Department of Energy

Ohio Field Office
Fernald Closure Project
175 Tri-County Parkway
Springdale, Ohio 45246
(513) 648-3155

FEB 27 2006

DOE-0078-06

Mr. James A. Saric, Remedial Project Manager
United States Environmental Protection Agency
Region V, SR-6J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
Southwest District Office
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF THE DRAFT CERTIFICATION REPORT FOR AREA 6 WASTE PITS 4, 5, AND 6

Enclosed for your review is the draft Certification Report for Area 6 Waste Pits 4, 5, and 6.

If you have any questions regarding this transmittal, please contact me at (513) 648-3139.

Sincerely,

Johnny Reising

Johnny W. Reising
Director

Enclosure

cc w/enclosure:
J. Desormeau, OH/FCP
T. Schneider, OEPA-Dayton (three copies of enclosure)
G. Jablonowski, USEPA-V, SR-6J
M. Cullerton, Tetra Tech
M. Shupe, HSI GeoTrans
R. Vandegrift, ODH
AR Coordinator, Fluor Fernald, Inc./MS6

cc w/o enclosures:
J. Chiou, Fluor Fernald, Inc./MS88
F. Johnston, Fluor Fernald, Inc./MS12
C. Murphy, Fluor Fernald, Inc./MS1

Fluor Fernald, Inc.
P.O. Box 538704
Cincinnati, OH 45253-8704

FLUOR

February 23, 2006

Fernald Closure Project
Letter No. C:CPD:2006-0046

Mr. Johnny W. Reising, Director
U. S. Department of Energy
Ohio Field Office - Fernald Closure Project
175 Tri-County Parkway
Cincinnati, Ohio 45246

Dear Mr. Reising:

CONTRACT DE-AC24-01OH20115, TRANSMITTAL OF THE DRAFT CERTIFICATION REPORT FOR AREA 6 WASTE PITS 4, 5, AND 6

Enclosed for your review is the draft Certification Report for Area 6 Waste Pits 4, 5, and 6.

Upon your concurrence, please forward this document to the U.S. Environmental Protection Agency and Ohio Environmental Protection Agency. If you have any questions or require additional information, please contact Jyh-Dong Chiou at (513) 738-2834 or Frank Miller at (513) 484-2324.

Sincerely,

Cornelius M. Murphy
Closure Project Director

CMM:FLM:jkp

Enclosure

c: With Enclosure

Joe Desormeau, DOE-OH/FCP, MS2
Krista Flaugh, MS88
Reinhard Friske, MS60
Frank L. Miller, MS88
SDFP Library, MS88
DOE Records Center
Administrative Record, MS6
Letter Log Copy, MS1
Project Number 20600.2.22 (20600-RP-0006)

Without Enclosure

Richard Abitz, MS88
Tom Buhrlage, MS60-1
Christina Carr, DOE-OH/FCP, MS2
Tom Carr, MS64
Jyh-Dong Chiou, MS88
Mike Connors, MS99
Dennis Dalga, MS52-3
Timothy L. Jones, DOE Contracting Officer, DOE/EMCBC
Uday Kumthekar, MS88
Gregg Johnson, MS60
Frank Johnston, MS12
Jeff Middaugh, MS60
Dennis Nixon, MS1
Scott Osborn, MS52-3
M. D. Powell, MS64
Dennis Sizemore, Fluor Fernald, Inc. Prime Contract, MS1
Anthony Snider, MS88
Chuck Van Arsdale, MS88
Christa Walls, MS52-3
Fred Wilson, MS64
Bill Zebick, MS60

CERTIFICATION REPORT FOR AREA 6 WASTE PITS 4, 5, AND 6

FERNALD CLOSURE PROJECT
FERNALD, OHIO

FEBRUARY 2006

U.S. DEPARTMENT OF ENERGY

20600-RP-0006
REVISION A
DRAFT

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LIST OF ACRONYMS AND ABBREVIATIONS

ASCOC	area-specific constituent of concern
ASL	analytical support level
BTV	benchmark toxicity value
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	constituent of concern
CRDL	Contract Required Detection Limit
CU	certification unit
DHWM	Division of Hazardous Waste Management
DOE	U.S. Department of Energy
ECOC	ecological constituent of concern
EPA	U.S. Environmental Protection Agency
FCP	Fernald Closure Project
FRL	final remediation level
GCN	General Cleanup Numbers
HAMDC	highest allowable minimum detectable concentration
HWMU	hazardous waste management unit
ICP-AES	inductively coupled plasma-atomic emission spectroscopy
ICP-MS	inductively coupled plasma-mass spectrometry
keV	kiloelectron volt.
m^2	square meters
µg/kg	micrograms per kilogram
MDL	minimum detection level
mg/kg	milligrams per kilogram
OEPA	Ohio Environmental Protection Agency
OSDF	On-Site Disposal Facility
OU	Operable Unit
PCB	polychlorinated biphenyl
pCi/g	picoCuries per gram
PSP	Project Specific Plan
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SP	Soil Stockpile
SVOC	semi-volatile organic compound
TPU	total propagated uncertainty
UCL	upper confidence limit
UST	underground storage tank
V/FCN	Variance/Field Change Notice
V&V	verification and validation
VOC	volatile organic compound

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

WAC	waste acceptance criteria
yd^3	cubic yards

EXECUTIVE SUMMARY

This Certification Report presents the information and data used by the U.S. Department of Energy (DOE) to determine that soils in Area 6 Waste Pits 4, 5, and 6 meet established final remediation levels (FRLs). Area 6 Waste Pits 4, 5 and 6 is located in the western and northern portion of the Fernald Closure Project (FCP).

This Certification Report includes details of the certification sampling, analysis, and validation that took place in Area 6 Waste Pits 4, 5, and 6. Figure 1-1 depicts the original layout of Area 6 and Figure 1-2 depicts the area in Area 6 that is to be certified.

Consistent with the Sitewide Excavation Plan (SEP, DOE 1998), these areas underwent predesign, excavation, and precertification activities, including the use of real-time instrumentation as well as physical sampling and analysis. As a result of these activities, it was determined that no further remediation was necessary prior to certification.

The SEP also has specific statistical criterion for certification. These criterion state: 1) the average primary area-specific constituent of concern (ASCOC) concentrations within a CU must be below-FRLs at a 95 percent upper confidence level (UCL) (90 percent UCL for secondary ASCOCs), and 2) that no certification result can be greater than twice the FRL (the hotspot criterion). If either of these criteria is not met, then further investigation and possible excavation is required. If both of these criteria are met for a CU, then it can be released for development of the final land use.

During the certification process CUs A6WP-C06 and A6WP-C08 failed one of the certification requirements (both CUs failed the 95 percent UCL on the mean) for the primary ASCOC total uranium. Although the hotspot criterion was met with all uranium results in these CUs (i.e., less than two times the FRL), the affected areas were excavated and additional samples were collected within the affected sub-CUs and at the archive sample locations around the affected sub-CUs in accordance with an approved variance to the certification sampling plan. Following the re-sample, the pre-excavated data was replaced with the new data and the data from the archive locations were included in the statistics for these CUs.

Additionally, there was one result for aroclor-1254 that was greater than two times the FRL in CU A6WP-C07. Four bounding samples were collected and verified that the area that this condition represents is less than 10 square meters, which satisfies the requirements of the hotspot criterion.

Upon completion of final certification statistics, all of the Area 6 Waste Pits 4, 5, and 6 CUs pass the certification criteria. Additionally, following the protocols of the Closure Plan Review Guidance for

Resource Conservation and Recovery Act Facilities (OEPA 2004), written by the Ohio Environmental Protection Agency (OEPA) Division of Hazardous Waste Management all hazardous waste management units within this area are closed. On the basis of this reported information and supporting project files, DOE has determined that no additional remedial actions are required in this portion of the site. The area will be considered certified when the U.S. Environmental Protection Agency and OEPA concur that certification criteria have been met. DOE intends to proceed with final land use activities as outlined in the Natural Resource Restoration Plan (DOE 2002).

DOE has restricted access to certified areas in order to maintain their integrity prior to final land use development. FCP procedure EP-0008 has been developed to implement a process to protect certified areas from becoming re-contaminated.

1.0 INTRODUCTION

1.1 PURPOSE

This Certification Report presents the information and data used by the U.S. Department of Energy (DOE) to determine that soils in Area 6 Waste Pits 4, 5, and 6 meets the established final remediation levels (FRLs). Area 6 Waste Pits 4, 5, and 6, as defined for this certification effort, is located in the western and northern portion of the Fernald Closure Project (FCP). On the basis of this reported information and supporting project files, DOE has determined that no additional remedial actions are required in this portion of the site.

1.2 BACKGROUND

In the Operable Unit (OU) 5 Record of Decision (ROD, DOE 1996a), DOE made a commitment to excavate contaminated soil that exceeds health-based FRLs. The excavated material may be disposed of at the On-Site Disposal Facility (OSDF) or at an off-site disposal facility if it does not meet OSDF waste acceptance criteria (WAC). The OU5 Remedial Investigation Report (RI, DOE 1995a) defined the extent of above-FRL soil contamination and, in general, indicated widespread contamination occurring in approximately 430 acres of the 1,050-acre FCP.

In the OU5 Remedial Action Work Plan (RAWP, DOE 1996b), DOE agreed to prepare a Sitewide Excavation Plan (SEP, DOE 1998) that defined the overall approach to cleaning up soil and at- and below-grade debris in accordance with the OU2 ROD (DOE 1995b), OU3 ROD (DOE 1996c), and OU5 ROD.

In the SEP, the FCP was divided into distinct remedial areas and phases for soil remediation, based on the operable units' remediation schedule. After all necessary remediation is completed within each area/phase, the soil is certified as having attained all clean up goals (i.e., FRLs). The general approach for the removal of contaminated soil and debris in Area 6 Waste Pits 4, 5, and 6 followed "Excavation Approach B - Excavation In Waste Storage/Management Areas Outside The Former Production Area," as described in Section 4.2 of the SEP.

1.3 SCOPE AND AREA DESCRIPTION

The scope of this Certification Report includes details of certification sampling, analysis and validation that took place in Area 6 Waste Pits 4, 5, and 6. Figure 1-1 depicts the layout of the entire Area 6 and Figure 1-2 depicts the Area 6 Waste Pits 4, 5, and 6 which is to be certified under this Certification Report.

Area 6 Waste Pits 4, 5, and 6 is located in the western and northern portion of the FCP. Area 6 Waste Pits 4, 5, and 6 also includes Hazardous Waste Management Unit (HWMU) 27 (Waste Pit 4) and 42

(Waste Pit 5) as shown on Figure 1-3. The entire Area 6 Waste Pits 4, 5, and 6 is approximately 86 acres. However, as discussed above, only approximately 9.5 acres will be included in the scope of this Certification Report (Figure 1-2). The Area 6 Waste Pits 1, 2, and 3, Burn Pit, Clearwell, and the remaining General Areas will be included in the scope of other certification efforts to be defined at a later time.

1.4 OBJECTIVES

The objectives of this Certification Report are:

- Summarize the precertification and remedial activities,
- Describe the analytical methods, data validation processes, data reduction and statistical processes used to support the certification process,
- Present certification sampling results for all certification units (CUs),
- Present the statistical analysis showing that all CUs have passed the certification criteria, including FRL attainment and hotspot criteria, and
- Describe access controls implemented to prevent recontamination.

1.5 REPORT FORMAT

This Certification Report is presented in six sections with supporting documentation and data in the appendices. These sections are as follows:

~~Section 1.0 Introduction: Purpose, background, area description, scope, and objectives of the report~~

Section 2.0 Certification Approach: The approach for certification sampling and analysis

Section 3.0 Overview of Field Activities: Historical data evaluation, precertification, area preparation, excavation and changes to work scope

Section 4.0 Analytical Methodologies, Data Validation Processes and Data Reduction

Section 5.0 Certification Evaluation and Conclusions

Section 6.0 Protection of Certified Areas

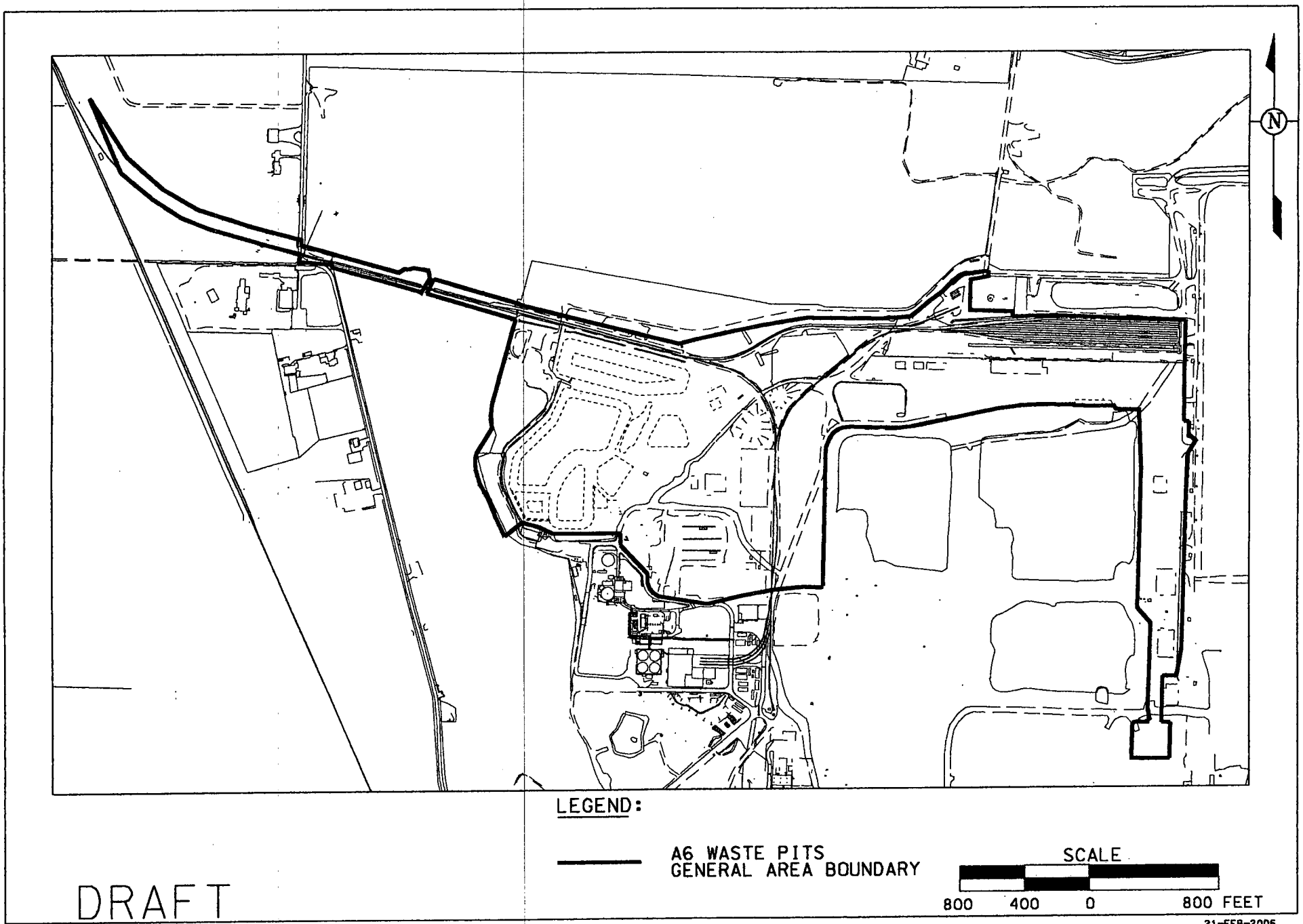
Appendix A Certification Samples, Analytical Results and Statistics Tables

Appendix B Additional Aroclor-1254 Data and Figures for the Delineation of the Hotspot in A6WP-C07

Appendix C Variances/Field Change Notices (V/FCNs) for the Area 6 Waste Pits 4, 5, and 6 Certification Design Letter (CDL) and Certification Project Specific Plan (PSP, DOE 2005a)

1.6 FCP MASTER CERTIFICATION MAP

In order to track certification and characterization for reuse areas at the FCP, DOE updates a controlled map (Figure 1-4) showing the status of the soil remediation areas and phased areas with all Certification Reports. This map has been updated to include certification of Area 6 Waste Pits 4, 5, and 6.



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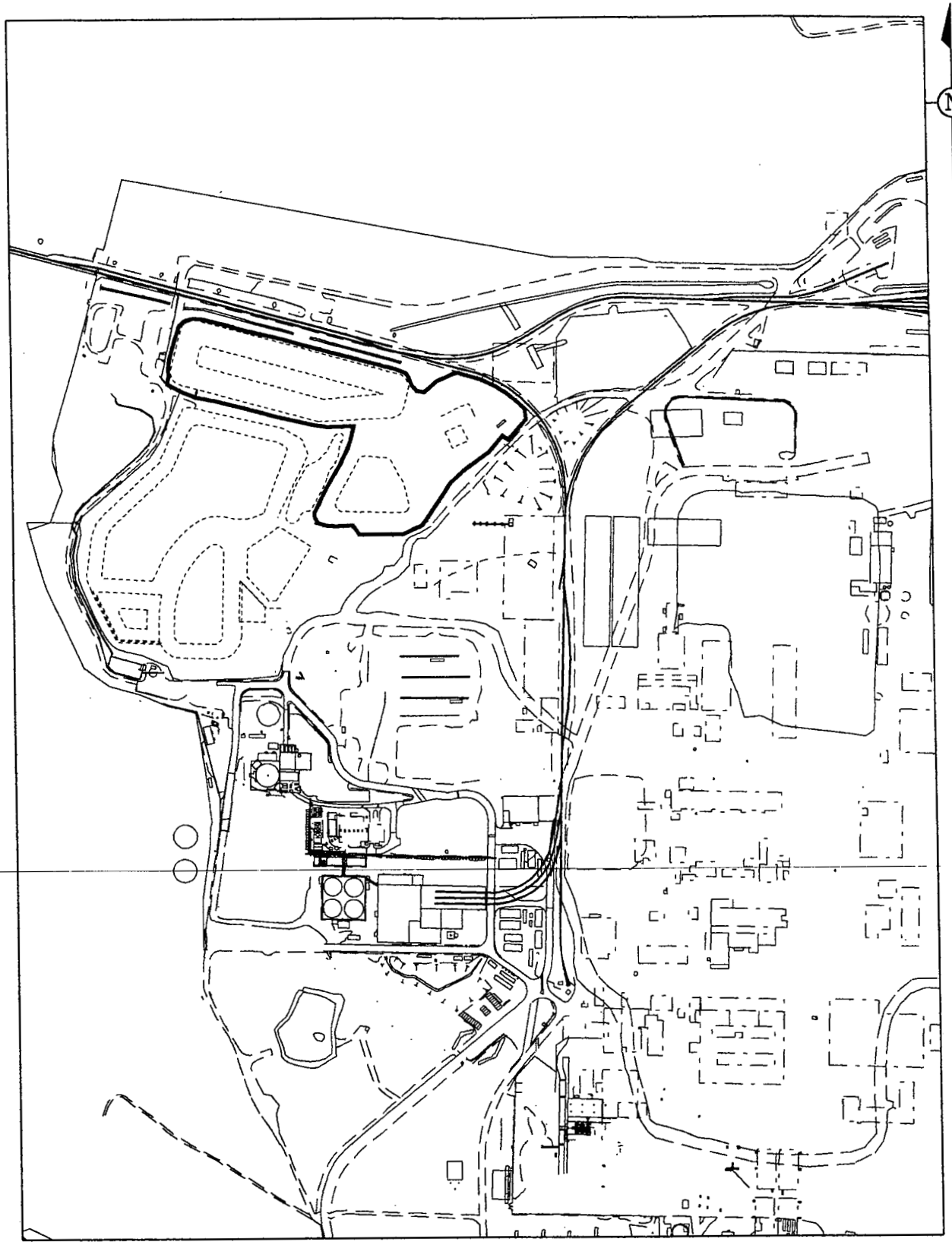
STATE PLANAR COORDINATE SYSTEM 1983

FIGURE 1-1. AREA 6 LOCATION MAP

21-FEB-2006

Document 6129



LEGEND:

WASTE PITS 4, 5, & 6 BOUNDARY

SCALE

500 250 0 500 FEET

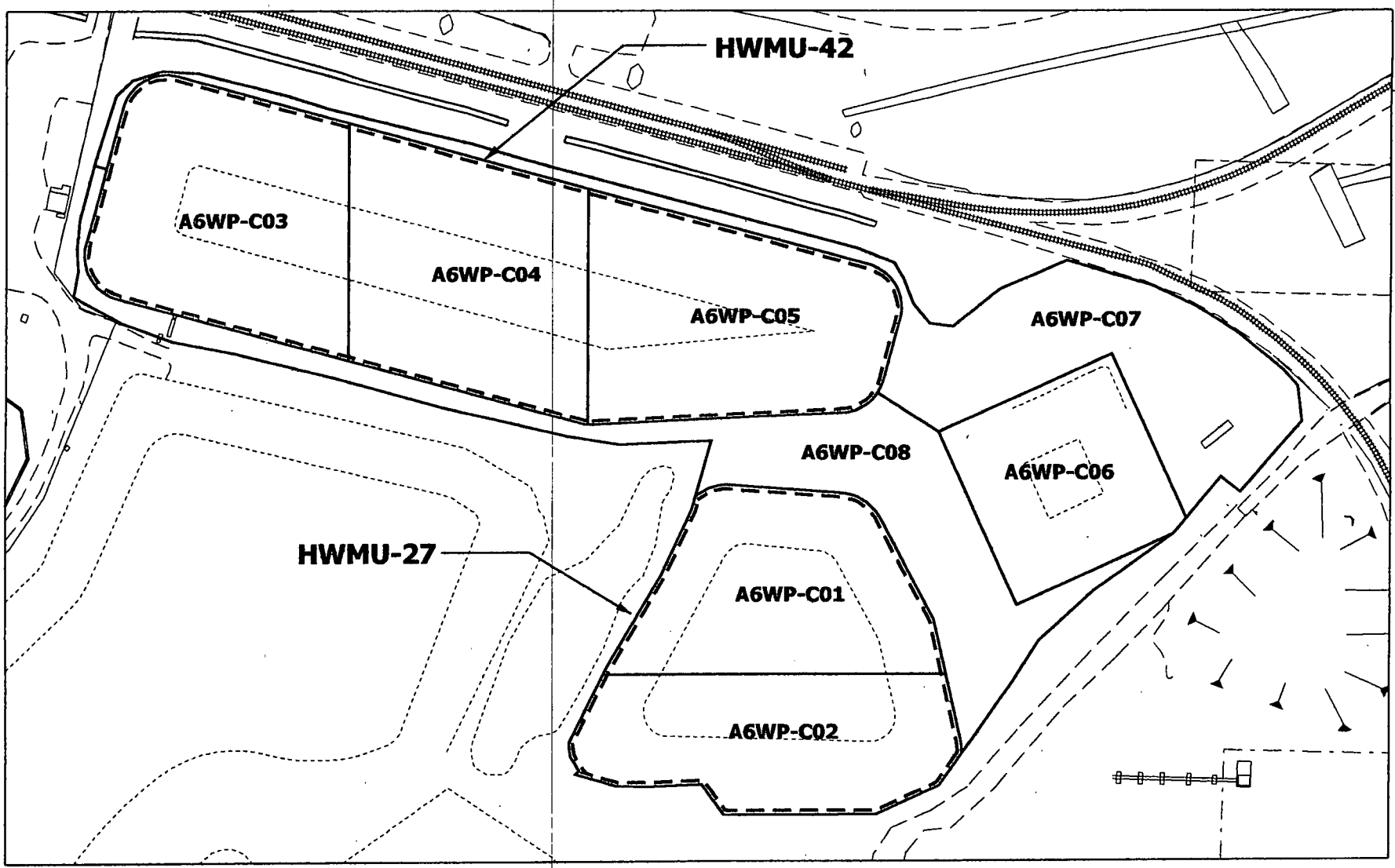
DRAFT

STATE PLANAR COORDINATE SYSTEM 1983

21-FEB-2006

v:\02fm12\dgn\wp_456_001.dgn

FIGURE 1-2. AREA 6 WASTE PITS 4, 5, AND 6 CERTIFICATION AREA



STATE PLANAR COORDINATE SYSTEM 1983

LEGEND:

CU BOUNDARY

HWMU BOUNDARY

SCALE

150 75 0 150 FEET

DRAFT

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FIGURE 1-3. AREA 6 WASTE PITS 4, 5, & 6 CERTIFICATION AREA BOUNDARIES

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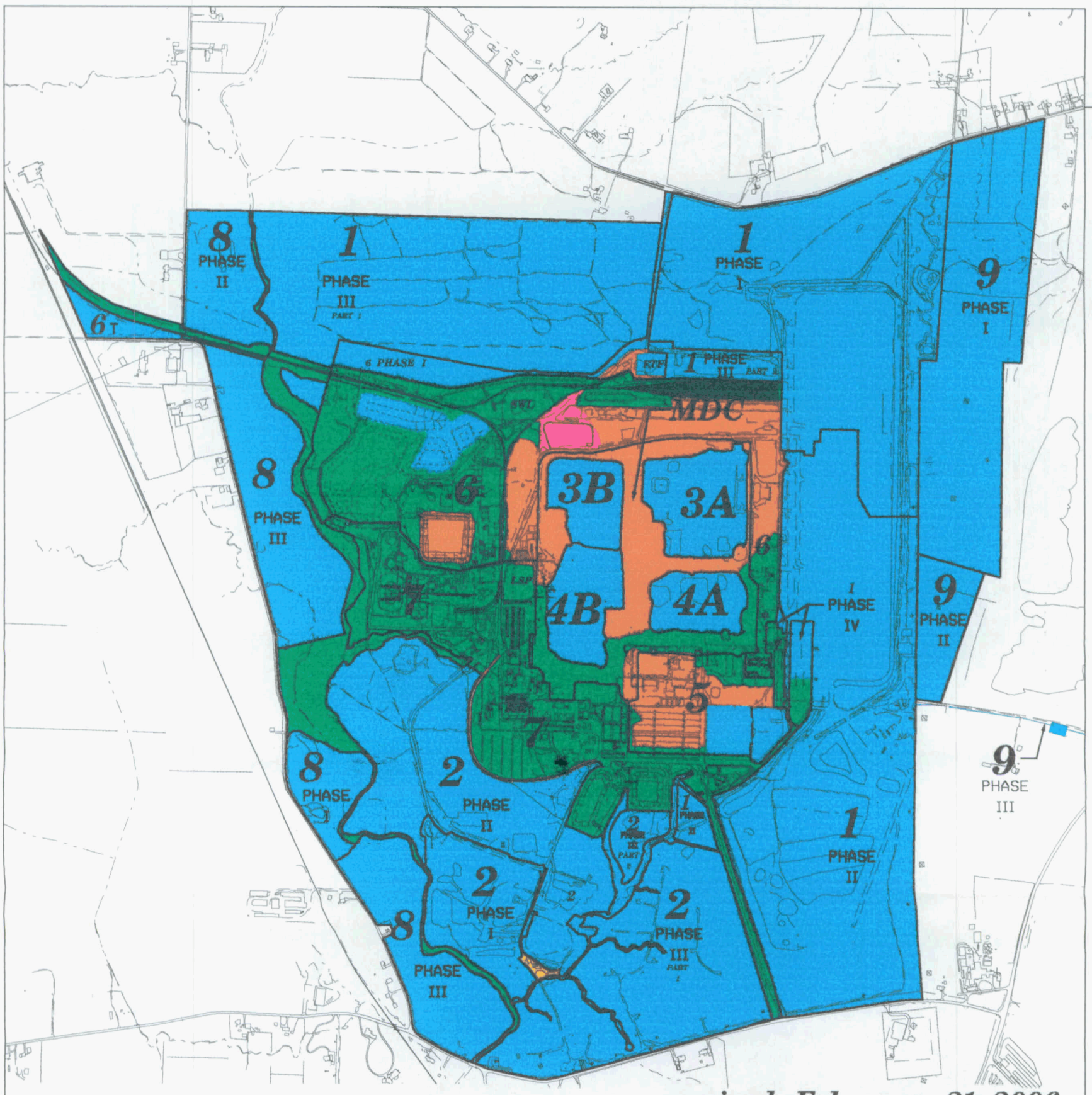

revised February 21, 2006

AREAS	TOTAL ACRES	APPROVED CERT. ACRES	CERT. ACRES IN PROGRESS	REMEDIATION ACRES IN PROGRESS	PREDESIGN ACRES IN PROGRESS	REMAINING ACRES
AREA 1	395.8	394.0	0	1.7	0	0
AREA 2	174.7	173.9	0	0	0.8	0
AREA 3A/4A	29.3	29.3	0	0	0	0
AREA 3B/4B	25.4	25.4	0	0	0	0
AREA 5	26.9	7.6	15.2	4.2	0	0
AREA 6	140.8	28.4	34.5	73.1	4.7	0
AREA 7	85.1	0	1.5	83.6	0	0
AREA 8	98.9	98.9	0	0	0	0
MDC	39.8	0	25.8	14.0	0	0
PR/SSOD/PPDD	32.7	7.0	0	25.8	0	0
TOTAL ON SITE	1049.4	764.5	77.1	202.3	7.6	0
AREA 9	85.6	85.6	0	0	0	0
TOTAL OFF SITE	85.6	85.6	0	0	0	0

AREA 10 INCLUDES PIPELINES RELATED TO GROUNDWATER REMEDIATION AND OTHER UTILITIES NOT SPECIFICALLY LISTED.

SCALE
1100 550 0 1100 FEET

FIGURE 1-4. FCP CONTROLLED CERTIFICATION MAP

v:\6c131\dgn\fbmplacertmap5.dgn
STATE PLANAR COORDINATE SYSTEM 1983
16-NOV-2005

2.0 CERTIFICATION APPROACH

2.1 CERTIFICATION STRATEGY

This section summarizes the area-specific constituent of concern (ASCOC) selection process and the certification approach, including CU establishment, sampling design, and statistical analysis. The general certification strategy is described in Section 3.4 of the SEP, and the specific strategy for Area 6 Waste Pits 4, 5, and 6 is described in the CDL and Certification Sampling PSP for Area 6 Waste Pits 4, 5, and 6 Certification Sampling.

2.1.1 Area-Specific Constituents of Concern

Total uranium, radium-226, radium-228, thorium-228 and thorium-232 are sitewide primary constituents of concern (COCs) and were retained as ASCOCs for this remediation effort. Secondary and ecological ASCOCs for Area 6 are listed in the SEP. All of the Area 6 COCs were retained for Area 6 Waste Pits 4, 5, and 6.

2.1.2 ASCOC Selection Criteria

The selection process for retaining ASCOCs for a remediation area is driven by applying a set of decision criteria. A soil contaminant is retained as an ASCOC if:

- It is listed as a soil COC in the OU5 ROD and, it is listed as an ASCOC in Table 2-7 of the SEP for the Remediation Area of interest;
- It is listed as a COC for a HWMU or underground storage tank (UST) that lies within the certification area boundary;
- It can be traced to site use in the remediation area of interest, either through process knowledge or known release of the constituent to the environment;
- Analytical results indicated that a contaminant is present above its FRL, and the above-FRL concentrations are not attributed to false positives or elevated Contract Required Detection Limits (CRDLs);
- Physical characteristics of the contaminant, such as degradation rate or volatility, indicated it is likely to persist in the soil between time of release and remediation; or
- The contaminant is one of the sitewide primary COCs (total uranium, radium-226, radium-228, thorium-238, and thorium-232).

Table 2-1 lists the secondary ASCOCs identified in Table 2-7 of the SEP. Using the above process, the ASCOCs were refined to those listed in Table 2-2, which presents all of the ASCOCs listed in Table 2-1 as well as the applicable HWMU COCs identified in Table 2-1 of the SEP. Additionally, Table 2-2 lists the

justification for retaining or not retaining the ASCOCs and the ecological COCs for each CU in Area 6 Waste Pits 4, 5, and 6.

2.1.3 ASCOC Selection Process

As was committed to the agencies in DOE's response to OEPA's Comment Number 4 of the PSP for Investigating Subsurface Material from Waste Pits 4 through 6, and the Burn Pit (DOE 2004), all of the Area 6 ASCOCs were retained for certification of Waste Pits 4, 5, and 6. Table 2-2 presents the reasoning for retaining each ASCOC and ecological COCs listed in Table 2-1. Table 2-2 also lists the applicable HWMU COCs listed in Table 2-1 of the SEP.

2.2 CERTIFICATION APPROACH

The certification design for Area 6 Waste Pits 4, 5, and 6 followed the general approach outlined in Section 3.4 of the SEP. The design for Area 6 Waste Pits 4, 5, and 6 is depicted on Figure 2-1 and the sample locations are depicted on Figure 2-2. The five primary ASCOCs (total uranium, radium-226, radium-228, thorium-228, and thorium-232) were retained in each CU. Additional secondary COCs are identified for specific CUs within the certification area as well as unique COCs for the HWMUs.

Many factors were taken into consideration when determining the boundaries for each CU within Area 6 Waste Pits 4, 5, and 6. These factors included: historical land use, proximity to other areas of the site, residual COC data, and previous existence of HWMUs. Additionally, it was considered to be an impacted area and was therefore comprised of Group 1 CUs to allow for more concentrated sampling and to ensure the excavation fully remediated this area of the site.

2.2.1 Area 6 Waste Pits 4, 5, and 6 Certification Unit Design

Area 6 Waste Pits 4, 5, and 6 consists of eight Group 1 CUs.

Due to the presence of HWMUs 27 and 42 in Area 6 Waste Pits 4, 5, and 6 this certification includes the demonstration of soil FRL attainment, and HWMU closure. Per Section 2.2.5 of the SEP:

- Each HWMU footprint will form a distinct CU or CUs,
- At least eight locations will be sampled in each HWMU
- Samples will be analyzed for the COCs identified for each particular HWMU in Table 2-1 of the SEP.

The size of HWMU 27 encompassed all of Waste Pit 4; therefore due to the size criteria of Group 1 CUs, two CUs were necessary to cover this HWMU. Both of the Group 1 CUs (CUs A6WP-C01 and A6WP-C02) established in Waste Pit 4 were sampled for the ASCOCs as well as the COC identified

specifically for HWMU 27. Also, the size of HWMU 42 encompassed all of Waste Pit 5; therefore due to the size criteria of Group 1 CUs, three CUs were necessary to cover the HWMU. All three Group 1 CUs (CUs A6WP-C03, A6WP-C04, and A6WP-C05) established in Waste Pit 5 were sampled for the ASCOCs as well as the COC identified specifically for HWMU 42.

2.2.2 Sample Selection Process

The selection of certification sampling locations was conducted according to Section 3.4.2 of the SEP. Each CU was first divided into 16 approximately equal sub-CUs. Sample locations were then generated by randomly selecting an easting and northing coordinate within the boundaries of each sub-CU, then testing those locations against the minimum distance criteria for the CU. If the minimum distance criteria were not met, an alternative random location was selected for that sub-CU, and all the locations were re-tested. This process continued, until all 16 random locations met the minimum distance criteria.

The sub-CUs and planned certification sampling locations are shown on Figure 2-2. Four of the 16 sample locations (one location from each quadrant of the CU) were designated with a "V," indicating archive sample locations, which were not collected unless they were needed for additional analysis. One sample location in the CU was designated with a "D," indicating a field duplicate sample collection location.

Prior to commencement of certification sampling field activities, all certification sample locations were surveyed and field verified to make sure no surface obstacles would prevent sample collection at the planned location. It was not necessary to move any planned certification sample locations.

2.2.3 Certification Sampling

Samples were collected for analysis from 0 to 6 inches at 12 of the 16 locations in each Group 1 CU and all sampling locations within the HWMUs. The four samples designated as "archive" were not collected unless they were needed for additional analysis.

2.2.4 Statistical Analysis

Two criteria must be met for the CU to pass certification. If the data distribution is normal or lognormal, the first criterion compares the 95 percent upper confidence limit (UCL) on the mean of each primary ASCOC to its FRL, or the 90 percent UCL on the mean of each secondary ASCOC. On an individual CU basis, any ASCOC with the 95 percent UCL (for primary ASCOCs) or 90 percent UCL (for secondary ASCOCs) above the FRL results in that CU failing certification. If the data distribution is not normal or lognormal, the appropriate nonparametric approach discussed in Appendix G of the SEP will be used to evaluate the first criterion; the *a posteriori* test will be performed to determine whether the sample size is sufficient for a meaningful conclusion of this comparison. The second criterion is the hotspot criterion, which states that primary or secondary ASCOC concentrations must not exceed two times the FRL. Per

Section 3.4.6 of the SEP, if an individual secondary COC concentration does exceed two times its FRL, the area will be further delineated. Following the delineation the affected area must be greater than 10 square meters (m^2) or the result must exceed three times the FRL before excavation will take place. When the given UCL on the mean for each ASCOC is less that its FRL and the hotspot criterion is met, the CU will be considered certified.

In the event that a CU passes the *a posteriori* test but fails certification, the following two scenarios will be evaluated: 1) localized contamination, and 2) widespread contamination. Details on the evaluation and responses to these possible outcomes are provided in Section 3.4.5 of the SEP.

TABLE 2-1
AREA 6 ASCOC LIST[a]

ASCOC	FRL / *(BTV)*[b]
PRIMARY	
Radium-226	1.7 pCi/g
Radium-228	1.8 pCi/g
Thorium-228	1.7 pCi/g
Thorium-232	1.5 pCi/g
Total Uranium	82 mg/kg
SECONDARY	
Fluoride	78000 mg/kg
Arsenic	12 mg/kg
Beryllium	1.5 mg/kg
Aroclor-1254	0.13 mg/kg
Aroclor-1260	0.13 mg/kg
Dieldrin	0.015 mg/kg
Benzo(a)pyrene	2.0 mg/kg / *(1.0 mg/kg)*
Benzo(b)floranthene	20 mg/kg / *(1.0 mg/kg)*
Dibenzo(a,h)anthracene	2.0 mg/kg / *(0.088 mg/kg)*
Indeno(1,2,3-cd)pyrene	20 mg/kg / *(10 mg/kg)*
Bromodichloromethane	4.0 mg/kg
1,1-Dichloroethene	0.41 mg/kg
Tetrachloroethene	3.6 mg/kg
Heptachloradibenzo-p-dioxin	0.00088 mg/kg
Octochlorodibenzo-p-dioxin	0.0088 mg/kg
Cesium-137	1.4 pCi/g
Technetium-99	30.0 pCi/g
Thorium-230	280 pCi/g
ECOLOGICAL	
Antimony	96 mg/kg / *(10 mg/kg)*
Cadmium	82 mg/kg / *(5 mg/kg)*
Silver	29,000 mg/kg / *(10 mg/kg)*
Benzo(a)anthracene	20 mg/kg / *(1 mg/kg)*
Benzo(k)fluoranthene	200 mg/kg / *(1 mg/kg)*
Chrysene	2000 mg/kg / *(1 mg/kg)*
Benzo(g,h,i)perylene	*1 mg/kg*
Fluoranthene	*10 mg/kg*
Phenanthrene	*5 mg/kg*
Pyrene	*10 mg/kg*

[a] As listed in Table 2-7 of the SEP.
[b] Benchmark toxicity value (BTV) applies to Ecological COCs.
mg/kg - milligrams per kilogram
pCi/g - picoCuries per gram

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TABLE 2-2
ASCOC LIST FOR AREA 6 WASTE PITS 4, 5, AND 6

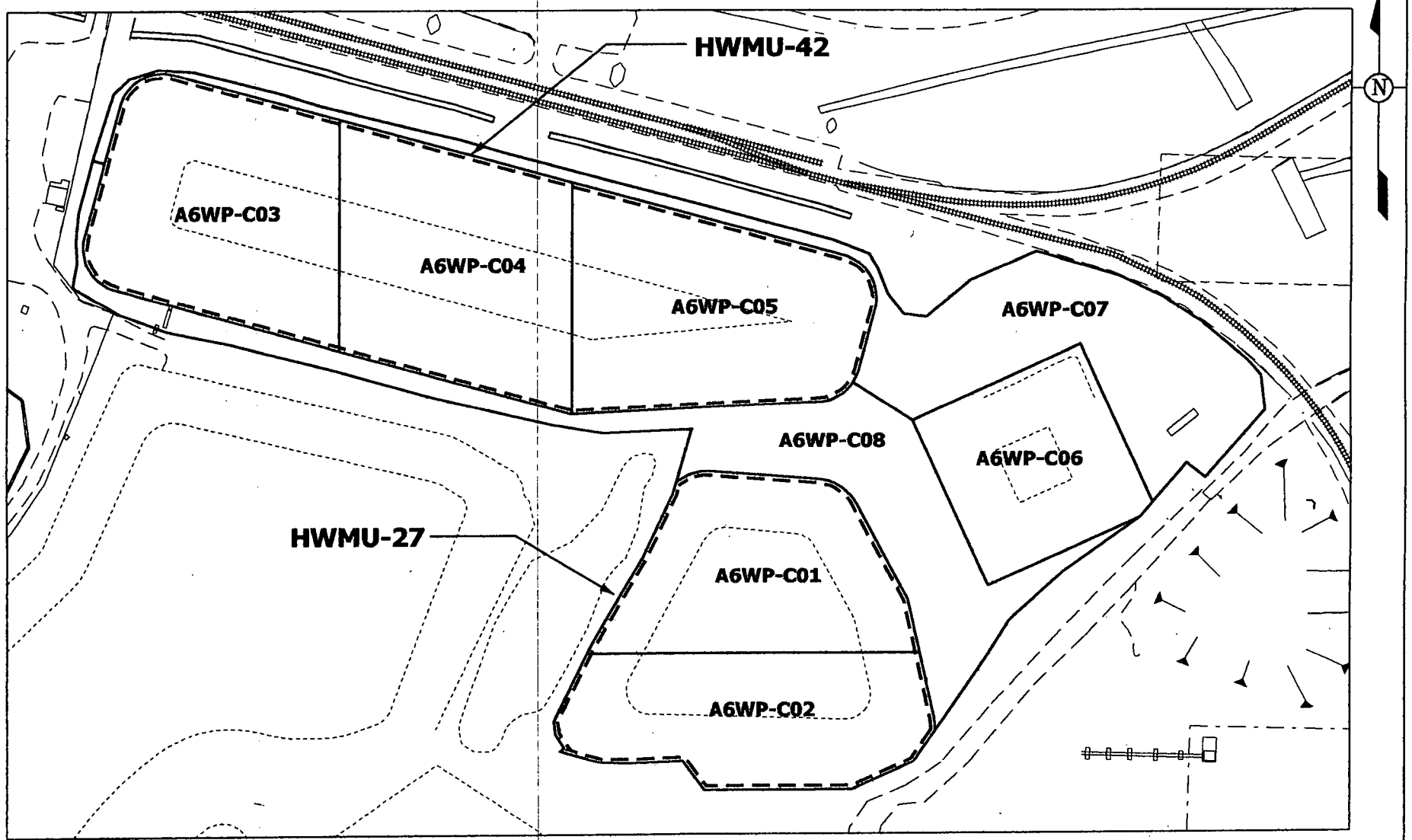
ASCOC	Retained as ASCOC?	Justification	CU(s)
Radionuclides			
Total Uranium	Yes	Primary Radionuclide	All
Radium-226	Yes	Primary Radionuclide	All
Radium-228	Yes	Primary Radionuclide	All
Thorium-228	Yes	Primary Radionuclide	All
Thorium-232	Yes	Primary Radionuclide	All
Cesium-137	Yes	*	All
Technetium-99	Yes	Above-FRL concentrations detected within Area 6	All
Thorium-230	Yes	*	All
Organic			
1,1,1-Tricholoroethane	Yes	HWMU 42 specific COC	1, 2
1,1-Dichloroethene	Yes	Above-FRL concentrations detected within Waste Pits 5 and 6	All
1,2-Dichloroethene	Yes	Although this is not a COC for Area 6 as defined in the SEP nor was it identified in the characterization of the waste pit material, it was prevalent across the site and has been identified in some of the water monitoring wells in the Waste Pit area.	All
Aroclor-1254	Yes	Above-FRL concentrations within Area 6	All
Aroclor-1260	Yes	Above-FRL concentrations within Area 6	All
Benzo(a)pyrene	Yes	*	All
Benzo(b)fluoranthene	Yes	*	All
Bromodichloromethane	Yes	Above-FRL concentrations detected within Waste Pit 6	All
Dibenzo(a,h)anthracene	Yes	*	All
Dieldrin	Yes	Above-FRL concentrations within Area 6	All
Fluoride	Yes	*	All
Heptachloradibenzo-p-dioxin	Yes	*	All
Indeno(1,2,3-cd)pyrene	Yes	*	All
Octochlorodibenqo-p-dioxin	Yes	*	All
Tetrachloroethene	Yes	Above-FRL concentrations detected within Waste Pits 4 and 6	All
Trichloroethene	Yes	Although this is not a COC for Area 6 as defined in the SEP nor was it identified in the characterization of the waste pit material, it was prevalent across the site and has been identified in some of the water monitoring wells in the Waste Pit area.	All

TABLE 2-2
ASCOC LIST FOR AREA 6 WASTE PITS 4, 5, AND 6

ASCOC	Retained as ASCOC?	Justification	CU(s)
Metals			
Arsenic	Yes	Above-FRL concentrations detected within Waste Pits 5 and 6	All
Barium	Yes	HWMU 27 specific COC	3, 4, 5
Beryllium	Yes	Above-FRL concentrations detected within Area 6	All
Ecological			
Antimony	Yes	Is an ECOC in Area 6 per Appendix C of the SEP	All
Cadmium	Yes	Is an ECOC in Area 6 per Appendix C of the SEP	All
Silver	Yes	Is an ECOC in Area 6 per Appendix C of the SEP	All
Benzo(a)anthracene	No	Not an ECOC in Area 6 per Appendix C of the SEP	None
Benzo(k)fluoranthene	No	Not an ECOC in Area 6 per Appendix C of the SEP	None
Chrysene	No	Not an ECOC in Area 6 per Appendix C of the SEP	None
Benzo(g,h,I)perylene	No	Not an ECOC in Area 6 per Appendix C of the SEP	None
Fluoranthene	No	Not an ECOC in Area 6 per Appendix C of the SEP	None
Phenanthrene	No	Not an ECOC in Area 6 per Appendix C of the SEP	None
Pyrene	No	Not an ECOC in Area 6 per Appendix C of the SEP	None

*This COC was not detected at concentrations above the FRL within Area 6 Waste Pits 4, 5, or 6; however DOE's response to OEPA Comment Number 4 to the PSP for Investigating Subsurface Material from Waste Pits 4 through 6, and the Burn Pit agreed to retaining all COCs for this certification.

ECOC - ecological constituent of concern



STATE PLANAR COORDINATE SYSTEM 1983

LEGEND:

CU BOUNDARY

HWMU BOUNDARY

SCALE

150 75 0 150 FEET

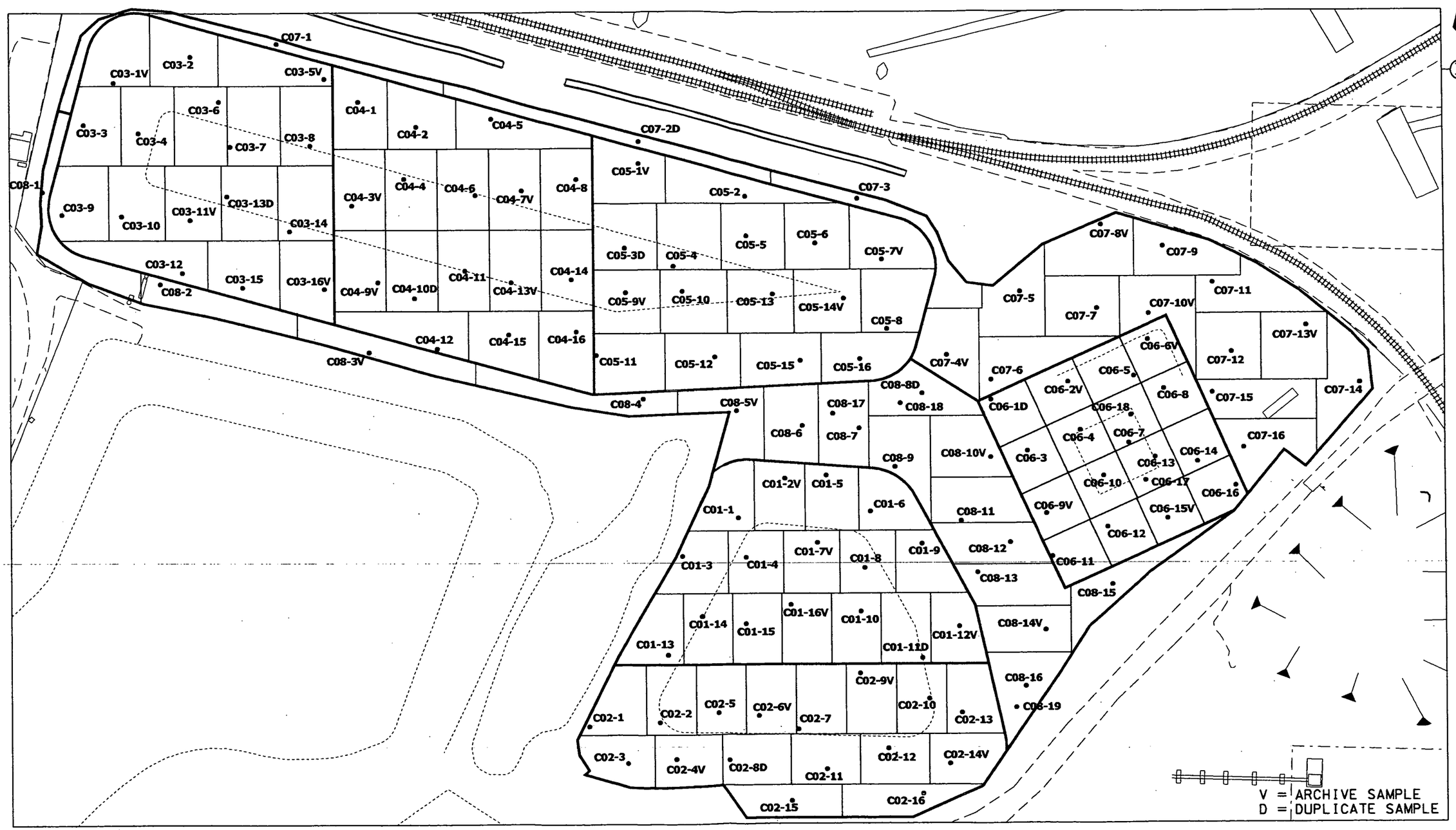
DRAFT

v:\#2fm12\dgn\wp_456_002.dgn

21-FEB-2006

FIGURE 2-1. AREA 6 WASTE PITS 4, 5, & 6 CERTIFICATION AREA BOUNDARIES

Document 6129



LEGEND:

• SAMPLE LOCATION

SCALE

90 45 0 90 FEET

DRAFT

v:\2fm12\dgn\wp_456_cu.dgn STATE PLANAR COORDINATE SYSTEM 1983 21-FEB-2006

FIGURE 2-2. CERTIFICATION SAMPLING LOCATIONS FOR CUs

3.0 OVERVIEW OF FIELD ACTIVITIES

In accordance with the SEP, prior to conducting precertification and certification activities, all soil demonstrated to contain contamination above the associated FRLs or other applicable action levels were evaluated for remedial actions.

In addition to the predesign investigations, the OU3 and OU5 RI Reports (DOE 1995c and 1995a) and Feasibility Study Reports (FS, DOE 1995d and 1995e) were used for remedial design of Area 6 Waste Pits 4, 5, and 6. Final grade excavation monitoring/sampling and real-time scanning/sampling data have been collected pursuant to the RI/FS and remedial activities.

Before initiating the certification process, all historical soil data within the Area 6 Waste Pits 4, 5, and 6 certification area was pulled from the Sitewide Environmental Database (SED). Based on the results of sampling and scanning activities summarized below, it was determined that no further remedial actions were necessary to remove above-FRL or above-WAC soil.

3.1 AREA PREPARATION AND PRECERTIFICATION

All historical data for Area 6 Waste Pits 4, 5, and 6 is presented in the Excavation Plan for Area 6 Waste Pits and General Area (DOE 2005b). This includes data collected during the RI/FS and during one predesign investigation: PSP for Investigating Subsurface Material from Waste Pits 4 through 6, and the Burn Pit. Data were also collected during the remediation/excavation activities for excavation control and following the remediation/excavation activities for precertification per the PSP for Excavation Control and Precertification of the Area 6 Waste Pits and General Area (Supplement to 20300-PSP-0011) (DOE 2005c).

Below is a brief discussion of the remediation/excavation activities of above-WAC, above-FRL, and HWMU areas in the Area 6 Waste Pits 4, 5, and 6.

There were no designed above-WAC areas in Area 6 Waste Pits 4, 5, and 6 stemming from physical sample data or initial real-time scans, as all visible Waste Pit material (visible product) was removed under the OU1 ROD. All of this material was removed prior to executing the Excavation Plan for Area 6 Waste Pits and General Area. However, as above-FRL material was excavated, discovered above-WAC materials were identified through visual observations and subsequent real-time scans, removed, and sent to Soil Stockpile (SP) 7 for off-site disposal.

The final above-WAC soil volume removed from Area 6 Waste Pits 4, 5, and 6 was approximately 3,200 cubic yards (yd^3). The final above-FRL soil volume removed from Area 6 Waste Pits 4, 5, and 6 was approximately 7,400 (bank) yd^3.

The predesign investigation, PSP for Investigating Subsurface Material from Waste Pits 4 through 6, and the Burn Pit, identified above-FRL areas in Waste Pits 4 through 6 and the historical data identified an above-FRL area to the north and east of Waste Pit 6. In Waste Pit 4, there were three above-FRL results for total uranium; one on the floor, one on the southwest corner sidewall and one on the northeast corner sidewall. In Waste Pit 5, above-FRL results for total uranium, radium-228, thorium-228, and thorium-232 were identified on the floor and above-FRL results for uranium were identified on the east sidewall. In Waste Pit 6, above-FRL results for total uranium were identified on the floor. Historical sampling identified above-FRL results for total uranium and thorium-232 on the surface in the area north and east of Waste Pit 6. All of these areas were excavated and real-time scanning/physical sampling was performed to ensure that the above-FRL material was removed consistent with DOE's response to OEPA's Comment Number 3 to the Area 6 Waste Pits and General Area Excavation Plan. This data was presented in Appendix D of the CDL and Certification PSP for Area 6 Waste Pits 4, 5, and 6. These above-FRL areas are discussed in detail in Section 2.3.2 of the Excavation Plan for Area 6 Waste Pits and General Area.

There are two HWMUs, 27 and 42, listed in Section 2.1.4 of the Excavation Plan for Area 6 Waste Pits and General Area and Table 2-1 of the SEP that will be closed during the certification of this area. Waste Pit 4 is HWMU 27 and Waste Pit 5 is HWMU 42. Both of these HWMUs were inactive land-based land disposal units with no spills recorded. The COC for HWMU 27 is barium and the COC for HWMU 42 is 1,1,1-trichloroethane.

According to guidelines established in Section 3.3.3 of the SEP, precertification activities were conducted to evaluate residual radiological contamination patterns as specified in the PSP Guidelines for General Characterization for Sitewide Soil Remediation (DOE 2005d). After several hotspots were identified by real-time scans and subsequently removed, all areas in Area 6 Waste Pits 4, 5, and 6 passed the requirements of precertification, and it was determined that certification of the soil in Area 6 Waste Pits 4, 5, and 6 could be completed.

3.2 CHANGES TO SCOPE OF WORK

The scope of work for Area 6 Waste Pits 4, 5, and 6 Certification Sampling required three changes, which were documented with three V/FCNs (see Appendix C) and discussed in the following paragraphs.

Variance 20600-PSP-0017-1 documents the collection of four additional samples from CU A6WP-C07/Sub-CU 15 for aroclor-1254, where a result greater than two times the FRL was found. The

four sample locations were place approximately five feet from the original sample location to delineate the hotspot per Section 3.4.6 for the SEP to determine if the impacted area was greater than 10 m^2.

Variance 20600-PSP-0017-2 was disapproved by OEPA and was superceded by variance 20600-PSP-0017-3.

Variance 20600-PSP-0017-3 documents the collection of nine total uranium samples from CUs A6WP-C06 and A6WP-C08 due to above-FRL results found in Sub-CUs A6WP-C06-14, A6WP-C08-7, A6WP-C08-8, and A6WP-C08-16. CUs 6 and 8 failed, due to wide variability in the data causing the UCL on the mean to be greater than the FRL results. These four areas were excavated to remove the contamination and random samples were collected from the four sub-CUs and A6WP-C06-7 as well as from four archive locations around each of the excavated sub-CUs. The newly collected samples replace the previously collected samples and were used in the statistical analysis of these two CUs.

Variance 20600-PSP-0017-4 documents choice of analytical methods to analyze the samples collected in Variance 20600-PSP-0017-3 to gamma spectroscopy or ICP-MS. Either method is an acceptable SCQ method and the choice was inadvertently omitted from Table 4-1 of the PSP.

4.0 ANALYTICAL METHODOLOGIES, DATA VALIDATION PROCESSES, AND DATA REDUCTION

4.1 ANALYTICAL METHODOLOGIES

All samples collected were sent off-site for analysis. The laboratories complied with Sitewide Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Quality Assurance Project Plant (SCQ) requirements (DOE 2003). The SCQ is the source for analytical methodologies (Appendix G), data verification and validation, and analytical quality assurance/quality control requirements.

Laboratory analysis of certification samples was conducted using approved analytical methods, as discussed in Appendix H of the SEP. The minimum detection level (MDL) was set at 10 percent of the FRL and analyses were conducted to Analytical Support Level (ASL) D or E, where the MDL of 10 percent of the FRL is above the SCQ ASL detection level, but the analyses meet all other SCQ ASL D criteria. ASL D data packages were provided for all of the analytical data. All data were validated. Once data were validated as required, results were entered into the FCP SED. Final certification results are provided in Appendix A, and a summary of the analytical methods follows:

4.1.1 Chemical Methods

Metals

Samples submitted for antimony, arsenic, barium, beryllium, cadmium, and silver analysis were analyzed by inductively coupled plasma-mass spectrometry (ICP-MS) or by inductively coupled plasma-atomic emission spectroscopy (ICP-AES).

Samples submitted for mercury analysis were analyzed by cold vapor atomic absorption.

Samples submitted for fluoride analysis were analyzed by ion chromatography.

Pesticides and Polychlorinated Biphenyl (PCBs)

Samples submitted for PCB analyses were analyzed by gas chromatography.

Semi-Volatile Organic Compounds (SVOCs)

Samples submitted for SVOC analyses were analyzed by gas chromatography/mass spectrometry.

Volatile Organic Compounds (VOCs)

Samples submitted for VOC analyses were analyzed by gas chromatography/mass spectrometry.

Dioxins

Samples submitted for dioxin analysis were analyzed by high-resolution gas chromatography.

4.1.2 Radiochemical Methods

The radiochemical analytical methods depended on the specific nuclides of interest. Performance-based specification criteria included highest allowable minimum detectable concentration (HAMDC) percent overall tracer/chemical recovery, percent matrix spike recovery, method blank concentration, percent recovery of laboratory control sample, and relative error ratio for duplicate samples for each analyte. The off-site laboratory was required to meet these specifications using the methodologies described below.

Total Uranium

Samples were analyzed for unaium-238 using gamma spectroscopy, and the results were used to calculate the total uranium value. The calculation used was as follows:

Total uranium (mg/kg) = (2.998544) x uranium-238 gamma spectrometry result (pCi/g)

The validation qualifier assigned to the total uranium value was the same as the uranium-238 qualifier.

Samples collected under V/FCN 20600-PSP-0017-3 were analyzed using ICP-MS. This was documented in V/FCN 20600-PSP-0017-4. Both V/FCNs have been included in Appendix C.

Radium-226

Samples were analyzed by gamma spectrometry, and radium-226 was quantified by measuring gamma rays emitted by members of its decay chain. This method does not require chemical separation, but the samples must be allowed a 20-day progeny in-growth period before counting. The off-site laboratory used the same gamma ray emission lines and error weighted average methodology to calculate all of the Area 6 Waste Pits 4, 5, and 6 certification results.

Radium-228

Following gamma spectrometry analysis, radium-228 was also quantified by measuring gamma rays emitted by members of its decay chain. The off-site laboratory used the same gamma ray emission lines and error weighted average methodology to calculate all Area 6 Waste Pits 4, 5, and 6 certification results.

Isotopic Thorium

Isotopic thorium (thorium-228 and thorium-232) was also quantified by measuring gamma rays emitted by members of its decay chain by gamma spectrometry. The off-site laboratory used the same gamma ray

emission lines and error weighted average methodology to calculate all Area 6 Waste Pits 4, 5, and 6 certification results.

Thorium-230

Samples were analyzed by alpha spectrometry and the isotope was quantified by measuring its characteristic alpha rays at 4621-kiloelectron volt (keV) and 4687 keV. The off-site laboratory used the combination of these two alpha lines with the help of a yield indicator, thorium-229, to quantify the thorium-230 results.

Technetium-99

Technetium-99 was quantified by using a liquid scintillation counter.

4.2 DATA VERIFICATION AND VALIDATION

This section discusses the data verification and validation (V&V) process used to examine the quality of field and laboratory results. Data were qualified to indicate the level of data usability, or level of confidence in the reported analytical results following Section 11.2 and Appendix D of the SCQ.

Specific parameters associated with the data were evaluated during V&V to determine whether or not the data quality objectives were met. Five principal Quality Assurance parameters (i.e., precision, accuracy, completeness, comparability, and representativeness) were addressed during V&V. Field sampling and handling, laboratory analysis and reporting, and non-conformances and discrepancies in the data were examined to ensure compliance with appropriate and applicable procedures.

The V&V process evaluated the following parameters:

- Specific field forms for sample collection and handling
- Chain of Custody forms
- Completeness of laboratory data deliverable.

The data validation process examined the analytical data to determine the validation qualifier of the results. General areas examined that apply to all the chemical data include the following:

- Holding Times
- Instrument calibrations
- Calculation of results
- Matrix spike/matrix spike duplicate recoveries
- Laboratory/field duplicate precision
- Field/Laboratory Blank contamination
- Dry weight correction for solid samples

- Correct detection limits reported
- Laboratory control sample recoveries and compliance with established limits.

Parameters unique to the evaluation of radiochemical analyses include:

- Calibration data for specific energies
- Background checks
- Relative Error ratios
- Detector efficiencies
- Background count correction.

For this project, all the radiological data were reviewed and validated for all criteria noted above. Per project requirements, a minimum of 10 percent of the certification data were validated to Level D. This validation included the same review process as for Level B, but included a systematic review of the raw data and recalculations.

Following V&V, qualifier codes were applied to specific data points, reflecting the level of confidence assigned to the particular datum. These codes included:

- No qualification; the positive result or detection limit is confident as reported

J Positive result is estimated or imprecise; data point is usable for decision-making purposes. Positive results less than the contract required reporting limits are also qualified in this manner

R Positive result or detection limit is considered unreliable; data point should not be used for decision-making purposes

U Undetected result at the stated limit of detection

UJ Undetected result; detection limit is considered estimated or imprecise; the data point is usable for decision-making purposes

N Positive result is tentatively identified - that is, there is some question regarding the actual identification and quantification of the result. Compound reported is best professional judgement of the interpretation of the supporting data, such as mass spectra. Caution must be exercised with the use of these data

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration. This qualifier indicates the presumptive presence of the analyte, but the result can only be considered estimated. This qualifier is not used in typical inorganic analyses, but could be used to qualify organic or radiochemistry data due to spectral interpretation problems.

NV Not Validated. The results for this sample were not validated

Z This result, or detection limit in this analysis is not the best one to use; another analysis (e.g., the dilution or re-analysis) contains a more confident and usable result.

4.3 DATA REDUCTION

Each sample used to support the Area 6 Waste Pits 4, 5, and 6 certification decision was entered in the SED with the following information:

Field Information

- Sample Identification Number - A unique number assigned to each discrete sample point
- Coordinate Information - Northing and Easting locations.

Using the information as summarized above, the following actions were taken for data reduction of each CU data set.

1. All of the data for each CU were queried from SED.
2. The data from the validation fields were used for statistical calculations.
3. Data with a qualifier of R or Z was not used in the statistical calculations.
4. The higher of the two duplicate results was used in the statistical calculations.
5. One half on the non-detect (U or UJ) values were used in the statistical calculations.

Laboratory Information

For each sample result the following information is entered:

- Laboratory Result - The reported analytical value from the laboratory
- Laboratory Qualifier - The qualifier reported from the lab. For radiological parameters non-detect values are assigned a U qualifier
- Total Propagated Uncertainty (TPU) - The TPU is an estimate of the overall uncertainty associated with a measured or calculated result that has been derived from an evaluation of all factors that can influence a result, including both systematic and random sources of uncertainty. For both *in situ* and laboratory-based radioactivity measurements, factors such as the random nature of the radioactive decay process (i.e., counting uncertainty), the mass or volume of the "sample" being analyzed, the variation in radiation detection efficiency with the energy of the emitted radiation and the density and chemical composition of the sample, uncertainty in nuclear decay parameters used to convert counts to activity, and attenuation of the radiation must be considered to properly asses the overall uncertainty of the measured result.
- Units - The units in which the Laboratory Result is reported.

Validation Information

- Validation Result - The result based on the validation process. During the validation process, sample results may be adjusted. If the laboratory result is less than the associated minimum detectable concentration, the validation result becomes the minimum detectable concentration value.

- Validation TPU - The TPU based on the validation process (applicable to radiological parameters only). The data Validation Section evaluates the reported TPU as described in the SCQ in Section 11.2 and Appendix D to assess the impact on the data quality and will qualify the data as estimated if the uncertainty is excessive.

- Validation Qualifier - The qualifier assigned as a result of the data validation process.

- Validation Units - The units in which the Validation Result is reported.

5.0 CERTIFICATION EVALUATION AND CONCLUSIONS

Certification success or failure was based on sample data from each CU against criteria discussed in Section 2.2.4. Subsequent to any evaluation of preliminary data, full statistical analysis and evaluation was performed on all validated data. Final certification data are presented in Appendix A.

5.1 CERTIFICATION RESULTS AND EVALUATION

Below is a summary of the analytical results and statistical analyses of the data for each CU in Area 6 Waste Pits 4, 5, and 6.

CUs A6WP-C01, A6WP-C02, A6WP-C03, A6WP-C04, and A6WP-C05

CUs A6WPC-01, A6WP-C02, A6WP-C03, A6WP-C04, and A6WP-C05 passed all of the certification criteria as discussed in Section 2.2.4. Final certification data are presented in Appendix A.1.

CU A6WP-C06

As discussed in Section 3.2, A6WP-C06 required additional excavation to remove total uranium due to failing the preliminary certification statistics, which are presented in Appendix A.1. The resample results and associated statistical analysis preformed after the additional excavation are discussed below as well as presented in Appendix A.2.

Other than the total uranium issue, the remainder of the constituents for A6WP-C06 passed all certification requirements. Therefore, the final certification data for those COCs are presented in Appendix A.1. In A6WP-C06, there was one above-FRL result for total uranium from the initial certification sampling, which was less than two times the FRL. A statistical analysis conducted on the total uranium results indicated that the CU did not meet all of the certification criteria discussed in Section 2.2.4 by having a 95 percent UCL on the mean for total uranium of 84.8 mg/kg where the FRL for this COC is only 82 mg/kg. These statistics are presented in Appendix A.1. Although there was only one result that was greater than the FRL and the mean was well below the FRL, the variability for the CU was fairly large coupled with the fact that the data were lognormally distributed. This resulted in the UCL on the mean being greater than the FRL. In an effort to reduce the variability and to remove the above-FRL area; the sample location with the above-FRL result was excavated. Following excavation, V/FCN 20600-PSP-0017-3 was written to collect three additional samples, one from a random location within the affected sub-CU, one from the sub-CU due north of the of the above-FRL sub-CU, and one from the archive sample location due south of the above-FRL sub-CU. All of these results were below the FRL. Following excavation and re-sampling, A6WP-C06 passed all certification requirements. All final certification total uranium data are presented in Appendix A.2.

CU A6WPC-07

There was one result for aroclor-1254 [330 micrograms per kilogram (μg/kg)] that was greater than two times the FRL (130 μg/kg) in A6WP-C07. Due to this, V/FCN 20600-PSP-00017-1 was written to collect four additional samples for aroclor-1254 approximately 5 feet from the original sample location to delineate the hotspot and to determine if the impacted area was greater than 10 m^2. Per Section 3.4.6 of the SEP, if the area of the secondary COC hotspot is less than 10 m^2 and the hotspot does not exceed three times the respective FRL, the hotspot does not have to be excavated. The results of this sampling were all below the FRL; therefore no further action was required. Appendix B contains the data, coordinates, and Figures B-1 and B-2 for this sampling to demonstrate the affected area is less than 10 m^2.

With this, A6WP-C07 passed all of the certification criteria as discussed in Section 2.2.4. Final certification data are presented in Appendix A.1.

CU A6WP-C08

As discussed in Section 3.2, A6WP-C08 required additional excavations to remove total uranium due to failing the preliminary certification statistics, which are presented in Appendix A.1. The resample results and associated statistical analysis preformed after the additional excavations are discussed below.

Other than the total uranium issue, the remainder of the constituents for A6WP-C08 passed all certification requirements. Therefore, the final certification data for those COCs are presented in Appendix A.1.

In A6WP-C08, there were three above-FRL results for total uranium from the initial certification sampling, which were less than two times the FRL. A statistical analysis conducted on the total uranium results indicated that the CU did not meet all of the certification criteria discussed in Section 2.2.4 by having a 95 percent UCL on the mean for total uranium of 119 mg/kg where the FRL for this COC is only 82 mg/kg. These statistics are presented in Appendix A.1. Although there were only three results that were greater than the FRL and the mean was below the FRL, the variability for the CU was fairly large coupled with the fact that the data were lognormally distributed. This resulted in the UCL on the mean being greater than the FRL. In an effort to reduce the variability and to remove the above-FRL areas; the sample locations with the above-FRL results were excavated. Following excavation, V/FCN 20600-PSP-0017-3 was written to collect six additional samples, one from a random location within each of the affected sub-CU and from three of the archive sample locations closest to the above-FRL sub-CUs. All of these results were below the FRL. Following excavation and re-sampling, A6WP-C08 passed all certification requirements. All final certification total uranium data are presented in Appendix A.2.

HWMU CLOSURES (HWMUs 27 and 42)

As discussed in Section 4.1.2 of the CDL, there are two HWMUs (27 and 42) in Area 6 Waste Pits 4, 5, and 6 which are being closed under the scope of this certification effort.

Based on SEP protocol described in Section 2.2.5, a unique CU should be established with a minimum of eight sample locations collected and analyzed for the HWMU COCs. The size of HWMU 27 encompasses Waste Pit 4 and is defined as two CUs, A6WP-C01 and A6WP-C02, and the constituent for this HWMU is Barium. The size of HWMU 42 encompasses Waste Pit 5 and is defined as three CUs, A6WP-C03, A6WP-C04, and A6WP-C05, and the constituent for this HWMU is 1,1,1-trichloroethane. In all, 26 samples (excluding field duplicates) were collected across the footprint of HWMU 27 and 39 samples (excluding field duplicates) were collected across the footprint of HWMU 42.

As an added measure, the calculations described in the Closure Plan Review Guidance for RCRA Facilities by the OEPA Division of Hazardous Waste Management (DHWM), were performed. Specifically, Appendix N, Section entitled "Using GCNs to Determine that No Further Action is Necessary at a Unit" was used.

In short, this OEPA guidance describes the application of General Cleanup Numbers (GCNs) to a specific Resource Conservation and Recovery Act (RCRA) site. According to this guidance, elimination of a COC from assessment can be done based on two conditions: 1) if the frequency of detection is less than 5 percent, and 2) the 95 percent UCL or maximum concentration of the compound is below the site-specific background for the compound (for inorganic metals only). For Waste Pit 4 (HWMU 27), barium, which was the single HWMU COC, was eliminated from the COC list because the maximum concentration of 143 mg/kg is less than the site-specific maximum background concentration of 261 mg/kg. For Waste Pit 5 (HWMU 42), 1,1,1-trichloroethane, which was the single HWMU COC, was eliminated based on the frequency of detection being less than 5 percent. (Out of the 39 samples collected, only one had a detected concentration equaling 2.6 percent.)

Taking both approaches (SEP protocols and OEPA DHWM guidance) into consideration, both HWMUs (27 and 42) pass all relevant criteria and therefore are considered closed.

5.2 AREA 6 WASTE PITS 4, 5, AND 6 CERTIFICATION CONCLUSIONS

Based on the certification analytical results, precertification data, and statistical analysis, DOE has determined that the remedial objectives in the OU5 ROD have been achieved for Area 6 Waste Pits 4, 5, and 6 including all HWMUs described in this report. No further remedial actions are required. This portion of the FCP will be released for restoration and final land use upon U.S. Environmental Protection Agency (EPA) and OEPA concurrence.

6.0 PROTECTION OF CERTIFIED AREAS

DOE has restricted access to certified areas in order to maintain their integrity prior to transfer for final land use. FCP Procedure EP-0008 has been developed to implement a process to protect certified areas from becoming re-contaminated.

The procedure is summarized as follows:

- At the beginning of certification sampling activities for a remediation area, the perimeter of the "certified" area will be clearly delineated
- Signs will be posted upon the temporary perimeter limiting access to authorized individuals or projects
- To gain access to conduct work in a "certified" area, the person or project desiring access will submit a request to the Compliance section of the Environmental Closure Project
- Any equipment to be used within the "certified" area must have been cleaned in accordance with FCP certified area access
- Employees/operators should be briefed on the entry and exit requirements for a "certified" area
- Additional restrictions apply to certified areas that have been restored. The Environmental Closure Project Restoration Management Group will approve request for access in writing prior to entry.

After DOE, EPA and OEPA agree that an area is certified; the area will be released for final land use. At that time, best management practices and administrative controls will be used to protect the area from contamination, and other controls will be implemented as needed.

REFERENCES

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APPENDIX A

CERTIFICATION SAMPLES, ANALYTICAL RESULTS AND STATISTICS TABLES

APPENDIX A
STATISTICAL ABBREVIATIONS AND SYMBOLS

The procedure used to determine if the data are to be assumed to be either normally distributed or lognormally distributed is outlined in Section G.2.3 of Appendix G to the SEP. The second paragraph under "Step 3: Perform the Shapiro-Wilk Test to evaluate if the data are normally or lognormally distributed" states that "If the Shapiro-Wilk Test indicates both normal and lognormal distributions fit the data, the distribution with the highest p-value will be used in the Student's t-Test (Section G.2.2.2) to make the certification decision." Therefore, the distribution testing procedure is not a matter of transforming the data and then testing for lognormality only when the normality assumption fails as the comment seems to imply. The method is to test both normality and lognormality and select the distribution that "best" fits the data as defined by the test yielding the higher p-value above a minimum acceptable value. The minimum acceptable p-value for acceptance of a distribution was set at 0.05.

Abbreviations:

W-Statistic Probability - Shapiro-Wilk probability of the "better" fit - either normal or lognormal (note: a value less than 0.05 indicates that neither normality nor lognormality could be accepted, but the highest p-value is still shown.)

t-Test (N) - indicates that the normal distribution is best fit to data with a p-value greater than or equal to 0.05.

t-Test (LN) - indicates that the lognormal distribution is best fit to data with a p-value greater than or equal to 0.05.

Sign Test - the Sign test was used because one of the following situations occurred:

1. there were greater than 50 percent non-detects,
2. between 15 and 50 percent non-detects and data not symmetrically distributed,
3. less than 15 percent non-detects, but fails Shapiro-Wilk test for both normality and lognormality and data not symmetrically distributed.

Wilcoxon SR - the Wilcoxon Signed Rank procedure was used because of one of the following situations:

1. between 15 and 50 percent non-detects and data symmetrically distributed,
2. less than 15 percent non-detects, but fails Shapiro-Wilk test for both normality and lognormality and data symmetrically distributed.

Note: Data was considered to be "symmetrically distributed" if the Standardized Skewness had an Absolute Value of less than or equal to 2.00 (i.e., between -2.00 and 2.00).

Number of NDs - number of non-detects.

@ - maximum result was below the FRL indicating that no statistical result needed to be reported.

APPENDIX A.1

SAMPLING RESULTS AND STATISTICS INITIAL SAMPLING

Certification Unit A6WP-C01

SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Technetium-99	Thorium-230	Antimony
A6WP-C01-1	0.992 -	0.766 -	0.820 -	0.766 -	33.4 -	0.0662 U	0.829 U	1.81 J	0.53 J
A6WP-C01-3	1.98 -	1.41 -	1.39 -	1.41 -	32.2 -	0.0831 U	1.07 U	1.74 J	0.50 UJ
A6WP-C01-4	1.11 -	0.704 -	0.712 -	0.704 -	36.1 -	0.0723 U	0.810 U	1.72 J	0.47 UJ
A6WP-C01-5	1.21 -	0.732 -	0.733 -	0.732 -	54.1 -	0.0778 U	0.741 U	1.11 J	0.43 UJ
A6WP-C01-6	0.921 -	0.811 -	0.841 -	0.811 -	13.0 -	0.0501 U	0.810 U	1.04 J	0.42 UJ
A6WP-C01-8	1.08 -	0.685 -	0.692 -	0.685 -	38.8 -	0.0282 U	0.783 U	4.17 -	0.44 UJ
A6WP-C01-9	0.893 -	0.658 -	0.655 -	0.658 -	9.39 -	0.0286 U	0.829 U	1.31 J	0.42 UJ
A6WP-C01-10	1.14 -	0.966 -	1.05 -	0.966 -	20.7 -	0.0790 U	1.05 U	5.68 -	0.43 UJ
A6WP-C01-11	0.877 -	0.574 -	0.592 -	0.574 -	24.0 -	0.0646 U	0.847 U	1.13 J	0.42 UJ
A6WP-C01-11-D	0.822 -	0.651 -	0.660 -	0.651 -	28.4 -	0.0672 U	0.778 U	1.35 J	0.42 UJ
A6WP-C01-13	1.00 -	0.785 -	0.804 -	0.785 -	10.7 -	0.0694 U	0.844 U	1.40 J	0.42 UJ
A6WP-C01-14	1.05 -	0.855 -	0.839 -	0.855 -	93.6 -	0.0817 U	0.810 U	1.88 -	0.43 UJ
A6WP-C01-15	0.999 -	0.713 -	0.721 -	0.713 -	17.2 -	0.0745 U	0.830 U	2.06 -	0.45 UJ
Limit	1.7	1.8	1.7	1.5	82	1.4	30	280	96
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.98	1.41	1.39	1.41	93.6	0.0831 U	1.07 U	5.68	0.53
Max. >= Limit	Yes	No	No	No	Yes	No	No	No	No
W-statistic Prob. #	< 0.01% (LN)	--	--	--	83.5% (LN)	--	--	--	--
Test Procedure	Median (Sign)	--	--	--	Lognormal	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	12	12	0	11
% Nondetects	0%	0%	0%	0%	0%	100%	100%	0%	92%
Est. Mean*	1.025	--	--	--	32.9	--	--	--	--
UCL	1.14	--	--	--	53.7	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--
Pass / Fail	Pass	--	--	--	pass	--	--	--	--
a posteriori Sample	7	--	--	--	4	--	--	--	--
Size calculation	Pass	--	--	--	Pass	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

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(continued)

SampleID	Arsenic	Barium	Beryllium	Cadmium	Fluoride	Silver	1,1-Dichloroethene
A6WP-C01-1	6.4 -	88.9 -	0.54 -	0.39 -	6.2 J	0.15 U	1.0 U
A6WP-C01-3	15.7 -	143 -	1.30 -	0.0900 U	5.9 J	0.18 U	3.9 J
A6WP-C01-4	5.9 -	71.7 -	0.59 -	0.38 -	5.9 J	0.16 U	1.0 U
A6WP-C01-5	6.2 -	69.8 -	0.45 -	0.36 -	2.8 U	0.15 U	0.9 U
A6WP-C01-6	4.9 -	69.6 -	0.37 -	0.29 -	2.7 U	0.15 U	0.9 U
A6WP-C01-8	5.2 -	61.1 -	0.46 -	0.20 -	8.2 J	0.16 U	0.9 U
A6WP-C01-9	6.0 -	68.7 -	0.54 -	0.33 -	4.4 J	0.15 U	1.0 U
A6WP-C01-10	6.4 -	61.5 -	0.59 -	0.22 -	2.7 U	0.15 U	0.9 U
A6WP-C01-11	5.8 -	64.9 -	0.42 -	0.18 -	3.0 J	0.15 U	0.9 U
A6WP-C01-11-D	6.4 -	52.1 -	0.47 -	0.30 -	4.7 J	0.15 U	0.9 U
A6WP-C01-13	4.8 -	56.0 -	0.43 -	0.29 -	5.4 J	0.15 U	0.9 U
A6WP-C01-14	6.1 -	72.8 -	0.59 -	0.31 -	8.5 J	0.15 U	1.1 U
A6WP-C01-15	7.1 -	69.5 -	0.57 -	0.24 -	3.8 J	0.16 U	1.0 U
Limit	12	68000	1.5	82	78000	29000	410
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	15.7000	143	1.3	0.39	8.5	0.18 U	3.9
Max. >= Limit	Yes	No	No	No	No	No	No
W-statistic Prob. #	< 0.01% (LN)	--	--	--	--	--	--
Test Procedure	Median (Sign)	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	0	0	0	1	3	12	11
% Nondetects	0%	0%	0%	0%	0%	0%	0%
Est. Mean*	6.15	--	--	--	--	--	--
UCL	6.4	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	Pass	--	--	--	--	--	--

a posteriori Sample	5	--	--	--	--	--	--
Size calculation	Pass	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

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(continued)

SampleID	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1,2-Dichloroethene (Total)	Aroclor-1254	Aroclor-1260	Benzo(a)pyrene
A6WP-C01-1	0.00000153 U	1.0 U	15 U	15 U	3.82 U
A6WP-C01-3	0.00000171 U	1.7 U	17 U	17 U	4.33 U
A6WP-C01-4	0.000000482 U	1.0 U	16 U	16 U	9.60 J
A6WP-C01-5	0.00000119 U	0.9 U	15 U	15 U	3.84 U
A6WP-C01-6	0.000000967 U	0.9 U	15 U	15 U	3.71 U
A6WP-C01-8	0.00000348 U	0.9 U	16 U	16 U	8.10 J
A6WP-C01-9	0.00000103 U	1.0 U	15 U	15 U	3.71 U
A6WP-C01-10	0.00000686 -	0.9 U	15 U	15 U	3.81 U
A6WP-C01-11	0.00000149 U	0.9 U	15 U	15 U	4.10 J
A6WP-C01-11-D	0.00000137 U	0.9 U	15 U	15 U	6.80 J
A6WP-C01-13	0.00000127 U	0.9 U	15 U	15 U	3.76 U
A6WP-C01-14	0.00000419 -	1.1 U	15 U	15 U	280 J
A6WP-C01-15	0.00000348 U	1.0 U	16 U	16 U	5.00 J
Limit	0.00088	160	130	130	2000
Units	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%
Max. Result	0.00000686	1.7 U	17 U	17 U	280
Max. >= Limit	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--
Test Procedure	--	--	--	--	--
Sample Size	12	12	12	12	12
Nondetects	10	12	12	12	7
% Nondetects	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--
UCL	--	--	--	--	--
Prob. > Limit	--	--	--	--	--
Pass / Fail	--	--	--	--	--
a posteriori Sample	--	--	--	--	--
Size calculation	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

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(continued)

SampleID	Benzo(b)fluoranthene	Bromodichloromethane	Dibenzo(a,h)anthracene	Dieldrin	Indeno(1,2,3-cd)pyrene
A6WP-C01-1	3.82 U	1.0 U	3.82 U	7.6 U	3.82 U
A6WP-C01-3	4.33 U	1.7 U	4.33 U	8.7 U	4.33 U
A6WP-C01-4	11.0 -	1.0 U	4.08 U	8.2 U	4.08 U
A6WP-C01-5	5.10 -	0.9 U	3.84 U	7.7 U	3.84 U
A6WP-C01-6	6.10 -	0.9 U	3.71 U	7.4 U	3.71 U
A6WP-C01-8	9.90 -	0.9 U	3.92 U	7.8 U	3.92 U
A6WP-C01-9	3.71 U	1.0 U	3.71 U	7.4 U	3.71 U
A6WP-C01-10	5.40 -	0.9 U	3.81 U	7.6 U	3.81 U
A6WP-C01-11	7.10 -	0.9 U	3.77 U	7.5 U	3.77 U
A6WP-C01-11-D	7.60 -	0.9 U	3.75 U	7.5 U	9.20 J
A6WP-C01-13	7.40 -	0.9 U	3.76 U	7.5 U	3.76 U
A6WP-C01-14	220 -	1.1 U	45.0 -	7.7 U	150 J
A6WP-C01-15	8.00 -	1.0 U	4.10 U	8.2 U	4.10 U
Limit	20000	4000	2000	15	20000
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%
Max. Result	220	1.7 U	45	8.7 U	150
Max. >= Limit	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--
Test Procedure	--	--	--	--	--
Sample Size	12	12	12	12	12
Nondetects	3	12	11	12	10
% Nondetects	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--
UCL	--	--	--	--	--
Prob. > Limit	--	--	--	--	--
Pass / Fail	--	--	--	--	--
a posteriori Sample	--	--	--	--	--
Size calculation	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

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(continued)

SampleID	Octachlorodibenzo-p-dioxin	Tetrachloroethene	Trichloroethene
A6WP-C01-1	0.0000381 -	1.0 U	1.0 U
A6WP-C01-3	0.0000326 -	1.7 U	1.7 U
A6WP-C01-4	0.0000712 -	1.0 U	1.0 U
A6WP-C01-5	0.0000302 -	0.9 U	0.9 U
A6WP-C01-6	0.0000332 -	0.9 U	0.9 U
A6WP-C01-8	0.0000467 -	0.9 U	0.9 U
A6WP-C01-9	0.0000367 -	1.0 U	1.0 U
A6WP-C01-10	0.0000859 -	0.9 U	0.9 U
A6WP-C01-11	0.0000353 -	0.9 U	0.9 U
A6WP-C01-11-D	0.0000385 -	0.9 U	0.9 U
A6WP-C01-13	0.0000249 -	0.9 U	0.9 U
A6WP-C01-14	0.0000640 -	1.1 U	1.1 U
A6WP-C01-15	0.0000500 -	1.0 U	1.0 U
Limit	0.0088	3600	25000
Units	mg/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%
Max. Result	0.0000859	1.7 U	1.7 U
Max. >= Limit	No	No	No
W-statistic Prob. #	- -	- -	- -
Test Procedure	- -	- -	- -
Sample Size	12	12	12
Nondetects	0	12	12
% Nondetects	0%	0%	0%
Est. Mean*	- -	- -	- -
UCL	- -	- -	- -
Prob. > Limit	- -	- -	- -
Pass / Fail	- -	- -	- -

a posteriori Sample	- -	- -	- -
Size calculation	- -	- -	- -

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

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SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Technetium-99	Thorium-230	Antimony
A6WP-C02-1	1.67 J	0.973 -	0.981 -	0.973 -	80.3 J	0.0284 U	0.796 U	6.80 J	0.41 UJ
A6WP-C02-2	1.38 J	0.903 -	0.889 -	0.903 -	83.9 J	0.0294 U	0.881 J	5.89 J	0.43 UJ
A6WP-C02-3	0.838 J	0.606 -	0.606 -	0.606 -	2.36 J	0.0462 U	0.811 U	1.45 J	0.48 UJ
A6WP-C02-5	1.38 J	1.16 -	1.16 -	1.16 -	74.2 J	0.0632 U	0.875 U	5.04 J	0.53 UJ
A6WP-C02-7	1.08 J	1.05 -	1.08 -	1.05 -	65.9 J	0.0484 U	0.865 U	1.82 J	0.47 UJ
A6WP-C02-8	1.16 J	0.921 -	0.964 -	0.921 -	29.4 J	0.0597 U	0.786 U	2.47 J	0.5 UJ
A6WP-C02-8-D	1.32 J	1.02 -	1.01 -	1.02 -	48.2 J	0.0600 U	0.820 U	3.42 J	0.51 UJ
A6WP-C02-10	0.952 J	0.595 -	0.625 -	0.595 -	22.9 J	0.0449 U	0.809 U	1.61 J	0.43 UJ
A6WP-C02-11	1.07 J	0.865 -	0.867 -	0.865 -	3.62 U	0.0760 U	0.818 U	1.62 J	0.45 UJ
A6WP-C02-12	1.08 J	0.600 -	0.609 -	0.600 -	13.7 J	0.0750 U	0.828 U	1.14 J	0.43 UJ
A6WP-C02-13	1.42 J	1.29 -	1.29 -	1.29 -	64.8 J	0.0860 U	0.847 J	2.17 J	0.46 UJ
A6WP-C02-15	1.41 J	0.952 -	1.01 -	0.952 -	14.5 J	0.0760 U	0.769 U	1.77 J	0.44 UJ
A6WP-C02-16	1.34 J	0.940 -	0.912 -	0.940 -	3.61 U	0.0740 U	0.799 U	1.64 J	0.44 UJ
Limit	1.7	1.8	1.7	1.5	82	1.4	30	280	96
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.67	1.29	1.29	1.29	83.9	0.0837 U	0.881	5.89	0.53 UJ
Max. >= Limit	No	No	No	No	Yes	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	4.8% (N)	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	Wilcoxon	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	2	12	10	0	12
% Nondetects	0%	0%	0%	0%	17%	100%	83%	0%	100%
Est. Mean*	- -	- -	- -	- -	35.6	- -	- -	- -	- -
UCL	- -	- -	- -	- -	74.2	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	0.0007	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	pass	- -	- -	- -	- -
a posteriori Sample	- -	- -	- -	- -	6	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	Pass	- -	- -	- -	- -

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

Certification Unit A6WP-C02

(continued)

SampleID	Arsenic	Barium	Beryllium	Cadmium	Fluoride	Silver	1,1-Dichloroethene
A6WP-C02-1	6.2 J	72.2 J	0.58 J	0.5 J	10.3 J	0.14 U	1.1 U
A6WP-C02-2	5.1 J	58.5 J	0.43 J	0.39 J	9.6 J	0.15 U	1.7 U
A6WP-C02-3	4.5 J	36.5 J	0.33 J	0.35 J	2.8 U	0.17 U	1.6 U
A6WP-C02-5	6.9 J	83.6 J	0.69 J	0.56 J	5.0 J	0.19 U	1.2 U
A6WP-C02-7	4.8 J	53.7 J	0.43 J	0.33 J	5.0 J	0.16 U	0.9 U
A6WP-C02-8	4.0 J	56.9 J	0.49 J	0.29 J	5.9 J	0.18 U	1.8 U
A6WP-C02-8-D	5.5 J	80.0 J	0.69 J	0.44 J		0.18 U	1.2 U
A6WP-C02-10	5.1 J	58.0 J	0.41 J	0.37 J	5.7 J	0.15 U	0.9 U
A6WP-C02-11	5.5 J	52.4 J	0.45 J	0.36 J	3.0 U	0.16 U	0.9 U
A6WP-C02-12	6.6 J	60.6 J	0.49 J	0.37 J	2.6 U	0.15 U	0.8 U
A6WP-C02-13	7.7 J	108 J	0.87 J	0.45 J	21.6 J	0.16 U	0.9 U
A6WP-C02-15	7.4 J	71.0 J	0.69 J	0.42 J	2.7 U	0.15 U	1.4 U
A6WP-C02-16	6.7 J	94.7 J	0.76 J	0.46 J	2.7 U	0.15 U	1.1 U
Limit	12	68000	1.5	82	78000	29000	410
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	7.7	108	0.87	0.56	21.6	0.19 U	1.8 U
Max. >= Limit	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	0	0	0	0	5	12	12
% Nondetects	0%	0%	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--

a posteriori Sample	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
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(continued)

SampleID	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1,2-Dichloroethene (Total)	Aroclor-1254	Aroclor-1260	Benzo(a)pyrene
A6WP-C02-1	0.00001 J	1.1 U	130 J	14.0 U	220 J
A6WP-C02-2	0.00000772 J	1.7 U	36.0 J	15.0 U	72.0 J
A6WP-C02-3	0.000000784 U	1.6 U	17.0 U	17.0 U	4.17 U
A6WP-C02-5	0.00000935 J	1.2 U	19.0 U	19.0 U	18.0 J
A6WP-C02-7	0.00000552 J	0.9 U	16.0 U	16.0 U	4.06 U
A6WP-C02-8	0.00000231 J	1.8 U	18.0 U	18.0 U	4.46 U
A6WP-C02-8-D	0.0000104 J	1.2 U	23.0 J	18.0 U	32.0 J
A6WP-C02-10	0.00000384 J	0.9 U	15.0 U	15.0 U	20.0 J
A6WP-C02-11	0.000000735 U	0.9 U	16.0 U	16.0 U	4.04 U
A6WP-C02-12	0.00000226 J	0.8 U	15.0 U	15.0 U	4.0 J
A6WP-C02-13	0.00000117 U	0.9 U	16.0 U	230 -	3.98 U
A6WP-C02-15	0.00000206 J	1.4 U	16.0 U	16.0 U	5.4 J
A6WP-C02-16	0.00000142 U	1.1 U	16.0 U	16.0 U	3.89 U
Limit	0.00088	160	130	130	2000
Units	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%
Max. Result	0.0000104	1.8 U	130	230	220
Max. >= Limit	No	No	Yes	Yes	No
W-statistic Prob. #	- -	- -	< 0.01% (LN)	< 0.01% (LN)	- -
Test Procedure	- -	- -	Proportions (Sign)	Proportions (Sign)	- -
Sample Size	12	12	12	12	12
Nondetects	4	12	9	11	5
% Nondetects	0%	0%	75%	92%	0%
Est. Mean*	- -	- -	8	8	- -
UCL	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	0.004687418	0.0047	- -
Pass / Fail	- -	- -	pass	pass	- -
a posteriori Sample	- -	- -	5	5	- -
Size calculation	- -	- -	Pass	Pass	- -

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
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(continued)

SampleID	Benzo(b)fluoranthene	Bromodichloromethane	Dibenzo(a,h)anthracene	Dieldrin	Indeno(1,2,3-cd)pyrene
A6WP-C02-1	180 J	1.1 U	32.0 -	7.2 U	150 J
A6WP-C02-2	78.0 J	1.7 U	11.0 -	7.7 U	3.84 U
A6WP-C02-3	4.17 U	1.6 U	4.17 -	17.0 U	4.17 U
A6WP-C02-5	28.0 J	1.2 U	4.8 -	9.4 U	4.68 U
A6WP-C02-7	5.7 J	0.9 U	4.06 -	8.1 U	4.06 U
A6WP-C02-8	4.46 U	1.8 U	4.46 -	18.0 U	4.46 U
A6WP-C02-8-D	27.0 J	1.2 U	5.5 -	8.8 U	4.38 U
A6WP-C02-10	22.0 J	0.9 U	3.72 -	7.4 U	3.72 U
A6WP-C02-11	5.8 J	0.9 U	4.04 -	8.1 U	4.04 U
A6WP-C02-12	3.76 U	0.8 U	3.76 -	7.5 U	3.76 U
A6WP-C02-13	3.98 U	0.9 U	3.98 -	8.0 U	3.98 U
A6WP-C02-15	15.0 J	1.4 U	3.89 -	7.8 U	3.89 U
A6WP-C02-16	3.89 U	1.1 U	3.89 -	7.8 U	3.89 U
Limit	20000	4000	2000	15	20000
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%
Max. Result	180	1.8 U	32	9.0000	150
Max. >= Limit	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	< 0.01% (LN)	- -
Test Procedure	- -	- -	- -	Proportions (Sign)	- -
Sample Size	12	12	12	12	12
Nondetects	5	12	0	12	11
% Nondetects	0%	0%	0%	100%	0%
Est. Mean*	- -	- -	- -	3.95	- -
UCL	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	0.000748147	- -
Pass / Fail	- -	- -	- -	pass	- -
a posteriori Sample	- -	- -	- -	2	- -
Size calculation	- -	- -	- -	Pass	- -

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
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(continued)

SampleID	Octachlorodibenzo-p-dioxin	Tetrachloroethene	Trichloroethene
A6WP-C02-1	0.000126 J	1.1 U	1.1 U
A6WP-C02-2	0.000103 J	1.7 U	1.7 U
A6WP-C02-3	0.0000165 J	1.6 U	1.6 U
A6WP-C02-5	0.000151 J	1.2 U	1.2 U
A6WP-C02-7	0.0000753 J	0.9 U	0.9 U
A6WP-C02-8	0.0000471 J	1.8 U	1.8 U
A6WP-C02-8-D	0.000129 J	1.2 U	1.2 U
A6WP-C02-10	0.0000676 J	0.9 U	0.9 U
A6WP-C02-11	0.0000305 J	0.9 U	0.9 U
A6WP-C02-12	0.0000371 J	0.8 U	0.8 U
A6WP-C02-13	0.0000347 J	0.9 U	0.9 U
A6WP-C02-15	0.0000492 J	1.4 U	1.4 U
A6WP-C02-16	0.0000313 J	1.1 U	1.1 U
Limit	0.0088	3600	25000
Units	mg/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%
Max. Result	0.000151	1.8 U	1.8 U
Max. >= Limit	No	No	No
W-statistic Prob. #	--	--	--
Test Procedure	--	--	--
Sample Size	12	12	12
Nondetects	0	0	0
% Nondetects	0%	0%	0%
Est. Mean*	--	--	--
UCL	--	--	--
Prob. > Limit	--	--	--
Pass / Fail	--	--	--
a posteriori Sample	--	--	--
Size calculation	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
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SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Technetium-99	Thorium-230	Antimony
A6WP-C03-2	0.819 -	0.587 -	0.566 J	0.587 -	6.33 J	0.091 U	0.448 U	1.48 J	0.42 UJ
A6WP-C03-3	0.829 -	0.589 -	0.57 J	0.589 -	7.7 J	0.079 U	0.455 U	1.25 J	0.42 UJ
A6WP-C03-4	1.02 -	0.765 -	0.752 J	0.765 -	7.39 J	0.08 U	1.05 J	1.42 J	0.47 UJ
A6WP-C03-6	0.977 -	0.612 -	0.58 J	0.612 -	8.85 J	0.068 U	4.54 J	2.69 J	0.45 UJ
A6WP-C03-7	1.28 -	0.793 -	0.757 J	0.793 -	12.7 J	0.17 -	7.23 J	4.51 J	0.49 UJ
A6WP-C03-8	0.785 -	0.547 -	0.519 J	0.547 -	9.41 J	0.063 U	0.415 U	1.66 J	0.44 UJ
A6WP-C03-9	0.983 -	0.765 -	0.751 J	0.765 -	7.07 J	0.076 U	1.52 J	1.29 J	0.46 UJ
A6WP-C03-10	0.743 -	0.33 J	0.308 J	0.33 J	4.36 J	0.062 U	2.66 J	1.09 J	0.41 UJ
A6WP-C03-12	0.916 -	0.596 -	0.56 J	0.596 -	6.19 J	0.093 U	0.449 U	1.13 J	0.44 UJ
A6WP-C03-13	0.709 -	0.456 J	0.433 J	0.456 J	5.49 J	0.081 U	5.84 J	1.11 J	0.42 UJ
A6WP-C03-13-D	0.717 -	0.426 J	0.373 J	0.426 J	5.26 J	0.072 U	4.8 J	1.15 J	0.44 UJ
A6WP-C03-14	0.797 -	0.515 J	0.481 J	0.515 J	4.31 J	0.071 U	0.507 J	0.594 J	0.45 UJ
A6WP-C03-15	0.906 -	0.703 -	0.694 J	0.703 -	6.53 J	0.082 U	0.458 U	1.4 J	0.43 UJ
Limit	1.7	1.8	1.7	1.5	82	1.4	30	280	96
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result Max. >= Limit	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	11	5	0	12
% Nondetects	0%	0%	0%	0%	0%	92%	42%	0%	100%
Est. Mean*	--	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--	--
a posteriori Sample	--	--	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
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(continued)

SampleID	Arsenic	Beryllium	Cadmium	Fluoride	Silver	1,1,1-Trichloroethane	1,1-Dichloroethene
A6WP-C03-2	7.0 J	0.62 -	0.37 -	4.2 -	0.15 U	0.9 U	2.1 J
A6WP-C03-3	6.8 J	0.5 -	0.28 -	3.0 -	0.15 U	0.8 U	4.1 J
A6WP-C03-4	5.1 J	0.66 -	0.27 -	2.8 U	0.16 U	1.1 U	2.4 J
A6WP-C03-6	6.3 J	0.73 -	0.12 -	9.8 -	0.16 U	1.0 U	2.0 J
A6WP-C03-7	7.9 J	0.73 -	0.35 -	3.1 -	0.17 U	1.5 U	2.9 J
A6WP-C03-8	6.6 J	0.5 -	0.32 -	5.0 -	0.15 U	0.9 U	3.7 J
A6WP-C03-9	7.9 J	0.76 -	0.31 -	9.0 -	0.16 U	1.2 U	1.2 U
A6WP-C03-10	9.0 J	0.45 -	0.38 -	3.3 -	0.14 U	1.1 U	7.4 J
A6WP-C03-12	6.5 J	0.51 -	0.31 -	2.8 -	0.15 U	0.9 U	0.9 U
A6WP-C03-13	4.8 J	0.29 -	0.28 -	3.0 -	0.15 U	0.8 U	0.8 U
A6WP-C03-13-D	4.8 J	0.28 -	0.29 -	2.9 -	0.15 U	0.9 U	0.9 U
A6WP-C03-14	6.3 J	0.62 -	0.32 -	4.0 -	0.16 U	1.0 U	1.0 U
A6WP-C03-15	6.9 J	0.59 -	0.17 -	6.7 -	0.15 U	0.9 U	7.2 J
Limit	12	1.5	82	78000	29000	4300	410
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result Max. >= Limit	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	0	0	0	1	12	12	4
% Nondetects	0%	0%	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
a posteriori Sample	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
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(continued)

SampleID	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1,2-Dichloroethene (Total)	Aroclor-1254	Aroclor-1260	Benzo(a)pyrene
A6WP-C03-2	0.00000174 U	0.9 U	15.0 U	15.0 U	5.8 -
A6WP-C03-3	0.00000671 J	0.8 U	14.0 U	14.0 U	25.0 -
A6WP-C03-4	0.00000144 U	1.1 U	16.0 U	16.0 U	5.3 -
A6WP-C03-6	0.0000014 U	1.0 U	15.0 U	15.0 U	9.0 -
A6WP-C03-7	0.00000662 J	1.5 U	17.0 U	17.0 U	9.4 -
A6WP-C03-8	0.00000182 U	0.9 U	15.0 U	15.0 U	18.0 -
A6WP-C03-9	0.00000979 J	1.2 U	16.0 U	16.0 U	49.0 -
A6WP-C03-10	0.00000123 U	1.1 U	14.0 U	14.0 U	3.54 U
A6WP-C03-12	0.00000235 U	0.9 U	15.0 U	15.0 U	25.0 -
A6WP-C03-13	0.00000293 U	0.8 U	15.0 U	15.0 U	3.63 U
A6WP-C03-13-D	0.00000135 U	0.9 U	15.0 U	15.0 U	4.6 -
A6WP-C03-14	0.00000121 U	1.0 U	16.0 U	16.0 U	3.94 U
A6WP-C03-15	0.00000812 J	0.9 U	15.0 U	15.0 U	61.0 -
Limit	0.00088	160	130	130	2000
Units	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%
Max. Result					
Max. >= Limit	No	No	No	No	No
W-statistic Prob. #	- -	- -	- -	- -	- -
Test Procedure	- -	- -	- -	- -	- -
Sample Size	12	12	12	12	12
Nondetects	8	12	12	12	2
% Nondetects	0%	0%	0%	0%	0%
Est. Mean*	- -	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -
Prob. > Limit	- -	- -	- -	- -	- -
Pass / Fail	- -	- -	- -	- -	- -
a posteriori Sample	- -	- -	- -	- -	- -
Size calculation	- -	- -	- -	- -	- -

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
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(continued)

SampleID	Benzo(b)fluoranthene	Bromodichloromethane	Dibenzo(a,h)anthracene	Dieldrin	Indeno(1,2,3-cd)pyrene
A6WP-C03-2	8.8 -	0.9 U	3.64 U	7.3 U	7.1 -
A6WP-C03-3	24.0 -	0.8 U	3.7 -	7.2 U	21.0 -
A6WP-C03-4	6.9 -	1.1 U	4.03 U	8.1 U	4.03 U
A6WP-C03-6	9.7 -	1.0 U	3.87 U	7.7 U	8.1 -
A6WP-C03-7	11.0 -	1.5 U	4.22 U	8.4 U	13.0 -
A6WP-C03-8	27.0 -	0.9 U	4.2 -	7.6 U	24.0 -
A6WP-C03-9	39.0 -	1.2 U	7.0 -	8.0 U	35.0 -
A6WP-C03-10	3.54 U	1.1 U	3.54 U	7.1 U	18.0 -
A6WP-C03-12	22.0 -	0.9 U	38.0 -	7.5 U	21.0 -
A6WP-C03-13	4.6 -	0.8 U	3.63 U	7.3 U	3.63 U
A6WP-C03-13-D	6.7 -	0.9 U	3.8 U	7.6 U	3.8 U
A6WP-C03-14	5.8 -	1.0 U	3.94 U	7.9 U	3.94 U
A6WP-C03-15	53.0 -	0.9 U	9.3 -	7.4 U	47.0 -
Limit	20000	4000	2000	15	20000
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%
Max. Result Max. >= Limit	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--
Test Procedure	--	--	--	--	--
Sample Size	12	12	12	12	12
Nondetects	1	12	7	12	3
% Nondetects	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--
UCL	--	--	--	--	--
Prob. > Limit	--	--	--	--	--
Pass / Fail	--	--	--	--	--
a posteriori Sample	--	--	--	--	--
Size calculation	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
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(continued)

SampleID	Octachlorodibenzo-p-dioxin	Tetrachloroethene	Trichloroethene
A6WP-C03-2	0.0000759 J	0.9 U	0.9 U
A6WP-C03-3	0.000139 J	0.8 U	0.8 U
A6WP-C03-4	0.000073 J	1.1 U	1.1 U
A6WP-C03-6	0.0000911 J	1.0 U	1.0 U
A6WP-C03-7	0.000151 J	1.5 U	1.5 U
A6WP-C03-8	0.0000481 J	0.9 U	0.9 U
A6WP-C03-9	0.00213 J	1.2 U	1.2 U
A6WP-C03-10	0.0000694 J	1.1 U	1.1 U
A6WP-C03-12	0.0000889 J	0.9 U	0.9 U
A6WP-C03-13	0.0000602 J	0.8 U	0.8 U
A6WP-C03-13-D	0.0000334 J	0.9 U	0.9 U
A6WP-C03-14	0.0000324 J	1.0 U	1.0 U
A6WP-C03-15	0.000411 J	0.9 U	0.9 U
Limit	0.0088	3600	25000
Units	mg/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%
Max. Result			
Max. >= Limit	No	No	No
W-statistic Prob. #	--	--	--
Test Procedure	--	--	--
Sample Size	12	12	12
Nondetects	0	12	12
% Nondetects	0%	0%	0%
Est. Mean*	--	--	--
UCL	--	--	--
Prob. > Limit	--	--	--
Pass / Fail	--	--	--

a posteriori Sample	--	--	--
Size calculation	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Technetium-99	Thorium-230	Antimony
A6WP-C04-1	1.07 J	0.815 J	0.774 J	0.815 J	6.74 -	0.076 U	1.06 -	2.0 -	0.42 UJ
A6WP-C04-2	0.811 J	0.46 J	0.433 J	0.46 J	5.27 -	0.087 U	0.62 -	1.32 -	0.39 J
A6WP-C04-4	0.713 J	0.416 J	0.398 J	0.416 J	5.01 -	0.065 U	0.527 -	0.912 -	0.39 UJ
A6WP-C04-5	0.959 J	0.671 J	0.683 J	0.671 J	7.66 -	0.08 U	1.05 -	1.48 -	0.44 J
A6WP-C04-6	0.973 J	0.545 J	0.524 J	0.545 J	11.8 -	0.079 U	0.417 U	3.29 -	0.4 UJ
A6WP-C04-8	1.2 J	0.647 J	0.623 J	0.647 J	5.83 -	0.082 U	0.67 -	0.813 -	0.42 UJ
A6WP-C04-10	0.755 J	0.524 J	0.504 J	0.524 J	5.01 -	0.079 U	1.31 -	1.2 J	0.41 UJ
A6WP-C04-10-D	0.902 J	0.541 J	0.517 J	0.541 J	4.74 -	0.085 U	0.174 U	0.826 -	0.39 UJ
A6WP-C04-11	0.865 J	0.505 J	0.481 J	0.505 J	6.41 -	0.082 U	1.08 -	1.54 -	0.41 UJ
A6WP-C04-12	0.954 J	0.747 J	0.714 J	0.747 J	6.42 -	0.093 U	0.409 U	0.954 -	0.4 UJ
A6WP-C04-14	0.805 J	0.519 J	0.494 J	0.519 J	6.26 -	0.082 U	0.75 -	0.93 -	0.42 UJ
A6WP-C04-15	0.787 J	0.606 J	0.594 J	0.606 J	4.96 -	0.08 U	0.43 U	1.55 -	0.41 UJ
A6WP-C04-16	1.22 J	0.686 J	0.68 J	0.686 J	6.71 -	0.07 U	0.475 J	0.747 J	0.44 UJ
Limit	1.7	1.8	1.7	1.5	82	1.4	30	280	96
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result									
Max. >= Limit	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	12	3	0	10
% Nondetects	0%	0%	0%	0%	0%	100%	25%	0%	83%
Est. Mean*	--	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--	--
a posteriori Sample	--	--	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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(continued)

SampleID	Arsenic	Beryllium	Cadmium	Fluoride	Silver	1,1,1-Trichloroethane	1,1-Dichloroethene
A6WP-C04-1	6.9 J	0.48 -	0.3 -	5.6 -	0.15 U	6.0 U	6.0 U
A6WP-C04-2	6.4 J	0.38 -	0.47 -	3.9 -	0.14 U	12.0 -	4.0 U
A6WP-C04-4	5.5 J	0.27 -	0.34 -	3.0 -	0.14 U	4.0 U	4.0 U
A6WP-C04-5	7.7 J	0.63 -	0.55 -	7.3 -	0.14 U	4.0 U	4.0 U
A6WP-C04-6	5.7 J	0.42 -	0.4 -	5.3 -	0.14 U	4.0 U	4.0 U
A6WP-C04-8	7.1 J	0.54 -	0.42 -	3.7 -	0.15 U	5.0 U	5.0 U
A6WP-C04-10	7.5 J	0.47 -	0.38 -	2.5 -	0.14 U	5.0 U	5.0 U
A6WP-C04-10-D	4.1 J	0.3 -	0.34 -	4.2 -	0.14 U	5.0 U	5.0 U
A6WP-C04-11	5.4 J	0.29 -	0.25 -	5.5 -	0.14 U	4.0 U	4.0 U
A6WP-C04-12	7.3 J	0.5 -	0.19 -	5.4 -	0.14 U	5.0 U	5.0 U
A6WP-C04-14	4.9 J	0.44 -	0.28 -	3.0 U	0.15 U	4.0 U	4.0 U
A6WP-C04-15	6.3 J	0.36 -	0.29 -	6.1 -	0.14 U	5.0 U	5.0 U
A6WP-C04-16	13.8 J	0.71 -	0.14 -	7.8 -	0.15 U	5.0 U	5.0 U
Limit	12	1.5	82	78000	29000	4300	410
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	13.8000						
Max. >= Limit	Yes	No	No	No	No	No	No
W-statistic Prob. #	3.4% (LN)	--	--	--	--	--	--
Test Procedure	Median (Sign)	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	0	0	0	1	12	11	12
% Nondetects	0%	0%	0%	0%	0%	0%	0%
Est. Mean*	6.65	--	--	--	--	--	--
UCL	7.3	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	Pass	--	--	--	--	--	--

a posteriori Sample	5	--	--	--	--	--	--
Size calculation	Pass	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
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(continued)

SampleID	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1,2-Dichloroethene (Total)	Aroclor-1254	Aroclor-1260	Benzo(a)pyrene
A6WP-C04-1	0.00000239 U	6.0 U	15.0 U	15.0 U	3.84 U
A6WP-C04-2	0.00000103 U	4.0 U	14.0 U	14.0 U	3.55 U
A6WP-C04-4	0.00000088 U	4.0 U	14.0 U	14.0 U	5.2 J
A6WP-C04-5	0.00000426 U	4.0 U	15.0 U	15.0 U	37.0 J
A6WP-C04-6	0.00000391 U	4.0 U	15.0 U	15.0 U	24.0 J
A6WP-C04-8	0.00000145 U	5.0 U	15.0 U	15.0 U	3.81 U
A6WP-C04-10	0.00000095 U	5.0 U	15.0 U	15.0 U	4.3 J
A6WP-C04-10-D	0.0000018 U	5.0 U	14.0 U	14.0 U	3.6 U
A6WP-C04-11	0.00000367 U	4.0 U	15.0 U	15.0 U	5.2 J
A6WP-C04-12	0.00000213 U	5.0 U	15.0 U	15.0 U	5.6 J
A6WP-C04-14	0.00000192 U	4.0 U	15.0 U	15.0 U	3.83 U
A6WP-C04-15	0.0000022 U	5.0 U	15.0 U	15.0 U	5.2 J
A6WP-C04-16	0.0000012 U	5.0 U	16.0 U	16.0 U	4.0 U
Limit	0.00088	160	130	130	2000
Units	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%
Max. Result					
Max. >= Limit	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--
Test Procedure	--	--	--	--	--
Sample Size	12	12	12	12	12
Nondetects	12	12	12	12	5
% Nondetects	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--
UCL	--	--	--	--	--
Prob. > Limit	--	--	--	--	--
Pass / Fail	--	--	--	--	--
a posteriori Sample	--	--	--	--	--
Size calculation	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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(continued)

SampleID	Benzo(b)fluoranthene	Bromodichloromethane	Dibenzo(a,h)anthracene	Dieldrin	Indeno(1,2,3-cd)pyrene
A6WP-C04-1	3.9 J	6.0 U	3.84 U	7.7 U	3.84 U
A6WP-C04-2	7.6 J	4.0 U	3.55 U	7.1 U	3.55 U
A6WP-C04-4	5.4 J	4.0 U	3.55 U	7.1 U	3.55 U
A6WP-C04-5	33.0 J	4.0 U	4.7 -	7.5 U	29.0 J
A6WP-C04-6	22.0 J	4.0 U	5.0 -	7.3 U	11.0 J
A6WP-C04-8	3.81 U	5.0 U	3.81 U	7.6 U	3.81 U
A6WP-C04-10	6.3 J	5.0 U	3.75 U	7.5 U	3.75 U
A6WP-C04-10-D	5.7 J	5.0 U	3.6 U	7.2 U	3.6 U
A6WP-C04-11	6.9 J	4.0 U	3.72 U	7.4 U	3.72 U
A6WP-C04-12	7.3 J	5.0 U	3.69 U	7.4 U	7.6 J
A6WP-C04-14	3.83 U	4.0 U	3.83 U	7.7 U	3.83 U
A6WP-C04-15	8.0 J	5.0 U	3.74 U	7.5 U	3.74 U
A6WP-C04-16	4.0 U	5.0 U	4.0 U	8.0 U	4.0 U
Limit	20000	4000	2000	15	20000
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%
Max. Result					
Max. >= Limit	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--
Test Procedure	--	--	--	--	--
Sample Size	12	12	12	12	12
Nondetects	3	12	10	12	9
% Nondetects	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--
UCL	--	--	--	--	--
Prob. > Limit	--	--	--	--	--
Pass / Fail	--	--	--	--	--

a posteriori Sample	--	--	--	--	--
Size calculation	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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(continued)

SampleID	Octachlorodibenzo-p-dioxin	Tetrachloroethene	Trichloroethene
A6WP-C04-1	0.000149 -	6.0 U	6.0 U
A6WP-C04-2	0.0000344 -	4.0 U	4.0 U
A6WP-C04-4	0.0000245 -	4.0 U	4.0 U
A6WP-C04-5	0.000224 -	4.0 U	4.0 U
A6WP-C04-6	0.000081 -	4.0 U	4.0 U
A6WP-C04-8	0.0000392 -	5.0 U	5.0 U
A6WP-C04-10	0.0000445 -	5.0 U	5.0 U
A6WP-C04-10-D	0.0000456 -	5.0 U	5.0 U
A6WP-C04-11	0.0000628 -	4.0 U	4.0 U
A6WP-C04-12	0.0000673 -	5.0 U	5.0 U
A6WP-C04-14	0.0000472 -	4.0 U	4.0 U
A6WP-C04-15	0.0000853 -	5.0 U	5.0 U
A6WP-C04-16	0.0000237 -	5.0 U	5.0 U
Limit	0.0088	3600	25000
Units	mg/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%
Max. Result			
Max. >= Limit	No	No	No
W-statistic Prob. #	--	--	--
Test Procedure	--	--	--
Sample Size	12	12	12
Nondetects	0	12	12
% Nondetects	0%	0%	0%
Est. Mean*	--	--	--
UCL	--	--	--
Prob. > Limit	--	--	--
Pass / Fail	--	--	--

a posteriori Sample	--	--	--
Size calculation	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Technetium-99	Thorium-230	Antimony
A6WP-C05-2	0.815 J	0.514 -	0.475 -	0.514 -	5.9 J	0.075 U	0.474 U	1.38 J	0.43 UJ
A6WP-C05-3	0.941 J	0.538 -	0.548 -	0.538 -	7.27 J	0.086 U	0.451 U	1.8 J	0.43 UJ
A6WP-C05-3-D	0.763 J	0.513 -	0.498 -	0.513 -	5.47 J	0.076 U	0.475 U	1.13 J	0.44 UJ
A6WP-C05-4	0.843 J	0.496 -	0.483 -	0.496 -	4.93 J	0.082 U	0.472 U	1.64 J	0.42 UJ
A6WP-C05-5	0.832 J	0.627 -	0.59 -	0.627 -	5.92 J	0.068 U	0.725 -	1.63 J	0.44 UJ
A6WP-C05-6	1.56 J	0.744 -	0.722 -	0.744 -	22.0 J	0.093 U	7.45 -	23.1 -	0.45 J
A6WP-C05-8	0.98 J	0.753 -	0.74 -	0.753 -	23.9 J	0.085 U	0.448 U	4.24 -	0.45 UJ
A6WP-C05-10	1.01 J	0.676 -	0.658 -	0.676 -	21.6 J	0.09 U	0.607 -	5.61 -	0.53 UJ
A6WP-C05-11	0.885 J	0.484 -	0.439 -	0.484 -	8.02 J	0.085 U	0.447 U	2.8 J	0.44 UJ
A6WP-C05-12	1.4 J	0.801 -	0.787 -	0.801 -	32.3 J	0.085 U	0.416 U	2.7 J	0.43 UJ
A6WP-C05-13	1.12 J	0.66 -	0.659 -	0.66 -	32.6 J	0.075 U	1.06 -	7.94 -	0.47 UJ
A6WP-C05-15	1.03 J	0.645 -	0.636 -	0.645 -	6.72 J	0.07 U	0.639 -	1.76 J	0.45 UJ
A6WP-C05-16	1.11 J	0.894 -	0.875 -	0.894 -	7.65 J	0.084 U	0.471 U	2.19 J	0.45 UJ
Limit	1.7	1.8	1.7	1.5	82	1.4	30	280	96
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.56	0.894	0.875	0.894	32.6	0.093 U	1.06	23.1	0.45
Max. >= Limit	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	12	7	0	11
% Nondetects	0%	0%	0%	0%	0%	100%	58%	0%	92%
Est. Mean*	--	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--	--
a posteriori Sample	--	--	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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(continued)

SampleID	Arsenic	Beryllium	Cadmium	Fluoride	Silver	1,1,1-Trichloroethane	1,1-Dichloroethene
A6WP-C05-2	5.5 -	0.52 -	0.43 -	2.3 U	0.15 U	0.9 U	0.9 U
A6WP-C05-3	6.2 -	0.46 -	0.34 -	6.5 -	0.15 U	1.1 U	1.1 U
A6WP-C05-3-D	5.4 -	0.46 -	0.32 -	5.2 -	0.15 U	0.9 U	0.9 U
A6WP-C05-4	6.1 -	0.53 -	0.4 -	3.8 -	0.15 U	1.1 U	1.1 U
A6WP-C05-5	6.2 -	0.56 -	0.43 -	2.8 U	0.15 U	1.0 U	1.0 U
A6WP-C05-6	7.8 -	0.62 -	0.36 -	7.9 -	0.15 U	1.1 U	1.1 U
A6WP-C05-8	7.4 -	0.61 -	0.41 -	4.8 -	0.16 U	1.1 U	1.1 U
A6WP-C05-10	7.0 -	0.59 -	0.35 -	3.4 U	0.19 U	1.4 U	1.4 U
A6WP-C05-11	6.8 -	0.52 -	0.38 -	6.7 -	0.16 U	1.5 U	1.5 U
A6WP-C05-12	7.7 -	0.76 -	0.36 -	20.8 -	0.15 U	0.9 U	0.9 U
A6WP-C05-13	7.7 -	0.56 -	0.36 -	8.5 -	0.16 U	0.8 U	0.8 U
A6WP-C05-15	7.3 -	0.63 -	0.4 -	9.4 -	0.16 U	1.01 U	1.4 J
A6WP-C05-16	6.3 -	0.53 -	0.08 U	3.1 U	0.16 U	1.14 U	1.1 U
Limit	12	1.5	82	78000	29000	4300	410
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	7.8	0.76	0.43	20.8	0.19 U	1.5 U	1.4000
Max. >= Limit	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	0	0	1	4	12	12	11
% Nondetects	0%	0%	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
a posteriori Sample	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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(continued)

SampleID	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1,2-Dichloroethene (Total)	Aroclor-1254	Aroclor-1260	Benzo(a)pyrene
A6WP-C05-2	0.00000301 U	0.9 U	15.0 U	15.0 U	6.0 J
A6WP-C05-3	0.00000295 U	1.1 U	15.0 U	15.0 U	9.1 J
A6WP-C05-3-D	0.00000238 U	0.9 U	15.0 U	15.0 U	3.8 U
A6WP-C05-4	0.00000213 U	1.1 U	15.0 U	15.0 U	4.2 J
A6WP-C05-5	0.00000133 U	1.0 U	15.0 U	15.0 U	3.83 U
A6WP-C05-6	0.00000477 -	1.1 U	18.0 -	15.0 U	79.0 J
A6WP-C05-8	0.000012 -	1.1 U	16.0 U	16.0 U	3.88 U
A6WP-C05-10	0.00000886 -	1.4 U	18.0 U	18.0 U	30.0 J
A6WP-C05-11	0.00000557 -	1.5 U	15.0 U	15.0 U	3.84 U
A6WP-C05-12	0.0000453 -	0.9 U	16.0 U	130 -	4.0 J
A6WP-C05-13	0.00000615 -	0.8 U	17.0 U	17.0 U	9.1 J
A6WP-C05-15	0.00000258 U	1.0 U	16.0 U	16.0 U	4.4 J
A6WP-C05-16	0.00000235 U	1.1 U	16.0 U	16.0 U	3.94 U
Limit	0.00088	160	130	130	2000
Units	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%
Max. Result	0.0000453	1.5 U	18.0	130	79
Max. >= Limit	No	No	No	Yes	No
W-statistic Prob. #	--	--	--	< 0.01% (LN)	--
Test Procedure	--	--	--	Proportions (Sign)	--
Sample Size	12	12	12	12	12
Nondetects	6	12	11	11	4
% Nondetects	0%	0%	0%	92%	0%
Est. Mean*	--	--	--	7.75	--
UCL	--	--	--	--	--
Prob. > Limit	--	--	--	0.0047	--
Pass / Fail	--	--	--	pass	--

a posteriori Sample	--	--	--	5	--
Size calculation	--	--	--	Pass	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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(continued)

SampleID	Benzo(b)fluoranthene	Bromodichloromethane	Dibenzo(a,h)anthracene	Dieldrin	Indeno(1,2,3-cd)pyrene
A6WP-C05-2	7.1 J	0.9 U	3.73 U	7.5 U	11.0 -
A6WP-C05-3	8.8 J	1.1 U	3.79 U	7.6 U	3.79 U
A6WP-C05-3-D	4.7 J	0.9 U	3.78 U	7.6 U	3.78 U
A6WP-C05-4	4.0 J	1.1 U	3.71 U	7.4 U	3.71 U
A6WP-C05-5	3.83 U	1.0 U	3.83 U	7.7 U	3.83 U
A6WP-C05-6	65.0 J	1.1 U	10.0 -	7.7 U	77.0 -
A6WP-C05-8	3.88 U	1.1 U	3.88 U	7.8 U	3.88 U
A6WP-C05-10	29.0 J	1.4 U	4.61 U	9.2 U	20.0 -
A6WP-C05-11	4.4 J	1.5 U	3.84 U	7.7 U	3.84 U
A6WP-C05-12	5.1 J	0.9 U	3.88 U	7.8 U	3.7 J
A6WP-C05-13	8.3 J	0.8 U	4.15 U	8.3 U	5.8 -
A6WP-C05-15	5.3 J	1.0 U	4.03 U	8.1 U	4.5 -
A6WP-C05-16	4.7 J	1.1 U	3.94 U	7.9 U	3.94 U
Limit	20000	4000	2000	15	20000
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%
Max. Result	65	1.5 U	10.0	9.2 U	77
Max. >= Limit	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--
Test Procedure	--	--	--	--	--
Sample Size	12	12	12	12	12
Nondetects	2	12	11	12	6
% Nondetects	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--
UCL	--	--	--	--	--
Prob. > Limit	--	--	--	--	--
Pass / Fail	--	--	--	--	--

a posteriori Sample	--	--	--	--	--
Size calculation	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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(continued)

SampleID	Octachlorodibenzo-p-dioxin	Tetrachloroethene	Trichloroethene
A6WP-C05-2	0.0000969 -	0.9 U	0.9 U
A6WP-C05-3	0.0000529 -	1.1 U	1.1 U
A6WP-C05-3-D	0.0000661 -	0.9 U	0.9 U
A6WP-C05-4	0.0000532 -	1.1 U	1.1 U
A6WP-C05-5	0.0000481 -	1.0 U	1.0 U
A6WP-C05-6	0.000111 -	1.1 U	1.1 U
A6WP-C05-8	0.000306 -	1.1 U	1.1 U
A6WP-C05-10	0.000127 -	1.4 U	1.4 U
A6WP-C05-11	0.00104 -	1.5 U	1.5 U
A6WP-C05-12	0.000238 -	0.9 U	0.9 U
A6WP-C05-13	0.0000755 -	0.8 U	0.8 U
A6WP-C05-15	0.0000611 -	1.0 U	1.0 U
A6WP-C05-16	0.0000493 -	1.1 U	1.1 U
Limit	0.0088	3600	25000
Units	mg/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%
Max. Result	0.00104	1.5 U	1.5 U
Max. >= Limit	No	No	No
W-statistic Prob. #	--	--	--
Test Procedure	--	--	--
Sample Size	12	12	12
Nondetects	0	12	12
% Nondetects	0%	0%	0%
Est. Mean*	--	--	--
UCL	--	--	--
Prob. > Limit	--	--	--
Pass / Fail	--	--	--

a posteriori Sample	--	--	--
Size calculation	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Technetium-99	Thorium-230	Antimony
A6WP-C06-1	1.5 -	1.3 -	1.33 -	1.3 -	20.1 J	0.0548 U	0.93 U	1.49 J	0.46 UJ
A6WP-C06-1-D	1.61 -	1.27 -	1.31 -	1.27 -	21.4 J	0.0547 U	0.964 U	1.58 J	0.47 UJ
A6WP-C06-3	0.999 -	0.747 -	0.715 -	0.747 -	13.7 J	0.0513 U	0.925 U	1.1 J	0.43 UJ
A6WP-C06-4	0.868 -	0.664 -	0.673 -	0.664 -	18.3 J	0.0522 U	0.918 U	1.08 J	0.43 UJ
A6WP-C06-5	0.975 -	0.656 -	0.641 -	0.656 -	6.59 J	0.124 -	0.918 U	0.93 J	0.43 UJ
A6WP-C06-7	0.84 -	0.69 -	0.704 -	0.69 -	75.9 J	0.0512 U	0.908 U	1.22 J	0.43 UJ
A6WP-C06-8	0.98 -	0.755 -	0.768 -	0.755 -	5.66 J	0.0516 U	0.93 U	1.74 -	0.41 UJ
A6WP-C06-10	0.887 -	0.544 -	0.545 -	0.544 -	53.4 J	0.047 U	0.903 U	1.2 J	0.46 UJ
A6WP-C06-11	0.943 -	0.779 -	0.791 -	0.779 -	30.2 J	0.0523 U	0.93 U	1.01 J	0.43 UJ
A6WP-C06-12	0.926 -	0.608 -	0.641 -	0.608 -	13.1 J	0.0528 U	0.854 U	1.1 J	0.45 UJ
A6WP-C06-13	0.915 -	0.637 -	0.641 -	0.637 -	120 J	0.0498 U	0.817 U	1.71 -	0.44 UJ
A6WP-C06-14	0.898 -	0.589 -	0.582 -	0.589 -	8.24 J	0.0433 U	0.879 U	0.939 J	0.44 UJ
A6WP-C06-16	1.05 -	0.87 -	0.829 -	0.87 -	46.0 J	0.0499 U	0.938 U	1.03 J	0.41 UJ
Limit	1.7	1.8	1.7	1.5	82	1.4	30	280	96
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.61	1.3	1.33	1.3	120	0.124	0.964 U	1.74	0.47 UJ
Max. >= Limit	No	No	No	No	Yes	No	No	No	No
W-statistic Prob. #	--	--	--	--	77.2% (LN)	--	--	--	--
Test Procedure	--	--	--	--	Lognormal	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	11	12	0	12
% Nondetects	0%	0%	0%	0%	0%	92%	100%	0%	100%
Est. Mean*	--	--	--	--	36.0	--	--	--	--
UCL	--	--	--	--	84.8	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	FAIL	--	--	--	--
a posteriori Sample	--	--	--	--	5	--	--	--	--
Size calculation	--	--	--	--	Pass	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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(continued)

SampleID	Arsenic	Beryllium	Cadmium	Fluoride	Silver	1,1-Dichloroethene	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
A6WP-C06-1	7.0 J	0.87 J	0.08 U	4.9 -	0.16 U	6.0 UJ	0.00000123 U
A6WP-C06-1-D	13.5 J	1.3 J	0.14 -	4.4 -	0.16 U	6.0 UJ	0.00000134 U
A6WP-C06-3	4.7 J	0.48 J	0.26 -	3.4 -	0.15 U	5.0 UJ	0.00000116 U
A6WP-C06-4	4.4 J	0.44 J	0.31 -	3.2 -	0.15 U	5.0 UJ	0.00000179 U
A6WP-C06-5	7.9 J	0.43 J	0.38 -	4.7 -	0.15 U	5.0 UJ	0.00000132 U
A6WP-C06-7	5.2 J	0.43 J	0.22 -	8.4 -	0.15 U	4.0 UJ	0.00000215 U
A6WP-C06-8	4.5 J	0.42 J	0.16 -	3.5 -	0.15 U	5.0 UJ	0.00000104 U
A6WP-C06-10	5.7 J	0.49 J	0.23 -	2.9 U	0.16 U	5.0 UJ	0.00000609 -
A6WP-C06-11	5.8 J	0.51 J	0.25 -	3.9 -	0.15 U	6.0 UJ	0.00000173 U
A6WP-C06-12	4.6 J	0.36 J	0.2 -	2.7 U	0.16 U	4.0 UJ	0.00000104 U
A6WP-C06-13	4.6 J	0.36 J	0.21 -	2.7 -	0.15 U	6.0 UJ	0.00000414 U
A6WP-C06-14	4.9 J	0.49 J	0.26 -	3.3 -	0.15 U	5.0 UJ	0.00000124 U
A6WP-C06-16	5.5 J	0.43 J	0.26 -	10.1 -	0.15 U	4.0 UJ	0.00000431 U
Limit	12	1.5	82	78000	29000	410	0.00088
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	mg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	13.5	1.3	0.38	10.1	0.16 U	6.0 UJ	0.00000609
Max. >= Limit	Yes	No	No	No	No	No	No
W-statistic Prob. #	< 0.01% (LN)	--	--	--	--	--	--
Test Procedure	Median (Sign)	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	0	0	0	2	12	12	11
% Nondetects	0%	0%	0%	0%	0%	0%	0%
Est. Mean*	5.05	--	--	--	--	--	--
UCL	5.7	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	Pass	--	--	--	--	--	--
a posteriori Sample	5	--	--	--	--	--	--
Size calculation	Pass	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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(continued)

SampleID	1,2-Dichloroethene (Total)	Aroclor-1254	Aroclor-1260	Benzo(a)pyrene	Benzo(b)fluoranthene	Bromodichloromethane
A6WP-C06-1	6.0 UJ	16.0 U	16.0 U	3.92 U	3.92 U	6.0 UJ
A6WP-C06-1-D	6.0 UJ	16.0 U	16.0 U	4.05 U	4.05 U	6.0 UJ
A6WP-C06-3	5.0 UJ	15.0 U	15.0 U	3.71 U	5.4 J	5.0 UJ
A6WP-C06-4	5.0 UJ	15.0 U	15.0 U	3.74 U	3.74 U	5.0 UJ
A6WP-C06-5	5.0 UJ	15.0 U	15.0 U	3.7 U	5.9 J	5.0 UJ
A6WP-C06-7	4.0 UJ	15.0 U	15.0 U	4.8 -	6.3 J	4.0 UJ
A6WP-C06-8	5.0 UJ	14.0 U	14.0 U	3.59 U	7.5 J	5.0 UJ
A6WP-C06-10	5.0 UJ	16.0 U	16.0 U	6.0 -	7.2 J	5.0 UJ
A6WP-C06-11	6.0 UJ	15.0 U	15.0 U	3.66 U	3.66 U	6.0 UJ
A6WP-C06-12	4.0 UJ	16.0 U	16.0 U	3.66 U	3.66 U	4.0 UJ
A6WP-C06-13	6.0 UJ	15.0 U	15.0 U	8.6 -	12.0 J	6.0 UJ
A6WP-C06-14	5.0 UJ	15.0 U	15.0 U	3.74 U	6.8 J	5.0 UJ
A6WP-C06-16	4.0 UJ	15.0 U	15.0 U	12.0 -	13.0 J	4.0 UJ
Limit	160	130	130	2000	20000	4000
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%
Max. Result	6.0 UJ	16.0 U	16.0 U	12	13	6.0 UJ
Max. >= Limit	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	12	12	2	8	4	12
% Nondetects	0%	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--

a posteriori Sample	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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(continued)

SampleID	Dibenzo(a,h)anthracene	Dieldrin	Indeno(1,2,3-cd)pyrene	Octachlorodibenzo-p-dioxin	Tetrachloroethene	Trichloroethene
A6WP-C06-1	3.92 U	7.8 U	3.92 U	0.0000209 -	6.0 UJ	6.0 UJ
A6WP-C06-1-D	4.05 U	8.1 U	4.05 U	0.0000169 -	6.0 UJ	6.0 UJ
A6WP-C06-3	3.71 U	7.4 UJ	3.71 U	0.0000333 -	5.0 UJ	5.0 UJ
A6WP-C06-4	3.74 U	7.5 U	3.74 U	0.0000446 -	5.0 UJ	5.0 UJ
A6WP-C06-5	3.7 U	7.4 UJ	3.7 U	0.0000451 -	5.0 UJ	5.0 UJ
A6WP-C06-7	3.75 U	7.5 U	3.75 U	0.0000463 -	4.0 UJ	4.0 UJ
A6WP-C06-8	3.59 U	7.2 U	3.59 U	0.0000329 -	5.0 UJ	5.0 UJ
A6WP-C06-10	4.01 U	8.0 UJ	4.01 U	0.0000615 -	5.0 UJ	5.0 UJ
A6WP-C06-11	3.66 U	7.3 UJ	3.66 U	0.0000352 -	6.0 UJ	6.0 UJ
A6WP-C06-12	3.66 U	7.9 U	3.66 U	0.0000206 -	4.0 UJ	4.0 UJ
A6WP-C06-13	3.74 U	7.5 U	18.0 -	0.0000448 -	6.0 UJ	6.0 UJ
A6WP-C06-14	3.74 U	7.5 UJ	3.74 U	0.00003 -	5.0 UJ	5.0 UJ
A6WP-C06-16	3.63 U	7.3 U	9.4 -	0.0000886 -	4.0 UJ	4.0 UJ
Limit	2000	15	20000	0.0088	3600	25000
Units	ug/kg	ug/kg	ug/kg	mg/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%
Max. Result	4.05 U	8.1 U	18	0.0000886	6.0 UJ	6.0 UJ
Max. >= Limit	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	12	12	10	0	12	12
% Nondetects	0%	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--
a posteriori Sample	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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Certification Unit A6WP-C07

SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Technetium-99	Thorium-230	Antimony
A6WP-C07-1	0.836 J	0.541 J	0.522 J	0.541 J	6.49 J	0.06 U	0.329 U	1.32 -	0.47 UJ
A6WP-C07-2	1.03 J	0.808 J	0.757 J	0.808 J	11.3 J	0.082 U	0.471 -	2.03 -	0.43 UJ
A6WP-C07-2-D	1.11 J	0.785 J	0.782 J	0.785 J	11.4 J	0.091 U	0.29 U	2.9 -	0.42 UJ
A6WP-C07-3	0.912 J	0.762 J	0.739 J	0.762 J	7.73 J	0.093 U	0.327 U	0.858 J	0.46 UJ
A6WP-C07-5	0.864 J	0.651 J	0.638 J	0.651 J	18.7 J	0.075 U	0.331 U	1.23 -	0.43 UJ
A6WP-C07-6	1.03 J	0.795 J	0.794 J	0.795 J	61.1 J	0.083 U	0.334 U	2.23 -	0.43 UJ
A6WP-C07-7	0.991 J	0.777 J	0.766 J	0.777 J	11.2 J	0.075 U	0.328 U	1.87 -	0.46 UJ
A6WP-C07-9	0.888 J	0.728 J	0.732 J	0.728 J	10.6 J	0.09 U	0.322 U	1.74 -	0.44 UJ
A6WP-C07-11	1.01 J	0.816 J	0.791 J	0.816 J	17.9 J	0.087 U	0.342 U	1.52 -	0.47 UJ
A6WP-C07-12	0.886 J	0.654 J	0.637 J	0.654 J	53.7 J	0.07 U	0.669 -	2.09 -	1.1 J
A6WP-C07-14	1.03 J	0.712 J	0.713 J	0.712 J	29.6 J	0.083 U	0.252 U	2.83 -	0.45 UJ
A6WP-C07-15	0.891 J	0.581 J	0.56 J	0.581 J	80.6 J	0.071 U	4.86 -	1.85 -	0.44 UJ
A6WP-C07-16	0.814 J	0.538 J	0.537 J	0.538 J	25.1 J	0.078 U	0.429 U	1.06 -	0.44 UJ
Limit	1.7	1.8	1.7	1.5	82	1.4	30	280	96
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result	1.11	0.816	0.794	0.816	80.6	0.091 U	4.86	2.9	1.1
Max. >= Limit	No	No	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	12	9	0	11
% Nondetects	0%	0%	0%	0%	0%	100%	75%	0%	92%
Est. Mean*	--	--	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--	--	--
a posteriori Sample	--	--	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

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(continued)

SampleID	Arsenic	Beryllium	Cadmium	Fluoride	Silver	1,1-Dichloroethene	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
A6WP-C07-1	8.2 -	0.85 -	0.15 -	7.1 -	0.16 U	5.0 U	0.00000375 J
A6WP-C07-2	8.3 -	0.74 -	0.3 -	9.1 -	0.15 U	5.0 U	0.0000114 J
A6WP-C07-2-D	7.4 -	0.61 -	0.38 -	5.9 -	0.15 U	5.0 U	0.00000618 J
A6WP-C07-3	6.8 -	0.72 -	0.39 -	7.8 -	0.16 U	6.0 U	0.00000422 J
A6WP-C07-5	6.2 -	0.51 -	0.39 -	7.1 -	0.15 U	5.0 U	0.00000284 J
A6WP-C07-6	7.0 -	0.62 -	0.4 -	10.0 -	0.15 U	5.0 U	0.00000656 J
A6WP-C07-7	9.2 -	0.79 -	0.38 -	14.0 -	0.16 U	4.0 U	0.00000226 J
A6WP-C07-9	7.9 -	0.71 -	0.33 -	4.7 -	0.15 U	4.0 U	0.00000246 J
A6WP-C07-11	8.3 -	1.0 -	0.3 -	7.5 -	0.16 U	5.0 U	0.00000681 J
A6WP-C07-12	7.2 -	0.56 -	0.36 -	7.7 -	0.16 U	5.0 U	0.0000639 J
A6WP-C07-14	8.8 -	0.77 -	0.41 -	9.3 -	0.16 U	6.0 U	0.0000107 J
A6WP-C07-15	6.0 -	0.51 -	0.35 -	10.4 -	0.15 U	4.0 U	0.0000245 J
A6WP-C07-16	5.9 -	0.48 -	0.36 -	9.0 -	0.16 U	4.0 U	0.00000378 J
Limit	12	1.5	82	78000	29000	410	0.00088
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	mg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result	9.2	1.0	0.41	14	0.16 U	6.0 U	0.0000639
Max. >= Limit	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	0	0	0	0	12	12	0
% Nondetects	0%	0%	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
a posteriori Sample	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

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SampleID	1,2-Dichloroethene (Total)	Aroclor-1254	Aroclor-1260	Benzo(a)pyrene	Benzo(b)fluoranthene	Bromodichloromethane
A6WP-C07-1	5.0 U	16.0 U	16.0 U	19.0 J	19.0 J	5.0 U
A6WP-C07-2	5.0 U	15.0 U	15.0 U	29.0 J	27.0 J	5.0 U
A6WP-C07-2-D	5.0 U	15.0 U	15.0 U	50.0 J	49.0 J	5.0 U
A6WP-C07-3	6.0 U	16.0 U	16.0 U	3.99 U	4.8 J	6.0 U
A6WP-C07-5	5.0 U	15.0 U	15.0 U	4.2 J	13.0 J	5.0 U
A6WP-C07-6	5.0 U	18.0 -	15.0 U	110 J	63.0 J	5.0 U
A6WP-C07-7	4.0 U	16.0 U	16.0 U	4.4 J	4.5 J	4.0 U
A6WP-C07-9	4.0 U	15.0 U	15.0 U	17.0 J	18.0 J	4.0 U
A6WP-C07-11	5.0 U	16.0 U	16.0 U	4.07 U	4.3 J	5.0 U
A6WP-C07-12	5.0 U	49.0 -	16.0 U	26.0 J	23.0 J	5.0 U
A6WP-C07-14	6.0 U	110 -	16.0 U	75.0 J	63.0 J	6.0 U
A6WP-C07-15	4.0 U	330 -	15.0 U	220 J	160 J	4.0 U
A6WP-C07-16	4.0 U	16.0 U	16.0 U	31.0 J	28.0 J	4.0 U
Limit	160	130	130	2000	20000	4000
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%
Max. Result	6.0 U	330	16.0 U	220	63	6.0 U
Max. >= Limit	No	Yes	No	No	No	No
W-statistic Prob. #	- -	< 0.01% (LN)	- -	- -	- -	- -
Test Procedure	- -	Proportions (Sign)	- -	- -	- -	- -
Sample Size	12	12	12	12	12	12
Nondetects	12	8	12	2	0	12
% Nondetects	0%	67%	0%	0%	0%	0%
Est. Mean*	- -	8	- -	- -	- -	- -
UCL	- -	- -	- -	- -	- -	- -
Prob. > Limit	- -	0.0047	- -	- -	- -	- -
Pass / Fail	- -	pass	- -	- -	- -	- -

a posteriori Sample	- -	5	- -	- -	- -	- -
Size calculation	- -	Pass	- -	- -	- -	- -

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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SampleID	Dibenzo(a,h)anthracene	Dieldrin	Indeno(1,2,3-cd)pyrene	Octachlorodibenzo-p-dioxin	Tetrachloroethene	Trichloroethene
A6WP-C07-1	4.1 U	8.2 UJ	15.0 J	0.0000703 -	5.0 U	5.0 U
A6WP-C07-2	4.3 -	7.4 UJ	22.0 J	0.000227 -	5.0 U	5.0 U
A6WP-C07-2-D	3.68 U	7.4 UJ	38.0 J	0.000213 -	5.0 U	5.0 U
A6WP-C07-3	3.99 U	8.0 UJ	3.99 U	0.000293 -	6.0 U	6.0 U
A6WP-C07-5	3.77 U	7.5 UJ	3.77 U	0.0001 -	5.0 U	5.0 U
A6WP-C07-6	8.1 -	7.5 UJ	44.0 J	0.000145 -	5.0 U	5.0 U
A6WP-C07-7	4.01 U	8.0 U	4.01 U	0.0000324 -	4.0 U	4.0 U
A6WP-C07-9	3.78 U	7.6 U	13.0 J	0.0000244 -	4.0 U	4.0 U
A6WP-C07-11	4.07 U	8.1 U	4.07 U	0.00013 -	5.0 U	5.0 U
A6WP-C07-12	4.0 -	7.8 U	19.0 J	0.000542 -	5.0 U	5.0 U
A6WP-C07-14	11.0 -	7.9 U	58.0 J	0.000265 -	6.0 U	6.0 U
A6WP-C07-15	30.0 -	7.7 U	150 J	0.000308 -	4.0 U	4.0 U
A6WP-C07-16	3.91 U	7.8 U	13.0 J	0.0000644 -	4.0 U	4.0 U
Limit	2000	15	20000	0.0088	3600	25000
Units	ug/kg	ug/kg	ug/kg	mg/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%
Max. Result	30.0	8.2 UJ	150	0.000542	6.0 U	6.0 U
Max. >= Limit	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	7	12	4	0	12	12
% Nondetects	0%	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--
a posteriori Sample	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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SampleID	Radium-226	Radium-228	Thorium-228	Thorium-232	Uranium, Total	Cesium-137	Technetium-99	Thorium-230	Antimony
A6WP-C08-1	0.972 J	0.702 J	0.67 J	0.702 J	9.94 J	0.094 U	0.463 U	1.75 J	0.46 UJ
A6WP-C08-2	0.854 J	0.58 J	0.539 J	0.58 J	7.7 J	0.072 U	0.449 U	1.1 J	0.43 UJ
A6WP-C08-4	1.01 J	0.733 J	0.712 J	0.733 J	12.9 J	0.069 U	0.593 J	1.9 J	0.45 UJ
A6WP-C08-6	1.25 J	0.748 J	0.731 J	0.748 J	67.1 J	0.08 U	0.72 J	10.3 J	0.42 UJ
A6WP-C08-7	1.18 J	0.871 J	0.824 J	0.871 J	94.8 J	0.089 U	0.809 J	6.02 J	0.44 UJ
A6WP-C08-8	1.26 J	0.823 J	0.789 J	0.823 J	67.7 J	0.076 U	0.588 J	8.68 J	0.44 UJ
A6WP-C08-8-D	1.7 J	1.03 J	1.02 J	1.03 J	107 J	0.09 U	1.36 J	13.6 J	0.46 UJ
A6WP-C08-9	1.33 J	0.969 J	0.962 J	0.969 J	70.7 J	0.073 U	0.452 U	1.59 J	0.49 UJ
A6WP-C08-11	0.997 J	0.815 J	0.782 J	0.815 J	24.1 J	0.075 U	0.435 U	1.26 J	0.45 UJ
A6WP-C08-12	0.673 J	0.543 J	0.512 J	0.543 J	24.1 J	0.068 U	0.388 U	2.52 J	0.45 UJ
A6WP-C08-13	1.04 J	0.932 J	0.904 J	0.932 J	31.3 J	0.076 U	0.437 U	1.66 J	0.49 UJ
A6WP-C08-15	0.952 J	0.818 J	0.785 J	0.818 J	43.9 J	0.077 U	0.424 U	2.34 J	0.46 UJ
A6WP-C08-16	1.01 J	0.797 J	0.785 J	0.797 J	100 J	0.08 U	0.409 U	3.68 J	0.43 UJ
Limit	1.7	1.8	1.7	1.5	82	1.4	30	280	96
Units	pCi/g	pCi/g	pCi/g	pCi/g	mg/kg	pCi/g	pCi/g	pCi/g	mg/kg
Conf. Level	95%	95%	95%	95%	95%	90%	90%	90%	90%
Max. Result					107				
Max. >= Limit	No	No	No	No	Yes	No	No	No	No
W-statistic Prob. #	--	--	--	--	34.4% (LN)	--	--	--	--
Test Procedure	--	--	--	--	Lognormal	--	--	--	--
Sample Size	12	12	12	12	12	12	12	12	12
Nondetects	0	0	0	0	0	12	8	0	12
% Nondetects	0%	0%	0%	0%	0%	100%	67%	0%	100%
Est. Mean*	--	--	--	--	54.4	--	--	--	--
UCL	--	--	--	--	119	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	FAIL	--	--	--	--
a posteriori Sample	--	--	--	--	9	--	--	--	--
Size calculation	--	--	--	--	Pass	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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(continued)

SampleID	Arsenic	Beryllium	Cadmium	Fluoride	Silver	1,1-Dichloroethene	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
A6WP-C08-1	6.3 -	0.58 U	0.37 -	29.8 U	0.16 U	5.0 U	0.0000138 -
A6WP-C08-2	6.0 -	0.57 U	0.28 -	28.0 U	0.15 U	5.0 U	0.00000205 U
A6WP-C08-4	8.6 -	0.78 U	0.28 -	31.2 U	0.16 U	6.0 U	0.0000114 -
A6WP-C08-6	7.7 -	0.68 U	0.27 -	27.7 U	0.15 U	6.0 U	0.00000883 -
A6WP-C08-7	6.4 -	0.67 U	0.16 -	24.5 U	0.15 U	5.0 U	0.0000108 -
A6WP-C08-8	7.9 -	0.73 U	0.25 -	27.3 U	0.16 U	5.0 U	0.00000896 -
A6WP-C08-8-D	7.9 -	0.71 U	0.28 -	28.3 U	0.16 U	5.0 U	0.0000105 -
A6WP-C08-9	8.6 -	0.8 U	0.09 U	30.0 U	0.17 U	5.0 U	0.00000581 -
A6WP-C08-11	8.8 -	1.0 J	0.16 -	25.3 U	0.16 U	5.0 U	0.00000581 -
A6WP-C08-12	6.4 -	0.62 U	0.23 -	28.2 U	0.16 U	5.0 U	0.0000243 -
A6WP-C08-13	7.7 -	0.96 J	0.17 -	29.0 U	0.17 U	4.0 U	0.00000186 U
A6WP-C08-15	6.2 -	0.64 U	0.2 -	33.0 U	0.16 U	6.0 U	0.0000116 -
A6WP-C08-16	6.7 -	0.63 U	0.23 -	25.8 U	0.15 U	6.0 U	0.0000077 -
Limit	12	1.5	82	78000	29000	410	0.00088
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	mg/kg
Conf. Level	90%	90%	90%	90%	90%	90%	90%
Max. Result							
Max. >= Limit	No	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12	12
Nondetects	0	10	1	12	12	12	10
% Nondetects	0%	83%	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--	--	--
UCL	--	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--	--
a posteriori Sample	--	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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(continued)

SampleID	1,2-Dichloroethene (Total)	Aroclor-1254	Aroclor-1260	Benzo(a)pyrene	Benzo(b)fluoranthene	Bromodichloromethane
A6WP-C08-1	5.0 U	16.0 UJ	16.0 UJ	72.0 J	68.0 J	5.0 U
A6WP-C08-2	5.0 U	15.0 U	15.0 U	7.4 J	8.7 J	5.0 U
A6WP-C08-4	6.0 U	19.0 J	16.0 U	100.0 J	190.0 J	6.0 U
A6WP-C08-6	6.0 U	36.0 J	15.0 U	110.0 J	92.0 J	6.0 U
A6WP-C08-7	5.0 U	15.0 U	15.0 U	14.0 J	15.0 J	5.0 U
A6WP-C08-8	5.0 U	19.0 J	16.0 U	39.0 J	35.0 J	5.0 U
A6WP-C08-8-D	5.0 U	36.0 J	16.0 U	33.0 J	33.0 J	5.0 U
A6WP-C08-9	5.0 U	17.0 U	17.0 U	17.0 J	17.0 J	5.0 U
A6WP-C08-11	5.0 U	16.0 U	16.0 U	4.4 J	4.4 J	5.0 U
A6WP-C08-12	5.0 U	30.0 J	16.0 U	46.0 J	43.0 J	5.0 U
A6WP-C08-13	4.0 U	17.0 U	17.0 U	21.0 J	18.0 J	4.0 U
A6WP-C08-15	6.0 U	16.0 U	16.0 U	25.0 J	23.0 J	6.0 U
A6WP-C08-16	6.0 U	15.0 U	15.0 U	20.0 J	22.0 J	6.0 U
Limit	160	130	130	2000	20000	4000
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%
Max. Result						
Max. >= Limit	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	12	8	12	0	0	12
% Nondetects	0%	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--
a posteriori Sample	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
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(continued)

SampleID	Dibenzo(a,h)anthracene	Dieldrin	Indeno(1,2,3-cd)pyrene	Octachlorodibenzo-p-dioxin	Tetrachloroethene	Trichloroethene
A6WP-C08-1	12.0 -	0.81 U	93.0 J	0.00018 -	5.0 U	5.0 U
A6WP-C08-2	3.76 U	0.75 U	4.9 J	0.0000578 -	5.0 U	5.0 U
A6WP-C08-4	16.0 -	0.78 U	3.92 U	0.00028 -	6.0 U	6.0 U
A6WP-C08-6	17.0 -	0.74 U	98.0 J	0.000335 -	6.0 U	6.0 U
A6WP-C08-7	3.81 U	0.76 U	12.0 J	0.000271 -	5.0 U	5.0 U
A6WP-C08-8	5.4 -	0.78 U	23.0 J	0.000124 -	5.0 U	5.0 U
A6WP-C08-8-D	4.9 -	8.2 U	28.0 J	0.000153 -	5.0 U	5.0 U
A6WP-C08-9	4.29 U	8.6 U	14.0 J	0.0000885 -	5.0 U	5.0 U
A6WP-C08-11	3.92 U	7.8 U	3.92 U	0.0000944 -	5.0 U	5.0 U
A6WP-C08-12	5.3 -	7.8 U	27.0 J	0.000266 -	5.0 U	5.0 U
A6WP-C08-13	4.2 U	8.4 U	16.0 J	0.0000408 -	4.0 U	4.0 U
A6WP-C08-15	4.04 U	8.1 U	21.0 J	0.000173 -	6.0 U	6.0 U
A6WP-C08-16	3.7 U	0.74 U	20.0 J	0.000169 -	6.0 U	6.0 U
Limit	2000	15	20000	0.0088	3600	25000
Units	ug/kg	ug/kg	ug/kg	mg/kg	ug/kg	ug/kg
Conf. Level	90%	90%	90%	90%	90%	90%
Max. Result						
Max. >= Limit	No	No	No	No	No	No
W-statistic Prob. #	--	--	--	--	--	--
Test Procedure	--	--	--	--	--	--
Sample Size	12	12	12	12	12	12
Nondetects	7	12	2	0	12	12
% Nondetects	0%	0%	0%	0%	0%	0%
Est. Mean*	--	--	--	--	--	--
UCL	--	--	--	--	--	--
Prob. > Limit	--	--	--	--	--	--
Pass / Fail	--	--	--	--	--	--
a posteriori Sample	--	--	--	--	--	--
Size calculation	--	--	--	--	--	--

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

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APPENDIX A.2

SAMPLING RESULTS AND STATISTICS SECONDARY SAMPLING

Certification Unit A6WP-C06

SampleID	Uranium, Total
A6WP-C06-1	20.1 J
A6WP-C06-1-D	21.4 J
A6WP-C06-3	13.7 J
A6WP-C06-4	18.3 J
A6WP-C06-5	6.59 J
A6WP-C06-7	75.9 J
A6WP-C06-8	5.66 J
A6WP-C06-10	53.4 J
A6WP-C06-11	30.2 J
A6WP-C06-12	13.1 J
A6WP-C06-14	8.24 J
A6WP-C06-15*	1.59 U
A6WP-C06-16	46.0 J
A6WP-C06-17*	2.02 J
A6WP-C06-18*	2.17 J
Limit	82
Units	µg/g
Conf. Level	95%
Max. Result	75.9
Max. >= Limit	No
W-statistic Prob. #	- -
Test Procedure	- -
Sample Size	14
Nondetects	1
% Nondetects	7%
Est. Mean*	- -
UCL	- -
Prob. > Limit	- -
Pass / Fail	- -

a posteriori Sample	- -
Size calculation	- -

* Newly collected data after re-excavation.

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

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Certification Unit A6WP-C08

SampleID	Uranium, Total
A6WP-C08-1	9.94 J
A6WP-C08-2	7.7 J
A6WP-C08-4	12.9 J
A6WP-C08-5*	73.5 -
A6WP-C08-6	67.1 J
A6WP-C08-9	70.7 J
A6WP-C08-10*	43.6 -
A6WP-C08-11	24.1 J
A6WP-C08-12	24.1 J
A6WP-C08-13	31.3 J
A6WP-C08-14*	61.0 -
A6WP-C08-15	43.9 J
A6WP-C08-17*	63.8 -
A6WP-C08-18*	40.9 -
A6WP-C08-19*	78.7 -
Limit	82
Units	µg/g
Conf. Level	95%
Max. Result	78.7
Max. >= Limit	No
W-statistic Prob. #	- -
Test Procedure	- -
Sample Size	15
Nondetects	0
% Nondetects	0%
Est. Mean*	- -
UCL	- -
Prob. > Limit	- -
Pass / Fail	- -

a posteriori Sample	- -
Size calculation	- -

* Newly collected data after re-excavation.

Note: Est. Mean = Estimated measure of central tendency(Normal: Mean; LogNormal: Est. Mean; Non-Parametric: Median)
The maximum value of the two duplicates was used in all statistical equations.
#: This is the highest reported probability of the Shapiro-Wilk W-statistic for tests for the validity of the normality assumption.
The test is performed on the raw data (untransformed) data (N) and the log-transformed data (LN) to test for lognormality.

Document 6129

APPENDIX B

ADDITIONAL AROCLOR-1254 DATA AND FIGURES FOR THE DELINEATION OF THE HOTSPOT IN A6WP-C07

Appendix B
Certification Unit A6WP-C07
Additional Data for the Delineation of the Aroclor-1254 Hot Spot
(Bounding Data was not used in the Statistical Analysis for this CU)

Location ID	Sample ID	FACTS ID	Parameter	Result	Qualifier	Units
A6WP-C07-15	A6WP-C07-15^MPS	200509910	Aroclor-1254	330	-	ug/kg
A6WP-C07-15E	A6WP-C07-15E^P	200513962	Aroclor-1254	6.3	J	ug/kg
A6WP-C07-15N	A6WP-C07-15N^P	200513960	Aroclor-1254	6.9	J	ug/kg
A6WP-C07-15S	A6WP-C07-15S^P	200513961	Aroclor-1254	3.8	U	ug/kg
A6WP-C07-15W	A6WP-C07-15W^P	200513963	Aroclor-1254	3.9	U	ug/kg

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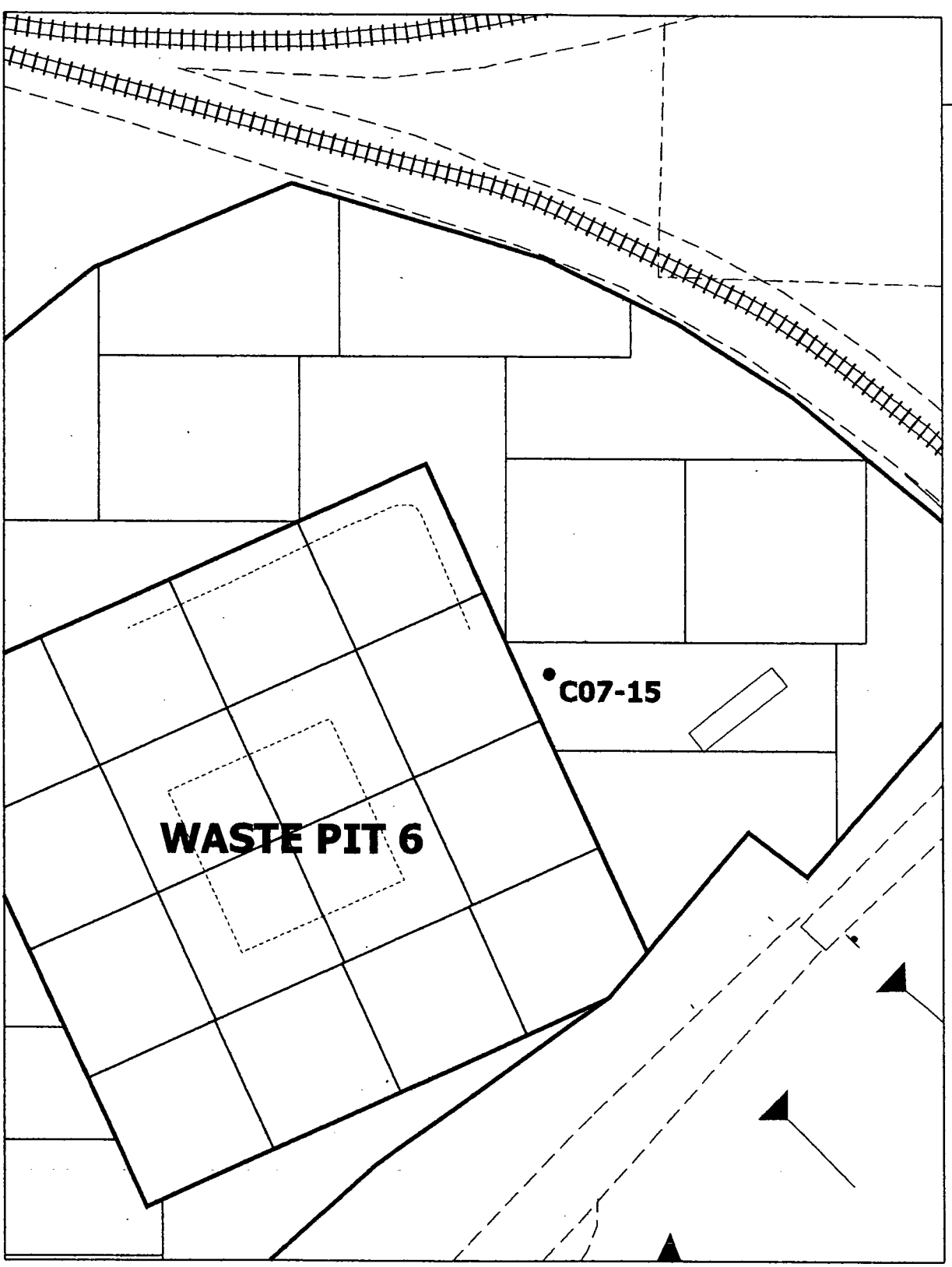

LEGEND:

● SAMPLE LOCATION

SCALE

50 25 0 50 FEET

DRAFT

FIGURE B-1. AROCLOR-1254 HOT SPOT

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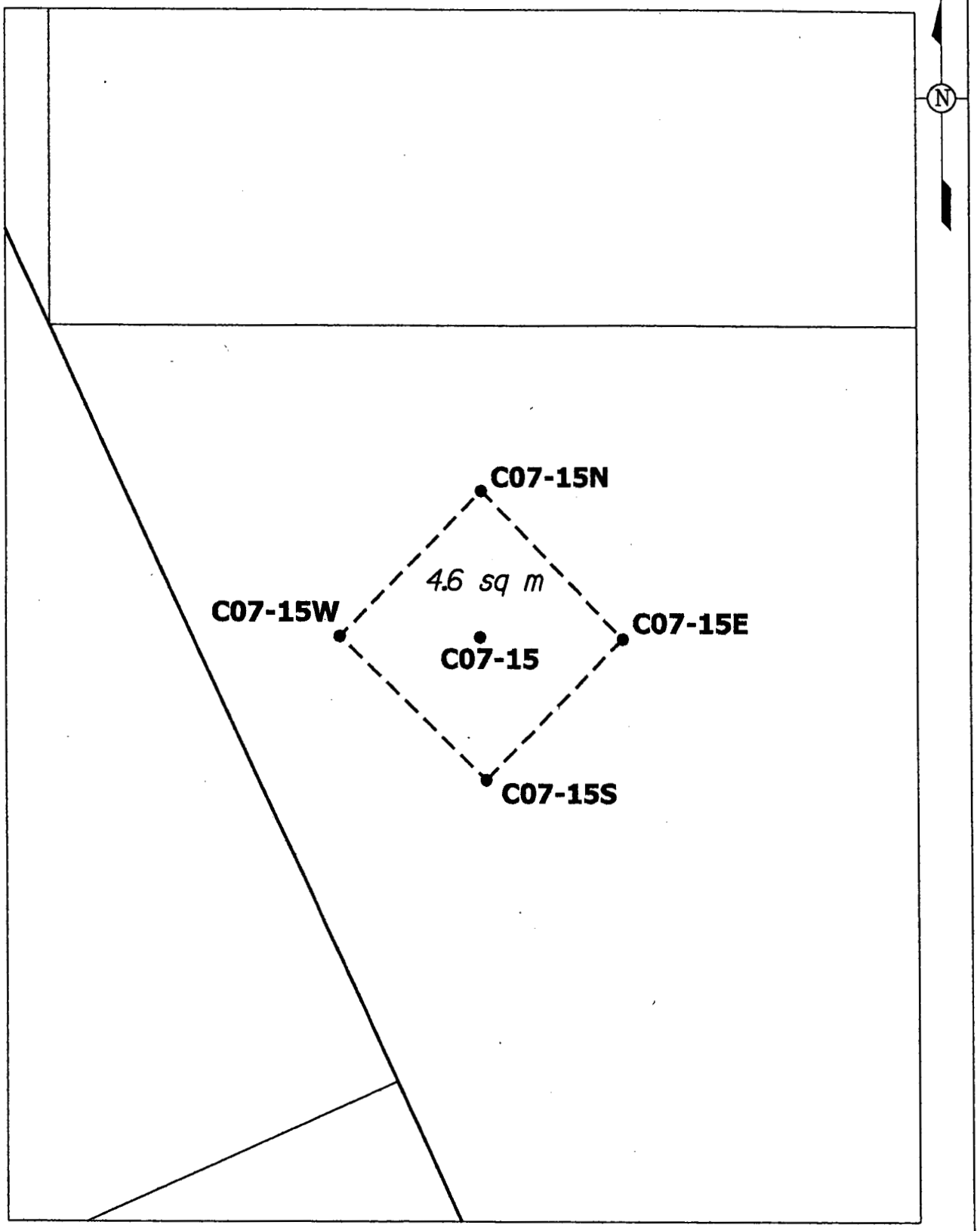
STATE PLANAR COORDINATE SYSTEM 1983
22-FEB-2006



LEGEND:

---- HOT SPOT BOUNDARY

SCALE

5 2.5 0 5 FEET

DRAFT

FIGURE B-2. CU07 AROCLOR-1254 HOT SPOT DELINEATION

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STATE PLANAR COORDINATE SYSTEM 1983
22-FEB-2006

APPENDIX C

VARIANCE/FIELD CHANGE NOTICES FOR THE AREA 6 WASTE PITS 4, 5, AND 6 CERTIFICATION DESIGN LETTER AND CERTIFICATION PSP

VARIANCE/FIELD CHANGE NOTICE LOG FOR CERTIFICATION DESIGN LETTER AND CERTIFICATION PROJECT SPECIFIC PLAN FOR AREA 6 WASTE PITS 4, 5, AND 6

Variance No.	Variance Date	Variance Description	Significant? (Y or N)	Date Signed	Date Distributed	EPA/OEPA Approval
20600-PSP-0017-1	1/6/06	Documents the collection of 4 aroclor-1254 samples in CU7, sub-CU 15, to delineate a hot spot that was identified in this sub-CU.	Y	1/6/06	1/10/06	1/10/06
20600-PSP-0017-2	1/30/06	CANCELLED and replaced with V/FCN 20600-PSP-0017-3 per Ohio-EPA disapproval.	Y	N/A	N/A	Disapproved 1/30/06
20600-PSP-0017-3	1/31/06	Documents the collection of nine total uranium samples in CUs 6 and 8 following the excavation of four above-FRL locations.	Y	2/6/06	2/7/06	1/31/06
20600-PSP-0017-4	2/9/06	Documents the choice of analytical methods to analyzed the samples collected in V/FCN 20600-PSP-0017-3.	N	2/16/06	2/22/06	N/A

Document 6129

VARIANCE / FIELD CHANGE NOTICE	Significant? (Yes or No): YES	V/F: 20600-PSP-0017-1 Document 6129
WBS NO.: PROJECT/DOCUMENT/ECDC #20600-PSP-0017 REV 0		**Page: 1 of 2**
PROJECT TITLE: Project Specific Plan for Area 6 Waste Pits 4, 5, and 6 Certification Sampling		**Date: 1/06/06**

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance documents the collection of four aroclor-1254 (TAL J) samples in CU 7, A6WP-C07-15, where a result greater than 2 times the FRL was detected. Four additional locations, each approximately 5' from the original location, will be sampled to delineate the hot spot per Section 3.4.6 of the Sitewide Excavation Plan.

The Sampling Table, TAL, and Sampling and Analytical Requirements are on Attachment 1.

Surveying required: Yes. Surveyors should survey these locations prior to sampling
Field QC samples required: No
Field data validation: Yes
Analytical data validation: Yes - VSL D
Off-site data package requirements (if applicable): ASL D
The highest total uranium result for the area is 77.8 mg/kg from boring A6WP-C07-15.

Justification:
Certification Unit 7, sub-CU 15, had a result for aroclor-1254 that was greater than 2 times the FRL; therefore four additional locations will be sampled to delineate the hot spot per Section 3.4.6 of the Sitewide Excavation Plan to determine if the impacted area is greater than 10 meters^2. Per Section 6.4 of the PSP, the changes to the PSP will be documented with a V/FCN.

REQUESTED BY: Krista Flaugh Date: 1/06/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Friske	1-10-06	X	PROJECT MANAGER: J.D. Chior	1/6/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: F. Miller	1/6/06
X	ANALYTICAL CUSTOMER SUPPORT: Paul J. McLurgan	1/10/06		RTIMP Manager	
	WAO		X	Sampling Manager: T. Buhrlage	1/10/06

VARIANCE/FCN APPROVED [X]YES [ ]NO REVISION REQUIRED: [ ]YES [x]NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

SAMPLING TABLE

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting
7	7-15 (original)	na	already sampled	na	481985	1347782.5
	7-15N	0-0.5	A6WP-C07-15N^P	J	481990	1347782.5
	7-15E	0-0.5	A6WP-C07-15S^P	J	481985	1347787.5
	7-15S	0-0.5	A6WP-C07-15E^P	J	481980	1347782.5
	7-15W	0-0.5	A6WP-C07-15W^P	J	481985	1347777.5

TAL 20600-PSP-0017-J

Component	MDL
Aroclor-1254	0.013 mg/kg

SAMPLING AND ANALYTICAL REQUIREMENTS

Analyte	Sample Matrix	Lab	ASL	TAT	Preservative	Holding Time	Container	Sample Volume/Mass
TAL J	Solid	Offsite	D	10 day	Cool 4 degrees C	14 days	Glass with teflon lined lid	100 g (300 g)*

*At the direction of the Field Sampling Lead, triple the specified volume must be collected for all samples at one location in order for the contract laboratory to perform the required quality control analysis.
The samples shall be idnetifed on the Chain of Custody/Request for Analysis forms as "designated for laboratory QC".

Document 6129

OhioEPA
State of Ohio Environmental Protection Agency

Southwest District

401 East Fifth Street
Dayton, Ohio 45402-2911

TELE: (937)285-6357 FAX: (937)285-6249
www.epa.state.oh.us

Bob Taft, Governor
Bruce Johnson, Lt. Governor
Joseph P. Koncelik, Director

Document 6129

MEMO

TO: J.D. Chiou, Fluor Fernald

FROM: Donna Bohannon, Ohio EPA/OFFO

DATE: January 10, 2006

SUBJECT: **V/FCN: 20600-PSP-0017-1** ***Project Specific Plan for Area 6 Waste Pits 4, 5, and 6 Certification Sampling***

This V/FCN documents the collection of 4 additional samples from CU7/sub-CU-15 for arloclor-1254, where a result greater than 2 times the FRL was found. The sample locations will be placed about five feet from the original sample in order to delineate the hot spot. Ohio EPA approves of this variance.

Q:\ou5\A6\PSPA6WP4,5&6VFCN1.wpd

VARIANCE / FIELD CHANGE NOTICE	Significant? (Yes or No) YES	V/F: 20600-PSP-0017-3
WBS NO.: PROJECT/DOCUMENT/ECDC #20600-PSP-0017 REV 0		**Page: 1 of 3**
PROJECT TITLE: Project Specific Plan for Area 6 Waste Pits 4, 5, and 6 Certification Sampling		**Date: 1/31/06**

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance documents the collection of nine total uranium (TAL K) samples in CUs 6 and 8. Above-FRL results were reported in 4 sub-CUs. These sub-CUs were C06-13, C08-7, C08-8, and C08-16. These areas have been excavated and samples will be collected from a random location within each of these four sub-CUs and from an additional random location in C06-7, which is the sub-CU due north of the above-FRL location in CU 6. Samples will also be collected from four archive locations around the excavated sub-CUs: A6WP-C06-15V, A6WP-C08-5V, A6WP-C08-10V and A6WP-C08-14V. See Figure 1.

TAL K, the Sampling and Analytical Requirements, and the sample identifiers are on Attachment 1.

Surveying required: Yes. Surveyors will survey these locations prior to sampling
Field QC samples required: No
Field data validation: Yes
Analytical data validation: Yes - VSL D
Off-site data package requirements (if applicable): ASL D
The highest total uranium result for the area is 120 mg/kg from boring A6WP-C06-13.

Justification:
Certification Units 6 and 8 failed for total uranium with the UCL on the mean being greater than the FRL due to extreme variability of the data. In CU 6 one individual sample (A6WP-C06-13) was greater than the FRL and in CU 8 three individual samples (A6WP-C08-7, A6WP-C08-8, and A6WP-C08-16) were greater than the FRL. Therefore, the four areas where the above-FRL samples were collected, were excavated to remove the contamination. Following the excavation, it is necessary to sample a random location within each of these sub-CUs as well as the archive locations around these sub-CUs. The results of the additional samples taken under this variance will replace the above-FRL uranium sample results (now excavated) in the performance of the statistics. Per Section 6.4 of the PSP, the changes to the PSP will be documented with a V/FCN.

REQUESTED BY: Krista Flaugh Date: 1/31/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Friske	2/6/06	X	PROJECT MANAGER: J.D. Chiou	2/1/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: F. Miller	1/31/06
X	ANALYTICAL CUSTOMER SUPPORT: Paul J. McGurgan	1/31/06		RTIMP Manager	
	WAO		X	Sampling Manager: T. Buhrlage	2/1/06

VARIANCE/FCN APPROVED [X]YES [ ]NO REVISION REQUIRED: [ ]YES [x]NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER:

TAL 20600-PSP-0017-K

Component	MDL
Total Uranium	8.2 mg/kg

SAMPLING AND ANALYTICAL REQUIREMENTS

Analyte	Sample Matrix	Lab	ASL	TAT	Preservative	Holding Time	Container	Sample Volume/Mass
TAL K	Solid	Offsite	D	3 day	None	12 months	Appropriate Plastic or Glass	300 g (900 g)*

*At the direction of the Field Sampling Lead, triple the specified volume must be collected for all samples at one location in order for the contract laboratory to perform the required quality control analysis.
The samples shall be identifed on the Chain of Custody/Request for Analysis forms as "designated for laboratory QC".

CU	Location	Depth (feet)	Sample ID	TAL	Northing	Easting	Original Sub-CU
6	6-15V	0-0.5	A6WP-C06-15^R	K	481868.89	1347740.44	C06-15
	6-17	0-0.5	A6WP-C06-17^R	K	481904.37	1347720.46	C06-13
	6-18	0-0.5	A6WP-C06-18^R	K	481964.44	1347707.11	C06-7
8	8-5V	0-0.5	A6WP-C08-5^R	K	481969.48	1347345.77	C08-5
	8-10V	0-0.5	A6WP-C08-10^R	K	481925.91	1347578.68	C08-10
	8-14V	0-0.5	A6WP-C08-14^R	K	481766.39	1347628.13	C08-14
	8-17	0-0.5	A6WP-C08-17^R	K	481966.64	1347434.12	C08-7
	8-18	0-0.5	A6WP-C08-18^R	K	481975.97	1347496.04	C08-8
	8-19	0-0.5	A6WP-C08-19^R	K	481694.73	1347600.63	C08-16

Document 6129

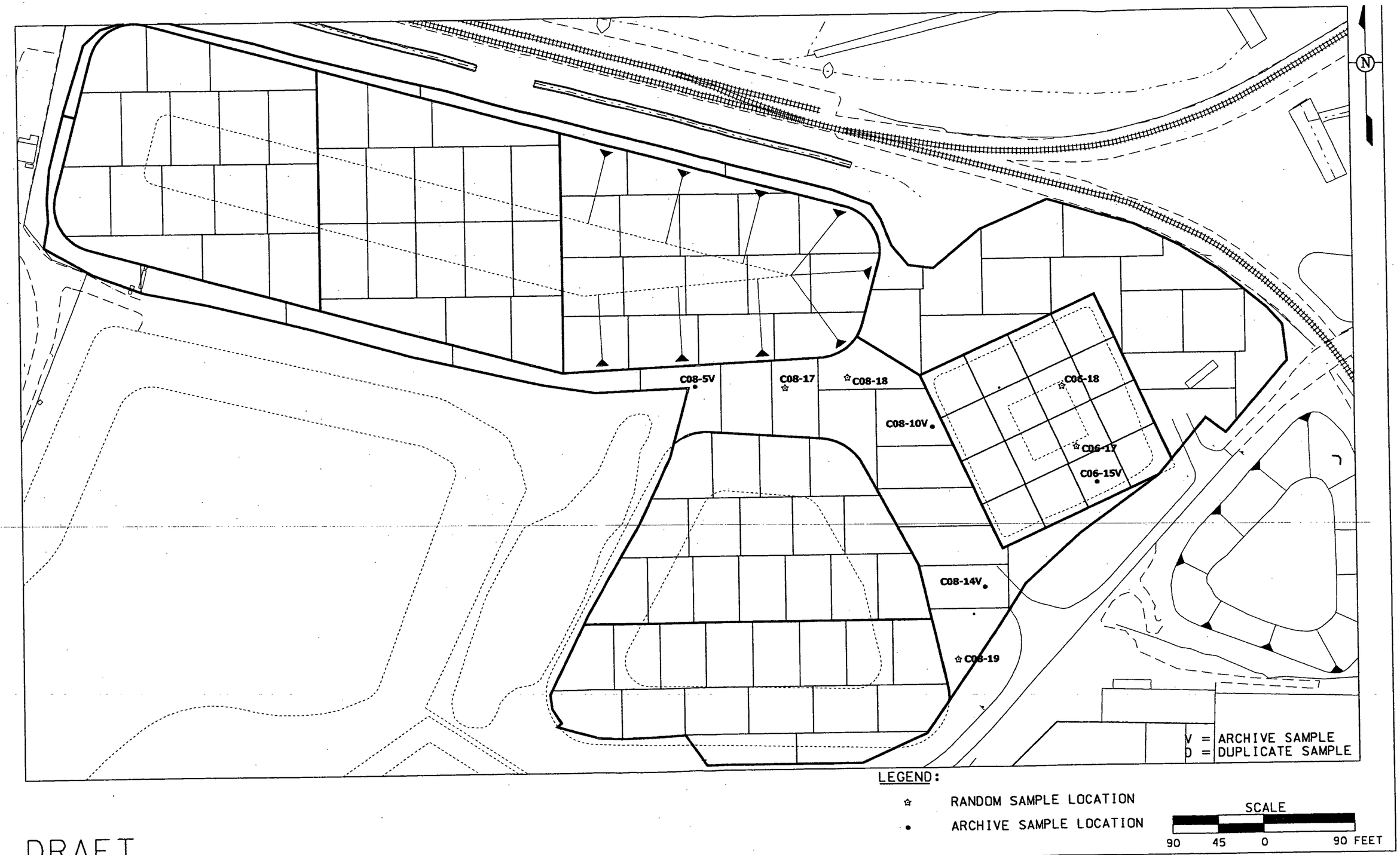

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FIGURE 1.

OhioEPA
State of Ohio Environmental Protection Agency

Document 6129

Southwest District

401 East Fifth Street
Dayton, Ohio 45402-2911

TELE: (937)285-6357 FAX: (937)285-6249
www.epa.state.oh.us

Bob Taft, Governor
Bruce Johnson, Lt. Governor
Joseph P. Koncelik, Director

MEMO

TO: J.D. Chiou, Fluor Fernald

FROM: Donna Bohannon, Ohio EPA/OFFO

DATE: January 31, 2006

SUBJECT: **V/FCN: 20600-PSP-0017-3** ***Project Specific Plan for Area 6 Waste Pits 4, 5, and 6 Certification Sampling***

This V/FCN request the collection of 9 total uranium samples from CUs 6 and 8 due to above FRL results found in sub-C06-13, C08-7, C08-8 and C08-16. Certification Units 6 & 8 failed, due to the UCL $\bar{x}$ being greater than the FRL results and wide variability in the data. Excavation was done in these four areas to remove the contamination and random samples will be collected from the 4 sub-CUs, C06-7, and from 4 archive points around the excavated sub-CUs.. Ohio EPA approves of this variance.

Q:\ou5\A6\PSPA6WP4, 5&6VFCN3.wpd

VARIANCE / FIELD CHANGE NOTICE	Significant? (Yes or No): NO	V/F: 20600-PSP-0017-4
WBS NO.: PROJECT/DOCUMENT/ECDC #20600-PSP-0017 REV 0		**Page: 1 of 1**
PROJECT TITLE: Project Specific Plan for Area 6 Waste Pits 4, 5, and 6 Certification Sampling		**Date: 2/9/06**

VARIANCE / FIELD CHANGE NOTICE (Include justification):

This Variance documents the choice of analytical methods to analyze the samples collected under V/FCN 20600-PSP-0017-3. The choice of analytical methods is Gamma Spectroscopy or ICP/MS.

Justification:
Either method is an acceptable SCQ method. The choice for ICP/MS was inadvertently omitted from the PSP.

REQUESTED BY: Krista Flaugh Date: 2/9/06

X IF REQD	VARIANCE/FCN APPROVAL	DATE	X IF REQD	VARIANCE/FCN APPROVAL	DATE
X	QUALITY ASSURANCE: R. Friske	2-16-06	X	PROJECT MANAGER: J.D. Chiou	2/16/06
	DATA QUALITY MANAGEMENT		X	CHARACTERIZATION MANAGER: F. Miller	2/13/06
X	ANALYTICAL CUSTOMER SUPPORT: Pat J. McSwigan	2/16/06		RTIMP Manager	
	WAO			Sampling Manager: T. Buhrlage for T.B.	2/16/06

VARIANCE/FCN APPROVED [X]YES [ ]NO

REVISION REQUIRED: [ ]YES [x]NO

DISTRIBUTION

PROJECT MANAGER:	DOCUMENT CONTROL: Jeannie Rosser	OTHER:
QUALITY ASSURANCE:	CHARACTERIZATION MANAGER: Frank Miller	OTHER:
FIELD MANAGER:	OTHER:	OTHER: