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Dominion®

April 18, 2011

Mr. James Golden
Deputy Director for Program Development
Virginia Department of Environmental Quality
P.O. Box 1105
Richmond, VA 23218

Re: Battlefield Golf Club, Chesapeake, Virginia
2010 Annual Review of Groundwater Monitoring Data

Dear Mr. Golden:

This report is being forwarded to the Virginia Department of Environmental Quality (DEQ) pursuant to the Memorandum of Agreement between DEQ and Dominion effective August 16, 2010 to monitor groundwater quality at the Battlefield Golf Club located in Chesapeake, Virginia. The report summarizes groundwater monitoring data collected at the golf course during 2010.

Groundwater was sampled from the Dominion monitoring well network on a quarterly basis during 2010. The network consists of nineteen monitoring wells located at or near the perimeter of the property.

Should you have any questions or comments regarding the enclosed information, please contact me at (804) 273-2929 or Donald Hintz of Dominion Electric Environmental Services at (804) 273-3552.

Sincerely,

Cathy C. Taylor

Cathy C. Taylor
Director, Environmental Services

Attachments

cc: Ms. Maria Nold
Regional Deputy Director
Department of Environmental Quality
Tidewater Regional Office
5636 Southern Boulevard
Virginia Beach, VA 23462

Mr. Milton Johnston
Waste Compliance Manager
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Ms. Christine Wagner
On-Scene Coordinator
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Philadelphia, PA 19103-2029

File Code: Chesapeake/Golf Course/2011

Please scan signed original and rename file as:

BGC Groundwater Annual Review DEQ 2010

Please send renamed document to:

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Compliance Reporting and Supporting Documents/Groundwater/Battlefield Golf Club/Chesapeake Energy Center

2010 ANNUAL GROUNDWATER MONITORING REPORT

Battlefield Golf Club
Chesapeake, Virginia

Executive Summary

Dominion voluntarily monitors groundwater quality along the perimeter of the golf course associated with the Battlefield Golf Club. This groundwater monitoring program was initiated in 2008 to assess the effects of the golf course, which was designed and permitted as a coal combustion byproduct (ash) beneficial reuse project. The course was completed in 2007 using approximately 1.5 million tons of amended fly ash. Dominion was not the developer and is not the owner of the Battlefield Golf Club. Dominion voluntarily entered into a Memorandum of Agreement (MOA) with the Virginia Department of Environmental Quality (DEQ) in 2010 to continue the groundwater monitoring program and to provide an annual review of quarterly analytical results to DEQ and EPA.

Groundwater monitoring results for the Battlefield Golf Club indicate no negative impact to groundwater quality at the perimeter of the site attributable to the amended fly ash used to construct the golf course. Specifically, trends indicative of a dissolved metal contribution from ash to groundwater have not been observed in the analytical data. The presence of dissolved metals above EPA MCLs in groundwater from specific wells located in the southwest portion of the golf course is likely influenced by the occurrence of "acid sulfate soil" and not associated with amended fly ash.

The first quarter groundwater monitoring event for 2011 was completed in March. The next planned activities for the site are groundwater monitoring events in June, September and December 2011.

Section 1 – Purpose of the Annual Report

This Annual Monitoring Report was prepared by Dominion to comply with the Memorandum of Agreement (MOA) entered voluntarily with the Virginia Department of Environmental Quality (DEQ) effective on August 16, 2010 to monitor groundwater quality at the Battlefield Golf Club. The tasks described in the report were completed pursuant to the Groundwater Monitoring Plan included with the MOA during the time period of January 1, 2010 through December 31, 2010. Section 4 of this report summarized the results of the work performed at the site during the subject reporting period.

Section 2 - Introduction and Background

The Battlefield Golf Club (the "Site") is an 18-hole golf course located approximately one mile west of the U.S. Naval Reservation - Fentress Landing Field, Chesapeake, Virginia. The 'Site' is located southeast of the intersection of Whittamore Road and Centerville Turnpike South (Figure

1). Dominion was not the developer and is not the owner of the Battlefield Golf Club. The golf course is currently owned and operated by MJM.

Combustion Products Management (CPM) developed the concept of a golf course as an ash beneficial reuse project in 1999 and approached Dominion with a proposal to supply ash for the project. A site plan for an 18-hole golf course was developed by CPM and the City of Chesapeake granted CPM a Conditional Use Permit for the golf course project in 2001. Following a period of environmental due diligence (data on file with DEQ) Dominion agreed to supply the golf course project with 1.5 million tons of amended ash over a five year period. The ash was stabilized with a calcium amending reagent. The Virginia DEQ issued a letter confirming complete administrative review of the project in 2002.

CPM purchased the site, designed the course, obtained all state and City permits for the course and constructed the golf course. The design plans for the golf course incorporated a two foot separation between amended ash and groundwater and eighteen inches of soil as a final cover over the amended ash, both DEQ regulatory requirements.

The last truckload of amended ash was delivered to the project site in March 2007. CPM, through a Licensed Professional Engineer, certified the project was completed according to appropriate regulations and design plans. MJM (current owner) completed construction of the golf course in 2007 (install irrigation equipment, plant golf course grasses, install tee boxes, greens, sand traps, hole markers, etc.). The golf course opened for public play in October 2007.

Section 3 – Monitoring Program

Site Hydrogeology

The golf course is located in the Coastal Plain Physiographic Province of eastern Virginia. The shallow subsurface consists of unconsolidated clays, silts, sands and gravels of sedimentary origin. Groundwater is present within the unconsolidated sediments, often in a subdued reflection of the surface topography. Groundwater flow patterns for the unconfined, uppermost-saturated layer (water table aquifer) typically follow surface-water drainage. Groundwater is encountered at depths ranging from just over 2 feet to 10 feet below ground surface at the site. Locally, the upper aquifer is 20 to 50 feet thick and is unconfined throughout the area. Groundwater flow direction is generally toward the southeast (Figures 2 and 3).

Monitoring Network

The primary goal of the groundwater monitoring network is to assess groundwater quality along the perimeter of the golf course with respect to parameters reasonably expected to be associated with coal ash. Dominion has a perpetual easement granted by the owner that runs along the boundary line that makes up the perimeter of the property. The easement was acquired before the golf course was constructed for the purpose of installing, monitoring, and maintaining groundwater monitoring wells. Monitoring wells were installed in 2008 and 2009 and groundwater quality data is collected on a quarterly basis.

Nineteen 2-inch groundwater monitoring wells are installed along or in close proximity to the perimeter of the Site. Each well was advanced using hollow-stem auger drilling techniques. Standard penetration tests and sampling was performed using the procedures described in ASTM D1586 continuously for the first 10 feet below grade and at 5-foot intervals thereafter. The field program was monitored by a Virginia Registered Professional Geologist which included oversight of each boring and well installation.

Eleven 'shallow-depth' wells were advanced to penetrate at least ten feet into the uppermost water-bearing zone. The shallow well depths ranged from approximately 15 to 20 feet below grade. Eight 'intermediate-depth' wells were advanced to the apparent base of the uppermost water-bearing zone to assess deeper portions of the aquifer. The intermediate well depths ranged from approximately 35 to 44 feet below grade. Each well was constructed with pre-filter packed well screen, consisting of; a 10-foot section of 4-inch I.D. polyvinyl chloride (PVC) machine-slotted outer screen and a 10-foot section of 2-inch I.D. PVC machine-slotted inner screen with clean sand between the inner and outer screen sections. The remaining annular space of the well was filled with sand, which was extended approximately two feet above the top of the slotted screen. A bentonite seal approximately two feet thick was placed above the sand pack and Portland cement-bentonite grout slurry was placed above the bentonite to seal the well at the ground surface and mitigate the potential for cross-contamination of the underlying aquifer.

Shallow- and intermediate-depth wells were installed in pairs at eight locations around the perimeter of the Site within the existing Dominion easement. Three additional shallow-depth wells were installed in the southwest corner of the site (Figure 1). Three of the well-pairs; MW-BGC-5, -6 and -7 were installed in areas inferred to be up-gradient of the amended ash fill and five well-pairs; MW-BGC-8, -9, -10, -11 and -12 (including non-paired wells 13, 14, 15) were installed in areas inferred to be cross-gradient to down-gradient from the amended ash fill. Each monitoring well is located outside of the amended ash fill.

Sampling Program

Well purging and sampling is performed using a peristaltic pump and a flow-through cell. Water quality parameters (temperature, pH, turbidity, oxidation-reduction potential, conductivity and dissolved oxygen) are monitored via the flow-through cell (Horiba U22 water quality analyzer) prior to sample collection. Once water quality parameters stabilize, the flow through cell is removed and groundwater samples are collected from the polyethylene tubing connected to the peristaltic pump. Groundwater sampling is performed in general accordance with EPA Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures. Groundwater samples are appropriately containerized (with preservative, when applicable), placed on ice and shipped under Chain-of-Custody for delivery to a contract laboratory for analysis. The groundwater monitoring program is summarized in Table 1.

TABLE 1
Battlefield Golf Club
Groundwater Monitoring Program Summary

Analyte	Laboratory Method	Sampling Frequency (19 wells)
Metals: Ag, As, Ba, Cd, Cr, Hg, Pb & Se plus Al, B, Be, Ca, Co, Cu, Fe, K, Mn, Mg, Mo, Na, Ni, Sb, Tl, V & Zn	SW-846 Method 6010B/7470A Total (unfiltered)	Quarterly
Alkalinity & Bicarbonate Alkalinity	SM2320B	Quarterly
Anions: Bromide, Chloride, Fluoride, Sulfate, Nitrate as N, Sulfide	300.0	Quarterly
Total Phosphorus	E365.3	Quarterly
Total Dissolved Solids (TDS)	SM2540C	Quarterly
Total Organic Carbon (TOC)	SW9060A	Quarterly

Quality Control

The QA/QC program for the site is intended to assess and enhance the reliability and validity of groundwater data. Field sampling QA/QC procedures include the collection of quality control samples, such as; equipment rinse blank, field duplicate and matrix spike/matrix spike duplicate samples (MS/MSD). The equipment rinse blank is used to indicate whether effective decontamination of equipment or potential cross-contamination has occurred. A field duplicate sample is collected randomly side by side at designated sample locations, and analyzed by the analytical laboratory. The results of the field duplicate sample indicate sampling and analytical precision. The MS/MSD samples are collected and analyzed to indicate if the matrix of the samples is causing interference. The analytical data is reviewed for quality with respect to precision, accuracy, representativeness, completeness, and usability in accordance with standard procedures.

Section 4 – Work Performed During This Reporting Period

Monitoring Overview

Groundwater samples were collected from the Dominion well network in March, June, September and December of 2010. The analysis includes general chemistry parameters and twenty five metals. Of those twenty five metals, eleven have EPA determined primary drinking water standards (concentrations) known as maximum contaminant levels (MCLs). While groundwater is not used for drinking water at the golf course, MCLs are used to indicate general water quality.

Surface water pH was measured in 2010 from the outermost pond located in the southwest corner of the golf course. The referenced pond is being monitored for acidification resulting from the natural acidity of the surrounding soil in this area of the site.

Groundwater Monitoring Data Discussion

Groundwater analytical results with respect to detections above the EPA MCLs are summarized for 2010 in Table 2. Of the eleven shallow wells sampled, detections of dissolved metals above an MCL were not reported for nine of those wells during 2010. Of the two remaining wells MW-13 contained beryllium above the MCL four out of four times the well was sampled in 2010 and MW-15 contained arsenic above the MCL three out of four times the well was sampled in 2010. Both wells are located near the southwest corner of the golf course property (Figures 4 and 5). There were no detections of metals above an MCL from the eight deeper wells sampled in 2010.

Table 2
Detections above EPA MCLs During 2010
For the Shallow Monitoring Well Network

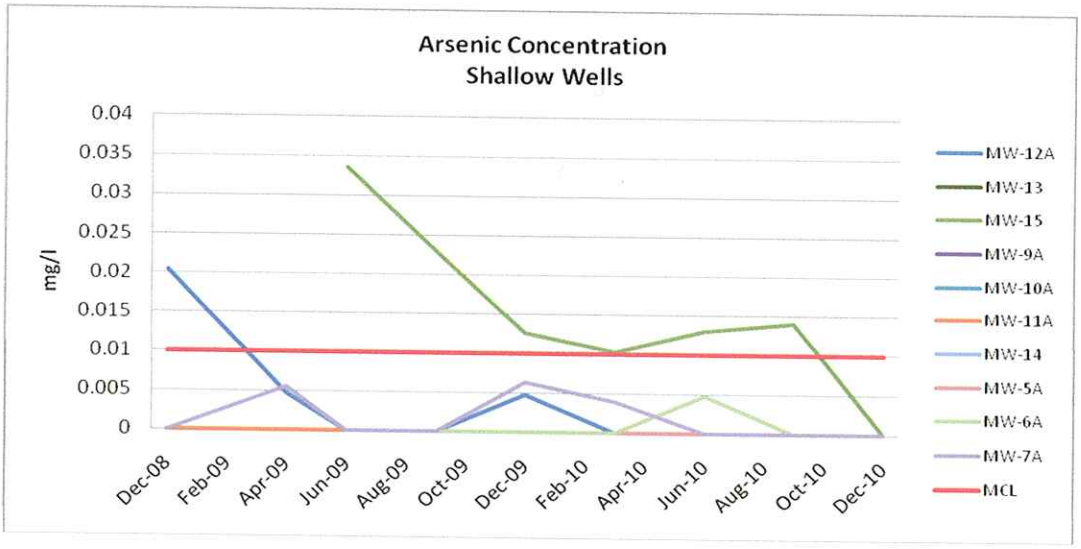
Well Identification		MW-5A	MW-6a	MW-7A	MW-8A	MW-9A	MW-10A	MW-11A	MW-12A	MW-13	MW-14	MW-15
Parameter	EPA MCL (mg/l)	Number of groundwater samples collected in 2010										
		3	4	4	4	4	4	4	4	4	4	4
		Number of detections above the EPA MCL in 2010										
Antimony	0.006	0	0	0	0	0	0	0	0	0	0	*0*
Arsenic	0.01	0	0	0	0	0	0	0	0	0	0	*3*
Barium	2	0	0	0	0	0	0	0	0	0	0	0
Beryllium	0.004	0	0	0	0	0	0	0	0	*4*	0	0
Cadmium	0.005	0	0	0	0	0	0	0	0	0	0	0
Chromium	0.1	0	0	0	0	0	0	0	0	0	0	0
Copper	1.3	0	0	0	0	0	0	0	0	0	0	0
Lead	0.015	0	0	0	0	0	0	0	0	0	0	0
Selenium	0.05	0	0	0	0	0	0	0	0	0	0	0
Thallium	0.002	0	0	0	0	0	0	0	0	0	0	0
Mercury	0.002	0	0	0	0	0	0	0	0	0	0	0

Note: MW-5A was not sampled in 9/2010 due to well casing damage (MW-5A was subsequently replaced).

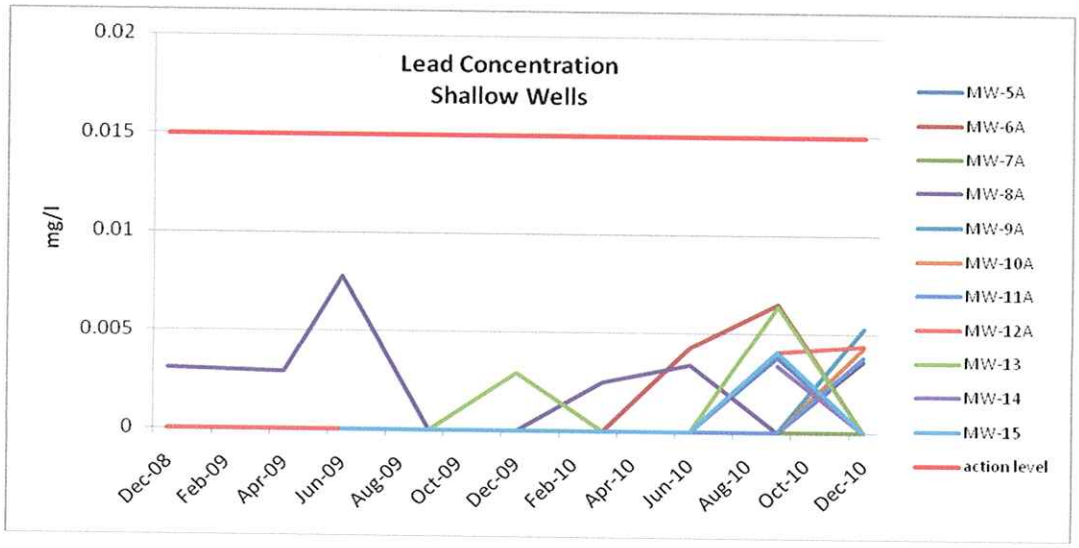
Dissolved metals such as; barium, boron, calcium, iron, magnesium, manganese, nickel, potassium, sodium, vanadium and zinc are routinely detected by the groundwater monitoring network, however, the concentrations are generally consistent with background levels for the site.

The following graphs illustrate the concentration of three metals detected in groundwater since monitoring began at the golf course in 2008. Beryllium and arsenic (actually a metalloid) are highlighted because detections above the respective MCL were noted in 2010. The third metal, lead, is included since there were initial concerns from stake holders that lead detected in local residential water wells may be associated with the golf course. Lead concentrations have not been detected over the EPA action level in the Dominion groundwater monitoring network (EPA

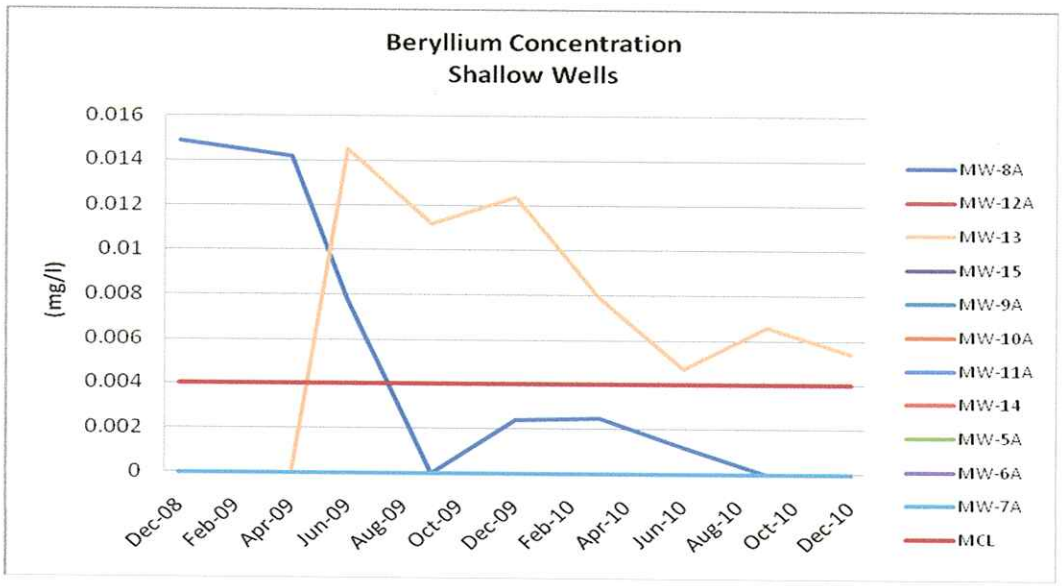
concluded from similar results that lead levels in local residential water wells is not associated with amended ash under the golf course).



Dissolved arsenic concentrations in groundwater do not show an overall increasing or decreasing trend. Upgradient and downgradient concentrations are generally below the MCL of 0.010 mg/l and within a similar range for the site. The one exception is MW-15, which contained concentrations of arsenic above the MCL prior to the December 2010 sampling event. The relevance of the readings is discussed below.



Dissolved lead concentrations in groundwater do not show an obvious overall increasing or decreasing trend. When detected, upgradient and downgradient concentrations are generally within a similar range for the site and are well below the EPA action level 0.015 mg/l (EPA uses the terminology "action level" rather than "MCL" for lead).



Dissolved beryllium concentrations in groundwater do not show an overall increasing or decreasing trend. Upgradient and downgradient concentrations are generally within a similar range for the site with the exception of MW-8A and MW-13, which have/had detections above the MCL of 0.004 mg/l. The relevance of dissolved metals detected in MW-8A, MW-13 and MW-15 are discussed below.

Surface water measurements from the southwest corner pond are an acidic pH <4. Acidification of the pond has likely occurred due to the release of stored acidity from sulfidic materials in surrounding soil and sediments, which is further discussed in the following paragraphs.

Sediment Chemistry and Mineralogy

Metals are inorganic constituents that occur naturally in soil and groundwater and will therefore be detected in any soil or groundwater sample analyzed for metals. Concentrations of metals in soil and groundwater can vary considerable from one geographic area to another.

It is well documented that specific areas of Chesapeake, including portions of the golf course site, contain sediment and soil that retain high amounts of sulfides (primarily pyrite). These materials are known as "acid sulfate soil" and are commonly associated with the Tabb Formation. When the sulfide bearing materials are exposed to the atmosphere (i.e., by excavation), the sulfides oxidize and produce an acid. This reaction will produce acidic (low pH) surface water and groundwater until sufficient neutralization occurs.

The presence of acid sulfate soil and sediment in the southwest portion of the golf course appears to play a role in two observations: 1) low pH surface water in the southwest pond, and 2) dissolved trace metals in groundwater above background, including EPA MCLs. Many elements generally considered insoluble under neutral pH conditions will dissolve under acidic conditions,

resulting in an increase (or release) of dissolved trace metals to the water system. Monitoring results for this area of the site suggest that this complex geochemical process does influence groundwater, most notably in the concentration of dissolved metals detected in wells MW-8A, MW-13 and MW-15.

Conclusion

Groundwater monitoring results for the Battlefield Golf Club in 2010 indicate no negative impact to groundwater quality at the perimeter of the site attributable to the amended fly ash used to construct the golf course, specifically:

1. To date, trends indicative of a dissolved metal contribution from ash to groundwater have not been observed in the analytical data from the Dominion monitoring well network along the perimeter of the golf course.

2. The presence of dissolved metals in groundwater from specific wells located in the southwest portion of the golf course (MW-8A, MW-13 and MW-15) appear to be influenced by the presence of "acid sulfate soil" and not associated with amended fly ash.

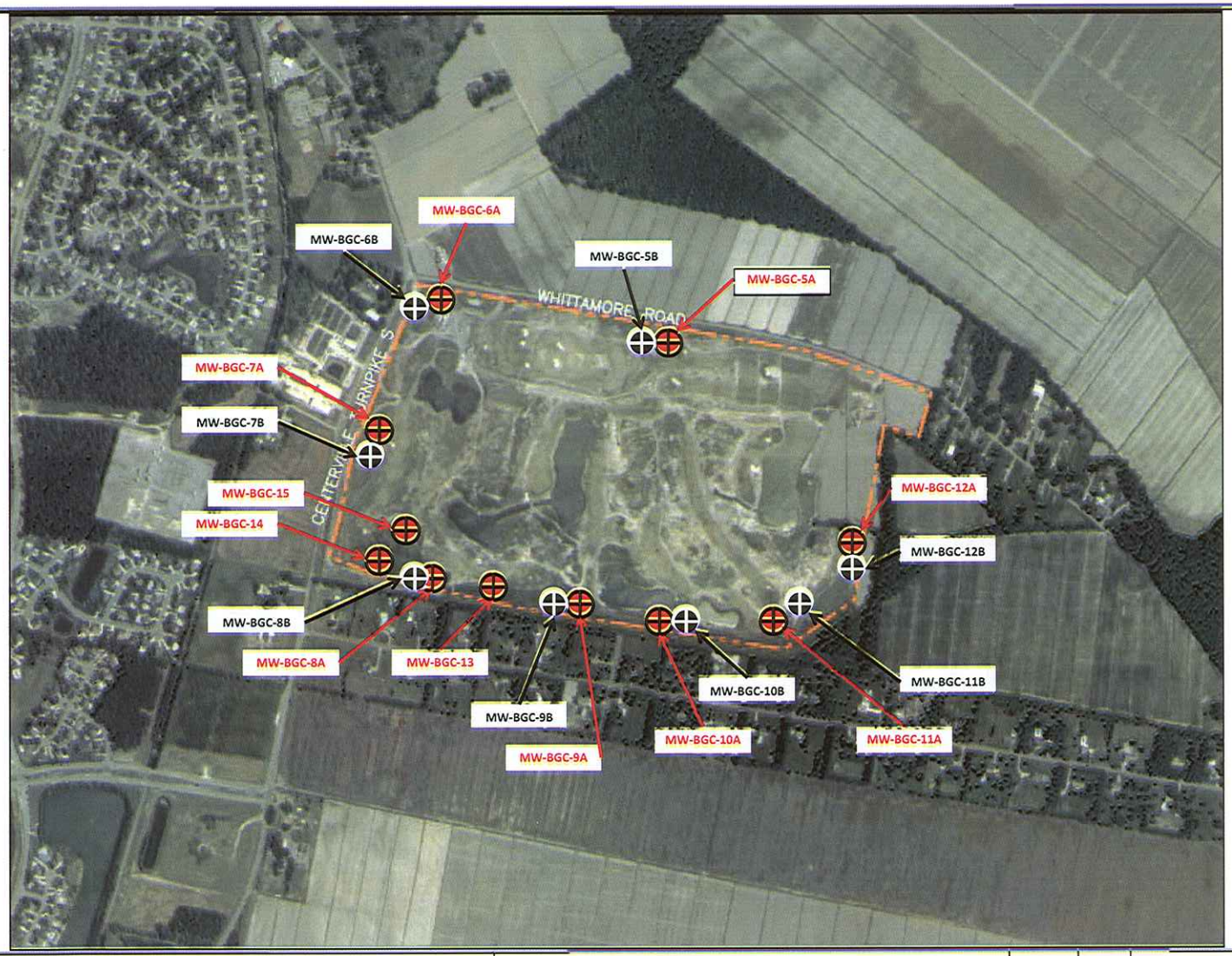
Section 5 – Projected Work for Next Reporting Period

The first quarter groundwater monitoring event was completed in March, 2011. The next planned activities for the site are groundwater monitoring events in June, September and December 2011. Dominion will provide DEQ and EPA with the analytical results from each groundwater monitoring event as they become available. An annual groundwater monitoring report will prepared and submitted to DEQ and EPA in 2012 following review and analysis of the four-2011 groundwater monitoring events.

Attachments:

Figure 1 Site Plan and Monitoring Locations
Figure 2 Groundwater Contour Map (shallow wells)
Figure 3 Groundwater Contour Map (intermediate wells)
Figure 4 September 2010 Results
Figure 5 December 2010 Results
Appendix: Results of Groundwater Sampling

ATTACHMENTS



LEGEND

APPROXIMATE SITE BOUNDARY

APPROXIMATE SHALLOW MONITORING WELL LOCATION

APPROXIMATE INTERMEDIATE MONITORING WELL LOCATION

SCALE IN FEET

0 800 1600

SOURCE: SERGI IS FROM SEAMLESS, 2008.

FIGURE 1
SITE LOCATION MAP

MACTEC ENGINEERING AND CONSULTING, INC.
21740 BEAUMEADE CIRCLE
ASHBURN, VA 20147

Des. by	J.M.B.
Drn. by	M.R.C.
Chk. by	C.B.S.
Date:	4/22/10

BATTLEFIELD GOLF CLUB
1001 SOUTH CENTERVILLE TURNPIKE
CHESAPEAKE, VA.

3552-10-1321	APRIL 2010	Approx. Scale: 1" = 350'

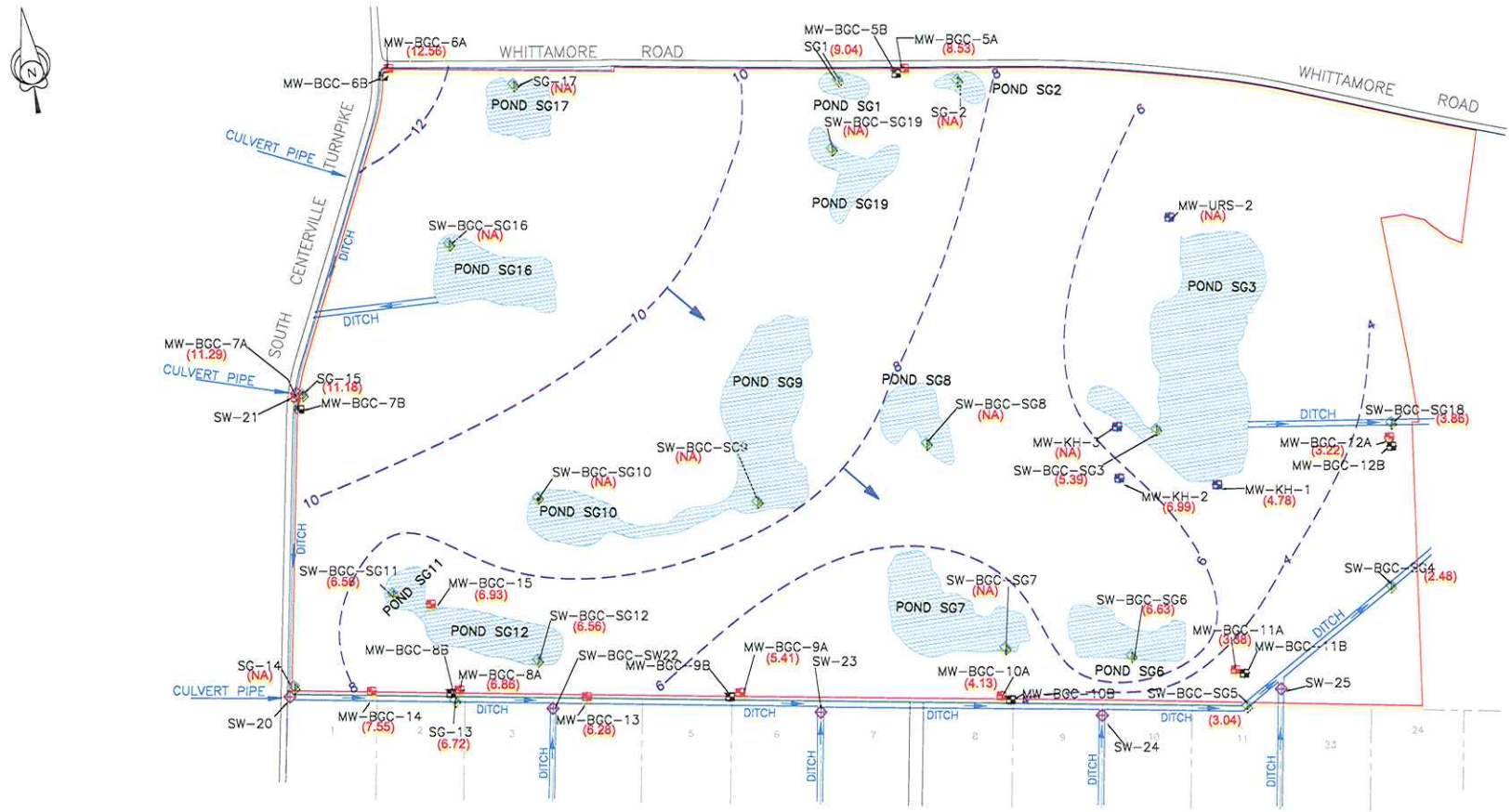


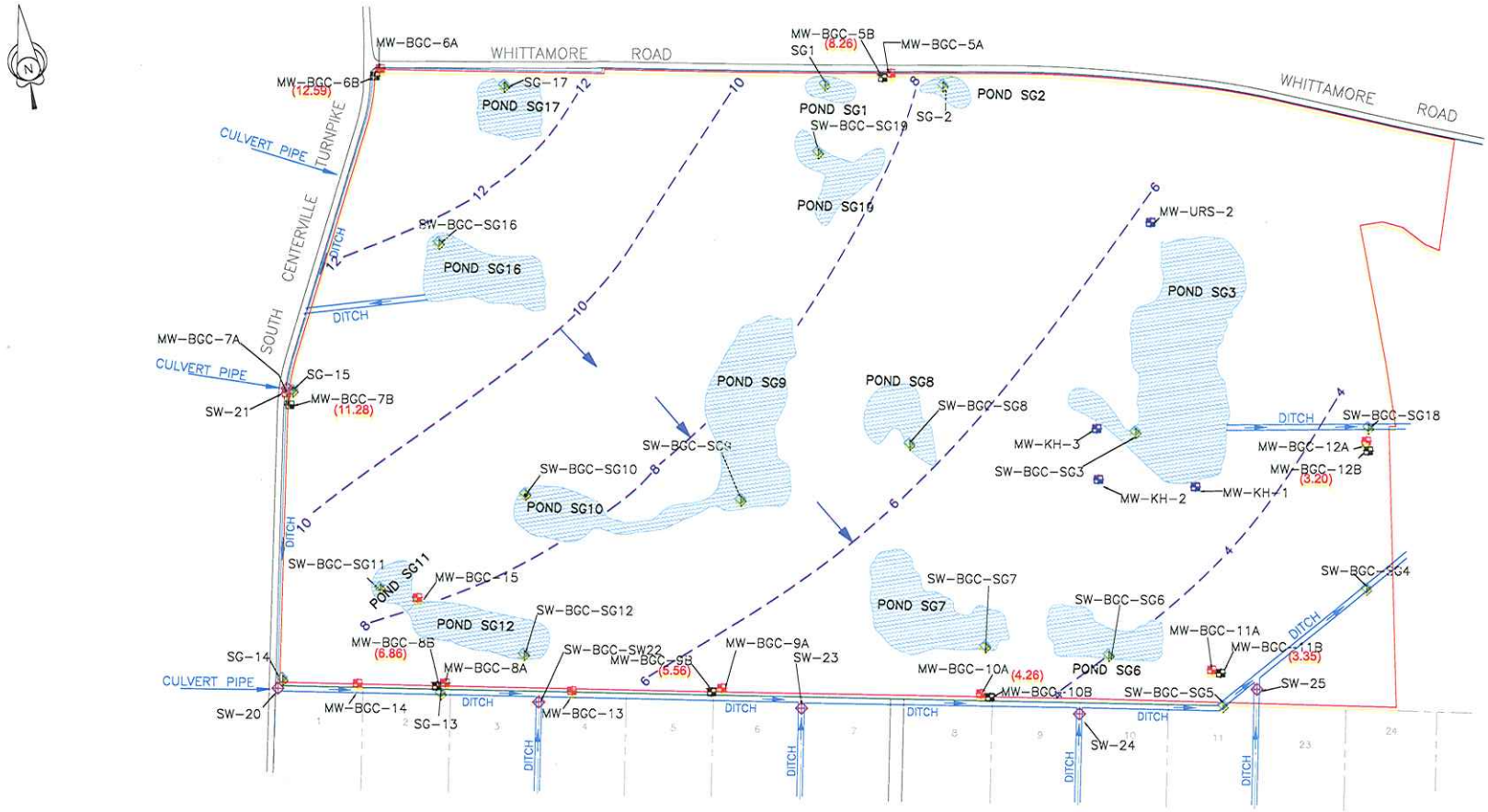
FIGURE 2
GROUNDWATER CONTOUR MAP FOR SHALLOW-DEPTH WELLS
(DECEMBER 6, 2010)

MACTEC ENGINEERING AND CONSULTING, INC.
21740 BEAUMEADE CIRCLE
SUITE 150
ASHBURN, VA 20147

Des. by	J.M.B.
Drn. by	M.R.C.
Chk. by	G.B.G.

BATTLEFIELD GOLF CLUB
1001 SOUTH CENTERVILLE TURNPIKE
CHESAPEAKE, VA.

3552-10-1321	JANUARY 2011	Approx. Scale: 1" = 400'



NOTE: As intermediate-depth wells are not available in the interior of the site, contours and inferred flow directions are conceptual only. For purposes of this map, its assumed Surface-Water features of the site do not influence intermediate-depth Groundwater.

ARROW INDICATES SURFACE WATER FLOW DIRECTION IN DRAINAGE DITCHES

INFERRED GROUNDWATER FLOW DIRECTION

8 ESTIMATED GROUNDWATER CONTOUR

STAFF GAUGE/SURFACE WATER SAMPLE LOCATION (SG)

SURFACE WATER (SW)

PRE-EXISTING MONITORING WELL LOCATION

SHALLOW MONITORING WELL LOCATION

INTERMEDIATE MONITORING WELL LOCATION

(4.26) APPROXIMATE GROUNDWATER ELEVATION (feet, msl)

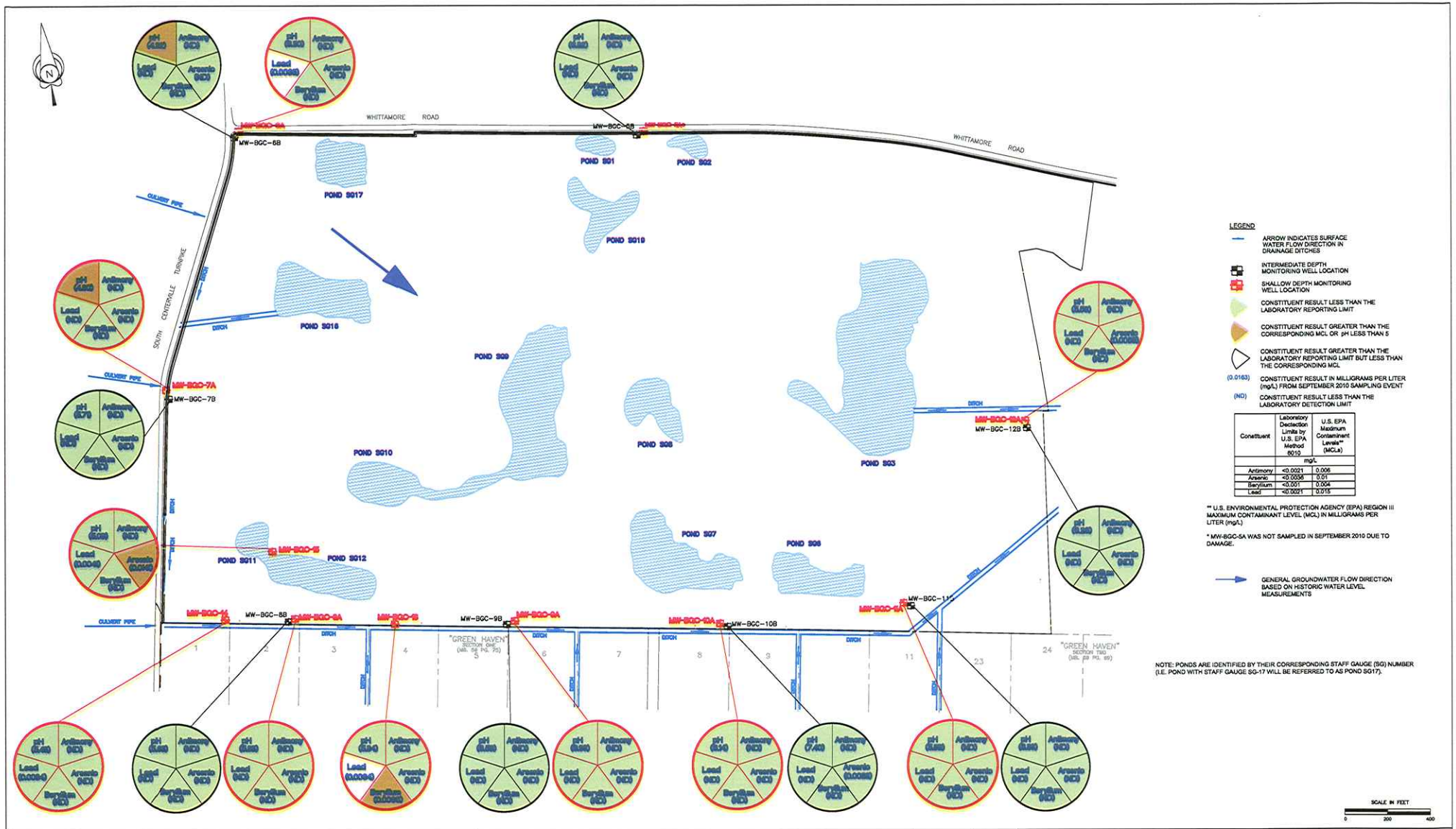
FIGURE 3
GROUNDWATER CONTOUR MAP FOR INTERMEDIATE-DEPTH WELLS
(DECEMBER 6, 2010)

MACTEC ENGINEERING AND CONSULTING, INC.
21740 BEAUMEADE CIRCLE
SUITE 150
ASHBURN, VA 20147

Des. by	J.M.B.
Drn. by	M.R.C.
Chk. by	G.B.G.

BATTLEFIELD GOLF CLUB
1001 SOUTH CENTERVILLE TURNPIKE
CHESAPEAKE, VA.

3552-10-1321 | JANUARY 2011 | Approx. Scale: 1" = 400'



Constituent	Laboratory Detection Limits by U.S. EPA Method 6010	U.S. EPA Maximum Contaminant Levels** (MCLs)
	mg/L	
Antimony	<0.0021	0.006
Arsenic	<0.0036	0.01
Beryllium	<0.001	0.004
Lead	<0.0021	0.015

FIGURE 4
GROUNDWATER SAMPLE RESULTS
(SEPTEMBER 2010 SAMPLING EVENT)

MACTEC ENGINEERING AND CONSULTING, INC.
21740 BEAUMEADE CIRCLE
SUITE 150
ASHBURN, VA 20147

Des. by	J.M.B.
Drn. by	M.R.C.
Chk. by	G.B.G.

BATTLEFIELD GOLF CLUB
1001 SOUTH CENTERVILLE TURNPIKE
CHESAPEAKE, VA.

3552-10-1321 | OCTOBER 2010 | SCALE IS APPROXIMATE

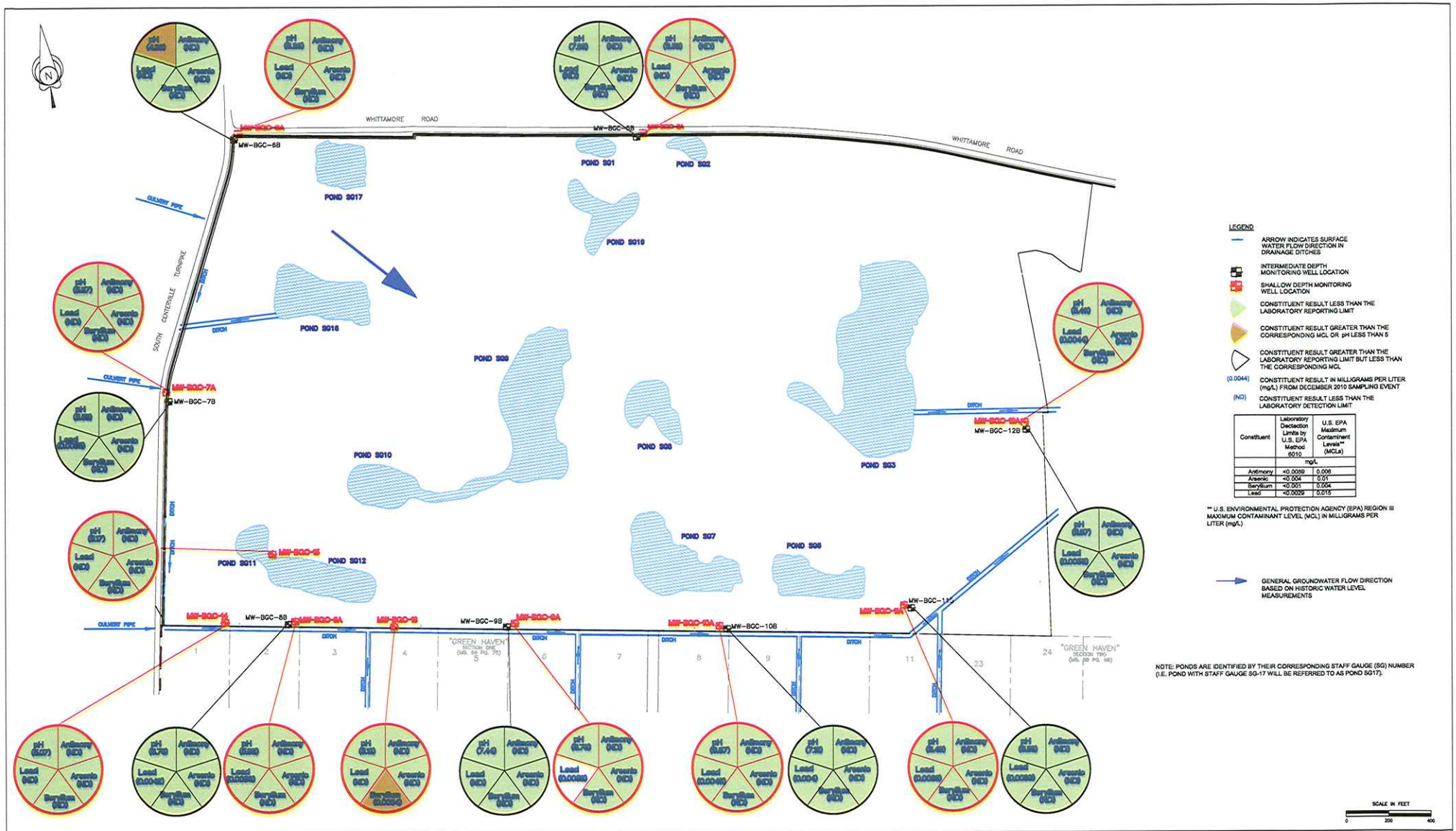


FIGURE 5
GROUNDWATER SAMPLE RESULTS
(DECEMBER 2010 SAMPLING EVENT)

MACTEC ENGINEERING AND CONSULTING, INC.
21740 BEAUMEADE CIRCLE
SUITE 150
ASHBURN, VA 20147

Des. by	J.M.B.
Drn. by	M.R.C.
Chk. by	G.B.G.

BATTLEFIELD GOLF CLUB
1001 SOUTH CENTERVILLE TURNPIKE
CHESAPEAKE, VA.

3552-10-1321 | JANUARY 2011 | SCALE IS APPROXIMATE

Appendix
Results of Groundwater Sampling

Groundwater Laboratory Analytical Results - Shallow Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-5A					
Sample I.D.:				MW-BGC-5A		MW-BGC-5A		MW-BGC-5A	
Sample Date:				3/16/2010		6/8/2010		12/16/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)									
Total Alkalinity, (CaCO3)	---	---	30	**84**		**81.3**	**B**	**134**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**84**		**81.3**	**B**	**136**	
Bromide	---	---	---	**0.697**	**J**	**0.892**	**J**	**1.2**	**M8**
Chloride	---	---	50	**46.9**	**B**	**48.2**		**39.5**	**B**
Fluoride	4	1.4	---	**0.373**		**0.328**		**0.442**	
Nitrate as N	10	5	---	**0.107**	**H2**	**0.069**	**J**	**1.02**	
Phosphorus, Total as P	---	---	---	**0.396**	**B**	**0.115**	**B**	**0.0555**	**J**
Sulfate	---	---	50	**86.9**		**91.4**		**47.3**	**M8**
Sulfide	---	---	---	<0.17	U	**0.6**	**J**	**1.1**	
Total Dissolved Solids	---	---	1,000	**315**		**280**		**312**	
Total Organic Carbon	---	---	10	**3.92**		**2.91**		**4.49**	
Total Organic Halides	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)									
Aluminum	---	---	---	<0.054	U	<0.054	U	**0.48**	
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	<0.004	U
Barium	2	1	---	**0.021**		**0.0235**		**0.0676**	
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.0558**		**0.0579**		**0.0745**	**B**
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**41.9**		**42.5**		**47.7**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	**0.002**	**J**
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.002	U
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.003	U
Iron	---	---	0.3	**5.92**		**5.38**		**5.94**	
Lead	0.015	0.05	---	<0.0021	U	**0.0038**	**J**	<0.0029	U
Magnesium	---	---	---	**13.3**	**M8**	**12.8**		**12.9**	
Manganese	---	---	0.05	**0.174**		**0.21**		**0.242**	
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0074**	**J**	<0.0023	U	<0.002	U
Potassium	---	---	---	**2.91**		**4.53**		**4.96**	
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U
Silver	--	---	---	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**26.4**		**17.6**		**41.1**	
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U
Vanadium	---	---	---	**0.0094**	**J**	<0.005	U	<0.007	U
Zinc	---	0.05	---	**0.0063**	**J**	**0.0079**	**J**	**0.014**	**J**
Mercury by USEPA Method 7470/7471A (mg/L)									
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U

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Groundwater Laboratory Analytical Results - Shallow Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-6A									
Sample I.D.:				MW-BGC-6A		MW-BGC-Dup31610		MW-BGC-6A		MW-BGC-6A		MW-BGC-6A	
Sample Date:				3/16/2010		3/16/2010		6/8/2010		9/28/2010		12/7/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)													
Total Alkalinity, (CaCO3)	---	---	30	**161**		**158**		**94.3**	**B**	**43.5**	**B**	**115**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**161**		**158**		**94.3**	**B**	**38.8**	**B**	**118**	
Bromide	---	---	---	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
Chloride	---	---	50	**25.6**	**B**	**26.3**	**B**	**19.4**		**5.64**	**B**	**22.6**	**B**
Fluoride	4	1.4	---	**0.121**		**0.118**		**0.155**		**0.154**		**0.115**	
Nitrate as N	10	5	---	**0.361**	**H2**	**0.342**	**H2**	**0.061**	**J**	**0.081**	**J**	**0.263**	**H2**
Phosphorus, Total as P	---	---	---	**0.084**	**J**	**0.102**	**B**	**0.129**	**B**	**0.829**	**B**	**0.111**	
Sulfate	---	---	50	**21.4**		**20.1**		**17.5**		**7.55**		**19.1**	
Sulfide	---	---	---	<0.17	U	**1.4**		**0.7**	**J**	<0.17	U	**0.9**	**J**
Total Dissolved Solids	---	---	1,000	**251**		**249**		**194**		**196**	**H**	**244**	
Total Organic Carbon	---	---	10	**8.49**		**8.57**		**11.2**		**8.65**		**6.66**	
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)													
Aluminum	---	---	---	**0.2**	**B**	**0.185**	**B**	**2.68**		**8.1**		**0.154**	
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	**0.0048**	**J**	<0.0037	U	<0.004	U
Barium	2	1	---	**0.0302**		**0.0292**		**0.0347**		**0.0387**		**0.0324**	
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.0163**	**J**	**0.0141**	**J**	**0.0227**	**J**	**0.0199**	**J**	**0.0185**	**J**
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**47.9**		**45.3**		**26.7**		**7.93**		**44.6**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	**0.0026**	**J**	**0.0057**		<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.002	U
Copper	1.3	1	---	**0.004**	**J**	**0.0038**	**J**	**0.0031**	**J**	**0.0068**	**J**	<0.003	U
Iron	---	---	0.3	**0.21**		**0.174**		**2.26**		**1.86**		**2.16**	
Lead	0.015	0.05	---	<0.0021	U	<0.0021	U	**0.0043**	**J**	**0.0065**		<0.0029	U
Magnesium	---	---	---	**5.64**		**5.38**		**3.2**		**1.61**		**5.94**	
Manganese	---	---	0.05	**0.145**		**0.135**		**0.123**		**0.0057**	**J**	**0.178**	
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0043**	**J**	**0.0038**	**J**	<0.0023	U	**0.0028**	**J**	<0.002	U
Potassium	---	---	---	**2.81**		**2.85**		**4.38**		**10**		**6.34**	**B**
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	--	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**25**		**23.2**		**17.3**		**8.47**		**15.4**	**B**
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	<0.005	U	<0.005	U	<0.005	U	**0.0125**	**J**	<0.007	U
Zinc	---	0.05	---	**0.289**		**0.196**		**0.238**		**0.117**		**0.0726**	**B**
Mercury by USEPA Method 7470/7471A (mg/L)													
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

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Groundwater Laboratory Analytical Results - Shallow Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-7A							
Sample I.D.:				MW-BGC-7A		MW-BGC-7A		MW-BGC-7A		MW-BGC-7A	
Sample Date:				3/16/2010		6/8/2010		9/28/2010		12/7/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)											
Total Alkalinity, (CaCO3)	---	---	30	**12.4**		**20.8**	**B**	**45**	**B, M1**	**14.5**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**12.4**		**20.8**	**B**	**39.2**	**B**	**16.4**	
Bromide	---	---	---	<0.1	U	<0.1	U	**0.428**	**J**	<0.1	U
Chloride	---	---	50	**7.68**	**B**	**10.1**		**11**	**B**	**7.33**	**B**
Fluoride	4	1.4	---	**0.098**	**J**	<0.03	U	<0.03	U	<0.03	U
Nitrate as N	10	5	---	**0.26**	**H2**	**0.428**		<0.01	U	<0.01	**UH2**
Phosphorus, Total as P	---	---	---	**0.071**	**J**	**0.076**	**J,B**	**0.0603**	**J, B**	<0.05	U
Sulfate	---	---	50	**35.7**		**49.2**		**63.3**		**36.6**	
Sulfide	---	---	---	**0.2**	**J**	**1.8**		<0.17	U	**1.3**	
Total Dissolved Solids	---	---	1,000	**91**		**106**		**112**	**A-01**	**92**	
Total Organic Carbon	---	---	10	**2.11**		**2.54**		**5.3**		**2.86**	
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)											
Aluminum	---	---	---	**0.11**	**B**	**0.0794**	**J**	**0.0613**	**J**	**0.0723**	**J**
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	**0.004**	**J**	<0.0036	U	<0.0037	U	<0.004	U
Barium	2	1	---	**0.0718**		**0.0855**		**0.068**		**0.072**	
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.0205**	**J**	**0.0204**	**J**	**0.0274**	**J**	**0.0192**	**J**
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**9.88**		**15.3**		**29.4**		**14.3**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	**0.0021**	**J**
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**3.31**		**2.39**		**1.65**		**1.88**	
Lead	0.015	0.05	---	<0.0021	U	<0.0021	U	<0.0029	U	<0.0029	U
Magnesium	---	---	---	**2.48**		**3.43**		**4.68**		**2.79**	
Manganese	---	---	0.05	**0.0226**		**0.0171**		**0.0539**		**0.0198**	
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0047**	**J**	<0.0023	U	<0.0023	U	<0.002	U
Potassium	---	---	---	**2.91**		**3.86**		**5.43**		**3.77**	**B**
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	--	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**5.37**		**4.6**		**10.9**		**5**	**B**
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.007	U
Zinc	---	0.05	---	**0.0115**	**J**	**0.0118**	**J**	<0.0078	U	**0.0301**	**J**
Mercury by USEPA Method 7470/7471A (mg/L)											
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

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Groundwater Laboratory Analytical Results - Shallow Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-8A							
Sample I.D.:				MW-BGC-8A		MW-BGC-8A		MW-BGC-8A		MW-BGC-8A	
Sample Date:				3/16/2010		6/8/2010		9/28/2010		12/7/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)											
Total Alkalinity, (CaCO3)	---	---	30	<5	U	**11.4**	**B**	**20.6**	**B**	**22.3**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	<5	U	**11.4**	**B**	**21.3**	**B**	**25**	
Bromide	---	---	---	<0.1	U	<0.1	U	**0.451**	**J**	<0.1	U
Chloride	---	---	50	**14.6**	**B**	**14.6**		**18.8**	**B**	**12.5**	**B**
Fluoride	4	1.4	---	**0.462**		**0.343**		**0.128**		**0.175**	
Nitrate as N	10	5	---	<0.01	**U, H2**	<0.01	U	<0.01	U	<0.01	**UH2**
Phosphorus, Total as P	---	---	---	**0.088**	**J**	**0.089**	**J,B**	**0.25**	**B**	<0.05	U
Sulfate	---	---	50	**121**		**67.9**		**34.2**		**69.7**	
Sulfide	---	---	---	**0.5**	**J**	<0.17	U	**0.4**	**J**	**1.2**	
Total Dissolved Solids	---	---	1,000	**239**		**147**		**124**	**H**	**152**	
Total Organic Carbon	---	---	10	**2.4**		**1.95**		**3.82**		**3.61**	
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)											
Aluminum	---	---	---	**3.73**	**B**	**1.7**		**0.209**		**0.262**	
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	**0.0045**	**J**	<0.0036	U	<0.0037	U	<0.004	U
Barium	2	1	---	**0.0811**		**0.0523**		**0.0551**		**0.0531**	
Beryllium	0.004	---	---	**0.0025**	**J**	**0.0012**	**J**	<0.001	U	<0.001	U
Boron	---	---	---	**0.021**	**J**	**0.0202**	**J**	**0.0298**	**J**	**0.0263**	**J**
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**19.2**		**9.36**		**11.8**		**21.8**	
Chromium[a]	0.1	0.05	---	**0.0061**		<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	**0.026**		**0.0193**	**J**	<0.005	U	<0.002	U
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**15.3**		**9.93**		**2.56**		**6.54**	
Lead	0.015	0.05	---	**0.0025**	**J**	**0.0034**	**J**	<0.0029	U	**0.0036**	**J**
Magnesium	---	---	---	**4.32**		**2.22**		**3.16**		**6.25**	
Manganese	---	---	0.05	**0.398**		**0.19**		**0.125**		**0.336**	
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0514**		**0.0219**		<0.0023	U	<0.002	U
Potassium	---	---	---	**4.06**		**2.81**		**1.14**		**1.53**	**B**
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	--	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**13.9**		**13**		**11.9**		**13.4**	**B**
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	**0.0063**	**J**	<0.005	U	**0.0053**	**J**	<0.007	U
Zinc	---	0.05	---	**0.0195**	**J**	**0.0309**	**J**	<0.0078	U	**0.0235**	**J**
Mercury by USEPA Method 7470/7471A (mg/L)											
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

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Groundwater Laboratory Analytical Results - Shallow Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-9A									
Sample I.D.:				MW-BGC-9A		MW-BGC-9A		MW-DUP-6910		MW-BGC-9A		MW-BGC-9A	
Sample Date:				3/17/2010		6/9/2010		6/9/2010		9/29/2010		12/8/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)													
Total Alkalinity, (CaCO3)	---	---	30	**120**		**122**	**H2,B**	**121**	**H2,B**	**98.8**	**B**	**90.8**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**118**		**120**	**B**	**116**	**B**	**98.8**	**B**	**93**	
Bromide	---	---	---	<0.1	U	<0.1	U	<0.1	U	**0.531**	**J**	<0.1	U
Chloride	---	---	50	**21.6**		**29.2**	**B**	**32.2**	**B**	**71.7**		**26.8**	
Fluoride	4	1.4	---	**0.286**		**0.248**		**0.229**		**0.442**	**B**	**0.268**	
Nitrate as N	10	5	---	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Phosphorus, Total as P	---	---	---	**0.113**		**0.266**		**0.164**		**0.286**	**B**	**0.129**	
Sulfate	---	---	50	**50**		**76.3**		**79.8**		**38**	**B**	**67.1**	
Sulfide	---	---	---	**0.6**	**J**	**1.4**		**0.4**	**J**	**0.6**	**J**	**1.3**	
Total Dissolved Solids	---	---	1,000	**223**		**288**		**276**		**300**	**H**	**312**	**B**
Total Organic Carbon	---	---	10	**2.12**		**2**		**2.16**		**7.81**		**2.03**	
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)													
Aluminum	---	---	---	<0.054	U	<0.054	U	<0.054	U	<0.054	U	<0.05	U
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	<0.0036	U	<0.0037	U	<0.004	U
Barium	2	1	---	**0.0293**		**0.0336**		**0.0351**		**0.0176**		**0.0391**	
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.0697**		**0.0356**	**J**	**0.0314**	**J**	**0.0793**		**0.0536**	
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**35.8**		**40.9**		**45.4**		**32.5**		**43.9**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.002	U
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**2.6**		**6.21**		**7.59**		**0.944**		**5.03**	
Lead	0.015	0.05	---	<0.0021	U	<0.0021	U	<0.0021	U	<0.0029	U	**0.0053**	
Magnesium	---	---	---	**13.8**		**14.4**		**15.6**		**14.4**		**15**	
Manganese	---	---	0.05	**0.15**		**0.195**		**0.228**		**0.108**		**0.187**	
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0059**	**J**	<0.0023	U	<0.0023	U	<0.0023	U	<0.002	U
Potassium	---	---	---	**7.72**		**6.08**		**5.61**		**9.13**		**6.88**	
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	--	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**16.3**		**16.4**		**15.6**		**19**		**15**	**B**
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	**0.0057**	**J**	<0.005	U	**0.0062**	**J**	<0.005	U	<0.007	U
Zinc	---	0.05	---	<0.005	U	**0.0347**	**J**	<0.005	U	<0.0078	U	<0.008	U
Mercury by USEPA Method 7470/7471A (mg/L)													
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

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Groundwater Laboratory Analytical Results - Shallow Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-10A							
Sample I.D.:				MW-BGC-10A		MW-BGC-10A		MW-BGC-10A		MW-BGC-10A	
Sample Date:				3/18/2010		6/9/2010		9/29/2010		12/8/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)											
Total Alkalinity, (CaCO3)	---	---	30	**91.6**		**96.6**	**H2, B**	**47.7**	**B**	**62.5**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**78.8**		**86**	**B**	**47.7**	**B**	**63.6**	
Bromide	---	---	---	<0.1	U	<0.1	U	**0.561**	**J**	<0.1	U
Chloride	---	---	50	**19.6**	**B**	**16.3**	**B**	**49.3**		**14.1**	
Fluoride	4	1.4	---	**0.501**		**0.715**		**1.29**	**B**	**0.691**	
Nitrate as N	10	5	---	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Phosphorus, Total as P	---	---	---	**1.77**		**0.595**		**0.614**	**B**	**0.555**	
Sulfate	---	---	50	**57.9**		**32.8**		**172**	**B**	**25.1**	
Sulfide	---	---	---	**3.5**	**J**	**2.2**		**1.1**		**1.3**	
Total Dissolved Solids	---	---	1,000	**194**		**166**		**380**	**H**	**166**	**B**
Total Organic Carbon	---	---	10	**2.71**		**2**		**1.99**		**1.98**	
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)											
Aluminum	---	---	---	<0.054	U	<0.054	U	<0.054	U	<0.05	U
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	<0.0037	U	<0.004	U
Barium	2	1	---	**0.0136**		**0.0044**	**J**	**0.0911**		<0.006	U
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.0388**	**J**	**0.0115**	**J**	**0.0105**	**J**	**0.0252**	**J**
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**34.9**		**29.4**		**48.2**		**29.7**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.002	U
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**10.6**		**4.13**		<0.049	U	**3.94**	
Lead	0.015	0.05	---	<0.0021	U	<0.0021	U	<0.0029	U	**0.0043**	**J**
Magnesium	---	---	---	**8.73**		**6.32**		**10**		**5.99**	
Manganese	---	---	0.05	**0.103**		**0.0811**		<0.001	U	**0.0864**	
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0091**	**J**	<0.0023	U	<0.0023	U	<0.002	U
Potassium	---	---	---	**4.16**		**2.26**		**1.2**		**2.45**	
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	--	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**12.2**		**9.27**		**6.5**		**9.07**	**B**
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.007	U
Zinc	---	0.05	---	**0.0089**	**J**	<0.005	U	<0.0078	U	<0.008	U
Mercury by USEPA Method 7470/7471A (mg/L)											
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

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Groundwater Laboratory Analytical Results - Shallow Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-11A							
Sample I.D.:				MW-BGC-11A		MW-BGC-11A		MW-BGC-11A		MW-BGC-11A	
Sample Date:				3/17/2010		6/9/2010		9/29/2010		12/8/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)											
Total Alkalinity, (CaCO3)	---	---	30	**144**		**139**	**H2,B**	**112**	**B**	**107**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**144**		**136**	**B**	**112**	**B**	**107**	
Bromide	---	---	---	**0.381**	**J**	**0.374**	**J**	<0.1	U	<0.1	U
Chloride	---	---	50	**32.5**		**30.9**	**B**	**21.8**		**23.1**	
Fluoride	4	1.4	---	**0.393**		**0.351**		**0.554**	**B**	**0.43**	
Nitrate as N	10	5	---	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Phosphorus, Total as P	---	---	---	**0.114**		**0.177**		**0.278**	**B**	**0.11**	
Sulfate	---	---	50	**51.6**		**38.5**		**26.6**	**B**	**26.1**	
Sulfide	---	---	---	**0.6**	**J**	**1.2**		<0.17	U	**1.5**	
Total Dissolved Solids	---	---	1,000	**248**		**235**		**192**	**H**	**216**	**B**
Total Organic Carbon	---	---	10	**1.32**		**1.34**		**1.55**		**1.14**	
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)											
Aluminum	---	---	---	<0.054	U	<0.054	U	<0.054	U	<0.05	U
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	<0.0037	U	<0.004	U
Barium	2	1	---	**0.0094**	**J**	**0.0064**	**J**	<0.006	U	<0.006	U
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.0272**	**J**	**0.005**	**J**	<0.005	U	**0.0184**	**J**
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**41.4**		**34.8**		**30.9**		**31.7**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.002	U
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**2.06**		**2.96**		**2.38**		**1.16**	**B**
Lead	0.015	0.05	---	<0.0021	U	<0.0021	U	<0.0029	U	**0.0038**	**J**
Magnesium	---	---	---	**20.2**		**15.6**		**15.8**		**15**	
Manganese	---	---	0.05	**0.0446**		**0.0473**		**0.03**		**0.0332**	**B**
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0064**	**J**	<0.0023	U	<0.0023	U	<0.002	U
Potassium	---	---	---	**1.99**		**1.84**		**1.7**		**1.8**	
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	--	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**21.7**		**17.2**		**13.6**		**14.2**	
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	**0.0129**	**J**	**0.0078**	**J**	<0.005	U	<0.007	U
Zinc	---	0.05	---	**0.136**		**0.01**	**J**	<0.0078	U	<0.008	U
Mercury by USEPA Method 7470/7471A (mg/L)											
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

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Groundwater Laboratory Analytical Results - Shallow Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-12A											
Sample I.D.:				MW-BGC-12A		MW-BGC-12A		MW-BGC-12A		MW-BGC-092910		MW-BGC-12A		MW-BGC-12810	
Sample Date:				3/17/2010		6/10/2010		9/29/2010		9/29/2010		12/8/2010		12/8/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)															
Total Alkalinity, (CaCO3)	---	---	30	**39.2**		**42**	**H2,B**	**37.7**	**B**	**40**	**B**	**38**		**36.1**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**39.2**		**50.6**	**B**	**37.7**	**B**	**40**	**B**	**36.6**		**37.5**	
Bromide	---	---	---	**0.373**	**J**	<0.1	U	<0.1	U	<0.1	U	<0.1	U	**2.17**	
Chloride	---	---	50	**30**		**35.7**		**22.8**		**21.9**		**22.8**		**22.4**	
Fluoride	4	1.4	---	**0.326**		**0.256**		**0.412**	**B**	**0.421**	**B**	**0.296**		**0.279**	
Nitrate as N	10	5	---	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Phosphorus, Total as P	---	---	---	**0.092**	**J**	**0.066**	**J**	**0.15**	**B**	**0.177**	**B**	**0.0877**	**J**	**0.0932**	**J**
Sulfate	---	---	50	**105**		**95.2**		**61.3**	**B**	**61.3**	**B**	**63.6**		**62.7**	
Sulfide	---	---	---	<0.17	U	<0.17	U	**1.3**		<0.17	U	**1.3**		**1.1**	
Total Dissolved Solids	---	---	1,000	**255**		**224**	**B**	**198**	**H**	**176**	**H**	**178**	**B**	**204**	**B**
Total Organic Carbon	---	---	10	**2.59**		**2.46**		**2.06**		**2.15**		**1.58**		**1.52**	
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)															
Aluminum	---	---	---	<0.054	U	<0.054	U	**0.0829**	**J**	<0.054	U	<0.05	U	<0.05	U
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	**0.0039**	**J**	<0.0037	U	<0.004	U	<0.004	U
Barium	2	1	---	**0.0234**		**0.0222**		**0.0193**		<0.006	U	**0.0212**		**0.0209**	
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.0187**	**J**	**0.0328**	**J**	**0.0052**	**J**	**0.049**	**J**	**0.0197**	**J**	**0.0211**	**J**
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**28.6**		**27.3**		**24.9**		**30.6**		**22.8**		**22.9**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.002	U	<0.002	U
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**4.05**		**4.37**		**4.1**		**0.696**		**3.36**	**B**	**2.97**	**B**
Lead	0.015	0.05	---	<0.0021	U	<0.0021	U	<0.0029	U	<0.0029	U	**0.0044**	**J**	**0.0041**	**J**
Magnesium	---	---	---	**17.9**		**14.2**		**12**		**11.6**		**12.8**		**12.3**	
Manganese	---	---	0.05	**0.0962**		**0.0947**		**0.0893**		**0.0734**		**0.0753**	**B**	**0.0753**	**B**
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0131**		**0.0043**	**J**	**0.0032**	**J**	<0.0023	U	**0.0046**	**J**	**0.0043**	**J**
Potassium	---	---	---	**1.06**		**1.34**		**1.27**		**7.81**		**1.2**		**1.2**	
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	--	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U	<0.002	U
Sodium	---	---	100	**18.3**		**16.4**	**M8**	**12.7**		**13.6**		**14.5**		**14**	
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	**0.0105**	**J**	**0.0068**	**J**	<0.005	U	<0.005	U	<0.007	U	<0.007	U
Zinc	---	0.05	---	**0.0151**	**J**	**0.0192**	**J**	**0.0114**	**J**	<0.0078	U	**0.0169**	**J**	**0.0179**	**J**
Mercury by USEPA Method 7470/7471A (mg/L)															
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

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Groundwater Laboratory Analytical Results - Shallow Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-13							
Sample I.D.:				MW-BGC-13		MW-BGC-13		MW-BGC-13		MW-BGC-13	
Sample Date:				3/18/2010		6/9/2010		9/30/2010		12/9/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)											
Total Alkalinity, (CaCO3)	---	---	30	<5	U	<1.4	U, H2	13.8	B	7.08	J
Bicarbonate Alkalinity, (CaCO3)	---	---	---	10.8		14.5	B	13.8	B	7.08	J
Bromide	---	---	---	0.522	J	<0.1	U	0.36	J	1.14	
Chloride	---	---	50	42.9	B	23.9	B	42.8	B	47.8	
Fluoride	4	1.4	---	0.507		0.342		0.821		0.395	
Nitrate as N	10	5	---	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Phosphorus, Total as P	---	---	---	<0.05	U	<0.05	U	0.0814	JB	<0.05	U
Sulfate	---	---	50	202		120		171		162	
Sulfide	---	---	---	1.4		0.6	J	<0.540	U	1.1	
Total Dissolved Solids	---	---	1,000	406		283	B	435	B	344	
Total Organic Carbon	---	---	10	2.37		2.42		2.68		1.92	
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)											
Aluminum	---	---	---	0.391		0.18		0.266		0.255	
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	<0.0037	U	<0.004	U
Barium	2	1	---	0.0326		0.0321		0.0589		0.0372	
Beryllium	0.004	---	---	0.0079		0.0047		0.0066		0.0054	
Boron	---	---	---	0.0178	J	<0.005	U	0.0175	J	<0.005	U
Cadmium	0.005	0.0004	---	<0.0006	U	0.0009	J	<0.0006	U	<0.0006	U
Calcium	---	---	---	52.7		30.6		56.4		49.4	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	0.0211		0.0093	J	0.0146	J	0.0138	J
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	30.3		15.4		34.4		24.8	
Lead	0.015	0.05	---	<0.0021	U	<0.0021	U	0.0064		<0.0029	U
Magnesium	---	---	---	13.7		7.47		13.6		11.3	
Manganese	---	---	0.05	0.501		0.247		0.498		0.402	
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	0.0476		0.0145		0.0296		0.0235	
Potassium	---	---	---	7.05		4.79		7.94		8.11	
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	--	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	9.84		7.33		12		10.7	
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	0.0083	J	<0.005	U	0.0067	J	<0.007	U
Zinc	---	0.05	---	0.102		0.0422	J	0.0823		0.0643	
Mercury by USEPA Method 7470/7471A (mg/L)											
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

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Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-14							
Sample I.D.:				MW-BGC-14		MW-BGC-14		MW-BGC-14		MW-BGC-14	
Sample Date:				3/18/2010		6/9/2010		9/30/2010		12/9/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)											
Total Alkalinity, (CaCO3)	---	---	30	**26.8**		**21.7**	**H2,B**	**30.7**	**B**	**26.6**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**33.8**		**32.6**	**B**	**30.7**	**B**	**26.6**	
Bromide	---	---	---	<0.1	U	**0.43**	**J**	**0.388**	**J**	<0.1	U
Chloride	---	---	50	**17.9**	**B**	**34**	**B**	**49.8**	**B**	**17.7**	**B**
Fluoride	4	1.4	---	**0.205**		**0.168**		**0.309**	**M8**	**0.176**	
Nitrate as N	10	5	---	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Phosphorus, Total as P	---	---	---	**0.102**		**0.07**	**J**	**0.0845**	**JB**	**0.0818**	**J**
Sulfate	---	---	50	**52.9**		**54.6**		**61.2**		**53.5**	
Sulfide	---	---	---	**1.4**		**1**		**2.00**	**J**	**0.8**	**J**
Total Dissolved Solids	---	---	1,000	**124**		**178**	**B**	**222**	**B**	**104**	
Total Organic Carbon	---	---	10	**1.67**		**1.68**		**1.67**		**1.37**	
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)											
Aluminum	---	---	---	<0.054	U	<0.054	U	<0.054	U	<0.05	U
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	<0.0037	U	<0.004	U
Barium	2	1	---	**0.0322**		**0.0491**		**0.0705**		**0.0424**	
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.0179**	**J**	<0.005	U	**0.0173**	**J**	<0.005	U
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**16.7**		**19.4**		**27.2**		**19.4**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.002	U
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**9.77**		**10.2**		**11.9**		**11.4**	
Lead	0.015	0.05	---	<0.0021	U	<0.0021	U	**0.0034**	**J**	<0.0029	U
Magnesium	---	---	---	**4.93**		**4.88**		**6.4**		**5.2**	
Manganese	---	---	0.05	**0.24**		**0.243**		**0.254**		**0.252**	
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0076**	**J**	<0.0023	U	<0.0023	U	<0.002	U
Potassium	---	---	---	**1.95**		**2.68**		**4.48**		**2.69**	
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	--	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**10.6**		**16.9**		**24**		**12.4**	
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	<0.005	U	<0.005	U	**0.0074**	**J**	<0.007	U
Zinc	---	0.05	---	<0.005	U	<0.005	U	<0.0078	U	<0.008	U
Mercury by USEPA Method 7470/7471A (mg/L)											
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

Notes: See Page 12

Groundwater Laboratory Analytical Results - Shallow Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-15							
Sample I.D.:				MW-BGC-15		MW-BGC-15		MW-BGC-15		MW-BGC-15	
Sample Date:				3/18/2010		6/10/2010		9/30/2010		12/9/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)											
Total Alkalinity, (CaCO3)	---	---	30	<5	U	<1.4	UH2	23.2	B	13.7	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	32.5		<5	U	23.2	B	13.7	
Bromide	---	---	---	4.76		5.97		5.14		4.49	
Chloride	---	---	50	575	B	1170		584	B	487	
Fluoride	4	1.4	---	<0.03	U	<0.03	U	<0.03	U	<0.03	U
Nitrate as N	10	5	---	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Phosphorus, Total as P	---	---	---	0.085	J	0.056	J	0.143	B	<0.05	U
Sulfate	---	---	50	270		357		181		128	
Sulfide	---	---	---	0.9	J	1.1		<0.540	U	1.7	
Total Dissolved Solids	---	---	1,000	1300		1880	B	1320	B	1060	
Total Organic Carbon	---	---	10	8.98		8.9		6.15		4.67	
Total Organic Halides	---	---	---	---	—	---	—	---	—	---	—
Total Metals by USEPA Method 6010B (mg/L)											
Aluminum	---	---	---	0.274		0.118		0.103		0.0584	J
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	0.0102		0.013		0.0141		<0.004	U
Barium	2	1	---	0.0549		0.0607		0.121		0.103	
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	0.136		0.146		0.132		0.105	
Cadmium	0.005	0.0004	---	<0.0006	U	0.001		<0.0006	U	<0.0006	U
Calcium	---	---	---	114		143		111		103	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.002	U
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	34.9		49		36.9		28.8	
Lead	0.015	0.05	---	<0.0021	U	<0.0021	U	0.0041	J	<0.0029	U
Magnesium	---	---	---	20.9		22.8		19.3		16.9	
Manganese	---	---	0.05	0.177		0.225		0.202		0.174	
Molybdenum	---	---	---	0.0127	J	0.0178	J	0.0081	J	<0.005	U
Nickel	---	---	---	0.0149		<0.0023	U	<0.0023	U	<0.002	U
Potassium	---	---	---	55.2		66.6		49.6		47.9	
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	--	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	225		381		256		213	
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	0.0179	J	0.0142	J	0.01	J	<0.007	U
Zinc	---	0.05	---	0.0073	J	0.0089	J	0.0093	J	0.0082	J
Mercury by USEPA Method 7470/7471A (mg/L)											
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

Notes: See Page 12

Groundwater Laboratory Analytical Results - Shallow Wells

Notes:

---: Not Applicable / Not Available
A-01: Result based on four weight readings. Constant weight not achieved
B: Analyte was detected in the associated Method Blank.
B1: Analyte was detected in the associated Method Blank. Analyte concentration in the sample is greater than 10x the concentration found in the method blank
E: Concentration exceeds the calibration range and therefore result is semi-quantitative
H: Sample analysis performed past method-specified holding time
H2: Initial analysis within holding time. Reanalysis for the required dilution or confirmation was past the holding time
J: Analyte detected at a concentration less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). Concentrations within this range are estimate
M1: The Matrix Spike (MS) and/or MS Duplicate (MSD) were above the acceptance limits due to sample matrix interference (see Blank Spike [LCS]). See Appendix C for laboratory data package
M8: The Matrix Spike (MS) and/or MS Duplicate (MSD) were below the acceptance limits. See Appendix C for laboratory data packages
Q: Data Qualifier
U: Undetected
[a] Chromium VI (particulates)
[b] Nickel (soluble salts)
[c] Thallium (soluble salts)
[d] U.S. Environmental Protection Agency (EPA) Region III Maximum Contaminant Level (MCL) in (mg/L)
[e] Virginia DEQ Groundwater Quality Standards 9 VAC 25-280-40, effective February 12, 2004
[f] Virginia DEQ Groundwater Criteria of the Coastal Plain 9 VAC 25-280-70, effective February 12, 2004. These criteria apply to naturally occurring constituents and enforceable standards were not adopted.
[g] Samples collected in June 2009 were analyzed for mercury on 7/16/09
April 2009 and September 2009 samples were collected by others
Sample result greater than the U.S. EPA MCL for drinking water, where applicable
Sample result greater than the VA DEQ Groundwater Quality Standard, where applicable

Prepared By/Date: BJS 1/10/11
Checked By/Date: JMB 1/10/11

Groundwater Laboratory Analytical Results - Intermediate-Depth Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-5B									
Sample I.D.:				MW-BGC-5B		MW-BGC-5B		MW-Dup-6810		MW-BGC-5B		MW-BGC-5B	
Sample Date:				3/16/2010		6/8/2010		6/8/2010		9/28/2010		12/9/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)													
Total Alkalinity, (CaCO3)	---	---	30	**87**		**85.3**	B	**89.2**	B	**75.1**	B	**70.7**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**87**		**85.3**	B	**89.2**	B	**70.5**	B	**70.7**	
Bromide	---	---	---	**0.524**	J	**0.385**	J	**0.358**	J	**0.454**	J	**1.01**	
Chloride	---	---	50	**26.6**	B	**29.7**		**29.7**		**28.9**	B	**29.1**	
Fluoride	4	1.4	---	**0.361**		**0.281**		**0.293**		**0.373**		**0.346**	
Nitrate as N	10	5	---	**0.152**	H2	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Phosphorus, Total as P	---	---	---	**0.195**	B	**0.201**	B	**0.19**	B	**0.215**	B	**0.179**	
Sulfate	---	---	50	**62**		**71.3**		**69.6**		**86.7**		**89.5**	
Sulfide	---	---	---	**0.7**	J	<0.17	U	**0.4**	J	<0.17	U	**1.7**	
Total Dissolved Solids	---	---	1,000	**238**		**251**		**243**		**272**	H	**274**	
Total Organic Carbon	---	---	10	**1.14**		**0.87**	J	**0.869**	J	**0.828**	J	**0.578**	J
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)													
Aluminum	---	---	---	<0.054	U	<0.054	U	**0.269**		<0.054	U	<0.05	U
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	<0.0036	U	<0.0037	U	<0.004	U
Barium	2	1	---	**0.0121**		**0.0136**		**0.0137**		**0.0159**		**0.0142**	
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.0808**		**0.0708**		**0.0724**		**0.0721**		**0.0585**	
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**31.2**		**32.5**		**32.1**		**42.1**		**40.6**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.002	U
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**0.292**		**0.95**		**0.916**		**0.838**		**0.758**	
Lead	0.015	0.05	---	<0.0021	U	**0.0035**	J	**0.004**	J	<0.0029	U	<0.0029	U
Magnesium	---	---	---	**10**		**9.19**		**9.24**		**10.8**		**12.2**	
Manganese	---	---	0.05	**0.0462**		**0.05**		**0.0496**		**0.0587**		**0.0582**	
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.005**	J	<0.0023	U	<0.0023	U	<0.0023	U	<0.002	U
Potassium	---	---	---	**6.41**		**5.72**		**5.76**		**5.88**		**6.94**	
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	---	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**21.2**		**20.7**		**19.9**		**21**		**23.7**	
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	**0.0089**	J	<0.005	U	<0.005	U	**0.0083**	J	<0.007	U
Zinc	---	0.05	---	**0.116**		**0.0171**	J	**0.0255**	J	**0.0113**	J	<0.008	U
Mercury by USEPA Method 7470/7471A (mg/L)													
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

Notes: See Page 9

Groundwater Laboratory Analytical Results - Intermediate-Depth Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-6B											
Sample I.D.:				MW-BGC-6B		MW-BGC-6B		MW-BGC-6B		MW-BGC-092810		MW-BGC-6B		MW-BGC-12710	
Sample Date:				3/16/2010		6/8/2010		9/28/2010		9/28/2010		12/7/2010		12/7/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)															
Total Alkalinity, (CaCO3)	---	---	30	<5	U	<5	U	<1.4	U	<1.4	U	<1.4	U	<1.4	U
Bicarbonate Alkalinity, (CaCO3)	---	---	---	<5	U	<5	U	<5	U	<5	U	<5	U	<5	U
Bromide	---	---	---	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U	<0.1	U
Chloride	---	---	50	**29**	**B**	**27.6**		**24.8**	**B**	**24.7**	**B**	**24.3**	**B**	**24.2**	
Fluoride	4	1.4	---	**0.115**		**0.154**		**0.145**		**0.141**		**0.137**		**0.143**	
Nitrate as N	10	5	---	<0.01	**U, H2**	<0.01	U	<0.01	U	<0.01	U	<0.01	**UH2**	<0.01	**UH2**
Phosphorus, Total as P	---	---	---	**0.065**	**J**	**0.081**	**J, B**	**0.0708**	**J, B**	**0.0928**	**J, B**	<0.05	U	<0.05	U
Sulfate	---	---	50	**68.3**		**74.9**		**69**		**69.9**		**72.1**		**72.7**	
Sulfide	---	---	---	**1**		**1.1**		**0.9**	**J**	<0.17	U	**1**		**1.3**	
Total Dissolved Solids	---	---	1,000	**163**		**146**		**164**	**H**	**172**	**H**	**165**		**128**	
Total Organic Carbon	---	---	10	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)															
Aluminum	---	---	---	**0.208**	**B**	**0.23**		**0.247**		**0.267**		**0.286**		**0.299**	
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	<0.0037	U	<0.0037	U	<0.004	U	<0.004	U
Barium	2	1	---	**0.0707**		**0.0795**		**0.0848**		**0.0843**		**0.0795**		**0.0838**	
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.0119**	**J**	**0.0132**	**J**	**0.0149**	**J**	**0.0146**	**J**	**0.0091**	**J**	**0.0103**	**J**
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**18**		**20.4**		**23.4**		**23.6**		**21.6**		**22.2**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	**0.005**	**J**	**0.0049**	**J**	**0.005**	**J**
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**3.37**		**3.9**		**3.99**		**4.01**		**4**		**4.24**	
Lead	0.015	0.05	---	<0.0021	U	**0.0027**	**J**	<0.0029	U	<0.0029	U	<0.0029	U	<0.0029	U
Magnesium	---	---	---	**3.13**		**3.35**		**3.84**		**3.87**		**3.49**		**3.63**	
Manganese	---	---	0.05	**0.109**		**0.12**		**0.126**		**0.127**		**0.123**		**0.127**	
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0079**	**J**	**0.0049**	**J**	**0.0051**	**J**	**0.005**	**J**	**0.0054**	**J**	**0.0055**	**J**
Potassium	---	---	---	**2.43**		**2.66**		**2.64**		**2.64**		**2.91**	**B**	**2.95**	**B**
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	---	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U	<0.002	U
Sodium	---	---	100	**12.8**		**11.5**		**10.7**		**10.5**		**12.2**	**B**	**12.9**	**B**
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	<0.005	U	<0.005	U	**0.0064**	**J**	**0.0055**	**J**	<0.007	U	<0.007	U
Zinc	---	0.05	---	**0.0721**		**0.0332**	**J**	**0.0217**	**J**	**0.0202**	**J**	**0.0413**	**B**	**0.0416**	**B, J**
Mercury by USEPA Method 7470/7471A (mg/L)															
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

Notes: See Page 9

Groundwater Laboratory Analytical Results - Intermediate-Depth Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-7B							
Sample I.D.:				MW-BGC-7B		MW-BGC-7B		MW-BGC-7B		MW-BGC-7B	
Sample Date:				3/16/2010		6/8/2010		9/28/2010		12/7/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)											
Total Alkalinity, (CaCO3)	---	---	30	**34.7**		**51.3**	**B**	**25.7**	**B**	**33.5**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**34.7**		**51.3**	**B**	**37.5**	**B**	**34.3**	
Bromide	---	---	---	<0.2	U	<0.1	U	<0.1	U	<0.1	U
Chloride	---	---	50	**14.5**	**B**	**15.4**		**11.9**	**B**	**13.9**	**B**
Fluoride	4	1.4	---	**0.25**		**0.181**		**0.2**		**0.185**	
Nitrate as N	10	5	---	<0.02	**U, H2**	**0.058**	**J**	<0.01	U	<0.01	**UH2**
Phosphorus, Total as P	---	---	---	**0.107**	**B**	**0.084**	**J, B**	**0.0923**	**JB**	**0.0608**	**J**
Sulfate	---	---	50	**12.2**		**11.7**		**12.7**		**11.6**	
Sulfide	---	---	---	**0.7**	**J**	<0.17	U	<0.17	U	**1.6**	
Total Dissolved Solids	---	---	1,000	**113**		**86**		**104**	**H**	**144**	
Total Organic Carbon	---	---	10	**1.28**		**1.24**		**1.56**		**1.24**	
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)											
Aluminum	---	---	---	<0.054	U	<0.054	U	<0.054	U	<0.05	U
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	<0.0037	U	<0.004	U
Barium	2	1	---	**0.0085**	**J**	**0.0141**		**0.0143**		**0.0182**	
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.0087**	**J**	**0.0115**	**J**	**0.0144**	**J**	**0.0079**	**J**
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**4.67**		**6.51**		**6.32**		**7.21**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.002	U
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**3.94**		**4.42**		**5.72**		**6.65**	
Lead	0.015	0.05	---	<0.0021	U	**0.0042**	**J**	<0.0029	U	**0.0035**	**J**
Magnesium	---	---	---	**1.96**		**2.74**		**2.71**		**2.98**	
Manganese	---	---	0.05	**0.101**		**0.147**		**0.131**		**0.154**	
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	<0.0023	U	<0.0023	U	<0.0023	U	<0.002	U
Potassium	---	---	---	**0.546**	**J**	**0.948**	**J**	**0.784**	**J**	**0.951**	**B**
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	---	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**7.63**		**11**		**10**		**12.3**	**B**
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.007	U
Zinc	---	0.05	---	<0.005	U	**0.008**	**J**	<0.0078	U	**0.0267**	**B**
Mercury by USEPA Method 7470/7471A (mg/L)											
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

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Groundwater Laboratory Analytical Results - Intermediate-Depth Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-8B							
Sample I.D.:				MW-BGC-8B		MW-BGC-8B		MW-BGC-8B		MW-BGC-8B	
Sample Date:				3/16/2010		6/8/2010		9/28/2010		12/7/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)											
Total Alkalinity, (CaCO3)	---	---	30	**122**		**119**	**B**	**93.2**	**B**	**99**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**122**		**119**	**B**	**96.9**	**B**	**98.4**	
Bromide	---	---	---	<0.1	U	<0.1	U	<0.1	U	<0.1	U
Chloride	---	---	50	**13.4**	**B**	**14.2**		**13.3**	**B**	**13.2**	**B**
Fluoride	4	1.4	---	**0.223**		**0.248**		**0.259**		**0.25**	
Nitrate as N	10	5	---	**0.115**	**H2**	<0.01	U	<0.01	U	<0.01	**UH2**
Phosphorus, Total as P	---	---	---	**0.15**	**B**	**0.148**	**B**	**0.11**	**B**	**0.115**	
Sulfate	---	---	50	**24.7**		**23.4**		**34.6**		**25.7**	
Sulfide	---	---	---	**0.3**	**J**	**0.4**	**J**	<0.17	U	**0.2**	**J**
Total Dissolved Solids	---	---	1,000	**184**		**178**		**196**	**H**	**188**	
Total Organic Carbon	---	---	10	**1.69**		**1.79**		**2.06**		**1.76**	
Total Organic Halides	---	---	---	---	---	---	---	---	---		
Total Metals by USEPA Method 6010B (mg/L)											
Aluminum	---	---	---	**0.0966**	**J**	<0.054	U	<0.054	U	<0.05	U
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	<0.0037	U	<0.004	U
Barium	2	1	---	**0.0161**		**0.0166**		**0.019**		**0.0176**	
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.0621**		**0.052**		**0.0441**	**J**	**0.0489**	**J**
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**28.4**		**26.7**		**28.2**		**28.7**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.002	U
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**7.86**		**8.02**		**8.82**		**8.51**	
Lead	0.015	0.05	---	<0.0021	U	**0.004**	**J**	<0.0029	U	**0.0042**	**J**
Magnesium	---	---	---	**10**		**8.74**		**8.55**		**9.3**	
Manganese	---	---	0.05	**0.252**		**0.258**		**0.304**		**0.295**	
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0048**	**J**	<0.0023	U	<0.0023	U	<0.002	U
Potassium	---	---	---	**4.57**		**4.11**		**3.36**		**4.09**	**B**
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	---	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**13.8**		**12.7**		**13.4**		**13.8**	**B**
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	**0.0067**	**J**	<0.005	U	<0.005	U	<0.007	U
Zinc	---	0.05	---	**0.125**		**0.0133**	**J**	<0.0078	U	**0.0537**	**B**
Mercury by USEPA Method 7470/7471A (mg/L)											
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

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Groundwater Laboratory Analytical Results - Intermediate-Depth Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-9B									
Sample I.D.:				MW-BGC-9B		MW-BGC-031710		MW-BGC-9B		MW-BGC-9B		MW-BGC-9B	
Sample Date:				3/17/2010		3/17/2010		6/9/2010		9/29/2010		12/8/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)													
Total Alkalinity, (CaCO3)	---	---	30	**161**		**153**		**160**	**H2,B**	**120**	**B**	**138**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**152**		**155**		**166**	**B**	**120**	**B**	**138**	
Bromide	---	---	---	**0.37**	**J**	**0.375**	**J**	**0.381**	**J**	<0.1	U	<0.1	U
Chloride	---	---	50	**33.3**		**32.5**		**34.1**	**B**	**21.6**		**31.8**	
Fluoride	4	1.4	---	**0.353**		**0.354**		**0.304**		**0.373**	**B**	**0.336**	
Nitrate as N	10	5	---	<0.01	U	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Phosphorus, Total as P	---	---	---	**0.136**		**0.162**		**0.123**		**0.173**	**B**	**0.149**	
Sulfate	---	---	50	**13.7**		**12.9**		**12**		**36.9**	**B**	**14.2**	
Sulfide	---	---	---	**1**		<0.17	U	**0.6**	**J**	**0.9**	**J**	**0.8**	**J**
Total Dissolved Solids	---	---	1,000	**219**		**223**		**223**		**230**	**H**	**228**	**B**
Total Organic Carbon	---	---	10	**1.07**		**1.11**		**1.07**		**1.61**		**0.885**	**J**
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)													
Aluminum	---	---	---	<0.054	U	<0.054	U	<0.054	U	<0.054	U	<0.05	U
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	<0.0036	U	<0.0037	U	<0.004	U
Barium	2	1	---	**0.0146**		**0.0144**		**0.014**		**0.0278**		**0.0156**	
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.118**		**0.122**		**0.0988**		**0.0106**	**J**	**0.11**	
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**30.5**		**31**		**28.6**		**40.7**		**31**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.002	U
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**0.269**		**0.273**		**0.316**		**9.08**		**0.481**	
Lead	0.015	0.05	---	<0.0021	U	<0.0021	U	<0.0021	U	<0.0029	U	<0.0029	U
Magnesium	---	---	---	**14.3**		**14.3**		**13**		**14.2**		**13.2**	
Manganese	---	---	0.05	**0.0678**		**0.0688**		**0.0705**		**0.178**		**0.0781**	
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0061**	**J**	**0.0065**	**J**	<0.0023	U	<0.0023	U	<0.002	U
Potassium	---	---	---	**10.5**		**10.6**		**9.46**		**2.15**		**9.72**	
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	---	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**26.4**		**26.2**		**23.5**		**33.6**		**25**	**B**
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	**0.0104**	**J**	**0.0062**	**J**	**0.0074**	**J**	<0.005	U	<0.007	U
Zinc	---	0.05	---	<0.005	U	<0.005	U	<0.005	U	<0.0078	U	<0.008	U
Mercury by USEPA Method 7470/7471A (mg/L)													
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

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Groundwater Laboratory Analytical Results - Intermediate-Depth Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-10B							
Sample I.D.:				MW-BGC-10B		MW-BGC-10B		MW-BGC-10B		MW-BGC-10B	
Sample Date:				3/18/2010		6/9/2010		9/29/2010		12/8/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)											
Total Alkalinity, (CaCO3)	---	---	30	**160**		**156**	**H2,B**	**97.5**	**B**	**142**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**155**		**157**	**B**	**97.5**	**B**	**143**	
Bromide	---	---	---	<0.1	U	**0.418**	**J**	<0.1	U	**1.08**	
Chloride	---	---	50	**45.4**	**B**	**42.5**	**B**	**19.6**		**37.6**	
Fluoride	4	1.4	---	**0.402**		**0.299**		**0.462**	**B**	**0.333**	
Nitrate as N	10	5	---	**0.05**	**J**	<0.01	U	<0.01	U	<0.01	U
Phosphorus, Total as P	---	---	---	**0.16**		**0.132**		**0.256**	**B**	**0.188**	
Sulfate	---	---	50	**44.9**		**41.8**		**38.3**	**B**	**43.5**	
Sulfide	---	---	---	**0.6**	**J**	**0.7**	**J**	<0.17	U	**1.5**	
Total Dissolved Solids	---	---	1,000	**294**		**284**		**17**	**H**	**299**	**B**
Total Organic Carbon	---	---	10	**2.36**		**2.5**		**2.24**		**1.19**	
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)											
Aluminum	---	---	---	<0.054	U	<0.054	U	<0.054	U	<0.05	U
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	**0.0038**	**J**	<0.004	U
Barium	2	1	---	**0.0059**	**J**	**0.0057**	**J**	**0.0195**		**0.0068**	**J**
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.13**		**0.0968**		**0.0058**	**J**	**0.126**	
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**37.5**		**34.4**		**25**		**40.7**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.002	U
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**0.319**		**0.302**		**4.09**		**0.406**	
Lead	0.015	0.05	---	<0.0021	U	<0.0021	U	<0.0029	U	**0.004**	**J**
Magnesium	---	---	---	**17.1**		**14**		**12**		**16.6**	
Manganese	---	---	0.05	**0.0608**		**0.0598**		**0.0895**		**0.0671**	
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0108**		<0.0023	U	**0.0032**	**J**	<0.002	U
Potassium	---	---	---	**12.8**		**10.9**		**1.23**		**12**	
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	---	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**31.5**		**28.3**		**12.5**		**30.5**	**B**
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	**0.0074**	**J**	<0.005	U	<0.005	U	<0.007	U
Zinc	---	0.05	---	**0.0067**	**J**	<0.005	U	**0.0121**	**J**	<0.008	U
Mercury by USEPA Method 7470/7471A (mg/L)											
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

Notes: See Page 9

Groundwater Laboratory Analytical Results - Intermediate-Depth Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-11B							
Sample I.D.:				MW-BGC-11B		MW-BGC-11B		MW-BGC-11B		MW-BGC-11B	
Sample Date:				3/17/2010		6/9/2010		9/29/2010		12/8/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)											
Total Alkalinity, (CaCO3)	---	---	30	**139**		**146**	**H2,B**	**124**	**B**	**163**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**139**		**140**	**B**	**124**	**B**	**164**	
Bromide	---	---	---	**0.568**	**J**	**0.519**	**J**	**0.213**	**J**	**1.1**	
Chloride	---	---	50	**97.9**		**88.2**	**B**	**59.3**		**69.5**	
Fluoride	4	1.4	---	**0.371**		**0.247**		**0.386**	**B**	**0.381**	
Nitrate as N	10	5	---	<0.01	U	<0.01	U	<0.01	U	<0.01	U
Phosphorus, Total as P	---	---	---	**0.248**		**0.285**		**0.404**	**B**	**0.259**	
Sulfate	---	---	50	**109**		**98.2**		**89.6**	**B**	**61.9**	
Sulfide	---	---	---	<0.17	U	**1.6**		<0.17	U	**1**	
Total Dissolved Solids	---	---	1,000	**481**		**412**		**378**	**H**	**358**	**B**
Total Organic Carbon	---	---	10	**1.77**		**1.77**		**1.85**		**1.46**	
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)											
Aluminum	---	---	---	<0.054	U	<0.054	U	<0.054	U	<0.05	U
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	<0.0037	U	<0.004	U
Barium	2	1	---	**0.0327**		**0.0257**		**0.0232**		**0.0196**	
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.0631**		**0.0368**	**J**	**0.019**	**J**	**0.133**	
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**63.2**		**51.9**		**54.4**		**37.2**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.002	U
Copper	1.3	1	---	<0.0021	U	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**4.5**		**4.48**		**4.87**		**2.06**	**B**
Lead	0.015	0.05	---	<0.0021	U	<0.0021	U	<0.0029	U	**0.0039**	**J**
Magnesium	---	---	---	**22.4**		**17.9**		**19.4**		**19.4**	
Manganese	---	---	0.05	**0.27**		**0.248**		**0.233**		**0.115**	**B**
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0082**	**J**	<0.0023	U	<0.0023	U	<0.002	U
Potassium	---	---	---	**10.3**		**8.59**		**7.75**		**13.5**	
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	---	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**47.8**		**38**		**35.4**		**54.8**	
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	**0.0135**	**J**	**0.0068**	**J**	<0.005	U	<0.007	U
Zinc	---	0.05	---	<0.005	U	<0.005	U	<0.0078	U	<0.008	U
Mercury by USEPA Method 7470/7471A (mg/L)											
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

Notes: See Page 9

Groundwater Laboratory Analytical Results - Intermediate-Depth Wells

Well I.D.:	U.S. EPA Maximum Contaminant Levels (MCLs)[d]	VA DEQ Groundwater Quality Standards[e]	VA DEQ Groundwater Quality Criteria[f]	MW-BGC-12B							
Sample I.D.:				MW-BGC-12B		MW-BGC-12B		MW-BGC-12B		MW-BGC-12B	
Sample Date:				3/17/2010		6/10/2010		9/29/2010		12/8/2010	
Laboratory Data:				Result	Q	Result	Q	Result	Q	Result	Q
General Chemistry Parameters (mg/L)											
Total Alkalinity, (CaCO3)	---	---	30	**55**		**110**	**H2,B**	**62.4**	**B**	**54**	
Bicarbonate Alkalinity, (CaCO3)	---	---	---	**55**		**110**	**B**	**62.4**	**B**	**54.6**	
Bromide	---	---	---	<0.1	U	**0.662**	**J**	<0.1	U	<0.1	U
Chloride	---	---	50	**33.4**		**96.9**		**34.1**		**30.1**	
Fluoride	4	1.4	---	**0.491**		**0.402**		**0.601**	**B**	**0.443**	
Nitrate as N	10	5	---	**0.087**	**J**	<0.01	U	<0.01	U	<0.01	U
Phosphorus, Total as P	---	---	---	**0.144**		**0.244**		**0.321**	**B**	**0.309**	
Sulfate	---	---	50	**101**		**94.8**		**92.5**	**B**	**92.2**	
Sulfide	---	---	---	**0.3**	**J**	**1.6**		**0.5**	**J**	<0.17	U
Total Dissolved Solids	---	---	1,000	**275**		**416**	**B**	**264**	**H**	**254**	**B**
Total Organic Carbon	---	---	10	**1.22**		**1.68**		**1.43**		**1.14**	
Total Organic Halides	---	---	---	---	---	---	---	---	---	---	---
Total Metals by USEPA Method 6010B (mg/L)											
Aluminum	---	---	---	<0.054	U	<0.054	U	<0.054	U	<0.05	U
Antimony	0.006	---	---	<0.0021	U	<0.0021	U	<0.0059	U	<0.0059	U
Arsenic	0.01	0.05	---	<0.0036	U	<0.0036	U	<0.0037	U	<0.004	U
Barium	2	1	---	**0.0129**		**0.0257**		**0.013**		**0.0131**	
Beryllium	0.004	---	---	<0.001	U	<0.001	U	<0.001	U	<0.001	U
Boron	---	---	---	**0.0273**	**J**	**0.0985**		**0.0078**	**J**	**0.0269**	**J**
Cadmium	0.005	0.0004	---	<0.0006	U	<0.0006	U	<0.0006	U	<0.0006	U
Calcium	---	---	---	**35.1**		**41.8**		**40.9**		**38.1**	
Chromium[a]	0.1	0.05	---	<0.0026	U	<0.0026	U	<0.0026	U	<0.001	U
Cobalt	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.002	U
Copper	1.3	1	---	**0.0021**	**J**	<0.0021	U	<0.003	U	<0.003	U
Iron	---	---	0.3	**3.11**		**5.14**		**5.37**		**6.67**	**B**
Lead	0.015	0.05	---	<0.0021	U	<0.0021	U	<0.0029	U	**0.0056**	
Magnesium	---	---	---	**16.9**		**17.6**		**17**		**16.7**	
Manganese	---	---	0.05	**0.144**		**0.128**		**0.127**		**0.138**	**B**
Molybdenum	---	---	---	<0.005	U	<0.005	U	<0.005	U	<0.005	U
Nickel	---	---	---	**0.0059**	**J**	<0.0023	U	<0.0023	U	<0.002	U
Potassium	---	---	---	**2.21**		**6.56**		**2.91**		**2.43**	
Selenium	0.05	0.01	---	<0.0039	U	<0.0039	U	<0.0039	U	<0.0039	U
Silver	---	---	---	<0.0028	U	<0.0028	U	<0.0028	U	<0.002	U
Sodium	---	---	100	**17.9**		**55.7**		**22.7**		**19.6**	
Thallium	0.002	---	---	<0.0063	U	<0.0063	U	<0.0084	U	<0.0084	U
Vanadium	---	---	---	**0.0104**	**J**	**0.0067**	**J**	<0.005	U	<0.007	U
Zinc	---	0.05	---	<0.005	U	**0.0213**	**J**	<0.0078	U	<0.008	U
Mercury by USEPA Method 7470/7471A (mg/L)											
Mercury[g]	0.002	0.00005	---	<0.0001	U	<0.0001	U	<0.0001	U	<0.0001	U

Notes: See Page 9

Groundwater Laboratory Analytical Results - Intermediate-Depth Wells

Notes

---: Not Applicable / Not Available

B: Analyte was detected in the associated Method Blank.

B1: Analyte was detected in the associated Method Blank. Analyte concentration in the sample is greater than 10x the concentration found in the method blank.

E: Concentration exceeds the calibration range and therefore result is semi-quantitative.

H: Sample analysis performed past method-specified holding time.

H2: Initial analysis within holding time. Reanalysis for the required dilution or confirmation was past the holding time.

HT1: The holding time for this test is immediate. The laboratory measurement, therefore, may not be suitable for compliance purposes.

J: Analyte detected at a concentration less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL) Concentrations within this range are estimated

L1: Laboratory Control Sample and/or Laboratory Control Sample Duplicate recovery was above acceptance limits.

M2: The Matrix Spike (MS) and/or MS Duplicate (MSD) were below the acceptance limits due to sample matrix interference. and laboratory control sample (LCS).

M7: The Matrix Spike (MS) and/or MS Duplicate (MSD) were below the acceptable limits. See Appendix E for laboratory data packages.

M8: The Matrix Spike (MS) and/or MS Duplicate (MSD) were below the acceptance limits. See Appendix C for laboratory data packages.

MHA: Due to high levels of analyte in the sample, the MS/MSD calculation does not provide useful spike recovery information. See Appendix E for laboratory data packages.

Q: Data Qualifier

U: Undetected

[a] Chromium VI (particulates)

[b] Nickel (soluble salts)

[c] Thallium (soluble salts)

[d] U.S. Environmental Protection Agency (EPA) Region III Maximum Contaminant Level (MCL) in (mg/L)

[e] Virginia DEQ Groundwater Quality Standards 9 VAC 25-280-40, effective February 12, 2004

[f] Virginia DEQ Groundwater Criteria of the Coastal Plain 9 VAC 25-280-70, effective February 12, 2004. These criteria apply to naturally occurring constituents and enforceable standards were not adopted.

[g] Samples collected in June 2009 were analyzed for mercury on 7/16/09
April 2009 and September 2009 samples were collected by others.
See Appendix E for laboratory data packages

Sample result greater than the U.S. EPA MCL for drinking water, where applicable

Sample result greater than the VA DEQ Groundwater Quality Standard, where applicable

Prepared By/Date: BJS 1/10/11
Checked By/Date: JMB 1/10/11