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TRANSMITTAL OF THE QUARTERLY STATUS REPORT FOR THE CONSOLIDATED WATER TREATMENT FACILITY – AMP-013-96

Action: Forward copies of the Quarterly Status Report to the Colorado Department of Public Health and Environment and the Environmental Protection Agency

Rocky Mountain Remediation Services is pleased to deliver the attached copy of the Quarterly Status Report for work package 12579, Consolidated Water Treatment Facility, in fulfillment of the scheduled milestone due January 31, 1996. Work package 12579 is scoped to perform operations, maintenance and reporting activities for the Consolidated Water Treatment Plant.

If there is any additional information you would like to have incorporated into the existing format for next quarter's report or clarification of the current report, please do not hesitate to contact J. R. (Russ) Cirillo on extension 5876 or digital page 4011.

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QUARTERLY REPORT
CONSOLIDATED WATER TREATMENT FACILITY
FOR OCTOBER THROUGH DECEMBER 1995
INCLUDING OU1/OU2 DATA SUMMARY FOR
JULY THROUGH SEPTEMBER 1995

Rocky Mountain Remediation Services, L.L.C.

January 1996

January 25, 1996

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1.0 INTRODUCTION

1.1 HISTORICAL PERSPECTIVE - OU1

The Operable Unit No. 1 (OU1) Water Treatment Facility located in Building 891 began operation in April 1992. Building 891 has historically been used to treat the following waters:

- Groundwater collected from the 881 Hillside area (the French Drain Sump and the Collection Well)
- Water collected in the Building 881 Footing Drain (collection and treatment of this water was discontinued in September 1994)
- The majority of the water collected at the Main Decontamination Facility
- Some groundwater well purge water
- Rainwater collected from the Building 891 Truck Dock and Tank Farm

The French Drain Sump is pumped through piping directly to one of the Building 891 influent storage tanks each operating day. The depth of water level in the French Drain Sump typically regenerates from about a 1-foot low (after pumping) to 4-6 feet (over a one day period). The water from the Collection Well is pumped into a trailer-mounted container each operating day, and the container is then transported to Building 891 for off-loading and treatment.

The water from the French Drain Sump and from the Collection Well is temporarily stored in one of two influent collection tanks prior to treatment. The water is then treated with an ultraviolet (UV) light/hydrogen peroxide system for the removal of volatile organic compounds (VOCs), and a four-step ion exchange (IX) system for the removal of uranium, total dissolved solids, hardness, alkalinity, anions, and selected metals.

After treatment, the water is stored in one of three effluent storage tanks until laboratory sample results verify that the water chemistry meets OU1 Applicable or Relevant and Appropriate Requirements (ARARs) and is acceptable for discharge into the South Interceptor Ditch (SID).

1.2 HISTORICAL PERSPECTIVE - OU2

The Operable Unit No. 2 (OU2) Field Treatability Unit (FTU) Granular Activated Carbon Treatment Units (T-900C) began operation in May, 1991, and the Radionuclides Removal System (T-900A and T-900B) began operation in April 1992. The FTU was historically used to treat the following waters:

- Surface water collected from Surface Water Stations SW-59, SW-61, and SW-132 (collection and treatment of water from SW-61 and SW-132 was discontinued on May 6, 1994)
- Some of the water collected at the Main Decontamination Facility
- Some groundwater well purge water
- Rainwater collected from FTU trailer containments

Collected surface water was pumped directly from the surface water stations to Equalization Tank T-200 via a heat-traced pipeline. However in May 1995, because heavy rains interrupted power at the SW-59 weir and may have compromised the integrity of the pipeline, it became necessary to collect and transport water from SW-59 to T-200 using a trailer-mounted container. The use of the container for collection and transport will be discontinued as soon as construction of the double-walled storage tank adjacent to SW-59 is complete.

Collected surface water was stored in Equalization Tank T-200 until enough water was present to justify initiating a batch treatment. The water was then treated using pH adjustment, chemical precipitation, and cross-flow membrane filtration for the removal of radionuclides and metals, and GAC for the removal of VOCs. No effluent holding tank existed at OU2, and therefore treated effluent from the FTU was discharged directly to South Walnut Creek as it was processed. The last process run for the OU2 FTU trailers at the OU2 location was August 8, 1995, and the final reading on the OU2 FTU totalizer was 24,856,900 gallons of water treated.

1.3 CONSOLIDATED WATER TREATMENT FACILITY

During the October through December 1995 period, work continued on the consolidation of the OU1 and OU2 treatment facilities to create the Consolidated Water Treatment Facility (CWTF). It is planned that the CWTF will consist of the following unit operations:

- . Chemical precipitation (T-900A/T-900B)
- . Cross-flow membrane microfiltration (T-900A/T-900B)
- . Ultraviolet Light/Hydrogen Peroxide Oxidation (Bldg 891)
- . Granular Activated Carbon (Bldg 891)¹
- . Ion Exchange (Bldg 891)

On August 18, 1995 the OU2 trailers T-900A and T-900B were relocated to the south side of the OU1 Building 891 Treatment Facility (the T-900C GAC trailer was not relocated). The OU2 Equalization Tank T-200 was relocated to OU1 on October 17, 1995. The T-900A/T-900B trailers will not be operational until construction of the CWTF is complete (anticipated completion is mid-February 1996).

During August 1995, in preparation for the relocation of trailers T-900A/T-900B and T-200 to the south side of Building 891, it was necessary to begin transporting OU2 SW-59 water to the OU1 Influent Storage Tank T-201 for subsequent treatment in Building 891. OU2 water was first treated in Building 891 on September 18, 1995.

The CWTF is expected to treat contaminated water from the following sources:

- . OU1 groundwater
- . OU2 surface water
- . Decontamination water from the Main Decontamination Facility
- . Decontamination water from the Protected Area Decontamination Facility
- . Other ER waters (e.g., purge water, water from other ER special projects, etc.)

The CWTF flowpath should be flexible enough to allow waters to be treated through particular unit processes as necessary, and to allow for re-treatment if necessary. The consolidation of the OU1 and OU2 water treatment facilities has significantly reduced direct operating cost.

¹It was anticipated that the Consolidated Water Treatment Facility would also include cartridge filtration, however this project was canceled due to budget cuts.

2.0 CWTF OPERATIONS (OCTOBER, NOVEMBER, DECEMBER 1995)

2.1 QUANTITIES OF WATER COLLECTED AND TREATED

Table 2-1 summarizes the quantities of water treated at the CWTF for the period October through December 1995. During this period the CWTF collected water from the following sources:

- . OU1 French Drain Sump
- . OU1 Collection Well
- . Main Decontamination Facility
- . Ground water purge water
- . OU2 Surface Water Station SW-59

As can be seen from Table 2-1, a total of approximately 54,251 gallons of water was treated in Building 891. No water was processed through the T-900A/T-900B trailers during the October through December 1995 period due to construction activities. Please note that because the CWTF is equipped with three Influent Tanks, the amount of water treated may be less than or greater than the amount of water collected for any given period.

No water was released from the CWTF Effluent Storage Tanks to the SID during the October through December 1995 period (refer to Table 3-4 for a listing of the most recent discharges from CWTF Effluent Storage Tanks).

Approximately 3,139,821 gallons of water were processed through Building 891 through December 1995.

2.2 CHEMICAL USAGE

The following chemicals are utilized during wastewater treatment operations at the CWTF:

- . Building 891
 - Hydrogen peroxide (UV oxidation)
 - Hydrochloric acid (ion exchange regeneration and pH adjustment)
 - Sodium hydroxide (ion exchange regeneration)
- . T-900A/T-900B trailers
 - Sulfuric acid (pH adjustment: TK-1 and effluent)
 - Calcium hydroxide (precipitation)
 - Ferric sulfate (precipitation)
 - Hydrogen peroxide (chemical cleaning of filter modules)
 - Sodium hydroxide (pH adjustment: TK-2)
 - Sodium hypochlorite (chemical cleaning of filter modules)

Table 2-2 summarizes the quantities of chemicals utilized during the period of October through December 1995.

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**TABLE 2-1
CONSOLIDATED WATER TREATMENT FACILITY
QUANTITIES OF WATER COLLECTED AND PROCESSED a/**

Month/Year	Gallons Collected from the OU1 French Drain Sump b/	Gallons Collected from the OU1 Collection Well b/	Gallons Accepted at Bldg 891 from the MDF and Other Sources c/	Gallons Pumped from Bldg. 891 Containments	Gallons Collected from the OU2 SW-59 d/	Gallons Accepted at OU2 FTU from the MDF and Other Sources e/	Gallons Processed through the IX at Bldg 891
Oct-95	9,618	2,035	0	2,791	5,160	0	10,309
Nov-95	8,848	1,670	0	2,552	5,500	0	10,874
Dec-95	17,178	1,800	2,300	0	6,270	0	33,068
4th Quarter Totals	35,644	5,505	2,300	5,343	16,930 f/	0	54,251

a/ Please note that because the Consolidated Water Treatment Facility is equipped with Influent Tanks, the quantity of water collected will not necessarily equate to the quantity of water processed.

b/ This ground water is collected each operating day (i.e., 5 days per week).

c/ Other sources may include ground water purge water, surface water purge water, etc.

d/ This surface water is collected daily (i.e., 7 days per week).

e/ The OU2 FTU trailers T-900A/T-900B were relocated to the south side of Bldg. 891 in August 1995, and will not become operational at this location until after construction of the CWTF is complete.

f/ These 16,930 gallons were transferred to Building 891 for treatment.

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**TABLE 2-2
CONSOLIDATED WATER TREATMENT FACILITY
CHEMICAL USAGE**

Month/Year	Building 891			T-900A/T-900B					
	Hydrochloric Acid 36% (gallons)	Sodium Hydroxide 50% (gallons)	Hydrogen Peroxide 50% (gallons)	Sulfuric Acid a/ 98% (gallons)	Calcium Hydroxide (pounds)	Ferric Sulfate (pounds)	Hydrogen Peroxide 35% (gallons)	Sodium Hydroxide 50% (gallons)	Sodium Hypochlorite (gallons)
Oct-95	235	103	0	0	0	0	0	0	0
Nov-95	153	62	1.8	0	0	0	0	0	0
Dec-95	246	53	1	0	0	0	0	0	0
4th Quarter Totals	634	218	2.8	0	0	0	0	0	0

a/ Occasionally a small amount (approx. 1 gallon) of this sulfuric acid is used in Building 891 for effluent pH adjustment.

2.3 WASTE GENERATION

The following types of waste are generated during normal wastewater treatment operations at Building 891 and the T-900A/T-900B trailers:

Building 891

- used filter socks
- neutralized ion exchange regenerant
- personnel protective equipment

T-900A/T-900B trailers

- filter press sludge cake
- personnel protective equipment
- used filter membranes

Table 2-3 summarizes the types and quantities of the waste generated during wastewater treatment operations at Building 891 and the T-900A/T-900B trailers for the fourth quarter of 1995. Three tanker truck loads (approximately 10,087 gallons) of neutralized regenerant water from Tank T-210 were sent to the 374 evaporator for processing during the 4th quarter.

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**TABLE 2-3
CONSOLIDATED WATER TREATMENT FACILITY
WASTE GENERATION**

Month/Year	Building 891			T-900A/T-900B		Bldg 891/T-900A/T-900B	
	Filter Socks (55-gal drum)	Neutralized Regenerant to 374 (gallons)	Spent GAC (pounds) a/	Sludge Production (55-gal drum)	Used Filter Membranes (55-gal drum)	Personal Protective Equip. (55-gal drum) b/	
Oct-95	--	2,933	0	0	0	--	
Nov-95	--	3,122	0	0	0	--	
Dec-95	--	4,023	0	0	0	--	
4th Quarter Totals	0 c/	10,078	0	0	0	less than 1 drum c/	

a/ A Granular Activated Carbon unit is currently being installed in Building 891, but as yet is not operational.

b/ PPE is monitored for radiological contaminants, and if determined to be clean for unrestricted release, is sent to the Rocky Flats landfill for disposal. To date, no PPE from Building 891 or the T-900A/T-900B trailers has been found to be contaminated.

c/ These drums are filled gradually, and therefore only quarterly totals are reported.

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TABLE 3-1
CONSOLIDATED WATER TREATMENT FACILITY
COMPARISON OF SELECTED GROUND WATER WELL CONSTITUENTS TO OU1 ARARS
JULY, AUGUST, SEPTEMBER 1995

COMPOUND	OU1 ARAR	UNITS	GROUND WATER WELLS							
			WELL 10092	WELL 10492	WELL 10592	WELL 10692	WELL 10792	WELL 10992	WELL 11092	
			Alluvial 29-Aug-95	Bedrock 22-Aug-95	Alluvial 22-Aug-95	Alluvial 23-Aug-95	Bedrock 22-Aug-95	Alluvial 22-Aug-95	Alluvial 22-Aug-95	
1,1,1 Trichloroethane	200	ug/L	1 U a/	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2 Trichloroethane	5	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1 Dichloroethane	5	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1 Dichloroethene	7	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2 Dichloroethane	5	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	50	ug/L	-- c/	--	--	--	--	--	--	--
Carbon Disulfide	5	ug/L	--	--	--	--	--	--	--	--
Carbon Tetrachloride	5	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	NA b/	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	5	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	ug/L	1 U	1 U	1 U	1 U	0.7 J	1 U	1 U	1 U
Toluene	2000	ug/L	1 U	1 U	1 U	1 U	0.6 J	1 U	1 U	1 U
Trichloroethene	5	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Gross Alpha d/	15	pCi/L	--	13.93	16.85	30.18	--	--	--	--
Copper (dissolved)	200	ug/L	--	5.6 J	--	3 U	--	--	--	--
Iron (dissolved)	300	ug/L	--	17.7 J	--	17.6 J	--	--	--	--
Lead (dissolved)	50	ug/L	--	1 U	--	1 U	--	--	--	--
Selenium (dissolved)	10	ug/L	--	329	--	1 U	--	--	--	--
Thallium (dissolved)	10	ug/L	--	14	--	13.4	--	--	--	--
Nitrate/Nitrite	10	mg/L	4	2.7	7.3	2.4	--	--	--	--
Sulfate	250	mg/L	--	154	388	445	147	126	--	--
Total Dissolved Solids	400	mg/L	--	748	1260	1410	507	741	--	--

- a/ Refer to Appendix A for an explanation of the data qualifiers.
- b/ "NA" = No ARAR exists for this constituent.
- c/ "--" = Data not available.
- d/ Note that this table does not include the error bounds on the radiological data.

3.0 INFLUENT AND EFFLUENT SAMPLING (JULY, AUGUST, SEPTEMBER 1995)

3.1 881 HILLSIDE GROUNDWATER CHARACTERISTICS

The French Drain Performance Monitoring Plan (FDPMP) requires monitoring of French Drain performance. The FDPMP requires groundwater level measurements of designated French Drain monitoring wells 10092, 10192, 10292, 10392, 10492, 10592, 10692, 10792, 10892, 10992, 11092, 39991, 45391, 4887, 35691, 31491, and 4787². Additionally, quarterly water quality sampling of the wells is required. Not all locations are sampled for all parameters due to the small quantities of water generated at many of these locations.

Table 3-1 presents a synopsis of the selected ground water monitoring well data for the following categories of constituents:

- . VOCs
- . Radionuclides
- . Metals
- . Water Quality

All constituents which exceeded OU1 ARARs are included in Table 3-1, however compounds which did not exceed OU1 ARARs are not necessarily included in the table.

As can be seen from Table 3-1 during the July, August, September 1995 period neither VOCs nor radionuclides exceeded OU1 ARARs. Those constituents which did exceed OU1 ARARs include the following:

GROUND WATER WELLS

<u>Compound</u>	<u>Exceedance Range</u>	<u>Units</u>	<u>OU1 ARAR</u>
Gross Alpha	16.85 to 30.18	pCi/L	15
Selenium	329	ug/L	10
Sulfate	388 to 445	mg/L	250
Thallium	13.4 to 14	ug/L	10
Total Dissolved Solids	741 to 1410	mg/L	400

Naphthalene and 1,2,3-trichlorobenzene were also identified in Ground Water Well #10492 at estimated values of 0.1 ug/L and 0.2 ug/L respectively, however these compounds do not have associated OU1 ARARs.

Figure 3-1 is a water level map that was constructed for the October through December 1995 period. This water level data is taken quarterly, and this map was developed based on water levels taken in October 1995. Note that due to the elimination of wells from the monitoring program, this October through December 1995 water level map was constructed using data from 16 fewer ground water wells. Comparison of this map with the previous map developed from water levels taken in July 1995, indicates that areas of 881 Hillside which were unsaturated in July 1995 were saturated in October 1995.

² Well #'s 4787, 10192 and 10392 were reported as dry. Well #39991 was reported as damaged in April 1993, and Well #45391 was reported as damaged in April 1995. Bedrock wells are not used during the development of the ground water level maps.

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3.2 OU1 FRENCH DRAIN SUMP AND COLLECTION WELL CHARACTERISTICS

Collection Well water is now collected separately from the French Drain Sump water, and collection and treatment of water from the Building 881 Footing Drain was discontinued in September 1994. Therefore the current French Drain Sump data is representative of only those waters that seep from the groundwater table into the French Drain. For the July, August, and September 1995 period, monthly sampling was performed at the French Drain Sump and the Collection Well.

Table 3-2 presents a synopsis of selected French Drain Sump and Collection Well data for the following categories of constituents:

- . VOCs
- . Radionuclides
- . Metals
- . Water Quality

All constituents which exceeded OU1 ARARs are included in Table 3-2, however compounds which did not exceed OU1 ARARs are not necessarily included in the table.

As can be seen in Table 3-2³, samples taken from the French Drain Sump during the July through September 1995 period did not exceed OU1 VOC ARARs. Those constituents which did exceed OU1 ARARs include the following:

FRENCH DRAIN SUMP

<u>Compound</u>	<u>Exceedance Range</u>	<u>Units</u>	<u>OU1 ARAR</u>
Gross Alpha	15.28	pCi/L	15
Selenium	31.6 to 44	ug/L	10
Total Dissolved Solids	662 to 1182	mg/L	400

Various phthalates and Tentatively Identified Compounds (TICs) were also identified during French Drain Sump sampling, however these compounds do not have associated OU1 ARARs.

Table 3-2 also presents a synopsis of Collection Well data for the July through September 1995 period. As can be seen in Table 3-2, samples taken from the Collection Well continue to contain elevated levels of VOCs. Those constituents which did exceed OU1 ARARs include the following:

COLLECTION WELL

<u>Compound</u>	<u>Exceedance Range</u>	<u>Units</u>	<u>OU1 ARAR</u>
1,1,2 Trichloroethane	66	ug/L	5
1,1 Dichloroethene	15 to 40	ug/L	7
Carbon Tetrachloride	26 to 40	ug/L	5
Methylene Chloride	16 to 26	ug/L	5
Tetrachloroethene	72 to 88	ug/L	5
Trichloroethene	740 to 940	ug/L	5

³As of January 1995, detection limits for VOCs analyzed by gas chromatography/mass spectrometry (GC/MS) are reported at 10 ug/L. The RFETS General Radiochemistry and Routine Analytical Services Protocol (GRRASP) requires data to be reported as estimated if compounds are detected at or above 1 ug/L but below 10 ug/L.

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**TABLE 3-2
CONSOLIDATED WATER TREATMENT FACILITY
COMPARISON OF SELECTED OU1 INFLUENT SOURCE CONSTITUENTS TO OU1 ARARS
JULY, AUGUST, SEPTEMBER 1995**

COMPOUND	OU1 ARAR	UNITS	FRENCH DRAIN SUMP			COLLECTION WELL		
			11-Jul-95	15-Aug-95	26-Sep-95	11-Jul-95	15-Aug-95	25-Sep-95
1,1,1 Trichloroethane	200	ug/L	10 U a/	0.5 U	0.5 U	14 J	9	4 J
1,1,2 Trichloroethane	5	ug/L	10 U	0.5 U	0.5 U	50 U	66	5 U
1,1 Dichloroethane	5	ug/L	10 U	0.5 U	0.5 U	50 U	0.5 U	5 U
1,1 Dichloroethene	7	ug/L	10 U	0.5 U	0.5 U	40 J	24	15
1,2 Dichloroethane	5	ug/L	10 U	0.5 U	0.5 U	50 U	0.5 U	5 U
Acetone	50	ug/L	10 U	1 U	-- b/	50 U	1 U	--
Carbon Disulfide	5	ug/L	10 U	--	--	50 U	--	--
Carbon Tetrachloride	5	ug/L	10 U	0.5 U	0.5 U	37 J	40 D	26
Chloroform	NA c/	ug/L	10 U	0.5 U	0.5 U	50 U	3	5 U
Methylene Chloride	5	ug/L	3 J	0.2 BJ	1 B	26 BJ	26 BJ	16 DJ
Tetrachloroethene	5	ug/L	10 U	1	1	72	84 D	88
Toluene	2000	ug/L	10 U	0.5 U	0.5 U	50 U	0.5 U	5 U
Trichloroethene	5	ug/L	10 U	0.6	0.3 J	760	940 D	740
Gross Alpha d/	15	pCi/L	9.272	9.921	15.28	19.65	21.65	8.84
Copper (dissolved)	200	ug/L	29.9	13.2 B	21.7 B	29.4	17.4 B	21.9 B
Iron (dissolved)	300	ug/L	52.6 B	42.2 B	61.9 B	80.6 B	62.8 B	285
Lead (dissolved)	50	ug/L	24.2	1.2 U	0.8 U	3.4	1.2 U	0.8 U
Selenium (dissolved)	10	ug/L	44	40.7	31.6	732	745	860
Thallium (dissolved)	10	ug/L	3.3 U	3.3 U	4.1 U	5.7 B	5.2 B	5.5 B
Hardness (calculated from Ca and Mg)	NA	mg/L	471	435	440	636	611	641
Chloride	250	mg/L	193	90.7	4.2	86.6	205	196
Nitrite/Nitrate	10	mg/L	2	1.46	1.21	6.81	6.57	6.3
Sulfate	250	mg/L	227	133	97.3	128	228	253
Total Dissolved Solids	400	mg/L	1182	778	662	847	1259	1174

- a/ Refer to Appendix A for an explanation of the data qualifiers.
- b/ "--" = Data not available.
- c/ "NA" = No ARAR exists for this constituent.
- d/ Note that this table does not include the error bound on the radiological data.

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COLLECTION WELL (continued)

<u>Compound</u>	<u>Exceedance Range</u>	<u>Units</u>	<u>OUI ARAR</u>
Gross Alpha	19 to 21	pCi/L	15
Selenium	732 to 860	ug/L	10
Sulfate	253	mg/L	250
Total Dissolved Solids	847 to 1259	mg/L	400

Various phthalates, TICs, and 1,1,2/1,2,2-Trichloroethane were also identified during Collection Well sampling, however these compounds do not have associated OUI ARARs.

3.3 OU2 SURFACE WATER CHARACTERISTICS

Surface water is sampled on a quarterly basis from SW-59, SW-61, and SW-132. Although the Environmental Protection Agency and the Colorado Department of Public Health and the Environment authorized the discontinuation of the collection and treatment of SW-61 and SW-132 on April 24, 1994, the two surface water stations continue to be sampled to verify that no increase in contamination is occurring. Collection and treatment for SW-61 and SW-132 was discontinued on May 6, 1994. Presently only SW-59 water is collected and treated.

Table 3-3 presents a synopsis of OU2 Surface Water data for the July through September 1995 period. As can be seen in Table 3-3, those constituents which did exceed OU2 ARARs include the following:

SURFACE WATER STATIONS: SW-59, SW-61, and SW-132

<u>Compound</u>	<u>Exceedance Range</u>	<u>Units</u>	<u>OU2 ARAR</u>
Carbon Tetrachloride	55	ug/L	5
Chloroform	12	ug/L	1
Tetrachloroethene	2 to 21	ug/L	5
Trichloroethene	24	ug/L	5
Vinyl Chloride	8	ug/L	2
Plutonium, 238/239/240	0.18	pCi/L	0.05
Manganese (dissolved) ⁴	210	ug/L	10
Zinc (total)	219	ug/L	50

Other compounds, such as 1,1,1-Trichloroethane and cis-1,2-Dichloroethene were also identified during the sampling, however these constituents do not have OU2 ARARs.

⁴Currently trying to determine why the manganese dissolved result of 210 ug/L is greater than the manganese total result of 45.4 ug/L.

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TABLE 3-3
CONSOLIDATED WATER TREATMENT FACILITY
COMPARISON OF SELECTED SW-59, SW-61 AND SW-132 CONSTITUENTS TO OU2 ARARS
JULY, AUGUST, SEPTEMBER 1995

COMPOUND	OU2 ARARs	Units	SW-59	SW-61	SW 132
			27-Sep-95	27-Sep-95	27-Sep-95
1,1,1-Trichloroethane	NA a/	ug/L	3	1	0.2 U b/
1,1-Dichloroethane	NA	ug/L	1	2.0	0.2
1,1-Dichloroethene	7	ug/L	1	0.2 J	0.2 U
1,2-Dichloroethane	NA	ug/L	0.4 U	0.20 U	0.2 U
Carbon Tetrachloride	5	ug/L	55	1	0.1 U
Chloroform	1	ug/L	12	0.4	0.5
Methylene Chloride	NA	ug/L	0.3 BJ	0.5 U	0.5 U
Tetrachloroethene	1	ug/L	21	2 D	0.1 J
Trichloroethene	5	ug/L	24	2 D	0.3 U
Vinyl Chloride	2	ug/L	1	8	0.3 U
cis-1,2-Dichloroethene	NA	ug/L	24	24	2
Gross Alpha c/	11	pCi/L	10.87	2.36	2.81
Uranium, (total)	10	pCi/L	6.52	5.36	3.66
Plutonium 238,239,240 (total)	0.05	pCi/L	0.18	0.01	0.02
Aluminum (total)	200	ug/L	284 N	64.5 N	62 N
Copper (total)	25	ug/L	1.4 U	1.4 B	2.8
Iron (total)	1000	ug/L	323	354	278
Lead (total)	5	ug/L	1.5 U	1.5 U	1.5 U
Manganese (total)	1000	ug/L	421	45.4 d/	32.2
Manganese (dissolved)	50	ug/L	2.2 B	210 d/	26.2
Selenium (total)	10	ug/L	2.5 U	2.5 U	2.5 U
Zinc (total)	50	ug/L	219 E	38.9 E	37.9
Hardness (as CaCO ₃ - calculated from Ca and Mg)	NA	mg/L	396	297	194
Chloride	NA	mg/L	50.8	78.6	47.5
Nitrate/Nitrite	NA	mg/L	-- e/	--	--
Sulfate	NA	mg/L	32.9	30.1	33.1
Total Dissolved Solids	NA	mg/L	609	456	356

a/ "NA" = No ARAR exists for this constituent.

b/ Refer to Appendix A for an explanation of the data qualifiers.

c/ Note that this table does not include the error bounds on the radiological data.

d/ Currently trying to determine why the dissolved result is greater than the total result.

e/ "--" = Data not available.

3.4 TREATED EFFLUENT CHARACTERISTICS

Treated effluent from the CWTF is stored in one of three Effluent Storage Tanks prior to discharge. An Effluent Storage Tank is sampled once it is full, and the tank is discharged if the data show that OU1 ARARs have not been exceeded. Table 3-4 presents a synopsis of selected effluent tank data for April through September 1995. These Effluent Storage Tanks contained treated water from OU1 influent sources, the MDF, and miscellaneous purge water. During this reporting period, none of the discharged Effluent Storage Tanks contained treated water from OU2 influent sources. The treated effluent water did not exceed OU1 ARARs (Note that not all analyzed compounds are presented on Table 3-4).

The OU2 FTU was not equipped with an effluent holding tank, and therefore treated effluent from the FTU was discharged directly to South Walnut Creek as it was processed. With the consolidation of the OU1 and OU2 treatment facilities into the CWTF, all treated effluent will be sent to a CWTF Effluent Storage Tank for holding, and will be sampled prior to discharge.

During the July, August, September 1995 period, an OU2 FTU treated effluent process sample was taken on July 13, 1995. The FTU did not discharge in September 1995. Table 3-5 presents a synopsis of the FTU July 1995 discharge data. The RS7 treated effluent did not exceed OU2 ARARs (Note that not all analyzed compounds are presented on Table 3-5).

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TABLE 3-4
CONSOLIDATED WATER TREATMENT FACILITY
COMPARISON OF SELECTED EFFLUENT STORAGE TANK DATA TO OU1 ARARS
JULY - SEPTEMBER 1995, OCTOBER - NOVEMBER 1995, AND JANUARY 1996

COMPOUND	OU1 ARARs	UNITS	CWTF Effluent Tanks			
			Tank No. :	T-205	T-207	T-206
			Sampled :	19-Jul-95	31-Jul-95	19-Sep-95
			Discharged :	27-Jul-95	29-Sep-95	16-Jan-96
Trichloroethane 1,1,1	200	ug/L		1.00 U a/	0.5 U	0.5 U
Trichloroethane 1,1,2	5	ug/L		1.00 U	0.5 U	0.5 U
Dichloroethane 1,1	5	ug/L		1.00 U	0.5 U	0.5 U
Dichloroethene 1,1	7	ug/L		1.00 U	0.5 U	0.5 U
Dichloroethane 1,2	5	ug/L		1.00 U	0.5 U	0.5 U
Acetone	50	ug/L		10.0 U	1 U	5 U
Carbon disulfide	5	ug/L		10 U b/	-- c/	1 U
Carbon tetrachloride	5	ug/L		1.00 U	0.5 U	0.5 U
Chloroform	NA	ug/L		0.216 J	0.4 J	0.4 J
Methylene chloride	5	ug/L		0.209 J	1 U	0.8 BJ
Tetrachloroethene	5	ug/L		1.00 U	0.5 U	0.5 U
Toluene	2000	ug/L		1.00 U	0.5 U	0.5 U
Trichloroethene (TCE)	5	ug/L		1.00 U	0.5 U	0.5 U
Vinyl chloride	NA	ug/L		1.00 U	1 U	1 U
Americium 241 d/	4	pCi/L		0.0008	0.006	0.004 J
Gross Alpha	15	pCi/L		-0.02	0.223	0.0113 J
Gross Beta	50	pCi/L		2.3	1.35	0.9998 J
Plutonium 238/239/240 (total-calculated)	15	pCi/L		0.00	0.00	0.014 J
Strontium 89/90	8	pCi/L		0.02	0.033	0.157 J
Tritium	20000	pCi/L		90	173	24.05 J
Uranium (total - calculated)	40	pCi/L		0.516	0.079	0.06 J
Cadmium (dissolved)	10	ug/L		3.0 B	3.1 U	3.1 U
Chromium (dissolved)	50	ug/L		3.0 U	2.8 U	2.8 U
Copper (dissolved)	200	ug/L		3.6 B	21.3 B	14.2 B
Iron (dissolved)	300	ug/L		24.4 B	29.0 B	54.5 B
Lead (dissolved)	50	ug/L		2.0 U	3.4	1.2 U
Selenium (dissolved)	10	ug/L		6.6	2.9 U	3.7 B
Zinc (dissolved)	2000	ug/L		3.0 U	40.7	20.7
Chloride	250	mg/L		24	5.15	3.4
Nitrate + Nitrite	10	mg/L		0.6	0.36	0.232
Sulfate	250	mg/L		12	24.4	8.06
Total Dissolved Solids (TDS)	400	mg/L		97	82	78
pH	6.5-9.0	S.U.		6.7	7.02	7.52

- a/ Refer to Appendix A for an explanation of the data qualifiers.
- b/ The GRRASP requires that data be reported as estimated if compounds are detected at or above 1 ug/L but below 10 ug/L.
- c/ "--" = Data not available.
- d/ Note that this table does not include the error bound on the radiological data.

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**TABLE 3-5
CONSOLIDATED WATER TREATMENT FACILITY
COMPARISON OF SELECTED RS-7 TREATED EFFLUENT DATA TO OU2 ARARS
JULY, AUGUST, SEPTEMBER 1995**

COMPOUND	OU2 ARAR	Units	RS 7: Treated Effluent a/
			13-Jul-95
1,1,1-Trichloroethane	NA b/	ug/L	0.5 U c/
1,1-Dichloroethane	NA	ug/L	0.5 U
1,1-Dichloroethene	7	ug/L	0.5 U
1,2-Dichloroethane	NA	ug/L	0.5 U
Carbon Tetrachloride	5	ug/L	0.5 U
Chloroform	1	ug/L	0.5 U
Methylene Chloride	NA	ug/L	1 U
Tetrachloroethene	1	ug/L	0.5 U
Trichloroethene	5	ug/L	0.5 U
Vinyl Chloride	2	ug/L	1 U
cis-1,2-Dichloroethene	NA	ug/L	0.5 U
Gross Alpha d/	11	pCi/L	0.6171
Uranium (total - calculated)	10	pCi/L	0.04
Plutonium (total-calculated)	0.05	pCi/L	0.0059
Aluminum (total)	200	ug/L	55 B
Calcium	NS	ug/L	19900
Copper (total)	25	ug/L	13.2 B
Iron (total)	1000	ug/L	51.5 B
Lead (total)	5	ug/L	1.2 U
Magnesium	NS	ug/L	688
Manganese (total)	1000	ug/L	7.1 B
Manganese (dissolved)	50	ug/L	6.4 B
Selenium (total)	10	ug/L	3 B
Zinc (total)	50	ug/L	19.8 B
Hardness (calculated from Ca and Mg as CaCO3)	NA	mg/L	53
Sulfate	NA	mg/L	-- e/
Total Dissolved Solids	NA	mg/L	--

a/ RS7 treated effluent was discharged to South Walnut Creek. The OU2 FTU trailers were relocated to the south side of Building 891 in August 1995, and will not be operational until construction of the Consolidated Water Treatment Facility is complete.

b/ "NA" = No ARAR exists for this constituent.

c/ Refer to Appendix A for an explanation of the data qualifiers.

d/ Note that this table does not include the error bounds on the radiological data.

e/ "--" = Data not available.

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4.0 ENVIRONMENTAL COMPLIANCE

Period of Non-Collection

There were three periods of non-collection at the OU2 SW-59 weir during the October, November, December 1995 period. These periods of OU2 SW-59 weir non-collection are as follows:

- October 13 to October 14 (power to weir was interrupted, a portable generator was utilized until permanent power to the weir was restored on October 15)
- November 4 to November 5 (determined that the movement of the pump float switch was restricted, pump and float switch were repositioned within the weir box)
- November 6 to November 7 (determined that the float switch was faulty, the float switch was replaced by ultrasonic level controls, and the weir box is now equipped with primary and secondary pumps - the primary pump is activated by a pressure switch, the secondary pump is activated by the ultrasonic level controls)

All appropriate notifications were made, and the situations were immediately corrected.

5.0 ANTICIPATED OPERATIONS FOR NEXT QUARTER

Collection and treatment of water from the French Drain Sump will continue as normal. Water from the Collection Well will continue to be collected in the portable tank and transported to the CWTF for off-loading and treatment. Purge, incidental, and decontamination pad waters will continue to be accepted and treated.

Collection and transport of SW-59 water to the CWTF will continue via trailer-mounted container until construction of the above-ground storage tank adjacent to SW-59 is complete. Water collected from SW-59 will continue to be treated in Building 891 until consolidation of the CWTF is complete.

Once the CWTF is operational, the anticipated date is mid-February 1996, the flowpath for the water to be treated will be chosen based upon the influent contaminants and best anticipated method of treatment. Efforts will be made to minimize waste generation during CWTF operations.

Appendix A
Data Qualifiers and Descriptions

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Selected Laboratory Data Qualifiers and Descriptions

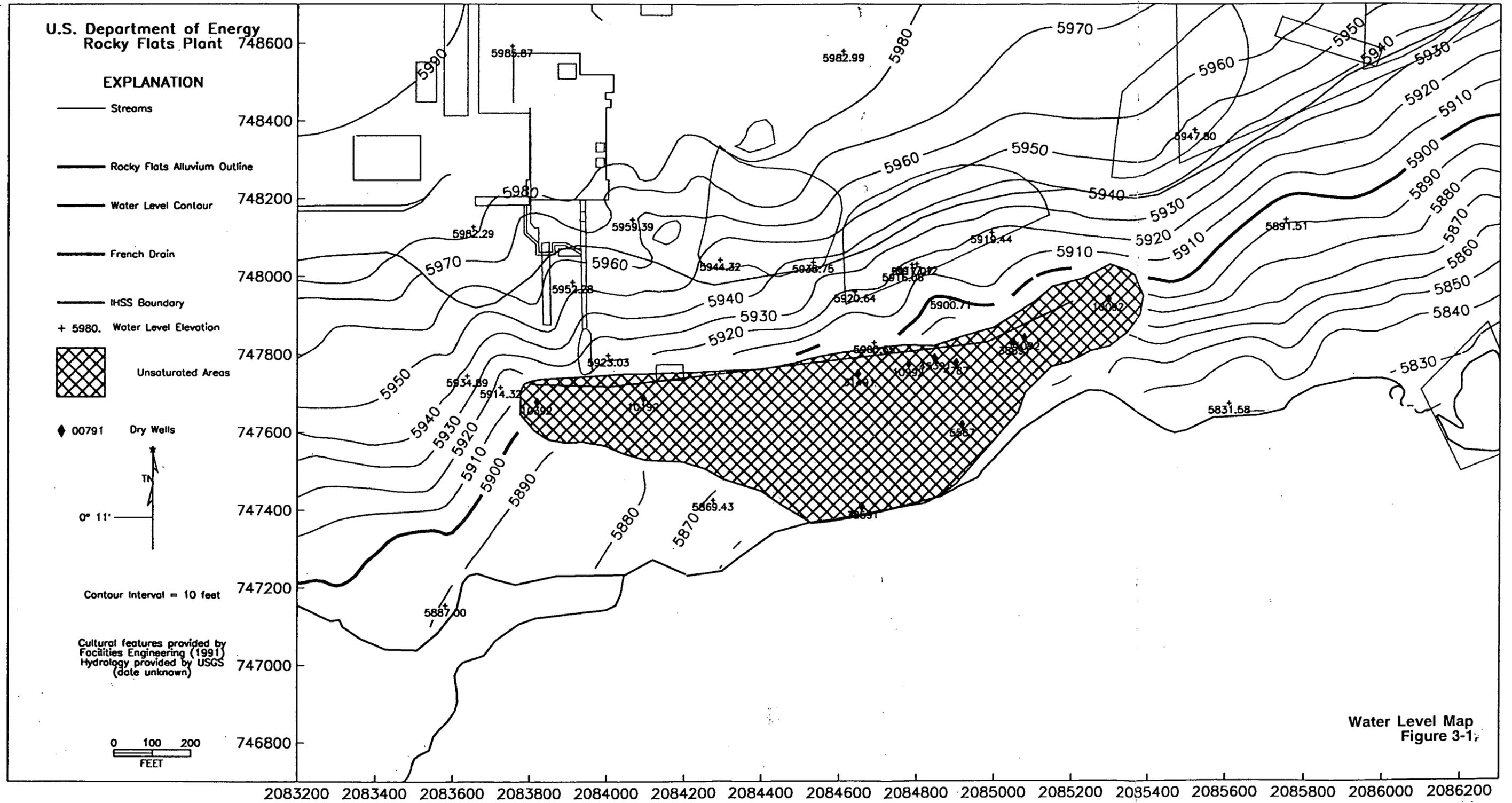
<u>Qualifier</u>	<u>Description</u>
B	< method detection limit but >= instrument detection limit (INORGANIC)
B	Analyte found in blank and sample (ORGANIC)
D	Compound identified using secondary dilution factor (ORGANIC)
E	Concentration exceeds calibration range of instrument (ORGANIC)
E	Estimated due to interference (INORGANIC)
J	Estimated value, < sample's detection limit
N	Spiked recovery not within control limits (INORGANIC)
S	Determined by MSA (INORGANIC)
U	Undetected, analyzed for but not detected

Selected Data Validation Qualifiers and Descriptions

<u>Qualifier</u>	<u>Description</u>
A	Data is acceptable, with qualifications
JA	Estimated, acceptable
R	Data is rejected
V	Data is valid
Y	Analytical results in validation process
Z	Validation was not requested or performed

Figure 3-1

Rocky Flats OU1 October – December 1995 Water Level Map



Water Level Map
Figure 3-1

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