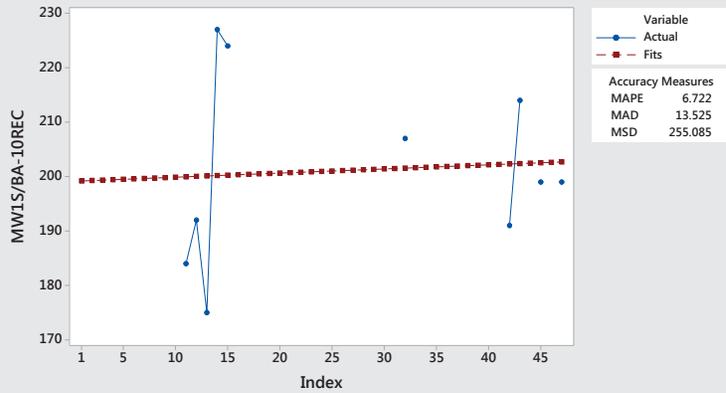
Trend Analysis Plot for MW1S/BA

Linear Trend Model  
 $Y_t = 179.59 + 0.651 \times t$



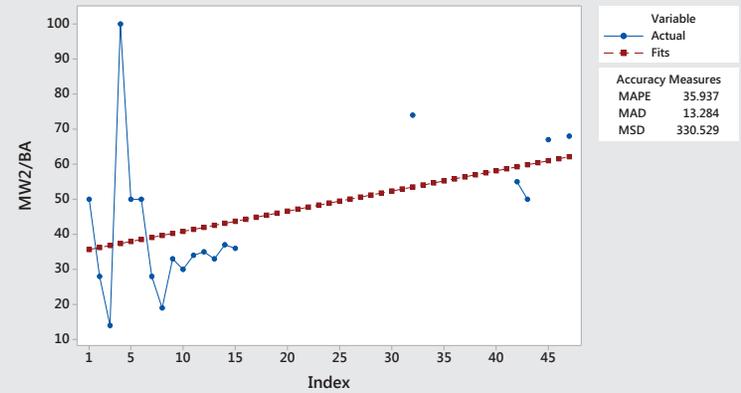
Trend Analysis Plot for MW1S/BA-10REC

Linear Trend Model  
 $Y_t = 199.1 + 0.076 \times t$



Trend Analysis Plot for MW2/BA

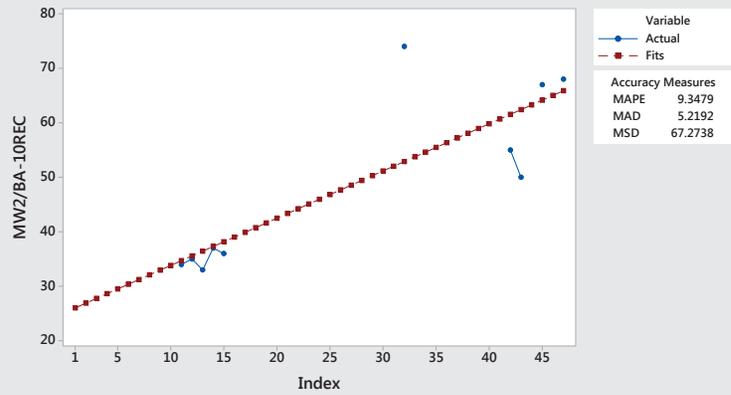
Linear Trend Model  
 $Y_t = 35.08 + 0.576 \times t$



Trend Analysis Plot for MW2/BA-10REC

Linear Trend Model

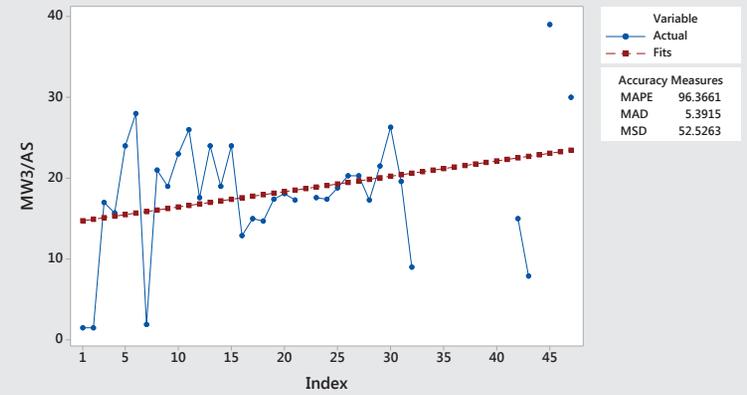
$$Y_t = 25.17 + 0.866 \times t$$



Trend Analysis Plot for MW3/AS

Linear Trend Model

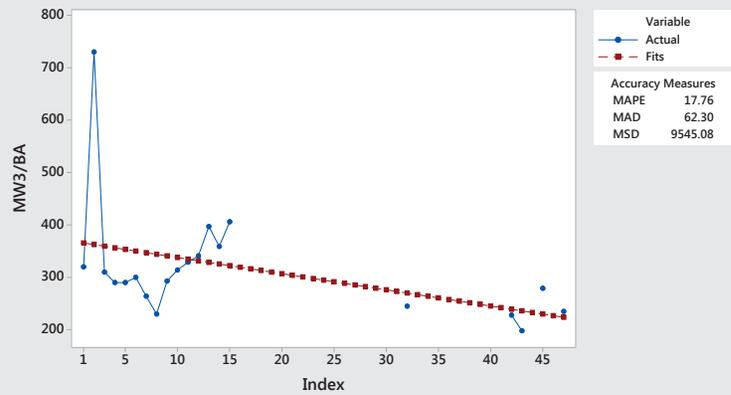
$$Y_t = 14.54 + 0.190 \times t$$



Trend Analysis Plot for MW3/BA

Linear Trend Model

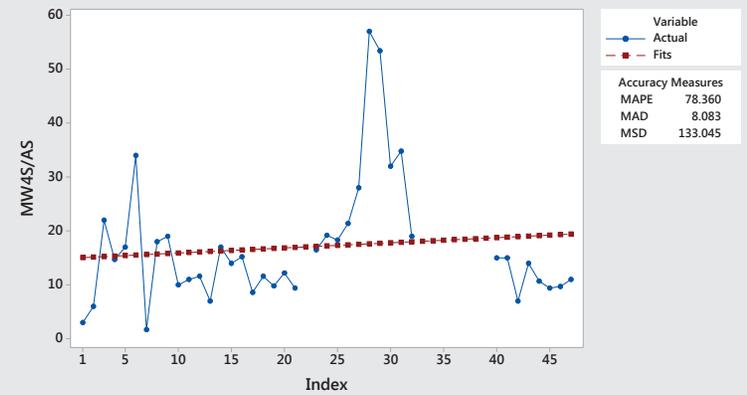
$$Y_t = 368.6 - 3.08 \times t$$



Trend Analysis Plot for MW4S/AS

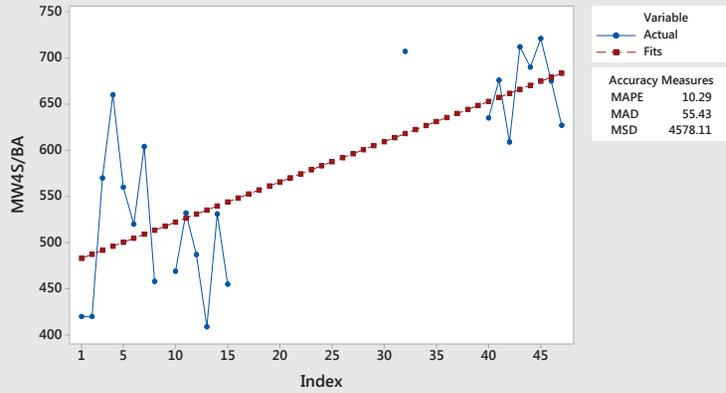
Linear Trend Model

$$Y_t = 14.95 + 0.095 \times t$$



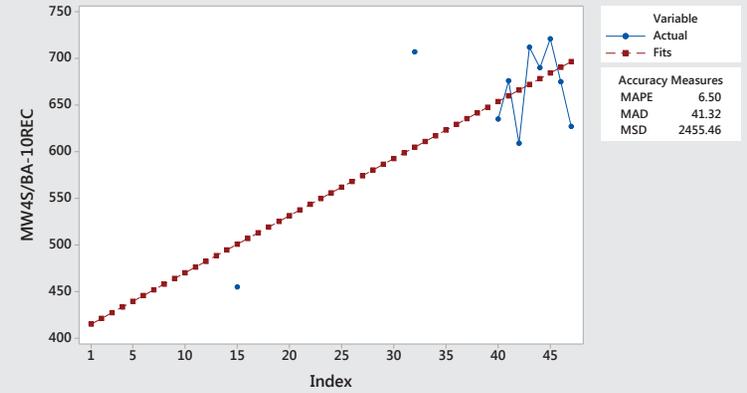
Trend Analysis Plot for MW4S/BA

Linear Trend Model  
 $Y_t = 478.6 + 4.357 \times t$



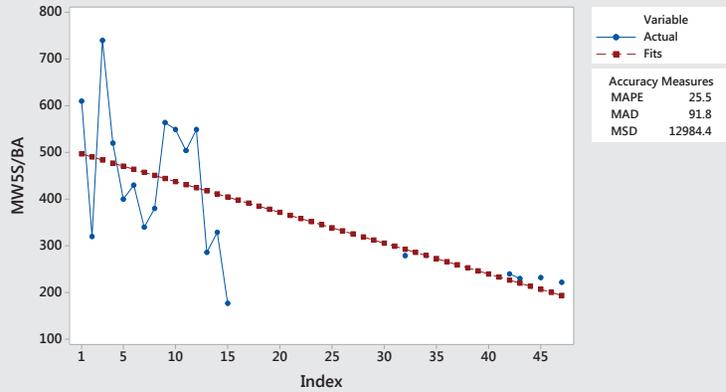
Trend Analysis Plot for MW4S/BA-10REC

Linear Trend Model  
 $Y_t = 409.0 + 6.12 \times t$



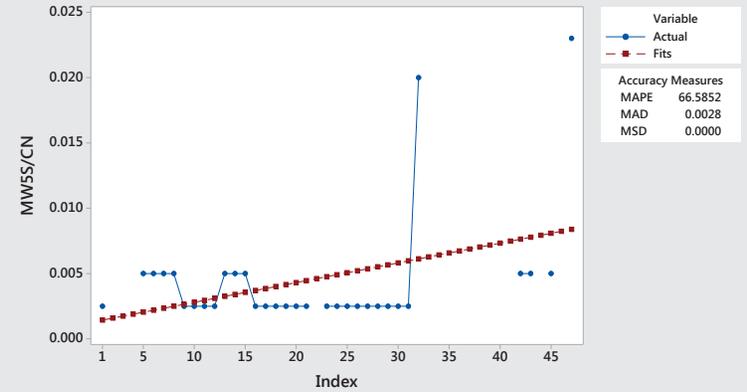
Trend Analysis Plot for MW5S/BA

Linear Trend Model  
 $Y_t = 503.5 - 6.59 \times t$



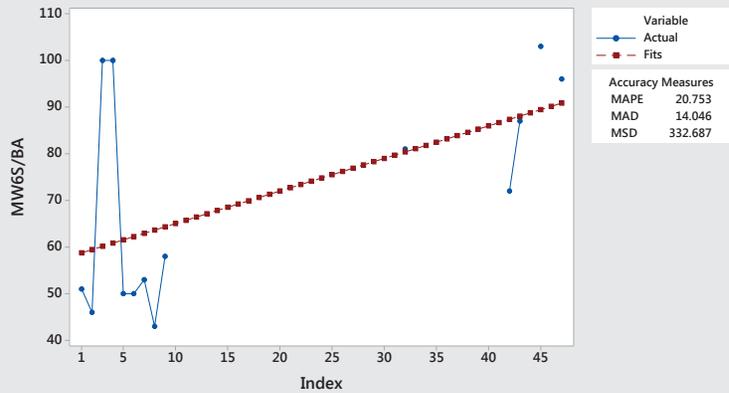
Trend Analysis Plot for MW5S/CN

Linear Trend Model  
 $Y_t = 0.00129 + 0.000151 \times t$



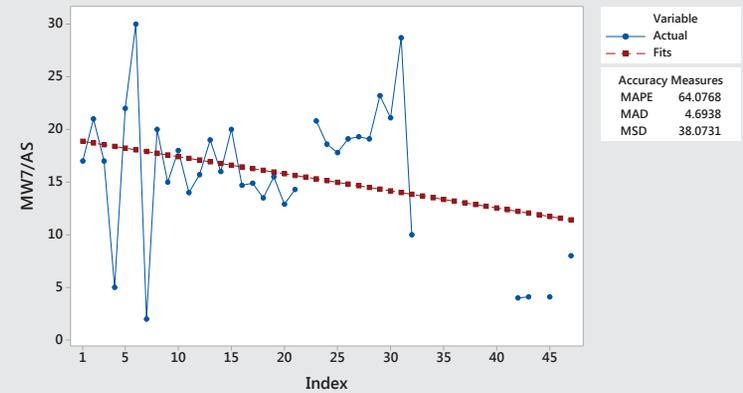
Trend Analysis Plot for MW6S/BA

Linear Trend Model  
 $Y_t = 58.06 + 0.698 \times t$



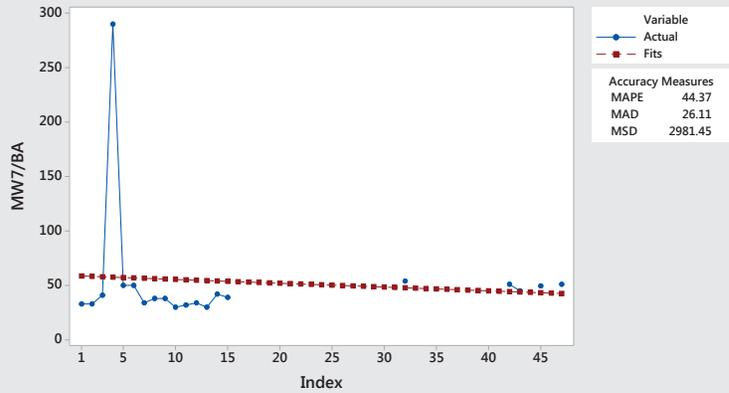
Trend Analysis Plot for MW7/AS

Linear Trend Model  
 $Y_t = 19.04 - 0.1624 \times t$



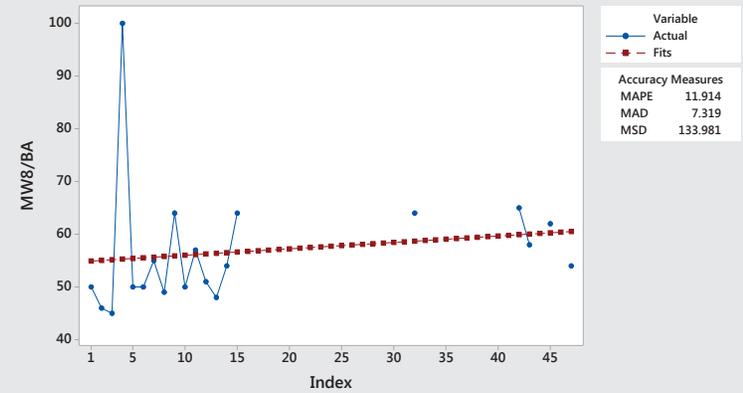
Trend Analysis Plot for MW7/BA

Linear Trend Model  
 $Y_t = 59.0 - 0.350 \times t$



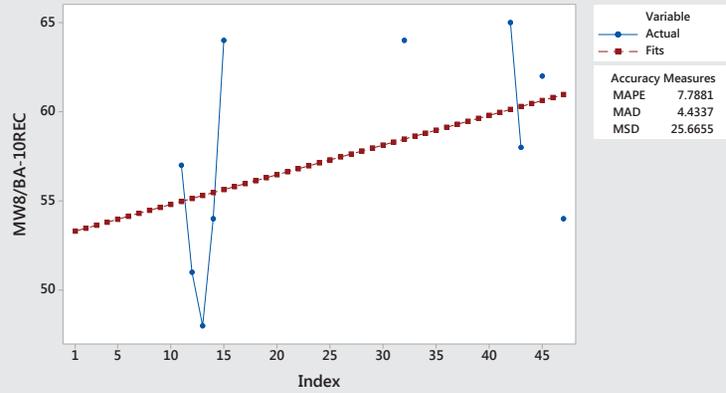
Trend Analysis Plot for MW8/BA

Linear Trend Model  
 $Y_t = 54.80 + 0.122 \times t$



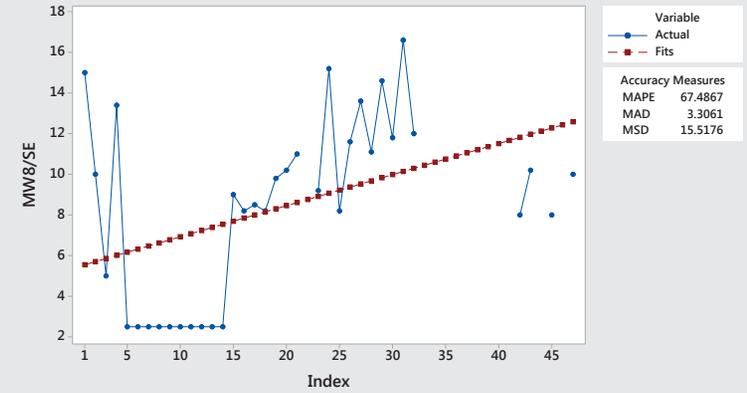
Trend Analysis Plot for MW8/BA-10REC

Linear Trend Model  
 $Y_t = 53.14 + 0.166 \times t$



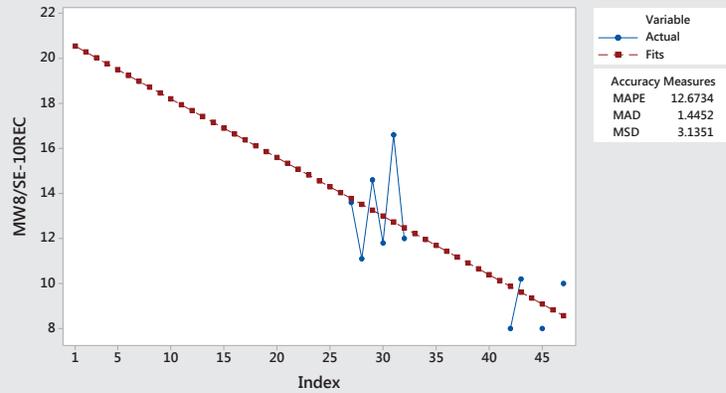
Trend Analysis Plot for MW8/SE

Linear Trend Model  
 $Y_t = 5.40 + 0.1528 \times t$



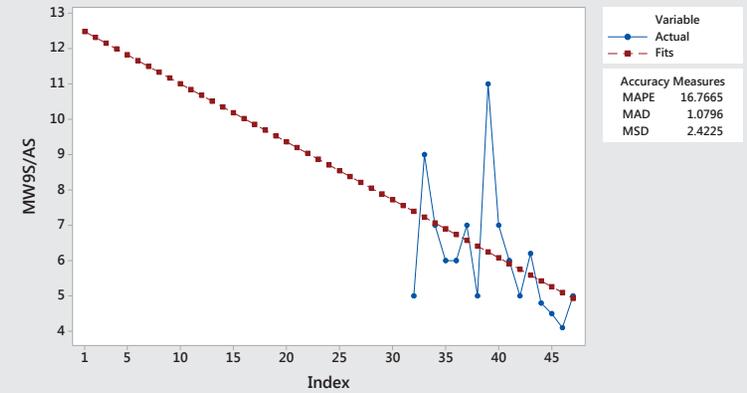
Trend Analysis Plot for MW8/SE-10REC

Linear Trend Model  
 $Y_t = 20.80 - 0.2602 \times t$



Trend Analysis Plot for MW9S/AS

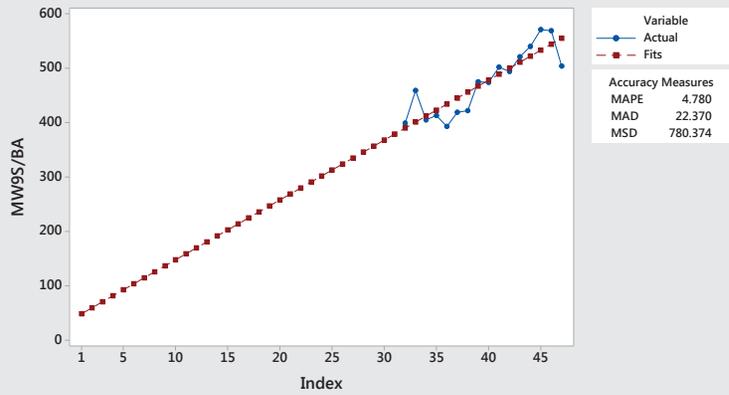
Linear Trend Model  
 $Y_t = 12.65 - 0.1641 \times t$



Trend Analysis Plot for MW9S/BA

Linear Trend Model

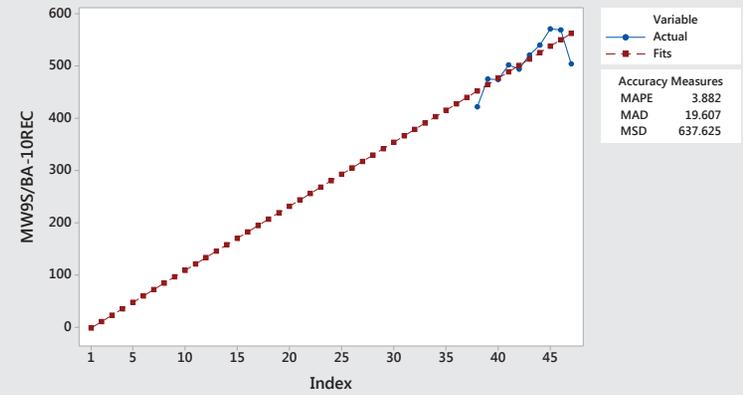
$$Y_t = 37.8 + 11.01 \times t$$



Trend Analysis Plot for MW9S/BA-10REC

Linear Trend Model

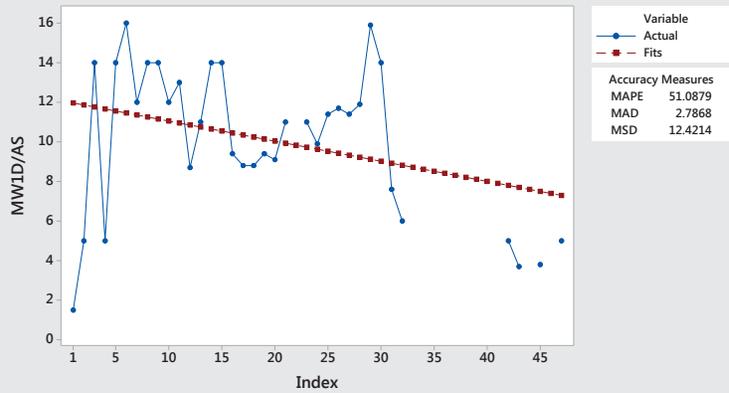
$$Y_t = -14 + 12.25 \times t$$



Trend Analysis Plot for MW1D/AS

Linear Trend Model

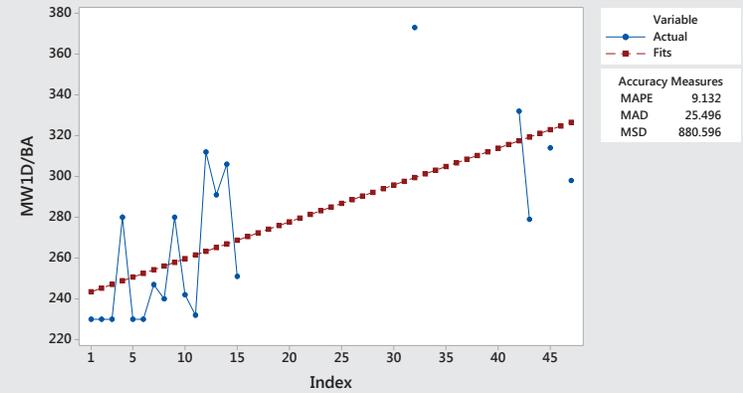
$$Y_t = 12.07 - 0.1016 \times t$$



Trend Analysis Plot for MW1D/BA

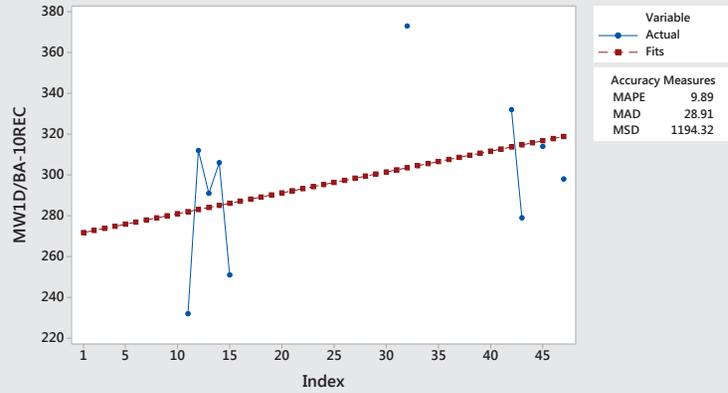
Linear Trend Model

$$Y_t = 241.6 + 1.806 \times t$$



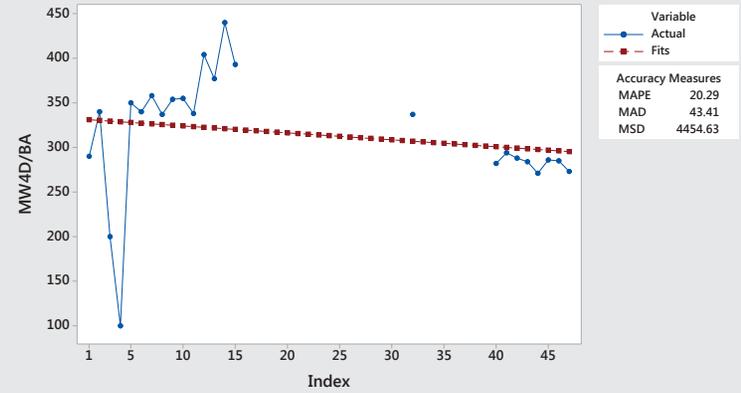
Trend Analysis Plot for MW1D/BA-10REC

Linear Trend Model  
 $Y_t = 270.8 + 1.023 \times t$



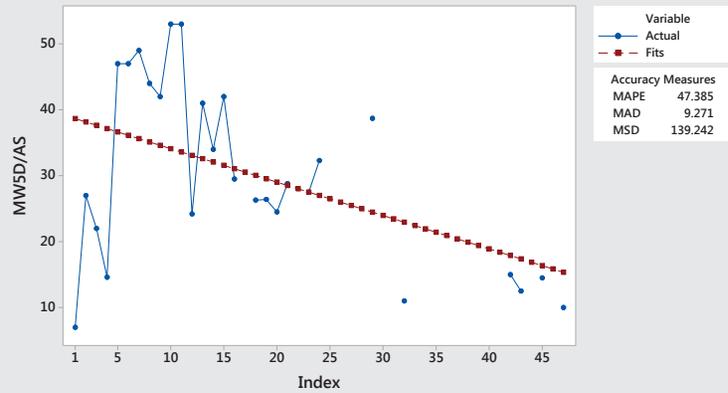
Trend Analysis Plot for MW4D/BA

Linear Trend Model  
 $Y_t = 331.8 - 0.776 \times t$



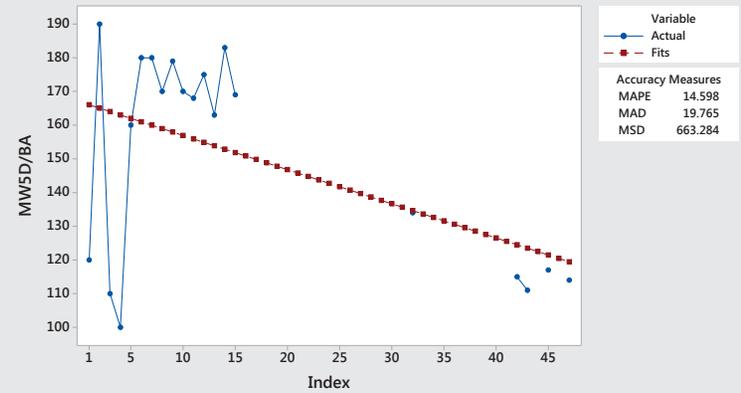
Trend Analysis Plot for MW5D/AS

Linear Trend Model  
 $Y_t = 39.17 - 0.507 \times t$



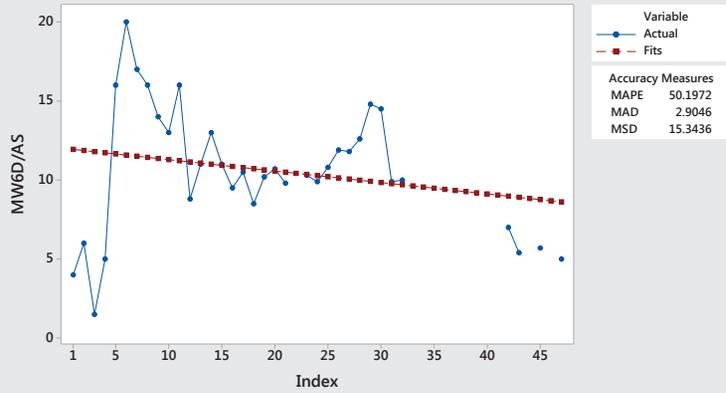
Trend Analysis Plot for MW5D/BA

Linear Trend Model  
 $Y_t = 167.07 - 1.014 \times t$



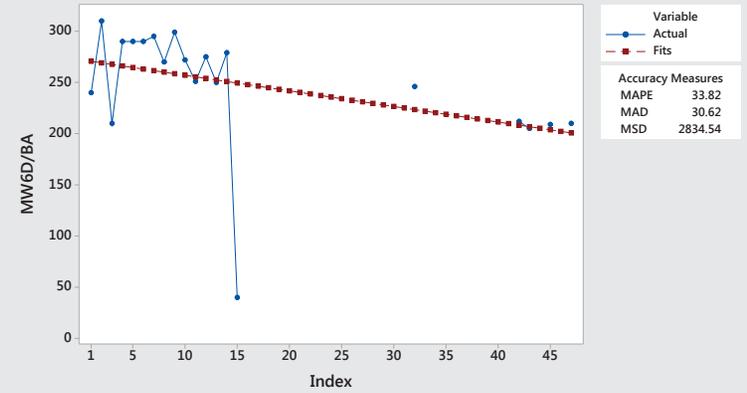
Trend Analysis Plot for MW6D/AS

Linear Trend Model  
 $Y_t = 12.01 - 0.0722 \times t$



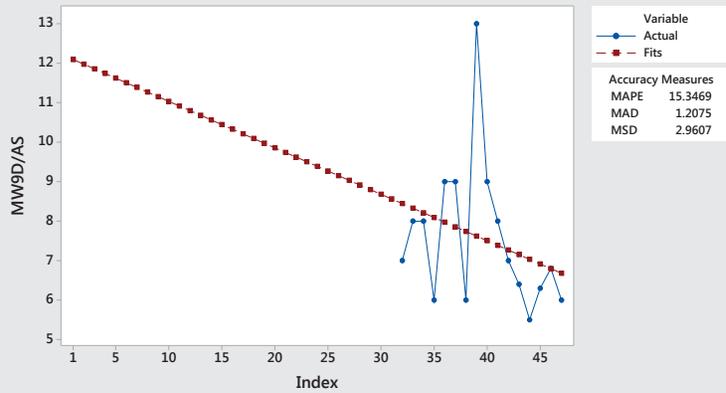
Trend Analysis Plot for MW6D/BA

Linear Trend Model  
 $Y_t = 272.2 - 1.522 \times t$



Trend Analysis Plot for MW9D/AS

Linear Trend Model  
 $Y_t = 12.21 - 0.1176 \times t$



Trend Analysis Plot for MW9D/BA

Linear Trend Model  
 $Y_t = 16.8 + 2.00 \times t$

