Waste Site Reclassification Form

Date Submitted: 9/13/06 Originator: L. M. Dittmer Phone: 372-9664	Operable Unit(s): 100-BC-1 Waste Site ID: 100-B-24 Type of Reclassification Action: Rejected ☐ Closed Out ☐ Interim Closed Out ☐ No Action ☒	Control Number: 2006-051 Lead Agency: EPA

This form documents agreement among the parties listed below authorizing classification of the subject unit as rejected, closed out, interim closed out, or no action and authorizing backfill of the site, if appropriate. Final removal from the National Priorities List of no action, interim closed-out, or closed-out sites will occur at a future date.

Description of current waste site condition:

The 100-B-24 Spillway is a spillway that was designed to serve as an emergency discharge point for the 116-B-7 outfall in the event that the 100-B-15 river effluent pipelines were blocked, damaged, or undergoing maintenance. Confirmatory sampling was conducted on January 17, 2006. Sampling and evaluation of this site have been performed in accordance with remedial action objectives and goals established by the *Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units, Hanford Site, Benton County, Washington* (Remaining Sites ROD), U.S. Environmental Protection Agency, Region 10, Seattle, Washington. The selected action involved demonstrating through confirmatory sampling that cleanup goals have been met and proposing the site for classification as no action.

Basis for reclassification:

The 100-B-24 Spillway site meets the remedial action objectives specified in the Remaining Sites ROD. The results demonstrate that residual contaminant concentrations support future unrestricted land uses that can be represented (or bounded) by a rural-residential scenario. These results also show that residual concentrations support unrestricted future use of shallow zone soil (i.e., surface to 4.6 m [15 ft]) and that contaminant levels remaining in the soil are protective of groundwater and the Columbia River. The site does not have a deep zone; therefore, no deep zone institutional controls are required. The basis for reclassification is described in detail in the *Remaining Sites Verification Package for the 100-B-24Spillway* (attached).

D. C. Smith DOE-RL Project Manager	[signature] Signature	9/14/06 Date
N/A Ecology Project Manager	Signature	Date
D. A. Faulk EPA Project Manager	[signature] Signature	9/18/06 Date

REMAINING SITES VERIFICATION PACKAGE FOR THE 100-B-24 SPILLWAY

Attachment to Waste Site Reclassification Form 2006-051

September 2006

REMAINING SITES VERIFICATION PACKAGE FOR THE 100-B-24 SPILLWAY

EXECUTIVE SUMMARY

The 100-B-24 Spillway, part of the 100-BC-1 Operable Unit, was designed to serve as an emergency discharge point for the 116-B-7 outfall in the event that the 100-B-15 river effluent pipelines were blocked, damaged, or undergoing maintenance. There is no physical or historical evidence that the 100-B-24 spillway was ever used.

Confirmatory sampling of the site was conducted on January 17, 2006. Soil covering the concrete spillway floor was excavated, and samples of the concrete were collected by scabbling. The sample results indicate antimony, arsenic, barium, copper, lead, and zinc exceed remedial action goals for soils. Concentrations of antimony, barium, and lead are within the range of Hanford Site background levels. There are no known health or ecological effects due to metals and/or arsenic bound in concrete. Because the contaminants are bound within the concrete of the 100-B-24 spillway, the waste site achieves compliance with the remedial action objectives. The results of the confirmatory sampling are used to make reclassification decisions for the 100-B-24 site in accordance with the TPA-MP-14 (DOE-RL 1998) process.

In accordance with this evaluation, the confirmatory sampling results support a reclassification of this site to no action. The current site conditions achieve the remedial action objectives and the corresponding remedial action goals established in the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (DOE-RL 2005b) and the *Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units, Hanford Site, Benton County, Washington* (ROD) (EPA 1999). These results show that residual concentrations support future land uses that can be represented (or bounded) by a rural-residential scenario. The results also demonstrate that residual contaminant concentrations support unrestricted future use of shallow zone soil (i.e., surface to 4.6 m [15 ft]) and that residual contaminant levels are protective of groundwater and the Columbia River. Because the contaminants are bound in concrete and are not readily available to ecological receptors, protection of the environment is also achieved. This site does not have a deep zone; therefore, no deep zone institutional controls are required.

REMAINING SITES VERIFICATION PACKAGE FOR THE 100-B-24 SPILLWAY

STATEMENT OF PROTECTIVENESS

This report demonstrates that the 100-B-24 site meets the objectives for no action as established in the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (DOE-RL 2005b) and the *Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units, Hanford Site, Benton County, Washington* (EPA 1999). These results show that residual contaminant concentrations support future land uses that can be represented (or bounded) by a rural-residential scenario. The results also demonstrate that residual contaminant concentrations support unrestricted future use of shallow zone soil (i.e., surface to 4.6 m [15 ft]) and that residual contaminant levels are protective of groundwater and the Columbia River. This site does not have a deep zone; therefore, no deep zone institutional controls are required.

GENERAL SITE INFORMATION AND BACKGROUND

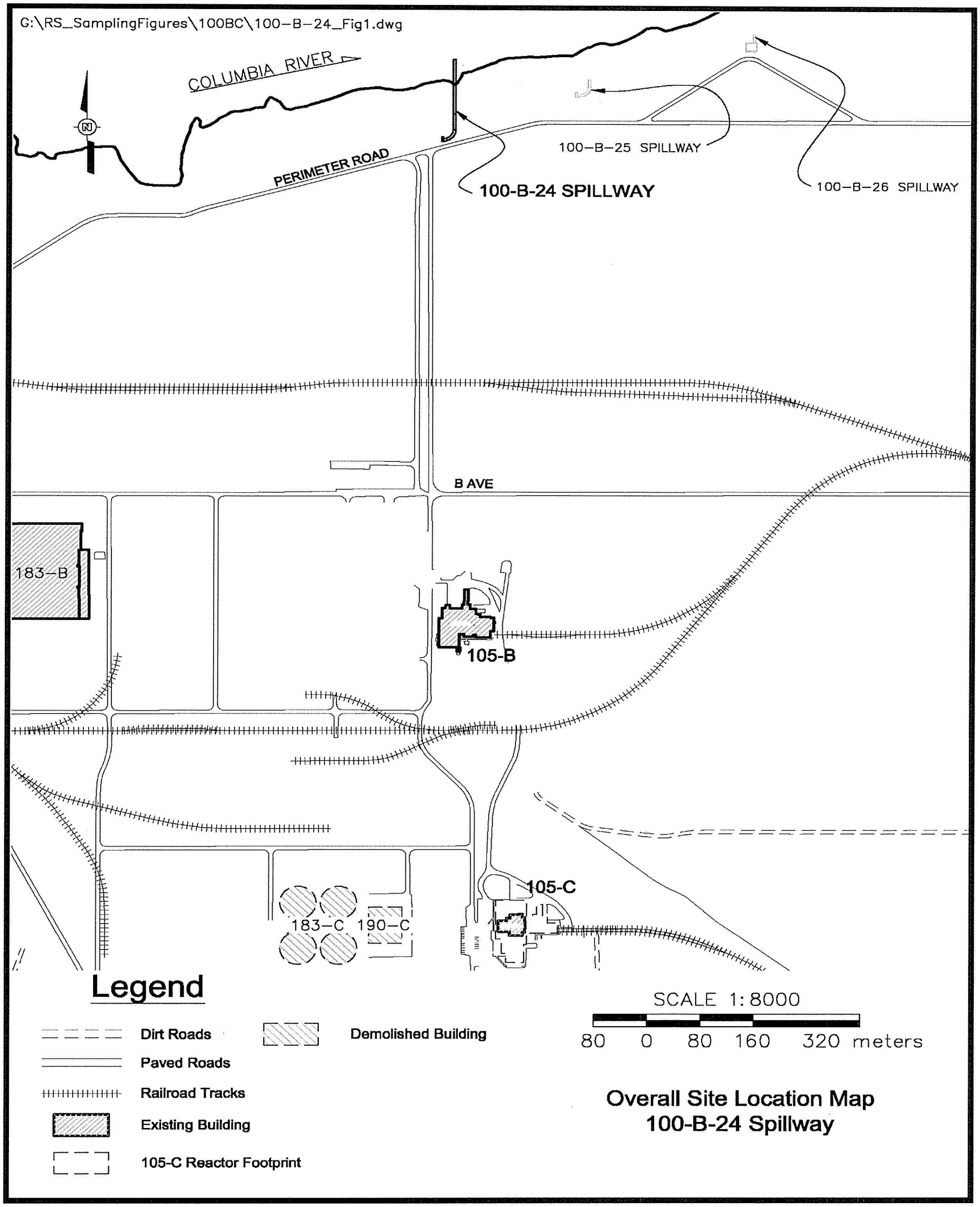
The 100-B-24 site consists of a concrete spillway (flume) that is part of the 100-BC-1 Operable Unit. Effluent cooling water from the 105-B reactor was typically discharged to the river via the 116-B-7 outfall and the 100-B-15 effluent pipelines. The 100-B-24 spillway led from the 116-B-7 outfall to the river, serving as an emergency discharge point for the outfall in the event that the 100-B-15 river effluent pipelines were blocked, damaged, or undergoing maintenance. There is no substantiated physical or historical evidence that the spillway was ever used. During decommissioning projects in the 1980s, the spillway walls were collapsed and the structure was covered with clean soil. Between July and December of 2001, the 116-B-7 outfall structure was removed and disposed along with the upper portion of the spillway. The remaining concrete spillway structure is partially covered with clean fill down to the normal water level at the river shoreline (Figure 1). The spillway was excavated, sampled, and analyzed for chemicals and radionuclides. A review of the sample results concluded that the spillway has not been exposed to contamination.

CONFIRMATORY SAMPLING ACTIVITIES

Contaminants of Potential Concern

The contaminants of potential concern (COPCs) for the 100-B-24 site were identified based on the contaminants of concern (COCs) and COPCs identified for the 116-B-7 Outfall (BHI 2002) and were as follows: americium-241, cesium-137, cobalt-60, europium-152, europium-154, europium-155, tritium, nickel-63, uranium-234, uranium-235, uranium-238, plutonium-238, plutonium-239/240, strontium-90, chromium (total), hexavalent chromium, lead, and mercury. Further consideration of upstream processes resulted in the inclusion of polychlorinated biphenyls as a COPC. Although not considered COCs or COPCs, confirmatory sample analysis was performed for the expanded list of inductively coupled plasma (ICP) metals to include antimony, arsenic, barium, beryllium, boron, cadmium, cobalt, copper, manganese, molybdenum, nickel, selenium, silver, vanadium, and zinc.

Figure 1. 100-B-24 Spillway Site Location Map.



Confirmatory Sample Design

A focused sampling design was used to assess whether the 100-B-24 waste site meets the cleanup criteria as specified in the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (DOE-RL 2005b).

Radiological surveys were performed along the 100-B/C Area shoreline during 2002 and 2003 as part of the 100-B/C Pilot Study (BHI 2005) (Figure 2), which contained survey information of the 100-B-24 spillway. The average survey background gamma reading for the survey was 1269 counts per minute. The sample location was focused on the spillway at the location of the highest LARADS survey results within the spillway footprint and physically above the ordinary high water mark (actually several results with an average gamma reading of 1539 counts per minute).

The potential source of contamination of the 100-B-24 spillway was the cooling water effluent from the 105-B reactor. Therefore, samples were collected from the floor of the spillway where the liquid would have had the most potential to deposit contamination. The concrete floor of the spillway was excavated and the concrete was scabbled to a depth of approximately 0.64 cm (0.25 in.). A field sample/duplicate pair of scabbled concrete was collected for the hexavalent chromium analysis and a second sample/duplicate pair of scabbled concrete, collected at the same location, was collected for the remainder of the analyses, as summarized in Table 1.

Field screening with an organic vapor monitor did not detect volatile organic compounds during sampling activities; therefore, volatile organic analysis was not requested.

Table 1. Confirmatory Sample Summary for the 100-B-24 Waste Site.

Sample Location	Sample Media	Sample Number	Coordinate Locations (Field Estimate)	Concrete Sample Thickness	Sample Analysis
Spillway floor	Concrete	J10V95	N 145391.2 E 565274.4	0.25 in	PCB, ICP metals,[a] mercury, GEA, gross alpha, gross beta, Ni-63 scintillation, tritium scintillation, and isotopic uranium
		J10V97			Hexavalent chromium
		J10V96 (duplicate of J10V95)			PCB, ICP metals,[a] mercury, GEA, gross alpha, gross beta, Ni-63 scintillation, tritium scintillation, and isotopic uranium
		J10V98 (duplicate of J10V97)			Hexavalent chromium
Equipment blank	Silica sand	J10V94	N/A	N/A	ICP metals[a] and mercury

Source: *100 BC Burial Grounds/Remaining Sites Sampling*, Logbook EL-1173-7 (WCH 2006a).

[a] The expanded list of ICP metals was performed to include antimony, arsenic, barium, beryllium, boron, cadmium, cobalt, copper, manganese, molybdenum, nickel, selenium, silver, vanadium, and zinc in the analytical results package.

bgs = below ground surface
GEA = gamma energy analysis
ICP = inductively coupled plasma
N/A = not applicable
PCB = polychlorinated biphenyl

Figure 2. Results of Radiological Surveys Along the 100-B/C Shoreline.

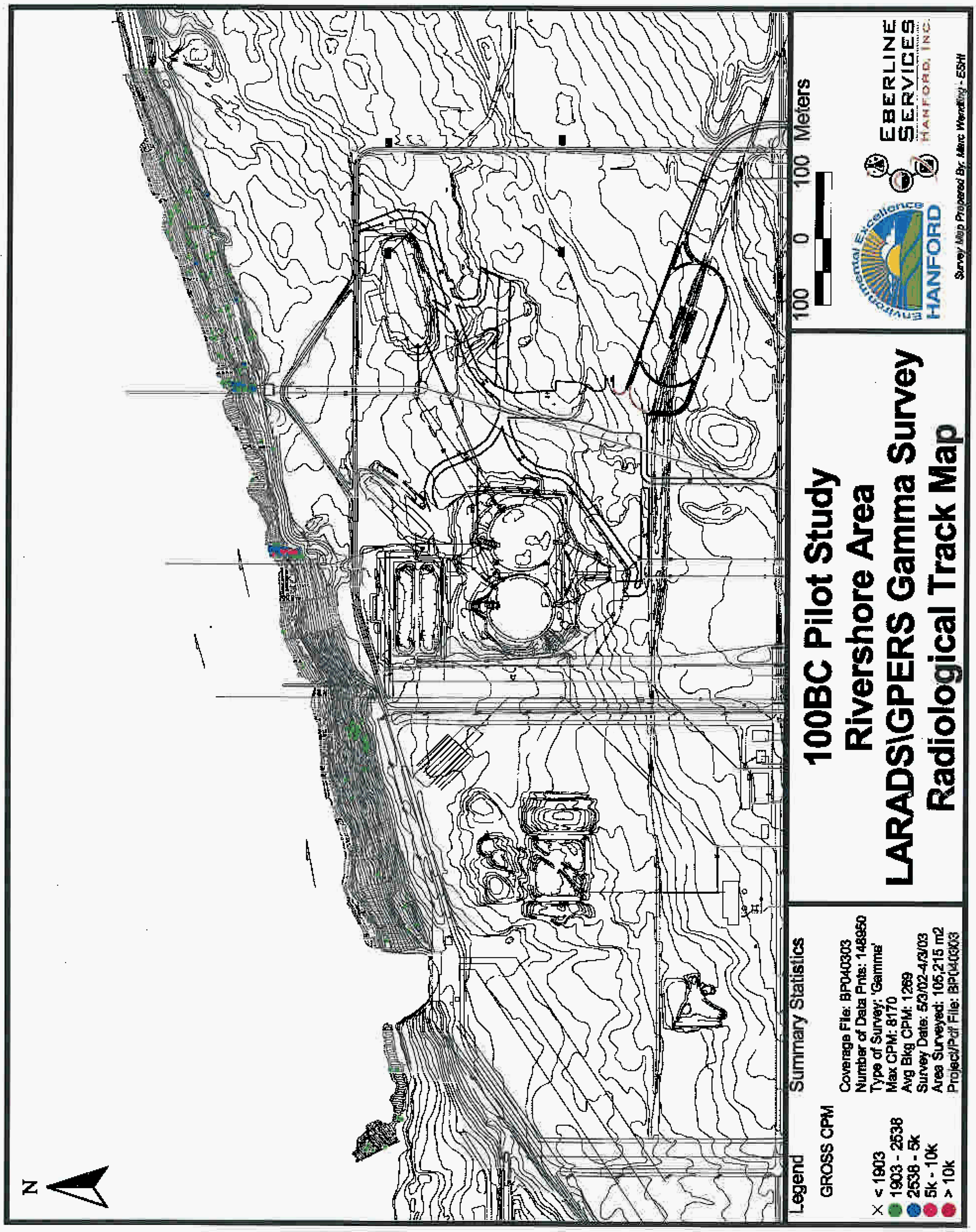
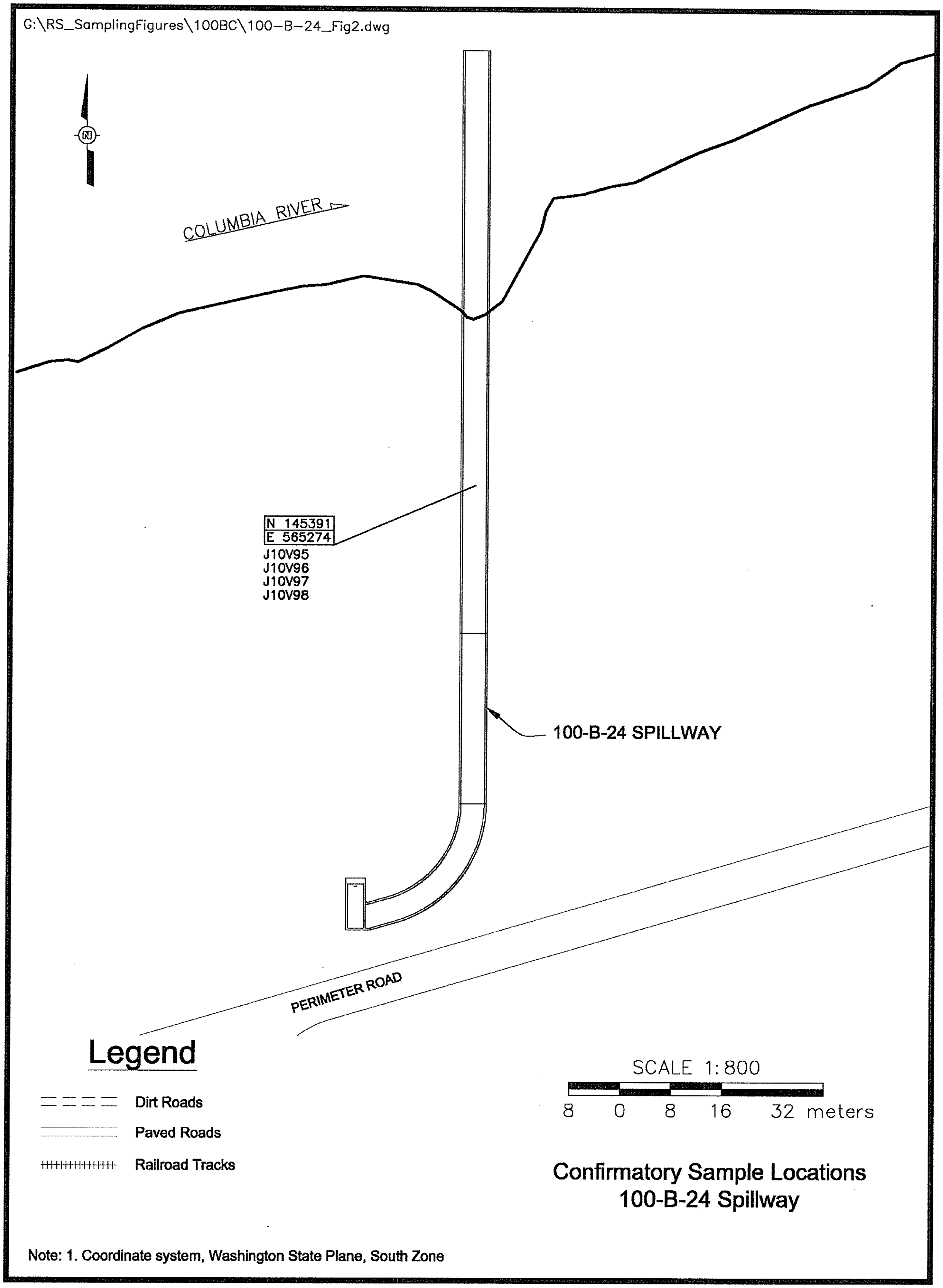


Figure 3. Sampling Location at the 100-B-24 Spillway Waste Site.



Confirmatory Sampling Results

Confirmatory sampling of the 100-B-24 waste site was performed on January 17, 2006. Samples were analyzed using analytical methods approved by the U.S. Environmental Protection Agency.

A comparison of the maximum concentrations of detected COPCs and the site remedial action goals (RAGs) is summarized in Table 2. Contaminants that were not detected by laboratory analysis are excluded from Table 2. Calculated cleanup levels for aluminum, calcium, iron, magnesium, potassium, silicon, and sodium are not available from the Model Toxics Control Act

Table 2. Comparison of Maximum Detected Contaminant Concentrations to Action Levels for the 100-B-24 Spillway Waste Site[a]. (2 Pages)

Contaminant of Potential Concern	Maximum Result (pCi/g)	Radionuclide Site Lookup Values (pCi/g)			Does the Maximum Result Exceed Lookup Values?
		Shallow Zone Lookup Value[b]	Groundwater Protection Lookup Value	River Protection Lookup Value	
Cesium-137	0.419	6.2	1,465	1,465	No
Cobalt-60	0.108	1.4	13,900	13,900	No
Europium-152	0.182	3.3	--[c]	--[c]	No
Nickel-63	3.78	4,013[d]	83[d]	83[d]	No
Uranium-233/234	0.713 (<BG)	1.1[e]	1.1[e]	1.1[e]	No
Uranium-238	0.479 (<BG)	1.1[e]	1.1[e]	1.1[e]	No
Contaminant of Potential Concern	**Maximum Result (mg/kg)**	**Nonradionuclide Remedial Action Goals (mg/kg)**			**Does the Maximum Result Exceed RAGs?**
		Direct Exposure	**Soil Cleanup Level for Groundwater Protection**	**Soil Cleanup Level for River Protection**	
Antimony[f]	6.4	32[g]	5[h]	5[h]	Yes [i]
Arsenic	31.6	20[j]	20[j]	20[j]	Yes [i]
Barium	133	5,600[k]	132[h,l]	224[m]	Yes [i]
Beryllium	0.59 (<BG)	10.4[n]	1.51[h]	1.51[h]	No
Boron[o]	15.1	16,000[g]	320	--[p]	No
Cadmium[f]	0.29 (<BG)	13.9[n]	0.81[h]	0.81[h]	No
Chromium (total)	13.8 (<BG)	80,000[k]	18.5[h]	18.5[h]	No
Cobalt	10.2 (<BG)	1,600[g]	32	--[p]	No
Copper	38.4	2,960[g]	59.2	22[h]	Yes [i]
Lead	14.9	353[q]	10.2[h]	10.2[h]	Yes [i]
Manganese	326 (<BG)	11,200[g]	512[h]	512[h]	No
Mercury	0.02 (<BG)	24[g]	0.33[h]	0.33[h]	No

Contaminant of Potential Concern	Maximum Result (mg/kg)	Remedial Action Goals (mg/kg)			Does the Maximum Result Exceed RAGs?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection	
Molybdenum[o]	1.9	400[g]	8	--[p]	No
Nickel	12.1 (<BG)	1,600[g]	19.1[h]	27.4	No
Vanadium	52.9 (<BG)	560[g]	85.1[h]	--[p]	No
Zinc	228	24,000[g]	480	67.8[h]	Yes[i]

[a] Lookup values and RAGs obtained from the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (DOE-RL 2005b) or calculated per WAC-173-340-720, 730, and 740, Method B, 1996, unless otherwise noted.

[b] Activity corresponding to a single radionuclide 15 mrem/yr exposure as calculated using a generic RESRAD model (DOE-RL 2005b).

[c] No value; modeling using RESRAD version 6.3 predicts the contaminant will not reach groundwater within 1,000 years.

[d] Revised lookup value per *100 Area Radionuclide and Nonradionuclide Lookup Values for the 1995 Interim Remedial Action Record of Decision* (BHI 2004).

[e] The calculated lookup value is below the Hanford Site-specific statistical soil background concentration. The value presented is the Hanford Site-specific statistical soil background concentration.

[f] Hanford Site-specific background value is not available; not evaluated during background study. Value used is from *Natural Background Soil Metals Concentration in Washington State* (Ecology 1994).

[g] Noncarcinogenic cleanup level calculated from WAC 173-340-740(3), Method B, 1996.

[h] Where cleanup levels are less than background, cleanup levels default to background (WAC 173-340-700[4][d]) (1996).

[i] Because the contaminants that exceed the RAG values are bound within the concrete of the 100-B-24 spillway, and therefore not environmentally available, the waste site achieves compliance with the remedial action objectives.

[j] The cleanup value of 20 mg/kg has been agreed to by Tri-Party project managers. The basis for 20 mg/kg is provided in Section 2.1.2.1 of the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (DOE-RL 2005b).

[k] Noncarcinogenic cleanup level calculated from WAC 173-340-740(3), 1996 (Method B for soils) (as presented in the DOE-RL [2005b]). Updated oral reference dose values (as provided in the Integrated Risk Information System) yield Method B direct exposure RAG values of 16,000 mg/kg and 120,000 mg/kg for barium and chromium, respectively.

[l] Barium soil cleanup level for groundwater protection calculated from WAC 173-340-740(3)(a)(ii)(A), 1996 ("100 times rule") and WAC 173-340-720(3), 1996 (Method B for groundwater) is 112 mg/kg (as presented in the DOE-RL [2005b]). The updated oral reference dose value (as provided in the Integrated Risk Information System) yields a Method B groundwater cleanup criteria of 7 mg/L, as compared to the more restrictive MCL of 2 mg/L (40 CFR 141). Per WAC 173-340-740(3)(a)(ii)(A), 1996 ("100 times rule"), the most restrictive updated soil cleanup level for groundwater protection would be 200 mg/kg.

[m] Barium soil cleanup level for river protection calculated from WAC 173-340-740(3)(a)(ii)(A), 1996 ("100 times rule"), a dilution attenuation factor of 2, and WAC 173-340-720(3), 1996 (Method B for groundwater) is 224 mg/kg (as presented in DOE-RL [2005b]). No surface water bioconcentration factor is available for barium and no water quality criteria value exists separate from the drinking water standard; therefore no WAC 173-340-730(3), 1996 (Method B for surface waters) value can be determined.

[n] Carcinogenic cleanup level calculated based on the inhalation exposure pathway (WAC 173-340-750[3]) (1996).

[o] No Hanford Site-specific or Washington State background value available.

[p] No cleanup level is available from the Ecology Cleanup Levels and Risk Calculations database (Ecology 2005), and no bioconcentration factor or water quality criteria values are available to calculate cleanup levels (WAC 173-340-730(3)(a)(iii), 1996 [Method B for surface waters]).

[q] A WAC 173-340-740(3) (1996) value for lead is not available. This value is based on the *Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for Lead in Children* (EPA 1994).

-- = not applicable
BG = background
CFR = *Code of Federal Regulations*
RAG = remedial action goal
RESRAD = RESidual RADioactivity (dose assessment model)
WAC = *Washington Administrative Code*

Cleanup Levels and Risk Calculations database under *Washington Administrative Code* 173-340-740(3); therefore, these constituents are not considered COPCs. Potassium-40, radium-226 and thorium-228 were detected in samples collected at the site, but are not considered within Table 2 because these isotopes are not related to the operational history of the site, and all were detected at levels below statistical background activities (based on an assumption of secular equilibrium, the background activity for thorium-228 is equal to the statistical background activity of 1.32 pCi/g for thorium-232 provided in DOE-RL [1996]). The laboratory reported results for all analyzed constituents are stored in the Environmental Restoration (ENRE) project-specific database prior to submitting the data for inclusion into the Hanford Environmental Information System (HEIS) and are also presented in Appendix A.

DATA EVALUATION

Cesium-137, cobalt-60, europium-152, and nickel-63 were all detected above background levels but below dose-equivalence look-up values. Table 3 presents the sum-of-fractions evaluation for these radionuclides, demonstrating that the cumulative dose above background will be less than the 15 mrem/yr RAG.

Table 3. Attainment of Radionuclide Direct Exposure RAG.

Contaminants of Potential Concern	Maximum Activity (pCi/g)	Activity Equivalent to 15 mrem/yr Dose (pCi/g)	Fraction
Cesium-137	0.419	6.2	0.068
Cobalt-60	0.108	1.4	0.077
Europium-152	0.182	3.3	0.055
Nickel-63	3.78	4,013	0.0009
		Sum of Fractions	0.201
		Equivalent Dose (mrem/yr)	3.0

Arsenic was detected in the concrete at concentrations exceeding soil RAGs for direct exposure, protection of groundwater, and protection of the Columbia River. Barium, copper, lead, antimony, and zinc were detected in concrete at concentrations exceeding soil RAGs for the protection of groundwater and/or the Columbia River. However, because arsenic and other metals are commonly detected in concrete, the leachability from concrete has been repeatedly studied (PCA 1993) and is well documented. These studies have shown that metals will not leach out of concrete in concentrations that are of concern to public health (PCA 1995). Metals found contained in the concrete are therefore not regarded as being available to human or ecological receptors (WCH 2006) and remediation of these contaminants at these concentrations is not required.

Remedial action to remove the concrete has the possibility of destabilizing the riverbank. To minimize impacts on the river and the local ecosystem the release of soils and sediments into the river should be avoided. It is reasonable to conclude that there is a greater risk posed to the river and the local ecosystem by a removal action at the 100-B-24 site than is posed by leaving it in its current state.

Nonradionuclide risk requirements for the 100-B-24 site include an individual hazard quotient of less than 1.0, a cumulative hazard quotient of less than 1.0, individual contaminant carcinogenic risks of less than 1×10^{-6}, and a cumulative carcinogenic risk of less than 1×10^{-5}. Because the residual contaminants for the 100-B-24 site are bound in concrete, they are not available to human or ecological receptors. As a result, they are not considered to exceed background values and, therefore, hazard quotient and excess cancer risk calculations are not required.

DATA QUALITY ASSESSMENT

A data quality assessment (DQA) was performed to compare the confirmatory sampling approach and analytical data with the sampling and data requirements specified in the site-specific work instruction (WCH 2005). This review involves evaluation of the data to determine if they are of the right type, quality, and quantity to support the intended use (i.e., closeout decisions) (EPA 2000) and completes the data life cycle (i.e., planning, implementation, and assessment) that was initiated by the data quality objectives process.

This DQA was performed in accordance with the site specific data quality objectives found in the *100 Area Remedial Action Sampling and Analysis Plan* (DOE-RL 2005a). To ensure quality data sets, the *100 Area Remedial Action Sampling and Analysis Plan* data quality assurance requirements, as well as the data validation procedures for chemical and radiochemical analysis (BHI 2000a, 2000b), are followed, where appropriate.

A review of the sample design (WCH 2005), the field logbook (WCH 2006b), and applicable analytical data packages has been performed as part of this DQA. Samples were collected at a location selected based on radiological survey results from the 100-B/C Pilot Study. Samples collected at the 100-B-24 waste site were provided to the analytical laboratories in two sample delivery groups (SDGs): J00047 and K0186.

SDG J00047 consists of a field sample (J10V97) and field duplicate (J10V98), submitted for hexavalent chromium analysis. The analytical laboratory reported low recoveries in the hexavalent chromium matrix spike and matrix spike duplicate, at 38% and 58%, respectively, and also commented that the recovery in the post-digestion spike was low. Recovery in the laboratory control sample was reported at 101%, and hexavalent chromium was not detected in the field samples. The most likely explanation for this combination of analytical results is that the sample matrix is reacting with the chemical spikes. It is therefore assumed that hexavalent chromium cannot exist in the sample matrix. Third-party validation (WCH 2006c) has qualified the sample results as estimated and assigned "J" flags due to the low recoveries in the matrix spike/matrix spike duplicate. The data remain useable for decision-making purposes.

SDG K0186 consists of a field sample (J10V95) and field duplicate (J10V96), submitted for ICP metals, mercury, PCB, gamma energy, nickel-63, tritium, and isotopic uranium analyses. An equipment blank (sample J10V94), submitted for ICP metals and mercury analyses, is also contained within this SDG.

No deficiencies were noted in the PCB analysis by the DQA or third-party validation (WCH 2006d); the data are useable for decision-making purposes.

No deficiencies were noted in the tritium analysis by the DQA; the data are useable for decision-making purposes.

In the isotopic uranium analysis, the relative percent difference values for uranium-233/234 for the laboratory duplicate were outside of quality control (QC) criteria at 32%. Similarly, the relative percent difference values for uranium-233/234 between the primary and duplicate field samples were outside of quality control criteria at 46%. This is the result of natural heterogeneity in the sample matrix, and all results are below the required detection limit. The data remain useable for decision-making purposes.

In the ICP metals and mercury analyses, samples J10V95 and J10V96 were reanalyzed with 6-fold dilutions, for aluminum, calcium, potassium, manganese, and sodium. The reanalyses were required due to high concentrations and the nature of the sample matrix. The quantitation on the diluted samples only applies to those analytes that were present in the samples at detectable concentrations after the dilutions. Non-detected analytes were quantitated from the original analysis to avoid elevated PQLs.

Also, in the ICP metals analysis, the LCS recovery for silicon was below the acceptance criteria at 52%. Associated sample results for silicon may be biased low. Silicon is not a COPC for the 100-B-24 waste site.

The method blank (MB) result for boron was greater than the PQL. The equipment blank is the only field sample where the boron result is similar in magnitude to the MB. The field sample (soil) results were much greater than the MB, therefore, the MB result is irrelevant.

In addition, the matrix spike (MS) recoveries for six ICP metals (aluminum, calcium, iron, antimony, silicon, and zinc) were out of acceptance criteria. Serial dilutions and post-digestion spikes were performed on all six with good results.

Finally, the relative percent difference (RPD) values for potassium and nickel were both above the laboratory acceptance criteria at 21%. Elevated RPDs are attributed to natural heterogeneity of the sample matrixes. The data are usable for decision-making purposes.

Limited, random, or sample matrix-specific influenced batch QC issues such as these are a potential for any analysis. The number and types seen in these data sets were within expectations for the matrix types and analyses performed.

The DQA review for the 100-B-24 waste site found the results to be accurate within the standard errors associated with the methods, including sampling and sample handling. The DQA review for the 100-B-24 waste site concludes that the data reviewed are of the right type, quality, and quantity to support the intended use. Detection limits, precision, accuracy, and sampling data group completeness were assessed to determine if any analytical results should be rejected as a result of QC deficiencies. All analytical data were found acceptable for decision-making purposes. The confirmatory sample analytical data are stored in the ENRE project-specific database prior to providing data for input to the HEIS and are summarized in Appendix A.

SUMMARY FOR NO ACTION

On November 3, 2005, focused confirmatory samples were collected from the concrete flume of the 100-B-24 Spillway. In accordance with this evaluation, the confirmatory sampling results support a reclassification of the 100-B-24 site to no action. Because the residual arsenic and other metals in the concrete are not available to human or ecological receptors, the 100-B-24 Spillway meets the cleanup objectives for direct exposure, groundwater protection, and river protection.

REFERENCES

40 CFR 141, "National Primary Drinking Water Regulations," *Code of Federal Regulations*, as amended.

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APPENDIX A

100-B-24 SPILLWAY SAMPLE RESULTS

Table A-1. 100-B-24 Confirmatory Sampling Results. (3 Pages)

Sample Location	HEIS Number	Sample Date	Americium-241 GEA			Cesium-137			Cobalt-60			Europium-152			Europium-154			Europium-155		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Spillway floor	J10V95	1/17/06	0.15	U	0.15	0.419		0.055	0.108		0.054	0.182		0.11	0.13	U	0.13	0.11	U	0.11
Duplicate of J10V95	J10V96	1/17/06	0.12	U	0.12	0.381		0.061	0.076	U	0.076	0.19	U	0.19	0.2	U	0.2	0.13	U	0.13

Sample Location	HEIS Number	Sample Date	Nickel-63			Potassium-40			Radium-226			Radium-228			Thorium-228 GEA			Thorium-232 GEA		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Spillway floor	J10V95	1/17/06	3.78		3.4	15	U	15	0.72	U	0.72	0.95	U	0.95	0.432		0.075	0.95	U	0.95
Duplicate of J10V95	J10V96	1/17/06	1.64	U	3.6	5.4		0.49	0.256		0.11	0.27	U	0.27	0.474		0.092	0.27	U	0.27

Sample Location	HEIS Number	Sample Date	Tritium			Uranium-233/234			Uranium-235			Uranium-235 GEA			Uranium-238			Uranium-238 GEA		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Spillway floor	J10V95	1/17/06	-0.977	U	4.3	0.713		0.26	0	U	0.31	0.15	U	0.15	0.374		0.26	5.2	U	5.2
Duplicate of J10V95	J10V96	1/17/06	-0.318	U	3.8	0.445		0.26	0	U	0.32	0.2	U	0.2	0.479		0.26	7.1	U	7.1

Sample Location	HEIS Number	Sample Date	Gross Alpha			Gross Beta		
			pCi/g	Q	MDA	pCi/g	Q	MDA
Spillway floor	J10V95	1/17/06	0.003	U	9.7	13.6		6.2
Duplicate of J10V95	J10V96	1/17/06	1.57	U	13	7.87	U	8.4

Acronyms and notes apply to all of the tables in this appendix.
Note: Data qualified with C are considered acceptable values.
C = blank contamination (inorganic constituents)
GEA= gamma energy analysis
HEIS = Hanford Environmental Information System
MDA = minimum detectable activity
PQL = practical quantitation limit
Q = qualifier
U = undetected

Attachment to Waste Site Reclassification Form 2006-051

Table A-1. 100-B-24 Confirmatory Sampling Results. (3 Pages)

Sample Location	HEIS Number	Sample Date	Aluminum			Antimony			Arsenic			Barium			Beryllium			Boron			Cadmium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Equipment blank	J10V94	1/17/06	37.3		2.7	0.35	U	0.35	0.30	U	0.3	1	C	0.02	0.03		0.009	0.34	C	0.24	0.06	U	0.06
Spillway floor	J10V95	1/17/06	10600		17.5	6.4		0.38	31.2		0.32	132	C	0.02	0.56		0.01	15.1	C	0.26	0.29		0.07
Duplicate of J10V95	J10V96	1/17/06	10500		17.6	6.3		0.38	31.6		0.3	133	C	0.02	0.59		0.01	13.7	C	0.26	0.07	U	0.07

Sample Location	HEIS Number	Sample Date	Calcium			Chromium			Cobalt			Copper			Hexavalent Chromium			Iron			Lead		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Equipment blank	J10V94	1/17/06	16.9	C	1.7	0.16		0.14	0.11	U	0.11	0.11	U	0.11				110		2.8	0.27	U	0.27
Spillway floor	J10V95	1/17/06	83200	C	11.2	13.8		0.15	10.2		0.11	38.4		0.11				19600		3.1	14.8		0.3
Duplicate of J10V95	J10V96	1/17/06	79400	C	11.2	13.5		0.15	10		0.12	36.3		0.12				20100		3.1	14.9		0.3
Spillway floor	J10V97*	1/17/06													0.35	UJ	0.35						
Duplicate of J10V97	J10V98*	1/17/06													0.35	UJ	0.35						

*Submitted for hexavalent chromium analysis only.

Sample Location	HEIS Number	Sample Date	Magnesium			Manganese			Mercury			Molybdenum			Nickel			Potassium			Selenium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Equipment blank	J10V94	1/17/06	5.4		1.2	2.4		0.47	0.01	U	0.01	0.12	U	0.12	0.12	U	0.12	47.7	U	47.7	0.32	U	0.32
Spillway floor	J10V95	1/17/06	6970		1.3	326		3	0.02	U	0.02	1.9	C	0.12	12.1		0.12	855		309	0.34	U	0.34
Duplicate of J10V95	J10V96	1/17/06	6290		1.3	304		3.1	0.02		0.02	1.9	C	0.12	11.1		0.12	997		311	0.35	U	0.35

Sample Location	HEIS Number	Sample Date	Silicon			Silver			Sodium			Vanadium			Zinc		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Equipment blank	J10V94	1/17/06	38.4		0.73	0.12	U	0.12	10.4	C	2.5	0.08	U	0.08	0.58		0.04
Spillway floor	J10V95	1/17/06	530		0.78	0.13	U	0.13	514	C	16.2	52.9		0.09	228		0.05
Duplicate of J10V95	J10V96	1/17/06	684		0.79	0.14	U	0.14	553	C	16.3	50.4		0.09	208		0.05

Table A-1. 100-B-24 Confirmatory Sampling Results. (3 Pages)

Constituents	J10V95 Spillway floor Sample date 1/17/16			J10V96 Duplicate of J10V95 Sample date 1/17/06		
	μg/kg	Q	PQL	μg/kg	Q	PQL
Polychlorinated Biphenyls (PCBs)						
Aroclor-1016	14	U	14	14	U	14
Aroclor-1221	14	U	14	14	U	14
Aroclor-1232	14	U	14	14	U	14
Aroclor-1242	14	U	14	14	U	14
Aroclor-1248	14	U	14	14	U	14
Aroclor-1254	14	U	14	14	U	14
Aroclor-1260	14	U	14	14	U	14