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RFS-ERDF- 006

Rev. 1

Environmental Restoration Disposal Facility

Waste Disposal Operations



Automation Plan

*Work Performed for
Bechtel Hanford Inc.
Under Subcontract
0600X-SC-G0006*



**Waste Management
Federal Services, Inc.**

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1.0 Purpose and Scope

1.1 Purpose - The purpose of this plan is to provide an automation-based systematic approach to the integration of waste profiles, waste manifest, and the acceptance criteria associated with the Environmental Restoration Disposal Facility (ERDF).

1.2 Scope - This plan applies to the waste that will be sent to the ERDF. This automation plan will describe the approach to the automation process, hardware/software specifications, and network architecture. The plan will describe the capabilities and operation of the system. This plan is not intended to describe the overall waste acceptance process for the ERDF. The Waste Acceptance Plan (RFS-ERDF-002.3) describes the overall process. The plan will present a flow diagram of the steps that will be automated and the requirements of the automation system.

2.0 Approach and Implementation

2.1 Waste Acceptance Flow Diagram - Figure 1 (See Page 7) is a block flow diagram of the waste acceptance process that will be automated.

2.2 Hardware/Software Inventory

2.2.1 File Server - A file server will be located within the operation trailer at the ERDF. This server will be a Dell Dimension 133 MHZ pentium processor, with 32 megabytes of random access memory, 512 Cache, Mouse, Win95 Spacesaver Keyboard, 4X CD-ROM, 17LS Monitor, STB 2MB DRAM Video Card, 1.44MB 3.5" floppy drive, (2) 1.0 GB Hard Drives, 1.6/3.2 GB Tape Backup, and 3COM ISA Combo Ethernet Adapter.

2.2.2 Workstations - Two workstations will be directly linked to the File Server. These workstations will be a minimum 100 MHZ pentium processor, with 16 megabytes of random access memory, with a minimum of a one gigabyte hard drive for storage. These workstations will be utilized by the Waste Management Federal Services, Inc. (WMFS) staff to enter final waste location, print reports and other automation related activities.

2.2.3 File Server Software - The system will use a Windows NT based platform, Computer Associates (CA) OpenRoad version 3.5 and a CA-OpenIngres version 1.2 Database.

2.2.4 Workstation Software - The system will use Windows for Workgroups Version 3.11 and MS DOS 6.22.

2.3 Staffing Requirements - The ERDF waste disposal subcontractor will dedicate less than one full time staff member to maintenance and operation of the system. The ERDF Waste Acceptance Manager will have responsibility to maintain the system.

2.4 Network Interfaces

2.4.1 File Server Interface - The file server will interface directly with the BHI local area network. This is to ensure access by the Remedial Action Sites (RAS) and other BHI personnel. Wiring to the communications closet will be copper and routed by WMFS. BHI will provide the router, Micro MMAC, and terminations.

2.4.2 Analytical Interface - Since information from the BHI analytical database is not required to create waste profiles, the system will not interface with the BHI analytical database.

2.5 System Requirements

2.5.1 Profile System - The profiles will be submitted and approved in a hard copy format per the Waste Acceptance Plan. Once the profile is approved, the standard values for chemical, radioactive and physical contents can be entered onto the file server. After the profiles are entered onto the system, the RAS will be able to utilize the data to prepare and submit manifests.

2.5.2 Manifest Preparation - The RAS will prepare waste manifests and submit them for review prior to shipping waste to ERDF. The system will allow the RAS to prepare a waste manifest using one of the following three different methods:

- The RAS can utilize the waste profile data values as stored on the file server.
- The RAS can multiply the waste profile data values by a scaling factor along with the waste profile data values. The multiplier is defined by the RAS. This shipper will validate the values prior to signing the manifest for shipment.
- The RAS can enter values directly onto the manifest form.

2.5.3 Manifest Review - The automation system will review the manifest prior to the waste being approved for shipment to the ERDF. This review will be an on-line feature of the system. The system will automatically review the manifest for compliance with the following items:

- The system will verify that the RAS that is proposing to send the waste to the ERDF is certified.
- The system will verify that the values listed on the manifest for radiological, chemical, and physical constituents are below the limits established in the Waste Acceptance Criteria.
- The system will verify that the values listed on the manifest for radiological, chemical, and physical constituents are below the limits established in the original approved waste profile.

2.5.4 Manifest Approval Code - If the manifest passes the criteria listed in item 2.5.3 above, then a Waste Shipment Approval Code will be assigned to the manifest. The code will be an eight-digit code that is a random number generated by the automation system. This code will be forwarded to the RAS for placement on the manifest. Printing requirements on the manifest will force BLAN connectivity. This will be accomplished before mobilization to the field. The transporter will verify that the correct code is on the manifest prior to loading and transporting the waste to the ERDF. If the code is incorrect or no code has been entered on the manifest the transporter will not load the waste.

2.5.5 Waste Receipt - The automation system will execute control over the waste receipt process at the ERDF. The transport truck driver will verify that the manifest at the RAS has the correct approval code. The transport truck driver will not load a container of waste that does not have the correct approval code. If the code is correct, the transport truck driver will load the container of waste on the transport truck and drive to the ERDF. Upon entering the ERDF, the transport truck driver will stop on the scale and enter the approval code and the transport truck number into the keypad located at the scale. The automation system will verify the waste has been approved for acceptance at the ERDF. If the waste has been approved for acceptance, The system will weigh the loaded transport truck and store the gross weight, approval code, truck number, time, and date of receipt on the file server. Connectivity will be provided by Cardinal Scale from the scale to the server located in the communications closet using an RS232 and card provided by Enabling Technologies. This information will be linked to the applicable manifest information.

2.5.6 Waste Placement - The placement location of the waste that is unloaded at the ERDF will be recorded by hand on the manifest when the transport truck is unloaded. The final location of the waste will be keyed into the automation system.

2.5.7 Tare Weight - A weekly tare weight average for each transport truck will be calculated and entered into the automation system. Tare weight spot checks will be performed when modifications to the trucks are made or when management requests. The automation system will store the tare weight for each transport truck.

2.5.8 Report Generation - Several reports will be generated by the automation system. This section will describe those reports and frequency.

- **Waste Receiving Report** - This report will list the manifest approval numbers for the waste received, net weight, time, date, and disposal location. The report will be issued on a daily, weekly and monthly basis. An example of this report is presented in Figure 3 (page 7).
- **Waste Disposal Location** - This report will list the final disposal location of the waste. The report will be issued on a weekly and monthly basis. An example of this report is presented in Figure 5 (page 9).

- **Total Inventory Disposed** - This report will list the cumulative quantities of radionuclides and hazardous constituents that have been disposed of at the ERDF on a weekly, monthly, quarterly and annual basis. An example of this report is presented in Figure 6 (pages 10, 11 and 12).

3.0 Financial Analysis

3.1 Cost to Operate and Maintain System - The cost to operate and maintain the system is expected to be less than \$10,000 per year. This cost includes cost to provide backup, cost to enter profile information, cost to enter final waste location and other miscellaneous maintenance (cleaning, etc.). WMFS will maintain the system.

3.2 Projected Future Costs - At the current time there are no planned upgrades to the system. As the automation system is placed into service, a user group will be formed to consider upgrades to the system. The BHI Automation Technologies will be included as a member of the group. Any costs associated will be determined during the planning phase of the upgrade.

Figure 1 - Flow Diagram of Waste Acceptance Process

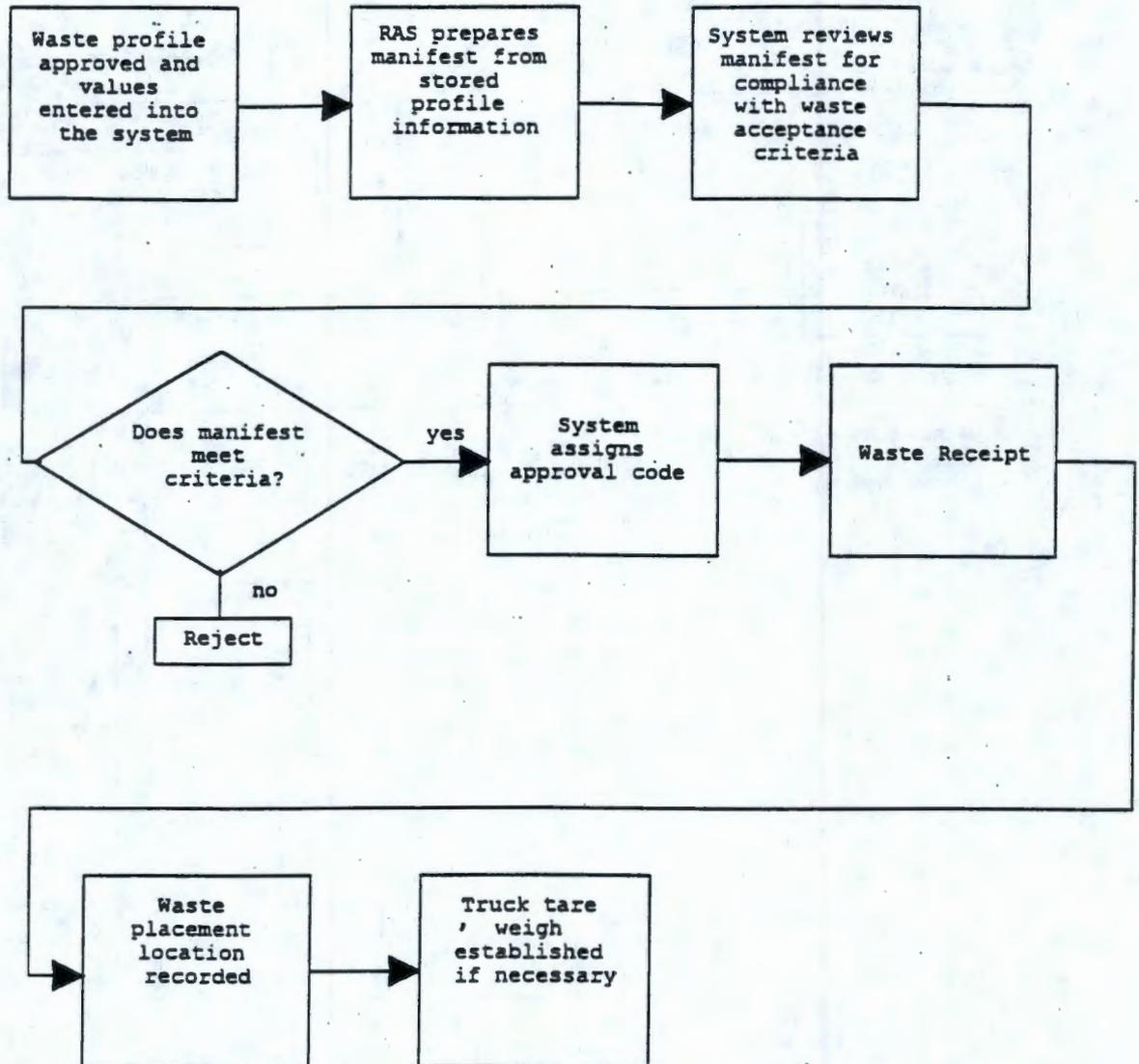


Figure 2 - ERDF Automation System One-Line Diagram

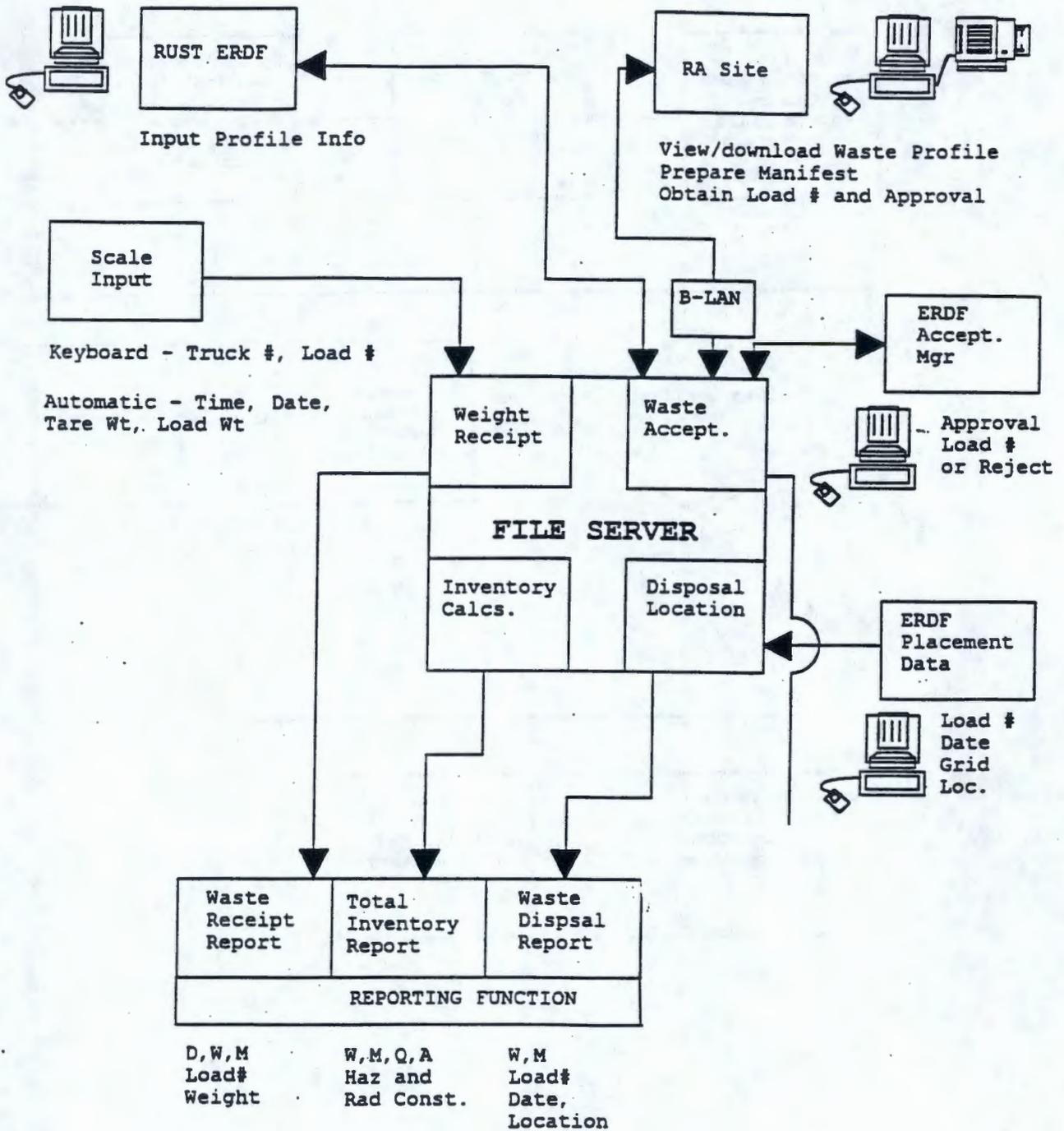


Figure 3 - Waste Receiving Report

WASTE RECEIVING REPORT

Period from 10/30/97 to 10/31/97

10-nov-1997 12:49:05

Manifest Number	Truck Number	Net Weight(kg)	Arrival Date
97411945	832	18037	10/30/97 7:32:17 AM
97411956	835	18809	10/30/97 7:18:04 AM
97412003	830	18564	10/30/97 4:00:00 AM
97412014	834	18654	10/30/97 8:09:15 AM
97417053	842	15791	10/30/97 7:33:54 AM
97417064	837	15055	10/30/97 7:26:32 AM
97417187	827	15710	10/30/97 7:52:22 AM
97417200	843	14363	10/30/97 7:44:17 AM
97417233	829	15127	10/30/97 7:47:37 AM
97417244	833	14745	10/30/97 7:36:19 AM
97417255	839	14318	10/30/97 7:56:54 AM
97417299	826	14337	10/30/97 7:46:21 AM
97417334	828	13973	10/30/97 7:54:40 AM
97417345	838	17191	10/30/97 7:41:09 AM
97418717	839	23781	10/30/97 12:34:00 PM
97418920	827	6464	10/30/97 10:57:21 AM
97419741	839	1736	10/30/97 1:40:34 PM
97420046	833	3918	10/30/97 12:37:58 PM
97420079	839	3536	10/30/97 2:34:16 PM
97421238	833	15073	10/30/97 1:39:00 PM
TOTALS	20	279182	

Figure 4 - Waste Disposal Location Report

WASTE DISPOSAL REPORT

Period from 04/03/97 to 04/03/97

10-nov-1997 12:51:17

Manifest Number	Net Weight(kg)	Disposal Date	Disposal Location
97193098	10618	04/03/97	K 15 35
97197564	10146	04/03/97	K 16 35
97200244	17945	04/03/97	R 15 35
97200435	18900	04/03/97	R 16 35
97204990	15545	04/03/97	P 13 35
97207409	10518	04/03/97	K 16 35
97208354	13700	04/03/97	K 16 35
97208398	12509	04/03/97	K 17 35
97208444	16946	04/03/97	R 15 35
97208488	16473	04/03/97	L 15 35
97208589	16991	04/03/97	L 15 35
97208602	17563	04/03/97	L 15 35
97208635	9518	04/03/97	K 17 35
97208680	16581	04/03/97	Q 15 35
97208703	16454	04/03/97	R 14 35
97208714	16909	04/03/97	P 16 35
97208859	16454	04/03/97	L 14 35
97208961	16509	04/03/97	L 15 35
97208994	17036	04/03/97	L 15 35
97209827	17563	04/03/97	P 15 35
97209928	17200	04/03/97	P 15 35
97210032	17955	04/03/97	R 16 35
97210043	17955	04/03/97	Q 16 35
97210054	19491	04/03/97	L 15 35
97210155	19137	04/03/97	P 16 35
97210201	17727	04/03/97	R 15 35
97210223	22563	04/03/97	Q 14 35
97210245	17200	04/03/97	Q 14 35
97210256	18754	04/03/97	R 17 35
97210289	17664	04/03/97	R 14 35
97210346	18381	04/03/97	L 16 35
97210874	16346	04/03/97	Q 15 35
97210885	14682	04/03/97	P 14 35
97210896	16928	04/03/97	Q 14 35
97210908	16500	04/03/97	Q 15 35
97210919	12654	04/03/97	Q 16 35
97210920	12981	04/03/97	R 13 35
97210964	14564	04/03/97	P 14 35
97211000	14491	04/03/97	P 14 35
97211011	16446	04/03/97	R 13 35
97211088	13590	04/03/97	R 14 35
97211099	13809	04/03/97	R 14 35
97211123	11163	04/03/97	Q 13 35
97211134	13018	04/03/97	L 15 35
97211617	18155	04/03/97	L 14 35
97211639	16981	04/03/97	Q 16 35
97214452	17863	04/03/97	R 16 35
TOTALS: 47	749076		

Figure 5 - Total Inventory Disposed Report

RADIONUCLIDES			
Constituent	Quantity Ci	Constituent	Quantity Ci
Americium-241		Nickel-63	
Americium-243		Plutonium-238	
Beryllium-7		Plutonium-239	
Carbon-14		Plutonium-240	
Carbon-14		Plutonium-241	
Cesium-134		Radium-226 + Daughters	
Cesium-137		Radium-228	
Chromium-51		Sodium-22	
Cobalt-58		Strontium-90	
Cobalt-60		Technetium-99	
Europium-152		Thorium-228 + Daughters	
Europium-154		Thorium-232	
Europium-155		Uranium-233/234	
Hydrogen-3		Uranium-235	
Neptunium-237		Uranium-238 + Daughters	
Nickel-63		Total Curies	

Hazardous Constituents			
Constituents	Quantity Kg	Constituents	Quantity Kg
Volatile Organic Compounds			
1,1,1-Trichloroethane		Carbon Tetrachloride	
1,1,2,2-Tetrachloroethane		Chloroform	
1,2-Dichloroethene		Ethylbenzene	
2-Butanone (MEK)		Methylene Chloride	
2-Hexanone		Tetrachloroethene	
4-Methyl-2-Pentanone		Toluene	
Acetone		Trichloroethene	
Benzene		Total Xylenes	
Carbon Disulfide		Vinyl Chloride	
Semivolatile Organic Compounds			
1,3-Dichlorobenzene		Di-n-butyl-phthalate	
1,4-Dichlorobenzene		Di-n-octyl-phthalate	
4-Chloro-3-Methylphenol		Dibenzo(a,h)anthracene	
Acenaphthene		Dibenzofuran	
Anthracene		Diethylphthalate	
Benzo(a)anthracene		Fluoranthene	
Benzo(a)pyrene		Fluorene	
Benzo(b)fluoranthene		Indeno(1,2,3-cd)Pyrene	
Benzo(g,h,i)perylene		2-Methylnaphthalene	
Benzo(k)fluoranthene		4-Methylphenol	
Benzoic Acid		Naphthalene	
Bis(2-ethyl)phthalate		2-Nitrophenol	
Butylbenzylphthalate		N-nitrosodiphenylamine	
Carbazole		Pentachlorophenol	
4-Chloroaniline		Phenanthrene	
2-Chlorophenol		Phenol	
Chrysene		Pyrene	

Hazardous Constituents			
Constituents	Quantity Kg	Constituents	Quantity Kg
Pesticides/PCBs			
4,4'DDD		Beta-BHC	
4,4'DDE		Gamma-Chlordane	
PCB Aroclor-1248		Dieldrin	
PCB Aroclor-1254		Methoxychlor	
PCB Aroclor-1260			
Metals			
Aluminum		Lead	
Antimony		Manganese	
Arsenic		Mercury	
Barium		Nickel	
Beryllium		Selenium	
Cadmium		Silver	
Cobalt		Thallium	
Copper		Vanadium	
Chromium		Zinc	
Chromium VI			



Waste Management Federal Services, Inc.

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November 11, 1997

Ms. Dana M. Trethewey
ERDF Submittal Coordinator
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3350 George Washington Way, HO-09
Richland, WA 99352

RE: Subcontractor No. 0600X-SC-G0006
RFS-ERDF-006, "Automation Plan," Revision 1

Dear Ms. Trethewey:

The Waste Management Federal Services, Inc. Environmental Restoration Disposal Facility Operations Plans and Procedures Manual, section RFS-ERDF-006, "Automation Plan," Revision 1 (Attachment) has been revised and is being resubmitted. The procedure is being implemented today at the Environmental Restoration Disposal Facility.

Should you have questions regarding this revision, please contact Mr. Michael Madison, of my staff, on 373-3722.

Sincerely,

Robert R. Bloom
ERDF Project Manager

RRB:bad

Attachment

cc: w/o attachment
WMFS
J. Biagini, RFS
M. Madison, RFS
CA File

BHI
P. Berthelot, BHI
G. Van Sickle, BHI