

DOE Oversight Bureau, New Mexico Environment Department

**Wastewater Monitoring at
Sandia National Laboratories/New Mexico**

**Conducted by the
New Mexico Environment Department DOE Oversight Bureau
for FFY 2016 Q-1**

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Final Report

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The purpose of this communication is to transmit wastewater quality data collected by NMED DOE Oversight Bureau from SNL/NM wastewater monitoring stations WW001 (ABCWUA permit number 2069A), WW006 (ABCWUA permit number 2069F), WW008 (ABCWUA permit number 2069I), and WW0011 (ABCWUA permit number 2069K) during first quarter FFY 2016.

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Introductory remarks

The New Mexico Environment Department (NMED) DOE Oversight Bureau (Bureau) has compiled and assessed wastewater data collected during October 2015. The Bureau staff collected split wastewater samples with Sandia National Laboratories/New Mexico (SNL/NM) and the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) using standard SNL/NM sampling procedures and equipment. Samples were obtained as a 24-hour composite using an ISCO automated sampler. The ISCO sampler is programmed to collect 100ml every 15 minutes during the 24-hour sampling period.

Samples were collected from wastewater monitoring stations WW001 (ABCWUA permit number 2069A), WW006 (ABCWUA permit number 2069F), WW008 (ABCWUA permit number 2069I), and WW0011 (ABCWUA permit number 2069K). Samples were submitted for analysis to ALS Laboratory Group in Fort Collins, CO for total metals, fluoride, total cyanide, volatile organic compounds (VOCs), gross alpha, gross beta, gamma-emitting isotopes and tritium. No anomalies were noted.

Data Assessment

Data results are compared to applicable Sewer Release Limits in Table III of 20.3.4 NMAC, in addition to Limitations on Pollutant Concentration in Table 3-2-13 of the Albuquerque Bernalillo County Water Utility Authority Sewer Use and Wastewater Control Ordinance (SUWCO) requirements.

Results

Analytical results for total (unfiltered) target analyte list (TAL) metals are listed in Table-1. All results were below established ABCWUA daily maximum composite sample concentration limits.

Analytical results for inorganic compounds are listed in Table-2. All samples were analyzed for fluoride and samples for total cyanide were collected from monitoring stations WW006 and WW008. Cyanide concentrations were below the pollutant concentration limit of 0.45 mg/L. Fluoride concentrations from all samples collected were below the pollutant concentration limit of 22.7 mg/L.

Volatile organic compounds detected at concentrations above the method detection limits (MDLs) are presented in Table-3. Compounds detected above the MDL include acetone, bromoform, chlorodibromomethane, and chloroform. No wastewater regulatory standards exist for VOCs. Table-4 summarizes the laboratory MDLs for the remaining VOCs, not listed in Table-3.

Analytical results for radionuclides are listed in Table-5. Samples were analyzed for gamma emitting isotopes, gross alpha/beta and tritium. It is important to note that the NMAC limit is a monthly average and our samples were obtained as a 24-hour composite. As such, it is not possible to directly correlate the values to the limits. However, it is possible to use the limit as a potential indicator for compliance. The data collected does not suggest any of the isotopes would exceed the effluent limit.

Conclusion

In summary, the results indicate that wastewater samples collected by the Bureau were below both the ABCWUA Sewer Use and Wastewater Control Ordinance and the Sewer Release Limits of the 20.3.4 NMAC.

Table-1 NMED DOE Oversight Bureau FFY 2016 Q-1 Semi-Annual Wastewater Quality Results: Total TAL Metals plus Uranium

SNL/NM Station Number Sample Date	Analyte	Result (mg/L)	ABQ Daily Maximum Composite Sample (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
WW001 27-Oct-15	Aluminum	0.074	900	0.05	0.019		SW-846:6020
	Antimony	0.00091	NE	0.0003	0.00023		SW-846:6020
	Arsenic	0.0032	0.051	0.002	0.00036		SW-846:6020
	Barium	0.1	NE	0.001	0.00094		SW-846:6020
	Beryllium	0.00014	NE	0.0005	0.00014	U	SW-846:6020
	Cadmium	0.00015	0.5	0.0003	0.00013	J	SW-846:6020
	Calcium	44	NE	1	0.094		SW-846:6020
	Chromium	0.0035	4.1	0.01	0.00074	J	SW-846:6020
	Cobalt	0.00021	NE	0.001	0.00021	U	SW-846:6020
	Copper	0.033	3.2	0.01	0.002		SW-846:6020
	Iron	0.25	NE	0.1	0.013		SW-846:6020
	Lead	0.0026	1	0.0005	0.0002		SW-846:6020
	Magnesium	8.1	NE	0.1	0.039		SW-846:6020
	Manganese	0.015	NE	0.002	0.00074		SW-846:6020
	Mercury	0.00006	0.004	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0071	2	0.005	0.0023		SW-846:6020
	Potassium	13	NE	1	0.2		SW-846:6020
	Selenium	0.004	0.25	0.001	0.00042		SW-846:6020
	Silver	0.00024	5	0.0001	0.000041		SW-846:6020
	Sodium	170	NE	1	0.84		SW-846:6020
Thallium	0.00007	NE	0.0002	0.000034	J	SW-846:6020	
Uranium	0.002	NE	0.0001	0.000046		SW-846:6020	
Vanadium	0.011	NE	0.001	0.00027	B	SW-846:6020	
Zinc	0.067	2.2	0.02	0.0071		SW-846:6020	

B = Compound was found in the blank and sample.

J = the reported value was obtained from a reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL).

NE = Not Established

U = the analyte was analyzed for but not detected

Table-1 NMED DOE Oversight Bureau FFY 2016 Q-1 Semi-Annual Wastewater Quality Results: Total TAL Metals plus Uranium

SNL/NM Station Number Sample Date	Analyte	Result (mg/L)	ABQ Daily Maximum Composite Sample (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
WW006 27-Oct-15	Aluminum	0.055	900	0.05	0.019		SW-846:6020
	Antimony	0.0004	NE	0.0003	0.00023		SW-846:6020
	Arsenic	0.0038	0.051	0.002	0.00036		SW-846:6020
	Barium	0.13	NE	0.001	0.00094		SW-846:6020
	Beryllium	0.00014	NE	0.0005	0.00014	U	SW-846:6020
	Cadmium	0.00013	0.5	0.0003	0.00013	U	SW-846:6020
	Calcium	53	NE	1	0.094		SW-846:6020
	Chromium	0.00077	4.1	0.01	0.00074	J	SW-846:6020
	Cobalt	0.00021	NE	0.001	0.00021	U	SW-846:6020
	Copper	0.013	3.2	0.01	0.002		SW-846:6020
	Iron	0.23	NE	0.1	0.013		SW-846:6020
	Lead	0.00042	1	0.0005	0.0002	J	SW-846:6020
	Magnesium	8.6	NE	0.1	0.039		SW-846:6020
	Manganese	0.011	NE	0.002	0.00074		SW-846:6020
	Mercury	0.00006	0.004	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0023	2	0.005	0.0023	J	SW-846:6020
	Potassium	11	NE	1	0.2		SW-846:6020
	Selenium	0.00049	0.25	0.001	0.00042	J	SW-846:6020
	Silver	0.00022	5	0.0001	0.000041		SW-846:6020
	Sodium	71	NE	1	0.84		SW-846:6020
Thallium	0.000034	NE	0.0002	0.000034	U	SW-846:6020	
Uranium	0.0028	NE	0.0001	0.000046		SW-846:6020	
Vanadium	0.015	NE	0.001	0.00027	B	SW-846:6020	
Zinc	0.047	2.2	0.02	0.0071		SW-846:6020	

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SNL/NM Station Number Sample Date	Analyte	Result (mg/L)	ABQ Daily Maximum Composite Sample (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
WW008 27-Oct-15	Aluminum	0.069	900	0.05	0.019		SW-846:6020
	Antimony	0.0061	NE	0.0003	0.00023		SW-846:6020
	Arsenic	0.0031	0.051	0.002	0.00036		SW-846:6020
	Barium	0.11	NE	0.001	0.00094		SW-846:6020
	Beryllium	0.00014	NE	0.0005	0.00014	U	SW-846:6020
	Cadmium	0.00015	0.5	0.0003	0.00013	J	SW-846:6020
	Calcium	45	NE	1	0.094		SW-846:6020
	Chromium	0.00082	4.1	0.01	0.00074	J	SW-846:6020
	Cobalt	0.00057	NE	0.001	0.00021	JB	SW-846:6020
	Copper	0.026	3.2	0.01	0.002		SW-846:6020
	Iron	0.24	NE	0.1	0.013		SW-846:6020
	Lead	0.00053	1	0.0005	0.0002		SW-846:6020
	Magnesium	8.5	NE	0.1	0.039		SW-846:6020
	Manganese	0.021	NE	0.002	0.00074		SW-846:6020
	Mercury	0.00006	0.004	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0072	2	0.005	0.0023		SW-846:6020
	Potassium	23	NE	1	0.2		SW-846:6020
	Selenium	0.0013	0.25	0.001	0.00042		SW-846:6020
	Silver	0.000041	5	0.0001	0.000041	U	SW-846:6020
	Sodium	64	NE	1	0.84		SW-846:6020
Thallium	0.000034	NE	0.0002	0.000034	U	SW-846:6020	
Uranium	0.0018	NE	0.0001	0.000046		SW-846:6020	
Vanadium	0.0057	NE	0.001	0.00027	B	SW-846:6020	
Zinc	0.056	2.2	0.02	0.0071		SW-846:6020	

B = Compound was found in the blank and sample.

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NE = Not Established

U = the analyte was analyzed for but not detected

Table-1 NMED DOE Oversight Bureau FFY 2016 Q-1 Semi-Annual Wastewater Quality Results: Total TAL Metals plus Uranium

SNL/NM Station Number Sample Date	Analyte	Result (mg/L)	ABQ Daily Maximum Composite Sample (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
WW011 27-Oct-15	Aluminum	0.059	900	0.05	0.019		SW-846:6020
	Antimony	0.00023	NE	0.0003	0.00023	U	SW-846:6020
	Arsenic	0.0034	0.051	0.002	0.00036		SW-846:6020
	Barium	0.096	NE	0.001	0.00094		SW-846:6020
	Beryllium	0.00014	NE	0.0005	0.00014	U	SW-846:6020
	Cadmium	0.00013	0.5	0.0003	0.00013	U	SW-846:6020
	Calcium	50	NE	1	0.094		SW-846:6020
	Chromium	0.00098	4.1	0.01	0.00074	J	SW-846:6020
	Cobalt	0.00023	NE	0.001	0.00021	JB	SW-846:6020
	Copper	0.02	3.2	0.01	0.002		SW-846:6020
	Iron	0.31	NE	0.1	0.013		SW-846:6020
	Lead	0.0007	1	0.0005	0.0002		SW-846:6020
	Magnesium	8.1	NE	0.1	0.039		SW-846:6020
	Manganese	0.027	NE	0.002	0.00074		SW-846:6020
	Mercury	0.00006	0.004	0.0001	0.00006	U	SW-846:7470A
	Nickel	0.0029	2	0.005	0.0023	J	SW-846:6020
	Potassium	26	NE	1	0.2		SW-846:6020
	Selenium	0.0018	0.25	0.001	0.00042		SW-846:6020
	Silver	0.00061	5	0.0001	0.000041		SW-846:6020
	Sodium	68	NE	1	0.84		SW-846:6020
Thallium	0.000034	NE	0.0002	0.000034	U	SW-846:6020	
Uranium	0.0026	NE	0.0001	0.000046		SW-846:6020	
Vanadium	0.0079	NE	0.001	0.00027	B	SW-846:6020	
Zinc	0.039	2.2	0.02	0.0071		SW-846:6020	

B = Compound was found in the blank and sample.

J = the reported value was obtained from a reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL).

NE = Not Established

U = the analyte was analyzed for but not detected

Table-2 NMED DOE Oversight Bureau FFY 2016 Q-1 Semi-Annual Wastewater Quality Results: Total Cyanide and Fluoride

SNL/NM Station Number Sample Date	Analyte	Result (mg/L)	ABQ Daily Maximum Composite Sample (mg/L)	Quantitation Limit (mg/L)	MDL (mg/L)	Laboratory Qualifier	Analytical Method
WW001 27-Oct-15	Fluoride	6.9	22.7	0.1	0.03	H	EPA:300.0
WW006 27-Oct-15	Cyanide (Total)	0.003	0.45	0.01	0.003	U	SW-846:9014
	Fluoride	0.81	22.7	0.1	0.03	H	EPA:300.0
WW008 26-Oct-15	Cyanide (Total)	0.01	0.45	0.01	0.003		SW-846:9014
WW008 27-Oct-15	Fluoride	0.33	22.7	0.1	0.03	H	EPA:300.0
WW011 27-Oct-15	Fluoride	0.42	22.7	0.1	0.03	NH	EPA:300.0

H = The samples were analyzed outside of the established hold time

N = Spiked sample recovery not within control limits.

U = Analyte not detected at or above the reporting limit or MDL

Table-3 NMED DOE Oversight Bureau FFY 2016 Q-1 Semi-Annual Wastewater Quality Results: Detected Volatile Organic Compounds

SNL/NM Station Number Sample Date	Analyte	Result (µg/L)	Quantitation Limit (µg/L)	MDL (µg/L)	Laboratory Qualifier	Analytical Method
WW001 27-Oct-15	Acetone	55	10	3		SW-846:8260B_25
	Bromoform	2.1	1	0.3		SW-846:8260B_25
	Chlorodibromomethane	0.62	1	0.3	J	SW-846:8260B_25
WW006 27-Oct-15	Acetone	42	10	3		SW-846:8260B_25
	Bromoform	0.32	1	0.3	J	SW-846:8260B_25
WW008 27-Oct-15	Acetone	65	10	3		SW-846:8260B_25
WW011 27-Oct-15	Acetone	41	10	3		SW-846:8260B_25
	Bromoform	0.75	1	0.3	J	SW-846:8260B_25
	Chloroform	0.31	1	0.3	J	SW-846:8260B_25

J = The reported value was obtained from the reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL).

Table-4 NMED DOE Oversight Bureau FFY 2016 Q-1 Semi-Annual Wastewater Quality Results: Method Detection Limits for Volatile Organic Compounds by Method SW-846:8260B_25

Analyte	MDL (µg/L)
Acetone	3
Benzene	0.3
Bromobenzene	0.3
Bromochloromethane	0.3
Bromodichloromethane	0.3
Bromoform	0.3
Bromomethane	0.3
Butanone[2-]	3
Butylbenzene[n-]	0.3
Butylbenzene[sec-]	0.3
Butylbenzene[tert-]	0.3
Carbon Disulfide	0.3
Carbon Tetrachloride	0.3
Chlorobenzene	0.3
Chlorodibromomethane	0.3
Chloroethane	0.3
Chloroform	0.3
Chlorohexane[1-]	0.3
Chloromethane	0.3
Chlorotoluene[2-]	0.3
Chlorotoluene[4-]	0.3
Dibromo-3-Chloropropane[1,2-]	0.3
Dibromoethane[1,2-]	0.3
Dibromomethane	0.3
Dichlorobenzene[1,2-]	0.3
Dichlorobenzene[1,3-]	0.3
Dichlorobenzene[1,4-]	0.3
Dichlorodifluoromethane	0.3
Dichloroethane[1,1-]	0.3
Dichloroethane[1,2-]	0.3
Dichloroethene[1,1-]	0.3
Dichloroethene[cis-1,2-]	0.3
Dichloroethene[trans-1,2-]	0.3
Dichloropropane[1,2-]	0.3
Dichloropropane[1,3-]	0.3
Dichloropropane[2,2-]	0.3
Dichloropropene[1,1-]	0.3
Dichloropropene[cis-1,3-]	0.3
Dichloropropene[trans-1,3-]	0.3
Ethylbenzene	0.3
Hexachlorobutadiene	0.3

Analyte	MDL (µg/L)
Hexanone[2-]	3
Iodomethane	0.3
Isopropylbenzene	0.3
Isopropyltoluene[4-]	0.3
Methyl tert-Butyl Ether	0.3
Methyl-2-pentanone[4-]	3
Methylene Chloride	0.44
Naphthalene	0.3
Propylbenzene[1-]	0.3
Styrene	0.3
Tetrachloroethane[1,1,1,2-]	0.3
Tetrachloroethane[1,1,2,2-]	0.3
Tetrachloroethene	0.2
Toluene	0.3
Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.3
Trichlorobenzene[1,2,3-]	0.3
Trichlorobenzene[1,2,4-]	0.3
Trichloroethane[1,1,1-]	0.3
Trichloroethane[1,1,2-]	0.3
Trichloroethene	0.3
Trichlorofluoromethane	0.3
Trichloropropane[1,2,3-]	0.3
Trimethylbenzene[1,2,4-]	0.3
Trimethylbenzene[1,3,5-]	0.3
Vinyl acetate	0.52
Vinyl Chloride	0.3
Xylene[1,2-]	0.3
Xylene[1,3-]+Xylene[1,4-]	0.3

Table-5 NMED DOE Oversight Bureau FFY 2016 Q-1 Semi-Annual Waste Water Quality Results: Gross Alpha, Gross Beta, Gamma Spectroscopy, and Tritium

SNL/NM Station Number Sample Date	Analyte	Activity (pCi/L)	Sewer Release Limit (Monthly Avg) (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
WW001 27-Oct-15	Actinium-228	3.1 ± 9.7	300,000	32	U	EPA:901.1
	Aluminum-26	1.6 ± 1.8	60,000	6	U	EPA:901.1
	Americium-241	3 ± 1.6	200	5.1	U	EPA:901.1
	Antimony-124	0.48 ± 1.4	70,000	4.8	U	EPA:901.1
	Antimony-125	-1.2 ± 2.6	300,000	9.9	U	EPA:901.1
	Beryllium-7	11 ± 10	6,000,000	34	U	EPA:901.1
	Bismuth-212	52 ± 20	700,000	64	U	EPA:901.1
	Bismuth-214	4.8 ± 6.4	3,000,000	21	U	EPA:901.1
	Cadmium-109	-4.1 ± 14	60,000	46	U	EPA:901.1
	Cerium-139	0.63 ± 0.81	700,000	2.7	U	EPA:901.1
	Cerium-144	-4.7 ± 4.7	30,000	16	U	EPA:901.1
	Cesium-134	-1.9 ± 1.3	9,000	4.4	U	EPA:901.1
	Cesium-137	0.46 ± 1.3	10,000	4.5	U	EPA:901.1
	Chromium-51	7.5 ± 12	5,000,000	39	U	EPA:901.1
	Cobalt-56	-6 ± 2.7	60,000	9.7	U	EPA:901.1
	Cobalt-57	-0.31 ± 0.59	600,000	2	U	EPA:901.1
	Cobalt-58	-0.57 ± 1.4	200,000	4.9	U	EPA:901.1
	Cobalt-60	1.3 ± 1.6	30,000	5.3	U	EPA:901.1
	Europium-152	2.4 ± 7.9	100,000	27	U	EPA:901.1
	Europium-154	-6.9 ± 7.6	70,000	27	U	EPA:901.1
	Europium-155	-1.6 ± 2.2	500,000	7.6	U	EPA:901.1
	Gross alpha	3.2 ± 0.75	NE	2.1		EPA:900
	Gross beta	13 ± 1.4	NE	2.7		EPA:900
	Iodine-131	1.9 ± 3.2	10,000	11	U	EPA:901.1
	Iron-59	7.7 ± 2.7	100,000	11	U	EPA:901.1
	Lead-212	-0.37 ± 3.8	20,000	13	U	EPA:901.1
	Lead-214	-0.94 ± 5.1	1,000,000	17	U	EPA:901.1
	Manganese-54	0.32 ± 1.4	300,000	4.6	U	EPA:901.1
	Niobium-94	-0.81 ± 1.4	100,000	4.9	U	EPA:901.1
	Niobium-95	1.4 ± 1.5	300,000	4.8	U	EPA:901.1
	Potassium-40	-13 ± 40	40,000	140	U	EPA:901.1
	Protactinium-234m	-37 ± 240	NE	840	U	EPA:901.1
Ruthenium-106	-12 ± 12	30,000	40	U	EPA:901.1	
Scandium-46	1.1 ± 1.4	100,000	4.7	U	EPA:901.1	
Silver-110m	0.92 ± 1.2	60,000	4	U	EPA:901.1	
Sodium-22	-1.3 ± 1.5	60,000	5.4	U	EPA:901.1	

NE = Not Established

U = Result is less than the sample specific MDC or less than the associated TPU.

Table-5 NMED DOE Oversight Bureau FFY 2016 Q-1 Semi-Annual Waste Water Quality Results: Gross Alpha, Gross Beta, Gamma Spectroscopy, and Tritium

SNL/NM Station Number Sample Date	Analyte	Activity (pCi/L)	Sewer Release Limit (Monthly Avg) (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
WW001 27-Oct-15	Strontium-85	2.8 ± 1.7	400,000	5.5	U	EPA:901.1
	Thallium-208	-1.6 ± 2.3	NE	7.9	U	EPA:901.1
	Thorium-227	-6.5 ± 7.9	20,000	27	U	EPA:901.1
	Thorium-234	22 ± 23	50,000	75	U	EPA:901.1
	Tritium	-190 ± 220	10,000,000	370	U	EPA:906.0
	Uranium-235	10 ± 6.2	3,000	26	U	EPA:901.1
	Zinc-65	-2.5 ± 3	50,000	10	U	EPA:901.1
WW006 27-Oct-15	Actinium-228	21 ± 5.7	300,000	17		EPA:901.1
	Aluminum-26	0.07 ± 2.1	60,000	7.3	U	EPA:901.1
	Americium-241	4.2 ± 8	200	27	U	EPA:901.1
	Antimony-124	6.9 ± 1.6	70,000	5		EPA:901.1
	Antimony-125	3.7 ± 3.2	300,000	11	U	EPA:901.1
	Beryllium-7	-8.7 ± 12	6,000,000	40	U	EPA:901.1
	Bismuth-212	15 ± 20	700,000	67	U	EPA:901.1
	Bismuth-214	-2.4 ± 6.4	3,000,000	21	U	EPA:901.1
	Cadmium-109	28 ± 25	60,000	83	U	EPA:901.1
	Cerium-139	0.5 ± 0.87	700,000	2.9	U	EPA:901.1
	Cerium-144	9.6 ± 4.4	30,000	14	U	EPA:901.1
	Cesium-134	0 ± 2.2	9,000	7.5	U	EPA:901.1
	Cesium-137	-0.28 ± 1.4	10,000	4.7	U	EPA:901.1
	Chromium-51	-10 ± 13	5,000,000	43	U	EPA:901.1
	Cobalt-56	3.4 ± 3	60,000	9.8	U	EPA:901.1
	Cobalt-57	-0.64 ± 0.86	600,000	2.9	U	EPA:901.1
	Cobalt-58	-2.5 ± 1.6	200,000	5.6	U	EPA:901.1
	Cobalt-60	-0.55 ± 1.9	30,000	6.4	U	EPA:901.1
	Europium-152	5.2 ± 8.6	100,000	29	U	EPA:901.1
	Europium-154	16 ± 8.4	70,000	27	U	EPA:901.1
	Europium-155	1.3 ± 3.7	500,000	12	U	EPA:901.1
	Gross alpha	2.9 ± 0.53	NE	1.4		EPA:900
	Gross beta	11 ± 1	NE	1.4		EPA:900
	Iodine-131	-0.049 ± 3.7	10,000	12	U	EPA:901.1
	Iron-59	6.1 ± 3.6	100,000	12	U	EPA:901.1
	Lead-212	-4.9 ± 4	20,000	13	U	EPA:901.1
	Lead-214	1.7 ± 5.1	1,000,000	17	U	EPA:901.1
Manganese-54	-1.6 ± 1.5	300,000	5.2	U	EPA:901.1	
Niobium-94	-0.37 ± 1.5	100,000	5.1	U	EPA:901.1	

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Table-5 NMED DOE Oversight Bureau FFY 2016 Q-1 Semi-Annual Waste Water Quality Results: Gross Alpha, Gross Beta, Gamma Spectroscopy, and Tritium

SNL/NM Station Number Sample Date	Analyte	Activity (pCi/L)	Sewer Release Limit (Monthly Avg) (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
WW006 27-Oct-15	Niobium-95	-1.6 ± 1.5	300,000	5.2	U	EPA:901.1
	Potassium-40	-85 ± 47	40,000	160	U	EPA:901.1
	Protactinium-234m	280 ± 260	NE	860	U	EPA:901.1
	Ruthenium-106	-27 ± 13	30,000	46	U	EPA:901.1
	Scandium-46	2.7 ± 1.6	100,000	5.2	U	EPA:901.1
	Silver-110m	-0.9 ± 1.3	60,000	4.4	U	EPA:901.1
	Sodium-22	-0.16 ± 1.7	60,000	5.7	U	EPA:901.1
	Strontium-85	-1.4 ± 1.9	400,000	6.3	U	EPA:901.1
	Thallium-208	0.87 ± 3.1	NE	10	U	EPA:901.1
	Thorium-227	-3.3 ± 9	20,000	30	U	EPA:901.1
	Thorium-234	11 ± 36	50,000	120	U	EPA:901.1
	Tritium	-140 ± 210	10,000,000	370	U	EPA:906.0
	Uranium-235	14 ± 5.5	3,000	21	U	EPA:901.1
Zinc-65	-7.9 ± 3.7	50,000	13	U	EPA:901.1	
WW008 27-Oct-15	Actinium-228	6.2 ± 12	300,000	39	U	EPA:901.1
	Aluminum-26	-1.9 ± 1.9	60,000	6.8	U	EPA:901.1
	Americium-241	-4.1 ± 7.8	200	26	U	EPA:901.1
	Antimony-124	-2.4 ± 1.7	70,000	5.7	U	EPA:901.1
	Antimony-125	1.7 ± 2.7	300,000	10	U	EPA:901.1
	Beryllium-7	11 ± 11	6,000,000	38	U	EPA:901.1
	Bismuth-212	35 ± 19	700,000	63	U	EPA:901.1
	Bismuth-214	8.3 ± 6.1	3,000,000	20	U	EPA:901.1
	Cadmium-109	-19 ± 41	60,000	140	U	EPA:901.1
	Cerium-139	-0.96 ± 0.88	700,000	3	U	EPA:901.1
	Cerium-144	1.6 ± 6.1	30,000	21	U	EPA:901.1
	Cesium-134	-5 ± 1.4	9,000	5	U	EPA:901.1
	Cesium-137	-2 ± 1.3	10,000	4.6	U	EPA:901.1
	Chromium-51	6.6 ± 11	5,000,000	37	U	EPA:901.1
	Cobalt-56	0.27 ± 2.6	60,000	8.7	U	EPA:901.1
	Cobalt-57	-1 ± 0.72	600,000	2.5	U	EPA:901.1
	Cobalt-58	-0.26 ± 1.3	200,000	4.3	U	EPA:901.1
	Cobalt-60	0.41 ± 1.6	30,000	5.3	U	EPA:901.1
	Europium-152	-6.3 ± 7.9	100,000	28	U	EPA:901.1
	Europium-154	-15 ± 7.4	70,000	26	U	EPA:901.1
Europium-155	-7.9 ± 6.3	500,000	21	U	EPA:901.1	
Gross alpha	2.3 ± 0.46	NE	1.2		EPA:900	

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Table-5 NMED DOE Oversight Bureau FFY 2016 Q-1 Semi-Annual Waste Water Quality Results: Gross Alpha, Gross Beta, Gamma Spectroscopy, and Tritium

SNL/NM Station Number Sample Date	Analyte	Activity (pCi/L)	Sewer Release Limit (Monthly Avg) (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
WW008 27-Oct-15	Gross beta	24 ± 2	NE	1.5		EPA:900
	Iodine-131	-1.6 ± 3.6	10,000	12	U	EPA:901.1
	Iron-59	4.3 ± 3.3	100,000	11	U	EPA:901.1
	Lead-212	0.58 ± 3.6	20,000	12	U	EPA:901.1
	Lead-214	-0.96 ± 5.2	1,000,000	17	U	EPA:901.1
	Manganese-54	-1.6 ± 1.4	300,000	4.9	U	EPA:901.1
	Niobium-94	2.1 ± 1.4	100,000	4.4	U	EPA:901.1
	Niobium-95	-1.5 ± 1.4	300,000	5	U	EPA:901.1
	Potassium-40	-11 ± 42	40,000	140	U	EPA:901.1
	Protactinium-234m	310 ± 230	NE	750	U	EPA:901.1
	Ruthenium-106	-1.8 ± 12	30,000	42	U	EPA:901.1
	Scandium-46	-0.12 ± 1.4	100,000	4.8	U	EPA:901.1
	Silver-110m	0.097 ± 1.2	60,000	4.2	U	EPA:901.1
	Sodium-22	-2.1 ± 1.5	60,000	5.2	U	EPA:901.1
	Strontium-85	3.5 ± 2	400,000	6.6	U	EPA:901.1
	Thallium-208	1.2 ± 2.5	NE	8.3	U	EPA:901.1
	Thorium-227	-0.81 ± 8.1	20,000	27	U	EPA:901.1
	Thorium-234	39 ± 39	50,000	130	U	EPA:901.1
	Tritium	-81 ± 210	10,000,000	360	U	EPA:906.0
	Uranium-235	12 ± 5.9	3,000	19	U	EPA:901.1
Zinc-65	-2.5 ± 3.1	50,000	11	U	EPA:901.1	
WW011 27-Oct-15	Actinium-228	3.8 ± 8.4	300,000	28	U	EPA:901.1
	Aluminum-26	0.67 ± 1.4	60,000	4.7	U	EPA:901.1
	Americium-241	-2.8 ± 1.4	200	4.7	U	EPA:901.1
	Antimony-124	-2 ± 1.3	70,000	4.5	U	EPA:901.1
	Antimony-125	4.9 ± 2.4	300,000	8.3	U	EPA:901.1
	Beryllium-7	-5.5 ± 9.1	6,000,000	31	U	EPA:901.1
	Bismuth-212	8.4 ± 17	700,000	57	U	EPA:901.1
	Bismuth-214	5 ± 5.8	3,000,000	19	U	EPA:901.1
	Cadmium-109	8 ± 11	60,000	36	U	EPA:901.1
	Cerium-139	-0.51 ± 1	700,000	3.4	U	EPA:901.1
	Cerium-144	4.3 ± 4.2	30,000	14	U	EPA:901.1
	Cesium-134	-2.1 ± 1.2	9,000	4	U	EPA:901.1
	Cesium-137	0.18 ± 1.1	10,000	3.7	U	EPA:901.1
	Chromium-51	0 ± 9.5	5,000,000	32	U	EPA:901.1
	Cobalt-56	5.9 ± 2.2	60,000	7.1	U	EPA:901.1

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Table-5 NMED DOE Oversight Bureau FFY 2016 Q-1 Semi-Annual Waste Water Quality Results: Gross Alpha, Gross Beta, Gamma Spectroscopy, and Tritium

SNL/NM Station Number Sample Date	Analyte	Activity (pCi/L)	Sewer Release Limit (Monthly Avg) (pCi/L)	MDA (pCi/L)	Laboratory Qualifier	Analytical Method
WW011 27-Oct-15	Cobalt-57	-0.42 ± 0.54	600,000	1.8	U	EPA:901.1
	Cobalt-58	-2.8 ± 1.2	200,000	4.2	U	EPA:901.1
	Cobalt-60	-0.99 ± 1.2	30,000	4.3	U	EPA:901.1
	Europium-152	3.3 ± 2.2	100,000	7.7	U	EPA:901.1
	Europium-154	3.7 ± 6.8	70,000	23	U	EPA:901.1
	Europium-155	-1.2 ± 1.7	500,000	5.9	U	EPA:901.1
	Gross alpha	2.3 ± 0.41	NE	1		EPA:900
	Gross beta	24 ± 2	NE	1.1		EPA:900
	Iodine-131	4.6 ± 3.1	10,000	10	U	EPA:901.1
	Iron-59	4.7 ± 3	100,000	10	U	EPA:901.1
	Lead-212	3.6 ± 3.2	20,000	11	U	EPA:901.1
	Lead-214	2.3 ± 4.3	1,000,000	14	U	EPA:901.1
	Manganese-54	1.1 ± 1.1	300,000	3.6	U	EPA:901.1
	Niobium-94	1.5 ± 1.3	100,000	4.2	U	EPA:901.1
	Niobium-95	-2.5 ± 1.3	300,000	4.4	U	EPA:901.1
	Potassium-40	13 ± 31	40,000	100	U	EPA:901.1
	Protactinium-234m	-320 ± 350	NE	1200	U	EPA:901.1
	Ruthenium-106	-13 ± 10	30,000	35	U	EPA:901.1
	Scandium-46	-1.8 ± 1.2	100,000	4.3	U	EPA:901.1
	Silver-110m	-1.7 ± 1	60,000	3.6	U	EPA:901.1
	Sodium-22	1.2 ± 1.2	60,000	4.2	U	EPA:901.1
	Strontium-85	2.1 ± 1.7	400,000	5.4	U	EPA:901.1
	Thallium-208	0.84 ± 2.1	NE	7.5	U	EPA:901.1
	Thorium-227	-5.1 ± 5.3	20,000	18	U	EPA:901.1
	Thorium-234	-15 ± 20	50,000	68	U	EPA:901.1
	Tritium	-150 ± 210	10,000,000	360	U	EPA:906.0
Uranium-235	6.6 ± 3.9	3,000	14	U	EPA:901.1	
Zinc-65	2.2 ± 2.5	50,000	8.5	U	EPA:901.1	

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