

# FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (FFA/CO) NEW SITE IDENTIFICATION (NSI)

Site Title: RPSSA Buildings TAN-647/648 and Surrounding Pads	Site Code: TSF-43
	Document number: NSI-26010

## PART A

1. Site Status:  Potential  Existing

If a potential site, record the date entered into the Long Term Stewardship Tracking System:  
\_\_\_\_\_

2. Description of Site and Location:

Site TSF-43 is an existing Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC § 9601 et seq.) site within Test Area North (TAN), Operable Unit (OU) 1-10. The site consists of the footprints of the former storage buildings, TAN-647, and TAN-648, and the adjacent storage areas to the north and south of the storage buildings, which together comprise the Radioactive Parts Service and Storage Area (see Figure Part A-1). The total site area is 153,487 ft<sup>2</sup>, (approximately 3.5 acres). This new site identification (NSI) form is prepared to document the results of soil samples collected in 2011, and to determine whether the no further action determination with institutional controls (DOE-ID 1999) remains appropriate.

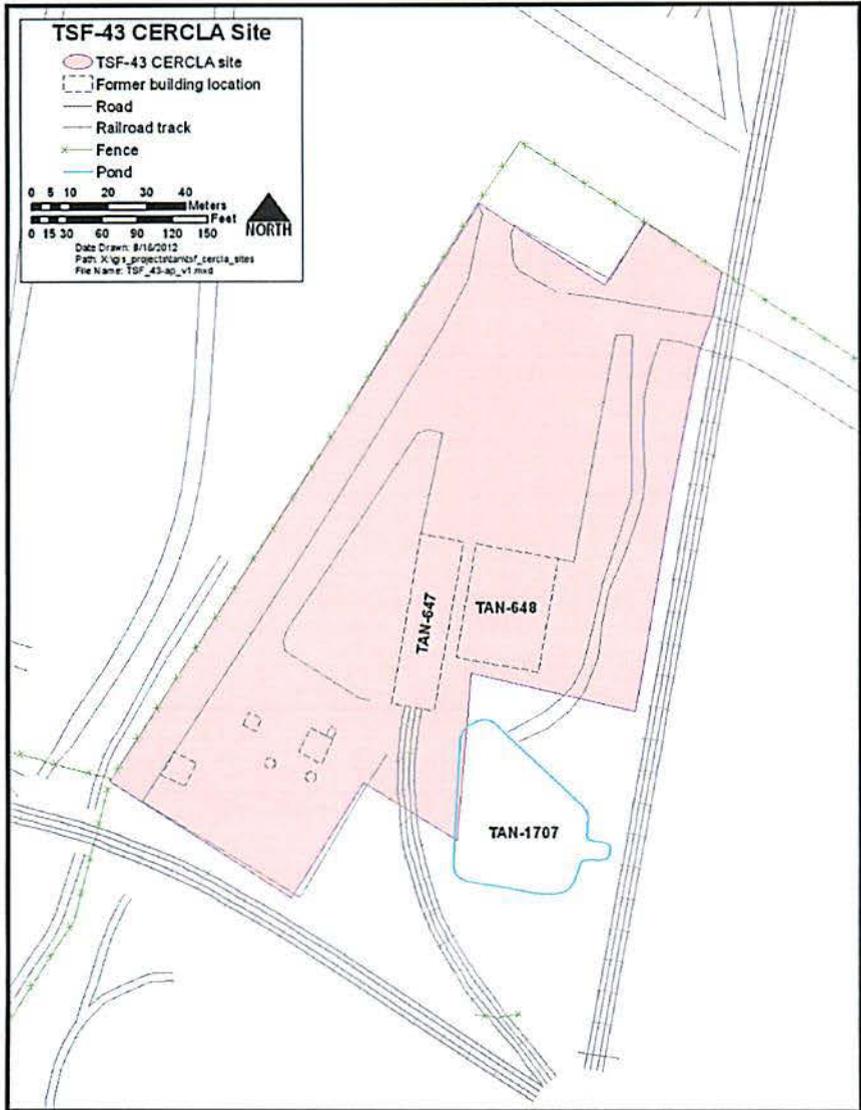


Figure Part A-1. Location of Site TSF-43, Radioactive Parts Service and Storage Area Buildings TAN-647 and -648 and adjacent storage areas.

**FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (FFA/CO)  
 NEW SITE IDENTIFICATION (NSI)**

Site Title: RPSSA Buildings TAN-647/648 and Surrounding Pads	Site Code: TSF-43
	Document number: NSI-26010

The buildings and pads at TSF-43 were constructed in the 1950s to store contaminated materials generated from TAN work activities. Open-air storage of the contaminated materials resulted in contamination of the concrete pads, buildings, and surrounding soil. In addition, the TAN Initial Engine Test (IET) Project used mercury as shielding for the Aircraft Nuclear Propulsion program reactor cores that leaked into the soil.

As part of the Track 1 investigation of Site TSF-43 in 1993 (EG&G 1994), interviews were held with personnel who had worked at or near the site, or were otherwise familiar with past operations. Those interviews revealed that mercury had been found in the soil several years prior to 1993, which originated from the engines stored there. The mercury was removed by TAN personnel. No post-removal sampling was performed. In addition, small spills occurred within the structures, but were contained and cleaned up within the buildings, and did not result in releases to the environment. It also was revealed that radiological contamination was released to the buildings and pads as a result of inadequately covered or uncovered storage items. Random radiological surveys of the asphalt pads identified hot spots with readings of more than 50,000 counts per minute.

Consequently, in 1993, spot radiological surveys were performed on portions of Site TSF-43. Those surveys revealed low levels of radioactivity on the building pads ranging from 0.02 to 0.03 mrem/hr (>180 cpm). On the asphalt pads and adjacent soil, radiological survey results ranged from 0.05 to 31.7 mrem/hr (180 to 50,000 cpm) (DOE-ID 2011a).

The *Final Record of Decision for Test Area North Operable Unit 1-10* (DOE-ID 1999) identified site TSF-43 as a no further action site requiring institutional controls until closure of TAN-647 as a Resource Conservation and Recovery Act (RCRA) interim status facility. The TAN-647 building was used as an interim status storage unit for hazardous waste under the Idaho National Laboratory RCRA Interim Status Program. TAN-647 was closed in January 2004 in accordance with the requirements in the *Idaho Hazardous Waste Management Act/Resource Conservation and Recovery Act Closure Plan for the Test Area North-647 Solid Waste Storage Facility* (DOE-ID 2003). Buildings TAN-647 and TAN-648 were demolished in the spring of 2004 (Litus and Shea 2005). The asphalt pads that surrounded the buildings were left in place to cover and fix any radioactively contaminated soil beneath. The closure plan, however, did not require soil sampling.

Near the completion of remedial actions in the TAN area, gamma surveys were performed at the site in 2007 to establish baseline gamma values. As discussed in the *Field Sampling Plan for TSF-28 and TSF-43 CERCLA Site Characterization* (DOE-ID 2011a), results of the surveys indicated the presence of surficial accumulation of gamma radiation (a hot spot) located along the southern and southeastern edges of the TSF-43 boundaries. No other evidence of elevated gamma readings were found. However, to determine the concentration of contaminants in the soil, and evaluate the need for continued institutional controls, additional sampling was performed in August of 2011. That sampling was performed in accordance with the requirements identified in the Field Sampling Plan (DOE-ID 2011a). Sample results for TSF-43 were presented in the *Field Investigation and Risk Assessment Report for TSF-28 and TSF-43 CERCLA Site Characterization, Test Area North, Idaho National Laboratory* (DOE-ID 2011b). Part A of this document compares those data results against the Idaho National Laboratory background concentrations (INEL 1996) for those constituents for which background concentrations are available. Part B provides additional data summary and risk screening analysis.

Table Part A-1 presents screening of the 95% upper confidence limit (UCL) of the mean mercury concentration against the background concentration.

Table Part A-1. Background screening results for mercury in soil samples collected at TSF-43 in 2011.

Constituent	95% UCL of mean (mg/kg)	Background <sup>a</sup> (mg/kg)	Retain for further screening?
Mercury, elemental	3.06E+00	0.050	Yes

a. The value was obtained from Background Dose Equivalent Rates (INEL 1996).

The 95% UCL of the mean mercury concentration is greater than the background concentration. Consequently, mercury was retained for additional screening in Part B of this NSI form.

Table Part A-2 presents screening of radionuclides against background concentrations. For constituents where there

**FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (FFA/CO)  
 NEW SITE IDENTIFICATION (NSI)**

Site Title: RPSSA Buildings TAN-647/648 and Surrounding Pads	Site Code: TSF-43
	Document number: NSI-26010

were sufficient detections to calculate the 95% UCL of the mean concentration, the UCL was screened against background concentrations (INEL 1996) when they were available. For all other constituents, the maximum detected concentration was used.

Table Part A-2. Background screening of radionuclide concentrations in soil samples collected at TSF-43 in 2011.

Constituent	Maximum Concentration (pCi/g)	95% UCL of mean (pCi/g)	Background <sup>a</sup> (pCi/g)	Retain for further screening
Am-241	ND	—	0.011	No
Cs-137	8.06E+01	1.65E+01	0.82	Yes
Co-60 <sup>b</sup>	3.15E+00	—	NA	Yes
Eu-152	ND	—	NA	No
Eu-154	ND	—	NA	No
Eu-155 <sup>b</sup>	2.26E-01	—	NA	Yes
Sr-90 <sup>b</sup>	1.23E+01	—	0.49	Yes
U-233/234	3.07E+00	1.65E+00	1.44	Yes
U-235/236 <sup>b</sup>	ND	—	NA	No
U-238	1.54E+00	1.17E+00	1.40	No

Note: A dash within a cell means that data were insufficient to calculate the UCL.  
 a. The values were obtained from Background Dose Equivalent Rates (INEL 1996).  
 b. Because of insufficient detections, the 95% UCL could not be calculated.  
 NA not applicable  
 ND not detected  
 UCL upper confidence limit

Because Am-241, Eu-152, Eu-154, and U-235/236 were not present at detectable concentrations, they are eliminated as a potential risk and will not be addressed further. The 95% UCL of the mean concentration for U-238 is less than the background concentration, therefore it is also eliminated as a potential risk. However, a background concentration is not available for Co-60; therefore, Co-60 was retained for further screening in Part B. In addition, Cs-137, Eu-155, Sr-90, and U-233/234 are present at concentrations greater than background concentrations (INEL 1996), and, therefore, also were retained for further screening in Part B. The data currently available are sufficient to evaluate whether institutional controls will remain necessary. Therefore, no additional samples are needed to complete Part B of this NSI form.

**References**

42 USC § 6901 et seq., 1976, "Resource Conservation and Recovery Act (Solid Waste Disposal Act)," as amended, *United States Code*, October 21, 1976.

DOE-ID, 1999, *Final Record of Decision for Test Area North Operable Unit 1-10*, DOE/ID-10682 Rev. 0, U.S. Department of Energy Idaho Operations Office, October 1999.

DOE-ID, 2003, *Idaho Hazardous Waste Management Act/Resource Conservation and Recovery Act Closure Plan for the Teas Area North-647 Solid Waste Storage Facility*, DOE/ID-11041, Rev. 2, U.S. Department of Energy Idaho Operations Office, January 2003.

DOE-ID, 2011a, *Field Sampling Plan for TSF-28 and TSF-43 CERCLA Site Characterization*. TPMC 11-002, Rev. 1, Terranear PMC, LLC, July 2011.

DOE-ID, 2011b, *Field Investigation and Risk Assessment for TSF-28 and TSF-43 CERCLA Site Characterization, Test Area North, Idaho National Laboratory*, TPMC 11-008, Rev. 0, Terranear PMC, LLC, October 2011.

EG&G, 1994, *Track 1 Decision Documentation Package for the Radioactive Parts Security Storage Area (RPSSA) Pads—Determination to Be Made in WAG Wide Remedial Investigation Feasibility Study (RI/FS)*, Document No. 5681, EG&G Idaho, April 1994.

435.36  
11/06/2012  
Rev. 13  
Use with MCP-3448

## FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (FFA/CO) NEW SITE IDENTIFICATION (NSI)

Site Title: RPSSA Buildings TAN-647/648 and Surrounding Pads	Site Code: TSF-43
	Document number: NSI-26010

Litus, Marty, and Jerry P. Shea, 2005, *Summary of Cleanup at the Idaho National Laboratory Site*, ICP/EXT-05-00806, Rev. 0, Bechtel BWXT Idaho, LLC, March 2005.

INEL 1996, *Executive Summary for Background Dose Equivalent Rates and Surficial Soil Metal and Radionuclide Concentrations for the Idaho National Engineering Laboratory*, INEL-94/0250 (Exec Sum), Rev. 1, Lockheed Martin Idaho Technologies Company, September 1996.

3. Is the site a solid waste management unit?       Yes       No

4a. Potential Site Recommendation

Do NOT include as a new FFA/CO site. This site does NOT warrant further investigation, and does NOT meet the criteria for acceptance (i.e., no evidence of a release of a CERCLA hazardous substance). The site should NOT be included under FFA/CO Action Plan.

Include as a new FFA/CO site. This site DOES meet the criteria for acceptance (i.e., evidence of a release of a CERCLA hazardous substance), DOES warrant further investigation, and SHOULD be included under the FFA/CO Action Plan (complete the remainder of Part A).

Additional sampling recommended?

Yes – Submit Part A.

No – Proceed to Part B.

4b. Existing Site Recommendation

Additional sampling recommended?

Yes – Submit Part A.

No – Proceed to Part B.

4c. Idaho Cleanup Project Environmental Restoration Director Concurrence:

<u>Frank Webber</u>	<u></u>	<u>12/18/2017</u>
Name (printed)	Signature	Date

4/5/36  
11/06/2012  
Rev. 13  
Use with MCP-3448

# FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (FFA/CO) NEW SITE IDENTIFICATION (NSI)

Site Title: RPSSA Buildings TAN-647/648 and Surrounding Pads	Site Code: TSF-43
	Document number: NSI-26010

## PART A

### 5. FFA/CO Remedial Project Manager (RPM) Concurrence:

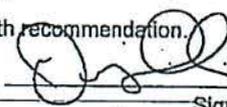
DOE-ID FFA/CO RPM:  Concur with recommendation.  Do not concur with recommendation.

EPA and DEQ concurrence required?  Yes  No

Kevin O'Neill Name (printed)  Signature 12/27/12 Date

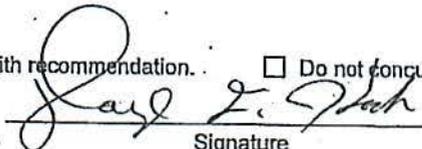
Explanation:

EPA FFA/CO RPM:  Concur with recommendation.  Do not concur with recommendation.

Dennis Falk Name (printed)  Signature 1/13/13 Date

Explanation:

DEQ FFA/CO RPM concurrence:  Concur with recommendation.  Do not concur with recommendation.

Daryl F. Koch Name (printed)  Signature 1/15/2013 Date

Explanation:

# FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (FFA/CO) NEW SITE IDENTIFICATION (NSI)

Site Title: RPSSA Buildings TAN-647/648 and Surrounding Pads

Site Code: TSF-43

Document number: NSI-26010

## PART B

### 1. Data Analysis and Risk Assessment:

In accordance with the *Field Sampling Plan for TSF-28 and TSF-43 CERCLA Site Characterization* (DOE-ID 2011) samples were collected from the 0- to 1-ft interval, the 1- to 3-ft interval, and the 3- to 5-ft interval. Samples also were collected at the 8- to 10-ft interval. Those deeper samples were stored onsite pending the screening results of the samples collected from the shallower depths. If screening of the 3- to 5-ft interval samples indicated the need to analyze the deeper samples to meet the criteria for closure under the residential land-use scenario (compliance with remediation goals to a depth of 10 ft below grade), the samples at the deeper intervals from the corresponding sample location(s) could be submitted for analysis of the constituent(s) in question. Figure Part B-1 shows the 2011 sampling locations.

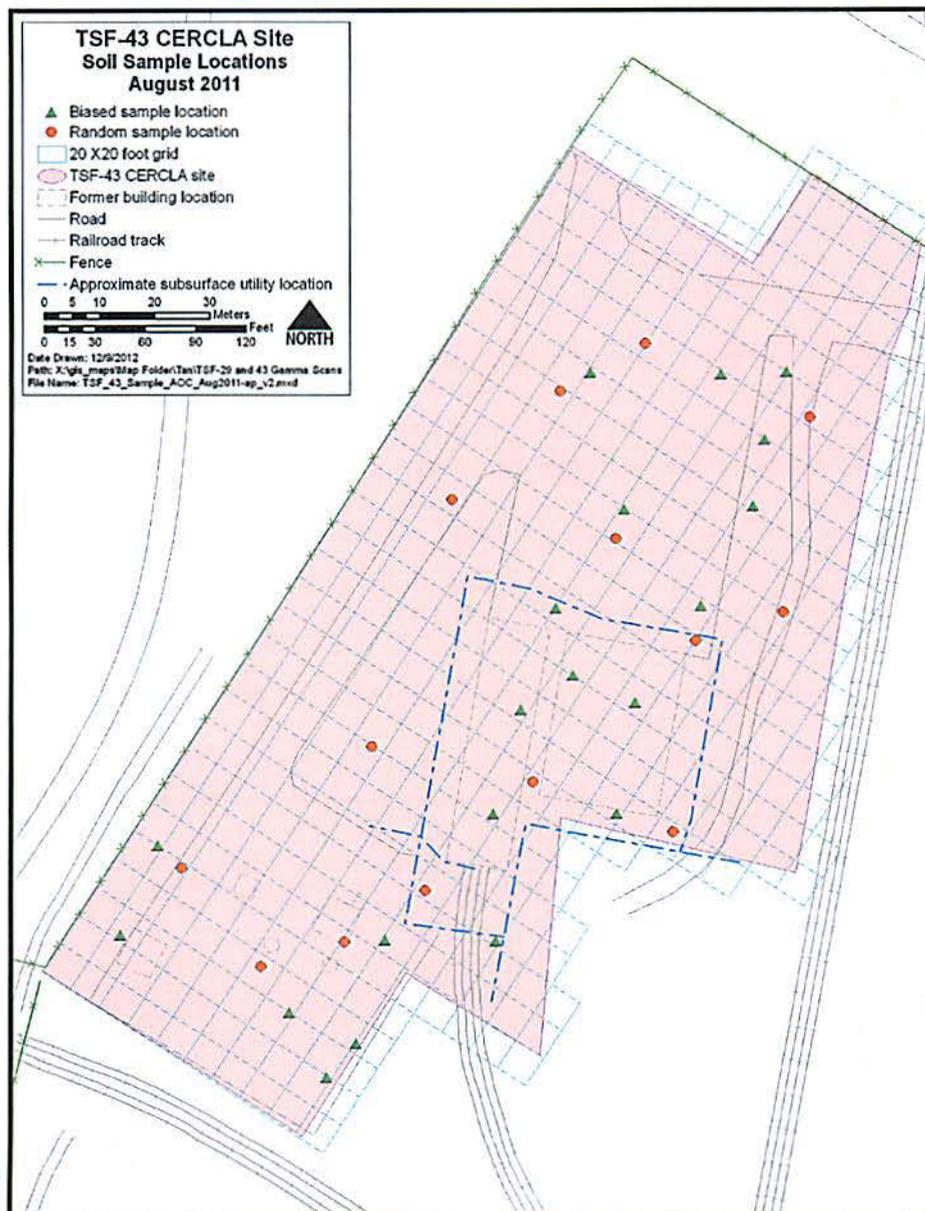


Figure Part B-1. Locations of samples collected from Site TSF-43 in August 2011.

Table Part B-1 presents screening of the 95% UCL of the mean mercury concentration against the background

FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (FFA/CO)  
NEW SITE IDENTIFICATION (NSI)

Site Title: RPSSA Buildings TAN-647/648 and Surrounding Pads	Site Code: TSF-43
	Document number: NSI-26010

concentration.

Table Part B-1. Screening results for mercury in soil samples collected at TSF-43 in 2011.

Constituent	95% UCL of mean (mg/kg)	Residential Soil Cleanup level <sup>a</sup> (mg/kg)	Ecological Soil Screening Level <sup>a</sup> (mg/kg)	Contaminant poses an unacceptable risk human/eco?
Mercury, elemental	3.06E+00	4.3E+00	8.4E+00	No/No

a. The values were obtained from Table 6 of the *Operable Unit 10-08 Remedial Design/Remedial Action Work Plan* (DOE-ID 2010).  
UCL upper confidence limit

The 95% UCL of the mean mercury concentration is less than the residential soil cleanup level and the ecological and human health screening level. Therefore, mercury is eliminated as an unacceptable risk.

Table Part B-2 presents screening of radionuclides based on the 95% UCL of the mean concentration, screened against residential soil cleanup levels and ecological screening levels. For constituents for which there were detections sufficient to calculate the 95% UCL of the mean concentration, the UCL was screened against residential cleanup levels and ecological soil screening levels. For all other constituents, the maximum detected concentration was used.

Table Part B-2. Screening of radionuclide concentrations in soil samples collected at TSF-43 in 2011.

Constituent	Maximum Concentration (pCi/g)	95% UCL of mean (pCi/g)	Residential Soil Cleanup level <sup>a</sup> (pCi/g)	Ecological Soil Screening Level <sup>a</sup> (pCi/g)	Contaminant poses an unacceptable risk human/eco?
Cs-137	8.06E+01	1.65E+01	6.0E+00	4.95E+03	Yes/No
Co-60 <sup>b</sup>	3.15E+00	—	3.61E+00	1.18E+03	No/No
Eu-155 <sup>b</sup>	2.26E-01	—	3.80E+02	3.25E+04	No/No
Sr-90 <sup>b</sup>	1.23E+01	—	2.31E+01	3.34E+03	No/No
U-233/234	3.07E+00	1.65E+00	4.01E+02	2.05E+01	No/No
U-238	1.54E+00	1.17E+00	7.42E+01	2.32E+01	No/No

Note: A dash within a cell means that data were insufficient to calculate the UCL.

a. The values were obtained from Table 6 of the *Operable Unit 10-08 Remedial Design/Remedial Action Work Plan* (DOE-ID 2010).

b. Because of insufficient detections, the 95% UCL could not be calculated.

UCL upper confidence limit

Table Part B-2 shows that the 95% UCL for Cs-137 exceeds the residential soil cleanup level, but is below the ecological soil screening level. All other constituent concentrations were below both the ecological screening level, and residential soil cleanup level.

Although the 95% UCL for Cs-137 exceeds the residential soil cleanup level, the maximum concentrations were obtained from the 0- to 1-ft-depth interval, with decreased concentrations obtained from the deeper sample intervals. Notably, the maximum concentration from the 3- to 5-ft-depth interval was 3.59E-01 pCi/g, which is below background, and screening levels. Consequently, the samples from the 8- to 10-ft-depth interval were not analyzed, and were disposed of onsite. Because of the high  $K_d$  of Cs-137, the highest concentrations are expected at the shallowest depth, as was observed.

As identified in Table 7 of the *Operable Unit 10-08 Remedial Design Remedial Action Work Plan* (DOE-ID 2010), Sr-90 is the only groundwater contaminant of potential concern. However, no driving force exists to accelerate migration to the Snake River Plain Aquifer; therefore, Sr-90 is eliminated as a potential risk to the groundwater.

Based on the results of this risk screening, Cs-137 is the only contaminant present at concentrations that pose a potential risk to human health or the environment. Because the 95% UCL for Cs-137 exceeds the residential soil cleanup level, institutional controls will be required at the site until the Cs-137 concentration decays to below the residential soil cleanup level of 6.0 pCi/g. The termination date for institutional controls at TSF-43 was calculated using the formula below.

$$t = (1/\lambda)\ln(C_i/C_0)$$

Where

t = the decay time (in years) required for Cs-137 to decay to residential soil cleanup level

$\lambda$  = the Cs-137 decay rate constant (0.023 yr<sup>-1</sup>)

$C_i$  = the final Cs-137 concentration (residential soil cleanup level = 6.0 pCi/g)

$C_0$  = the initial Cs-137 concentration (95% UCL from 2011 sampling = 16.5 pCi/g).



435.36  
11/08/2012  
Rev. 13  
Use with MCP-3448

# FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (FFA/CO) NEW SITE IDENTIFICATION (NSI)

Site Title:  
RPSSA Buildings TAN-647/648 and Surrounding Pads

Site Code: TSF-43  
Document number: NSI-26010

## PART B

### 4. FFA/CO Remedial Project Manager (RPM) Concurrence:

DOE-ID FFA/CO RPM:  Concur with recommendation  Do not concur with recommendation.

Kevin O'Neill [Signature] 12/27/12  
Name (printed) Signature Date

Explanation:

EPA FFA/CO RPM:  Concur with recommendation  Do not concur with recommendation.

Dennis Faulk [Signature] 1/14/13  
Name (printed) Signature Date

Explanation:

DEQ FFA/CO RPM Concurrence:  Concur with recommendation  Do not concur with recommendation.

Daryl F. Koch [Signature] 1/15/2013  
Name (printed) Signature Date

Explanation: