

Appendix A

Rocky Flats Legacy Management Agreement **Attachment 2 Figures and Tables**

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ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

Table 1. Surface Water Standards

| Analyte | CAS Reference Number | Standards [a] (mg/L) | Basis [b] | PQLs [d] (mg/L) |
|-------------------------------|----------------------|-------------------------|-----------|-----------------|
| Acenaphthene | 83-32-9 | 4.20E-01 | W+F, WS | |
| Acrolein | 107-02-8 | 3.50E-03 | W+F, WS | 2.50E-02 |
| Acrylamide | 79-06-1 | 7.80E-06 | WS | 3.20E-04 |
| Acrylonitrile | 107-13-1 | 5.10E-05 | W+F | 2.50E-02 |
| Alachlor | 15972-60-8 | 2.00E-03 | W+F, WS | |
| Aldicarb | 116-06-3 | 7.00E-03 | WS | |
| Aldicarb sulfone | 1646-88-4 | 7.00E-03 | WS | |
| Aldicarb sulfoxide | 1646-87-3 | 7.00E-03 | WS | |
| Aldrin | 309-00-2 | 4.90E-08 | W+F | 5.00E-05 |
| Ammonia, un-ionized | 7664-41-7 | [e] | [e] | |
| Aniline | 62-53-3 | 6.10E-03 | WS | 1.00E-02 |
| Anthracene | 120-12-7 | 2.10E+00 | W+F, WS | |
| Aramite | 140-57-8 | 1.40E-03 | WS | 2.00E-02 |
| Arsenic, total recoverable | 7440-38-2 | 2.00E-5 to 1.00E-02 [n] | SS | |
| Atrazine | 1912-24-9 | 3.00E-03 | WS | |
| Azobenzene | 103-33-3 | 3.20E-04 | WS | 3.00E-02 |
| Benzene [c] | 71-43-2 | 2.20E-03 | W+F | |
| Benzidine | 92-87-5 | 8.60E-08 | W+F | 4.00E-02 |
| alpha-BHC | 319-84-6 | 2.60E-06 | W+F | 3.00E-05 |
| beta-BHC | 319-85-7 | 9.10E-06 | W+F | 6.00E-05 |
| gamma-BHC [Lindane] | 58-89-9 | 8.00E-05 | AL | |
| Benzo(a)anthracene | 56-55-3 | 3.80E-06 | W+F | 2.00E-02 |
| Benzo(a)pyrene | 50-32-8 | 3.80E-06 | W+F | 1.00E-02 |
| Benzo(b)fluoranthene | 205-99-2 | 3.80E-06 | W+F | 1.00E-02 |
| Benzo(g,h,i)perylene | 191-24-2 | 3.80E-06 | W+F | 1.00E-02 |
| Benzo(k)fluoranthene | 207-08-9 | 3.80E-06 | W+F | 1.00E-02 |
| Benzotrichloride | 98-07-7 | 2.70E-06 | WS | 1.00E-02 |
| Benzyl chloride | 100-44-7 | 2.10E-04 | WS | 1.00E-03 |
| Beryllium | 7440-41-7 | 4.00E-03 | SS | |
| Boron, total | 7440-42-8 | 7.50E-01 | AG, SS | |
| Bromate | 15541-45-4 | 5.00E-05 | WS | 1.00E-03 |
| Bromodichloromethane | 75-27-4 | 5.50E-04 | W+F [f] | 1.00E-03 |
| Bromoform [Tribromomethane] | 75-25-2 | 4.30E-03 | W+F [f] | |
| Bromomethane [Methyl Bromide] | 74-83-9 | 9.80E-04 | W+F | 1.00E-03 |
| Butylbenzylphthalate | 85-68-7 | 1.40E+00 | W+F, WS | |
| Cadmium, dissolved | 7440-43-9 | 1.50E-03 | TVS [g] | |
| Carbofuran | 1563-66-2 | 4.00E-02 | WS | |
| Carbon tetrachloride [c] | 56-23-5 | 2.30E-04 | W+F | 1.00E-03 |
| Chlordane | 57-74-9 | 8.00E-07 | W+F | 2.00E-04 |
| Chlorobenzene | 108-90-7 | 1.00E-01 | W+F, WS | |
| Chlorodibromomethane (HM) | 124-48-1 | 5.40E-02 | W+F | |
| bis(2-Chloroethyl)ether | 111-44-4 | 3.00E-05 | W+F | 1.00E-02 |
| Chloroform [Trichloromethane] | 67-66-3 | 3.40E-03 | W+F [f] | |

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

Table 1 (continued). Surface Water Standards

| Analyte | CAS Reference Number | Standards [a] (mg/L) | Basis [b] | PQLs [d] (mg/L) |
|------------------------------------|----------------------|----------------------|-------------|-----------------|
| bis(2-Chloroisopropyl)ether | 108-60-1 | 2.80E-01 | W+F, WS | |
| Analyte | CAS Reference Number | Standards [a] (mg/L) | Basis [b] | PQLs [d] (mg/L) |
| Chloromethane [Methyl chloride] | 74-87-3 | 5.60E-03 | W+F | |
| Bis(chloromethyl)ether (BCME) | 542-88-1 | 1.00E-07 | W+F | 1.00E-02 |
| 4-Chloro-3-methylphenol | 59-50-7 | 3.00E-02 | AL | |
| Chloronaphthalene | 91-58-7 | 5.60E-01 | W+F, WS | |
| 2-Chlorophenol | 95-57-8 | 3.50E-02 | W+F, WS | |
| Chloropyrifos | 2921-88-2 | 4.10E-05 | AL | 5.00E-03 |
| Chromium III, Total Recoverable | 16065-83-1 | 5.00E-02 | SS | |
| Chromium VI, dissolved | 18540-29-9 | 1.10E-02 | TVS [g] | 2.00E-02 |
| Chrysene | 218-01-9 | 3.80E-06 | W+F | 1.00E-02 |
| Copper, dissolved | 7440-50-8 | 1.60E-02 | TVS [g] | 2.50E-02 |
| Cyanide | 57-12-5 | 5.00E-03 | SS | |
| 4,4-DDD | 72-54-8 | 3.10E-07 | W+F | 1.10E-04 |
| 4,4-DDE | 72-55-9 | 2.20E-07 | W+F | 5.00E-05 |
| 4,4-DDT | 50-29-3 | 2.20E-07 | W+F | 1.20E-04 |
| Dalapon | 75-99-0 | 2.00E-01 | WS | |
| Demeton | 8065-48-3 | 1.00E-04 | AL | 1.00E-02 |
| Dibenzo(a,h)anthracene | 53-70-3 | 3.80E-06 | W+F | 1.00E-02 |
| Dibromochloromethane | 124-48-1 | 8.00E-02 | W+F, WS [f] | |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | 2.00E-04 | WS | 1.00E-03 |
| Di-n-butylphthalate | 84-74-2 | 7.00E-01 | W+F, WS | |
| Dichloroacetic acid | 79-43-6 | 7.00E-04 | WS | 5.00E-04 |
| 1,2-Dichlorobenzene | 95-50-1 | 4.20E-01 | W+F | |
| 1,3-Dichlorobenzene | 541-73-1 | 9.40E-02 | W+F, WS | |
| 1,4-Dichlorobenzene | 106-46-7 | 6.30E-02 | W+F | |
| 3,3-Dichlorobenzidine | 91-94-1 | 2.10E-05 | W+F | 2.00E-02 |
| 1,2-Dichloroethane [c] | 107-06-2 | 3.80E-04 | W+F | 1.00E-03 |
| 1,1-Dichloroethene [c] | 75-35-4 | 7.00E-03 | W+F, WS | |
| 1,2-Dichloroethene (cis) | 156-59-2 | 7.00E-02 | WS | |
| 1,2-Dichloroethene (trans) | 156-60-5 | 1.00E-01 | W+F, WS | |
| 2,4-Dichlorophenol | 120-83-2 | 2.10E-02 | W+F, WS | |
| Dichlorophenoxyacetic acid [2,4-D] | 94-75-7 | 7.00E-02 | WS | |
| 1,2-Dichloropropane | 78-87-5 | 5.00E-04 | W+F | 1.00E-02 |
| 1,3-Dichloropropylene | 542-75-6 | 3.40E-04 | W+F | 1.00E-02 |
| Dichlorvos | 62-73-7 | 1.20E-04 | WS | 1.00E-02 |
| Dieldrin | 60-57-1 | 5.20E-08 | W+F | 2.00E-05 |
| Di(2-ethylhexyl)adipate | 103-23-1 | 4.00E-01 | WS | |
| Diethylphthalate | 84-66-2 | 5.60E+00 | W+F, WS | |
| Diisopropyl methyl phosphonate | 1445-75-6 | 8.00E-03 | WS | 1.00E-02 |
| 2,4-Dimethylphenol | 105-67-9 | 1.40E-01 | W+F, WS | |
| Dimethylphthalate | 131-11-3 | 7.00E+01 | W+F, WS | |
| 4,6-Dinitro-2-methylphenol | 534-52-1 | 2.70E-04 | WS | 5.00E-02 |

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

Table 1 (continued). Surface Water Standards

| Analyte | CAS Reference Number | Standards [a] (mg/L) | Basis [b] | PQLs [d] (mg/L) |
|---|----------------------|----------------------|-----------|-----------------|
| 2,4-Dinitrophenol | 51-28-5 | 1.40E-02 | W+F, WS | 5.00E-02 |
| 2,4-Dinitrotoluene | 121-14-2 | 1.10E-04 | W+F, WS | 1.00E-02 |
| 2,6-Dinitrotoluene | 606-20-2 | 2.30E-01 | AL | |
| Dinoseb | 88-85-7 | 7.00E-03 | WS | |
| 1,4-Dioxane | 123-91-1 | 6.10E-03 | WS [m] | 1.00E-02 |
| Dioxin (2,3,7,8 TCDD) | 1746-01-6 | 5.00E-12 | W+F | 1.00E-05 |
| 1,2-Diphenylhydrazine | 122-66-7 | 3.60E-05 | W+F | 1.00E-02 |
| Diquat | 85-00-7 | 2.00E-02 | WS | |
| Endosulfan | 115-29-7 | 5.60E-05 | AL | |
| Endosulfan, alpha | 959-98-8 | 5.60E-05 | AL | 2.00E-04 |
| Endosulfan, beta | 33213-65-9 | 5.60E-05 | AL | |
| Endosulfan sulfate | 1031-07-8 | 5.60E-05 | AL | 6.60E-04 |
| Endothall | 145-73-3 | 1.00E-01 | WS | |
| Endrin (technical) | 72-20-8 | 3.60E-05 | AL | 6.00E-05 |
| Endrin aldehyde | 7421-93-4 | 2.90E-04 | W+F | |
| Epichlorohydrin | 106-89-8 | 3.50E-03 | WS | 1.00E-02 |
| Ethylbenzene | 100-41-4 | 5.30E-01 | W+F | |
| Ethylene dibromide [1,2-Dibromomethane] | 106-93-4 | 5.00E-05 | WS | 1.00E-03 |
| bis(2-Ethylhexyl)phthalate | 117-81-7 | 1.20E-03 | W+F | 1.00E-02 |
| Fluoranthene | 206-44-0 | 1.30E-01 | W+F | |
| Fluorene | 86-73-7 | 2.80E-01 | WS | |
| Folpet | 133-07-3 | 1.00E-02 | WS | |
| Furmecyclox | 60568-05-0 | 1.20E-03 | WS | 1.00E-02 |
| Glyphosate | 1071-83-6 | 7.00E-01 | WS | |
| Guthion | 86-50-0 | 1.00E-05 | AL | 1.00E-01 |
| Heptachlor | 76-44-8 | 7.80E-08 | W+F | 5.00E-05 |
| Heptachlor epoxide | 1024-57-3 | 3.90E-08 | W+F | 1.00E-03 |
| Hexachlorobenzene | 118-74-1 | 2.80E-07 | W+F | 1.00E-02 |
| Hexachlorobutadiene | 87-68-3 | 4.40E-04 | W+F | 5.00E-03 |
| Hexachlorocyclohexane, Technical | 608-73-1 | 1.20E-05 | W+F | 1.00E-02 |
| Hexachlorocyclopentadiene | 77-47-4 | 5.00E-03 | AL | 1.00E-02 |
| Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-hcdd) | 19408-74-3 | 5.60E-09 | WS | 2.50E-05 |
| Hexachloroethane | 67-72-1 | 4.00E-04 | W+F | 1.00E-03 |
| Hydrazine/Hydrazine sulfate | 302-01-2 | 1.20E-05 | WS | 1.00E-02 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 3.80E-06 | W+F | 1.00E-02 |
| Isophorone | 78-59-1 | 1.30E-01 | W+F | |
| Lead, dissolved | 7439-92-1 | 6.50E-03 | TVS [g] | |
| Malathion | 121-75-5 | 1.00E-04 | AL | 1.00E-02 |
| Mercury, total | 7439-97-6 | 1.00E-05 | SS | 1.00E-03 |
| Methoxychlor | 72-43-5 | 3.00E-05 | AL | 1.80E-03 |
| 4,4-Methylene bis (N,N'-dimethyl)aniline | 101-61-1 | 7.60E-04 | WS | 1.00E-02 |
| Methylene chloride [Dichloromethane] | 75-09-2 | 4.60E-03 | W+F | |

ROCKY FLATS LEGACY MANAGEMENT AGREEMENT

Table 1 (continued). Surface Water Standards

| Analyte | CAS Reference Number | Standards [a] (mg/L) | Basis [b] | PQLs [d] (mg/L) |
|--------------------------------|----------------------|----------------------|------------|-----------------|
| Mirex | 2385-85-5 | 1.00E-06 | AL | 1.00E-02 |
| Naphthalene | 91-20-3 | 1.40E-01 | W+F, WS | |
| Nickel, dissolved | 7440-02-0 | 1.23E-01 | TVS [g] | |
| Nitrate [c] [h] | 14797-55-8 | 1.00E+01 | AG, SS | |
| Nitrite [c] [h] | 14797-65-0 | 5.00E-01 | AL [i], SS | |
| Nitrobenzene | 98-95-3 | 3.50E-03 | W+F, WS | |
| Nitrophenol 4 | 100-02-7 | 5.60E-02 | WS, W+F | |
| Nitrosodibutylamine N | 924-16-3 | 4.30E-06 | W+F | 1.00E-02 |
| N-Nitrosodiethanolamine | 1116-54-7 | 1.30E-05 | WS | 1.00E-02 |
| Nitrosodiethylamine N | 55-18-5 | 2.30E-07 | W+F, WS | 1.00E-02 |
| Nitrosodimethylamine N | 62-75-9 | 6.90E-07 | W+F, WS | 2.00E-02 |
| n-Nitrosodiphenylamine | 86-30-6 | 3.30E-03 | W+F | 1.00E-02 |
| n-Nitrosodipropylamine | 621-64-7 | 5.00E-06 | W+F, WS | 1.00E-02 |
| N-Nitroso-N-methylethylamine | 10595-95-6 | 1.60E-06 | WS | 1.00E-02 |
| Nitrosopyrrolidine N | 930-55-2 | 1.60E-05 | W+F | 4.00E-02 |
| Oxamyl(vydate) | 23135-22-0 | 2.00E-01 | WS | |
| PCBs | 1336-36-3 | 6.40E-08 | W+F [j] | 5.00E-04 |
| Parathion | 56-38-2 | 1.30E-05 | AL | 1.00E-02 |
| Pentachlorobenzene | 608-93-5 | 1.40E-03 | W+F | 1.00E-02 |
| Pentachlorophenol | 87-86-5 | 2.70E-04 | W+F | 5.00E-02 |
| Phenol | 108-95-2 | 2.10E+00 | W+F, WS | |
| Picloram | 1918-02-1 | 4.90E-01 | WS | |
| Propylene oxide | 75-56-9 | 1.50E-04 | WS | 1.00E-02 |
| Pyrene | 129-00-0 | 2.10E-01 | W+F, WS | |
| Quinoline | 91-22-5 | 1.20E-05 | WS | |
| Selenium | 7782-49-2 | 4.60E-03 | AL | |
| Silver, dissolved | 7440-22-4 | 6.00E-04 | TVS [g] | 1.00E-03 |
| Simazine | 122-34-9 | 4.00E-03 | WS | |
| Sulfide | 18496-25-8 | 2.00E-03 | SS | |
| Styrene | 100-42-5 | 1.00E-01 | WS | |
| 1,2,4,5-Tetrachlorobenzene | 95-94-3 | 9.70E-04 | W+F | 1.00E-03 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 1.70E-04 | W+F | 1.00E-03 |
| Tetrachloroethene [c] | 127-18-4 | 6.90E-04 | W+F | 1.00E-03 |
| Toluene | 108-88-3 | 1.00E+00 | W+F, WS | |
| Toxaphene | 8001-35-2 | 2.00E-07 | AL | 2.50E-03 |
| Tributyltin (TBT) | 56573-85-4 | 7.20E-05 | AL | 1.00E-02 |
| 1,2,4-Trichlorobenzene | 120-82-1 | 3.50E-02 | W+F | |
| 1,1,1-Trichloroethane | 71-55-6 | 2.00E-01 | WS | |
| 1,1,2-Trichloroethane | 79-00-5 | 2.70E-03 | W+F | |
| Trichloroethene [c] | 79-01-6 | 2.50E-03 | W+F | |
| 2,4,6-Trichlorophenol | 88-06-2 | 1.40E-03 | W+F | 1.00E-02 |
| Trichlorophenol 2,4,5 | 95-95-4 | 7.00E-01 | WS, W+F | |
| Trichlorophenoxypropionic acid | 93-72-1 | 5.00E-02 | WS | |
| Vinyl chloride | 75-01-4 | 2.30E-05 | W+F | 2.00E-04 |

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Table 1 (continued). Surface Water Standards

| Analyte | CAS Reference Number | Standards [a] (mg/L) | Basis [b] | PQLs [d] (mg/L) |
|-----------------------------|----------------------|----------------------|-----------|-----------------|
| Xylene (total) | 1330-20-7 | 1.00E+01 | WS | |
| Zinc, dissolved | 7440-66-6 | 1.41E-01 | TVS [g] | |
| PHYSICAL PARAMETERS: | | | | |
| Dissolved oxygen (minimum) | | 5.0 mg/L | SS | |
| pH | | 6.5-9.0 | SS | |
| RADIONUCLIDES [i] | | | | |
| Americium 241 | 14596-10-2 | 0.15 (pCi/L) | BS | |
| Plutonium 239/240 | 10-12-8 | 0.15 (pCi/L) | BS | |
| Radium 226/228 | | 5 (pCi/L) [k] | BS | |
| Strontium 89/90 | 11-10-9 | 8 (pCi/L) | BS | |
| Tritium | 10028-17-8 | 500 (pCi/L) | SS | |
| Uranium, total | 7440-61-1 | 16.8 (µg/L) | SS | |

NOTES:

[a] The values in this table reflect the promulgated Colorado WQCC classifications and standards. If relevant, effective date information is included in subsequent footnotes. Standards for chloride, dissolved iron, dissolved manganese, and sulfate are Secondary Drinking Water Standards, which are based on aesthetic considerations. They have been removed as site-specific standards since Segments 4a, 4b, and 5 waters will not be used for drinking water supply.

[b] Acronyms: AG = Agriculture; AL = Aquatic Life; BS = Basic Standard; SS = Site Specific Standard; TVS = Table Value Standard; WS = Water Supply; W+F = Water plus Fish

[c] Temporary modifications (TMs) were in place for some analytes in Segment 5 until December 31, 2009. TMs removed in subsequent revision of this table.

[d] Whenever the practical quantitation level (PQL) for a pollutant is higher (less stringent) than a standard or temporary modification, "less than" the PQL will be used as the compliance threshold.

[e] There is no un-ionized ammonia standard for Segment 5 or Segment 4b. A standard of 0.1 mg/L applies to Segment 4a, which begins in Walnut Creek downstream of Indiana Street.

[f] Per the Basic Standards, the Total Trihalomethane (TTHM) standard applies to the sum of the four TTHM compounds. For dibromochloromethane the TTHM value for water supply, 80 parts per billion, was applied.

[g] Table value standards for metals are based on a toxicity equation which uses a hardness value of 143 mg/L.

[h] The expired TMs for nitrate and nitrite were in place for the Walnut Creek portions of Segment 5 only

[i] The listed nitrite value is the chronic aquatic life standard based on chloride levels in excess of 22 mg/L in Segment 4.

[j] The total PCB standard in the Basic Standards is based on the sum of the Aroclor analytes.

[k] Per the basic standard, this value applies to the sum of the two radium isotopes.

[l] Radionuclides are measured in activity per volume units except for uranium, which is measured as a metal parameter in mass per volume units.

[m] Effective through 3/21/2012; starting 3/22/2012 the standard is 3.20E-03 mg/L

[n] The second number in the range for arsenic is applied as the applicable Table 1 standard in the flowchart in Figure 11.

The scientific notation used in this table indicates the power of ten by which the two-decimal-place number is multiplied (e.g., 2.52E-02 = 2.52 X 10⁻² = .0252).

Table 2. Water Monitoring Locations and Sampling Criteria

| General Objective | Classification | Media | Location ID (1) | Location Description | Frequency | Analytes (4) |
|---|-----------------------|-------|-----------------|---|--|---|
| Points of Compliance (POCs) | | | | | | |
| | POC (5) | SW | WALPOC | Walnut Creek near COU Boundary | Flow-paced (varies) | Pu, Am, U, nitrate, flow rate |
| | POC (5) | SW | WOMPOC | Woman Creek near COU Boundary | Flow-paced (varies) | Pu, Am, U, flow rate |
| | POC (5) | SW | GS01 | Woman Creek at Indiana Street | Flow-paced (varies) | Pu, Am, U, flow rate |
| | POC (5) | SW | GS03 | Walnut Creek at Indiana Street | Flow-paced (varies) | Pu, Am, U, nitrate (only when water flowing from upstream terminal pond), flow rate |
| | POC (5) | SW | GS08 | Pond B-5 outlet | Flow-paced (varies) | Pu, Am, U, nitrate, flow rate |
| | POC (5) | SW | GS11 | Pond A-4 outlet | Flow-paced (varies) | Pu, Am,U, nitrate, flow rate |
| | POC (5) | SW | GS31 | Pond C-2 outlet | Flow-paced (varies) | Pu, Am,U, flow rate |
| Points of Evaluation (POEs) | | | | | | |
| | POE (6) | SW | GS10 | S. Walnut Creek at B-Series Bypass | Flow-paced (varies) | Pu, Am, U, dissolved Ag and Cd, total Be and Cr, flow rate |
| | POE (6) | SW | SW027 | SID at Pond C-2 | Flow-paced (varies) | Pu, Am,U, dissolved Ag and Cd, total Be and Cr, flow rate |
| | POE (6) | SW | SW093 | N. Walnut Creek at end of FC-3 | Flow-paced (varies) | Pu, Am, U, dissolved Ag and Cd, total Be and Cr, flow rate |
| Present Landfill (PLF) Area (2) | | | | | | |
| | RCRA (10) | GW | 70193 | Upgradient | Quarterly | VOCs, metals |
| | RCRA (10) | GW | 70393 | Upgradient | Quarterly | VOCs, metals |
| | RCRA (10) | GW | 70693 | Upgradient | Quarterly | VOCs, metals |
| | RCRA (10) | GW | 73005 | Downgradient | Quarterly | VOCs, metals |
| | RCRA (10) | GW | 73105 | Downgradient | Quarterly | VOCs, metals |
| | RCRA (10) | GW | 73205 | Downgradient | Quarterly | VOCs, metals |
| | AOC (7) | GW | 4087 | Below East Landfill Pond | Semiannual | VOCs, U*, nitrate |
| | AOC (7) | GW | B206989 | Below East Landfill Pond | Semiannual | VOCs, U*, nitrate |
| | Treatment System (11) | GW | PLFSEEPINF | Seep influent to treatment system | Quarterly | VOCs,U*, metals, instantaneous flow rate |
| | Treatment System (11) | GW | GWISINFNORTH | North GWIS influent to treatment system | Discontinued | VOCs, U*, metals, nitrate |
| | Treatment System (11) | GW | GWISINF SOUTH | South GWIS influent to treatment system | Discontinued | VOCs, U*, metals, nitrate |
| | Treatment System (11) | SW | PLFSYSEFF | Treatment system effluent | Quarterly; Monthly (if required by decision) | VOCs, SVOCs, U, metals |
| | Treatment System (11) | SW | NNG01 | East of PLFSYSEFF | As required by decision rule | As required by decision rule |
| Original Landfill (OLF) Area (3) | | | | | | |
| | RCRA (10) | GW | P416589 | Upgradient | Quarterly | VOCs, metals, SVOCs |
| | RCRA (10) | GW | 80005 | Downgradient | Quarterly | VOCs, metals, SVOCs |
| | RCRA (10) | GW | 80105 | Downgradient | Quarterly | VOCs, metals, SVOCs |
| | RCRA (10) | GW | 80205 | Downgradient | Quarterly | VOCs, metals, SVOCs |
| | AOC (7) | GW | 11104 | Downgradient, downstream | Semiannual | VOCs, U* |
| | OLF SW (12) | SW | GS05 | Woman Creek at west property line (upstream) | Quarterly; Monthly (if required by decision) | VOCs, U, metals |
| | OLF SW (12) | SW | GS59 | Woman Creek 700 feet east of OLF (downstream) | Quarterly; Monthly (if required by decision) | VOCs, U, metals |

Table 2 (continued). Water Monitoring Locations and Sampling Criteria

| General Objective | Classification | Media | Location ID (1) | Location Description | Frequency | Analytes (4) |
|---|-----------------------|-------|-----------------|--|------------|-------------------|
| Mound Site Plume and Treatment System (MSPTS) | | | | | | |
| | Evaluation (9) | GW | 00897 | Source area | Biennial | VOCs |
| | Sentinel (8) | GW | 15699 | Downgradient of intercept trench | Semiannual | VOCs |
| | Treatment System (11) | GW | MOUND R1-0 | Treatment system influent | Semiannual | VOCs |
| | Treatment System (11) | GW | MOUND R2-E | Treatment system effluent | Semiannual | VOCs |
| | Treatment System (11) | SW | GS10 | S. Walnut Creek at B-Series Bypass | Semiannual | VOCs |
| East Trenches Plume and Treatment System (ETPTS) | | | | | | |
| | Evaluation (9) | GW | 3687 | Source area | Biennial | VOCs |
| | Evaluation (9) | GW | 05691 | Source area | Biennial | VOCs |
| | Evaluation (9) | GW | 03991 | East of source area | Biennial | VOCs |
| | Sentinel (8) | GW | 04091 | East of source area | Semiannual | VOCs |
| | Sentinel (8) | GW | 95299 | Downgradient of intercept trench | Semiannual | VOCs |
| | Sentinel (8) | GW | 95199 | Downgradient of intercept trench | Semiannual | VOCs |
| | Sentinel (8) | GW | 95099 | Downgradient of intercept trench | Semiannual | VOCs |
| | Sentinel (8) | GW | 23296 | Downgradient of intercept trench | Semiannual | VOCs, U* |
| | Treatment System (11) | GW | ET INFLUENT | Treatment system influent | Semiannual | VOCs |
| | Treatment System (11) | GW | ET EFFLUENT | Treatment system effluent | Semiannual | VOCs |
| | Treatment System (11) | SW | POM2 | S. Walnut Creek downstream of treatment system | Semiannual | VOCs |
| Solar Ponds Plume and Treatment System (SPPTS) | | | | | | |
| | Evaluation (9) | GW | P210189 | VOC plume source area | Biennial | VOCs, U*, nitrate |
| | Evaluation (9) | GW | 79102 | SPP source area - north | Biennial | VOCs, U*, nitrate |
| | Evaluation (9) | GW | 79202 | SPP source area - north | Biennial | VOCs, U*, nitrate |
| | Evaluation (9) | GW | P208989 | SPP source area - north | Biennial | VOCs, U*, nitrate |
| | Evaluation (9) | GW | 79302 | SPP source area - northeast | Biennial | U*, nitrate |
| | Evaluation (9) | GW | 79402 | SPP source area - northeast | Biennial | U*, nitrate |
| | Evaluation (9) | GW | 79502 | SPP source area - east | Biennial | U*, nitrate |
| | Evaluation (9) | GW | 79605 | SPP source area - east | Biennial | U*, nitrate |
| | Evaluation (9) | GW | 00203 | SPP source area - south | Biennial | VOCs, U*, nitrate |
| | Evaluation (9) | GW | 22205 | SPP downgradient plume - north | Biennial | VOCs, U*, nitrate |
| | Sentinel (8) | GW | P210089 | SPP downgradient plume - north | Semiannual | VOCs, U*, nitrate |
| | Sentinel (8) | GW | 70099 | Northwest of system | Semiannual | U*, nitrate |
| | Treatment System (11) | GW | SPIN | Treatment system influent | Semiannual | U*, nitrate |
| | Treatment System (11) | GW | SPOUT | Treatment system effluent | Semiannual | U*, nitrate |
| | Treatment System (11) | SW | GS13 | N. Walnut Creek at A-Series Bypass | Semiannual | U*, nitrate |
| | Evaluation (9) | GW | B210489 | Downgradient of treatment system | Biennial | U*, nitrate |
| | Evaluation (9) | GW | 51605 | Downgradient, adjacent to GS13 | Biennial | U*, nitrate |

Table 2 (continued). Water Monitoring Locations and Sampling Criteria

| Other Areas of Interest | | | | | | |
|--------------------------------|------------------------|----|---------|---|------------|-----------------------------|
| Drainages Below Impacted Areas | AOC (7) | GW | 10594 | N. Walnut Creek downstream of GS13 | Semiannual | VOCs, U*, nitrate |
| | AOC (7) | GW | 00997 | S. Walnut Creek upstream of Pond B-5 | Semiannual | VOCs, U*, nitrate |
| | AOC (7) | GW | 00193 | Woman Creek upstream of Pond C-2 | Semiannual | VOCs, U* |
| Former Building 371/374 | Sentinel (8) | GW | 37505 | North part of former B371 area | Semiannual | VOCs, U*, nitrate |
| | Sentinel (8) | GW | 37405 | North/northeast part of former B371/374 area | Semiannual | VOCs, U*, nitrate, Pu*, Am* |
| | Sentinel (8) | GW | 37705 | East/southeast of former B371/374 area at foundation drain confluence | Semiannual | VOCs, U*, nitrate, Pu*, Am* |
| Former Building 771/774 | Sentinel (8) | GW | 20705 | North/northwest of former B771 area | Semiannual | VOCs, U*, nitrate, Pu*, Am* |
| | Sentinel (8) | GW | 20505 | North of former B771/774 area | Semiannual | VOCs, U*, Pu*, Am* |
| | Sentinel (8) | GW | 20205 | North/northeast of former B771/774 area | Semiannual | VOCs, U*, Pu*, Am* |
| Former North-Central IA | Evaluation (9) | GW | P114689 | Southwest of former B559 area | Biennial | VOCs |
| | Evaluation (9) | GW | P115589 | West part of former B551 Warehouse area | Biennial | VOCs |
| | Evaluation (9) | GW | 70705 | East part of former B707 area | Biennial | VOCs, U* |
| | Evaluation (9) | GW | 33905 | North of former 231 Tanks area | Biennial | VOCs |
| | Evaluation (9) | GW | 21505 | West of former B776/777 area | Biennial | VOCs |
| | Sentinel (8) | GW | 52505 | West of former IHSS 118.1 area | Semiannual | VOCs |
| | Evaluation (9) | GW | 20902 | Northwest of former IHSS 118.1 | Biennial | VOCs |
| | AOC (7) | GW | 42505 | Terminus of FC-2 | Semiannual | VOCs |
| Former Building 559 | Evaluation (9) | GW | 55905 | North part of former B559 area | Biennial | VOCs, U*, nitrate |
| | Evaluation (9) | GW | 56305 | West part of former B559 area | Biennial | VOCs, U*, nitrate |
| Former IHSS 118.1 | Evaluation (9) | GW | 18199 | North of former IHSS 118.1 area | Biennial | VOCs |
| | SW Performance [SW018] | SW | SW018 | Upstream of FC-2 wetland | Semiannual | VOCs |
| Former Building 444 Complex | Evaluation (9) | GW | 40005 | West part of former B444 area | Biennial | VOCs, U* |
| | Evaluation (9) | GW | 40205 | South part of former B444 end | Biennial | VOCs, U* |
| | Evaluation (9) | GW | P419689 | Southeast of former B444 area | Biennial | VOCs, U* |
| | Sentinel (8) | GW | 40305 | East part of former B444 area | Semiannual | VOCs, U* |
| | Evaluation (9) | GW | P416889 | Southeast of former B444 area | Biennial | VOCs, U* |
| | Sentinel (8) | GW | 11502 | Southeast of former B444 area | Semiannual | VOCs, U* |
| Former Building 881 | Evaluation (9) | GW | 88205 | South part of former B881 area | Biennial | VOCs, U* |
| | Sentinel (8) | GW | 88104 | South part of former B881 area | Semiannual | VOCs, U* |
| | Sentinel (8) | GW | 00797 | South of former B881 area | Semiannual | VOCs, U* |
| Former Building 886 | Evaluation (9) | GW | 22996 | East/northeast part of former B886 area | Biennial | VOCs, U* |
| Former Building 991 | Sentinel (8) | GW | 99305 | East part of former B991 area | Semiannual | VOCs, U*, nitrate |
| | Sentinel (8) | GW | 99405 | Southeast part of former B991 area | Semiannual | VOCs, U*, nitrate |
| | Sentinel (8) | GW | 91305 | South of confluence of FC-4 and FC-5 | Semiannual | VOCs, U*, nitrate |
| Former Oil Burn Pit No. 1 | Evaluation (9) | GW | 33502 | Source area | Biennial | VOCs |
| | Evaluation (9) | GW | 33604 | Source area | Biennial | VOCs |
| | Sentinel (8) | GW | 33711 | Downgradient of source area | Semiannual | VOCs |
| Former Oil Burn Pit No. 2 | Evaluation (9) | GW | 91105 | Source area | Biennial | VOCs |
| | Sentinel (8) | GW | 91203 | Downgradient of source area | Semiannual | VOCs |
| Former SW056 | Sentinel (8) | GW | 45608 | Adjacent to French drain remnants and drain interruption | Semiannual | VOCs |
| OU1 Plume | Evaluation (9) | GW | 891WEL | Source area | Biennial | VOCs |
| | AOC (7) | GW | 89104 | Downgradient at Woman Creek | Semiannual | VOCs |
| 903 Pad/Ryan's Pit Plume | Evaluation (9) | GW | 00191 | East of former 903 Pad area | Biennial | VOCs |
| | Evaluation (9) | GW | 50299 | East of former 903 Pad area | Biennial | VOCs |
| | Evaluation (9) | GW | 90402 | Southeast of former 903 Pad area | Biennial | VOCs |
| | Evaluation (9) | GW | 00491 | Southeast of former 903 Pad area | Biennial | VOCs |
| | Evaluation (9) | GW | 07391 | Ryan's Pit source area | Biennial | VOCs, U* |
| | Evaluation (9) | GW | 90804 | Southeast part of 903 Pad/Ryan's Pit Plume | Biennial | VOCs |
| | Sentinel (8) | GW | 90399 | Southeast part of 903 Pad/Ryan's Pit Plume at SID | Semiannual | VOCs |
| | Sentinel (8) | GW | 90299 | Southeast part of 903 Pad/Ryan's Pit Plume at SID | Semiannual | VOCs |
| | AOC (7) | GW | 10304 | Southeast of 903 Pad/Ryan's Pit Plume at Woman Creek | Semiannual | VOCs, U*, nitrate |
| PU&D Yard Plume | Evaluation (9) | GW | 30900 | Source area | Biennial | VOCs |
| | Sentinel (8) | GW | 30002 | Downgradient at N. Walnut Creek | Semiannual | VOCs |

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Table 2 (continued). Water Monitoring Locations and Sampling Criteria

| General Objective | Classification | Media | Location ID (1) | Location Description | Frequency | Analytes (4) |
|---|--------------------|-------|-----------------|---|---|--------------------|
| Pre-discharge | | | | | | |
| | Pre-discharge (13) | SW | Pond A-4 | A-Series terminal pond on N. Walnut Creek | Prior to routine discharge | Pu, Am, U, nitrate |
| | Pre-discharge (13) | SW | Pond B-5 | B-Series terminal pond on S. Walnut Creek | Prior to routine discharge | Pu, Am, U, nitrate |
| | Pre-discharge (13) | SW | Pond C-2 | C-Series terminal pond in Woman Creek | Prior to routine discharge | Pu, Am, U |
| Notes | | | | | Acronyms and Abbreviations | |
| (1) See Figure 1 for monitoring locations | | | | | Ag: silver | |
| (2) Laboratory analytes are limited to those listed in Appendix C of the Present Landfill Monitoring and Maintenance Plan and Post-Closure Plan | | | | | Am: americium-241 | |
| (3) Laboratory analytes are limited to those listed in Appendix C of the Landfill Monitoring and Maintenance Plan, RFETS Original Landfill | | | | | AOC: Area of Concern | |
| (4) Analysis and evaluation for metals and VOCs will be performed for some or all of the analytes listed in Table 1 | | | | | B (followed by numerals): Building (e.g., B371) | |
| (5) Results for POCs are evaluated using Figure 5. POCs GS01, GS03, GS08, GS11 and GS31 will be replaced by WALPOC and WOMPOC per Section 5.1 | | | | | Be: beryllium | |
| (6) Results from POEs are evaluated using Figure 6. | | | | | Cd: cadmium | |
| (7) Results from AOC and SW018 are evaluated using Figure 7. | | | | | Cr: chromium | |
| (8) Results from Sentinel wells are evaluated using Figure 8. | | | | | FC: Functional Channel (e.g., FC-2) | |
| (9) Results from Evaluation wells are evaluated using Figure 9. | | | | | GW: groundwater | |
| (10) Results from RCRA wells are evaluated using Figure 10. | | | | | IA: Industrial Area | |
| (11) Results from Treatment System locations are evaluated using Figure 11. GWISINFNORTH and GWISINFSOUTH may be used for investigative purposes. | | | | | N/A: not applicable | |
| (12) Results from OLF SW locations are evaluated using Figure 12. | | | | | OLF: Original Landfill | |
| (13) Results from Predischarge locations are evaluated using Figure 13. | | | | | OU1: Operable Unit 1 | |
| | | | | | PLF: Present Landfill | |
| | | | | | POC: Point of Compliance | |
| | | | | | POE: Point of Evaluation | |
| * Samples of groundwater collected for U, Pu and Am analysis will be filtered in the field using a 0.45 um in-line filter. | | | | | PU&D: Property Utilization and Disposal | |
| | | | | | Pu: plutonium-239,240 | |
| | | | | | RCRA: Resource Conservation and Recovery Act | |
| | | | | | SID: South Interceptor Ditch | |
| | | | | | SPP: Solar Ponds Plume | |
| | | | | | SVOCs: semi-volatile organic compounds | |
| | | | | | SW: surface water | |
| | | | | | U: uranium | |
| | | | | | VOCs: volatile organic compounds | |

Table 3. Present and Original Landfill Inspection and Maintenance Requirements

Present Landfill

| Requirement | Description of activity | Frequency | Documentation/Reporting | Exit strategy |
|--|---|---|---|---|
| Final cover inspection and monitoring | <ul style="list-style-type: none"> - inspect/monitor slope stability, soil cover - visually inspect surface of landfill cover for cracks, depressions, heaving, and sinkholes - monitor settlement monuments and side slope stability monuments - vegetation surveys and monitoring | <ul style="list-style-type: none"> - quarterly (settlement and stability monuments annually); evaluate frequency during CERCLA periodic review - additional weather-related inspections within 2 days after storm event of one inch or more of rain in a 24-hour period or significant melt of 10-inch or more snowstorm - Quarterly vegetation surveys. - Annually for vegetation monitoring | <ul style="list-style-type: none"> - conditions affecting effectiveness of landfill cover to be reported per note 1 below - document on inspection checklist; submit to parties within one month of inspection; include in quarterly and annual reports | <ul style="list-style-type: none"> - Consultative process or periodic CERCLA review - Vegetation monitoring performed until PLF M&M Plan grassland success criteria are met |
| Inspection and monitoring of stormwater management system and erosion control features | <ul style="list-style-type: none"> - Visually inspect stormwater management structures (channels/lining, culverts, and outfalls); erosion control features (perimeter channels and natural drainages); and seep treatment system | <ul style="list-style-type: none"> - monthly for first year; evaluate frequency during CERCLA periodic review - additional weather-related inspections within 2 days after a storm event of one inch or more of rain in a 24-hour period or significant melt of a 10-inch or more snowstorm | <ul style="list-style-type: none"> - conditions affecting effectiveness of landfill cover to be reported per note 1 below - document on inspection checklist; submit to parties within one month of inspection; include in quarterly and annual reports | <ul style="list-style-type: none"> - Consultative process or periodic CERCLA review |
| GW monitoring | Included in Table 2, Figure 1, and Figure 10 | Included in Table 2, Figure 1, and Figure 10 | Included in Table 2, Figure 1, and Figure 10 | Included in Table 2, Figure 1, and Figure 10 |
| Landfill seep and pond monitoring | Included in Table 2, Figure 1, and Figure 11 | Included in Table 2, Figure 1, and Figure 11 | Included in Table 2, Figure 1, and Figure 11 | Included in Table 2, Figure 1, and Figure 11 |
| Maintenance and repairs | Perform minor or major repairs as needed; for major damage or repairs, consult with parties and develop appropriate actions for approval by CDPHE | - as needed | <ul style="list-style-type: none"> - minor/routine repairs and maintenance report on inspection form - conditions affecting effectiveness of landfill cover to be reported per note 1 below | Consultative process or periodic CERCLA review |
| Institutional and physical controls | Fence around perimeter of Central OU, signs at entry points to Central OU, warning signs in accordance with 6 CCR 1007-3 Part 265.14 | | <ul style="list-style-type: none"> - failure of physical controls to be reported per note 1 below - failure of institutional controls to be per note 2 below | Consultative process or periodic CERCLA review |

Table 3 (continued). Present and Original Landfill Inspection and Maintenance Requirements

Original Landfill

| Requirement | Description of activity | Frequency | Documentation/Reporting | Exit strategy |
|--|---|---|---|--|
| Final cover inspection and monitoring | <ul style="list-style-type: none"> - inspect/monitor slope stability and soil cover - visually inspect surface of landfill cover for cracks, depressions, heaving, sinkholes; visually inspect diversion berms; measure height and gradient if indicated (employ inclinometer monitoring results and topographic surveys as described in OLF M&M Plan.) - monitor settlement monuments - .Vegetation surveys and monitoring | <ul style="list-style-type: none"> - Monthly, until CDPHE approves Quarterly frequency; topographic survey every other year; evaluate frequency during CERCLA periodic review. - Additional weather-related monitoring within 2 days after a storm event of one inch or more or rain in a 24-hour period or significant melt of a 10-inch or more snowstorm - Quarterly until CDPHE approves annual frequency. - Quarterly vegetation surveys. - Annually for vegetation monitoring. | <ul style="list-style-type: none"> - conditions affecting effectiveness of landfill cover to be reported per note 1 below - document on inspection checklist; submit to parties within one month of inspection; include in quarterly and annual reports | <ul style="list-style-type: none"> - Consultative process or periodic CERCLA review - Vegetation monitoring performed until OLF M&M Plan grassland success criteria are met. |
| Inspection and monitoring of stormwater management system, seeps, and erosion controls | <ul style="list-style-type: none"> - Visually inspect/monitor stormwater management structures, seeps, and erosion controls | <ul style="list-style-type: none"> - Monthly, until CDPHE approves Quarterly, Semi-annual or Annual frequency; evaluate frequency during CERCLA periodic review - Additional weather-related inspections within 2 days after a storm event of one inch or more of rain in a 24-hour period or significant melt of a 10-inch or more snowstorm | <ul style="list-style-type: none"> - conditions affecting effectiveness of landfill cover to be reported per note 1 below - document on inspection checklist; submit to parties within one month of inspection; include in quarterly and annual reports | <ul style="list-style-type: none"> - Consultative process or periodic CERCLA review |
| GW monitoring | Included in Table 2, Figure 1, and Figure 10 | Included in Table 2, Figure 1, and Figure 10 | Included in Table 2, Figure 1, and Figure 10 | Included in Table 2, Figure 1, and Figure 10 |
| SW monitoring | Included in Table 2, Figure 1, and Figure 12 | Included in Table 2, Figure 1, and Figure 12 | Included in Table 2, Figure 1, and Figure 12 | Included in Table 2, Figure 1, and Figure 12 |
| Maintenance and repairs | <ul style="list-style-type: none"> - Perform minor or major repairs and maintenance - For major damage or repairs, consult with parties and develop appropriate actions for approval by CDPHE | <ul style="list-style-type: none"> - as needed | <ul style="list-style-type: none"> - minor/routine repairs and maintenance, report on inspection form - conditions affecting effectiveness of landfill cover to be reported per note 1 below | <ul style="list-style-type: none"> - Consultative process or periodic CERCLA review |
| Institutional and physical controls | <ul style="list-style-type: none"> - inspection for evidence that institutional controls were violated or physical controls damaged | <ul style="list-style-type: none"> - document on inspection forms | <ul style="list-style-type: none"> - failure of physical controls to be reported per note 1 below - failure of institutional controls to be reported per note 2 below | <ul style="list-style-type: none"> - Consultative process or periodic CERCLA review |

Table 3 (continued). Present and Original Landfill Inspection and Maintenance Requirements

Note 1: For reportable conditions as defined in RFLMA Attachment 2, Section 6.0 (except in the case of failure of institutional controls), DOE will inform CDPHE and EPA within 15 days of receiving the inspection reports or validated data. Evaluation and planning for mitigating actions, if any, will be prepared and submitted as defined in RFLMA, Attachment 2, Section 6.0.

Note 2: In case of failure of institutional controls, DOE will notify EPA and CDPHE within 2 days of discovering evidence and will perform evaluation, consultation, and actions as defined in RFLMA, Attachment 2, Section 6.0.

Table 4. Institutional Controls for the Central Operable Unit

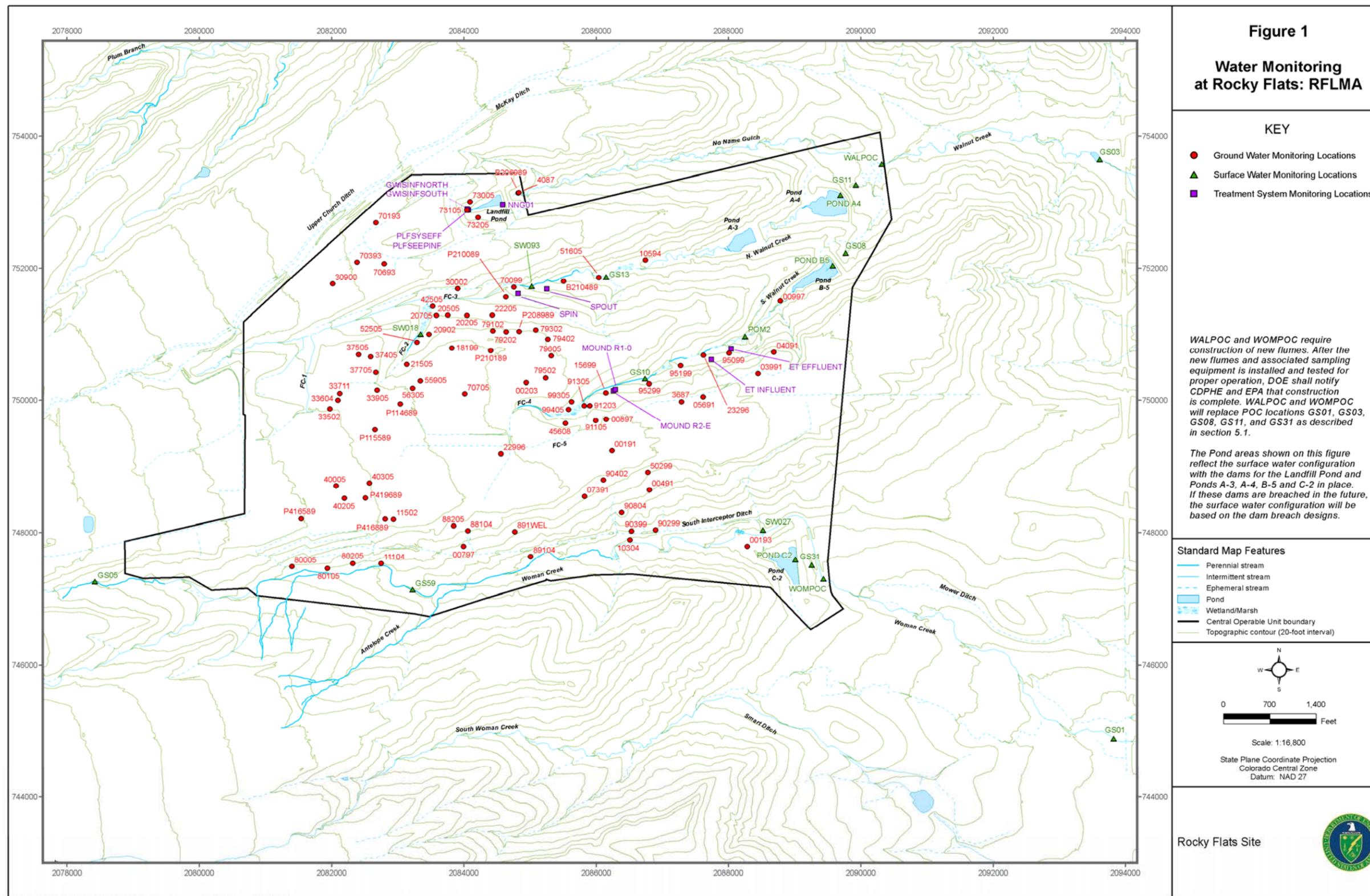
| Controls | Use Restrictions |
|----------|--|
| 1 | The construction and use of buildings that will be occupied on a permanent or temporary basis (such as for residences or offices) is prohibited. The construction and use of storage sheds or other, non-occupied structures is permitted, consistent with the restrictions contained in controls 2 and 3 below, and provided such use does not impair any aspect of the response action at Rocky Flats. |
| | <p>Objective: Prevent unacceptable exposures via the indoor air pathway.</p> <p>Rationale: The analysis of the indoor air pathway in the Comprehensive Risk Assessment indicated that subsurface volatile organic compounds were at levels in certain portions of the Central OU that could pose a risk of unacceptable exposure to the WRW if occupied structures were built in these areas.</p> |
| 2 | Excavation, drilling, and other intrusive activities below a depth of three feet are prohibited, without prior regulatory review and approval pursuant to the Soil Disturbance Review Plan in RFLMA Attachment 2. |
| | <p>Objective: Prevent unacceptable exposure to residual subsurface contamination.</p> <p>Rationale: Contaminated structures, such as building basements, exist in certain areas of the Central OU, and the Comprehensive Risk Assessment did not evaluate the risks posed by exposure to this residual contamination. Thus, this restriction eliminates the possibility of unacceptable exposures. Additionally, it prevents damage to subsurface engineered components of the remedy.</p> |
| 3 | No grading, excavation, digging, tilling, or other disturbance of any kind of surface soils is permitted, except in accordance with an erosion control plan (including Surface Water Protection Plans submitted to EPA under the Clean Water Act) approved by CDPHE or EPA. Soil disturbance that will not restore the soil surface to preexisting grade or higher may not be performed without prior regulatory review and approval pursuant to the Soil Disturbance Review Plan in RFLMA Attachment 2. |
| | <p>Objective: Prevent migration of residual surface soil contamination to surface water.</p> <p>Rationale: Certain surface soil contaminants, notably plutonium-239/240, were identified in the fate and transport evaluation in the Remedial Investigation as having complete pathways to surface water if disturbed. This restriction minimizes the possibility of such disturbance and resultant impacts to surface water. Restoring the soil surface to preexisting grade maintains the current depth to subsurface contamination or contaminated structures.</p> |
| 4 | Surface water may not be used for drinking water or agricultural purposes. |
| | <p>Objective: Prevent unacceptable exposure to local surface water contamination above the terminal ponds.</p> <p>Rationale: While the Comprehensive Risk Assessment did not evaluate the risks posed by the use of surface water for drinking or agricultural purposes, the nature and extent of contamination evaluation in the Remedial Investigation showed that certain contaminants were found at levels exceeding standards above the terminal ponds. This restriction reduces the possibility of unacceptable exposures to future users from this source.</p> |
| 5 | The construction or operation of groundwater wells is prohibited, except for remedy-related purposes. |
| | <p>Objective: Prevent unacceptable exposure to contaminated groundwater.</p> <p>Rationale: While the Comprehensive Risk Assessment did not evaluate the risks posed by the use of groundwater for drinking or agricultural purposes, the nature and extent of contamination evaluation in the Remedial Investigation identified areas in the Central OU where groundwater contaminants exceeded water quality standards or MCLs. This restriction reduces the possibility of unacceptable exposures to future users from this source. Additionally, it prevents the disruption of groundwater flow paths so as to avoid impacts on groundwater collection and treatment systems.</p> |
| 6 | Digging, drilling, tilling, grading, excavation, construction of any sort (including construction of any structures, paths, trails or roads), and vehicular traffic are prohibited on the covers of the Present Landfill and the Original Landfill, except for authorized response actions. |
| | <p>Objective: Ensure the continued proper functioning of the landfill covers.</p> <p>Rationale: This restriction helps ensure the integrity of the landfill covers.</p> |
| 7 | Activities that may damage or impair the proper functioning of any engineered component of the response action, including but not limited to any treatment system, monitoring well, landfill cap, or surveyed benchmark, are prohibited. The preceding sentence shall not be construed to prohibit the modification, removal, replacement, or relocation of any engineered component of the response action in accordance with the action determinations in RFLMA Attachment 2. |
| | <p>Objective: Ensure the continued proper functioning of engineered portions of the remedy.</p> <p>Rationale: This restriction helps ensure the integrity of other engineered components of the remedy, including monitoring and survey points.</p> |

WRW = Wildlife Refuge Worker.
MCL = maximum contaminant level.

Table 5. Ecological Sampling

| Requirement | Description of Activity | Frequency | Documentation/Reporting | Exit Strategy |
|--|--|--|---|---|
| Sample surface water and sediment for: Ammonia Cyanide Radium-228 | Collect surface water and sediment samples from Ponds A4, B5, and C2 | <u>Surface water:</u> Quarterly (minimum of 3) <u>Sediment:</u> Once | Report data in quarterly and annual reports; evaluate in CERCLA Periodic Review for relevance of the data to the ecological risks and uncertainty identified in the CAD/ROD | Sampling completed and data reported. Approved by CDPHE on April 2, 2008. |

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Figure 1. Water Monitoring at Rocky Flats

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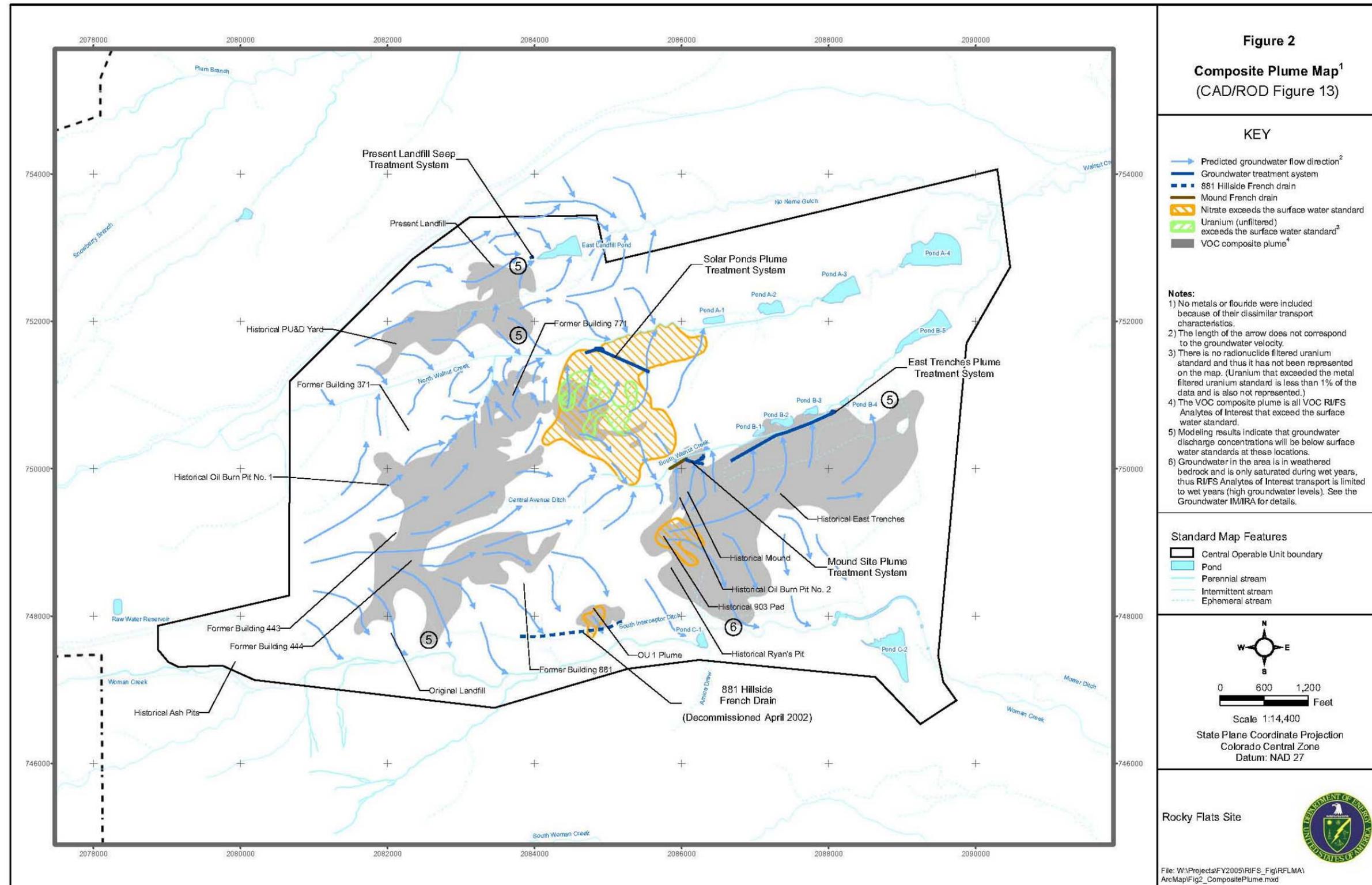


Figure 2. Composite Plume Map

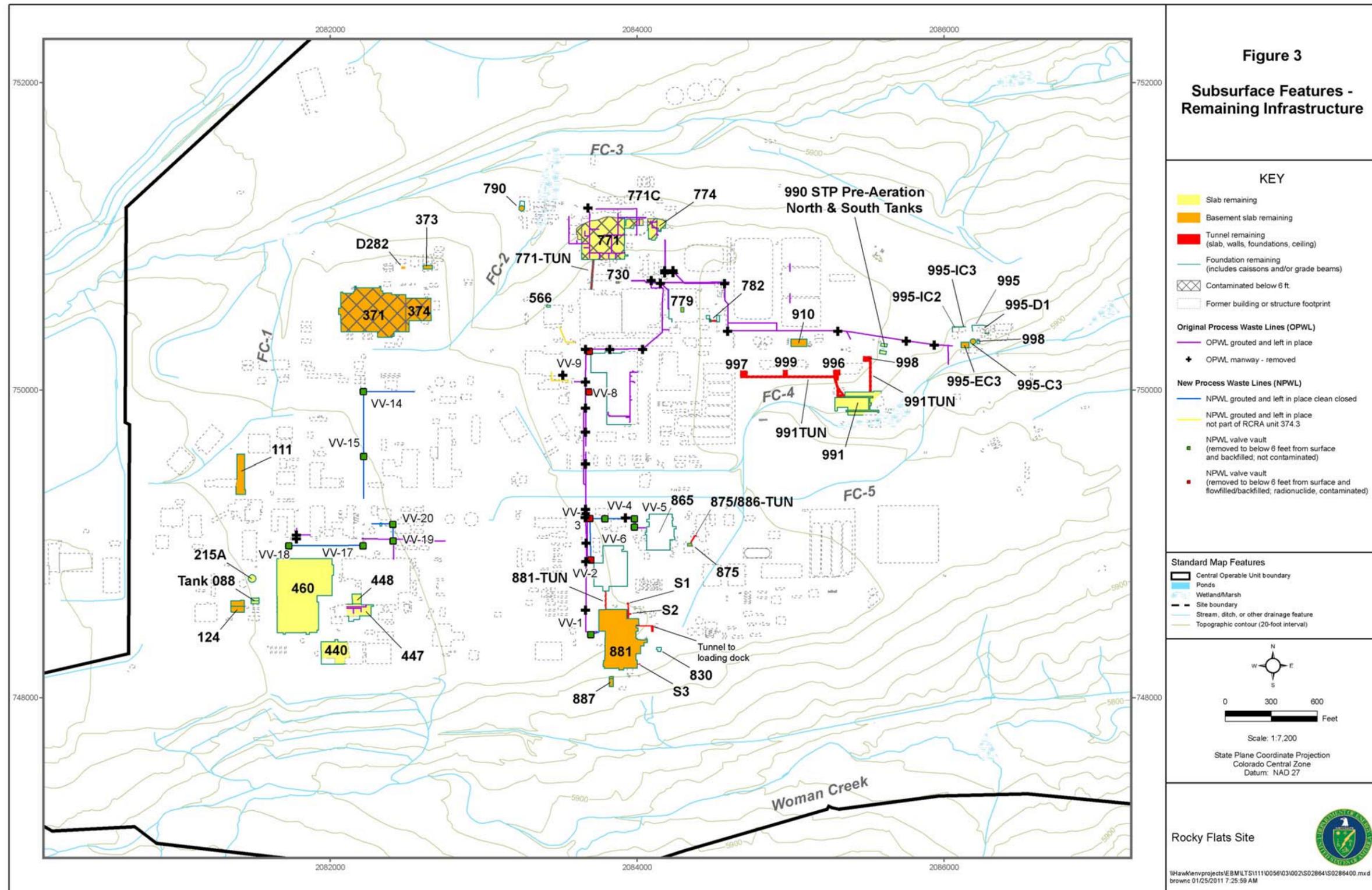


Figure 3. Subsurface Features—Remaining Infrastructure

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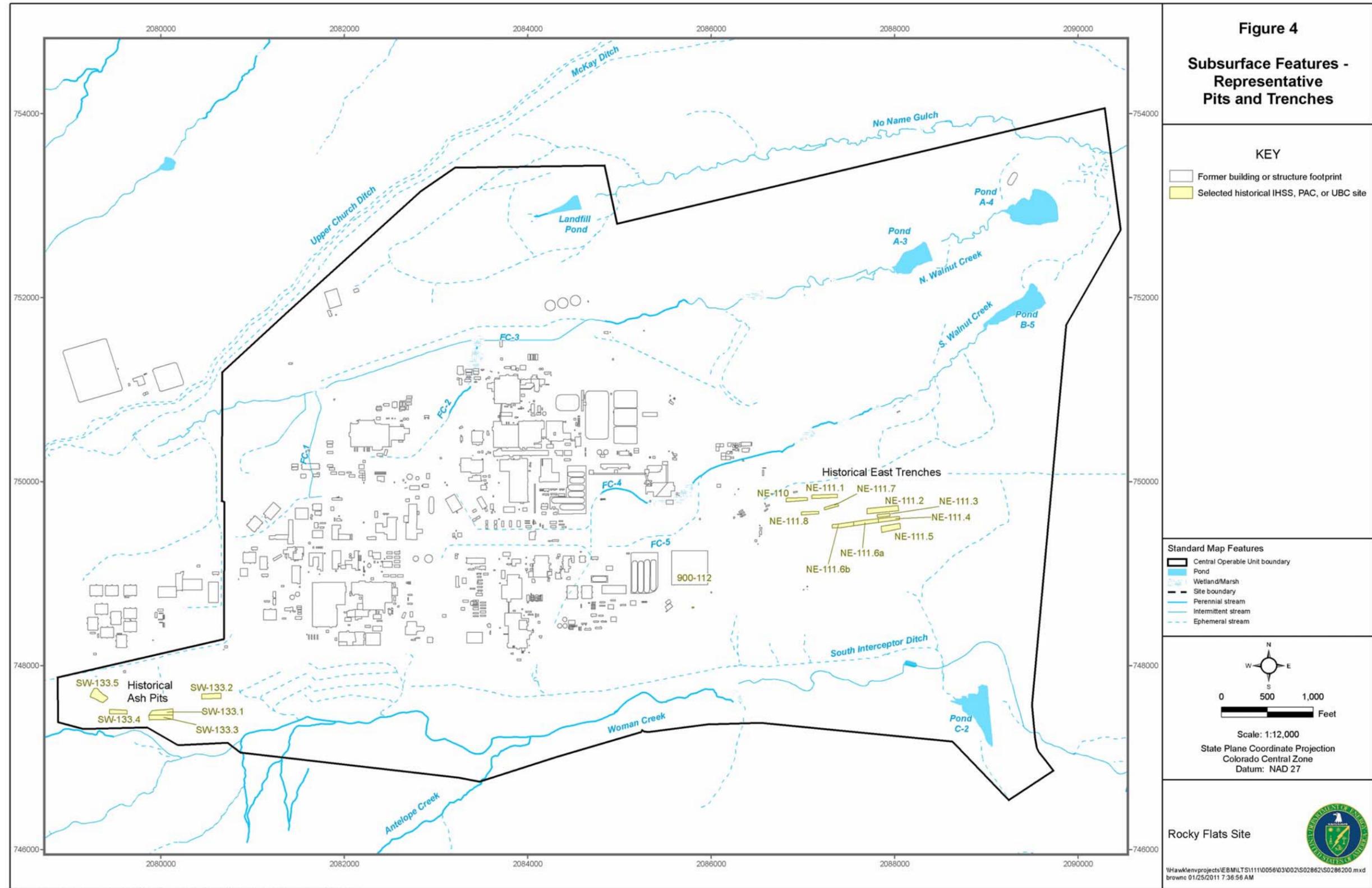
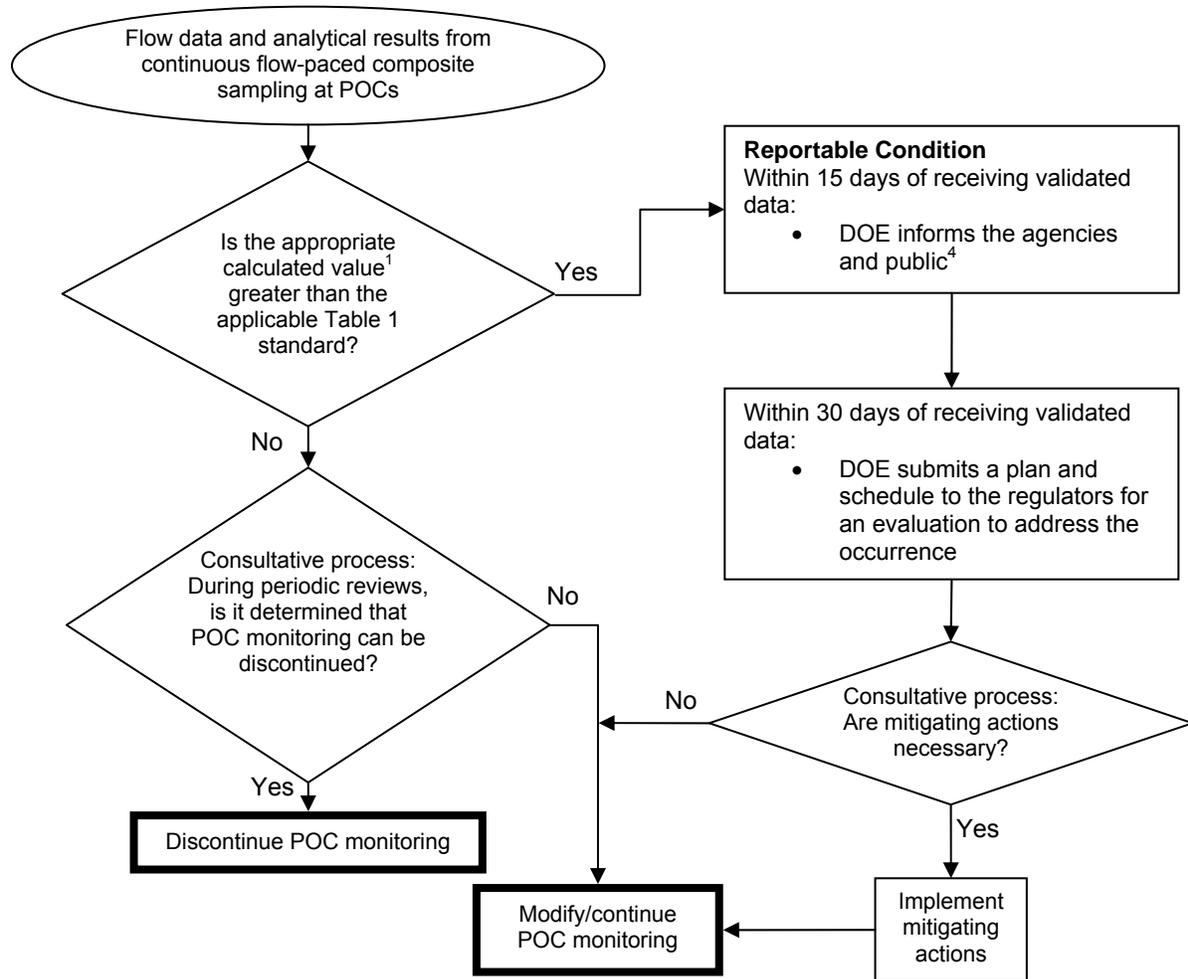


Figure 4. Subsurface Features—Representative Pits and Trenches

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Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.

¹Calculated values for determining Reportable Condition and exceedances of remedy performance standards at POCs.

- Reportable conditions (according to Section 6.0):
 - **plutonium, americium, uranium, nitrate** → 30-day average²
- Reportable Conditions and evaluation of compliance with remedy performance standards in Table 1:
 - **plutonium, americium, uranium, nitrate** → 12-month rolling average³ for POCs inside COU; 30-day average for GS01 and GS03.

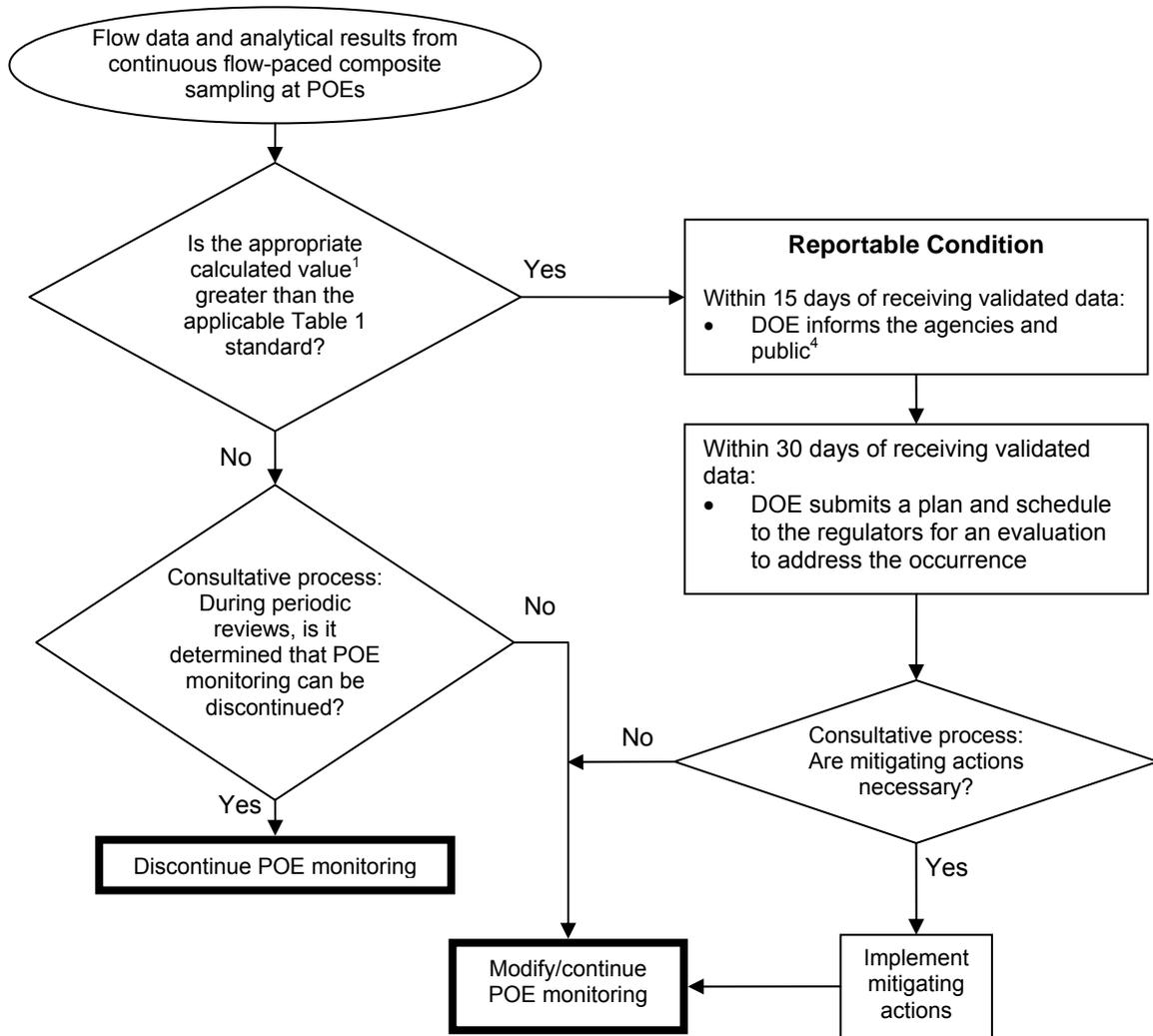
² The 30-day average for a particular day is calculated as a volume-weighted average of a “window” of time containing the previous 30 days with measurable flow. Each day has its own discharge volume (measured with a flow meter) and activity/concentration (from the sample carboy in place at the end of that day). Therefore, there are 365 30-day moving averages for a location that flows all year. At locations that have intermittent flows, 30-day averages are reported as averages of the previous 30 days of greater than zero flow. For days where no analytical result is available, either due to failed laboratory analysis or non-sufficient quantity (NSQ) for analysis, no 30-day average is reported.

³ The 12-month rolling average for the last day of a particular month is calculated as a volume-weighted average of a “window” of time containing the previous 12 months. Each 12-month “window” includes daily discharge volumes (measured with a flow meter) and daily activities/concentrations (from the sample carboy in place at the end of that day). Therefore, there are twelve 12-month rolling averages for a given calendar year. Days with no flow or no analytical result, either due to failed laboratory analysis or NSQ for analysis, are not included in the average. When no flow has occurred in the previous 12 months, no 12-month rolling average is reported.

⁴ Agencies: EPA, CDPHE, and USFWS
Public: Cities of Broomfield, Northglenn, Thornton, and Westminster; Rocky Flats Stewardship Council (RFSC)

Figure 5. Points of Compliance

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Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.

¹ Calculated Values by analytes (see Table 2 for reference)

- plutonium, americium, uranium → 12-month rolling average²
- dissolved Cd and Ag, total Be and Cr → 85th percentile of 30-day averages³ for previous calendar year

² The 12-month rolling average for the last day of a particular month is calculated as a volume-weighted average of a “window” of time containing the previous 12 months. Each 12-month “window” includes daily discharge volumes (measured with a flow meter) and daily activities/concentrations (from the sample carboy in place at the end of that day). Therefore, there are twelve 12-month rolling averages for a given calendar year. Days with no flow or no analytical result, either due to failed laboratory analysis or NSQ for analysis, are not included in the average. When no flow has occurred in the previous 12 months, no 12-month rolling average is reported.

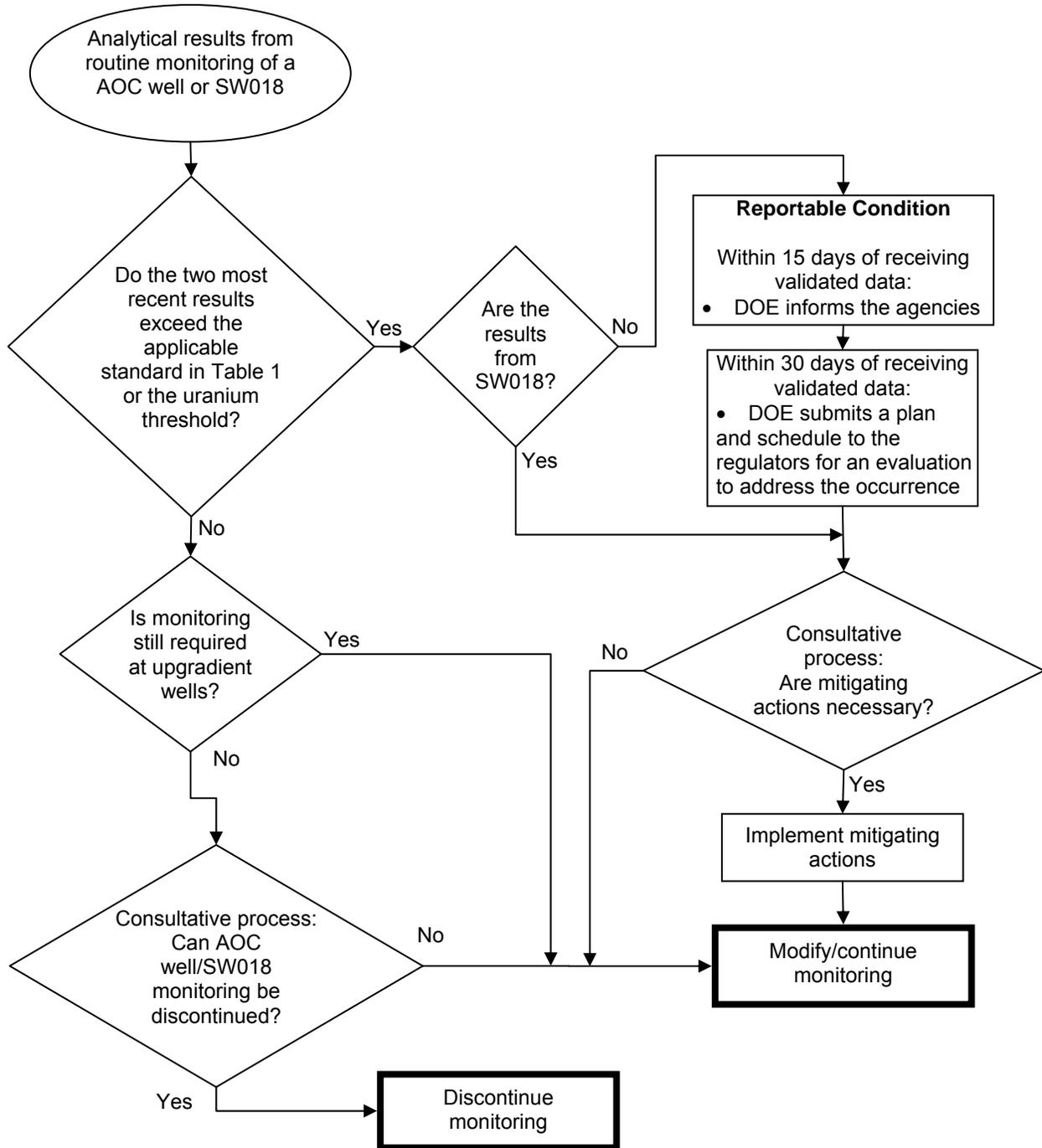
³ The 30-day average for a particular day is calculated as a volume-weighted average of a “window” of time containing the previous 30 days with measurable flow. Each day has its own discharge volume (measured with a flow meter) and activity/concentration (from the sample carboy in place at the end of that day). Therefore, there are 365 30 day moving averages for a location that flows all year. At locations that have intermittent flows, 30-day averages are reported as averages of the previous 30 days of greater than zero flow. For days where no analytical result is available, either due to failed laboratory analysis or NSQ for analysis, no 30-day average is reported.

⁴ Agencies: EPA, CDPHE, and USFWS

Public: Cities of Broomfield, Northglenn, Thornton, and Westminster; Rocky Flats Stewardship Council (RFSC)

Figure 6. Points of Evaluation

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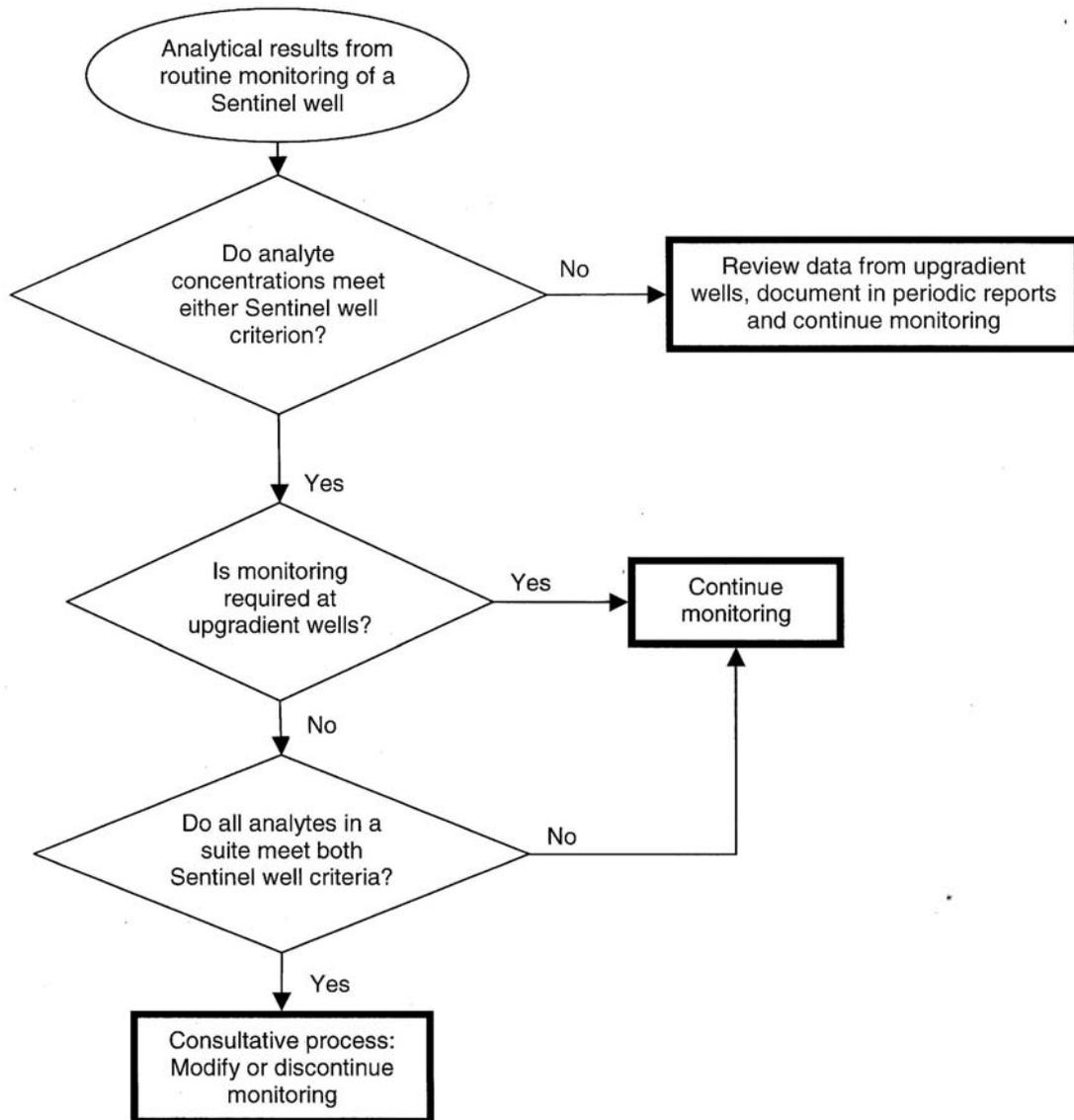


Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.

- AOC wells and location SW018 are sampled twice each year; see Table 2.
- Decisions related to uranium in ground water are based upon a 120 ug/L threshold for AOC wells (basis: a grand mean of results from Site-wide high-resolution uranium analyses performed in the late 1990s through mid-2000s), rather than the standard in Table 1.

Figure 7. Area of Concern Wells and SW018

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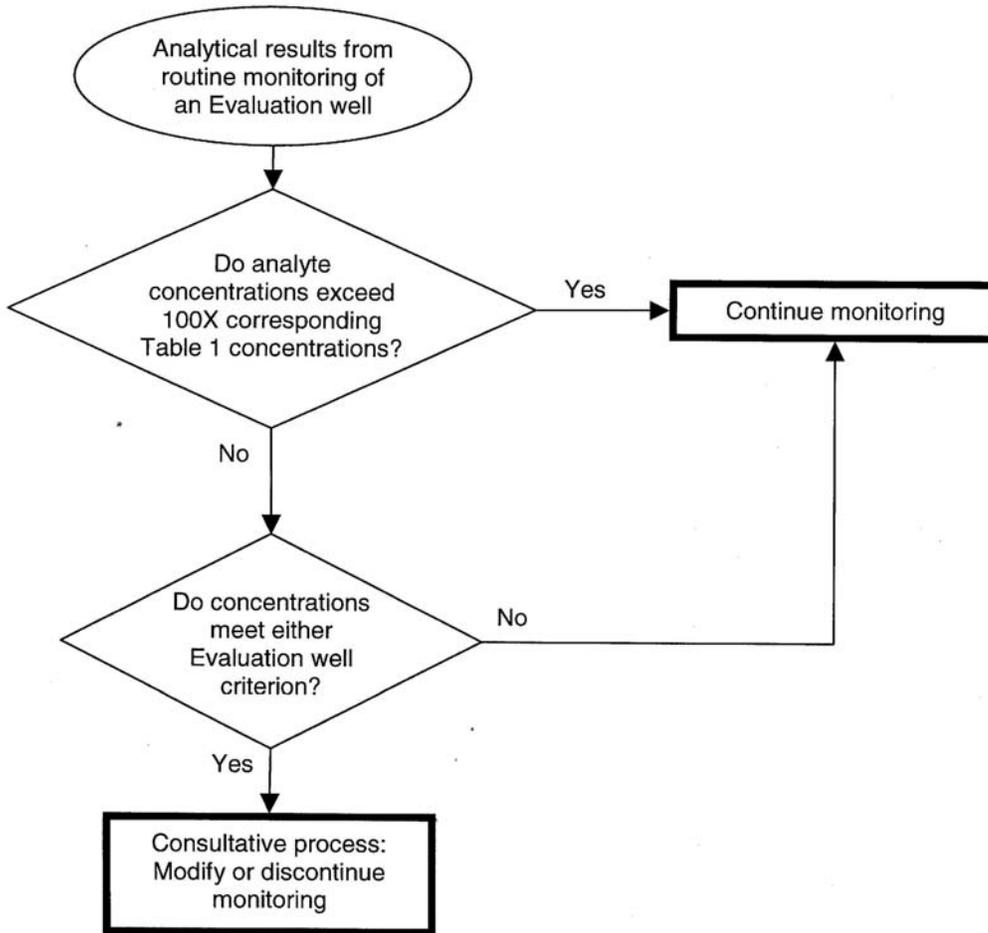
Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.

- Sentinel wells are sampled twice each year; see Table 2.
- Decisions related to uranium are based upon a 120 ug/L threshold for AOC wells (basis: a grand mean of results from Site-wide high-resolution uranium analyses performed in the late 1990s through mid-2000s), rather than the standard in Table 1.

Sentinel Well Criteria

1. The 85th percentile concentration of an analyte *is less than or equal to* the corresponding concentration in Table 1 or, for uranium, the 85th percentile concentration does not exceed 2x120 ug/L or the highest calendar year 2005 concentration, whichever is higher.
2. Analyte concentrations exhibit an indeterminate or statistically-significant *decreasing* trend at the 95% confidence level.

Figure 8. Sentinel Wells



Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.

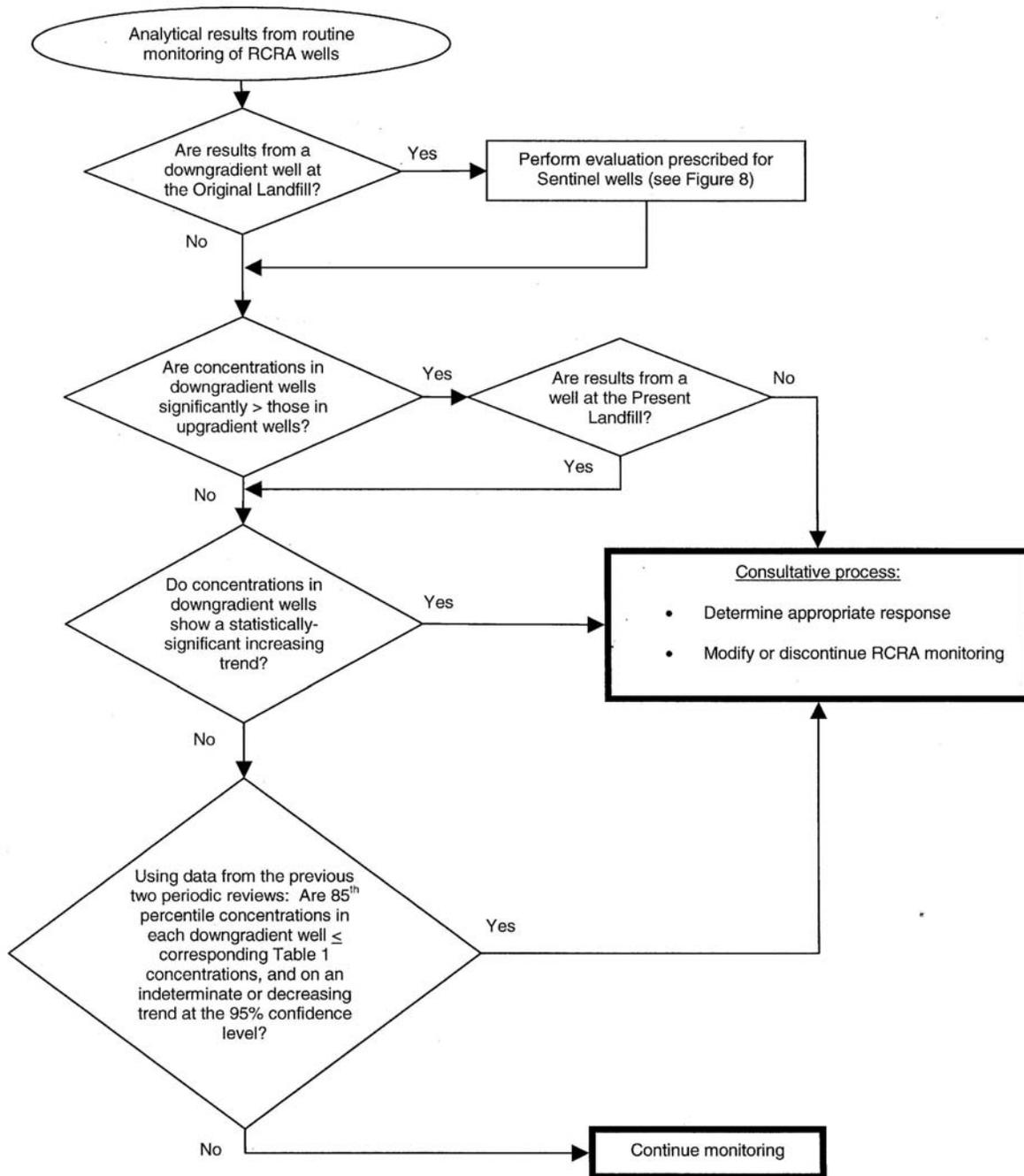
- Evaluation wells are listed in Table 2.

Evaluation Well Criteria:

1. The 85th percentile concentration of an analyte is less than or equal to the corresponding concentration in Table 1, or, for uranium, 240 ug/L or highest pre-CY05 concentration, whichever is higher.
2. Analyte concentrations exhibit an indeterminate or statistically-significant *decreasing* trend at the 95% confidence level.

Figure 9. Evaluation Wells

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Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria. RCRA wells are sampled quarterly; see Table 2.

Figure 10. RCRA Wells

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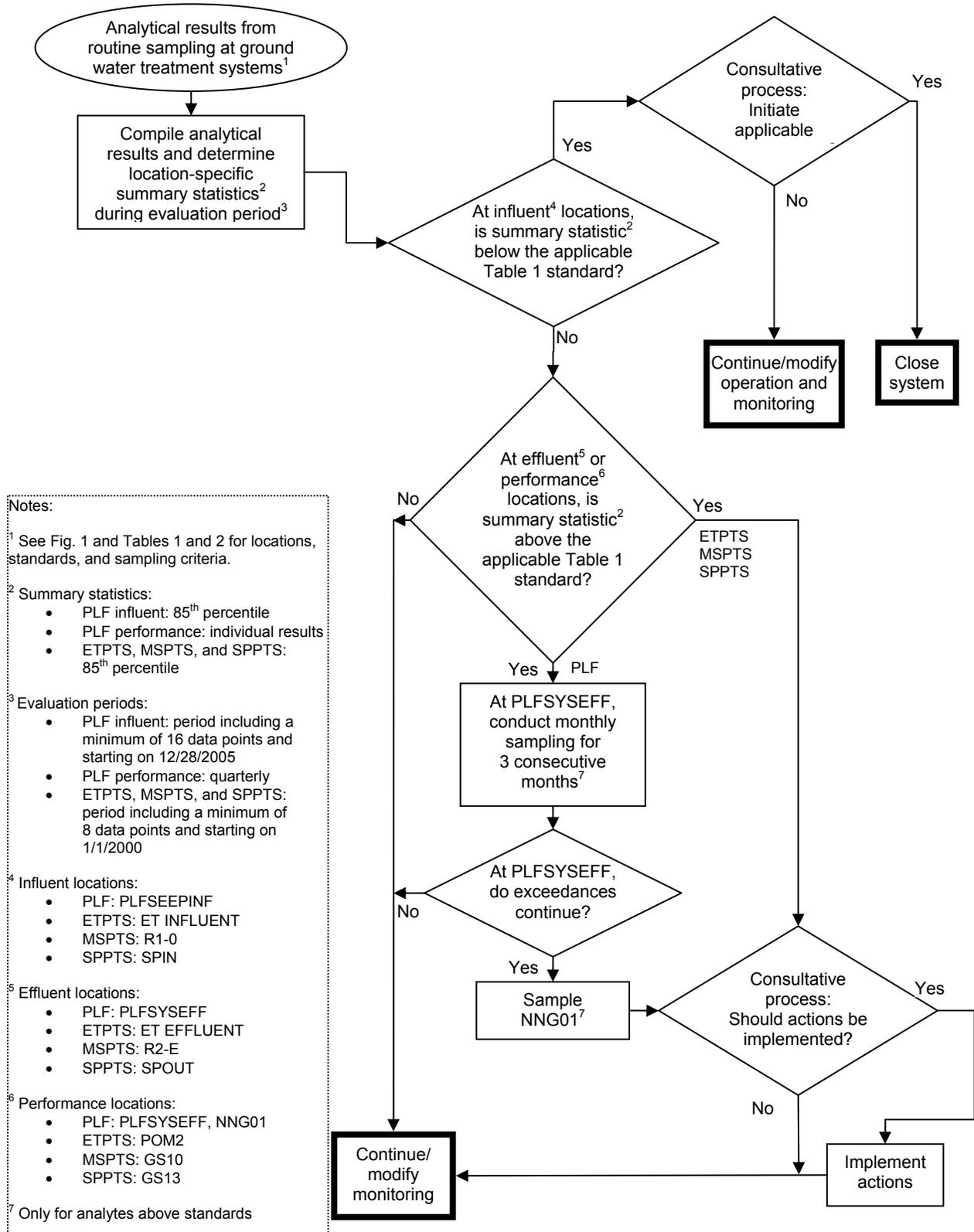


Figure 11. Groundwater Treatment Systems

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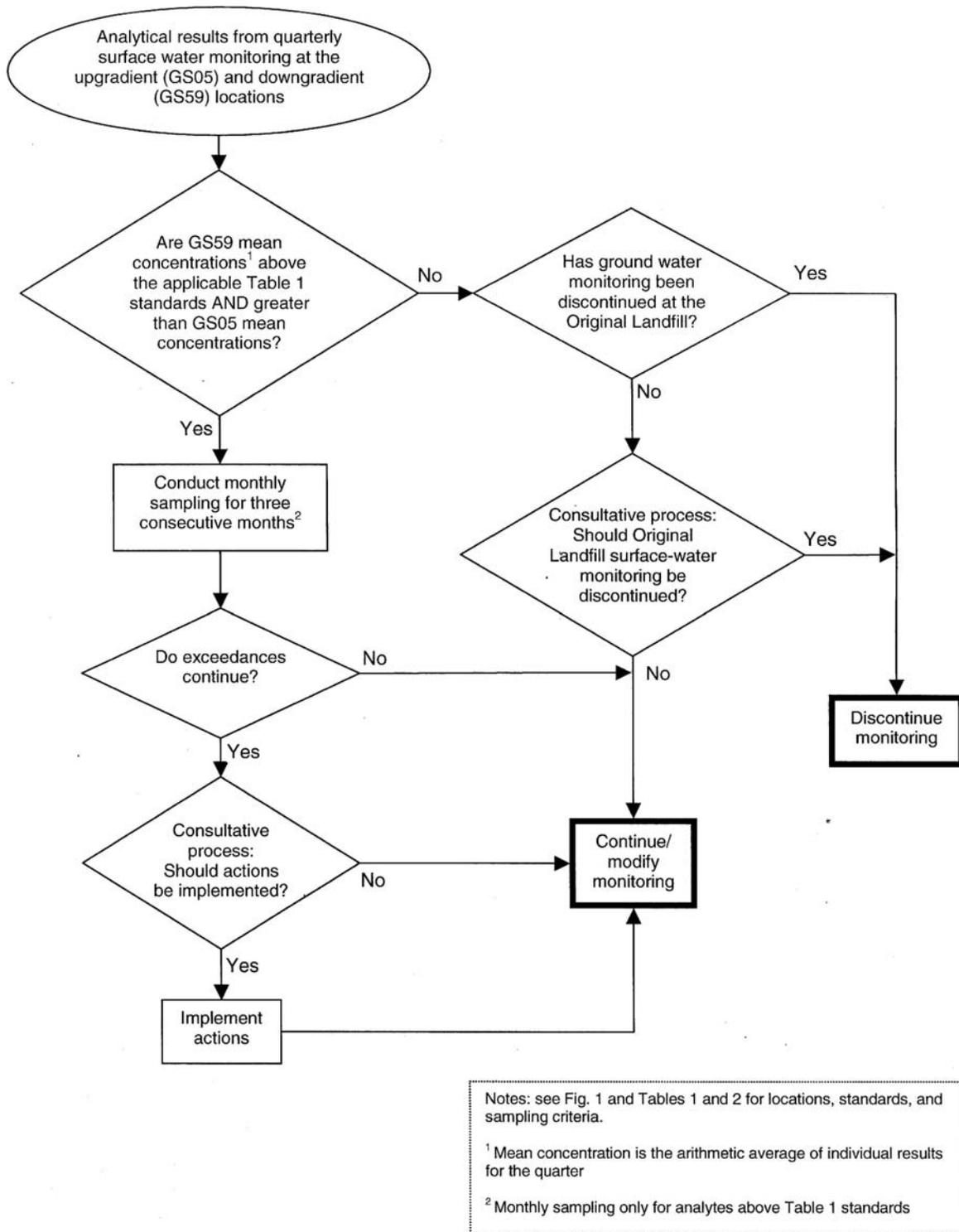


Figure 12. Original Landfill Surface Water

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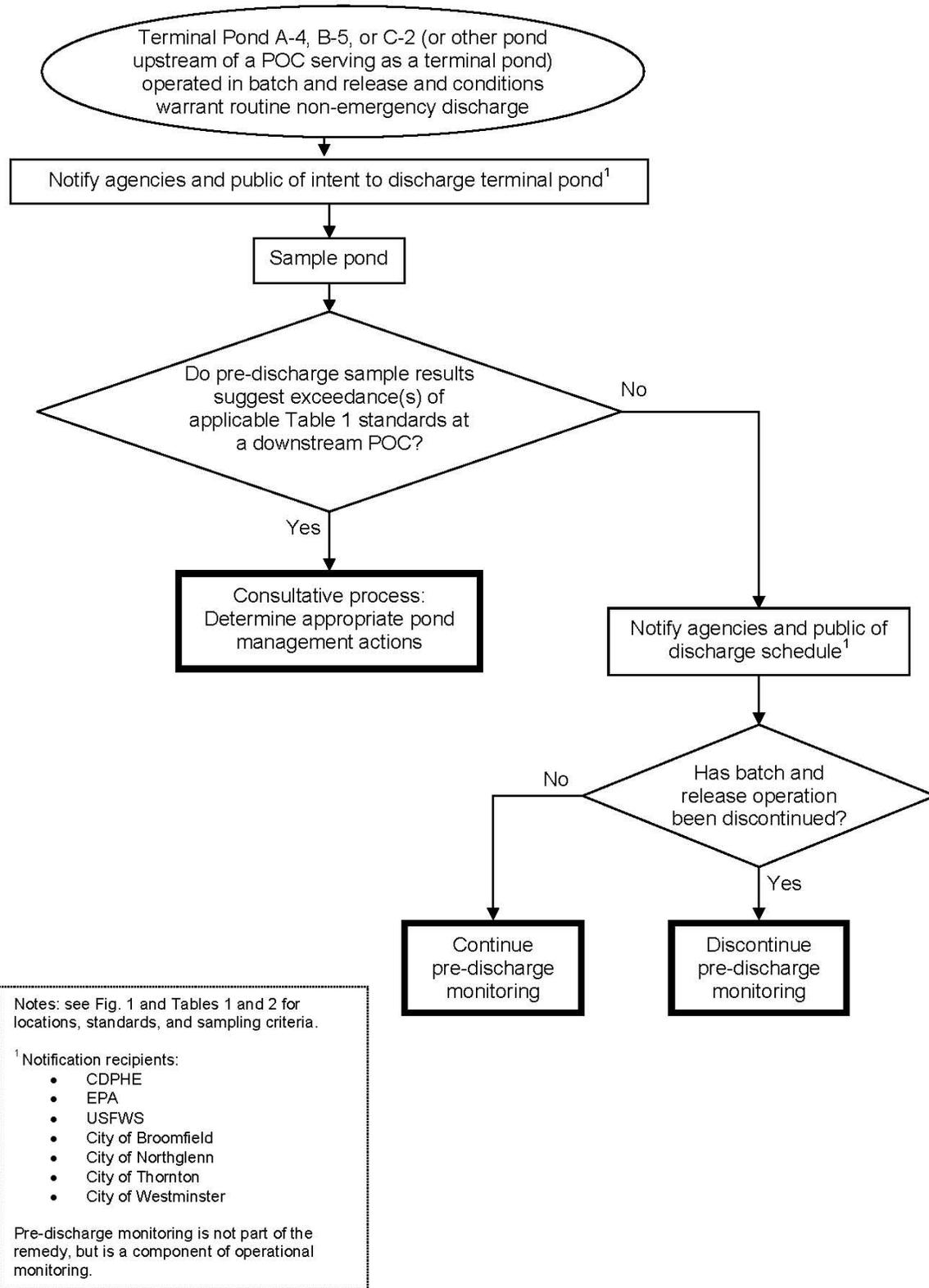


Figure 13. Pre-discharge Pond Sampling

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