

Data Table 2-2 2010 Savannah River Site Pollution Prevention Activities

P2 Activity Form Number	Description	Waste Type	Life Cycle Savings	Project Description Details
PPAF-2010-00002	Culvert Opening Area Cleanup Waste	Mixed Low-Level Waste (LLW)	\$43,520	Waste associated with the TRU culvert opening campaign was characterized as mixed waste due to TRU waste characteristics and RCRA "listed waste" requirements. Solid Waste Management (SWM) was able to document that the concrete culvert waste had not been contaminated using results from radiological surveys and drum inventory analysis. Based on the documented evaluation, SWM petitioned to recharacterize the waste to low-level waste (LLW). Hazardous waste (HW) labels were approved December 2, 2009, for removal.
PPAF-2010-00003	Reuse of Asbestos Gaskets from K Area	LLW	\$848	Approximately 40 4-inch asbestos jumper gaskets (valued at about \$1000), purchased for use in a radiation area, were given to H Canyon for reuse in lieu of disposal. Minimal volume; estimated at 0.1 cubic meter.
PPAF-2010-00004	Rollback 105-L 910 Fan Room	LLW	\$21,330	Rolled back the L Area 910 fan room and cleared the debris waste for special disposal at the Three Rivers Solid Waste Authority Landfill.
PPAF-2010-00005	Modular Caustic-Side Solvent Extraction Unit (MCU) Debris to Seven Springs Landfill Avoids LLW	LLW	\$200,550	Liquid Waste Operations (LWO) planned to pave an area requiring excavation and disposal of all the crush & run and top soil layer. The area has a contamination potential and history, therefore, the debris could not be proven to meet SRS volumetric release limits for disposal at the Three Rivers landfill. LWO was able to meet controlled area limits and subsequently move the debris to another controlled area at the Seven Springs Landfill for use as erosion control and, thus avoiding disposal to SRS's LLW slit trench.

Data Table 2-2 2010 Savannah River Site Pollution Prevention Activities (cont.)

P2 Activity Form Number	Description	Waste Type	Life Cycle Savings	Project Description Details
PPAF-2010-00006	Segregation and Recycling of Circuit Boards	Hazardous Waste (HW)	(\$770)	<p>Equipment (specific equipment descriptions not available) was disassembled, and 171 nonradioactive circuit boards were segregated from the various pieces of equipment. Removal of the circuit boards from the no-longer-serviceable equipment precluded the entire volume being characterized as HW. Removal of the HW enabled the remaining volume to be shipped to Excess Operations for recycling. The preferred vendor for shipment of removed circuit boards (HW) is Global Investments, Inc., which evaluates the received materials for recycle or disposal options.</p> <p>(NOTE: The negative life cycle savings is based on a very conservative estimate of waste volume avoidance and cost savings, as applied only to the circuit boards. Credit for the entire volume/weight of the non-serviceable equipment, which could have been factored into the overall life cycle savings, was not considered in the final calculation.)</p>
PPAF-2010-00007	SmartPlant Foundation (SPF) Tuff Tank (Polyethylene Tank for Liquid Storage and Transport) Frames to Sanitary Special Waste	LLW	\$1,172	<p>SPF identified 29 unusable Tuff Tanks for disposal that had a history of radiological contamination. In an effort to reduce the volume of LLW requiring disposal, the plastic liners were separated from the metal frames. The metal frames were surveyed, determined to be clean, and disposed of at the Three Rivers landfill. The tank liners were disposed of separately as LLW. The total volume of the metal frames was calculated at 339.3 cubic feet.</p>

Data Table 2–2 2010 Savannah River Site Pollution Prevention Activities (cont.)

P2 Activity Form Number	Description	Waste Type	Life Cycle Savings	Project Description Details
PPAF–2010–00008	Polychlorinated Biphenyls (PCB) Waste Reduction – K Area Complex (KAC) Shuffler Project	Mixed Toxic Substances Compliance Act (TSCA) Waste	\$15,857	The KAC Shuffler Project required removal of the walls and floors located in the 910B water seal area. The walls and floor were coated with a material containing greater than 3,000 parts per million (ppm) PCBs. Dismantling and removal (D&R) of the 910B water seal area required digging a large hole in the floor by cutting through approximately six inches of PCB-painted concrete using a water-cooled saw. During cutting and removal of the concrete walls and floors, the water used to cool the saw leaked, transporting minute amounts of PCB particles into the dirt under the floor and creating a PCB spill that required cleanup. The cleanup generated 5.1 cubic meters of dirt (considered PCB Remediation Waste under 40CFR 761.61). The waste resulting from the cleanup was disposed of via a TSCA-compliant facility (Energy Solutions in Utah). To accomplish this cleanup, all dirt in the affected area was removed, characterized, and disposed of as PCB waste. To minimize waste generation, the first 2-inch layer of soil (about 180 cubic feet) was collected as PCB Remediation Waste (segregated and sampled separately). The next 12 inches (about 405 cubic feet) was collected, sampled, and staged separately. Sample results from the 12 inches showed the soil contained <25 ppm PCBs, indicating cleanup had been accomplished and negating the need to dispose of the 405 cubic feet of what would have been PCB waste. This screening, sampling, and clearance process also eliminated the use of personal protective equipment (PPE) for an estimated 24 entries per day for 25 days. To prevent PCB recontamination of the exposed dirt area during remaining work activities, the floor was covered with a new layer of concrete. Any PCBs falling off the walls were swept up, bagged, segregated, and disposed of—along with the initial 2 inches of soil as PCB Remediation Waste.
PPAF–2010–00009	Recycling of Lead X-Ray Sheets	HW	\$2,305	Tritium operations had 588 lbs of lead-backed paper sheets generated from X-ray operations. These lead-backed sheets are generated continually at a rate of about 250 lbs per year. With support from Asset Services, approval was obtained to send these sheets to the lead-acid battery recycle vendor for recycling, which constituted a new service available to SRS.

Data Table 2–2 2010 Savannah River Site Pollution Prevention Activities (cont.)

P2 Activity Form Number	Description	Waste Type	Life Cycle Savings	Project Description Details
PPAF–2010–00012	H–12 Outfall Experimental Peat Bed D&R	LLW	\$26,211	<p>The H–12 outfall experimental peat bed project included two 8-foot-diameter poly tanks of peat bed and pea gravel used to determine if filtration would help reduce copper metal concentrations in the outfall. After the experiment concluded, the peat bed/gravel and inner tanks were surveyed, sampled, and determined to be radiologically contaminated above clean area limits but nonhazardous for metals (LLW). During the March 25, 2010, D&R preplanning session with Construction and Radiological Protection Department (RPD) personnel, a Generating Certification Official (GCO), and H Canyon Operations representatives, it was determined that all D&R materials would be dispositioned by Construction into LLW containers, as directed by the GCO. The large wooden platform around both tanks was not contaminated, and would be used to hold B–12 containers to allow the Construction workers safe access to the tank tops to shovel the peat bed/gravel from the top of each tank. The wood platform then would become contaminated and would be D&R'd and cut up to fit into B–25 containers as LLW. It was ultimately decided to remove the wood platform first—avoiding wood LLW generation—then to cut the poly tanks as needed from top downward while using mist for contamination control. In this way the workers were able to reach into the tanks and shovel the peat bed/gravel into B–12 containers from ground level. The D&R was safely performed, and generated two 20-yard rolloff pans of wood waste (30.58 cubic meters) that was disposed of as “clean” rather than as LLW.</p>
PPAF–2010–00010	Reuse of Concrete Culverts Avoids Use of 24 New B-25 (Storage and Transport) Containers per Year	Sanitary	\$161,400	<p>(a) LLW-contaminated laundry—generated within Solid Waste Management (SWM) facilities but rejected for processing by the offsite laundry—is stored and disposed of in new B-25 containers. Twenty-four new B-25 containers are used annually at a total cost of \$27,600, or \$1,150 for each container. (b) All LLW generated in SWM facilities is approved for storage and disposal in previously used concrete culverts. Using the culverts for storage and disposal of rejected LLW-contaminated laundry saved \$27,600 in FY10 for the purchase of 24 new B-25 containers. The avoidance of crushing the 12 concrete culverts required to replace the B-25s, and transporting them to the C&D Landfill for disposal, resulted in a cost savings of \$7,800 in FY10, based on the project cost (\$650/culvert) for culvert disposal.</p>

Data Table 2-2 2010 Savannah River Site Pollution Prevention Activities (cont.)

P2 Activity Form Number	Description	Waste Type	Life Cycle Savings	Project Description Details
PPAF-2010-00013	Polychlorinated Biphenyls (PCB) Tool Decontamination and Reuse	Mixed TSCA	\$112,030	Nuclear Materials Management (NMM) personnel D&R'd approximately 1,200 cubic feet of concrete that had been covered with a flexible vinyl coating. Sampling confirmed that the coating contained PCBs above TSCA limits, as well as relatively low amounts of DOE-added radioactivity. Therefore, all waste generated or equipment used to cut/contain/handle the waste would require disposal as PCB bulk LLW. Approximately 270 cubic feet of PCB-contaminated tools and equipment (valued at about \$100,000) used for this project required disposal at E Area. In lieu of disposal, the equipment was decontaminated, then sampled to ensure that the decontamination was successful. Sampling results indicated that the equipment was free of both PCBs and radioactive contamination, so it was released for non-PCB use on site. No significant volume of decontaminated waste was generated that disposal as PCB waste. This also eliminated the man-hours required for disassembling/staging the equipment, surveillance activities, and shipping/disposal of approximately 50 gallons of oil and 270 cubic feet of waste. It also precluded the need to purchase about \$100,000 in replacement equipment and tools.
PPAF-2010-00014	Radioactive Liquids Managed as Scavenger Wastewater	LLW	\$8,336	Sample results from one Tuff Tank containing approximately 330 gallons of water contaminated with Hydrasol Cable Gel showed the water was non-RCRA and non-PCB. Radiological screen results found tritium above the limit for release, which would require treatment and disposal at an offsite treatment, storage, and disposal facility. Collaboration with the Effluent Treatment Project (ETP) Operations and Central Sanitary Waste Treatment Facility (CSWTF) determined that disposal was permitted through the Scavenger Wastewater Program. Water was disposed of on site March 10, 2010, through CSWTF. Tuff Tank is now empty and available for reuse.

Data Table 2–2 2010 Savannah River Site Pollution Prevention Activities (cont.)

P2 Activity Form Number	Description	Waste Type	Life Cycle Savings	Project Description Details
PPAF–2010–00015	Bagging Process Water Deionizers @ K Area	LLW	\$63,900	Established alternative methods for packaging high-dose reactor process water deionizers (PWDIs) using special-made bags versus culverts thereby improving packaging efficiency for this high-radiation waste stream. This PPAF covers the last six PWDIs from K Area. Due to ALARA concerns (1.8 rad/hr), no decontamination was planned, and disposal was going to occur in concert culverts. Culverts were used as shielding for the vent/seal evolution (eliminating hydrogen build-up in PWDIs). As an alternative, special bags were procured from the Containment Fabrication Shop, and special handling techniques were developed to sleeve the inside of the culverts, to place the deionizers within the culverts for transport, and subsequently to remove the deionizers, allowing for direct disposal of the bagged PWDIs in the Intermediate Level Vaults (ILV). The original volume of the six PWDIs in the culverts was 45.6 cubic meters (7.6 cubic meters each); the final disposed volume was 30.6 cubic meters (5.1 cubic meters each), which avoided disposal of 15 cubic meters of LLW in the ILV.
PPAF–2010–00016	Recycle DOE-Suspension Nonradioactive Lead	HW	\$53,810	Contracted with TOXCO, Inc., Oak Ridge, TN, to recycle DOE-suspension and contaminated lead that otherwise would require disposition as HW. Shipped 18 containers (658 cubic feet) of DOE-suspension lead October 29, 2009, for recycling.
PPAF–2010–00017	Recycle DOE-Suspension Radioactive Contaminated Lead	Mixed LLW	\$236,318	Contracted with TOXCO to recycle DOE-suspension and contaminated lead that otherwise would require disposition as mixed waste. Shipped 29 containers (1,310 cubic feet) of radiologically contaminated lead March 22, 2010, for recycling. This report is similar to PPAF–2010–00016.

Data Table 2-2 2010 Savannah River Site Pollution Prevention Activities (cont.)

P2 Activity Form Number	Description	Waste Type	Life Cycle Savings	Project Description Details
PPAF-2010-00018	Large Steel Box (LSB) Dewatering Savings	Mixed LLW	\$83,252	LSB containers (also referred to as black boxes) to be transported to H-Area for repackaging must comply with the applicable packaging/transport procedure, which limits liquid content to less than 6 inches in depth. To achieve this compliance, water was pumped from some boxes into 55-gallon drums for subsequent solidification. Because of the parent containers' history, the pumped-off liquid was sampled for PCBs and hazardous constituents. Special arrangements were made with the offsite analytical lab to revise its detection protocols so the liquids would be analyzed for "Health-Based Levels for Aqueous IDW" detection limits. While regular testing was still required for the PCB and RCRA "D" codes, the requested testing enabled (1) removal (per Environmental Compliance Authority guidance) of all F-Listed codes and (2) characterization of the waste as LLW versus mixed.
PPAF-2010-00019	Liquid Waste Tank Farm Debris to Seven Springs Landfill	LLW	\$82,950	LWO planned to pave various areas in the tank farms, requiring excavation and disposal of all the crush & run and top soil layer. The area has a contamination potential and history; therefore, the debris could not be proven to meet SRS volumetric release limits for disposal at the Three Rivers landfill. LWO was able to meet controlled radiological area limits and subsequently move the debris to another controlled area at Seven Springs for use as an erosion control media, avoiding LLW slit trench disposal. Total volume moved was seven skid pans and eight dump truck loads. This is activity similar to that documented on PPAF-2010-00005.
PPAF-2010-00022	776-A Area Rollbacks from Contaminated Areas (CA) to Radiological Buffer Areas (RBA)	LLW	\$124,830	In the past, 776-A was an outdoor CA. During elevated temperatures, the full PPE dress-out requirement increased the chance for heat stress and contamination from sweating. Completion of substantial rollback efforts enabled operators to preclude wearing the PPE. LLW avoidance was calculated based on previous PPE wear; i.e., operators and Radiological Control (RADCON) personnel wore coveralls, shoe covers, glove liners, and gloves at the rate of one set of PPE per entry and about five entries per day Monday-Friday and four entries per day Saturday and Sunday.

Data Table 2-2 2010 Savannah River Site Pollution Prevention Activities (cont.)

P2 Activity Form Number	Description	Waste Type	Life Cycle Savings	Project Description Details
PPAF-2010-00023	Admin Controls Improve LLW Segregation	LLW	\$14,490	Tritium Operations (TO) was able to dispose of three B-25s of LLW in a slit trench at SRS's E-Area instead of at the Low-Activity Waste Vaults (LAWV). This is because of revisions to the applicable procedure and refresher training for maintenance and operation personnel. TO realized that the maintenance operators were often the first to touch their waste, and that if waste segregation could begin at the point of generation instead of during the removal stage, the segregation process could be improved. Through knowledge of waste-generating activities and process training of the operators and maintenance personnel, three B-25s of LLW were diverted to a less-expensive disposal path (slit trench versus LAWV). This change essentially was a "no cost" implementation activity for the Tritium Facility. TO GCOs and waste coordinators made their presence in the field more noticeable, increased waste assessments, and requested notification of upcoming maintenance jobs for improved preplanning.
PPAF-2010-00024	Legacy TRU Waste Segregation to LLW	TRU	\$701,380	SRNS established a program to maximize the disposition of legacy TRU waste, including activities to segregate, repackage, re-assay, and manage the waste as LLW whenever practical. In FY10 (through August), 19.2 cubic meters of TRU waste were diverted to LLMW, and 21.9 cubic meters to LLW. The P2 Program credits this work scope to recharacterizing legacy TRU waste because of the significant resource utilization required to actively segregate, repackage, and decharacterize this waste stream from TRU to LLW.

Data Table 2-2 2010 Savannah River Site Pollution Prevention Activities (cont.)

P2 Activity Form Number	Description	Waste Type	Life Cycle Savings	Project Description Details
PPAF-2010-00026	Bagging Reactor Process Water Deionizers for ILV Waste Disposal	LLW	\$95,850	Alternative methods were established for packaging high-dose reactor process water deionizers (PWDIs) in special-made bags versus culverts, thereby improving packaging efficiency for this high-radiation waste stream. This PPAF covers the last eight PWDIs shipped in August 2010 and one process water evaporator shipped in September. Because of ALARA concerns (1.8 rad/hr), no decontamination was planned, and disposal was going to occur in concert culverts. Culverts were used as shielding for the vent/seal evolution (eliminating hydrogen buildup in PWDIs). As an alternative, special bags were procured from the Containment Fabrication Shop, and special handling techniques were developed to sleeve the inside of the culverts, to place the deionizers within the culverts for transport, and to subsequently remove the deionizers, allowing for direct disposal of the bagged PWDIs in the ILV. The original volume of the nine PWDIs in the culverts was 68.4 cubic meters (7.6 cubic meters each); final disposed volume was 45.9 cubic meters (5.1 cubic meters each), avoiding 22.5 cubic meters of ILV LLW. This report is similar to PPAF-2010-00015.
PPAF-2010-00027	RCRA Satellite Accumulation Area (SAA) Reduction at Tritium Operations	LLW	\$78,966	By providing SCDHEC with an appreciation for Tritium Operations' ALARA and waste reduction practices, the Environmental RCRA SME facilitated SCDHEC approval of a single SAA for specific 264-H process cells, which reduced the total number of SAAs for 264-H. This in turn reduced waste generation associated with routine SAA entry operations.
PPAF-2010-00028	Radioactive Lead Recycled by LWO	Mixed LLW	\$271,240	Contract with TOXCO to recycle DOE-suspension and radioactive contaminated lead (PB). Shipped six trucks of radioactively contaminated lead September 22, 2010, for recycling. This material would require disposal as mixed (HW and LLW) waste if the recycle option had not been pursued and implemented. This report is similar to PPAF-2010-00016 and PPAF-2010-00017.

Data Table 2–2 2010 Savannah River Site Pollution Prevention Activities (cont.)

P2 Activity Form Number	Description	Waste Type	Life Cycle Savings	Project Description Details
PPAF–2010–00029	Tritiated Soil and Debris Remediation	LLW	\$610,500	<p>A pilot performed under a treatability study successfully remediated approximately 165 cubic yards (126 cubic meters) of tritiated concrete and soil in two campaigns at D Area. The cost for the pilot campaign was approximately \$900,000. A key benefit was that the tritiated material is treated on site and returned to the excavation, thus avoiding the costs for transportation and disposal off site (to Energy Solutions in Utah). Additionally, the amount of clean fill (to backfill the excavation) was greatly reduced. This pilot campaign provided proof of technology that was approved by SCDHEC for expansion to full operations that will add three additional treatment units to treat an additional 3,000 cubic yards of debris, with an estimated project cost of \$5 million to build and operate all four units. PPAF will be generated at end of project to cover remaining avoidance.</p>