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Department of Energy

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OCT 31 2005

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77 West Jackson Boulevard
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DOE-0014-06

Mr. Thomas Schneider, Project Manager
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401 East Fifth Street
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Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF THE DRAFT WAC ATTAINMENT PLAN FOR SEDIMENT IN THE STORM WATER RETENTION BASINS

Enclosed for your review is the draft Waste Acceptance Criteria (WAC) Attainment Plan for Sediment in the Storm Water Retention Basins (SWRBs). This plan describes the data collection activities that have been completed to support the On-Site Disposal Facility waste acceptance criteria attainment determination for the sediment currently in the SWRBs located in Area 7.

If you have any questions or require additional information, please contact me at (513) 648-3139.

Sincerely,

Johnny Reising

Johnny W. Reising
Director

Enclosure

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WAC ATTAINMENT PLAN FOR SEDIMENT IN THE STORM WATER RETENTION BASINS

FERNALD CLOSURE PROJECT
FERNALD, OHIO

OCTOBER 2005

U.S. DEPARTMENT OF ENERGY

20500-PL-0004
REVISION A
DRAFT

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LIST OF ACRONYMS AND ABBREVIATIONS

CAWWT	Converted Advanced Wastewater Treatment (Facility)
DOE	U.S. Department of Energy
FCP	Fernald Closure Project
mg/kg	milligrams per kilogram
OSDF	On-Site Disposal Facility
pCi/g	picoCuries per gram
RCRA	Resource Conservation and Recovery Act
SP	Soil Stockpile
SWRB	Storm Waster Retention Basin
TCLP	Toxicity Characteristic Leaching Procedure
WAC	Waste Acceptance Criteria
WAO	Waste Acceptance Organization

WAC ATTAINMENT PLAN FOR SEDIMENT IN THE STORM WATER RETENTION BASINS

1. INTRODUCTION

There are estimated up to 5,000 cubic yards of sediment in the Storm Water Retention Basins (SWRBs) that need to be removed and disposed of prior to excavation of the liner and underlying soil. This Waste Acceptance Criteria (WAC) Attainment Plan describes the data collection activities that have been completed that can support the On-Site Disposal Facility (OSDF) WAC attainment determination for the sediment currently in the SWRBs located in Area 7.

2. PURPOSE

The purpose of this WAC Attainment Plan is to present characterization data for the sediment in the Center and West SWRBs that has been collected to date, detail the future sample collection of the East basin, and provide the remediation process and excavation controls that will be used for the sediment in all basins.

3. SCOPE

The material included within the scope of this WAC Attainment Plan is the sediment that is contained in the Center, West, and East SWRB. The SWRBs are located in Remediation Area 7 and are comprised of three basins: a Center settling basin as well as a basin to the East and one to the West. Each basin is constructed with a synthetic liner over a compacted clay liner. The Center and West basins have been taken offline and will be excavated first while the East basin will stay online until the Converted Advanced Wastewater Treatment (CAWWT) Facility backwash basin is operational.

4. 2004 SAMPLING

Sediment in the SWRBs was sampled in March of 2004 under the Project Specific Plan for Sampling of Miscellaneous Areas for OSDF WAC Attainment (DOE 2001) for uranium and technetium-99 only with seven (7) samples being collected from the West basin, two (2) samples from the Center basin, and nine (9) samples from the East basin. While all samples from the West basin were below-WAC for total uranium and technetium-99, both samples from the Center and two samples from the East basin were above-WAC for technetium-99 only. Figure 1 shows the sample locations and corresponding uranium and technetium-99 results with the data presented in Table 1.

5. 2005 SAMPLING

Based on the assumption that the waste stream has not changed in the past year and a half, four additional samples were collected from the Center basin in August 2005 under the Project Specific Plan for Sampling of Material on the Eastern Portion of Soil Pile AR6-006 (Former SP-7) for Envirocare's Waste Acceptance Criteria (Supplement to 20300-PSP-0011), (DOE 2005). The samples were analyzed for

Envirocare's WAC constituents (see Table 2) in order to further characterize the sediment for off-site disposal at Envirocare. Two samples were greater than the "20 times rule" for total selenium and were subsequently submitted for toxicity characteristic leaching procedure (TCLP) analysis with results demonstrating conditions below the Resource Conservation and Recovery Act TCLP limit for selenium. However, the new data showed that all four samples were below the WAC for technetium-99. See Figure 2 for sample locations and Table 3 for the data from these four samples.

With these four new samples (locations A7-SWRBC-S-1, A7-SWRBC-S-2, A7-SWRBC-S-3, A7-SWRBC-S-4) being below OSDF WAC for technetium-99, additional samples were taken from both the Center and West basin to confirm that the current conditions in the basins are below OSDF WAC for uranium and technetium-99 (see Figure 3 for sample locations and Table 4 for the data). These new samples were placed directly at the historical above-WAC locations in the Center basin and placed near the locations in the West basin that approached the OSDF WAC for technetium-99 (A6-SWRBW-6). Additionally, a sample was placed near the center of the Center basin in the deepest settling point (A7-SWRBC-S-C1). This sample was taken in an effort to identify potential above-WAC uranium associated with any spent resin that potentially was spilled in the Center basin, which should have settled to the low point of the basin. All newly collected data demonstrates that the sediment in both the Center and West basin meets the OSDF WAC.

The change in the WAC status of the Center and West basin is attributed to the periodic flushing of the sediment via the constant inflow and treatment of the water by the AWWT/CAWWT Facility over the past year and a half. This constant state of flux made this an extremely dynamic waste stream. Technetium-99, being the only historical above-WAC constituent of concern and being an extremely mobile contaminant, followed the water through the treatment system and did not remain in the sediment. Additionally, the storm water concentration has been decreasing significantly in the last two years. The West and Center basins have also been offline since early September 2005 when the rains from Hurricane Katrina came through the area.

Due to the sediment in the West and Center basins being below the OSDF WAC as demonstrated in the recent sampling results, the sediment will be excavated and taken to the OSDF following the proper excavation controls.

6. EXCAVATION CONTROL PROCESS FOR CENTER AND WEST BASINS

Typical of the excavation control process, real time monitoring systems are employed to canvas excavations for above-WAC conditions due to uranium only since the real-time systems cannot determine technetium-99 concentrations. This process aids in the capturing of unidentified process residues exhibiting above-WAC uranium conditions. However, due to the nature of this sediment being saturated

with water exceeding the capabilities of the real-time monitoring systems, real-time will not be able to be used. Consistent with the protocols established for all excavations, when real time cannot be employed, physical samples are taken at a frequency of one sample per 100 x 100-foot grid. This has already been done as described above on a much more conservative average density of one sample per 100 x 35-foot grid with every sample collected from the basins well below WAC for uranium.

Additionally, as part of the typical excavation control process, visual inspection of the sediment will be performed by Waste Acceptance Organization (WAO) personnel to identify any prevalent resin spills that may be present as mentioned above that may be considered potentially above-WAC.

7. REMEDIATION PROCESS FOR CENTER AND WEST BASINS

Due to the moisture content of the sediment being on the order of 50 to 60 percent, the sediment will require stabilization with a moisture reducing agent (e.g., flyash, lime, etc). The stabilizing agent will be applied to the sediment with subsequent pushing of all materials to a loadout point located near the Center basin. All materials will be hauled to a transfer point within the controlled area and subsequently hauled to the OSDF for placement.

If, based upon visual inspection by WAO personnel, prevalent resin is identified, the associated materials will be isolated such that all suspect above-WAC material will be further sampled and characterized to determine if the uranium concentration is above the OSDF WAC. If it is found to be above-WAC for uranium, the segregated materials will be transported to the Soil Stockpile (SP) 7 area for subsequent off-site disposal.

8. FUTURE CHARACTERIZATION OF THE EAST BASIN

Currently, the East basin is the only basin receiving runoff water. Upon approval of this plan, sediment from the East basin will be sampled and analyzed to determine if it is below-WAC similar to the process described above. A visual inspection of the sediment will also be performed by WAO personnel. Due to the moisture content of the sediment, it is unlikely that a real-time scan can be completed. A variance/field change notice will be written to direct any future sampling.

9. REMEDIATION PROCESS FOR EAST BASIN

Upon obtaining physical sampling data that demonstrates the sediment in the East basin to be below the OSDF WAC for uranium and technetium-99, the remediation process will be consistent with the process described for the Center and West basin. Due to the moisture content of the sediment being on the order of 50 to 60 percent, the sediment will require stabilization with a moisture reducing agent (e.g., flyash, lime, etc). The stabilizing agent will be applied to the sediment with subsequent pushing of all materials

to a load-out point located near the Center basin. All materials will be hauled to a transfer point within the controlled area and subsequently hauled to the OSDF for placement.

If, based upon visual inspection by WAO personnel, prevalent resin is identified, the associated materials will be isolated such that all suspect above-WAC material will be further sampled and characterized to determine if the uranium concentration is above the OSDF WAC. If it is found to be above-WAC for uranium, the segregated materials will be transported to the SP-7 area for subsequent off-site disposal.

10. REFERENCES

U.S. Department of Energy, 2001, "Project Specific Plan for Sampling of Miscellaneous Areas for WAC Attainment," Revision 0, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

U.S. Department of Energy, 2005, "Project Specific Plan for Sampling of Material on the Eastern Portion of Soil Pile AR6-006 (Former SP-7) for Envirocare's Waste Acceptance Criteria (Supplement to 20300-PSP-0011)," Revision 0, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

TABLE 1
2004 EAST, CENTER, AND WEST SWRB SEDIMENT SAMPLING DATA

Release Number	Boring	Sample ID	Sample Date	Parameter	Result	LQ	VQ	Units	FRL	FRL Unit
1000030229	A6-SWRBC-1	A6-SWRBC-1^R	02-Mar-04	Moisture Content	45.7		NV	PERCENT		
1000030229	A6-SWRBC-1	A6-SWRBC-1^R	02-Mar-04	Technetium-99	422		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBC-1	A6-SWRBC-1^R	02-Mar-04	Uranium, Total	455		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBC-2	A6-SWRBC-2^R	02-Mar-04	Moisture Content	33.3		NV	PERCENT		
1000030229	A6-SWRBC-2	A6-SWRBC-2^R	02-Mar-04	Technetium-99	34		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBC-2	A6-SWRBC-2^R	02-Mar-04	Uranium, Total	542		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBE-1	A6-SWRBE-1^R	02-Mar-04	Moisture Content	17.9		NV	PERCENT		
1000030229	A6-SWRBE-1	A6-SWRBE-1^R	02-Mar-04	Technetium-99	4.09		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBE-1	A6-SWRBE-1^R	02-Mar-04	Uranium, Total	14.5		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBE-2	A6-SWRBE-2^R	02-Mar-04	Moisture Content	85.1		NV	PERCENT		
1000030229	A6-SWRBE-2	A6-SWRBE-2^R	02-Mar-04	Technetium-99	33.6		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBE-2	A6-SWRBE-2^R	02-Mar-04	Uranium, Total	422		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBE-3	A6-SWRBE-3^R	02-Mar-04	Moisture Content	41		NV	PERCENT		
1000030229	A6-SWRBE-3	A6-SWRBE-3^R	02-Mar-04	Technetium-99	27.3		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBE-3	A6-SWRBE-3^R	02-Mar-04	Uranium, Total	119		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBE-4	A6-SWRBE-4^R	02-Mar-04	Moisture Content	53		NV	PERCENT		
1000030229	A6-SWRBE-4	A6-SWRBE-4^R	02-Mar-04	Technetium-99	21.4		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBE-4	A6-SWRBE-4^R	02-Mar-04	Uranium, Total	98.3		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBE-5	A6-SWRBE-5^R	02-Mar-04	Moisture Content	49.4		NV	PERCENT		
1000030229	A6-SWRBE-5	A6-SWRBE-5^R	02-Mar-04	Technetium-99	29		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBE-5	A6-SWRBE-5^R	02-Mar-04	Uranium, Total	160		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBE-6	A6-SWRBE-6^R	02-Mar-04	Moisture Content	49.8		NV	PERCENT		
1000030229	A6-SWRBE-6	A6-SWRBE-6^R	02-Mar-04	Technetium-99	23.7		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBE-6	A6-SWRBE-6^R	02-Mar-04	Uranium, Total	88.4		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBE-7	A6-SWRBE-7^R	02-Mar-04	Moisture Content	47.2		NV	PERCENT		
1000030229	A6-SWRBE-7	A6-SWRBE-7^R	02-Mar-04	Technetium-99	26		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBE-7	A6-SWRBE-7^R	02-Mar-04	Uranium, Total	123		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBE-8	A6-SWRBE-8^R	02-Mar-04	Moisture Content	50		NV	PERCENT		
1000030229	A6-SWRBE-8	A6-SWRBE-8^R	02-Mar-04	Technetium-99	23.5		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBE-8	A6-SWRBE-8^R	02-Mar-04	Uranium, Total	89.4		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBE-9	A6-SWRBE-9^R	02-Mar-04	Moisture Content	45.1		NV	PERCENT		

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TABLE 1
2004 EAST, CENTER, AND WEST SWRB SEDIMENT SAMPLING DATA

Release Number	Boring	Sample ID	Sample Date	Parameter	Result	LQ	VQ	Units	FRL	FRL Unit
1000030229	A6-SWRBE-9	A6-SWRBE-9^R	02-Mar-04	Technetium-99	31		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBE-9	A6-SWRBE-9^R	02-Mar-04	Uranium, Total	377		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBW-1	A6-SWRBW-1^R	02-Mar-04	Moisture Content	44.5		NV	PERCENT		
1000030229	A6-SWRBW-1	A6-SWRBW-1^R	02-Mar-04	Technetium-99	18		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBW-1	A6-SWRBW-1^R	02-Mar-04	Uranium, Total	98.7		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBW-2	A6-SWRBW-2^R	02-Mar-04	Moisture Content	37.2		NV	PERCENT		
1000030229	A6-SWRBW-2	A6-SWRBW-2^R	02-Mar-04	Technetium-99	19		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBW-2	A6-SWRBW-2^R	02-Mar-04	Uranium, Total	99.9		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBW-3	A6-SWRBW-3^R	02-Mar-04	Moisture Content	36.3		NV	PERCENT		
1000030229	A6-SWRBW-3	A6-SWRBW-3^R	02-Mar-04	Technetium-99	15		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBW-3	A6-SWRBW-3^R	02-Mar-04	Uranium, Total	104		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBW-4	A6-SWRBW-4^R	02-Mar-04	Moisture Content	45		NV	PERCENT		
1000030229	A6-SWRBW-4	A6-SWRBW-4^R	02-Mar-04	Technetium-99	13		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBW-4	A6-SWRBW-4^R	02-Mar-04	Uranium, Total	120		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBW-5	A6-SWRBW-5^R	02-Mar-04	Moisture Content	42.1		NV	PERCENT		
1000030229	A6-SWRBW-5	A6-SWRBW-5^R	02-Mar-04	Technetium-99	15		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBW-5	A6-SWRBW-5^R	02-Mar-04	Uranium, Total	93.1		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBW-6	A6-SWRBW-6^R	02-Mar-04	Moisture Content	38.5		NV	PERCENT		
1000030229	A6-SWRBW-6	A6-SWRBW-6^R	02-Mar-04	Technetium-99	27		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBW-6	A6-SWRBW-6^R	02-Mar-04	Uranium, Total	129		NV	mg/kg	82	mg/kg
1000030229	A6-SWRBW-7	A6-SWRBW-7^R	02-Mar-04	Moisture Content	45.3		NV	PERCENT		
1000030229	A6-SWRBW-7	A6-SWRBW-7^R	02-Mar-04	Technetium-99	19		NV	pCi/g dry	30	pCi/g
1000030229	A6-SWRBW-7	A6-SWRBW-7^R	02-Mar-04	Uranium, Total	113		NV	mg/kg	82	mg/kg

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TABLE 2
ENVIROCARE WAC CONSTITUENTS

ANALYTE
Total Uranium
Uranium-235
Uranium-238
Thorium-230
Thorium-232
Radium-226
Radium-228
Cesium-137
Technetium-99
Americium-241
Neptunium-237
Potassium-40
Total Arsenic
Total Barium
Total Cadmium
Total Chromium
Total Lead
Total Mercury
Total Selenium
Total Silver
Total Zinc
pH
Percent Moisture

TABLE 3
CENTER SWRB SEDIMENT SAMPLING FOR ENVIROCARE WAC

Release Number	Boring	Sample ID	Sample Date	Parameter	Result	LQ	VQ	Units	FRL	FRL Unit
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Americium-241	3.66		-	pCi/g		
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Arsenic	4.11	J	J	mg/kg	12	mg/kg
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Barium	91.4	J	J	mg/kg	68000	mg/kg
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Cadmium	1.59	J	J	mg/kg	82	mg/kg
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Cesium-137	0.202	U	U	pCi/g	1.4	pCi/g
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Chromium	12.2		J	mg/kg	300	mg/kg
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Lead	64.7		J	mg/kg	400	mg/kg
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Mercury	0.0447	J	J	mg/kg	7.5	mg/kg
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Neptunium-237	0.303		-	pCi/g	3.2	pCi/g
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	pH	7.52	H	J	SU		
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Potassium-40	12.2		-	pCi/g		
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Radium-226	356		-	pCi/g	1.7	pCi/g
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Radium-228	1.29		-	pCi/g	1.8	pCi/g
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Selenium	11.4	J	J	mg/kg	5400	mg/kg
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Silver	0.739	U	UJ	mg/kg	29000	mg/kg
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Technetium-99	1.35		-	pCi/g	30	pCi/g
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Thorium-230	41.5		-	pCi/g	280	pCi/g
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Thorium-232	2.14		-	pCi/g	1.5	pCi/g
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Uranium, Total	66.2		-	mg/kg	82	mg/kg
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Uranium-235	4.06		-	pCi/g	1.27	pCi/g
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Uranium-238	21.6		-	pCi/g	27.4	pCi/g
1000033684	A7-SWRBC-S-1	A7-SWRBC-S-1^RM	11-Aug-05	Zinc	73.5		-	mg/kg	120000	mg/kg
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Americium-241	3.92		-	pCi/g		
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Arsenic	12.7	J	J	mg/kg	12	mg/kg
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Barium	114	J	J	mg/kg	68000	mg/kg
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Cadmium	1.13	J	J	mg/kg	82	mg/kg
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Cesium-137	0.594	U	U	pCi/g	1.4	pCi/g
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Chromium	22.9		J	mg/kg	300	mg/kg
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Lead	59		J	mg/kg	400	mg/kg
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Mercury	0.0992	J	J	mg/kg	7.5	mg/kg
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Neptunium-237	0.198		-	pCi/g	3.2	pCi/g

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TABLE 3
CENTER SWRB SEDIMENT SAMPLING FOR ENVIROCARE WAC

Release Number	Boring	Sample ID	Sample Date	Parameter	Result	LQ	VQ	Units	FRL	FRL Unit
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	pH	7.54	H	J	SU		
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Potassium-40	26.9		-	pCi/g		
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Radium-226	508		-	pCi/g	1.7	pCi/g
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Radium-228	2.08	U	UJ	pCi/g	1.8	pCi/g
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Selenium	18.2		-	mg/kg	5400	mg/kg
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Silver	1.01	U	UJ	mg/kg	29000	mg/kg
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Technetium-99	5.98		-	pCi/g	30	pCi/g
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Thorium-230	48		-	pCi/g	280	pCi/g
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Thorium-232	3.39		-	pCi/g	1.5	pCi/g
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Uranium, Total	23	U	UJ	mg/kg	82	mg/kg
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Uranium-235	3.6		J	pCi/g	1.27	pCi/g
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Uranium-238	7.72	U	UJ	pCi/g	27.4	pCi/g
1000033684	A7-SWRBC-S-2	A7-SWRBC-S-2^RM	11-Aug-05	Zinc	110		-	mg/kg	120000	mg/kg
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Americium-241	5.36		-	pCi/g		
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Arsenic	9.84	J	J	mg/kg	12	mg/kg
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Barium	161	J	J	mg/kg	68000	mg/kg
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Cadmium	1.46	J	J	mg/kg	82	mg/kg
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Cesium-137	0.305	U	U	pCi/g	1.4	pCi/g
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Chromium	23.1		J	mg/kg	300	mg/kg
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Lead	0.186	J	J	mg/L	400	mg/kg
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Lead	124		J	mg/kg	400	mg/kg
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Mercury	0.0855	J	J	mg/kg	7.5	mg/kg
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Neptunium-237	0.168		-	pCi/g	3.2	pCi/g
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	pH	7.6	H	J	SU		
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Potassium-40	26.2		-	pCi/g		
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Radium-226	523		-	pCi/g	1.7	pCi/g
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Radium-228	3.53		-	pCi/g	1.8	pCi/g
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Selenium	0.04	U	UJ	mg/L	5400	mg/kg
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Selenium	22.9		-	mg/kg	5400	mg/kg
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Silver	0.976	U	UJ	mg/kg	29000	mg/kg
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Technetium-99	13.1		-	pCi/g	30	pCi/g

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TABLE 3
CENTER SWRB SEDIMENT SAMPLING FOR ENVIROCARE WAC

Release Number	Boring	Sample ID	Sample Date	Parameter	Result	LQ	VQ	Units	FRL	FRL Unit
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Thorium-230	57.3		-	pCi/g	280	pCi/g
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Thorium-232	4.07		-	pCi/g	1.5	pCi/g
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Uranium, Total	34.4		-	mg/kg	82	mg/kg
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Uranium-235	7.2		-	pCi/g	1.27	pCi/g
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Uranium-238	10.4		-	pCi/g	27.4	pCi/g
1000033684	A7-SWRBC-S-3	A7-SWRBC-S-3^RM	11-Aug-05	Zinc	113		-	mg/kg	120000	mg/kg
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Americium-241	12.3		-	pCi/g		
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Arsenic	13	J	J	mg/kg	12	mg/kg
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Barium	282		J	mg/kg	68000	mg/kg
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Cadmium	2.27		-	mg/kg	82	mg/kg
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Cesium-137	0.445	U	U	pCi/g	1.4	pCi/g
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Chromium	23.7		J	mg/kg	300	mg/kg
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Lead	0.646		J	mg/L	400	mg/kg
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Lead	337		J	mg/kg	400	mg/kg
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Mercury	0.0864	J	J	mg/kg	7.5	mg/kg
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Neptunium-237	0.643		-	pCi/g	3.2	pCi/g
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	pH	7.57	H	J	SU		
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Potassium-40	21.7		-	pCi/g		
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Radium-226	1230		-	pCi/g	1.7	pCi/g
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Radium-228	1.88	U	UJ	pCi/g	1.8	pCi/g
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Selenium	0.0417	J	J	mg/L	5400	mg/kg
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Selenium	23.3		-	mg/kg	5400	mg/kg
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Silver	0.938	U	UJ	mg/kg	29000	mg/kg
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Technetium-99	2.68		-	pCi/g	30	pCi/g
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Thorium-230	118		-	pCi/g	280	pCi/g
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Thorium-232	4.49		-	pCi/g	1.5	pCi/g
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Uranium, Total	225		-	mg/kg	82	mg/kg
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Uranium-235	14.5		-	pCi/g	1.27	pCi/g
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Uranium-238	73.3		-	pCi/g	27.4	pCi/g
1000033684	A7-SWRBC-S-4	A7-SWRBC-S-4^RM	11-Aug-05	Zinc	123		-	mg/kg	120000	mg/kg

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TABLE 4
2005 CENTER AND WEST SWRB SEDIMENT URANIUM AND TECHNETIUM-99 CONFIRMATION SAMPLING DATA

Release Number	Boring	Sample ID	Sample Date	Parameter	Result	LQ	VQ	Units	FRL	FRL Unit
1000033846	A7-SWRBC-S-C1	A7-SWRBC-S-C1^R	15-Sep-05	Technetium-99	3.47		NV	pCi/g	30	pCi/g
1000033846	A7-SWRBC-S-C1	A7-SWRBC-S-C1^R	15-Sep-05	Uranium, Total	258		NV	mg/kg	82	mg/kg
1000033846	A7-SWRBW-S-1	A7-SWRBW-S-1^R	14-Sep-05	Technetium-99	7.22		NV	pCi/g	30	pCi/g
1000033846	A7-SWRBW-S-1	A7-SWRBW-S-1^R	14-Sep-05	Uranium, Total	142		NV	mg/kg	82	mg/kg
1000033846	A7-SWRBW-S-2	A7-SWRBW-S-2^R	14-Sep-05	Technetium-99	6.12		NV	pCi/g	30	pCi/g
1000033846	A7-SWRBW-S-2	A7-SWRBW-S-2^R	14-Sep-05	Uranium, Total	24.4	U	UNV	mg/kg	82	mg/kg
1000033846	A7-SWRBW-S-3	A7-SWRBW-S-3^R	14-Sep-05	Technetium-99	14.5		NV	pCi/g	30	pCi/g
1000033846	A7-SWRBW-S-3	A7-SWRBW-S-3^R	14-Sep-05	Uranium, Total	100		NV	mg/kg	82	mg/kg
1000033846	A7-SWRBW-S-4	A7-SWRBW-S-4^R	14-Sep-05	Technetium-99	7.55		NV	pCi/g	30	pCi/g
1000033846	A7-SWRBW-S-4	A7-SWRBW-S-4^R	14-Sep-05	Uranium, Total	58		NV	mg/kg	82	mg/kg
1000033846	A7-SWRBW-S-5	A7-SWRBW-S-5^R	14-Sep-05	Technetium-99	10.1		NV	pCi/g	30	pCi/g
1000033846	A7-SWRBW-S-5	A7-SWRBW-S-5^R	14-Sep-05	Uranium, Total	43.6		NV	mg/kg	82	mg/kg
1000033846	A7-SWRBW-S-6	A7-SWRBW-S-6^R	14-Sep-05	Technetium-99	11.4		NV	pCi/g	30	pCi/g
1000033846	A7-SWRBW-S-6	A7-SWRBW-S-6^R	14-Sep-05	Uranium, Total	78.9		NV	mg/kg	82	mg/kg
1000033804	A7-SWRBC-S-5	A7-SWRBC-S-5^R	30-Aug-05	Technetium-99	3.17		NV	pCi/g	30	pCi/g
1000033804	A7-SWRBC-S-6	A7-SWRBC-S-6^R	30-Aug-05	Technetium-99	21.3		NV	pCi/g	30	pCi/g

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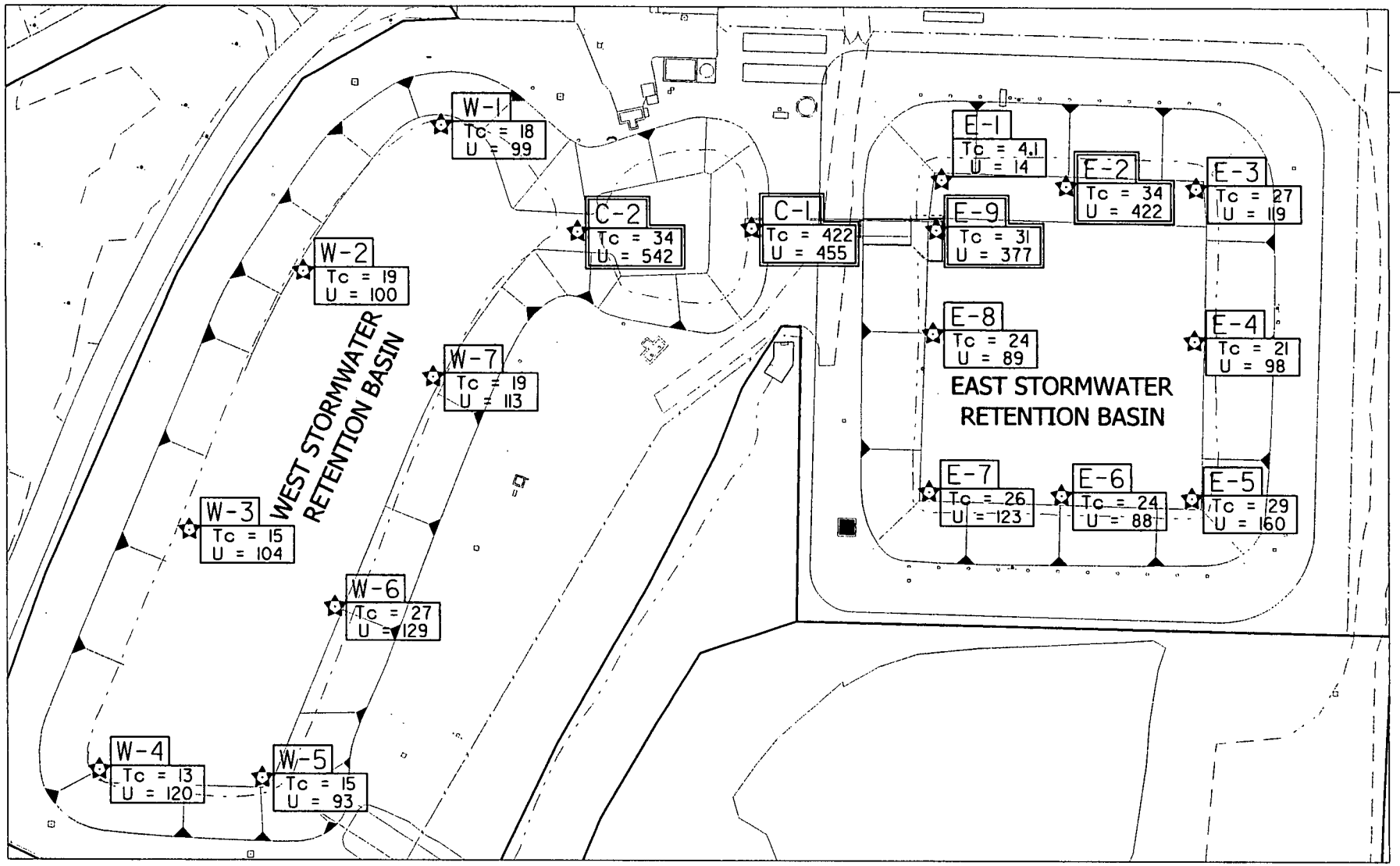

LEGEND:

APPROXIMATE SAMPLE LOCATIONS

SCALE

100 50 0 100 FEET

DRAFT

swb_001v81.dgn
STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 1 2004 SAMPLING RESULTS

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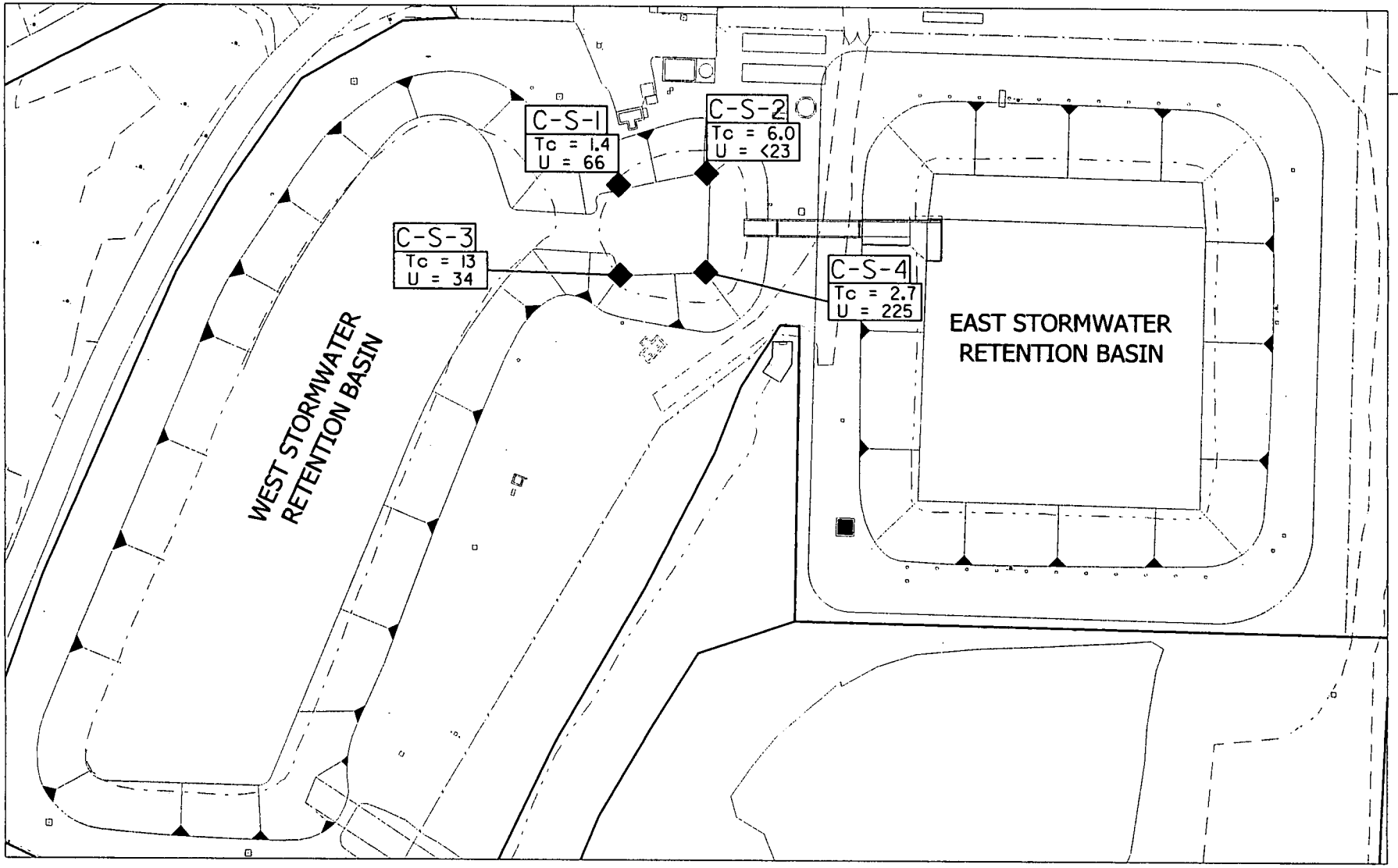

LEGEND:

◆ APPROXIMATE SAMPLE LOCATIONS FOR ENVIROCARE WAC

SCALE

100 50 0 100 FEET

DRAFT

swb_001v82.dgn
STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 2 2005 SAMPLING RESULTS FOR ENVIROCARE WAC

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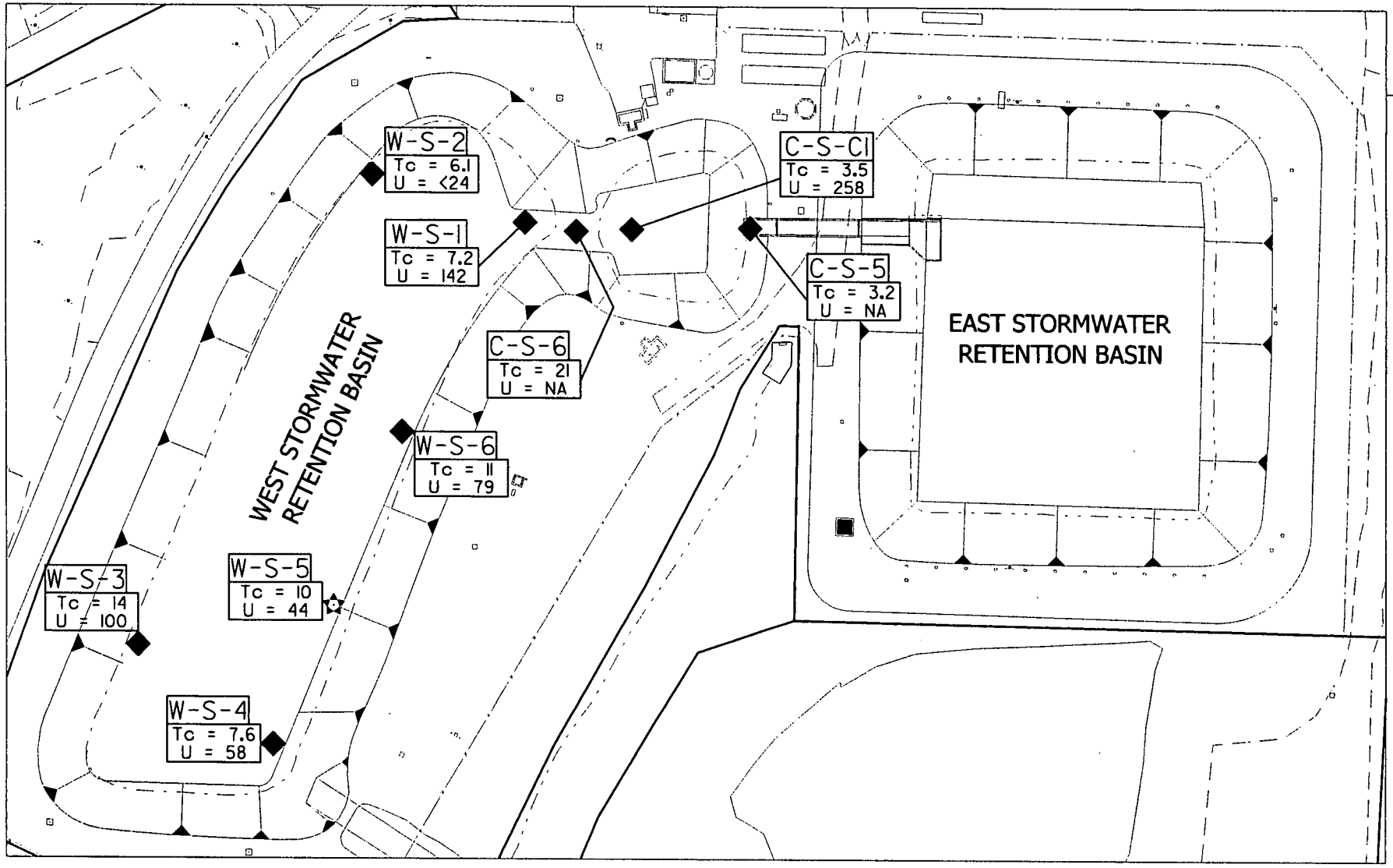

LEGEND:

● APPROXIMATE CONFIRMATION SAMPLE LOCATIONS

SCALE

100 50 0 100 FEET

DRAFT

swb_001v83.dgn
STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 3 2005 CONFIRMATION SAMPLING RESULTS

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