SWMU 23 – Septic Tanks and Septic Drain Field

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5.5.23 SWMU 23 - Septic Tanks and Septic Drain Field

The location of Solid Waste Management Unit (SWMU) 23, Septic Tanks and Septic Drain Field, is shown on Figure 5.5.23-1a and SWMU 23 monitoring stations and sample locations are provided on Figure 5.5.23-1b. Sanitary facilities (i.e., toilets, showers, sinks, etc.,) at the Silver Bow Plant are connected to a series of underground septic tanks that discharge to a septic drain field. The drain field is located northwest of the office buildings as shown on Figure 5.5.23-1b. The sinks and drains in the laboratory are also connected to this wastewater management system.

5.5.23.1 RFI Investigation

The objectives of the RFI work for SWMU 23 were to evaluate native soil below the septic drain field fill material (i.e., slag) and the vertical and horizontal extent of soil containing hazardous constituents, if present. Soil borings were advanced using 4.25-inch hollow stem augers, and soil samples were collected using split-spoon samplers as described in the Field Sampling Plan. Soils were classified and logged according to ASTM D-2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure). Soil classifications/descriptions are shown on the boring logs included in Appendix 5.5.23-A. Native soil from 0-1 foot and 8-10 feet below fill material of the septic drain field were collected and analyzed for general and site specific parameters, metals, radionuclides, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and polychlorinated biphenyls (PCBs).

Three soil borings were planned to be installed in SWMU 23. However, slag was not encountered at the ground surface at SDF-1 indicating that it was not located within the septic drain field area. This boring was not sampled for analytical parameters. A replacement boring (SDF-4) was advanced to the west of SDF-1 and sampled for the analytical parameters. The locations of the borings are shown on Figure 5.5.23-1b.

Two monitoring wells were installed to monitor groundwater quality across this SWMU. MW-06-16 was installed upgradient of the SWMU and MW-06-13 was installed down gradient of the SWMU. Monitoring well construction logs are included in Appendix 5.5.23-B. These wells are screened across the water table. Groundwater samples were collected in the spring and fall of 2008 and the samples were analyzed for general and site-specific parameters, metals, SVOCs, VOCs, PCBs and radionuclides.

5.5.23.2 Investigation Results

This section discusses the results of the investigation for the Septic Tanks and Septic Drain Field. The SWMU soil sample data and background values (i.e., mean, maximum, and 95% upper confidence limit of the mean) are summarized in Tables 5.5.23-1 through 5.5.23-6. The locations of the soil borings are shown in Figure 5.5.23-1b. The data presentation figures 5.5.23-2 through 5.5.23-15 show the locations, concentrations, and depth intervals for the data reported on the figures.

Soil data from SWMU 23 were compared to background/reference area concentrations. Concentrations above the 95% upper confidence limit of the mean background/reference area concentrations are highlighted on the constituent delineation figures presented in this section. Where a 95% upper limit could not be calculated, the maximum detected concentration of the maximum detection limit was selected.

Constituent concentrations are described in this report as above background/reference area concentrations if the mean and maximum concentrations of the SWMU data exceed both of the mean and maximum background/reference area values. All data will be retained for evaluation in the human health and ecological risk assessments. The definitive background comparison will be conducted in the risk assessment using a statistical approach consistent with EPA guidance (U.S. EPA 2002).

5.5.23.2.1 General and Site-specific Parameters

The general and site-specific parameters data are presented in Table 5.5.23-1. The distributions of these parameters 0-to 1-foot into native soil and 8- to 10-feet into native soil are shown in Figures 5.5.23-2 and 5.5.23-3, respectively.

5.5.23.2.2 Metals

The metals data are presented in Table 5.5.23-2.

5.5.23.2.2.1 Group A

The metals included in Group A are arsenic, cadmium, chromium, and copper. The distributions of these metal constituents 0-to 1-foot into native soil and 8- to 10-feet into native soil are shown in Figures 5.5.23-6 and 5.5.23-7, respectively. The arsenic, cadmium, chromium, and copper concentrations are consistent with the background/reference area data set.

5.5.23.2.2.2 Group B

The metals included in Group B are iron, lead, manganese, and nickel. The distributions of these metal constituents 0-to 1-foot into native soil and 8- to 10-feet into native soil are shown in Figures

5.5.23-8 and 5.5.23-9, respectively. The iron, lead, manganese and zinc concentrations are consistent with the background/reference area data set.

5.5.23.2.2.3 Group C

The metals included in Group C are selenium, silver, uranium, vanadium, and zinc. The distributions of these metal constituents 0-to 1-foot into native soil and 8- to 10-feet into native soil are shown in Figures 5.5.23-10 and 5.5.23-11, respectively. The selenium, silver, uranium, vanadium, and zinc are consistent with the background/reference area data set.

Although the maximum uranium concentration of 4.5 mg/kg is above the maximum uranium concentration in the background/reference data set (4.1 mg/kg). The mean concentration across the SWMU (1.76 mg/kg) is less than the mean concentration of the background/reference area data set (1.8 mg/kg).

5.5.23.2.2.4 Group D

The metals included in Group D are barium, beryllium, cobalt, mercury, and thallium. The distributions of these metal constituents 0-to 1-foot into native soil and 8- to 10-feet into native soil are shown in Figures 5.5.23-12 and 5.5.23-13, respectively. The beryllium, cobalt, mercury, and thallium concentrations are consistent with background/reference area concentrations.

The barium concentrations are above the background/reference area concentrations. The barium concentrations will be further evaluated in the human health risk assessment and the ecological risk assessment.

5.5.23.2.2.5 Group E

The metals included in Group E are calcium, magnesium, potassium, total phosphorus, sodium, and antimony. The distributions of these metal constituents 0-to 1-foot into native soil and 8- to 10-feet into native soil are shown in Figures 5.5.23-14 and 5.5.23-15, respectively. The calcium, magnesium, potassium, sodium, and antimony are consistent with background/reference area concentrations.

5.5.23.2.2.6 Metals Delineation

Barium is the only metal identified at concentrations above the background/reference area concentrations. The maximum concentration (306 mg/kg) was reported at SDF-2 (15.5-17.5ft). Although the maximum concentration is above the maximum of the background/reference area data set, the exceedance is small (i.e., less than 20% of the maximum background/reference area concentration). Risk assessment will be necessary to evaluate whether the potential exposure to the barium concentrations represent an unacceptable risk to human health or the environment.

5.5.23.2.3 SVOCs

The SVOC data are presented in Table 5.5.23-3. SVOCs were not detected in the SWMU 23 soil samples. The SVOC concentrations were not plotted on maps because the SVOCs were not detected in sufficient samples to gain any insight from a graphical presentation.

5.5.23.2.4 VOCs

The VOC data are presented in Table 5.5.23-4. Most VOCs were not detected in the SWMU 23 soil samples. Bromomethane and iodomethane were detected in 6 of seven samples. Toluene was detected in three of seven samples and methylene chloride was detected in one seven soil samples. The detected concentrations are below the method reporting limit but above the method detection limit (i.e., J-qualified).

The detected concentrations do not support a release model whereby the upper interval (i.e., 0-1 feet native soil) would have much higher concentrations than the lower interval (i.e., 8-10 feet native soil) samples. The detected concentrations are consistent between the sampled intervals. In addition, these VOCs were not detected in the groundwater samples collected from the down gradient monitoring well (MW-06-13). These compounds will be further evaluated in the human health and ecological risk assessments. The VOC concentrations were not plotted on maps because the VOCs were not detected in sufficient samples to gain any insight from a graphical presentation.

5.5.23.2.5 PCBs

The PCB data are presented in Table 5.5.23-5. PCBs were not detected in the SWMU 23 soil samples. The PCB concentrations were not plotted on maps because the PCBs were not detected in sufficient samples to gain any insight from a graphical presentation.

5.5.23.2.6 Radionuclides

Radionuclides were evaluated at all intervals and the data presented in Table 5.5.23-6. Distribution of radionuclides is shown in Figures 5.5.23-4 and 5.5.23-5. Radionuclide concentrations are consistent with background with the exception of Pb-210.

Pb-210 was detected in the 11-13 feet interval sample for SDF-1 at a concentration of 8.6 ± 1.5 pCi/g. Pb-210 was not detected at a detection limit of 4.9 ± 1.5 pCi/g in the 3-4 feet interval sample at the same location. Pb-210 was not detected in the background/reference area data set in sufficient numbers to calculate meaningful statistics so the maximum concentration was selected as the comparison value (6.6 pCi/g). Given that Pb-210 was not present in the 3-4 feet interval of the same

boring and the higher concentration in the 11-13 feet interval exceeeds the background concentration by a small margin (30%), the data do not demonstrate a release of Pb-210 from the SWMU.

5.5.23.3 Groundwater

Although site-wide groundwater quality is discussed in detail in Section 5.3, trends are discussed below for specific constituents of interest to determine any downgradient groundwater effects relating specifically to the septic drain field. Two wells were installed in 2006, MW-06-16, which is located upgradient, and MW-06-13, located downgradient and these wells were sampled during spring and fall of 2008. A map of their locations relative to the SWMU is in Figure 5.5.23-16. The boring logs associated with these two wells can be found in Appendix 5.5.23-B. The groundwater quality data for the two wells at SWMU 23 is summarized in Tables 5.5.23-7 through 5.5.23-12.

5.5.23.3.1 General and Site-specific parameters

The groundwater quality data for the general chemistry parameters are summarized on Table 5.5.23-7. The data demonstrate consistent or lower concentrations between the upgradient (MW-06-16) and downgradient (MW-06-13) sample concentrations for most general and site-specific parameters. Total phosphorus is the only parameter that shows higher concentrations in the down gradient samples. The total phosphorus concentrations are consistent with the site-wide upgradient concentrations presented in Section 4.3.

Elemental phosphorus was not detected in the groundwater samples.

5.5.23.3.2 Metals

The groundwater quality data for the metals are summarized on Table 5.5.23-8. The following metals were consistently detected in the down gradient samples at higher concentrations than the SWMU-specific upgradient samples: arsenic, barium, iron, manganese, sodium, and vanadium. However, these metals are present at concentrations that are consistent with the site-wide upgradient concentrations presented in Section 4.3.

5.5.23.3.3 SVOCs

The groundwater quality data for the SVOCs are summarized on Table 5.5.23-9. SVOCs were not detected in the down gradient groundwater samples. Benzoic acid, bis(2-ethylhexyl)phthalate, naphthalene and phenol were detected in only one of the two upgradient samples. The concentrations are J-qualified indicating the concentrations below the method reporting limit. SVOCs were not released to the groundwater from SWMU 23.

5.5.23.3.4 VOCs

The groundwater quality data for the VOCs are summarized on Table 5.5.23-10. Most VOCs were not detected in the down gradient groundwater samples. 111-Trichloroethane was detected in both downgradient samples and tetrachloroethylene was detected in one downgradient sample. The downgradient concentrations are lower than the upgradient concentrations indicating that SWMU 23 is not the source of these VOCs.

5.5.23.3.5 PCBs

The groundwater quality data for the PCBs are summarized on Table 5.5.23-11. Aroclor 1260 was detected in one of two downgradient groundwater samples. No other aroclors were detected in the groundwater samples from SWMU 23. In addition, PCBs were not detected in the soil samples collected from SWMU 23.

The lack of PCB detections in the soil samples, and the inconsistent detection of aroclor 1260 in the down gradient samples at concentrations below the method reporting limit indicates that aroclor 1260 was not released from SWMU 23.

5.5.23.3.6 Radionuclides

The groundwater quality data for the radionuclides are summarized on Table 5.5.23-12. The data demonstrate consistent or lower concentrations between the upgradient (MW-06-16) and downgradient (MW-06-13) sample concentrations.

5.5.23.4 Conclusions

The following conclusions were developed based on review of the information presented in this section:

- Barium is the only metal identified at concentrations above the background/reference area concentrations. The maximum concentration (306 mg/kg) was report at SDF-2 (15.5-17.5ft). Although the maximum concentration is above the maximum of the background/reference area data set, the exceedance is small (i.e., less than 20% of the maximum background/reference area concentration).
- Bromomethane and iodomethane were detected at consistent concentrations across the SWMU and between the 0-1 foot and 8-10 feet native soil depth intervals. The consistent concentrations reported for the 0-1 foot and 8-10 feet interval is inconsistent with a release model whereby higher concentrations should be reported for the shallower interval. The detection of these VOC at levels near the method detection limit may indicate lab

contamination rather than an actual release from the SWMU. Risk assessment will be necessary to evaluate whether the potential exposure to these constituent concentrations represent an unacceptable risk to human health or the environment.

- Radionuclides were consistent with background levels in SWMU 23 with the exception of Pb-210 in one sample SDF-4 (11-13ft). Since Pb-210 was not detected in the upper interval sample, the data does not demonstrate a release of Pb-210 from the SWMU in SWMU 23.

- Comparison of groundwater using upgradient well MW-06-16 and downgradient well MW-06-13 revealed these constituents have higher concentrations in samples from the downgradient well: arsenic, barium, iron, manganese, sodium, and vanadium. However, these metals are present at concentrations that are consistent with the site-wide upgradient concentrations.

There is sufficient information to conduct the risk assessment for this SWMU. The risk assessment will identify which parameters, if any, are present at concentrations that warrant corrective measures. The dataset would be reviewed at that time and additional sampling may be necessary to inform the corrective measures study or later during the corrective measures design phase.

5.5.23.5 References

U.S. EPA. 2002. Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites. U.S. Environmental Protection Agency. EPA 540-R-01-003. OSWER 9285.7-41. September 2002

Tables

Table 5.5.23-1
Soil Data - General and Site-Specific Parameters
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	Fluoride	Phosphorus, total	Phosphorus, elemental (white)
			Background Mean, Exceedances **Bold**	**4.1**		
			Background Max, No Exceedances	37		
			Background 95% UCL, Exceedances *Italic*	*7.6*		
Location ID	**Sample Date**	**Depth**	**Sample Type**			
SDF-2	5/13/2009	7.5 - 8.5 ft	N	***14.8***	713 J	< 0.00047
			FD	***15.4***	268 J	< 0.00047
SDF-2	5/13/2009	15.5 - 17.5 ft	N	**4.9 J**	377 J	< 0.00047
SDF-3	5/13/2009	8 - 9 ft	N	***13.8***	3400	< 0.00047
SDF-3	5/13/2009	18 - 20 ft	N	1.8	344	< 0.00047
SDF-4	5/14/2009	3 - 4 ft	N	***12.3***	602	< 0.00047
SDF-4	5/14/2009	11 - 13 ft	N	0.9	615	< 0.00047

Table 5.5.23-2
Soil Data - Metals
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name / Analysis Location				Antimony Lab	Arsenic Lab	Barium Lab	Beryllium Lab	Cadmium Lab	Calcium Lab	Chromium Lab	Cobalt Lab	Copper Lab	Iron Lab	Lead Lab	Magnesium Lab	Manganese Lab	Mercury Lab	Nickel Lab	Potassium Lab	Selenium Lab	Silver Lab	Sodium Lab	Thallium Lab	Uranium Lab	Vanadium Lab	Zinc Lab
Background Mean, Exceedances **Bold**				0.50	23	**150**	**0.51**	**1.6**	**3900**	**11**	**5.9**	35	**19600**	17	**3500**	**540**	**0.021**	**5.3**	**3000**	0.41	0.73(1)	**140**	**0.35**	**1.8**	**41**	**59**
Background Maximum, Exceedances Underline				3.9	120	290	1.3	8.9	14000	48	9.5	300	35300	190	5700	1100	0.20	21	5300	0.70	1.7(1)	620	1.0	4.1	83	380
Background 95% UCL, Exceedances *Italic*				1.0	40	*170*	*0.55*	*1.1*	*4500*	*12*	*6.1*	64	*20600*	35	*3700*	*570*	0.038	*6.0*	*3200*	0.47	0.35(1)	*220*	0.46	*2.0*	*43*	*98*
Location ID	**Sample Date**	**Depth**	**Sample Type**																							
SDF-2	5/13/2009	7.5 - 8.5 ft	N	0.44	5.4	***265***	0.51 J	< 0.05	***6200***	7.5	***7.88***	18.7	16800	14.5 J	3350	529	**0.028**	***6.3***	***3450***	< 0.8	< 0.2	***324***	**0.419**	**1.870 J**	31.7	56.9
			FD	0.48	4.7	***287***	***0.56 J***	< 0.05	**4370**	6.9	***9.02***	20.7	17900	14.7 J	**3510**	***712***	0.009 J	***6.1***	***3690***	< 0.9	< 0.2	***336***	0.303	1.020 J	33.7	51.1
SDF-2	5/13/2009	15.5 - 17.5 ft	N	0.44	4.8	***306***	***0.62 J***	< 0.05	***5710***	7.2	***6.89***	20.3	**20200 J**	14.8 J	3410	***589***	0.009 J	**5.8**	**3040**	< 0.8	< 0.2	***573***	0.316	1.300	36.7	**59.9**
SDF-3	5/13/2009	8 - 9 ft	N	0.32	6.6	**155**	0.49 J	< 0.04	***10400***	5.8	5.15	17.6	15500	8.9 J	3050	298	0.012 J	4.2 J	2900	< 0.8	< 0.2	**177**	0.314	***4.500***	32.4	37.1
SDF-3	5/13/2009	18 - 20 ft	N	0.28	3.7	***203***	***0.65 J***	< 0.05	**3960**	8.6	***7.68***	24.7	***21100***	10.7 J	***4370***	479	0.012 J	***6.4***	***3990***	< 0.9	< 0.2	**220**	**0.413**	1.180	40.4	44.5
SDF-4	5/14/2009	3 - 4 ft	N	0.32	2.2	***211***	***0.56 J***	***5.03***	3890	10.9	5.64	14.3	16500	9.4 J	***4220***	295	0.008 J	***8.2***	***4310***	< 0.8	< 0.2	***247***	0.252	1.280	33.3	***237***
SDF-4	5/14/2009	11 - 13 ft	N	0.18	1.2	107	0.29 J	< 0.04	2880	***18.4***	4.17	11.1	***27600***	8.3 J	2200	113	0.004 J	4.7	2220	< 0.8	< 0.2	138	0.111	1.160	***81.9***	25.4

Table 5.5.23-3
Soil Data - SVOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,2-Diphenylhydrazine	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,4-Dinitrotoluene	2,6-Dinitrotoluene	2-Chloronaphthalene
Location ID	Sample Date	Depth	Sample Type													
SDF-2	05/13/2009	7.5 - 8.5 ft	N	< 0.011	< 0.018	< 0.015	< 0.019	< 0.018	< 0.018	< 0.015	< 0.017	< 0.016	< 0.12	< 0.015	< 0.016	< 0.010
			FD	< 0.011	< 0.018	< 0.015	< 0.019	< 0.018	< 0.018	< 0.015	< 0.017	< 0.016	< 0.12	< 0.015	< 0.016	< 0.010
SDF-2	05/13/2009	15.5 - 17.5 ft	N	< 0.012	< 0.019	< 0.016	< 0.020	< 0.019	< 0.018	< 0.015	< 0.018	< 0.016	< 0.12	< 0.016	< 0.017	< 0.011
SDF-3	05/13/2009	8 - 9 ft	N	< 0.011	< 0.018	< 0.015	< 0.019	< 0.018	< 0.018	< 0.015	< 0.017	< 0.016	< 0.12	< 0.015	< 0.016	< 0.010
SDF-3	05/13/2009	18 - 20 ft	N	< 0.011	< 0.018	< 0.015	< 0.019	< 0.018	< 0.018	< 0.015	< 0.017	< 0.016	< 0.12	< 0.015	< 0.016	< 0.010
SDF-4	05/14/2009	3 - 4 ft	N	< 0.011	< 0.018	< 0.015	< 0.019	< 0.018	< 0.018	< 0.015	< 0.017	< 0.016	< 0.12	< 0.015	< 0.016	< 0.010
SDF-4	05/14/2009	11 - 13 ft	N	< 0.011	< 0.018	< 0.015	< 0.019	< 0.018	< 0.018	< 0.015	< 0.017	< 0.016	< 0.12	< 0.015	< 0.016	< 0.010

Table 5.5.23-3
Soil Data - SVOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name				2-Chlorophenol	2-Methyl-4,6-dinitrophenol	2-Methylnaphthalene	2-Nitroaniline	2-Nitrophenol	3,3`-Dichlorobenzidine	3-Nitroaniline	4-Bromophenyl phenyl ether	4-Chloro-3-methylphenol	4-Chloroaniline	4-Chlorophenyl phenyl ether	4-Nitroaniline	4-Nitrophenol	Acenaphthene	Acenaphthylene
Location ID	Sample Date	Depth	Sample Type															
SDF-2	05/13/2009	7.5 - 8.5 ft	N	< 0.0099	< 0.15	< 0.011	< 0.017	< 0.014	< 0.027	< 0.18	< 0.013	< 0.017	< 0.015	< 0.016	< 0.18	< 0.15	< 0.014	< 0.016
			FD	< 0.0099	< 0.15	< 0.011	< 0.017	< 0.014	< 0.027	< 0.18	< 0.013	< 0.017	< 0.015	< 0.016	< 0.18	< 0.15	< 0.014	< 0.016
SDF-2	05/13/2009	15.5 - 17.5 ft	N	< 0.011	< 0.15	< 0.012	< 0.018	< 0.015	< 0.029	< 0.19	< 0.013	< 0.018	< 0.016	< 0.017	< 0.19	< 0.16	< 0.014	< 0.017
SDF-3	05/13/2009	8 - 9 ft	N	< 0.0099	< 0.15	< 0.011	< 0.017	< 0.014	< 0.027	< 0.18	< 0.013	< 0.017	< 0.015	< 0.016	< 0.18	< 0.15	< 0.014	< 0.016
SDF-3	05/13/2009	18 - 20 ft	N	< 0.0099	< 0.15	< 0.011	< 0.017	< 0.014	< 0.027	< 0.18	< 0.013	< 0.017	< 0.015	< 0.016	< 0.18	< 0.15	< 0.014	< 0.016
SDF-4	05/14/2009	3 - 4 ft	N	< 0.0099	< 0.15	< 0.011	< 0.017	< 0.014	< 0.027	< 0.18	< 0.013	< 0.017	< 0.015	< 0.016	< 0.18	< 0.15	< 0.014	< 0.016
SDF-4	05/14/2009	11 - 13 ft	N	< 0.0099	< 0.15	< 0.011	< 0.017	< 0.014	< 0.027	< 0.18	< 0.013	< 0.017	< 0.015	< 0.016	< 0.18	< 0.15	< 0.014	< 0.016

Table 5.5.23-3
Soil Data - SVOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name				Anthracene	Benzidine	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Benzoic Acid	Benzyl alcohol	Bis(2-chloroethoxy)methane	Bis(2-chloroethyl)ether	Bis(2-chloroisopropyl)ether	Bis(2-ethylhexyl)phthalate	Butyl benzyl phthalate	Carbazole	Chrysene
Location ID	Sample Date	Depth	Sample Type																
SDF-2	05/13/2009	7.5 - 8.5 ft	N	< 0.014	< 0.42 R	< 0.013	< 0.020	< 0.018	< 0.021	< 0.020	< 0.14	< 0.017	< 0.011	< 0.012	< 0.015	< 0.019	< 0.017	< 0.012	< 0.012
			FD	< 0.014	< 0.42 R	< 0.013	< 0.020	< 0.018	< 0.021	< 0.020	< 0.14	< 0.017	< 0.011	< 0.012	< 0.015	< 0.019	< 0.017	< 0.012	< 0.012
SDF-2	05/13/2009	15.5 - 17.5 ft	N	< 0.015	< 0.44 R	< 0.013	< 0.021	< 0.018	< 0.022	< 0.021	< 0.15	< 0.018	< 0.012	< 0.013	< 0.015	< 0.020	< 0.018	< 0.012	< 0.013
SDF-3	05/13/2009	8 - 9 ft	N	< 0.014	< 0.42 R	< 0.013	< 0.020	< 0.018	< 0.021	< 0.020	< 0.14	< 0.017	< 0.011	< 0.012	< 0.015	< 0.019	< 0.017	< 0.012	< 0.012
SDF-3	05/13/2009	18 - 20 ft	N	< 0.014	< 0.42 R	< 0.013	< 0.020	< 0.018	< 0.021	< 0.020	< 0.14	< 0.017	< 0.011	< 0.012	< 0.015	< 0.019	< 0.017	< 0.012	< 0.012
SDF-4	05/14/2009	3 - 4 ft	N	< 0.014	< 0.42 R	< 0.013	< 0.020	< 0.018	< 0.021	< 0.020	< 0.14	< 0.017	< 0.011	< 0.012	< 0.015	< 0.019	< 0.017	< 0.012	< 0.012
SDF-4	05/14/2009	11 - 13 ft	N	< 0.014	< 0.42 R	< 0.013	< 0.020	< 0.018	< 0.021	< 0.020	< 0.14	< 0.017	< 0.011	< 0.012	< 0.015	< 0.019	< 0.017	< 0.012	< 0.012

Table 5.5.23-3
Soil Data - SVOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	Dibenz(a,h) anthracene	Dibenzofuran	Diethyl phthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Fluoranthene	Fluorene	Hexachlorobenzene	Hexachlorobutadiene	Hexachlorocyclopentadiene	Hexachloroethane	Indeno(1,2,3-cd)pyrene	Isophorone	Naphthalene
Location ID	Sample Date	Depth	Sample Type															
SDF-2	05/13/2009	7.5 - 8.5 ft	N	< 0.028	< 0.012	< 0.015	< 0.017	< 0.013	< 0.024	< 0.012	< 0.013	< 0.015	< 0.015	< 0.013	< 0.022	< 0.039	< 0.014	< 0.015
			FD	< 0.028	< 0.012	< 0.015	< 0.017	< 0.013	< 0.024	< 0.012	< 0.013	< 0.015	< 0.015	< 0.013	< 0.022	< 0.039	< 0.014	< 0.015
SDF-2	05/13/2009	15.5 - 17.5 ft	N	< 0.029	< 0.013	< 0.015	< 0.018	< 0.013	< 0.026	< 0.013	< 0.014	< 0.016	< 0.015	< 0.014	< 0.023	< 0.041	< 0.015	< 0.016
SDF-3	05/13/2009	8 - 9 ft	N	< 0.028	< 0.012	< 0.015	< 0.017	< 0.013	< 0.024	< 0.012	< 0.013	< 0.015	< 0.015	< 0.013	< 0.022	< 0.039	< 0.014	< 0.015
SDF-3	05/13/2009	18 - 20 ft	N	< 0.028	< 0.012	< 0.015	< 0.017	< 0.013	< 0.024	< 0.012	< 0.013	< 0.015	< 0.015	< 0.013	< 0.022	< 0.039	< 0.014	< 0.015
SDF-4	05/14/2009	3 - 4 ft	N	< 0.028	< 0.012	< 0.015	< 0.017	< 0.013	< 0.024	< 0.012	< 0.013	< 0.015	< 0.015	< 0.013	< 0.022	< 0.039	< 0.014	< 0.015
SDF-4	05/14/2009	11 - 13 ft	N	< 0.028	< 0.012	< 0.015	< 0.017	< 0.013	< 0.024	< 0.012	< 0.013	< 0.015	< 0.015	< 0.013	< 0.022	< 0.039	< 0.014	< 0.015

Table 5.5.23-3
Soil Data - SVOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	Nitrobenzene	N-Nitrosodimethylamine	N-Nitrosodi-n-propylamine	N-Nitrosodiphenylamine	o-Cresol	p-Cresol	Pentachlorophenol	Phenanthrene	Phenol	Pyrene	Pyridine
Location ID	Sample Date	Depth	Sample Type											
SDF-2	05/13/2009	7.5 - 8.5 ft	N	< 0.027	< 0.026	< 0.020	< 0.018	< 0.017	< 0.017	< 0.13	< 0.010	< 0.020	< 0.014	< 0.020
			FD	< 0.027	< 0.026	< 0.020	< 0.018	< 0.017	< 0.017	< 0.13	< 0.010	< 0.020	< 0.014	< 0.020
SDF-2	05/13/2009	15.5 - 17.5 ft	N	< 0.028	< 0.027	< 0.020	< 0.019	< 0.018	< 0.018	< 0.14	< 0.011	< 0.021	< 0.015	< 0.021 R
SDF-3	05/13/2009	8 - 9 ft	N	< 0.027	< 0.026	< 0.020	< 0.018	< 0.017	< 0.017	< 0.13	< 0.010	< 0.020	< 0.014	< 0.020
SDF-3	05/13/2009	18 - 20 ft	N	< 0.027	< 0.026	< 0.020	< 0.018	< 0.017	< 0.017	< 0.13	< 0.010	< 0.020	< 0.014	< 0.020
SDF-4	05/14/2009	3 - 4 ft	N	< 0.027	< 0.026	< 0.020	< 0.018	< 0.017	< 0.017	< 0.13	< 0.010	< 0.020	< 0.014	< 0.020
SDF-4	05/14/2009	11 - 13 ft	N	< 0.027	< 0.026	< 0.020	< 0.018	< 0.017	< 0.017	< 0.13	< 0.010	< 0.020	< 0.014	< 0.020

Table 5.5.23-4
Soil Data - VOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloro-1-propene	1,1-Dichloroethane	1,1-Dichloroethylene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane
Location ID	Sample Date	Depth	Sample Type													
SDF-2	05/13/2009	7.5 - 8.5 ft	N	< 0.0096	< 0.0038	< 0.0084	< 0.012	< 0.023	< 0.011	< 0.024	< 0.0083	< 0.025	< 0.0057	< 0.0076	< 0.039	< 0.0087
			FD	< 0.0098	< 0.0039	< 0.0086	< 0.013	< 0.023	< 0.011	< 0.025	< 0.0085	< 0.026	< 0.0058	< 0.0078	< 0.040	< 0.0088
SDF-2	05/13/2009	15.5 - 17.5 ft	N	< 0.012	< 0.0046	< 0.011	< 0.015	< 0.028	< 0.013	< 0.029	< 0.017	< 0.030	< 0.010	< 0.0092	< 0.047	< 0.011
SDF-3	05/13/2009	8 - 9 ft	N	< 0.0081	< 0.0032	< 0.0071	< 0.010	< 0.019	< 0.0087	< 0.020	< 0.0070	< 0.021	< 0.0048	< 0.0064	< 0.033	< 0.0073
SDF-3	05/13/2009	18 - 20 ft	N	< 0.0087	< 0.0035	< 0.0077	< 0.011	< 0.021	< 0.0094	< 0.022	< 0.0076	< 0.023	< 0.0052	< 0.0069	< 0.036	< 0.0079
SDF-4	05/14/2009	3 - 4 ft	N	< 0.0081	< 0.0032	< 0.0071	< 0.010	< 0.019	< 0.0087	< 0.020	< 0.0070	< 0.021	< 0.0048	< 0.0064	< 0.033	< 0.0073
SDF-4	05/14/2009	11 - 13 ft	N	< 0.0081	< 0.0032	< 0.0071	< 0.010	< 0.019	< 0.0087	< 0.020	< 0.0070	< 0.021	< 0.0048	< 0.0064	< 0.033	< 0.0073

Table 5.5.23-4
Soil Data - VOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloroethylene, cis	1,2-Dichloroethylene, trans	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichloro-1-propene, trans	1,3-Dichloro-1-propene, cis	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Chloroethyl Vinyl Ether
Location ID	Sample Date	Depth	Sample Type													
SDF-2	05/13/2009	7.5 - 8.5 ft	N	< 0.0063	< 0.0064	< 0.013	< 0.011	< 0.0097	< 0.0099	< 0.011	< 0.011	< 0.0070	< 0.011	< 0.0089	< 0.023	< 0.051
			FD	< 0.0064	< 0.0066	< 0.014	< 0.011	< 0.0099	< 0.010	< 0.011	< 0.011	< 0.0072	< 0.011	< 0.0091	< 0.023	< 0.052
SDF-2	05/13/2009	15.5 - 17.5 ft	N	< 0.0076	< 0.0077	< 0.016	< 0.013	< 0.012	< 0.012	< 0.013	< 0.013	< 0.0084	< 0.013	< 0.011	< 0.028	< 0.062
SDF-3	05/13/2009	8 - 9 ft	N	< 0.0053	< 0.0054	< 0.011	< 0.0090	< 0.0082	< 0.0083	< 0.0091	< 0.0089	< 0.0059	< 0.0087	< 0.0075	< 0.019	< 0.043
SDF-3	05/13/2009	18 - 20 ft	N	< 0.0057	< 0.0058	< 0.012	< 0.0097	< 0.0088	< 0.0089	< 0.0098	< 0.0096	< 0.0064	< 0.0094	< 0.0081	< 0.021	< 0.047
SDF-4	05/14/2009	3 - 4 ft	N	< 0.0053	< 0.0054	< 0.011	< 0.0090	< 0.0082	< 0.0083	< 0.0091	< 0.0089	< 0.0059	< 0.0087	< 0.0075	< 0.019	< 0.043
SDF-4	05/14/2009	11 - 13 ft	N	< 0.0053	< 0.0054	< 0.011	< 0.0090	< 0.0082	< 0.0083	< 0.0091	< 0.0089	< 0.0059	< 0.0087	< 0.0075	< 0.019	< 0.043

Table 5.5.23-4
Soil Data - VOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	2-Hexanone	Acetone	Acrolein	Acrylonitrile	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Butyl benzene	Butylbenzene sec	Butylbenzene tert-	Carbon disulfide	Carbon tetrachloride	Chlorobenzene
Location ID	**Sample Date**	**Depth**	**Sample Type**																
SDF-2	05/13/2009	7.5 - 8.5 ft	N	< 0.23	< 0.29	< 0.21	< 0.038	< 0.0081	< 0.012	< 0.012	< 0.011	< 0.012	**0.039 J**	< 0.0088	< 0.0093	< 0.012	< 0.018	< 0.025	< 0.0075
			FD	< 0.23	< 0.29	< 0.21	< 0.039	< 0.0082	< 0.013	< 0.012	< 0.011	< 0.012	**0.058 J**	< 0.0090	< 0.0094	< 0.013	< 0.019	< 0.026	< 0.0076
SDF-2	05/13/2009	15.5 - 17.5 ft	N	< 0.28	< 0.35	< 0.25	< 0.046	< 0.0097	< 0.015	< 0.014	< 0.013	< 0.014	**0.057 J**	< 0.011	< 0.013	< 0.015	< 0.022	< 0.030	< 0.0090
SDF-3	05/13/2009	8 - 9 ft	N	< 0.19	< 0.24	< 0.17	< 0.032	< 0.0068	< 0.010	< 0.0096	< 0.0087	< 0.0096	**0.034 J**	< 0.0074	< 0.0078	< 0.010	< 0.015	< 0.021	< 0.0063
SDF-3	05/13/2009	18 - 20 ft	N	< 0.21	< 0.26	< 0.19	< 0.035	< 0.0073	< 0.011	< 0.011	< 0.0094	< 0.011	< 0.021 J	< 0.0080	< 0.0084	< 0.011	< 0.017	< 0.023	< 0.0068
SDF-4	05/14/2009	3 - 4 ft	N	< 0.19	< 0.24	< 0.17	< 0.032	< 0.0068	< 0.010	< 0.0096	< 0.0087	< 0.0096	**0.030 J**	< 0.0074	< 0.0078	< 0.010	< 0.015	< 0.021	< 0.0063
SDF-4	05/14/2009	11 - 13 ft	N	< 0.19	< 0.24	< 0.17	< 0.032	< 0.0068	< 0.010	< 0.0096	< 0.0087	< 0.0096	**0.027 J**	< 0.0074	< 0.0078	< 0.010	< 0.015	< 0.021	< 0.0063

Table 5.5.23-4
Soil Data - VOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	Chlorotoluene o-	Chlorotoluene p-	Cumene (isopropyl benzene)	Cymene p- (Toluene isopropyl p-)	Dibromomethane (methylene bromide)	Dichlorodifluoromethane (CFC-12)	Ethyl benzene	Hexachlorobutadiene
Location ID	Sample Date	Depth	Sample Type												
SDF-2	05/13/2009	7.5 - 8.5 ft	N	< 0.0081	< 0.018	< 0.011	< 0.012 J	< 0.0074	< 0.0097	< 0.011	< 0.0083	< 0.021	< 0.025	< 0.0054	< 0.019
			FD	< 0.0082	< 0.019	< 0.011	< 0.012 J	< 0.0075	< 0.0099	< 0.012	< 0.0084	< 0.021	< 0.026	< 0.0055	< 0.020
SDF-2	05/13/2009	15.5 - 17.5 ft	N	< 0.0097	< 0.022	< 0.013	< 0.014 J	< 0.0089	< 0.012	< 0.014	< 0.013	< 0.025	< 0.030	< 0.0065	< 0.023
SDF-3	05/13/2009	8 - 9 ft	N	< 0.0068	< 0.015	< 0.0090	< 0.0096 J	< 0.0062	< 0.0082	< 0.0093	< 0.0069	< 0.017	< 0.021	< 0.0045	< 0.016
SDF-3	05/13/2009	18 - 20 ft	N	< 0.0073	< 0.017	< 0.0097	< 0.011 J	< 0.0067	< 0.0088	< 0.010	< 0.0074	< 0.019	< 0.023	< 0.0049	< 0.018
SDF-4	05/14/2009	3 - 4 ft	N	< 0.0068	< 0.015	< 0.0090	< 0.0096 J	< 0.0062	< 0.0082	< 0.0093	< 0.0076	< 0.017	< 0.021	< 0.0045	< 0.016
SDF-4	05/14/2009	11 - 13 ft	N	< 0.0068	< 0.015	< 0.0090	< 0.0096 J	< 0.0062	< 0.0082	< 0.0093	< 0.0069	< 0.017	< 0.021	< 0.0045	< 0.016

Table 5.5.23-4
Soil Data - VOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/kg]

Chemical Name				Iodomethane	Methyl ethyl ketone	Methyl isobutyl ketone	Methyl tertiary butyl ether (MTBE)	Methylene chloride	Naphthalene	Propylbenzene	Styrene	Tetrachloroethylene	Toluene	Trichloroethylene	Trichlorofluoromethane	Vinyl acetate	Vinyl chloride	Xylene m & p	Xylene, o-
Location ID	**Sample Date**	**Depth**	**Sample Type**																
SDF-2	05/13/2009	7.5 - 8.5 ft	N	**0.11 J**	< 0.25	< 0.41	< 0.018	< 0.0084	< 0.0081	< 0.011	< 0.0054	< 0.018	**0.014 J**	< 0.016	< 0.028	< 0.044	< 0.023	< 0.011	< 0.0081
			FD	**0.086 J**	< 0.26	< 0.41	< 0.019	< 0.0086	< 0.0082	< 0.012	< 0.0055	< 0.019	< 0.011	< 0.016	< 0.028	< 0.045	< 0.023	< 0.012	< 0.0082
SDF-2	05/13/2009	15.5 - 17.5 ft	N	**0.25 J**	< 0.30	< 0.49	< 0.022	< 0.011	< 0.0097	< 0.014	< 0.0065	< 0.022	< 0.013	< 0.019	< 0.033	< 0.053	< 0.028	< 0.014	< 0.0097
SDF-3	05/13/2009	8 - 9 ft	N	**0.083 J**	< 0.21	< 0.34	< 0.015	< 0.0071	< 0.0068	< 0.0093	< 0.0045	< 0.015	< 0.0085	< 0.013	< 0.023	< 0.037	< 0.019	< 0.0093	< 0.0068
SDF-3	05/13/2009	18 - 20 ft	N	< 0.070	< 0.23	< 0.37	< 0.017	**0.013 J**	< 0.0073	< 0.010	< 0.0049	< 0.017	**0.050 J**	< 0.014	< 0.025	< 0.040	< 0.021	< 0.010	< 0.0073
SDF-4	05/14/2009	3 - 4 ft	N	**0.077 J**	< 0.21	< 0.34	< 0.015	< 0.0071	< 0.0068	< 0.0093	< 0.0045	< 0.015	**0.010 J**	< 0.013	< 0.023	< 0.037	< 0.019	< 0.0093	< 0.0068
SDF-4	05/14/2009	11 - 13 ft	N	**0.093 J**	< 0.21	< 0.34	< 0.015	< 0.0071	< 0.0068	< 0.0093	< 0.0045	< 0.015	< 0.0085	< 0.013	< 0.023	< 0.037	< 0.019	< 0.0093	< 0.0068

Table 5.5.23-5
Soil Data - PCBs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268
Location ID	Sample Date	Depth	Sample Type									
SDF-2	05/13/2009	7.5 - 8.5 ft	N	< 0.019	< 0.012	< 0.024	< 0.012	< 0.0072	< 0.0088	< 0.013	< 0.020	< 0.0066
			FD	< 0.019	< 0.012	< 0.024	< 0.012	< 0.0072	< 0.0088	< 0.013	< 0.020	< 0.0066
SDF-2	05/13/2009	15.5 - 17.5 ft	N	< 0.019	< 0.012	< 0.024	< 0.012	< 0.0072	< 0.0088	< 0.013	< 0.020	< 0.0066
SDF-3	05/13/2009	8 - 9 ft	N	< 0.019	< 0.012	< 0.024	< 0.012	< 0.0072	< 0.0088	< 0.013	< 0.020	< 0.0066
SDF-3	05/13/2009	18 - 20 ft	N	< 0.019	< 0.012	< 0.024	< 0.012	< 0.0072	< 0.0088	< 0.013	< 0.020	< 0.0066
SDF-4	05/14/2009	3 - 4 ft	N	< 0.019	< 0.012	< 0.024	< 0.012	< 0.0072	< 0.0088	< 0.013	< 0.020	< 0.0066
SDF-4	05/14/2009	11 - 13 ft	N	< 0.019	< 0.012	< 0.024	< 0.012	< 0.0072	< 0.0088	< 0.013	< 0.020	< 0.0066

Table 5.5.23-6
Soil Data - Radionuclides
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/kg]

			Chemical Name	Lead 210	Radium 226	Thorium 230	Uranium 234	Uranium 235	Uranium 238
Background Mean, Exceedances **Bold**					**3.6**	**0.96**	**0.73**		**0.78**
Background Maximum, Exceedances Underline					12	3.4	2.8		2.7
Background 95% UCL, Exceedances *Italic*					*5.0*	1.7	*1.6*		*1.6*
Location ID	**Sample Date**	**Depth**	**Sample Type**						
SDF-2	05/13/2009	7.5 - 8.5 ft	N	< 4.5	**3.8 +/- 1**	0.71 +/- 0.33	**0.89 +/- 0.51**	< 0.34	***1.67 +/- 0.55***
			FD	< 4.2	< 3	< 0.61	**1.2 +/- 0.46**	< 0.32	**1.19 +/- 0.46**
SDF-2	05/13/2009	15.5 - 17.5 ft	N	< 4.7	2.7 +/- 0.96	< 0.57	**0.79 +/- 0.43**	< 0.32	0.35 +/- 0.34
SDF-3	05/13/2009	8 - 9 ft	N	< 4.8	***5.5 +/- 1.3***	**1.6 +/- 0.49**	0.62 +/- 0.35	< 0.22	0.64 +/- 0.31
SDF-3	05/13/2009	18 - 20 ft	N	< 4.4	***6.2 +/- 1.4***	< 0.62	***1.7 +/- 0.65***	< 0.32	***1.71 +/- 0.6***
SDF-4	05/14/2009	3 - 4 ft	N	< 4.9	***5.7 +/- 1.3***	0.77 +/- 0.39	0.61 +/- 0.33	< 0.22	0.59 +/- 0.31
SDF-4	05/14/2009	11 - 13 ft	N	8.6 +/- 1.5	***5.5 +/- 1.2***	0.52 +/- 0.3	0.48 +/- 0.28	< 0.26	**0.81 +/- 0.37**

Table 5.5.23-7
Groundwater Quality- General and Site-Specific Parameters
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/l]

Chemical Name			Alkalinity, bicarbonate, as CaCO3	Alkalinity, carbonate, as CaCO3	Chloride	Fluoride	Nitrate + Nitrite, as N	Nitrogen, ammonia (NH3), as N	Phosphorus, elemental (white)	Phosphorus, total	Sulfate
Location ID	Sample Date	Sample Type									
MW-06-16	05/21/2008	N	**154**	< 2	**270**	< 1.0	**6.48**	< 0.05	< 0.0000234	**0.28**	**703**
MW-06-16	09/20/2008	N	**157**	< 2	**273**	< 0.2	**6.48**	< 0.05	< 0.00119 R	**0.30**	**710**
MW-06-16	12/12/2008	N	--	--	--	--	--	--	< 0.0000234	--	--
MW-06-13	05/27/2008	N	**104**	< 2	**168**	**0.30**	**3.62**	< 0.05	--	**0.49**	**471**
		FD	**100**	< 2	**167**	**0.2**	**3.62**	< 0.05	--	**0.52**	**472**
MW-06-13	06/09/2008	N	--	--	--	--	--	--	< 0.0000234	--	--
		FD	--	--	--	--	--	--	< 0.0000234	--	--
MW-06-13	09/19/2008	N	**102**	< 2	**195**	**0.30**	**4.47**	< 0.05	< 0.00168 R	**0.40**	**446**
MW-06-13	12/12/2008	N	--	--	--	--	--	--	< 0.0000234	--	--

Table 5.5.23-8
Groundwater Quality- Metals
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/l]

Chemical Name / Analysis Location			Antimony Lab	Arsenic Lab	Barium Lab	Beryllium Lab	Cadmium Lab	Calcium Lab	Chromium Lab	Cobalt Lab	Copper Lab	Iron Lab	Lead Lab	Magnesium Lab	Manganese Lab	Mercury Lab	Nickel Lab	Potassium Lab	Selenium Lab	Silver Lab	Sodium Lab	Thallium Lab	Uranium Lab	Vanadium Lab	Zinc Lab
Location ID	Sample Date	Sample Type																							
MW-06-16	05/21/2008	N	**0.00008**	**0.0060**	**0.0274**	< 0.00002	**0.00004**	**335**	**0.0005**	**0.00593**	**0.0017 J**	**0.031**	**0.00005**	**64 R**	**0.00204**	< 0.0002	**0.0127**	**19.7**	**0.0094**	< 0.00002	**65.4**	< 0.00002	**0.0440**	**0.0045**	**0.0014**
MW-06-16	09/20/2008	N	**0.00008**	**0.0083**	**0.03035**	< 0.00002	**0.00004**	**318**	**0.0005**	**0.00608**	**0.0018**	**0.14**	**0.00026**	**62.8**	**0.00394**	< 0.0002	**0.0187**	**19.1**	**0.017**	**0.00003**	**66**	< 0.00002	**0.04279**	**0.0042**	< 0.0051
MW-06-13	05/27/2008	N	< 0.00013	**0.0103**	**0.0382**	< 0.00002	**0.00004**	**188**	< 0.0003	**0.00199**	< 0.0021	**0.068**	< 0.00013	**36.4**	**0.00284**	< 0.0002	**0.0036**	**16.4**	**0.0060**	**0.00005**	**80.5**	< 0.00002	**0.009860**	**0.0060**	< 0.0016
		FD	< 0.00014	**0.0106**	**0.0387**	< 0.00002	**0.00004**	**185**	< 0.0003	**0.00201**	< 0.0026	**0.069**	< 0.00014	**35.7**	**0.00236**	< 0.0002	**0.0035**	**16.2**	**0.0068**	**0.00005**	**79.9**	< 0.00002	**0.009930**	**0.0061**	< 0.0019
MW-06-13	09/19/2008	N	**0.0001**	**0.0104**	**0.04017**	< 0.00002	**0.00005**	**191**	**0.0003**	**0.00191**	**0.0012**	**0.26**	**0.00031**	**37.2**	**0.00526**	< 0.0002	**0.0038**	**16.9**	**0.009**	**0.00002**	**81.3**	< 0.00002	**0.0113**	**0.0058**	**0.003**

Table 5.5.23-9
Groundwater Quality- SVOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/l]

Chemical Name			1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,4-Dinitrotoluene	2,6-Dinitrotoluene	2-Chloronaphthalene	2-Chlorophenol	2-Methyl-4,6-dinitrophenol
Location ID	Sample Date	Sample Type														
MW-06-16	05/21/2008	N	< 0.000016	< 0.000022	< 0.000021	< 0.000029	< 0.000031	< 0.000058	< 0.000047	< 0.0022 R	< 0.00017	< 0.000018	< 0.000033	< 0.000041	< 0.000054	< 0.000025
MW-06-16	09/20/2008	N	< 0.000016	< 0.000022	< 0.000021	< 0.000029	< 0.000031	< 0.000058	< 0.000047	< 0.0022	< 0.00017	< 0.000018	< 0.000033	< 0.000041	< 0.000054	< 0.000025
MW-06-13	05/27/2008	N	< 0.000016	< 0.000022	< 0.000021	< 0.000029	< 0.000031	< 0.000058	< 0.000047	< 0.0022 R	< 0.00017	< 0.000018	< 0.000033	< 0.000041	< 0.000054	< 0.000025
		FD	< 0.000016	< 0.000022	< 0.000021	< 0.000029	< 0.000031	< 0.000058	< 0.000047	< 0.0022 R	< 0.00017	< 0.000018	< 0.000033	< 0.000041	< 0.000054	< 0.000025
MW-06-13	09/19/2008	N	< 0.000016	< 0.000022	< 0.000021	< 0.000035	< 0.000031	< 0.000058	< 0.000047	< 0.0022	< 0.00017	< 0.000018	< 0.000033	< 0.000041	< 0.000054	< 0.000025

Table 5.5.23-9
Groundwater Quality- SVOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/l]

Chemical Name			2-Methylnaphthalene	2-Nitroaniline	2-Nitrophenol	3,3`-Dichlorobenzidine	3-Nitroaniline	4-Bromophenyl phenyl ether	4-Chloro-3-methylphenol	4-Chloroaniline	4-Chlorophenyl phenyl ether	4-Nitroaniline	4-Nitrophenol	Acenaphthene	Acenaphthylene	Anthracene	Azobenzene	Benzo(a) anthracene
Location ID	Sample Date	Sample Type																
MW-06-16	05/21/2008	N	< 0.000026	< 0.000024	< 0.000063	< 0.00043	< 0.000029	< 0.000026	< 0.000037	< 0.000025	< 0.000027	< 0.000019	< 0.00028	< 0.000026	< 0.000015	< 0.000024	< 0.000021	< 0.000018
MW-06-16	09/20/2008	N	< 0.000026	< 0.000024	< 0.000063	< 0.00043	< 0.000029	< 0.000026	< 0.000037	< 0.000025	< 0.000027	< 0.000019	< 0.00028	< 0.0000044	< 0.0000034	< 0.0000036	< 0.000021	< 0.0000026
MW-06-13	05/27/2008	N	< 0.000026	< 0.000024	< 0.000063	< 0.00043	< 0.000029	< 0.000026	< 0.000037	< 0.000025	< 0.000027	< 0.000019	< 0.00028	< 0.000026	< 0.000015	< 0.000024	< 0.000021	< 0.000018
		FD	< 0.000026	< 0.000024	< 0.000063	< 0.00043	< 0.000029	< 0.000026	< 0.000037	< 0.000025	< 0.000027	< 0.000019	< 0.00028	< 0.000026	< 0.000015	< 0.000024	< 0.000021	< 0.000018
MW-06-13	09/19/2008	N	< 0.000026	< 0.000024	< 0.000063	< 0.00043	< 0.000029	< 0.000026	< 0.000037	< 0.000025	< 0.000027	< 0.000019	< 0.00028	< 0.000026	< 0.000015	< 0.000024	< 0.000021	< 0.000018

Table 5.5.23-9
Groundwater Quality- SVOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/l]

Chemical Name			Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene	Benzoic acid	Benzyl alcohol	Bis(2-chloroethoxy) methane	Bis(2-chloroethyl) ether	Bis(2-chloroisopropyl) ether	Bis(2-ethylhexyl) phthalate	Butyl benzyl phthalate	Carbazole	Chrysene	Dibenz(a,h) anthracene	Dibenzofuran	Diethyl phthalate	Dimethyl phthalate
Location ID	Sample Date	Sample Type																	
MW-06-16	05/21/2008	N	< 0.000031	< 0.000017	< 0.000019	< 0.000024	< 0.0011 R	< 0.000073	< 0.000024	< 0.000035	< 0.000026	**0.00035 J**	< 0.000018	< 0.000018	< 0.000028	< 0.000017	< 0.000018	< 0.000029	< 0.000021
MW-06-16	09/20/2008	N	< 0.0000043	< 0.0000023	< 0.0000029	< 0.0000025	**0.0019 J**	< 0.000073	< 0.000024	< 0.000035	< 0.000026	< 0.00013	< 0.000018	< 0.000018	< 0.0000034	< 0.0000025	< 0.000018	< 0.000022	< 0.000021
MW-06-13	05/27/2008	N	< 0.000031	< 0.000017	< 0.000019	< 0.000024	< 0.0011 R	< 0.000073	< 0.000024	< 0.000035	< 0.000026	< 0.00031	< 0.000042	< 0.000018	< 0.000028	< 0.000017	< 0.000018	< 0.000034	< 0.000021
		FD	< 0.000031	< 0.000017	< 0.000019	< 0.000024	< 0.0011 R	< 0.000073	< 0.000024	< 0.000035	< 0.000026	< 0.00024	< 0.000018	< 0.000018	< 0.000028	< 0.000017	< 0.000018	< 0.000032	< 0.000021
MW-06-13	09/19/2008	N	< 0.000031	< 0.000017	< 0.000019	< 0.000024	< 0.0011 J	< 0.000073	< 0.000024	< 0.000035	< 0.000026	< 0.00016	< 0.000018	< 0.000018	< 0.000028	< 0.000017	< 0.000018	< 0.000027	< 0.000021

Table 5.5.23-9
Groundwater Quality- SVOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/l]

Chemical Name			Di-n-butyl phthalate	Di-n-octyl phthalate	Fluoranthene	Fluorene	Hexachlorobenzene	Hexachlorobutadiene	Hexachlorocyclopentadiene	Hexachloroethane	Indeno(1,2,3-cd) pyrene	Isophorone	Naphthalene	Nitrobenzene	N-Nitrosodimethylamine	N-Nitrosodi-n-propylamine
Location ID	Sample Date	Sample Type														
MW-06-16	05/21/2008	N	< 0.00011	< 0.000018	< 0.000020	< 0.000027	< 0.000022	< 0.000027 R	< 0.00019 R	< 0.000024	< 0.000021	< 0.000016	**0.000022 J**	< 0.000028	< 0.00042	< 0.000037
MW-06-16	09/20/2008	N	< 0.000064	< 0.000018	< 0.0000044	< 0.0000038	< 0.000022	< 0.000027	< 0.00019	< 0.000024	< 0.0000026	< 0.000016	< 0.0000034	< 0.000028	< 0.00042	< 0.000037
MW-06-13	05/27/2008	N	< 0.00022	< 0.000018	< 0.000020	< 0.000027	< 0.000022	< 0.000027	< 0.00019 R	< 0.000024	< 0.000021	< 0.000016	< 0.000022	< 0.000028	< 0.00042	< 0.000037
		FD	< 0.00011	< 0.000018	< 0.000020	< 0.000027	< 0.000022	< 0.000027	< 0.00019 R	< 0.000024	< 0.000021	< 0.000016	< 0.000028	< 0.000028	< 0.00042	< 0.000037
MW-06-13	09/19/2008	N	< 0.000062	< 0.000018	< 0.000020	< 0.000027	< 0.000022	< 0.000027	< 0.00019	< 0.000024	< 0.000021	< 0.000016	< 0.000022	< 0.000028	< 0.00042	< 0.000037

Table 5.5.23-9
Groundwater Quality- SVOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/l]

		Chemical Name	N-Nitrosodiphenylamine	o-cresol	p-cresol	Pentachlorophenol	Phenanthrene	Phenol	Pyrene	Pyridine
Location ID	Sample Date	Sample Type								
MW-06-16	05/21/2008	N	< 0.000048	< 0.00011	< 0.00012	< 0.00034	< 0.000022	**0.00081**	< 0.000019	--
MW-06-16	09/20/2008	N	< 0.000048	< 0.00011	< 0.00012	< 0.00034	< 0.0000050	< 0.000063	< 0.0000035	< 0.0014
MW-06-13	05/27/2008	N	< 0.000048	< 0.00011	< 0.00012	< 0.00034	< 0.000022	< 0.00082	< 0.000019	--
		FD	< 0.000048	< 0.00011	< 0.00012	< 0.00034	< 0.000022	< 0.00054	< 0.000019	--
MW-06-13	09/19/2008	N	< 0.000048	< 0.00011	< 0.00012	< 0.00034	< 0.000022	< 0.000063	< 0.000019	< 0.0014

Table 5.5.23-10
Groundwater Quality- VOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/l]

Chemical Name			1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloro-1-propene	1,1-Dichloroethane	1,1-Dichloroethylene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane
Location ID	Sample Date	Sample Type													
MW-06-16	05/21/2008	N	< 0.000047	**0.00012 J**	< 0.000064	< 0.000061	< 0.000051	< 0.000042	< 0.00010	< 0.00010	< 0.00014	< 0.00013	< 0.000037	< 0.00022	< 0.000084
MW-06-16	09/20/2008	N	< 0.000047	**0.000090 J**	< 0.000064	< 0.000061	< 0.000051	< 0.000042	< 0.00010	< 0.00010	< 0.00014	< 0.00013	< 0.000037	< 0.00022 J	< 0.000084
MW-06-13	05/27/2008	N	< 0.000047	**0.000070 J**	< 0.000064	< 0.000061	< 0.000051	< 0.000042	< 0.00010	< 0.00010	< 0.00014	< 0.00013	< 0.000037	< 0.00022	< 0.000084
		FD	< 0.000047	**0.000080 J**	< 0.000064	< 0.000061	< 0.000051	< 0.000042	< 0.00010	< 0.00010	< 0.00014	< 0.00013	< 0.000037	< 0.00022	< 0.000084
MW-06-13	09/19/2008	N	< 0.000047	**0.000080 J**	< 0.000064	< 0.000061	< 0.000051	< 0.000042	< 0.00010	< 0.00010	< 0.00014	< 0.00013	< 0.000037	< 0.00022 J	< 0.000084

Table 5.5.23-10
Groundwater Quality- VOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/l]

Chemical Name			1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloroethylene, cis	1,2-Dichloroethylene, trans	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichloro-1-propene, cis	1,3-Dichloro-1-propene, trans	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Chloroethyl vinyl ether	2-Hexanone
Location ID	Sample Date	Sample Type														
MW-06-16	05/21/2008	N	< 0.000044	**0.00019 J**	< 0.000045	< 0.000048	< 0.000042	< 0.000042	< 0.000038	< 0.000041	< 0.000041	< 0.000032	< 0.000054	< 0.000050	< 0.00019 R	< 0.0029
MW-06-16	09/20/2008	N	< 0.000044	**0.00016 J**	< 0.000045	< 0.000048	< 0.000042	< 0.000042	< 0.000038	< 0.000041	< 0.000041	< 0.000032	< 0.000054	< 0.000050	< 0.00019 R	< 0.0029
MW-06-13	05/27/2008	N	< 0.000044	< 0.000073	< 0.000045	< 0.000048	< 0.000042	< 0.000042	< 0.000038	< 0.000041	< 0.000041	< 0.000032	< 0.000054	< 0.000050	< 0.00019 R	< 0.0029
		FD	< 0.000044	< 0.000073	< 0.000045	< 0.000048	< 0.000042	< 0.000042	< 0.000038	< 0.000041	< 0.000041	< 0.000032	< 0.000054	< 0.000050	< 0.00019 R	< 0.0029
MW-06-13	09/19/2008	N	< 0.000044	< 0.000073	< 0.000045	< 0.000048	< 0.000042	< 0.000042	< 0.000038	< 0.000041	< 0.000041	< 0.000032	< 0.000060	< 0.000050	< 0.00019 R	< 0.0029

Table 5.5.23-10
Groundwater Quality- VOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/l]

Chemical Name			Acetone	Acrolein	Acrylonitrile	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Butyl benzene	Butylbenzene, sec	Butylbenzene, tert	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane
Location ID	Sample Date	Sample Type																
MW-06-16	05/21/2008	N	< 0.0025	< 0.0020	< 0.00031	< 0.000045	< 0.000027	< 0.000091	< 0.000036	< 0.000080 J	< 0.000072	< 0.000056	< 0.000036	< 0.000038	< 0.000045	< 0.000068	< 0.000045	< 0.000057
MW-06-16	09/20/2008	N	< 0.0025	< 0.0020	< 0.00031	< 0.000045	< 0.000027	< 0.000091	< 0.000036	< 0.000080 J	< 0.000072	< 0.000056	< 0.000036	< 0.000038	< 0.000045	< 0.000068	< 0.000045	< 0.000057
MW-06-13	05/27/2008	N	< 0.0025	< 0.0020	< 0.00031	< 0.000045	< 0.000027	< 0.000091	< 0.000036	< 0.000080	< 0.000072 J	< 0.000056	< 0.000036	< 0.000038	< 0.000045	< 0.000068	< 0.000045	< 0.000057
		FD	< 0.0025	< 0.0020	< 0.00031	< 0.000045	< 0.000027	< 0.000091	< 0.000036	< 0.000080	< 0.000072 J	< 0.000056	< 0.000036	< 0.000038	< 0.000045	< 0.000068	< 0.000045	< 0.000057
MW-06-13	09/19/2008	N	< 0.0072	< 0.0020	< 0.00031	< 0.000045	< 0.000027	< 0.000091	< 0.000036	< 0.000080 J	< 0.000072	< 0.000056	< 0.000036	< 0.000038	< 0.000045	< 0.000068	< 0.000045	< 0.000057

Table 5.5.23-10
Groundwater Quality- VOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/l]

Chemical Name			Chloroethane	Chloroform	Chloromethane	Chlorotoluene, o	Chlorotoluene, p	Cumene (isopropyl benzene)	Cymene p- (Toluene isopropyl p-)	Dibromomethane (methylene bromide)	Dichlorodifluoromethane (CFC-12)	Ethyl benzene	Hexachlorobutadiene	Iodomethane	Methyl ethyl ketone	Methyl isobutyl ketone
Location ID	Sample Date	Sample Type														
MW-06-16	05/21/2008	N	< 0.00013	< 0.000042	**0.000090 J**	< 0.000035	< 0.000025	< 0.000031	< 0.000044	< 0.000089	< 0.000083	< 0.000042	< 0.00019	< 0.00027 R	< 0.0038	< 0.0030
MW-06-16	09/20/2008	N	< 0.00013	< 0.000042	< 0.000053	< 0.000035	< 0.000025	< 0.000050	< 0.000044	< 0.000089	< 0.000083	< 0.000042	< 0.00019	< 0.00027	< 0.0038	< 0.0030
MW-06-13	05/27/2008	N	< 0.00013	< 0.00013	< 0.00014	< 0.000035	< 0.000025	< 0.000031	< 0.000044	< 0.000089	< 0.000083	< 0.000042	< 0.00019	< 0.00027	< 0.0038	< 0.0030
		FD	< 0.00013	< 0.00012	< 0.000080	< 0.000035	< 0.000025	< 0.000031	< 0.000044	< 0.000089	< 0.000083	< 0.000042	< 0.00019	< 0.00027	< 0.0038	< 0.0030
MW-06-13	09/19/2008	N	< 0.00013	< 0.00017	< 0.000053	< 0.000035	< 0.000025	< 0.00010	< 0.000044	< 0.000089	< 0.000083	< 0.000042	< 0.00019	< 0.00027	< 0.0038	< 0.0030

Table 5.5.23-10
Groundwater Quality- VOCs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/l]

Chemical Name			Methyl tertiary butyl ether (MTBE)	Methylene chloride	Naphthalene	Propylbenzene	Styrene	Tetrachloroethylene	Toluene	Trichloroethylene	Trichlorofluoromethane	Vinyl acetate	Vinyl chloride	Xylene, m & p	Xylene, o
Location ID	Sample Date	Sample Type													
MW-06-16	05/21/2008	N	< 0.000070	< 0.00023	< 0.00010	< 0.000037	< 0.000039	**0.00019 J**	< 0.00016	< 0.000061	< 0.000086	< 0.00091	< 0.000071	< 0.000078	< 0.000037
MW-06-16	09/20/2008	N	< 0.000070	< 0.00023	< 0.00010	< 0.000037	< 0.000039	**0.00013 J**	< 0.000048	< 0.000061	< 0.000086	< 0.00091	< 0.000071	< 0.000078	< 0.000037
MW-06-13	05/27/2008	N	< 0.000070	< 0.00023	< 0.00010 J	< 0.000037	< 0.000039	< 0.000080	< 0.00010	< 0.000061	< 0.000086	< 0.00091	< 0.000071	< 0.000078	< 0.000037
		FD	< 0.000070	< 0.00023	< 0.00010 J	< 0.000037	< 0.000039	< 0.000090	< 0.00011	< 0.000061	< 0.000086	< 0.00091	< 0.000071	< 0.000078	< 0.000037
MW-06-13	09/19/2008	N	< 0.000070	< 0.00023	< 0.00010	< 0.000037	< 0.000039	**0.000090 J**	< 0.000048	< 0.000061	< 0.000086	< 0.00091	< 0.000071	< 0.000078	< 0.000037

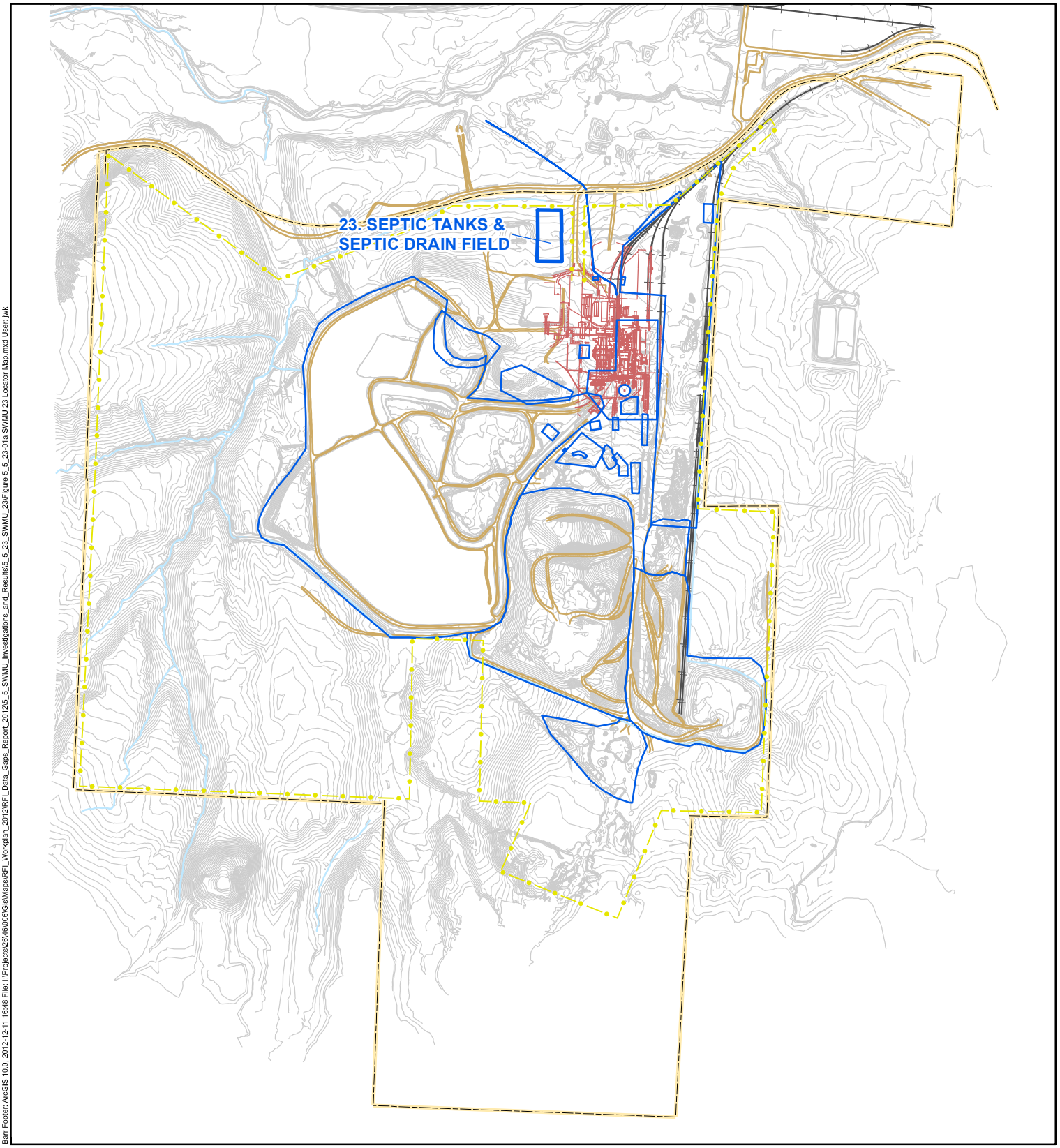
Table 5.5.23-11
Groundwater Quality- PCBs
SWMU 23
Rhodia Silver Bow Plant
[concentrations in mg/l]

		Chemical Name	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268
Location ID	Sample Date	Sample Type									
MW-06-16	05/21/2008	N	< 0.0000094	< 0.000020	< 0.000023	< 0.000013	< 0.0000054	< 0.0000070	< 0.0000031	< 0.0000048	< 0.0000065
MW-06-13	05/27/2008	N	< 0.0000094	< 0.000020	< 0.000023	< 0.000013	< 0.0000054	< 0.0000070	**0.0000042 J**	< 0.0000048	< 0.0000065
		FD	< 0.0000094	< 0.000020	< 0.000023	< 0.000013	< 0.0000054	< 0.0000070	**0.0000075 J**	< 0.0000048	< 0.0000065
MW-06-13	09/19/2008	N	< 0.0000094	< 0.000020	< 0.000023	< 0.000013	< 0.0000054	< 0.0000070	< 0.0000031	< 0.0000048	< 0.0000065

Table 5.5.23-12
Groundwater Quality- Radionuclides
SWMU 23
Rhodia Silver Bow Plant
[concentrations in pCi/l]

		Chemical Name	Gross Alpha (radiation)	Gross Beta (radiation)	Radium 226	Radium 228
Location ID	Sample Date	Sample Type				
MW-06-16	05/21/2008	N	**28 +/- 10**	**26 +/- 9.2**	< 0.21	< 0.76
MW-06-16	09/20/2008	N	**25 +/- 9**	**28 +/- 8.6**	< 0.23	**0.9 +/- 0.31**
MW-06-13	05/27/2008	N	**5.8 +/- 4.3**	**20 +/- 5.4**	< 0.52	< 0.71
		FD	**7 +/- 4.9**	**18 +/- 5.5**	< 0.35	**0.72 +/- 0.28**
MW-06-13	09/19/2008	N	**7.7 +/- 4.9**	**19 +/- 5.5**	< 0.23	**1.1 +/- 0.3**

Figures



Barr Footer: ArcGIS 10.0, 2012-12-11 16:48 File: I:\Projects\26\46\006\Gis\Maps\RFI_Workplan_2012\RFI_Data_Gaps_Report_2012\5_5_SWMU_Investigations_and_Results\5_5_23_SWMU_23\Figure 5_5_23-01a SWMU 23 Locator Map.mxd User: jwk

SWMU 23
Other SWMUs
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures
Property Boundary
Fence Line

N

Feet
1,000 0 1,000

Figure 5.5.23-1a

SWMU 23 LOCATION
Rhodia Silver Bow Plant
Montana

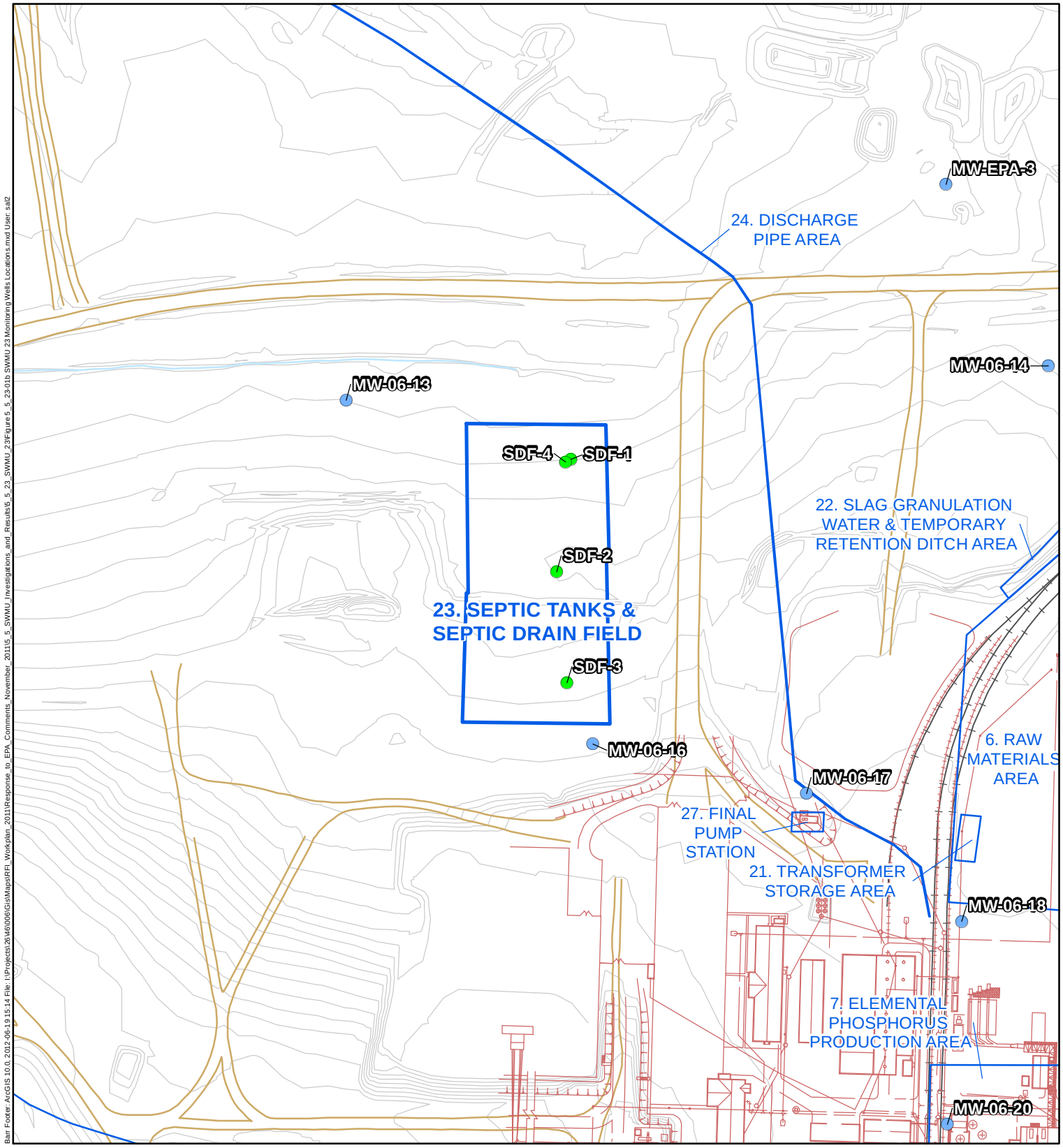
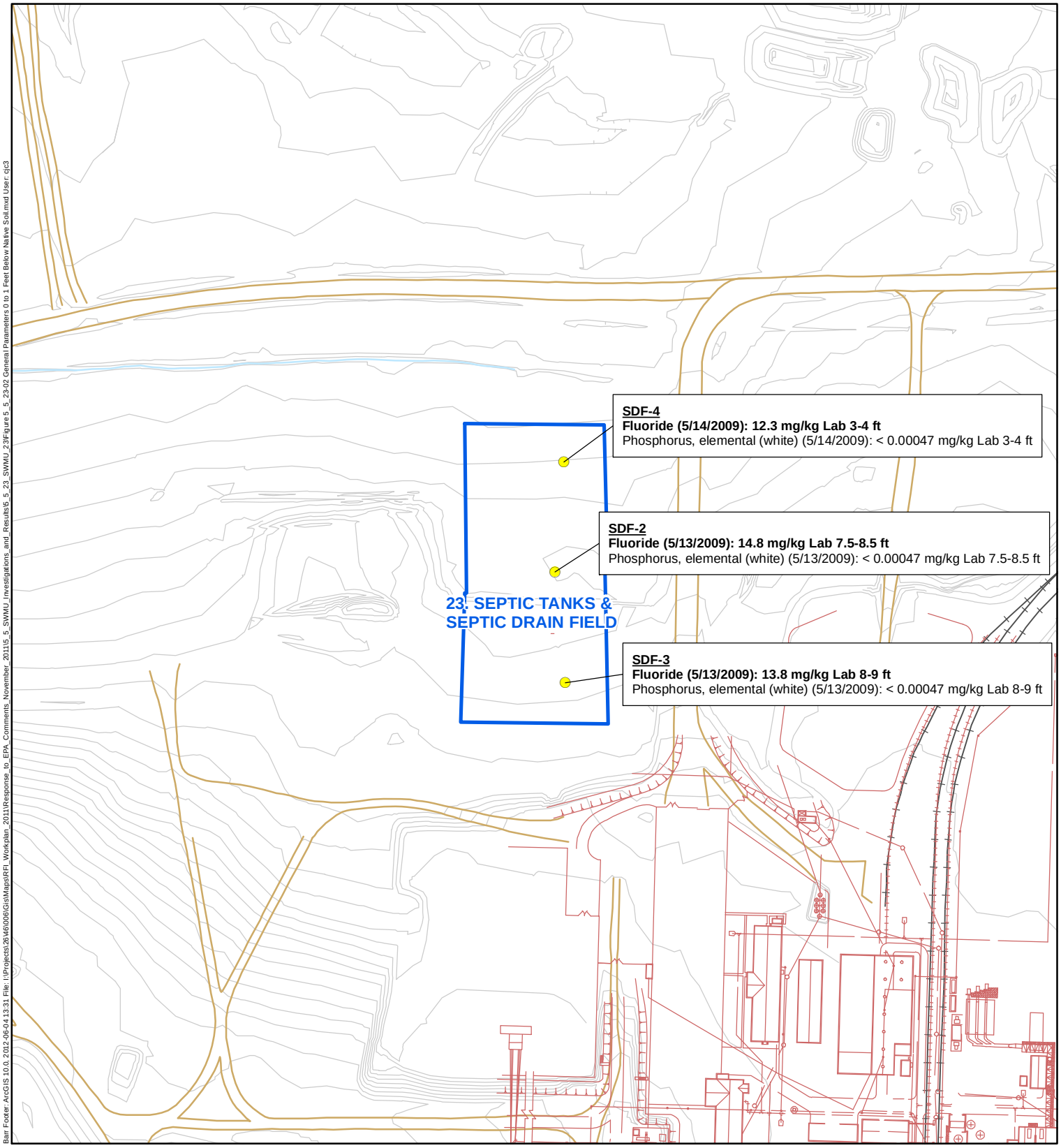


Figure 5.5.23-1b

SWMU 23
MONITORING STATIONS
AND SAMPLE LOCATIONS
Rhodia Silver Bow Plant
Montana



Barr Footer: ArcGIS 10.0, 2012-06-04 13:31, File: I:\Projects\2646\006\GisMaps\RFI_Workplan_2011\Response_to_EPA_Comments_November_2011\5_5_SWMU_Investigations_and_Results\5_5_23_SWMU_23\Figure 5_5_23-02 General Parameters 0 to 1 Feet Below Native Soil.mxd User: cjc3

Sample Location
SWMU 23
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

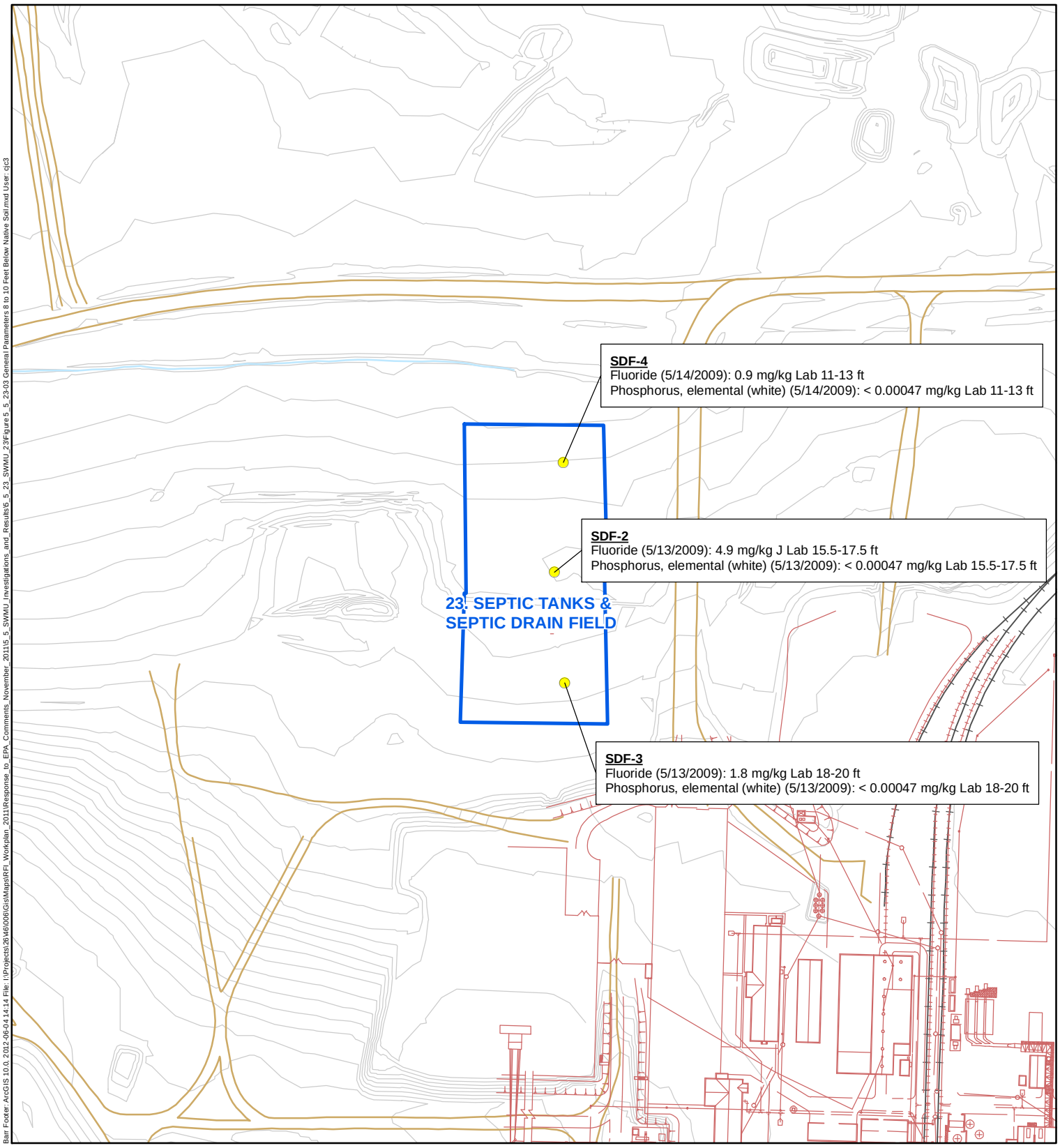
Bold font indicates that sample concentration is greater than the 95% UPL Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.23-2

SWMU 23
GENERAL PARAMETERS,
0-1 FEET BELOW NATIVE SOIL
Rhodia Silver Bow Plant
Montana



Barr Footer: ArcGIS 10.0, 2012-06-04 14:14 File: I:\Projects\2646\006\GisMaps\RFI_Workplan_2011\Response_to_EPA_Comments_November_201115_5_SWMU_Investigations_and_Results\5_5_23_SWMU_23\Figure 5_5_23-03 General Parameters 8 to 10 Feet Below Native Soil.mxd User: cjc3

Sample Location
SWMU 23
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

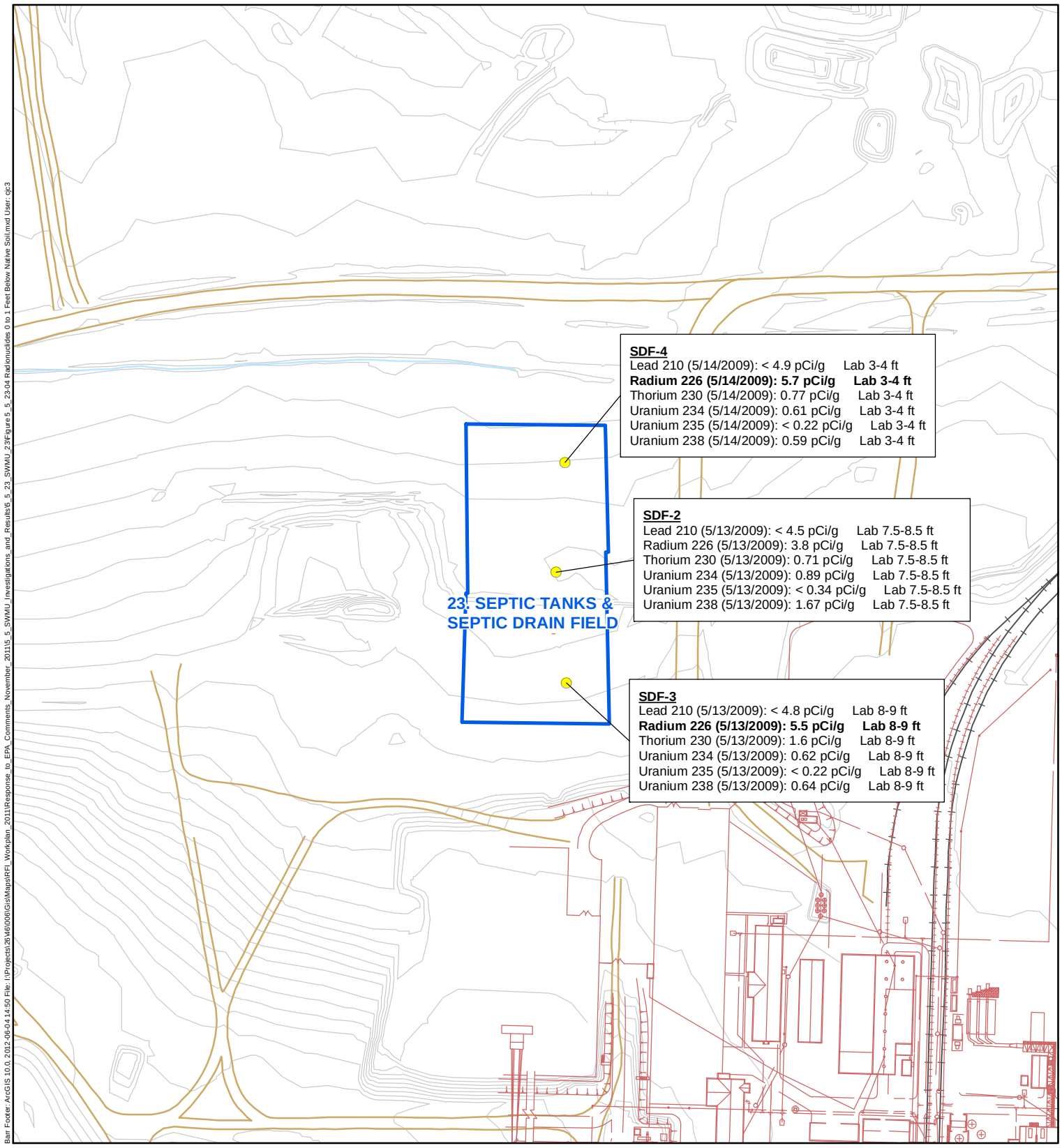
Bold font indicates that sample concentration is greater than the 95% UPL Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.23-3

SWMU 23
GENERAL PARAMETERS,
8-10 FEET BELOW NATIVE SOIL
Rhodia Silver Bow Plant
Montana



Sample Location
SWMU 23
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

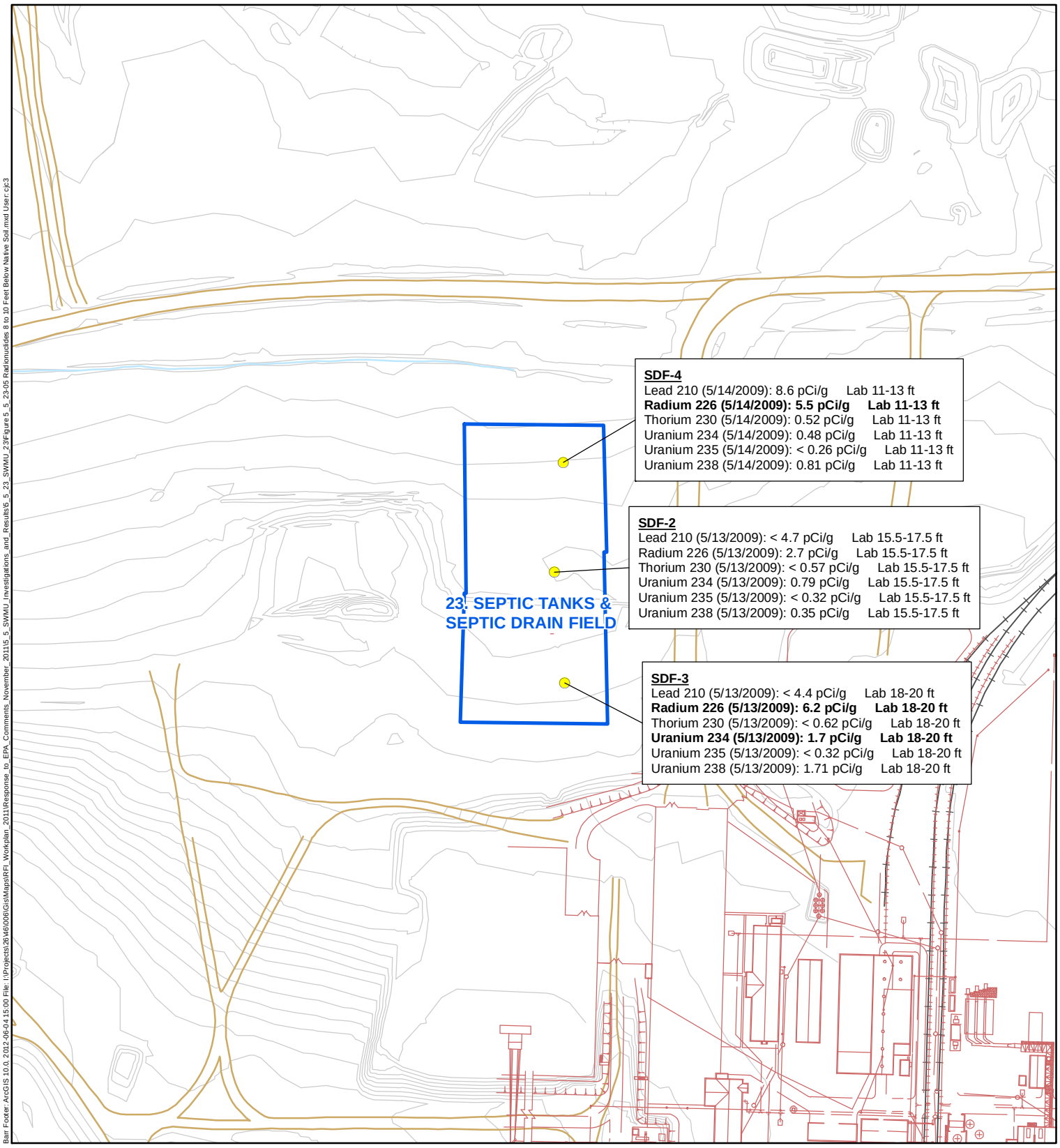
Bold font indicates that sample concentration is greater than the 95% UPL Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.23-4

SWMU 23
RADIONUCLIDES,
0-1 FEET BELOW NATIVE SOIL
Rhodia Silver Bow Plant
Montana



Sample Location

SWMU 23

Elevation Contour

Drainage

Railroad

Road

Former Plant Structures

Bold font indicates that sample concentration is greater than the 95% UPL Reference Area Concentration.

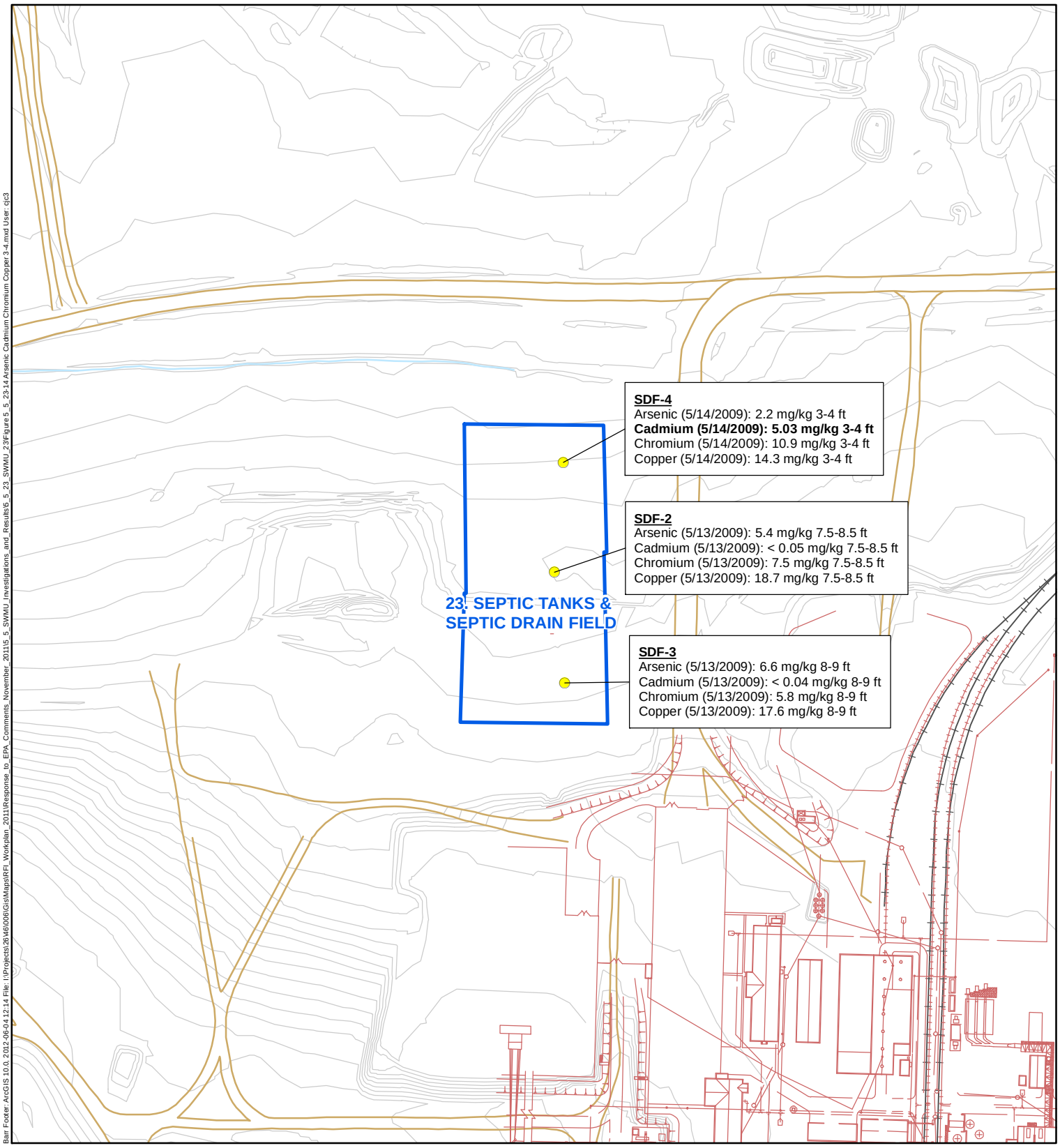
N

Feet

200 0 200

Figure 5.5.23-5

SWMU 23
RADIONUCLIDES,
8-10 FEET BELOW NATIVE SOIL
Rhodia Silver Bow Plant
Montana



Barr Footer: ArcGIS 10.0, 2012-06-04 12:14 File: I:\Projects\2646\006\GisMaps\RFI_Workplan_2011\Response_to_EPA_Comments_November_201115_5_SWMU_Investigations_and_Results\5_5_23_SWMU_23\Figure 5_5_23-14 Arsenic Cadmium Chromium Copper 3-4.mxd User: cjc3

Sample Location
SWMU 23
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

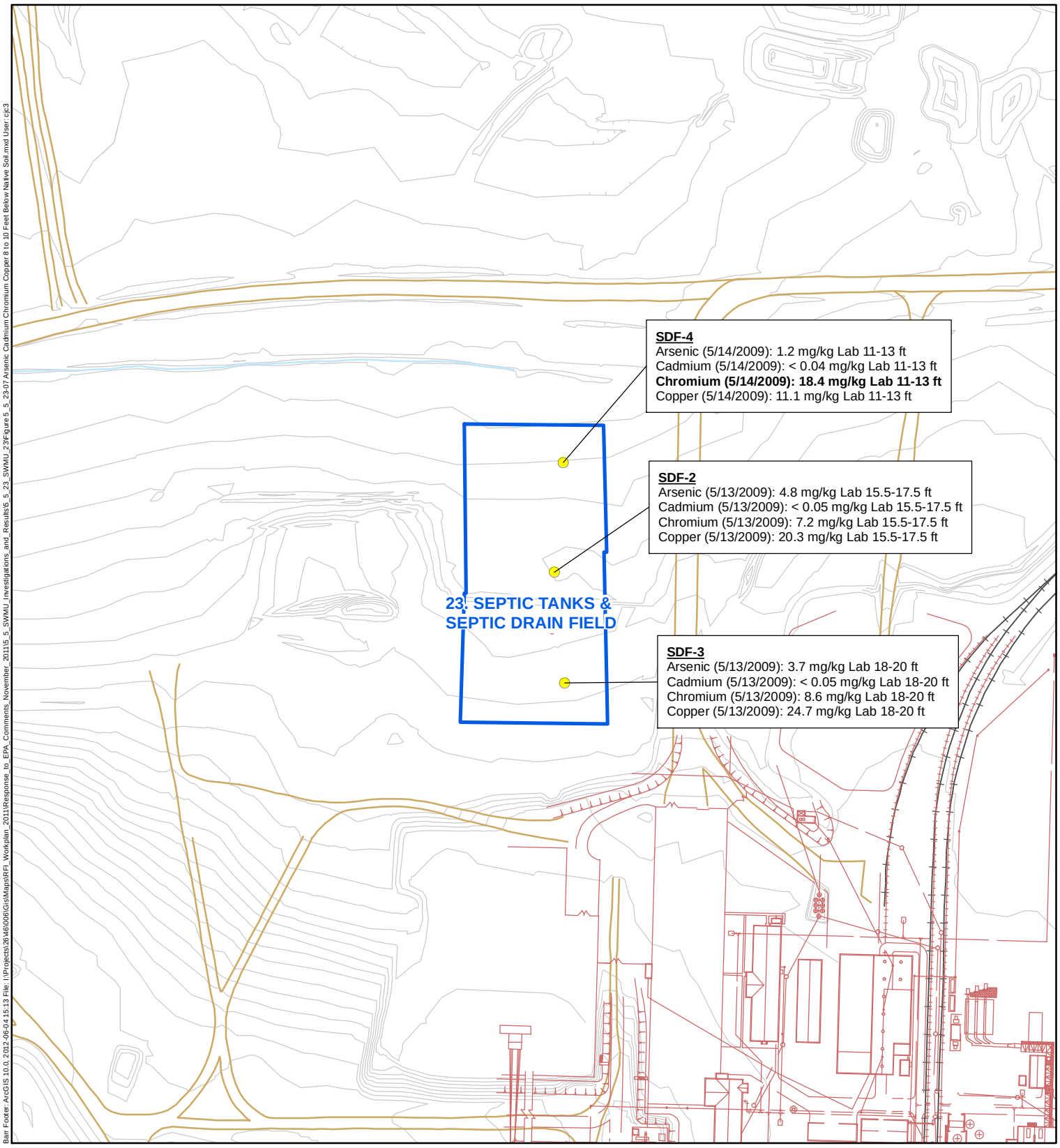
Bold font indicates that sample concentration is greater than the 95% UPL Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.23-6

SWMU 23
ARSENIC, CADMIUM, CHROMIUM, AND COPPER,
0-1 FEET BELOW NATIVE SOIL
Rhodia Silver Bow Plant
Montana



Barr Footer: ArcGIS 10.0, 2012-06-04 15:13 File: I:\Projects\26\46\006\GisMaps\RFI_Workplan_2011\Response_to_EPA_Comments_November_201115_5_SWMU_Investigations_and_Results\5_5_23_SWMU_23\Figure 5_5_23-07 Arsenic Cadmium Chromium Copper 8 to 10 Feet Below Native Soil.mxd User: cjc3

Sample Location

SWMU 23

Elevation Contour

Drainage

Railroad

Road

Former Plant Structures

Bold font indicates that sample concentration is greater than the 95% UPL Reference Area Concentration.

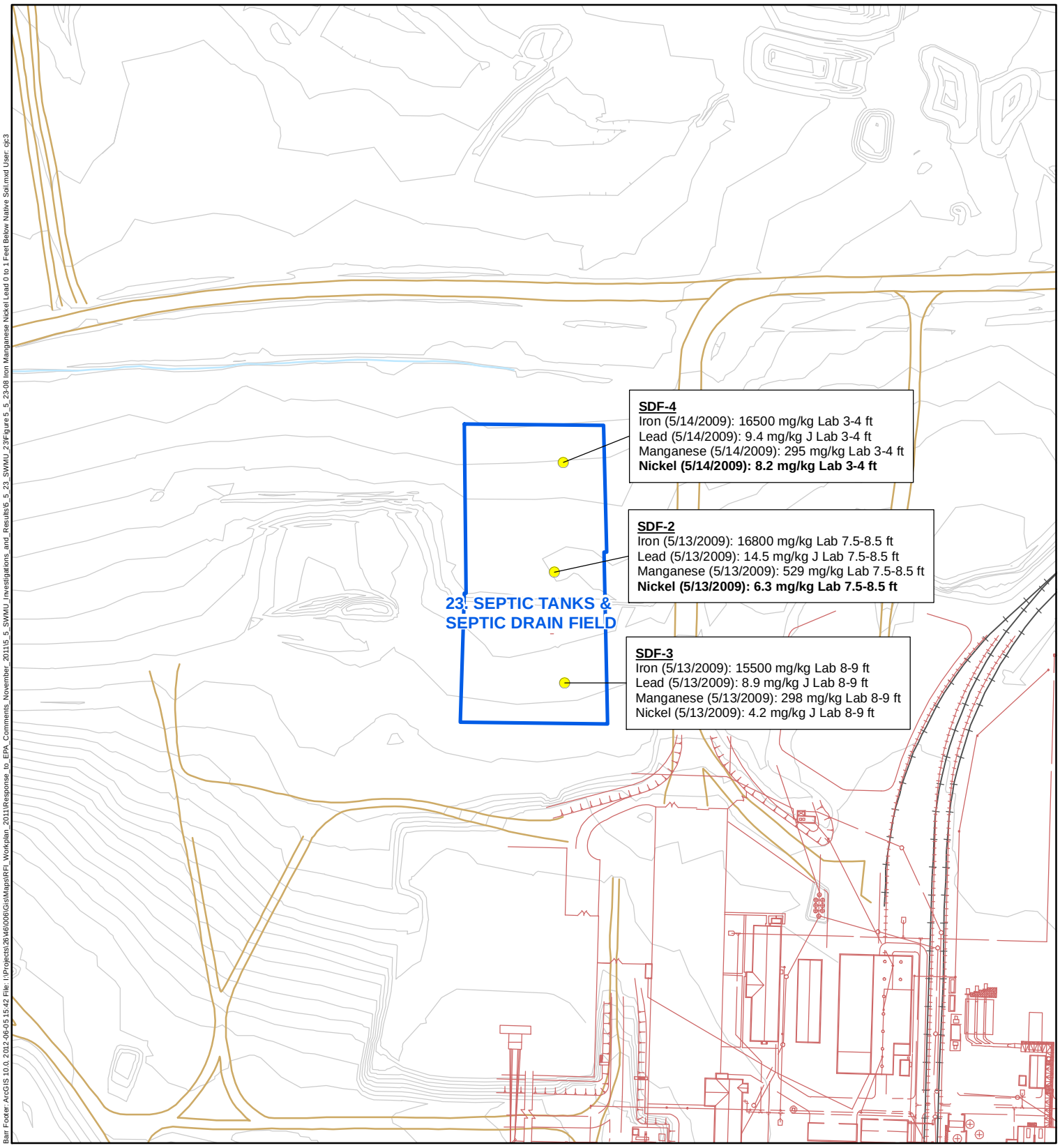
N

Feet

200 0 200

Figure 5.5.23-7

SWMU 23
ARSENIC, CADMIUM, CHROMIUM, AND COPPER
8-10 FEET BELOW NATIVE SOIL
Rhodia Silver Bow Plant
Montana



Barr Footer: ArcGIS 10.0, 2012-06-05 15:42 File: I:\Projects\2646\006\GisMaps\RFI_Workplan_2011\Response_to_EPA_Comments_November_201115_5_SWMU_Investigations_and_Results\5_5_23_SWMU_23\Figure 5_5_23-08 Iron Manganese Nickel Lead 0 to 1 Feet Below Native Soil.mxd User: cjc3

Sample Location

SWMU 23

Elevation Contour

Drainage

Railroad

Road

Former Plant Structures

Bold font indicates that sample concentration is greater than the 95% UPL Reference Area Concentration.

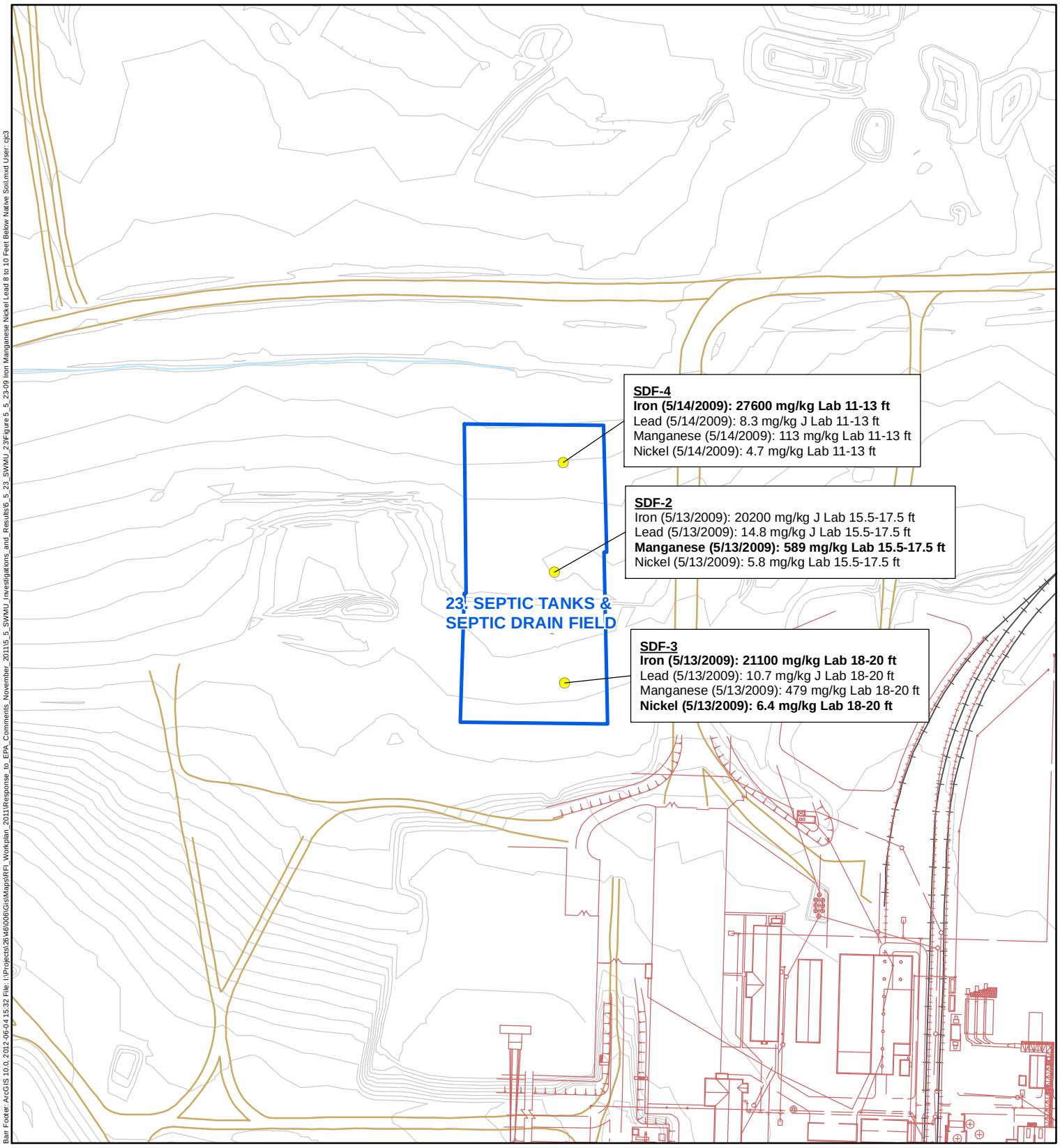
N

Feet

200 0 200

Figure 5.5.23-8

SWMU 23
IRON, MANGANESE, NICKEL, AND LEAD,
0-1 FEET BELOW NATIVE SOIL
Rhodia Silver Bow Plant
Montana



Barr Footer: ArcGIS 10.0, 2012-06-04 15:32 File: I:\Projects\2646\006\GisMaps\RFI_Workplan_2011\Response_to_EPA_Comments_November_201115_5_SWMU_Investigations_and_Results\5_5_23_SWMU_23\Figure 5_5_23-09 Iron Manganese Nickel Lead 8 to 10 Feet Below Native Soil.mxd User: cjc3

Sample Location
SWMU 23
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

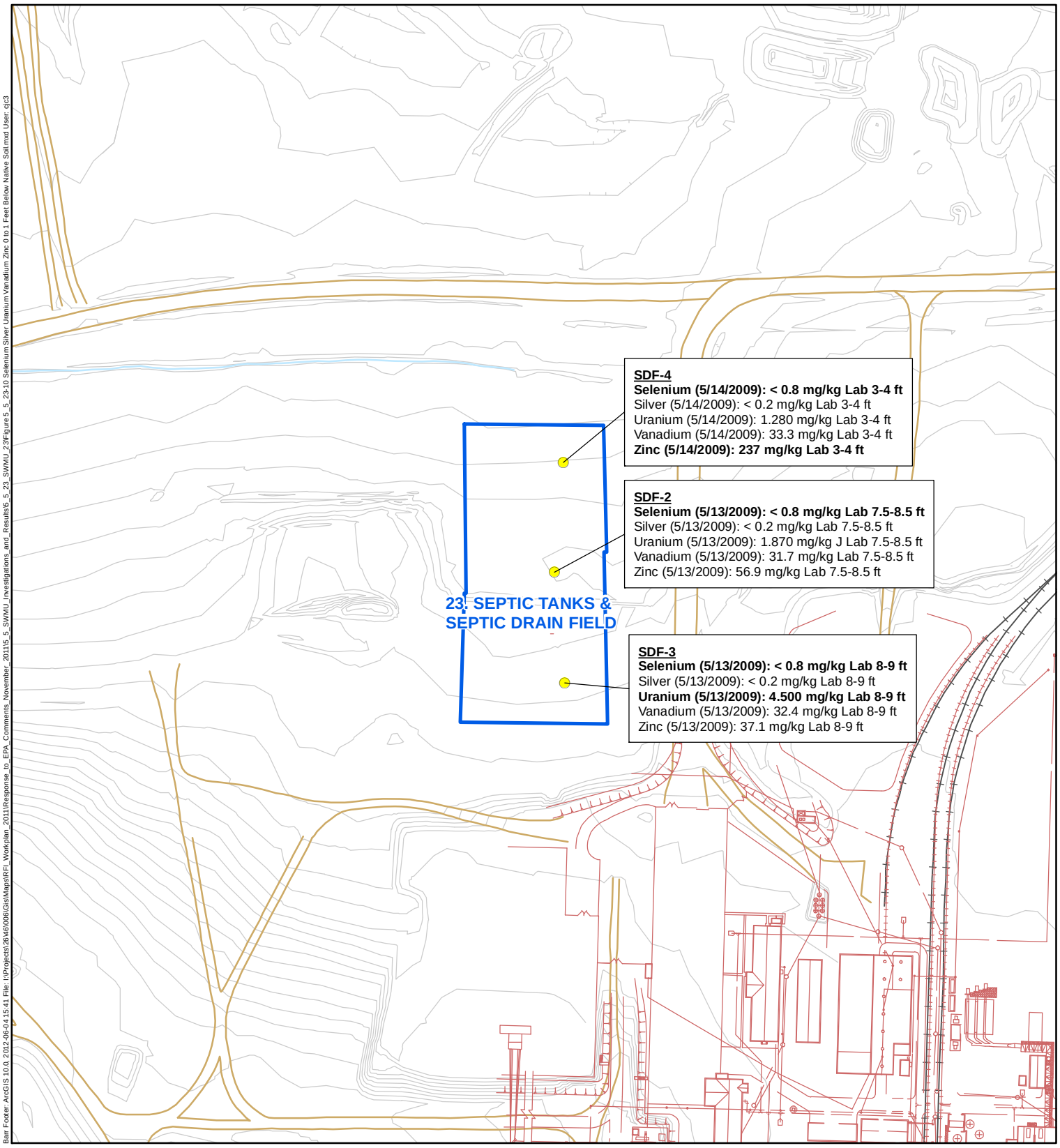
Bold font idicates that sample concentration is greater than the 95% UPL Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.23-9

SWMU 23
IRON, MANGANESE, NICKEL, AND LEAD,
8-10 FEET BELOW NATIVE SOIL
Rhodia Silver Bow Plant
Montana



Sample Location
SWMU 23
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

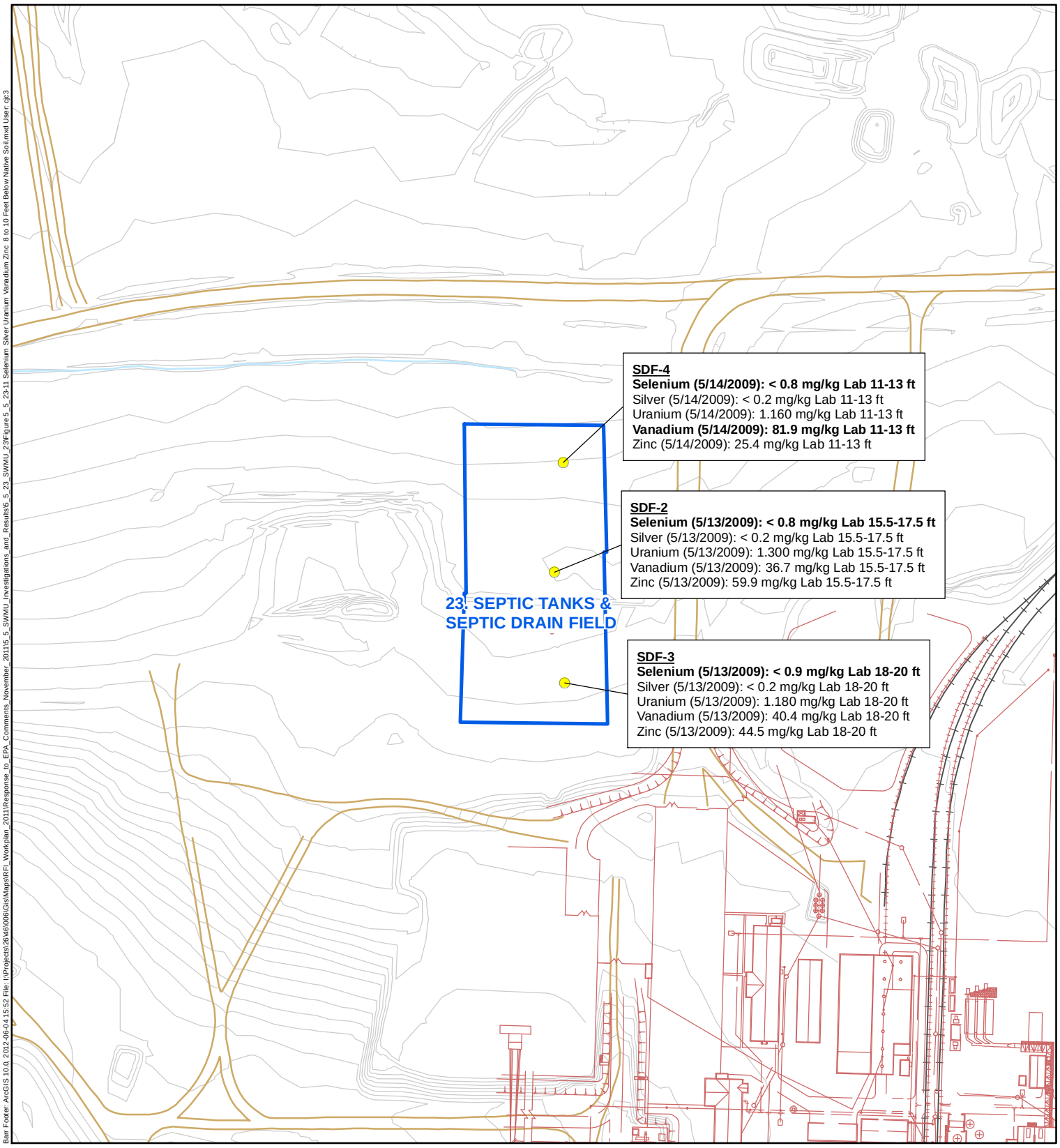
Bold font indicates that sample concentration is greater than the 95% UPL Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.23-10

SWMU 23
SELENIUM, SILVER, URANIUM, VANADIUM, AND ZINC,
0-1 FEET BELOW NATIVE SOIL
Rhodia Silver Bow Plant
Montana



Barr Footer: ArcGIS 10.0, 2012-06-04 15:52 File: I:\Projects\2646\006\GisMaps\RFI_Workplan_2011\Response_to_EPA_Comments_November_201115_5_SWMU_Investigations_and_Results\5_5_23_SWMU_23\Figure 5_5_23-11 Selenium Silver Uranium Vanadium Zinc 8 to 10 Feet Below Native Soil.mxd User: cjc3

Sample Location

SWMU 23

Elevation Contour

Drainage

Railroad

Road

Former Plant Structures

Bold font idicates that sample concentration is greater than the 95% UPL Reference Area Concentration.

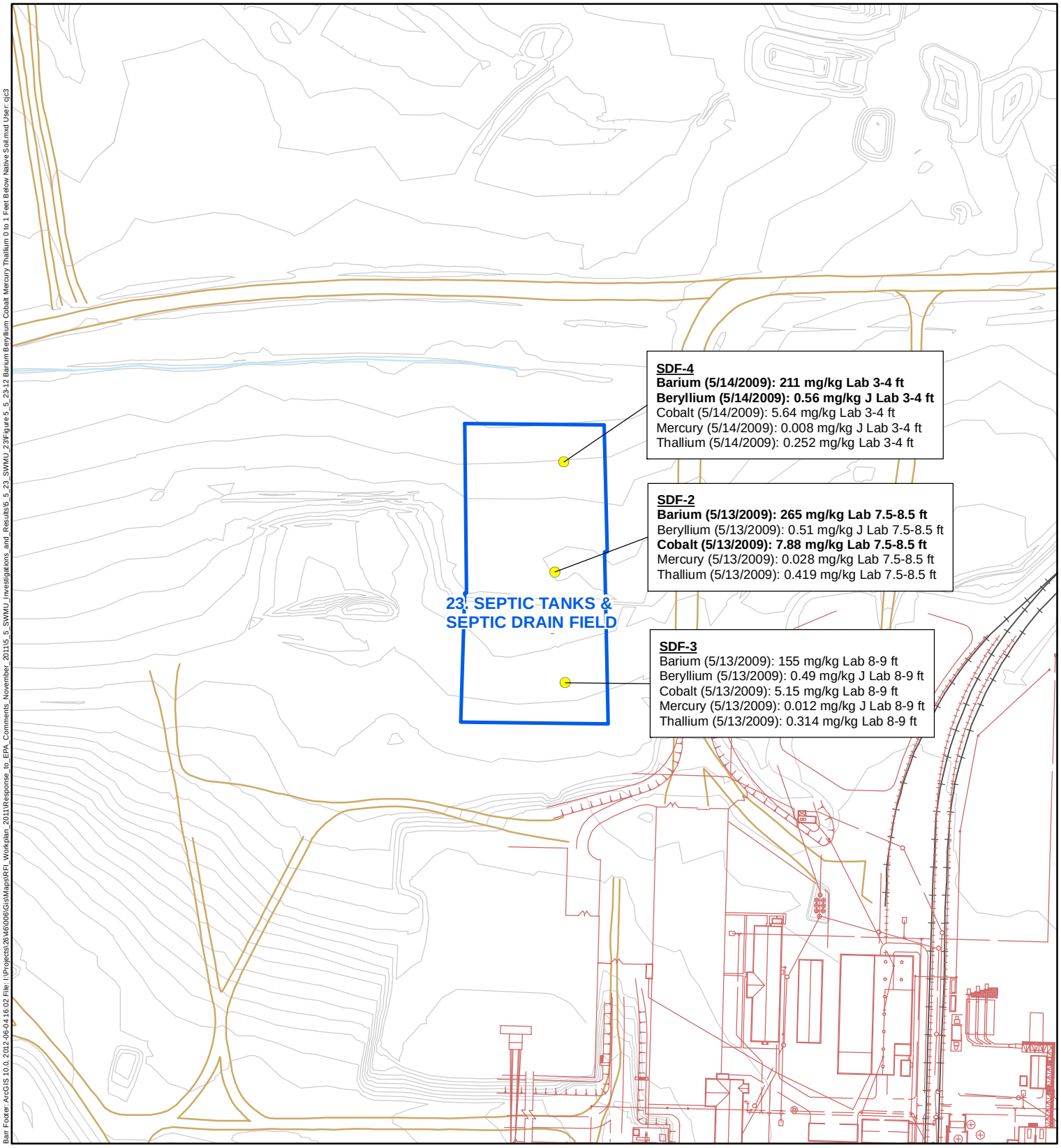
N

Feet

200 0 200

Figure 5.5.23-11

SWMU 23
SELENIUM, SILVER, URANIUM, VANADIUM, AND ZINC,
8-10 FEET BELOW NATIVE SOIL
Rhodia Silver Bow Plant
Montana



Barr Footer: ArcGIS 10.0, 2012-06-04 16:02 File: I:\Projects\2646\006\GisMaps\RFI_Workplan_2011\Response_to_EPA_Comments_November_2011\5_5_SWMU_Investigations_and_Results\5_5_23_SWMU_23\Figure 5_5_23-12 Barium Beryllium Cobalt Mercury Thallium 0 to 1 Feet Below Native Soil.mxd User: cjc3

Sample Location

SWMU 23

Elevation Contour

Drainage

Railroad

Road

Former Plant Structures

Bold font indicates that sample concentration is greater than the 95% UPL Reference Area Concentration.

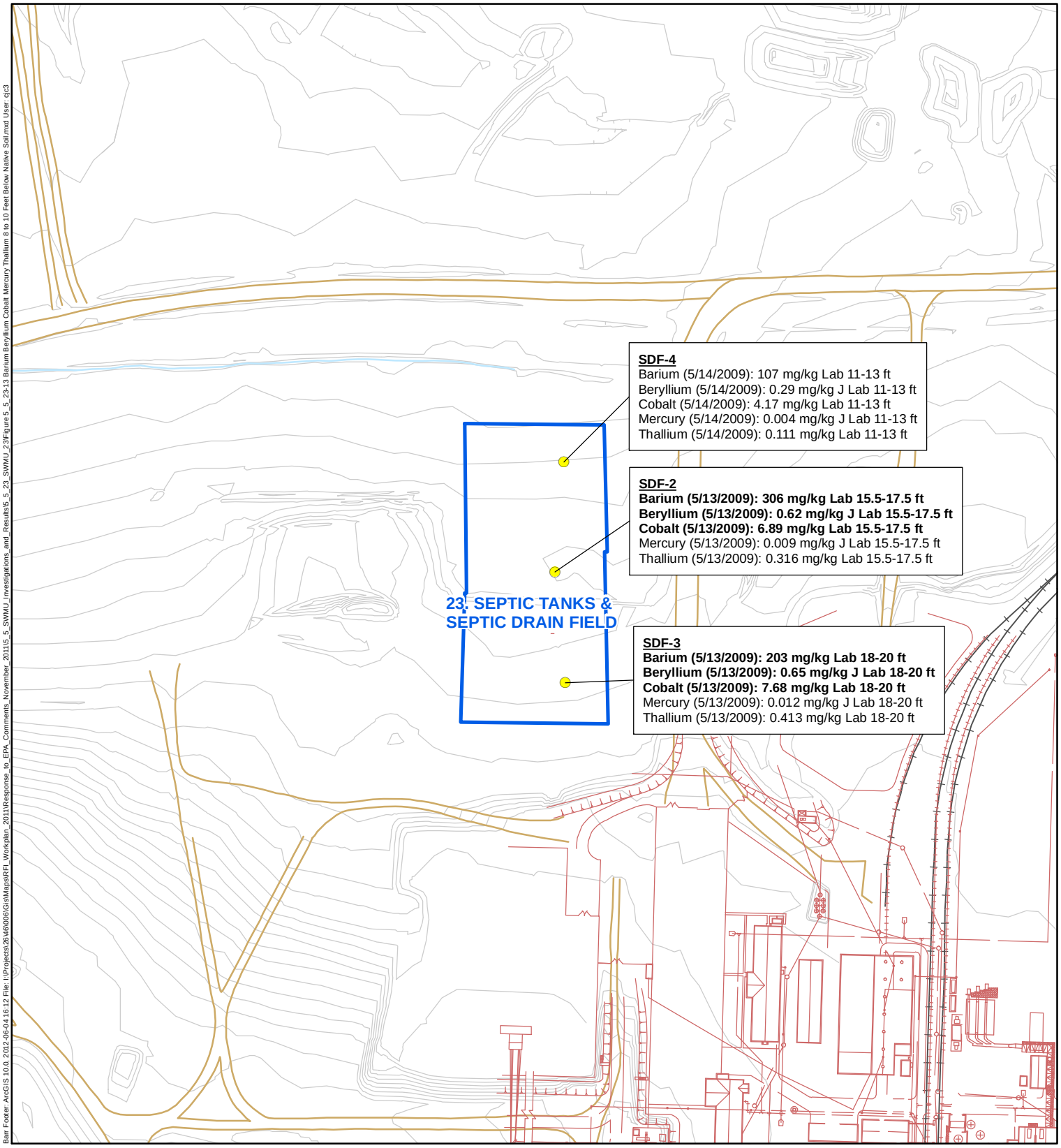
N

Feet

200 0 200

Figure 5.5.23-12

SWMU 23
BARIUM, BERYLLIUM, COBALT, MERCURY, AND THALLIUM, 0-1 FEET BELOW NATIVE SOIL
Rhodia Silver Bow Plant
Montana



Barr Footer: ArcGIS 10.0, 2012-06-04 16:12 File: I:\Projects\26\46\006\GisMaps\RFI_Workplan_2011\Response_to_EPA_Comments_November_201115_5_SWMU_Investigations_and_Results\5_5_23_SWMU_23\Figure 5_5_23-13 Barium Beryllium Cobalt Mercury Thallium 8 to 10 Feet Below Native Soil.mxd User: cjc3

Sample Location
SWMU 23
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

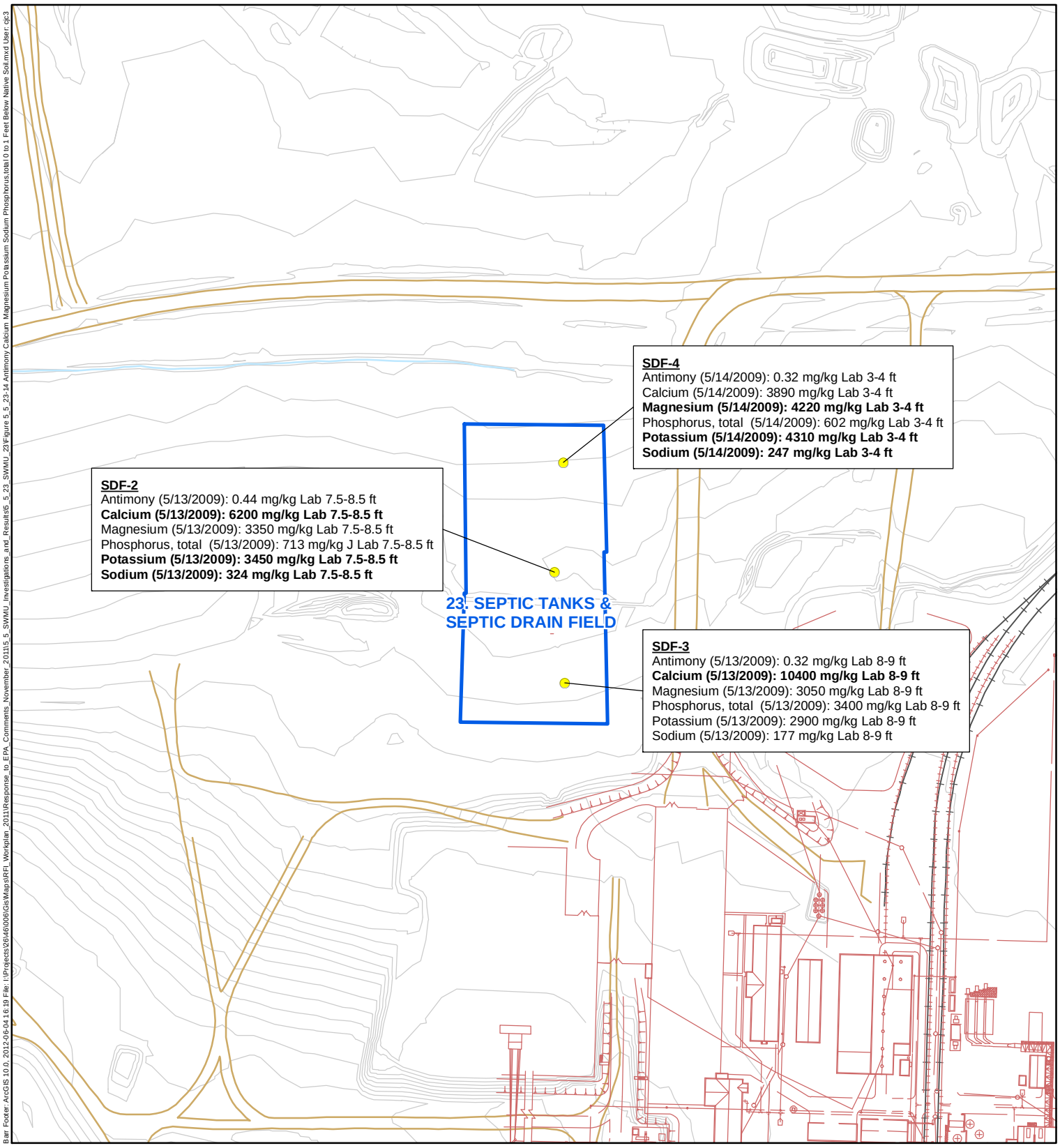
Bold font idicates that sample concentration is greater than the 95% UPL Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.23-13

SWMU 23
BARIUM, BERYLLIUM, COBALT, MERCURY, AND THALLIUM, 8-10 FEET BELOW NATIVE SOIL
Rhodia Silver Bow Plant
Montana



Barr Footer: ArcGIS 10.0, 2012-06-04 16:19 File: I:\Projects\26\46\006\Gis\Maps\RFI_Workplan_2011\Response_to_EPA_Comments_November_2011\5_5_SWMU_Investigations_and_Results\5_5_23_SWMU_23\Figure 5_5_23-14 Antimony Calcium Magnesium Potassium Sodium Phosphorus,total 0 to 1 Feet Below Native Soil.mxd User: cjc3

Sample Location
SWMU 23
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

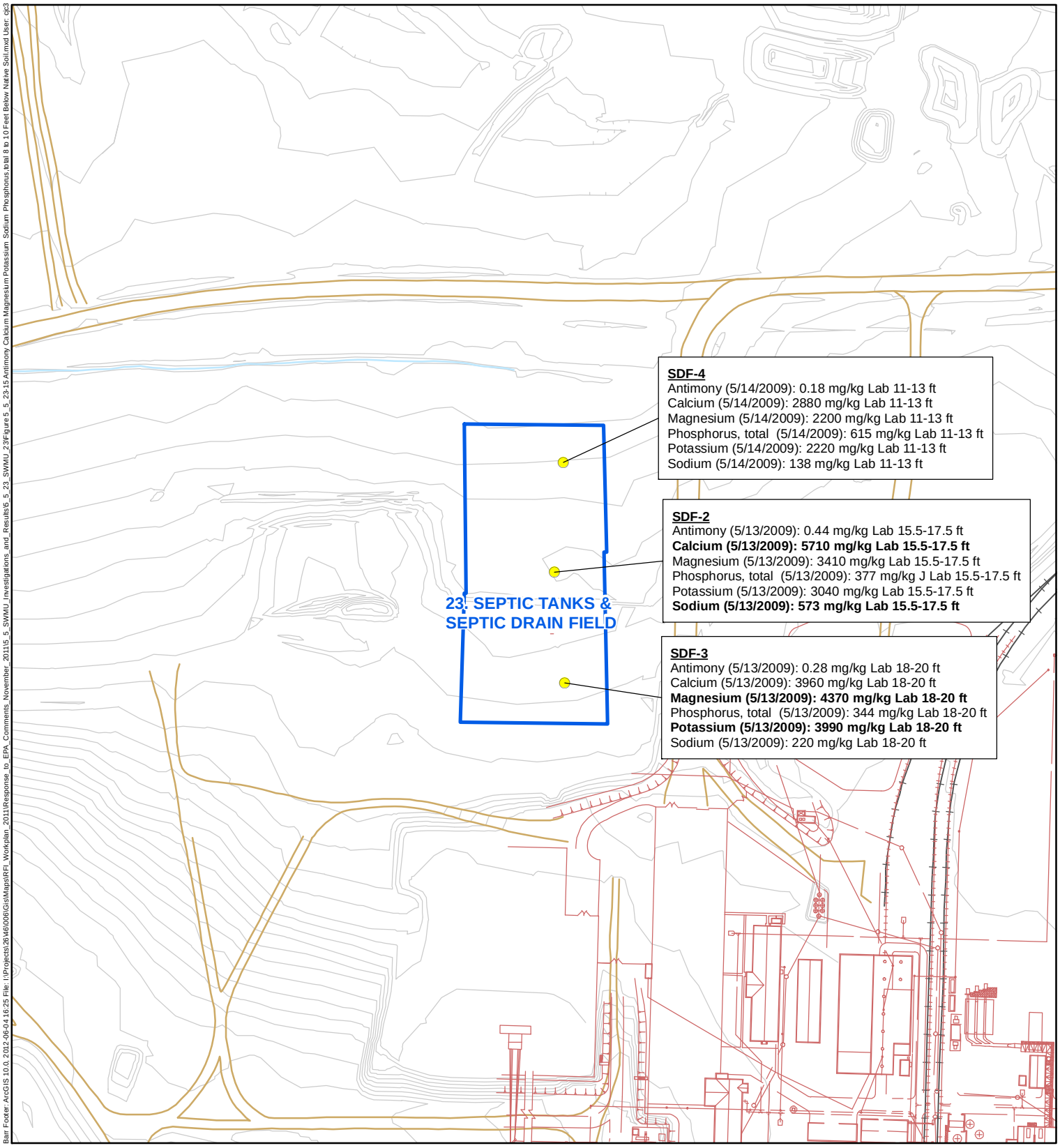
Bold font indicates that sample concentration is greater than the 95% UPL Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.23-14

SWMU 23
ANTIMONY, CALCIUM, MAGNESIUM, POTASSIUM, SODIUM, AND PHOSPHORUS, TOTAL, 0-1 FEET BELOW NATIVE SOIL
Rhodia Silver Bow Plant
Montana



Barr Footer: ArcGIS 10.0, 2012-06-04 16:25 File: I:\Projects\2646\006\GisMaps\RFI_Workplan_2011\Response_to_EPA_Comments_November_201115_5_SWMU_Investigations_and_Results\5_5_23_SWMU_23\Figure 5_5_23-15 Antimony Calcium Magnesium Potassium Sodium Phosphorus, total 8 to 10 Feet Below Native Soil.mxd User: gc3

Sample Location

SWMU 23

Elevation Contour

Drainage

Railroad

Road

Former Plant Structures

Bold font idicates that sample concentration is greater than the 95% UPL Reference Area Concentration.

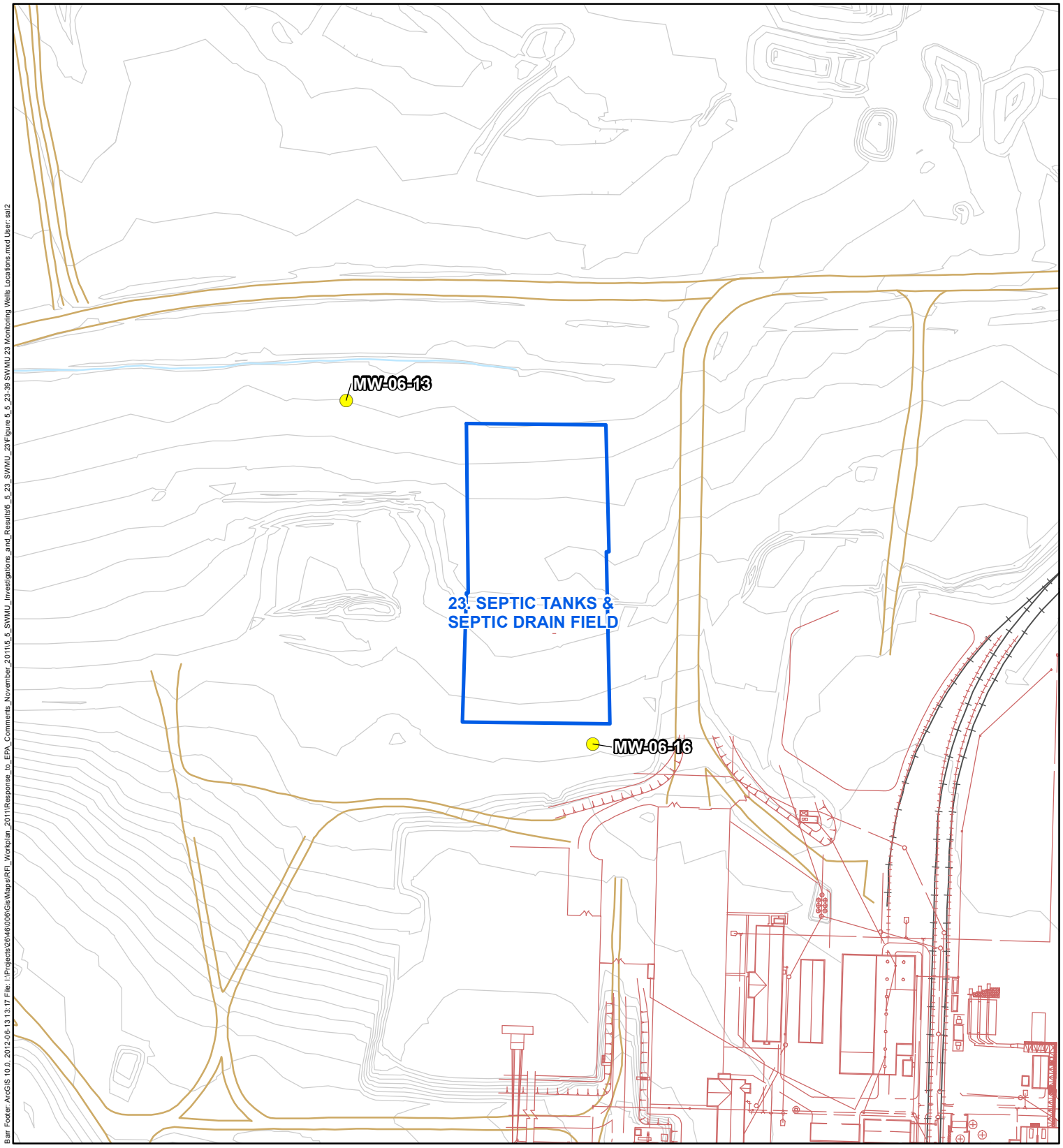
N

Feet

200 0 200

Figure 5.5.23-15

SWMU 23
ANTIMONY, CALCIUM, MAGNESIUM, POTASSIUM, SODIUM, AND PHOSPHORUS, TOTAL, 8-10 FEET BELOW NATIVE SOIL
Rhodia Silver Bow Plant
Montana



Barr Footer: ArcGIS 10.0, 2012-06-13 13:17 File: I:\Projects\26\46\006\Gis\Maps\RFI_Workplan_2011\Response_to_EPA_Comments_November_2011\5_5_SWMU_Investigations_and_Results\5_5_23_SWMU_23\Figure 5_5_23-39 SWMU 23 Monitoring Wells Locations.mxd User: sal2

Monitoring Well
SWMU 23
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

N

Feet
200 0 200

Figure 5.5.23-16

SWMU 23
MONITORING WELLS
LOCATIONS
Rhodia Silver Bow Plant
Montana

Appendices

Appendix 5.5.23-A

Soil Boring Logs

LOG OF Boring SDF-1

SHEET 1 OF 1

Client Rhodia
Project Name Rhodia RFI
Number 26/46-006
Location Silver Bow, Montana

Drill Contractor O'Keefe
Drill Method HSA
Drilling Started 5/14/09 Ended 5/14/09
Logged By MMB

Elevation --
Total Depth 8.0

DEPTH FEET	SAMP. LENGTH & RECOVERY	SAMP. NUMBER	Blows/6 in.	Discoloration-Odor-Sheen	Moisture	ASTM	LITHOLOGY	DESCRIPTION	DEPTH FEET
		1	6-14-18-26	None None None	Dry			0-2': Clayey Silt grading to Silt with 10% fine-grained sand, 1% medium-grained sand, brown(10 yr 5/3) to light yellowish brown(2.5 yr 6/3), rootlets to 1' bgs, few upper coarse grained sand to coarse fine gravel.	
2						ML/CL		2-4': Possibly some clay in matrix.	2
		2	19-29-35-41	None None None	Dry-Moist				
4								5-6': Silty clay , light olive brown(2.5 yr 5/6) mottles below 5', mottles are lenticular.	4
		3	14-22-23-27	None None None	Dry	CL			
6								6-8': Clayey sand with silt, fine to medium grained, light yellowish brown(7.5 y 5/3).	6
		4	14-28-29-33	None None None	Dry	SC			
8								End of Boring - 8 feet	8
10									10
12									12
14									14

Barr Engineering Co.
4700 West 77th Street, Suite 200
Minneapolis, MN 55435-4803
Telephone: (952) 832-2600
Fax: (952) 832-2601

Remarks: No analytical samples collected.

BGS = "below ground surface"
Additional data may have been collected in the field which is not included on this log.

LOG OF Boring SDF-2

SHEET 1 OF 1

Client Rhodia
Project Name Rhodia RFI
Number 26/46-006
Location Silver Bow, Montana

Drill Contractor O'Keefe
Drill Method HSA
Drilling Started 5/13/09 Ended 5/13/09
Logged By KAM

Elevation --
Total Depth 18.0

DEPTH FEET	SAMP. LENGTH & RECOVERY	SAMP. NUMBER	Blows/6 in.	Discoloration-Odor-Sheen	Moisture	ASTM	LITHOLOGY	DESCRIPTION	DEPTH FEET
		1	4-10-28-42	None None None	Moist	ML-CL		0-1': Sandy silt grading to sand lean clay, ~20% fine to coarse-grained sand, trace fine gravel mottled light yellow brown(2.5 y 6/3) and brown(10 y 4/3) firm, cohesive silt when wetted, medium plasticity/tought for clay.	
						Slag		1-7.5': Gray slag fine to coarse-grained sand size with angular pieces up to 2" observed in split spoon, very moist at base.	
		2	39-81-70-72	None None None	Moist				
5		3	150---	None Slight None	Moist				5
		4	111-104-51-43	None Slight None	Moist-Wet				
		5	20-26-39-37	None None None	Moist	ML		7.5-8': Silt, trace to 5% fine to medium-grained sand, firm, light yellow brown(2.5 y 6/3) abundant mica, few strong brown(7.5 y 5/6) oxidation around sand grains. Becomes firm to hard below ~9' bgs.	
10		6	11-14-17-22	None None None	Moist				10
		7	10-16-27-27	None None None	Moist			Fine-grained sand stringer(1 mm) observed at ~13.6' bgs.	
15		8	13-15-14-22	None None None	Moist-Very Moist			Fine-grained sand stringer observed ~14.3-14.5' bgs, very moist. Silt becomes soft below sand stringer.	15
		9	11-15-14-22	None None None	Very Moist-Moist			Very moist fine-grained sand stringer at ~16.3' bgs, silt is soft-firm, becomes firm to hard with depth. Boring created from bottom up with Bentonite chips.	
								End of Boring - 18 feet	

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Minneapolis, MN 55435-4803
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Fax: (952) 832-2601

Remarks: Collect analytical samples SDF-2 7.5-8.5', SDF-2 15.5-17.5'

BGS = "below ground surface"
Additional data may have been collected in the field which is not included on this log.

LOG OF Boring SDF-3

SHEET 1 OF 1

Client Rhodia
Project Name Rhodia RFI
Number 26/46-006
Location Silver Bow, Montana

Drill Contractor O'Keefe
Drill Method HSA
Drilling Started 5/13/09 Ended 5/13/09
Logged By KAM

Elevation --
Total Depth 20.0

DEPTH FEET	SAMP. LENGTH & RECOVERY	SAMP. NUMBER	Blows/6 in.	Discoloration-Odor-Sheen	Moisture	ASTM	LITHOLOGY	DESCRIPTION	DEPTH FEET
		1	3-9-17-49	None None None	Moist	OL/OH		0-0.2': Silty organic soil roots/plant material present very dark gray-brown(2.5 y 3/2).	
						CL		0.2-1.9': Sandy lean clay ~30% fine to coarse-grained sand, trace fine gravel, firm medium plasticity & toughness, roots present throughout, brown(10 y 5/3).	
						SM		1.9-2': Silty sand, fine to medium-grained, ~15% coarse-grained, ~20% silty fines, light yellow-brown(2.5 y 6/4).	
		2	57-66-67-66	None None None	Moist	SP		2-4': Poorly graded sand with gravel, medium to coarse-grained sand, ~ 15-20% fine gravel, granitic composition, angular to sub-angular with some sub-round fine gravel, trace fines generally light yellow brown(2.5 y 6/3).	
5		3	45-51-52-64	None None None	Moist-Dry	SP		4-6': Poorly graded sand with gravel, medium to coarse-grained sand, ~ 15-20% gravel, granitic composition, angular to sub-angular with some sub-round fine gravel, trace fines generally light yellow brown(2.5 y 6/3). 5mm lens of fine-grained black sand, sub-round to round.	5
		4	200---	None None None	Moist-Dry	SP		6-7.5': Poorly graded sand with gravel, medium to coarse-grained sand, ~ 15-20% gravel, granitic composition, angular to sub-angular with some sub-round fine gravel, trace fines generally light yellow brown(2.5 y 6/3). Sampler obstruction encountered at 6.4' bgs. Gravel observed in soil cuttings while hollow stem augers are advanced to 8' bgs.	
		5	14-24-26-36	None None None	Moist	ML		8-11.8': Sandy silt, firm ~20% fine to coarse-grained sand, cohesive when wetted, abundant mica,(native soil) yellow-brown(10 y 5/4), trace fine gravel. (contact with poorly graded sand above estimated) Driller reports softer material encountered at 7.7' bgs.	
10		6	17-32-35-36	None None None	Moist				10
		7	14-15-14-19	None None None	Moist	SP		11.8-13.5': Poorly graded sand, fine to medium-grained with ~20-25% coarse-grained sand, trace fine gravel, sub-round grains and clasts, abundant mica.	
15		8	12-13-25-26	None None None	Moist	ML		13.5-20': Silt, trace 5% fine-grained sand, firm, laminated(~1-3 mm) valved light yellow brown(2.5 y 6/3) and light brown gray(2.5 y 6/2). Some stained brown(7.5 y 5/6) oxidation around fine-grained sand grains, gives mottled appearance, abundant mica. Lens of poorly graded sand(sp) observed from 15.4-15.6 bgs. Fine to medium-grained sand with ~ 5% fines, light olive brown(2.5 y 5/4). 16-18': Very poor recovery.	15
		9	20-20-27-27	None None None	Moist				
		10	14-25-33-46	None None None	Moist			Boring grouted from bottom up with bentonite chips.	
								End of Boring - 20 feet	

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4700 West 77th Street, Suite 200
Minneapolis, MN 55435-4803
Telephone: (952) 832-2600
Fax: (952) 832-2601

Remarks: Collect analytical samples SDF-3 8-9', SDF-3 18-20'

BGS = "below ground surface"
Additional data may have been collected in the field which is not included on this log.

LOG OF Boring SDF-4

SHEET 1 OF 1

Client Rhodia
Project Name Rhodia RFI
Number 26/46-006
Location Silver Bow, Montana

Drill Contractor O'Keefe
Drill Method HSA
Drilling Started 5/14/09 Ended 5/14/09
Logged By MMB

Elevation --
Total Depth 13.0

DEPTH FEET	SAMP. NUMBER	SAMP. LENGTH & RECOVERY	Blows/6 in.	Discoloration-Odor-Sheen	Moisture	ASTM	LITHOLOGY	DESCRIPTION	DEPTH FEET
	1		11-15-15-13	None None None	Dry	FILL		0-2': Fill, texture is silty fine-grained sand, yellowish brown(10 yr 5/4) with ~5% slag pieces and silica rock.	
2	2		9-14-8-21	None None None	Dry	SM		3-4': Silty fine grained sand, light yellowish brown (10 yr 6/3), trace clay, mica present.	2
4	3		12-18-23-27	None None None	Dry	CL		4-6': Sandy clay, light olive brown(2.5 yr 5/3), dense, homogeneous, apparent decayed woody material and some lenticular light olive brown mottling.	4
6	4		12-31-37-32	None None None	Dry	SM		6-8': Silty sand with <2% gravel and some clay, light yellowish brown with thin lenses of medium-grained sand (quartz, plagioclase and mica).	6
8	5		13-17-21-24	None None None	Moist	SC		8-10': Clayey sand with some silt, light yellowish brown(2.5 yr 6/3), lenses of fine to medium-grained sand(sp), 2-4" thick.	8
10	6		16-18-30-26	None None None	Moist	SM		10-12': Silty sand with 10% gravel, light yellowish brown(2.5 yr 6/3).	10
12	7		36-42--	None None None	Wet	CL		12-13': Sandy clay, light olive brown(2.5 yr 5/3).	12
								End of Boring - 13 feet	
14									14

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Remarks: Collect Analytical samples: SDF-4 3-4', SDF-4 11-13'

BGS = "below ground surface"
Additional data may have been collected in the field which is not included on this log.

Appendix 5.5.23-B

Monitoring Well Logs for SWMU 23

LOG OF BORING MW-06-13

Client Rhodia
Project Name Rhodia RFI
Number 26/46-006
Location Silver Bow, Montana

Drill Contractor O'Keefe
Drill Method HSA
Drilling Started 10/2/06 Ended 10/2/06
Logged By JAM2

Elevation 5327.5
Total Depth 29.0

DEPTH FEET	SAMP. LENGTH & RECOVERY	SAMP. NUMBER	Blows/6 in.	Discoloration-Odor-Sheen	Moisture	ASTM	LITHOLOGY	DESCRIPTION	WELL OR PIEZOMETER CONSTRUCTION DETAIL	ELEV. FEET
		1	42-44-25-31	None None None	Dry			SILT with GRAVEL and SAND: Silt with angular gravel and cobbles, and fine-grained sand. Color grades from black at 0' to dark brown at 2' bgs. Unit is homogeneous and well cemented. Roots/organic matter observed from 0 to 1' bgs.	6" Steel Protop with Vented Cap	
		2	33-50->50->50	None None None	Dry			Light grayish brown silt with angular gravel and cobbles, and fine-grained sand from 2 to 4' bgs. Unit is homogeneous with portions very well cemented. Sample has low to no dry strength, rapid dilatancy, low toughness and low plasticity. Streaks of white precipitate observed throughout sample.	3' ags-8' bgs: 2" Sch 40 PVC Riser 0-5.6': Neat Cement Grout	5325
5		3	29-44-38-42	None None None	Dry			Silt, as above, with reduced gravel and sand content from 4 to 10' bgs. Unit has abundant white precipitate.		
		4	24-36-45-42	None None None	Dry	ML		Color changes to dark brown from 6 to 10' bgs.	5.6-6.3': Bentonite Well Seal 6.3-29': Sand Pack, 20/40 Sand	5320
		5	23-28-32-36	None None None	Dry					
10		6	6-6-6-7	None None None	Moist			Clay content increases from 10 to 13.9' bgs. Unit has rapid dilatancy, moderate plasticity and moderate toughness.		
		7	6-7-34->50	None None None	Moist			Whitish gray, angular gravel and cobbles with fine to coarse-grained sand observed from 13.9 to 14' bgs. Unit is poorly sorted and may be broken cobble due to the high blow count.		5315
15		8	>50->50->50-22	None None None	Moist to Wet	SP-SM		GRAVEL and SAND with SILT: Poorly sorted, angular, fine to coarse-grained gravel and fine to coarse-grained sand with silt. Sample has a mottled appearance with color ranging from black to dark reddish brown. Upper portion of sample (approximately 1 inch) is grayish black crystalline rock broken into angular gravel and cobble size pieces.		
		9	13-12-13-11	None None None	Wet Moist	SP-SM ML		GRAVEL and SAND with SILT: Fine to coarse-grained, angular gravel and fine to coarse-grained sand. Sand is predominately quartz with angular to sub-round grains. Unit is poorly sorted and mica-rich.	8-28': 2"X20' Sch 40 PVC 0.010 Slot Screen	5310
		10	11-13-18-20	None None None	Moist			SILT: Light reddish brown silt with a trace of gravel and fine-grained sand. Unit is homogeneous. Silt becomes mica-rich at 18' bgs.		
								(continued)		

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Remarks:

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Additional data may have been collected in the field which is not included on this log.

LOG OF BORING MW-06-13

Client Rhodia
Project Name Rhodia RFI
Number 26/46-006
Location Silver Bow, Montana

Drill Contractor O'Keefe
Drill Method HSA
Drilling Started 10/2/06 Ended 10/2/06
Logged By JAM2

Elevation 5327.5
Total Depth 29.0

DEPTH FEET	SAMP. LENGTH & RECOVERY	SAMP. NUMBER	Blows/6 in.	Discoloration-Odor-Sheen	Moisture	ASTM	LITHOLOGY	DESCRIPTION	WELL OR PIEZOMETER CONSTRUCTION DETAIL	ELEV. FEET
		11	12-18-24-33	None None None	Moist	ML		SILT: Light reddish brown silt with a trace of gravel and fine-grained sand. Unit is homogeneous.*(continued)* Sample has some (less than one inch) intervals that are wet from 20 to 22' bgs.		5305
25		12	12-18-22-28	None None None	Moist					
		13	14-20-21-34	None None None	Moist					5300
								End of Boring - 29 feet		
30										5295
35										5290

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LOG OF BORING MW-06-16

SHEET 1 OF 2

Client Rhodia
Project Name Rhodia RFI
Number 26/46-006
Location Silver Bow, Montana

Drill Contractor O'Keefe
Drill Method HSA
Drilling Started 9/30/06 Ended 10/1/06
Logged By KAM

Elevation 5343.7
Total Depth 37.5

DEPTH FEET	SAMP. NUMBER	SAMP. LENGTH & RECOVERY	Blows/6 in.	Discoloration-Odor-Sheen	Moisture	ASTM	LITHOLOGY	DESCRIPTION	WELL OR PIEZOMETER CONSTRUCTION DETAIL	ELEV. FEET
	1		15-27-43-69	None None None	Dry	SM		GRASS SILTY SAND: Brown, fine-grained silty sand with 20% medium to coarse-grained sand and 3% fine gravel. Sample has approximately 25% fines and angular to sub-round grains/clasts.	6" Steel Protop with Vented Cap	
	2		30-31-31-36	None None None	Dry	SC		CLAYEY SAND: Light yellowish brown, hard, fine to medium-grained sand with 15% coarse-grained sand and 3% lower fine gravel. Sample has approximately 40% fines, angular to sub-round grains/clasts, and low cohesiveness when wetted.	2.5' ags-17.5' bgs: 2" Sch 40 PVC Riser	5340
5	3		30-26-21-21	None None None	Dry	SM		SILTY SAND: Light yellowish brown to pale brown, fine to medium-grained sand with 20% coarse-grained sand and 10% fine gravel. Sample has approximately 15% fines, angular to sub-round grains/clasts, and some mica present.	0-12.5': Neat Cement Grout	
	4		7-16-19-26	None None None	Moist	ML		SILT: Yellowish brown silt with approximately 5% fine to medium-grained sand, trace coarse-grained sand, and lower fine gravel. Sample has angular to sub-round grains/clasts. Sample is firm to hard and homogeneous.		
	5		14-26-22-25	None None None	Moist					5335
10	6		9-14-14-21	None None None	Moist					
	7		12-16-17-21	None None None	Moist	ML		SILT with SAND: Yellowish brown silt with approximately 15% fine to coarse-grained sand and trace lower fine gravel. Sample is firm and homogeneous. Sample has abundant mica and very low cohesiveness when wetted.	12.5-14.5': Bentonite Well Seal	5330
15	8		9-12-22-28	None None None	Moist				14.5-37.5': Sand Pack, 20/40 Sand	
	9		16-16-12-20	None None None	Moist	SP		POORLY GRADED SAND: Light yellowish brown, fine to coarse-grained, 3 to 5% lower fine gravel, and 3 to 5% fines.		
						CL/CH		SILTY CLAY: Light yellowish brown silty clay with approximately 5 to 10% fine to coarse-grained sand, and approximately 5% fine, gravel size pieces of clay nodules and mudstone.		
	10		12-16-32-30	None None None	Moist	SM				5325

(continued)

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Remarks: Samples were collected using a 3 inch split spoon from 0 to 10' bgs and a 2 inch split spoon from 10 to 35' bgs.

BGS = "below ground surface"
Additional data may have been collected in the field which is not included on this log.

LOG OF BORING MW-06-16

Client Rhodia
Project Name Rhodia RFI
Number 26/46-006
Location Silver Bow, Montana

Drill Contractor O'Keefe
Drill Method HSA
Drilling Started 9/30/06 Ended 10/1/06
Logged By KAM

Elevation 5343.7
Total Depth 37.5

DEPTH FEET	SAMP. LENGTH & RECOVERY	SAMP. NUMBER	Blows/6 in.	Discoloration-Odor-Sheen	Moisture	ASTM	LITHOLOGY	DESCRIPTION	WELL OR PIEZOMETER CONSTRUCTION DETAIL	ELEV. FEET
						SM		SILTY SAND: Yellowish brown, very fine to fine-grained sand with trace medium to coarse-grained sand and 30% fines. Sample coarsens with depth to 20% medium to coarse-grained and 5% lower fine gravel. Fines decrease with depth.*(continued)*		
		11	10-19-20-19	None None None	Moist to Very Moist	SP		POORLY GRADED SAND: Yellowish brown, fine to medium-grained sand with 20% coarse-grained sand, trace lower fine gravel, 5 to 7% fines, and angular to sub-round grains/clasts.		5320
25								SILT with SAND: Yellowish brown silt with approximately 15% fine to coarse-grained sand and trace lower fine gravel. Sample is non-cohesive and firm. Sample has angular to sub-round grains/clasts and abundant mica.	17.5-37.5': 2"x20' Sch 40 PVC 0.010 Slot Screen	
		12	9-10-19-36	None None None	Wet			Soil is soft to firm.		5315
30						ML				
		13	9-17-26-35	None None None	Wet			Sample is dark yellowish brown in color, and has very low cohesiveness and low dilatancy.		5310
35								A fine to coarse-grained sand lens with 3% lower fine gravel observed from 34.6 to 34.9' bgs.		
								End of Boring - 37.5 feet		5305

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Remarks: Samples were collected using a 3 inch split spoon from 0 to 10' bgs and a 2 inch split spoon from 10 to 35' bgs.

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