DOE Oversight Bureau, New Mexico Environment Department

Groundwater Monitoring at Sandia National Laboratories/New Mexico Tijeras Arroyo Groundwater

Conducted by the
New Mexico Environment Department DOE Oversight Bureau
for FFY 2013 Q-1

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Final Report

6/17/2015

The purpose of this communication is to transmit groundwater data collected by New Mexico Environment Department DOE Oversight Bureau from Tijeras Arroyo groundwater monitoring wells during the firsh quarter of FFY 2013.

Acknowledgment:
This material is based upon work supported by the Department of Energy Office of Environmental Management under Award Number *DE-EM0002420*.

Introduction

The New Mexico Environment Department (NMED) DOE Oversight Bureau (Bureau) has compiled and assessed groundwater data collected during November and December 2012. The Bureau collected groundwater samples from Tijeras Arroyo Groundwater (TAG) monitoring wells A2-SW1-320, TA2-W-19, TA2-W-26, TJA-2, TJA-4, TJA-7, and WYO-4. Split samples were collected using standard Sandia National Laboratories/New Mexico sampling procedures and equipment. Bureau samples were submitted to an independent analytical laboratory where they were analyzed for anions, nitrate-nitrite, and volatile organic compounds (VOCs). Several samples analyzed for nitrate-nitrite were detected at or above the U.S. Environmental Protection Agency (EPA) maximum contaminant level (MCL) of 10 mg/L. Trichloroethylene (TCE) was also detected above the U.S. EPA MCL of 5 µg/L at monitoring well WYO-4.

Data Assessment

All groundwater samples were collected and analyzed in accordance with U.S. EPA protocols. Data results are compared to applicable MCLs established by the U.S. EPA National Primary Drinking Water Regulations (40 CFR 141), National Primary Drinking Water Standards, EPA, July 2002.

Results

Analytical results for inorganic compounds are listed in Table 1. Samples were analyzed for anions (bromide, chloride, fluoride and sulfate) and nitrate-nitrite as N. Nitrate concentrations were detected above the EPA MCL of 10 mg/L at monitoring wells TA2-SW1-320 (23 mg/L), TA2-W-19 (11 mg/L), TJA-2 (11 mg/L), TJA-4 (30 mg/L) and TJA-7 (23 mg/L).

Volatile organic compounds (VOCs) detected above the method detection limit are presented in Table 2. All samples were detected below established MCLs, except trichloroethylene (TCE). Monitoring well WYO-4 measured a TCE concentration of 8.8 µg/L. The laboratory method detection limits for the remaining VOCs analyzed from TAG monitoring wells are presented in Table-3.

Conclusion

Samples were collected from Tijeras Arroyo Groundwater (TAG) monitoring wells TA1-W-02, TA1-W-03, TA1-W-04, TA1-W-06, TA2-SW1-320, TA2-W-19, TA2-W-26, TA2-W-27, TJA-2, TJA-4, TJA-7, and WYO-4. Samples were analyzed for anions, nitrate-nitrite, and volatile organic compounds (VOCs). Several samples analyzed for nitrate-nitrite were detected at or above the U.S. Environmental Protection Agency (EPA) maximum contaminant level (MCL) of 10 mg/L. Trichloroethylene (TCE) was also detected above the U.S. EPA MCL of 5 µg/L at monitoring well WYO-4.

References

U.S. EPA National Primary Drinking Water Regulations (40 CFR 141), National Primary Drinking Water Standards, EPA, July 2002.

Table-1 NMED DOE OB FFY 2013 Q-1 Tijeras Arroyo Groundwater Quality Results: Anions and Nitrate-Nitrite

Monitoring Well/ Sample Date	Analyte	Result (mg/L)	EPA MCL (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
TA2-SW1-320 28-Nov-12	Nitrate Nitrite as N	**23**	10	1	0.11	B	EPA:353.2
TA2-W-19 27-Nov-12	Nitrate Nitrite as N	**11**	10	0.5	0.053	B	EPA:353.2
TA2-W-26 26-Nov-12	Nitrate Nitrite as N	5.3	10	0.5	0.053	B	EPA:353.2
TJA-2 29-Nov-12	Nitrate Nitrite as N	**11**	10	0.5	0.053	B	EPA:353.2
TJA-4 4-Dec-12 Dup	Nitrate Nitrite as N	**31**	10	1	0.11	B	EPA:353.2
TJA-4 4-Dec-12	Nitrate Nitrite as N	**30**	10	1	0.11	B	EPA:353.2
TJA-7 5-Dec-12	Nitrate Nitrite as N	**23**	10	1	0.11	B	EPA:353.2
WYO-4 3-Dec-12	Nitrate Nitrite as N	3.3	10	0.25	0.027	B	EPA:353.2

B = Compound was found in the blank and sample.

Table 2- NMED DOE OB FFY 2013 Q-1 Tijeras Arroyo Groundwater Quality Results: Detected Volatile Organic Compounds

Monitoring Well/ Sample Date	Analyte	Result (µg/L)	EPA MCL (µg/L)	Quantitation Limit (µg/L)	MDL (µg/L)	Laboratory Qualifier	Analytical Method
TA2-W-26 26-Nov-12	Bromodichloromethane	0.27	NE	1	0.14	J	SW-846:8260B
	Chloroform	0.31	NE	1	0.12	J	SW-846:8260B
	Dichloroethane[1,1-]	0.15	NE	1	0.1	J	SW-846:8260B
	Dichloroethene[1,1-]	0.3	7	1	0.14	J	SW-846:8260B
	Dichloroethene[cis-1,2-]	0.45	70	1	0.1	J	SW-846:8260B
	Tetrachloroethene	1.1	5	1	0.1		SW-846:8260B
	Toluene	0.32	1000	1	0.25	J	SW-846:8260B
	Trichloroethene	1.3	5	1	0.13		SW-846:8260B
TJA-2 29-Nov-12	Dichloroethane[1,1-]	0.55	NE	1	0.1	J	SW-846:8260B
	Dichloroethene[cis-1,2-]	0.57	70	1	0.1	J	SW-846:8260B
	Tetrachloroethene	0.18	5	1	0.1	J	SW-846:8260B
	Trichloroethene	3.4	5	1	0.13		SW-846:8260B
	Carbon Disulfide	0.41	NE	2	0.16	J	SW-846:8260B
	Dichloroethane[1,1-]	0.49	NE	1	0.1	J	SW-846:8260B
	Dichloroethene[cis-1,2-]	0.49	70	1	0.1	J	SW-846:8260B
	Tetrachloroethene	0.12	5	1	0.1	J	SW-846:8260B
	Trichloroethene	3.5	5	1	0.13		SW-846:8260B
TJA-7 5-Dec-12	Trichloroethene	0.86	5	1	0.13	J	SW-846:8260B
WYO-4 3-Dec-12	Chloroform	0.16	NE	1	0.12	J	SW-846:8260B
	Dichloroethane[1,1-]	1.2	NE	1	0.1		SW-846:8260B
	Dichloroethene[1,1-]	0.22	7	1	0.14	J	SW-846:8260B
	Dichloroethene[cis-1,2-]	2.2	70	1	0.1		SW-846:8260B
	Tetrachloroethene	0.22	5	1	0.1	J	SW-846:8260B
	Toluene	0.36	1000	1	0.25	J	SW-846:8260B
	Trichloroethene	**8.8**	5	1	0.13		SW-846:8260B

J = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Table-3 NMED DOE OB FFY 2013 Q-1 Tijeras Arroyo Groundwater Quality Results: Method Detection Limits for Volatile Organic Compounds

Analyte	MDL (µg/L)	Analytical Method
4-Methyl-2-pentanone (MIBK)	0.18	SW-846:8260B
Acetone	2.1	SW-846:8260B
Benzene	0.13	SW-846:8260B
Bromodichloromethane	0.14	SW-846:8260B
Bromoform	0.1	SW-846:8260B
Bromomethane	0.29	SW-846:8260B
Butanone[2-]	0.35	SW-846:8260B
Carbon Disulfide	0.16	SW-846:8260B
Carbon Tetrachloride	0.15	SW-846:8260B
Chlorobenzene	0.12	SW-846:8260B
Chloroethane	0.34	SW-846:8260B
Chloroform	0.12	SW-846:8260B
Chloromethane	0.25	SW-846:8260B
Dibromochloromethane	0.13	SW-846:8260B
Dichloroethane[1,1-]	0.1	SW-846:8260B
Dichloroethane[1,2-]	0.22	SW-846:8260B
Dichloroethene[1,1-]	0.14	SW-846:8260B
Dichloroethene[cis-1,2-]	0.1	SW-846:8260B
Dichloroethene[trans-1,2-]	0.11	SW-846:8260B
Dichloropropane[1,2-]	0.15	SW-846:8260B
Dichloropropene[cis-1,3-]	0.22	SW-846:8260B
Dichloropropene[trans-1,3-]	0.08	SW-846:8260B
Ethylbenzene	0.1	SW-846:8260B
Hexanone[2-]	0.17	SW-846:8260B
Methylene Chloride	0.35	SW-846:8260B
Styrene	0.15	SW-846:8260B
Tetrachloroethane[1,1,2,2-]	0.09	SW-846:8260B
Tetrachloroethene	0.1	SW-846:8260B
Toluene	0.25	SW-846:8260B
Trichloroethane[1,1,1-]	0.19	SW-846:8260B
Trichloroethane[1,1,2-]	0.31	SW-846:8260B
Trichloroethene	0.13	SW-846:8260B
Vinyl acetate	0.21	SW-846:8260B
Vinyl Chloride	0.22	SW-846:8260B
Xylenes, Total	0.18	SW-846:8260B