# SWMU 27 - Final Pump Station

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## 5.5.27 SWMU 27 - Final Pump Station

The location of Solid Waste Management Unit (SWMU) 27 is shown on Figure 5.5.27-1a and SWMU 27 monitoring stations and sample locations are provided on Figure 5.5.27-1b. SWMU 27 is located in the northern portion of the site, north of the main office building and access road to the maintenance shop and storeroom area. Groundwater monitoring well MW-06-17 is located just north of the station. The Final Pump Station was constructed in 1972 and improved in 1975 to pump storm water and uncontaminated cooling water to the tailing basin (SWMU 1). The pump station consists of a building, an underground concrete sump to collect the process water and storm water from the plant, and two pumps to move the water to the tailing basin. The pumps were automatically controlled by water level sensors in the concrete sump. When the water level in the sump reached a preset level, the first pump would turn on to remove the water. If the first pump failed to turn on, the second pump would be activated automatically to remove the water. The Final Pump Station was also equipped with a portable backup diesel generator. If the primary power to the station failed, the portable diesel generator would be started to supply power to the pumps. The Final Pump Station also captured overflow process water from the slag pits, overflow from the moat around the phosphorus storage tanks, overflows from the phosphorus production areas, over flow discharges from the Kiln dust collector scrubbers, and any other water collected by the storm water system.

### 5.5.27.1 RFI Investigation and Results

The Final Pump Station is inside a building with a concrete floor. In August 2008, U.S. EPA directed Rhodia to collect three surface soil samples near the Final Pump Station sump. Surface soil sample locations are shown on Figure 5.5.27-1b. Each sample was collected by advancing a decontaminated stainless-steel hand auger to a depth of 1 foot below ground surface (0 to 1 foot sample interval) then placing the recovered soil sample into a decontaminated stainless-steel bowl where it was homogenized and sampled as described in the Field Sampling Plan. These samples were analyzed for elemental phosphorus and metals and are summarized in Tables 5.5.27-1 and 5.5.27-2, respectively.

Elemental phosphorus was not detected at the detection limit of 0.00047 mg/kg (Figure 5.5.27-2).

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).

Several metals are present in the soil samples at concentrations above the respective background/reference area concentrations including antimony, beryllium, cadmium, calcium, chromium, lead, nickel, selenium, sodium, thallium, vanadium and zinc. The metals distribution is shown on Figures 5.5.27-3 through 5.5.27-7. FPS-3 typically has the highest metals concentrations. Risk assessment is needed to evaluate whether these metals represent an unacceptable risk to human health or the environment.

### 5.5.27.2 Conclusions

There is sufficient information to conduct the risk assessment for this SWMU 27. 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.

### 5.5.27.3 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

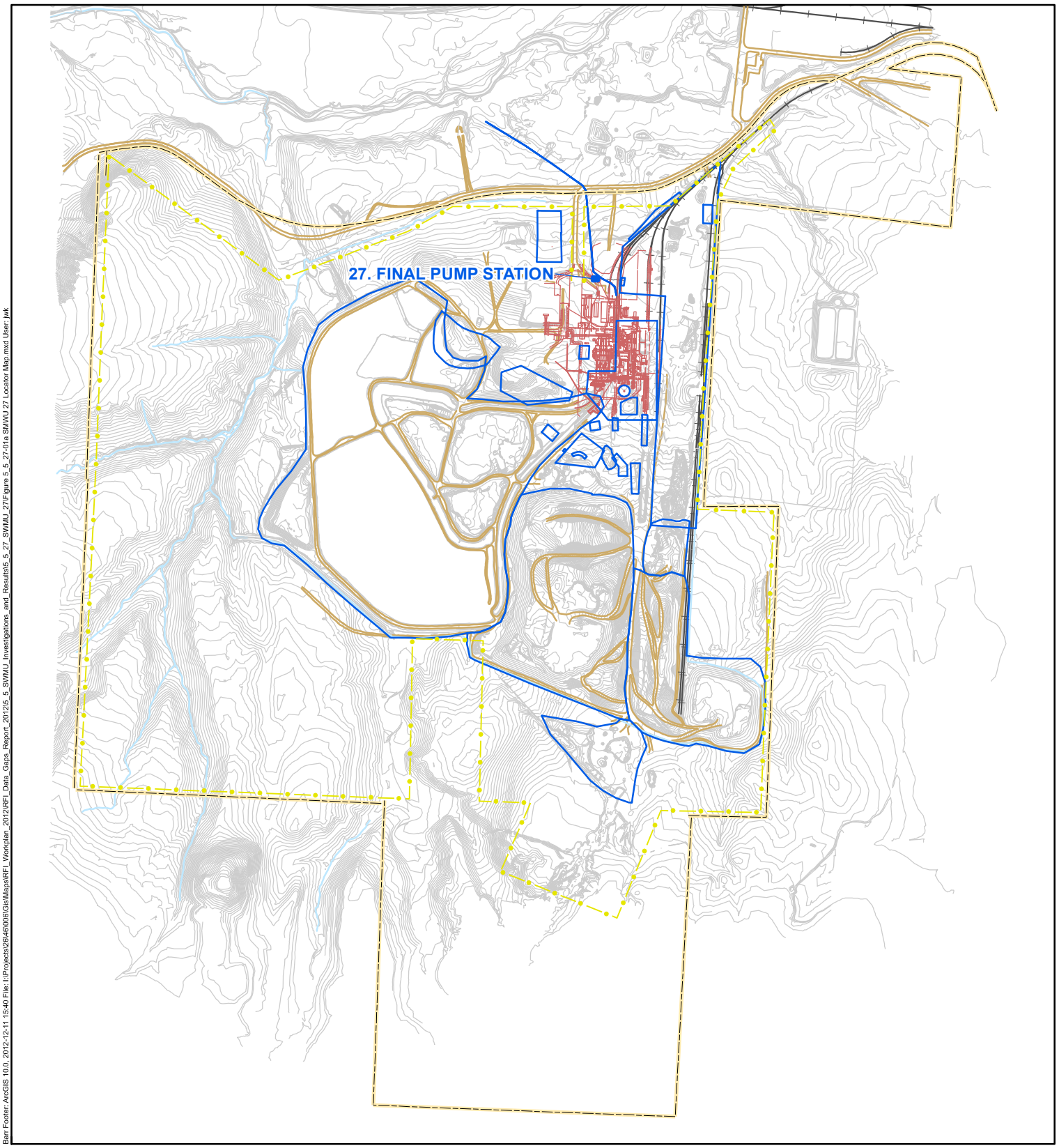
**Table 5.5.27-1**
**Soil Data - General and Site-Specific Parameters**
**SWMU 27**
**Rhodia Silver Bow Plant**
**[concentrations in mg/kg]**

| | | | Chemical Name | Phosphorus, elemental (white) |
|---|---|---|---|---|
| Location ID | Sample Date | Depth | Sample Type | |
| FPS-1 | 05/14/2009 | 0 - 1 ft | N | < 0.00047 |
| FPS-2 | 05/14/2009 | 0 - 1 ft | N | < 0.00047 |
| FPS-3 | 05/14/2009 | 0 - 1 ft | N | < 0.00047 |

**Table 5.5.27-2**
**Soil Data - Metals**
**SWMU 27**
**Rhodia Silver Bow Plant**
**[concentrations in mg/kg]**

| | | | Chemical Name | Antimony | Arsenic | Barium | Beryllium | Cadmium | Calcium | Chromium | Cobalt | Copper | Iron | Lead | Magnesium | Manganese | Mercury | Nickel | Potassium | Selenium | Silver | Sodium | Thallium | Uranium | Vanadium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Analysis Location | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | Lab | 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** | | | | | | | | | | | | | | | | | | | | | | | |
| FPS-1 | 5/14/2009 | 0 - 1 ft | N | ***1.47*** | 8.6 | **159 J** | ***1.08 J*** | ***15.9*** | ***101000*** | ***93.3 R*** | 3.2 | **38.9** | 12300 J | 15.8 R | ***5360 J*** | 226 | ***0.043*** | ***16.8*** | ***3330*** | ***2.7*** | ***1.4 J*** | ***605 J*** | ***0.999*** | ***16.3 R*** | ***91.7*** | ***251 J*** |
| FPS-2 | 5/14/2009 | 0 - 1 ft | N | ***2.20*** | 9.4 | **155** | ***1.49*** | ***61.8*** | ***160000*** | ***249*** | 2.4 | **55.7** | 12600 | ***542*** | ***4340*** | 188 | ***0.047*** | ***41.1*** | ***3710*** | ***5.2*** | ***2.9*** | ***1040*** | ***1.500*** | ***39.7 R*** | ***202*** | ***754*** |
| FPS-3 | 5/14/2009 | 0 - 1 ft | N | ***3.93*** | 21.7 | 132 | ***1.89*** | ***132*** | ***214000*** | ***402*** | 2.0 J | ***77.4*** | 7360 | ***50.6*** | 3140 | 134 | ***0.096*** | ***48.9*** | ***4450*** | ***8.3*** | ***11.0*** | ***2060*** | ***3.850*** | ***91.6 R*** | ***488*** | ***1380*** |

# Figures

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SWMU 27
Other SWMUs
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures
Property Boundary
Fence Line

N

Feet
1,000 0 1,000

Figure 5.5.27-1a

SWMU 27 LOCATION
Rhodia Silver Bow Plant
Montana

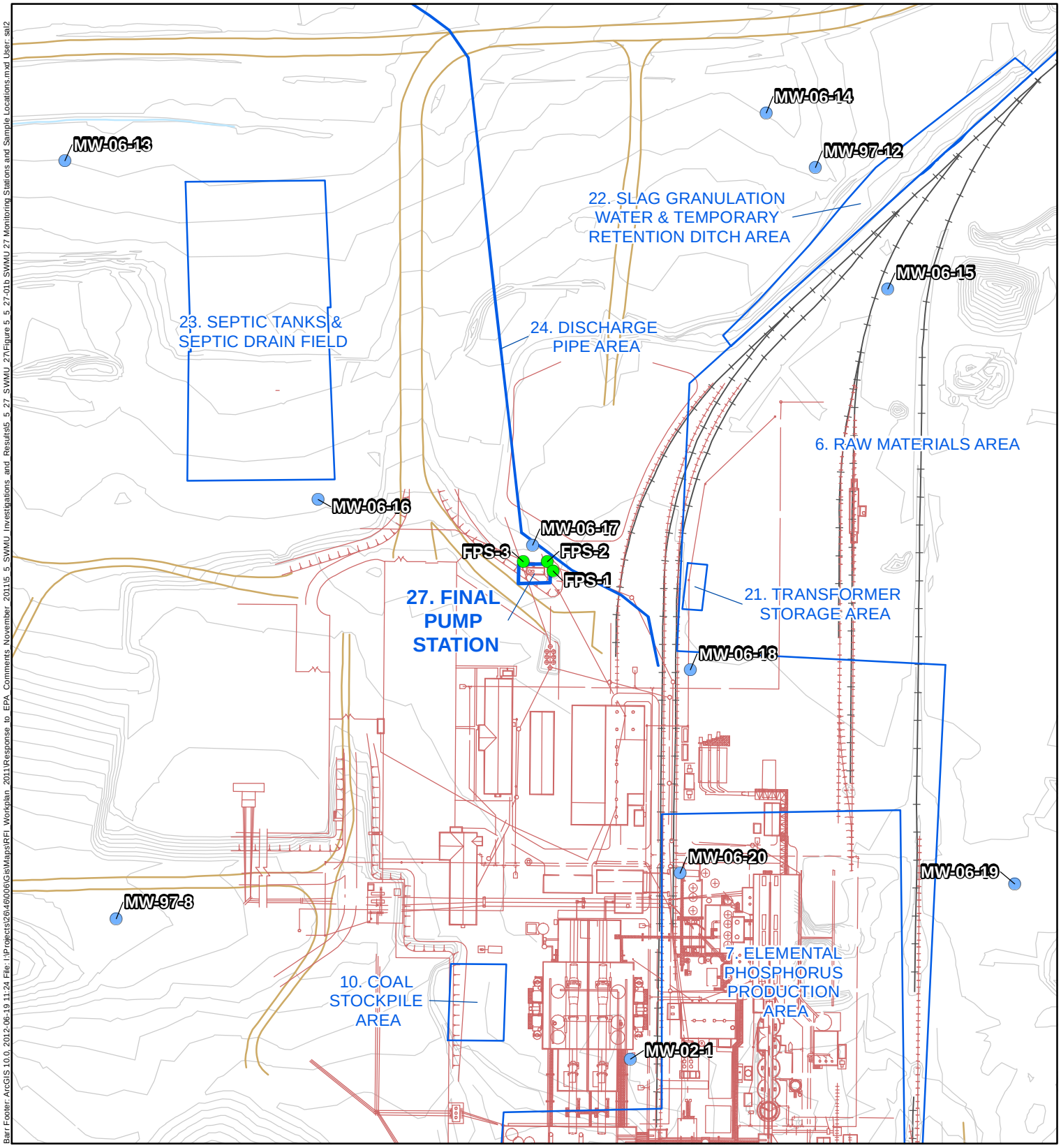
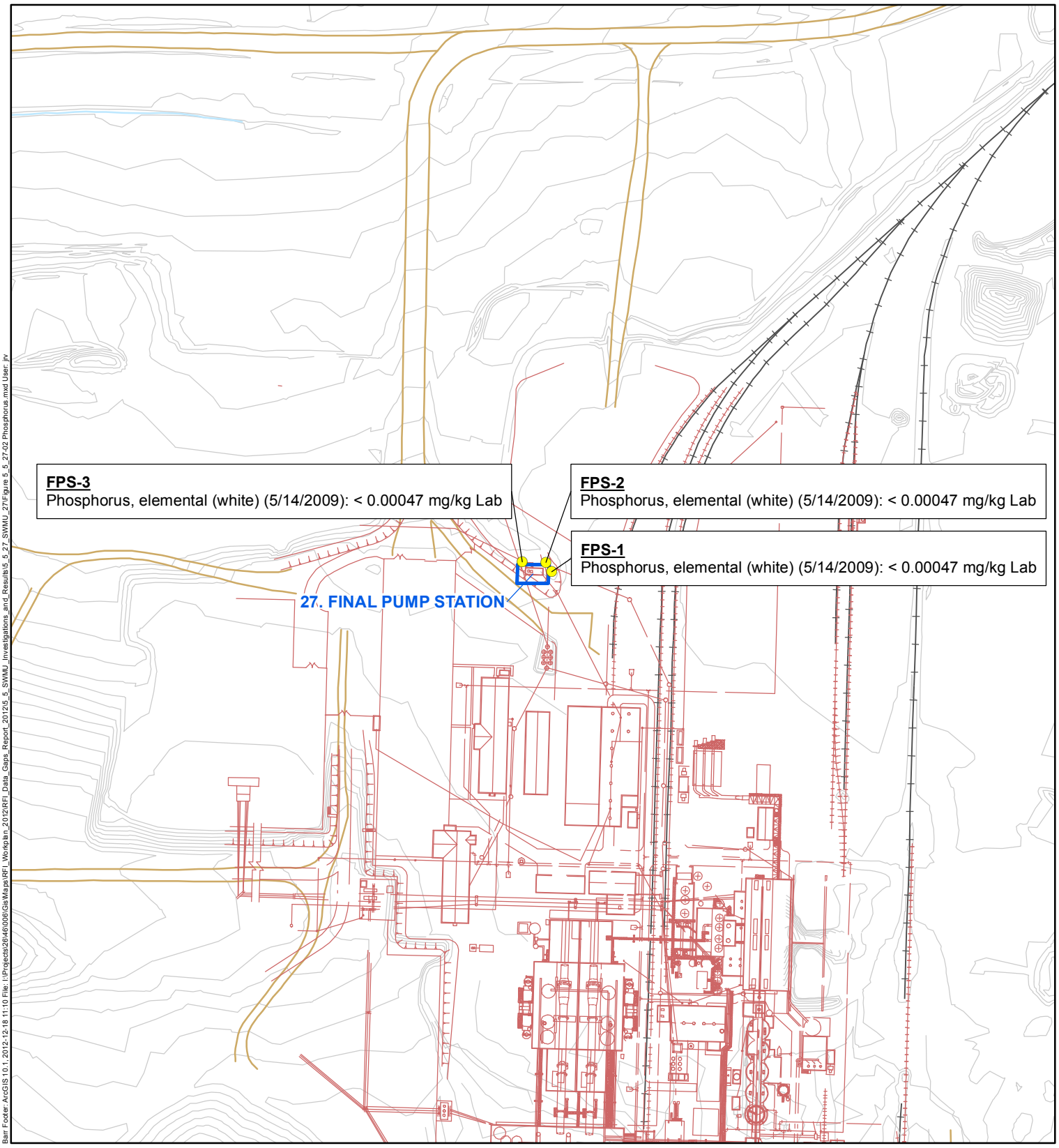



Figure 5.5.27-1b

SWMU 27
MONITORING STATIONS
AND SAMPLE LOCATIONS
Rhodia Silver Bow Plant
Montana

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Sample Location

SWMU 27

Elevation Contour

Drainage

Railroad

Road

Former Plant Structures

**Bold** font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

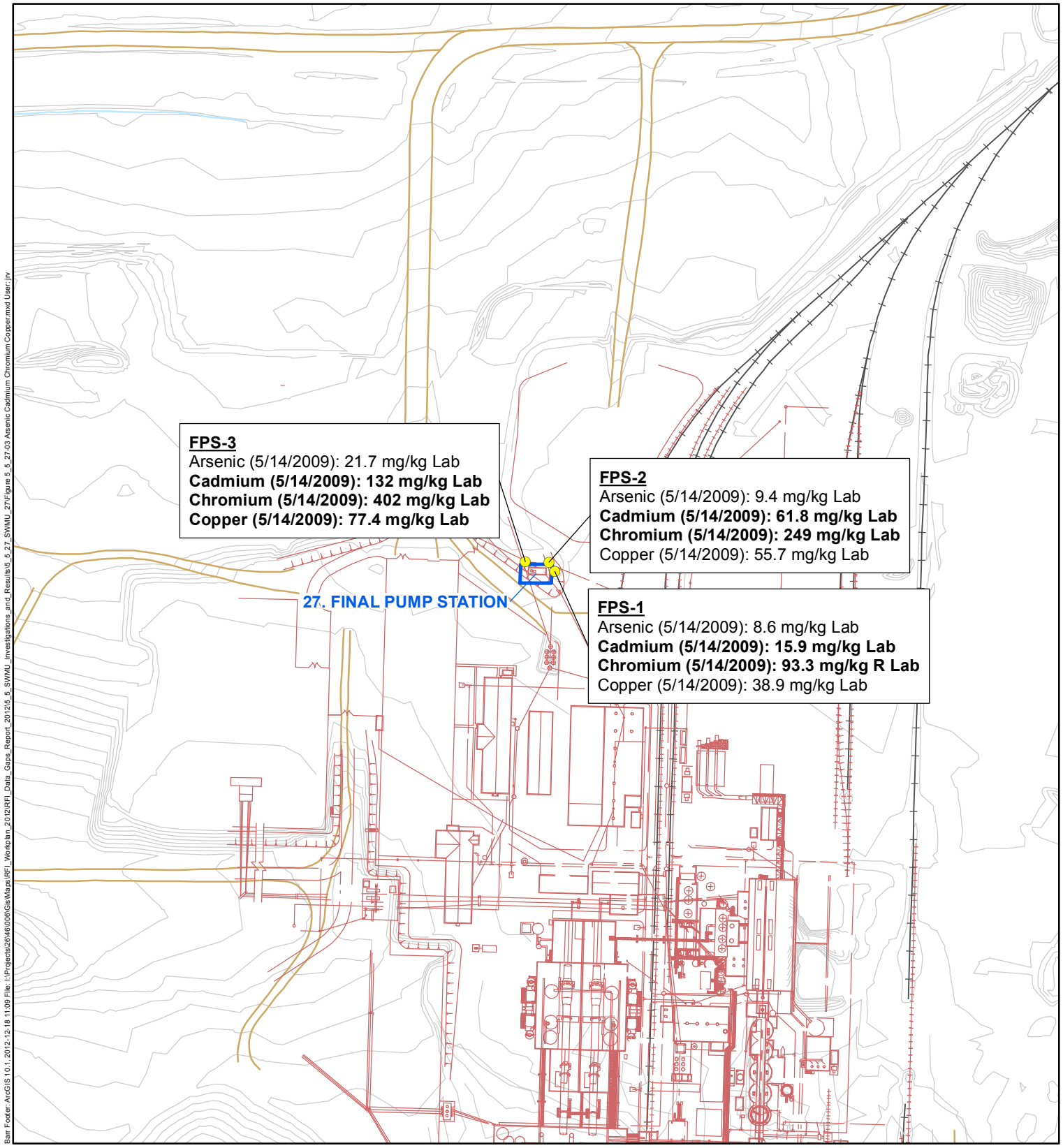
N

Feet

200 0 200

Figure 5.5.27-2

SWMU 27
PHOSPHORUS, ELEMENTAL (WHITE), 0-1 FEET
Rhodia Silver Bow Plant
Montana

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Sample Location

SWMU 27

Elevation Contour

Drainage

Railroad

Road

Former Plant Structures

**Bold** font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

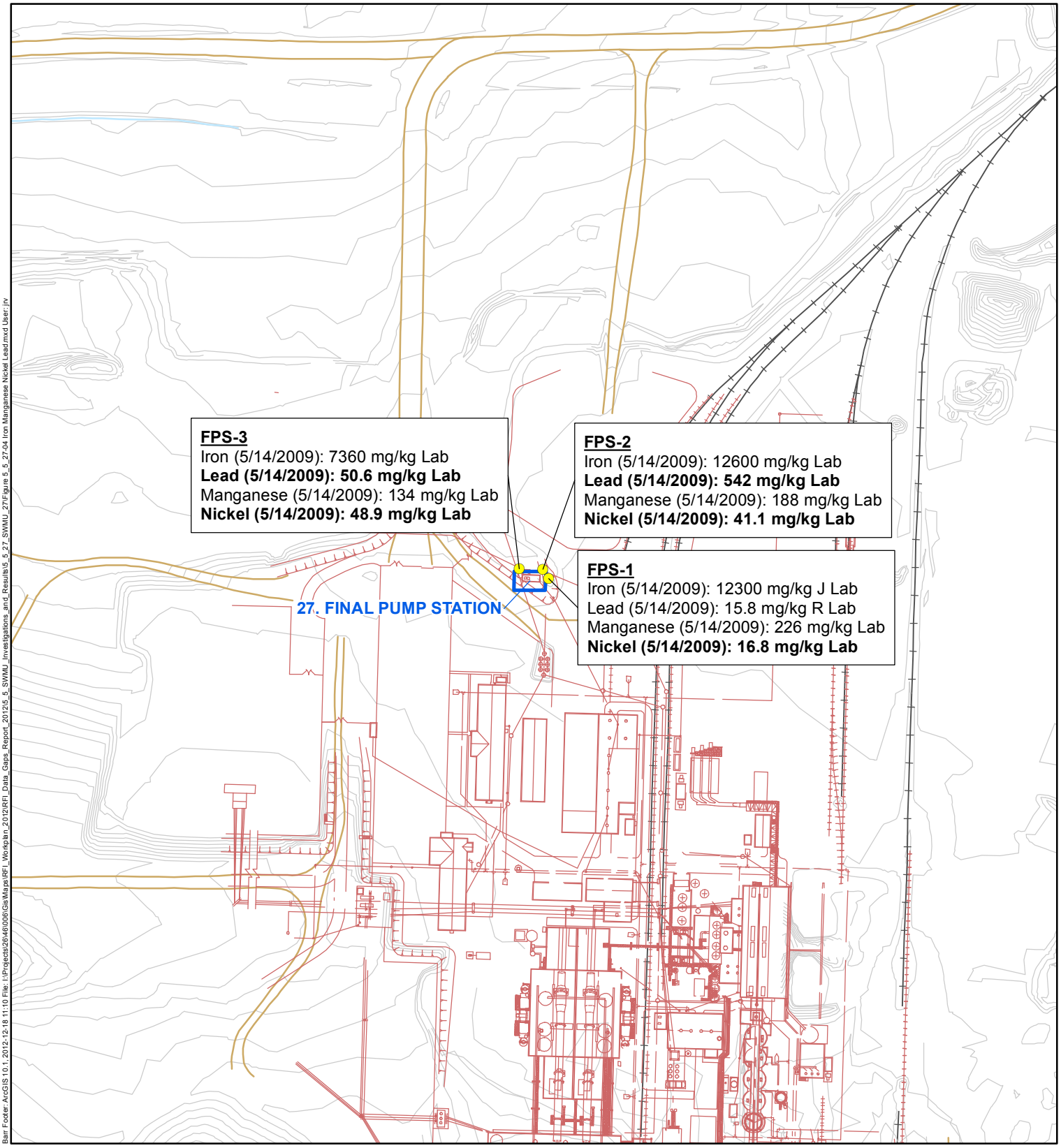
N

Feet

200 0 200

Figure 5.5.27-3

SWMU 27
ARSENIC, CADMIUM, CHROMIUM, AND COPPER, 0-1 FEET
Rhodia Silver Bow Plant
Montana

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- Sample Location
- SWMU 27
- Elevation Contour
- Drainage
- Railroad
- Road
- Former Plant Structures

**Bold** font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

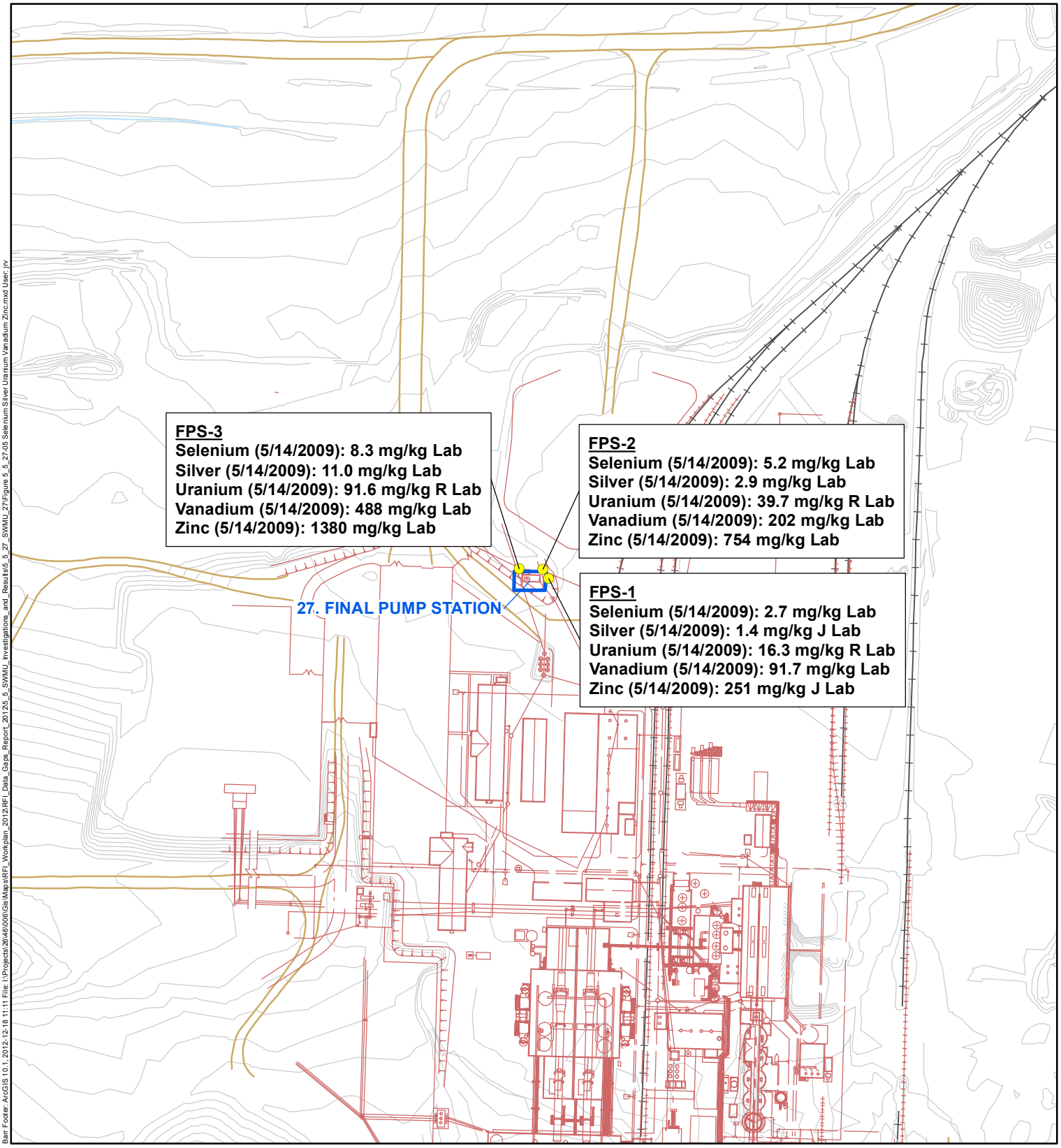
N

Feet

200 0 200

Figure 5.5.27-4

SWMU 27
IRON, MANGANESE, NICKEL, AND LEAD, 0-1 FEET
Rhodia Silver Bow Plant
Montana

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- Sample Location
- SWMU 27
- Elevation Contour
- Drainage
- Railroad
- Road
- Former Plant Structures

**Bold** font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

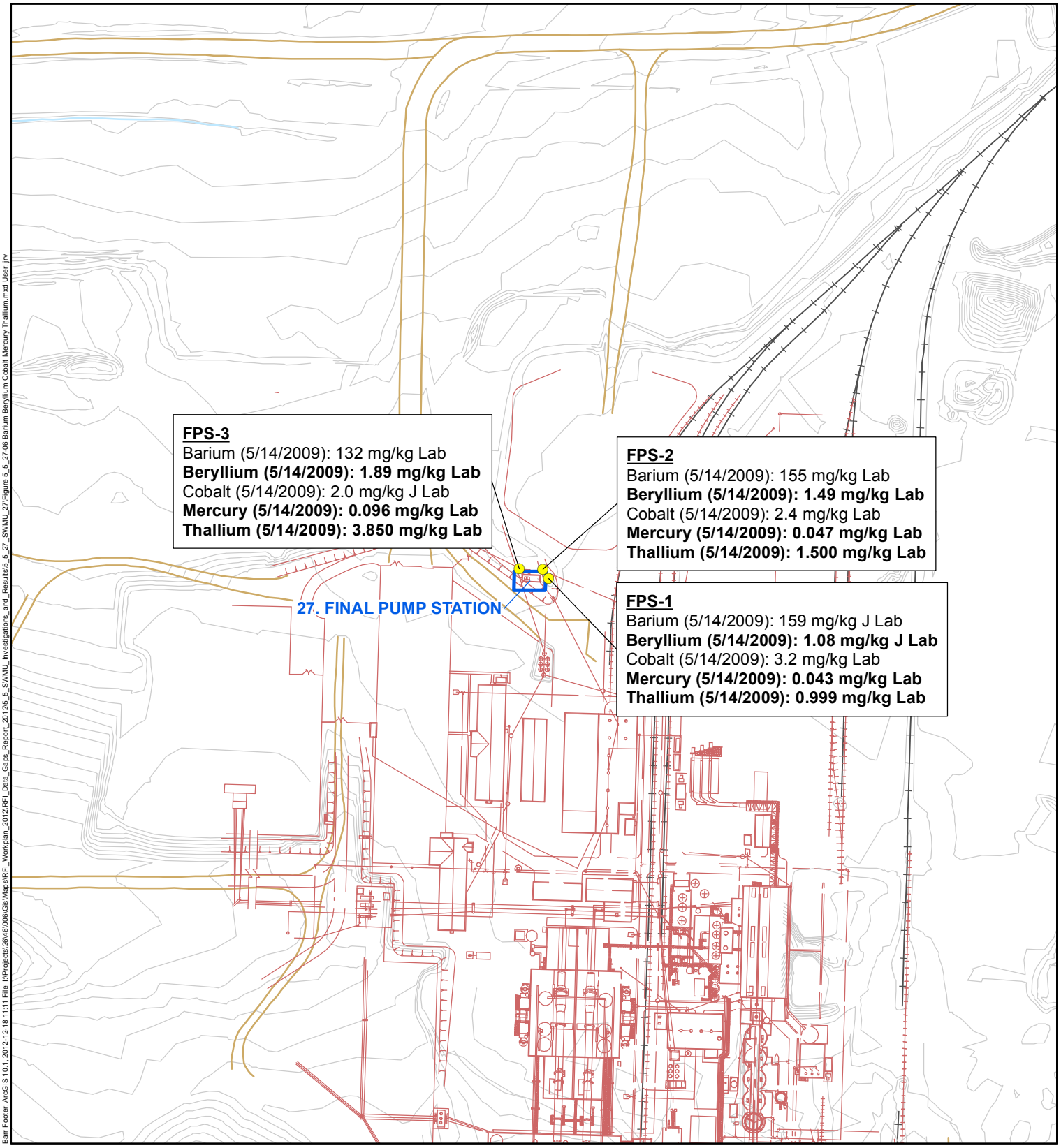
N

Feet

200 0 200

Figure 5.5.27-5

SWMU 27
SELENIUM, SILVER, URANIUM, VANADIUM, AND ZINC, 0-1 FEET
Rhodia Silver Bow Plant
Montana

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Sample Location
SWMU 27
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

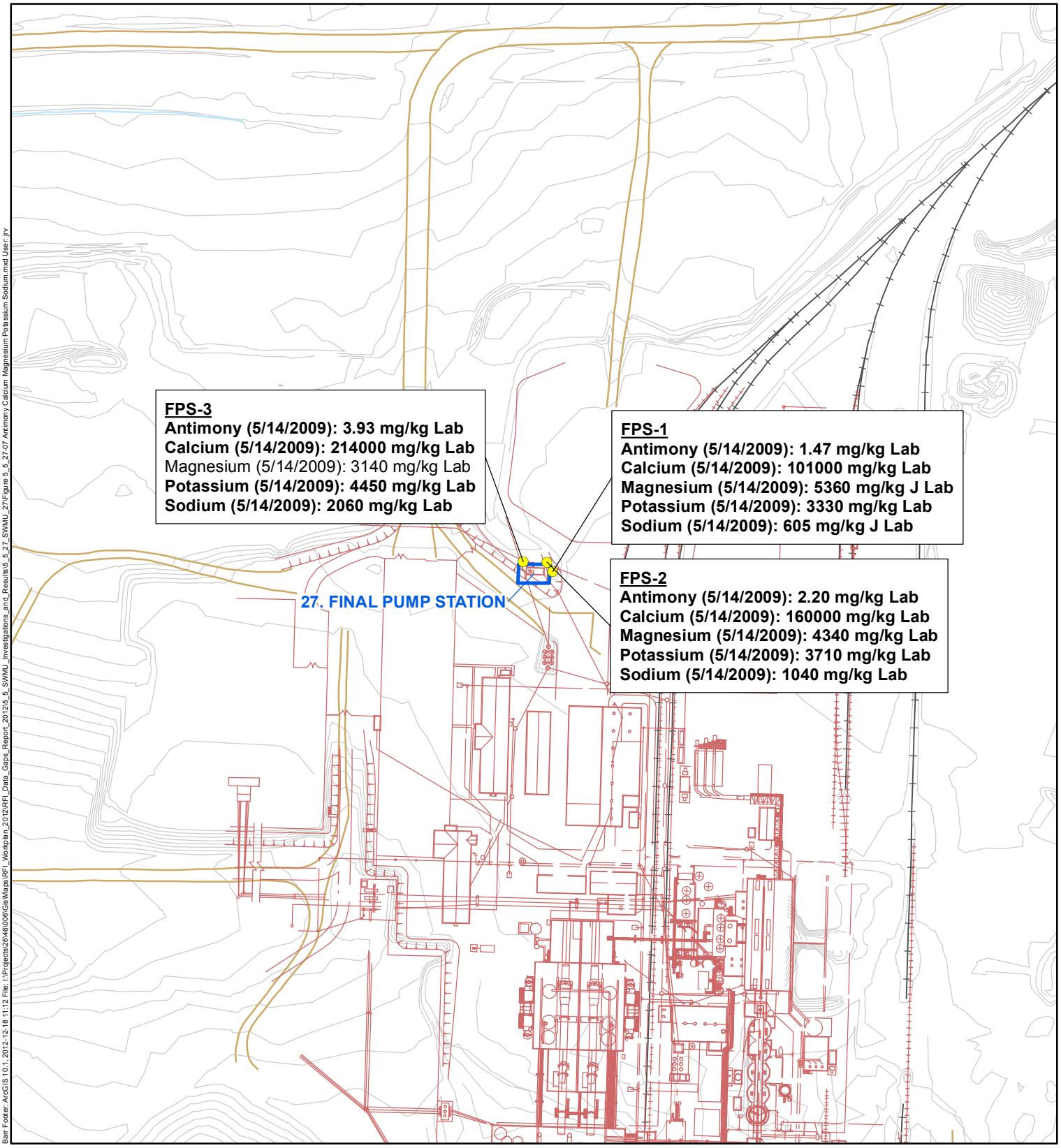
**Bold** font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.27-6

SWMU 27
BARIUM, BERYLLIUM, COBALT, MERCURY, AND THALLIUM, 0-1 FEET
Rhodia Silver Bow Plant
Montana

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Sample Location
SWMU 27
Elevation Contour
Drainage
Railroad
Road
Former Plant Structures

**Bold** font indicates that sample concentration is greater than the 95% UCL of mean Reference Area Concentration.

N

Feet
200 0 200

Figure 5.5.27-7

SWMU 27
ANTIMONY, CALCIUM, MAGNESIUM, POTASSIUM, AND SODIUM, 0-1 FEET
Rhodia Silver Bow Plant
Montana