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Revision 2

U.S. Department of Energy
Idaho Operations Office

HWMA/RCRA Closure Plan for the Materials Test Reactor Wing (TRA-604) Laboratory Components

Voluntary Consent Order Action Plan VCO-5.8.d

February 2008

Idaho Cleanup Project

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Prepared for the
U.S. Department of Energy
DOE Idaho Operations Office

ABSTRACT

This Hazardous Waste Management Act/Resource Conservation and Recovery Act closure plan was developed for the laboratory components of the Test Reactor Area Catch Tank System (TRA-630) that are located in the Materials Test Reactor Wing (TRA-604) at the Reactor Technology Complex, Idaho National Laboratory Site, to meet a further milestone established under Voluntary Consent Order Action Plan VCO-5.8.d. The TRA-604 laboratory components addressed in this closure plan were deferred from the TRA-630 Catch Tank System closure plan due to ongoing laboratory operations in the areas requiring closure actions. The TRA-604 laboratory components include the TRA-604 laboratory warm wastewater drain piping, undersink drains, subheaders, and the east TRA-604 laboratory drain header. Potentially contaminated surfaces located beneath the TRA-604 laboratory warm wastewater drain piping and beneath the island sinks located in Laboratories 126 and 128 (located in TRA-661) are also addressed in this closure plan. The TRA-604 laboratory components will be closed in accordance with the interim status requirements of the Hazardous Waste Management Act/Resource Conservation and Recovery Act as implemented by the Idaho Administrative Procedures Act 58.01.05.009 and 40 Code of Federal Regulations 265, Subparts G and J. This closure plan presents the closure performance standards and the methods for achieving those standards.

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ACRONYMS

BEA	Battelle Energy Alliance, LLC
cpm	counts per minute
CTS	Catch Tank System
DEQ	State of Idaho Department of Environmental Quality
DOE	U.S. Department of Energy
dpm	disintegrations per minute
HWMA	Hazardous Waste Management Act
INL	Idaho National Laboratory
MTR	Materials Test Reactor
PE	professional engineer
RCRA	Resource Conservation and Recovery Act
RTC	Reactor Technology Complex
TRA	Test Reactor Area
VCO	Voluntary Consent Order

HWMA/RCRA Closure Plan for the Materials Test Reactor Wing (TRA-604) Laboratory Components

Voluntary Consent Order Action Plan VCO-5.8.d

1. INTRODUCTION

This Hazardous Waste Management Act (HWMA) (State of Idaho 1983)/Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq. 1976) closure plan has been prepared for the Materials Test Reactor Wing (TRA-604) laboratory components, located in the Reactor Technology Complex (RTC) at the Idaho National Laboratory (INL) Site. The TRA-604 laboratory components are addressed under Voluntary Consent Order (VCO) Action Plan VCO-5.8.d (DEQ 2000).

The TRA-604 laboratory components addressed in this closure plan were deferred from the *HWMA/RCRA Tank System Closure Plan for the Test Reactor Area Catch Tank System (TRA-630) Voluntary Consent Order Action Plan VCO-5.8.d* (DOE-ID 2005), hereinafter referred to as the CTS closure plan, due to ongoing laboratory operations in areas requiring closure activities. The CTS closure plan identified the components to be addressed in this closure plan as the VCO-5.8.d laboratory components. The schematics included in the CTS closure plan have been adapted to reflect the TRA-604 laboratory components as they are being addressed in this closure plan and are included in Appendix A. Additional information on deferral of the TRA-604 laboratory components can be found in the CTS closure plan (DOE-ID 2005).

The TRA-604 laboratory components have been identified as having managed HWMA/RCRA hazardous waste (INEEL 2005). In accordance with the milestone established under VCO Action Plan VCO-5.8.d, the TRA-604 laboratory components will be closed in accordance with the interim status tank system closure performance standards of IDAPA 58.01.05.009 [40 CFR 265.111 and 265.197(a)].

This HWMA/RCRA closure plan includes a description of the TRA-604 laboratory components, including drains, drain piping, and the potentially contaminated surfaces associated with the drains and drain piping that may have contacted HWMA/RCRA hazardous waste, and a description of the closure activities that will be conducted to meet the closure performance standards. The closure approach specified in this closure plan is removal of the TRA-604 laboratory components and removal and/or decontamination of the potentially contaminated surfaces. Removed TRA-604 laboratory components and decontamination residues will be managed as closure-derived waste. The current and maximum hazardous waste inventories are identified in this closure plan along with the applicable U.S. Environmental Protection Agency hazardous waste numbers. The TRA-604 laboratory components will be considered HWMA/RCRA clean closed in accordance with 40 CFR 265.112 and 265.197(a)[a] when the closure activities identified in this plan are complete, as certified by a registered professional engineer (PE), and accepted by the State of Idaho Department of Environmental Quality (DEQ).

a. There are no tanks to be closed in this closure plan for the TRA-604 laboratory components; however, the laboratory components were identified in the CTS closure as ancillary tank system equipment and, as such, 40 CFR 265.197 is applicable.

2. FACILITY DESCRIPTION

The INL Site encompasses approximately 890 mi^2 on the northern edge of the Eastern Snake River Plain in southeastern Idaho. Formerly named the National Reactor Testing Station, the INL was established as a site where the U.S. Department of Energy (DOE) could safely build, test, and operate various types of nuclear facilities. The RTC is situated on the south-central portion of the INL Site (see Figure 1) and occupies an enclosed and secured area. TRA-604 houses radiochemistry laboratories that have supported and continue to support test reactor operations at the RTC. The TRA-604 laboratory components are generally located in or behind hoods and cabinets, and in pipe chases along laboratory walls and the ceiling of the basement floor. (See Figures A-1 and A-2 in Appendix A for the location of the TRA-604 laboratory components.)

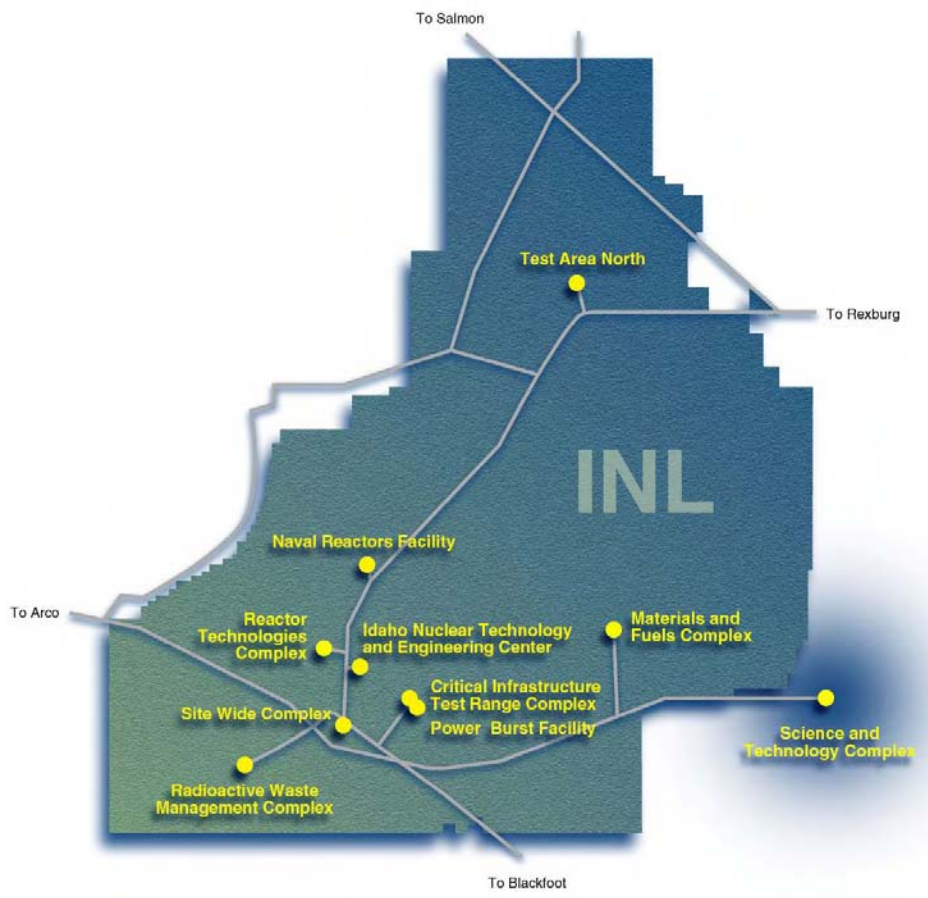

Figure 1. Map of the INL Site showing the location of the RTC.

2.1 Description and Operating History

TRA-604 is a one-story, steel-reinforced, concrete building with a basement that is located north and west of the TRA-630 pump vault and west of the MTR and MTR Service Building (Figure A-1; Appendix A). The original warm wastewater handling systems at the RTC were constructed from 1950 to 1952. TRA-604 contains radiochemistry laboratories that support RTC research and development activities. Warm wastewater (less than 20,000 counts per minute per milliliter [NRTS 1971]) from the laboratories was conveyed through drain piping to the TRA-630 CTS. The warm wastewater subheaders

originate from sinks in the laboratories then travel behind cabinets in pipe chases along laboratory walls. The subheaders then pass through the laboratory floor and continue north along the TRA-604 basement ceiling before connecting to either the east or west TRA-604 laboratory drain header. The warm wastewater subheaders are mostly 2-in. Duriron and the east TRA-604 laboratory drain header is 4-in. stainless steel. The original east and west TRA-604 laboratory drain headers were Duriron; however, due to leaks, they were replaced with welded stainless steel in 1986. The typical laboratory drain piping layout is depicted on Detail 1 of Figure A-3 (Appendix A).

The Alpha Wing (TRA-661) is the south extension of TRA-604 built in 1960. TRA-661 contains alpha laboratories that also supported RTC research and development activities. TRA-661 has an 8-ft-wide pipe tunnel under the facility that extends down the centerline of the building from north to south. The warm wastewater drain piping originates from sinks located in islands in the center of the laboratories, drops through the floor slab, and travels beneath the floor slab to the pipe tunnel. The RCRA/HWMA components subject to closure were removed or decontaminated during CTS closure activities except for the concrete floor located beneath the island warm wastewater sinks located in laboratories 126 and 128 (DOE-ID 2005). These two laboratories did not have metal cabinet bottoms since the bottoms had been removed and small water heaters were installed on the concrete floors. The concrete floors located beneath the warm wastewater drain piping under these two cabinets are HWMA/RCRA contaminated, and the closure activities for this concrete are being addressed in this closure plan.

The individual drain piping from TRA-604 and TRA-661 were originally designed to convey radiological laboratory warm wastewater to Tanks TRA-730-3 and -4 in the TRA-630 CTS via the laboratory header drain line and 4” HDC-604-B. Modifications to the wastewater handling systems have occurred and are as follows:

- 1952–1986: Laboratory warm wastewater conveyed through 4” HDC-604-B to Tanks TRA-730-3 and -4 in the TRA-630 CTS.

- 1986–1991: Laboratory warm wastewater conveyed through 4” HDB-604-A to Tanks TRA-730-3 and -4 in the TRA-630 CTS.

- 1991–2005: Laboratory warm wastewater conveyed to the vent scrubber sump drain located in the basement of TRA-604. From the vent scrubber sump, the waste flowed to the reactor drain tank in the MTR via the vent scrubber drain pipe. From 1991 to present, discharges have been administratively controlled as nonhazardous only.

- 2005–2007: Laboratory 109 warm wastewater passed through a new stainless steel drain pipe to the floor drain located in the TRA-604 fan area. The floor drain leads to the MTR building sump. The laboratory 109 drain pipe has been removed (August 2007).

2.2 TRA-604 Laboratory Components and Potentially Contaminated Surfaces Subject to HWMA/RCRA Closure

The TRA-604 laboratory components’ system boundaries were determined based on review of the system design (original and current) and field verification of system configuration. The TRA-604 laboratory components and associated boundaries are discussed in the following subsections.

2.2.1 TRA-604 Laboratory Components

Based on the historical evidence that hazardous waste may have been conveyed through the TRA-604 laboratory components, the laboratory components will be conservatively addressed under this HWMA/RCRA closure plan. The closure activities for the TRA-604 laboratory components included in this HWMA/RCRA closure plan are identified in Subsection 5.1.2.

- The TRA-604 laboratory components subject to closure are shown in red on Figure A-1 (Appendix A) and include:
  - Undersink drains
  - Subheaders including:
    - LAB-SH-113
    - LAB-SH-112
    - LAB-SH-111
    - LAB-SH-110
    - LAB-SH-109
  - East TRA-604 laboratory drain header that remains following completion of the CTS closure.

2.2.2 Potentially Contaminated Surfaces

The potentially contaminated surfaces referred to throughout this closure plan are those surfaces beneath the Duriron laboratory drain pipes that may have contacted HWMA/RCRA hazardous waste. Due to historical and visible evidence suggesting compromised integrity of the Duriron laboratory drain pipes, surfaces located beneath the historical and current Duriron laboratory drain pipes are considered potentially contaminated surfaces. Potentially contaminated surfaces require closure activities, unless they are otherwise determined to have not been HWMA/RCRA-contaminated. The closure activities for potentially contaminated surfaces included in this HWMA/RCRA closure plan are identified in Subsection 5.1.3.

- Potentially contaminated surfaces, as defined above, are shown on Figure A-2 (Appendix A) and include:
  - TRA-604 cabinet bottoms beneath the TRA-604 laboratory warm wastewater sinks
  - TRA-604 concrete main floor pipe chases containing the warm wastewater subheaders
  - TRA-604 basement floor beneath the east and west TRA-604 laboratory drain headers, the laboratory header drain line, and the associated subheaders including:
    - LAB-SH-113
    - LAB-SH-112

  - LAB-SH-111
  - LAB-SH-110
  - LAB-SH-109

- The concrete floor of the TRA-661 pipe tunnel from the base of the stairs in the TRA-661 pipe tunnel to the TRA-604 basement
- A portion of the wall located between the TRA-604 basement and the TRA-661 pipe tunnel
- Concrete floor beneath the island sinks located in the TRA-661 Laboratories 126 and 128
- The concrete floor adjacent to the construction joint J-1 located beneath the laboratory subheader LAB-SH-110.

The following potentially contaminated surfaces, as defined in this subsection, either have been determined to not be HWMA/RCRA contaminated and will not require closure, or have a continuing source of contamination and will be deferred.

- A variety of electrical switch gear cabinets and transformers are located beneath portions of the TRA-604 laboratory subheaders in the TRA-604 basement. Although the Duriron subheaders are historically known to have leaked, there is no evidence that any leakage resulted in contamination of this equipment. Based on visual inspection, there is no staining on the tops or faces of this equipment, nor on the adjacent concrete. Therefore, this equipment and underlying concrete will not require decontamination.

- Laboratory A19 is a block wall room built partially under the Laboratory 109 subheader in the TRA-604 basement. Laboratory A19 is shown in Figure B-1 (Appendix B). Visual inspection showed no evidence, such as staining, that any leakage has resulted in contamination of the Laboratory A19 roof; therefore, the Laboratory A19 roof will not require decontamination.

- The south concrete wall located in the TRA-604 basement under the 4” HDC-604-B drain pipe and the associated concrete floor as shown in Figure B-2 (Appendix B). Historical leakage of the 4” HDC-604-B drain pipe resulted in contaminated soil in this area and spring run-off infiltrates through the contaminated soil and enters the TRA-604 basement through cracks in this wall. The decontamination of this wall and adjacent floor will be addressed in the future VCO-5.8.d courtyard component closure.

3. CURRENT AND MAXIMUM WASTE INVENTORIES AND CHARACTERISTICS

The TRA-630 catch tanks were characterized as HWMA/RCRA hazardous for cadmium (D006), chromium (D007), lead (D008), and mercury (D009) (DOE-ID2005). The TRA-604 laboratory components are ancillary equipment to the TRA-630 catch tanks and, as such, are considered HWMA/RCRA hazardous for the same contaminants.

Video inspections were conducted at six locations throughout the TRA-604 laboratory drain piping. The TRA-604 laboratory drain pipes addressed in this closure plan were partially inspected and the remainder of each pipe is assumed to contain similar waste inventories as those identified through the video inspections. The maximum volume of material ever onsite (the combined maximum capacity of the laboratories drain pipes to be closed) was approximately 70 gal. Only residual sediment and liquids are currently present within the drain pipes. Table 1 lists the TRA-604 laboratory components that were characterized through video inspections and the current waste inventories.

Table 1. Waste inventories for TRA-604 laboratory components.

Location	Drain Inspected	Date	Current Inventory
TRA-604 Basement	East TRA-604 Laboratory Drain Header	7/20/2004	Contained approximately 5–10% residuals (4.31E–01 ft^3)
Laboratory 109/110	East Subheader	2/16/2004	Contained approximately 5% residuals (3.84E–01 ft^3)
Laboratory 111	South Sink	7/13/2004	Contained approximately 10–15% residuals (5.40E–01 ft^3)
Laboratory 112	East Sink	3/15/2004	Contained approximately 5% residuals (1.97E–01 ft^3)
Laboratory 113	East Sink	3/15/2004	Contained approximately 10–15% residuals (4.06E–01 ft^3)
Laboratory 114	East Sink	3/15/2004	Contained approximately 5% residuals (2.14E–01 ft^3)

4. CLOSURE PERFORMANCE STANDARDS

This section describes the performance standards for closure of the TRA-604 laboratory components (IDAPA 58.01.05.009 [40 CFR 265.111 and 265.197 (see footnote a on page 1)]) and the activities required to meet the closure performance standards.

4.1 Regulatory Closure Performance Standards

The closure performance standards identified in IDAPA 58.01.05.009 (40 CFR 265.111 and 265.197) applicable to the TRA-604 laboratory components closure are:

- Minimizing the need for further maintenance (IDAPA 58.01.05.009 [40 CFR 265.111(a)]).

- Controlling, minimizing, or eliminating the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere (IDAPA 58.01.05.009 [40 CFR 265.111(b)]).

- At closure of a tank system, the owner or operator must remove or decontaminate waste residues, contaminated containment system components (liners, etc.), contaminated soils, and structures and equipment contaminated with waste, and manage them as hazardous waste, unless §261.3(d) of this Chapter (CFR Title 40) applies. The closure plan, closure activities, cost estimates for closure, and financial responsibility for the tank systems must meet all of the requirements specified in subparts G and H of this part (IDAPA 58.01.05.009 [40 CFR 265.197(a)]).

4.2 Required Activities for Achieving the Closure Performance Standards

The closure and waste management activities to be conducted under HWMA/RCRA closure are described in detail in Section 5 of this closure plan. The closure performance standards will be achieved by the following measures:

<u>Standard 1</u>: The owner or operator must close the facility in a manner that minimizes the need for further maintenance (IDAPA 58.01.05.009 [40 CFR 265.111(a)]).

- The identified TRA-604 laboratory components undergoing HWMA/RCRA closure, including residual hazardous waste inventory, will be removed and managed as specified in Subsection 5.2

- Identified potentially contaminated surfaces, as defined in Subsection 2.2.2, will be removed and/or decontaminated, and managed as specified in Subsection 5.2.

<u>Standard 2</u>: The owner or operator must close the facility in a manner that controls, minimizes, or eliminates to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere (IDAPA 58.01.05.009 [40 CFR 265.111(b)]).

- The identified TRA-604 laboratory components undergoing HWMA/RCRA closure, including residual hazardous waste inventory, will be removed and managed as specified in Subsection 5.2

- Identified potentially contaminated surfaces, as defined in Subsection 2.2.2, will be removed and/or decontaminated, and managed as specified in Subsection 5.2

- The concrete that has been identified as a potentially contaminated surface will be decontaminated by removal of the overlying paint and surface concrete using a physical extraction technology (e.g., scabbling and shaving). No further closure actions with regard to this concrete will be required if a visual inspection of the concrete confirms no waste-related staining is present and a radiological survey of the concrete confirms no elevated radiation readings. For purposes of closure, elevated radiation readings are defined as 1,000 disintegrations per minute (dpm) (100 counts per minute [cpm] at 10% efficiency) above background.

Standard 3: At closure of a tank system, the owner or operator must remove or decontaminate waste residues, contaminated containment system components (liners, etc.), contaminated soils, and structures and equipment contaminated with waste, and manage them as hazardous waste, unless §261.3(d) of this Chapter (CFR Title 40) applies. The closure plan, closure activities, cost estimates for closure, and financial responsibility for the tank systems must meet all of the requirements specified in subparts G and H of this part (IDAPA 58.01.05.009 [40 CFR 265.197(a) (see footnote a on page 1)]).

- The identified TRA-604 laboratory components undergoing HWMA/RCRA closure, including residual hazardous waste inventory, will be removed and managed as specified in Subsection 5.2

- Identified potentially contaminated surfaces, as defined in Subsection 2.2.2, will be removed and/or decontaminated, and managed as specified in Subsection 5.2

- The concrete that has been identified as a potentially contaminated surface will be decontaminated by removal of the overlying paint and surface concrete using a physical extraction technology (e.g., scabbling and shaving). No further closure actions with regard to this concrete will be required if a visual inspection of the concrete confirms no waste-related staining is present and a radiological survey of the concrete confirms no elevated radiation readings. For purposes of closure, elevated radiation readings are defined as 1,000 dpm (100 cpm at 10% efficiency) above background. Concrete removal will continue until radiation readings or visible staring criteria have been met.

- If concrete removal continues until underlying soils are exposed, the soils will be evaluated to determine if elevated radiation levels [1,000 dpm (100 cpm at 10% efficiency) above background] or visible staining are present. If elevated radiation readings or visible staining are detected beneath the concrete, soils will be removed until the radiation and visual criteria are met. Removed soils will be characterized to determine if the soils are RCRA hazardous. If the characterization results conclude the soils are not RCRA hazardous, no further action with regard to underlying soils will be required under closure. If the soils are hazardous this plan will be amended in accordance with Section 7.

5. CLOSURE ACTIVITIES

This closure plan describes the methods for closing the TRA-604 laboratory components per the interim status tank system closure performance standard requirements of IDAPA 58.01.05.009 (40 CFR 265, Subparts G and J). The TRA-604 laboratory components and potentially contaminated surfaces will be closed by removal and/or decontamination. The following subsections describe the closure activities to be completed, waste management activities, and required closure documentation to ensure the closure performance standards (Section 4) are satisfied.

5.1 Closure Activities for the TRA-604 Laboratory Components and Potentially Contaminated Surfaces

5.1.1 Removal of Hazardous Waste Inventory

During TRA-604 laboratory component removal activities (described below), residual wastes will be removed and managed along with the TRA-604 laboratory components, as specified in Subsection 5.2.

5.1.2 Removal of TRA-604 Laboratory Components

The closure approach for the TRA-604 laboratory components is removal and waste management as specified in Subsection 5.2. The laboratory drains and drain pipes will be removed, sized as necessary, and placed in waste shipping containers for management as specified in Subsection 5.2. The TRA-604 laboratory components to be removed during closure are shown on Figure A-1 (Appendix A) and include the following:

- Undersink drains
- Subheaders including:
  - LAB-SH-113
  - LAB-SH-112
  - LAB-SH-111
  - LAB-SH-110
  - LAB-SH-109
- The remaining east TRA-604 laboratory drain header.

5.1.3 Removal and/or Decontamination of Potentially Contaminated Surfaces

Potentially contaminated surfaces will be removed and/or decontaminated. Potentially contaminated surfaces subject to closure, as defined in Subsection 2.2.2, are shown on Figure A-2 (Appendix A) and their respective closure activities are as follows:

- Removal of cabinet bottoms beneath the TRA-604 laboratory warm wastewater sinks.
- Decontamination of concrete main floor pipe chases containing the warm wastewater subheaders (see concrete decontamination below).

- Decontamination of the TRA-604 basement floor beneath the east and west TRA-604 laboratory drain headers, the laboratory header drain line, and subheaders (see concrete decontamination below).

- Decontamination of the TRA-661 pipe tunnel concrete floor under the TRA-661 drain header, from the base of the stairs in the TRA-661 pipe tunnel to the TRA-604 basement, as shown in Figure A-2 (Appendix A) (see concrete decontamination below).

- The portion of the wall located between the TRA-604 basement and the TRA-661 pipe tunnel, to include a 1-ft path centered under the TRA-604 laboratory drain header on the bottom of the pipe slot and along the front and back of the wall as shown on Figure B-3 (Appendix B). In some instances the width/depth of the path on the bottom of the pipe slot may vary due to interferences (e.g. pipe supports, asbestos-wrapped pipelines, airflow restrictor plate). All accessible areas shall be decontaminated until no elevated radiation readings are found. For purposes of closure, elevated radiation readings are defined as 1,000 dpm (100 cpm at 10% efficiency) above background.

- Decontamination of the concrete floor adjacent to the construction joint J-1 located beneath the laboratory subheader LAB-SH-110, as shown on Figure A-2 (Appendix A). The joint is keyed and sealed by painted asphalt; therefore, contamination of the joint is not expected. The concrete floor adjacent to the joint will be decontaminated (see concrete decontamination below). No further closure actions with regard to this joint will be required if a visual inspection of the joint confirms no waste-related staining is present and a radiological survey of the joint confirms no elevated radiation readings.

- Decontamination of the concrete floor beneath island sinks located in TRA-661 Laboratories 126 and 128 (see concrete decontamination below).

Concrete that is a potentially contaminated surface will be decontaminated by removal of the overlying paint and surface concrete using a physical extraction technology (e.g., scabbling and shaving). No further closure actions with regard to this concrete will be required if a visual inspection of the concrete confirms no waste-related staining is present and a radiological survey of the concrete confirms no elevated radiation readings. For purposes of closure, elevated radiation readings are defined as 1,000 dpm (100 cpm at 10% efficiency) above background. Concrete removal will continue until radiation readings or visible staining criteria have been met. The concrete floor located beneath the east and west TRA-604 laboratory drain headers, the laboratory header drain line, and the subheaders will be decontaminated in a 3-ft-wide path centered under the pipe, 1.5 ft on either side (Figure A-2; Appendix A). In some instances the width of the path may vary, as necessary, due to the interference of structures (e.g., unstained, uncontaminated columns, walls) that may be restricting the 3-ft-wide path.

5.1.4 Removal of Soils

If concrete removal continues until underlying soils are exposed, the soils will be evaluated to determine if elevated radiation levels [1,000 dpm (100 cpm at 10% efficiency) above background] or visible staining are present. If elevated radiation readings or visible staining are detected beneath the concrete, soils will be removed until the radiation and visual criteria are met. Removed soils will be characterized to determine if the soils are RCRA hazardous. If the characterization results conclude the soils are not RCRA hazardous, no further action with regard to underlying soils will be required under closure. If the soils are hazardous this plan will be amended in accordance with Section 7.

5.2 Waste Management

As required by IDAPA 58.01.05.009 (40 CFR 265.114), contaminated equipment and structures must be removed or decontaminated in accordance with applicable requirements. Waste generated during closure activities may include nonhazardous industrial waste, nonhazardous liquid waste, low-level waste, and HWMA/RCRA hazardous waste. Closure-generated wastes will undergo a hazardous waste determination in accordance with IDAPA 58.01.05.006 (40 CFR 262.11). Hazardous waste will be managed in accordance with the generator requirements of IDAPA 58.01.05.006 (40 CFR 262) and will be disposed of appropriately (e.g., RCRA hazardous waste transferred to/disposed of at a RCRA permitted treatment, storage, and disposal facility). All 40 CFR 262.34(a) requirements will be met. All waste and waste containers will be transferred to RCRA permitted storage prior to closure certification. Information regarding waste management during closure activities will be provided to the registered PE for closure certification and will be maintained as part of the project file.

5.3 Closure Documentation

Closure methods and attainment of the closure performance standards for units and components being HWMA/RCRA closed will be documented by performing the following:

- Closure activities will be monitored and reviewed by a registered PE. Following successful completion of closure activities, the PE will certify that the closure was performed in accordance with the DEQ-approved closure plan.

- Information related to successful implementation of closure activities will be recorded or documented and provided to the PE, as requested, to support closure certification. Such information will include:

    - Closure-derived waste removal and management, including hazardous waste manifests, waste disposition forms, etc. (as appropriate).

    - Work orders, other documents relating to TRA-604 laboratory component removal and concrete floor scabbling, etc.

6. CLOSURE SCHEDULE

The closure schedule reflects the time required for conducting closure activities and submitting information to the PE for certification. IDAPA 58.01.05.009 (40 CFR 265.113) requires the closure to be completed within 180 days from the initiation of closure activities. An extension to these time periods is being requested at this time, pursuant to IDAPA 58.01.05.009 (40 CFR 264.113). The following constraints necessitate an extension in the time frame to complete closure activities:

- More stringent health and safety provisions will need to occur due to europium and elemental mercury (e.g., additional respirator requirements, contamination control)
- For personnel safety, radiation doses must be As-low-as-reasonably-achievable
- Initiation of closure activities associated with the TRA-604 laboratory components depends upon Battelle Energy Alliance, LLC (BEA) permanently vacating TRA-604, which is expected to occur by September 30, 2009.

Quarterly reports summarizing closure activity progress will be submitted to the DEQ by April 30, July 31, October 31, and January 31 of each year. Quarterly progress reporting to DEQ will commence on the first of the aforementioned dates following DEQ approval of this closure plan.

Table 2 identifies the closure schedule that will be initiated following DEQ approval of this closure plan.

Table 2. TRA-604 laboratory components closure schedule.[a]

Activity	Duration
DEQ approval of closure plan	0 Day
Removal of TRA-604 laboratory components located in the TRA-604 basement[b]	90 Days
Decontamination of basement concrete that is a potentially contaminated surface, as defined in Subsection 2.2.2	180 Days
Removal of main floor TRA-604 laboratory components	816 Days[c]
Decontamination of main floor concrete pipe chases that are potentially contaminated surfaces, as defined in Subsection 2.2.2	906 Days
Waste disposition	966 Days
Completion of closure activities	996 Days
PE and owner/operator certification submitted to DEQ	1,056 Days[d]

a. Closure activities will be conducted sequentially, unless otherwise noted.

b. To the pipe support near the floor penetration.

c. In the event BEA vacates TRA-604 before September 30, 2009, the closure schedule for the subsequent activities will be adjusted to reflect the date the laboratories are vacated.

d. If closure activities are completed ahead of the proposed schedule, the PE and owner/operator closure certification will be submitted to DEQ within 60 days of the completion of closure activities.

7. CLOSURE PLAN AMENDMENTS

The conditions described in IDAPA 58.01.05.009 (40 CFR 265.112), “Closure Plan; Amendment of Plan,” will be followed to implement changes to the approved closure plan. Should unexpected events during the closure period require modification of the approved closure activities or closure schedule, the closure plan will be amended or DEQ will be otherwise notified within 30 days of the unexpected event. A written request detailing the proposed changes and the rationale for those changes, and a copy of the amended closure plan will be submitted to DEQ for approval or DEQ will be otherwise notified. Minor deviations from the approved closure plan that are equivalent to or do not compromise the closure requirements and performance standards identified in the approved closure plan may be made without prior notification to DEQ. Minor deviations will be identified in the documentation supporting the PE certification.

8. CERTIFICATION OF CLOSURE

Within 60 days of completing the closure activities a certification of closure of the TRA-604 laboratory components will be completed, in accordance with IDAPA 58.01.05.009 (40 CFR 265.115), by a registered PE and submitted to the Idaho Cleanup Project operating contractor and the DOE Idaho Operations Office. The PE and owner/operator signatures on the closure certification, which is submitted to DEQ, will document the completion of closure activities in accordance with the approved closure plan and State of Idaho HWMA/RCRA requirements. The PE and owner/operator signatures on the closure certification will be submitted as a milestone deliverable under Subsection 9.8 of the VCO. The closure certification may also identify any minor changes to the closure plan made without prior approval of DEQ. Closure of the TRA-604 laboratory components will be considered complete upon receipt of written acceptance issued by DEQ. The TRA-604 laboratory components are not a hazardous waste disposal facility; therefore, a “Notice in Deed” and a survey plat are not required.

9. COST AND LIABILITY REQUIREMENTS

The federal government, as owner of the INL Site, is exempt from the requirements to provide cost estimates for closure, to provide a financial assurance mechanism for closure, and regarding a state-required mechanism and state assumption of responsibility per IDAPA 58.01.05.009 (40 CFR 265.140[c]). The federal government, as owner of the INL Site, is also exempt from liability requirements.

10. REFERENCES

40 CFR 261, "Identification and Listing of Hazardous Waste," *Code of Federal Regulations*, Office of the Federal Register, as amended.

40 CFR 262, "Standards Applicable to Generators of Hazardous Waste," *Code of Federal Regulations*, Office of the Federal Register, as amended.

40 CFR 264, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," *Code of Federal Regulations*, Office of the Federal Register, as amended.

40 CFR 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," *Code of Federal Regulations*, Office of the Federal Register, as amended.

40 CFR 268, "Land Disposal Restrictions," *Code of Federal Regulations*, Office of the Federal Register, as amended.

42 USC 6901 et seq., 1976, "Resource Conservation and Recovery Act of 1976," as amended.

DEQ, 2000, B. R. Monson, DEQ, to D. N. Rasch, DOE-ID Enclosure: "Consent Order," Idaho Code §39-4413, June 14, 2000.

DOE-ID, 2005, *HWMA/RCRA Tank System Closure Plan for the Test Reactor Area Catch Tank System (TRA-630) Voluntary Consent Order Action Plan VCO-5.8.d*, DOE/ID-10823, Rev.3, March 2005.

IDAPA 58.01.05.006, "Standards Applicable to Generators of Hazardous Waste," Idaho Administrative Procedures Act, State of Idaho Department of Environmental Quality, as amended.

IDAPA 58.01.05.009, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities," Idaho Administrative Procedures Act, State of Idaho Department of Environmental Quality, as amended.

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NRTS, 1971, *Buried Line Register for NRTS, Part 1 TRA*, ACI-107, December 1971.

State of Idaho, 1983, "Hazardous Waste Management," Idaho Statute, Title 39, "Health and Safety," Chapter 44, "Hazardous Waste Management" (also known as the Hazardous Waste Management Act of 1983).

11. DRAWINGS

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008352, INL Reference Drawing, *Catch Tank Pump Room Steam Syphon Installation and Piping Details*, MTR-E-3455, Rev. 2.

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008924, INL Reference Drawing, *MTR Reactor Building Hot Drain System*, Rev. 6, January 1985.

100023, INL Reference Drawing, *Effluent Control, Area 13, Layout Plan and Sections*, 3150-13-3, Rev. 3.

100446, INL Reference Drawing, *Yard, Area 2, Piping Plan Block #12*, 3150-702-15, Rev. 7.

100453, INL Reference Drawing, *Reactor Building, Area 3, Piping Plan Below Basement Floor*, 3150-703-1, Rev. 4.

100454, INL Reference Drawing, *Reactor Building, Area 3, Sections and Details – Piping Below Basement Floor*, 3150-703-2, Rev. 8.

100470, INL Reference Drawing, *Reactor Wing Building, Area #4, Piping – Basement-Plan, Sections, and Details*, 3150-704-1, Rev. 32.

100471, INL Reference Drawing, *Reactor Wing Building, Area 4, Piping First Floor Plan-Sections and Details*, 3150-704-2, Rev. 13.

100496, INL Reference Drawing, *Effluent Control, Area 13, Catch Tanks and Pump Room Piping Plan and Elevation*, 3150-713-1, Rev. 14.

100700, INL Reference Drawing, *Effluent Control, Area 13, Structural Catch Tank Pit and Pump Room, Plans, Sections, and Details*, 3150-813-1, Rev. A.

101998, INL Reference Drawing, *Building MTR-661 Plot Plan, Location-Utilities-Details*, 1008-MTR-ETR-101-U-1, Rev. 3.

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157117, INL Reference Drawing, *TRA Hot Cell Upgrade Floor Plans*, Rev. 2, February 2000.

158660, INL Reference Drawing, TRA-630, *TRA Heating Upgrade, Catch Tanks and Pump Room Pumps and Piping Installation*, Rev. 1.

161549, INL Reference Drawing, *TRA – Building 603/605 – Test Reactor Area Cleanup – TRA Warm Waste System – TRA Warm Waste Collection System Piping Flowsheet*, 1570-TRA-603/635-P-1, Rev. C.

165930, INL Reference Drawing, *TRA Catch Tank Upgrade Site Map, Area Map, and Drawing Index*, Rev. 2.

165932, INL Reference Drawing, *TRA Catch Tank Upgrade Tank Vault Details*, Rev. 1.

165933, INL Reference Drawing, *TRA Catch Tank Upgrade Vault Section and Details*, Rev. 1.

165934, INL Reference Drawing, *TRA Catch Tank Upgrade Vault Cover and Ladder Details*, Rev. 1.

165935, INL Reference Drawing, *TRA Catch Tank Upgrade Flow Diagram Demolition*, Rev. 1.

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165939, INL Reference Drawing, *TRA Catch Tank Upgrade Piping Plan Installation*, Rev. 2.

165940, INL Reference Drawing, *TRA Catch Tank Upgrade Piping Section and Details*, Rev. 1.

165941, INL Reference Drawing, *TRA Catch Tank Upgrade Existing Utilities Plot Plan*, Rev. 1.

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452217, INL Reference Drawing, *TRA Hot and Warm Waste Flow Diagram*, Rev. C.

Appendix A

Schematics

Appendix A

Schematics

The following schematics pertain to HWMA/RCRA closure of the components addressed in this closure plan. Additional details related to the identified components addressed under VCO Action Plan VCO-5.8.d may be found in the TRA-630 system identification document (INEEL 2005). These schematics are presented for informational purposes only and are not INL reference drawings managed by configuration management.

Schematic P-VCO-5.8.d-R3-630: HWMA/RCRA Closure Schematic Set:

- Sheet 1: TRA-604 Laboratory Component Boundaries—The schematic shows a scaled plot plan of the TRA-630 CTS, identifying the TRA-604 laboratory components that will be addressed under this closure plan.

- Sheet 2: Potentially Contaminated Surface Boundaries—The schematic shows a scaled plot plan of the potentially contaminated surfaces associated with the TRA-604 laboratory components.

- Sheet 3: TRA-604 Laboratory Drain Detail—The schematic shows a scaled plot plan of the drain piping within the laboratories.

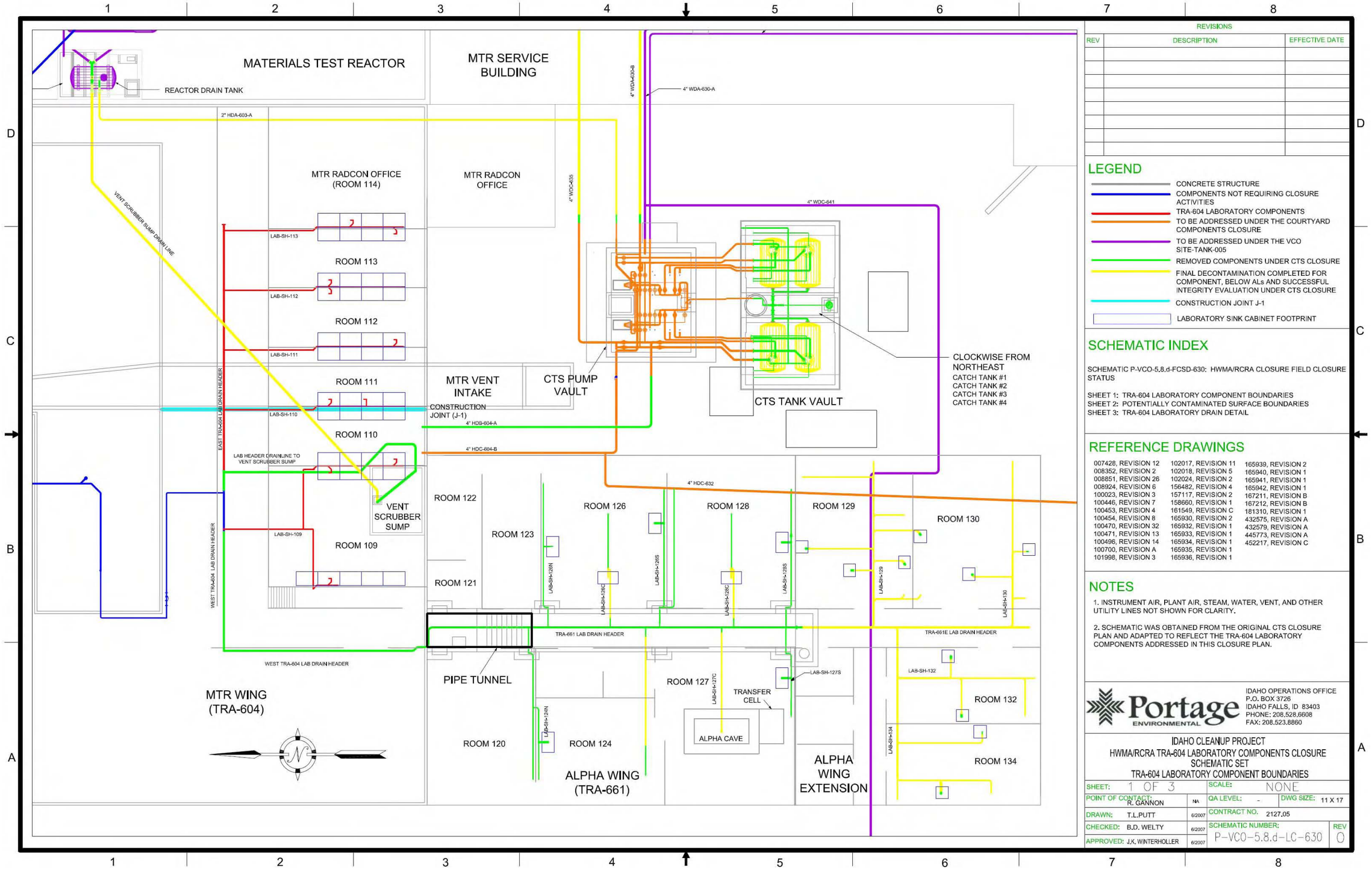

Figure A-1. Schematic P-VCO-5.8.d-RCP-630. HWMA/RCRA Closure Schematic Set, Sheet 1: TRA-604 Laboratory Component Boundaries.

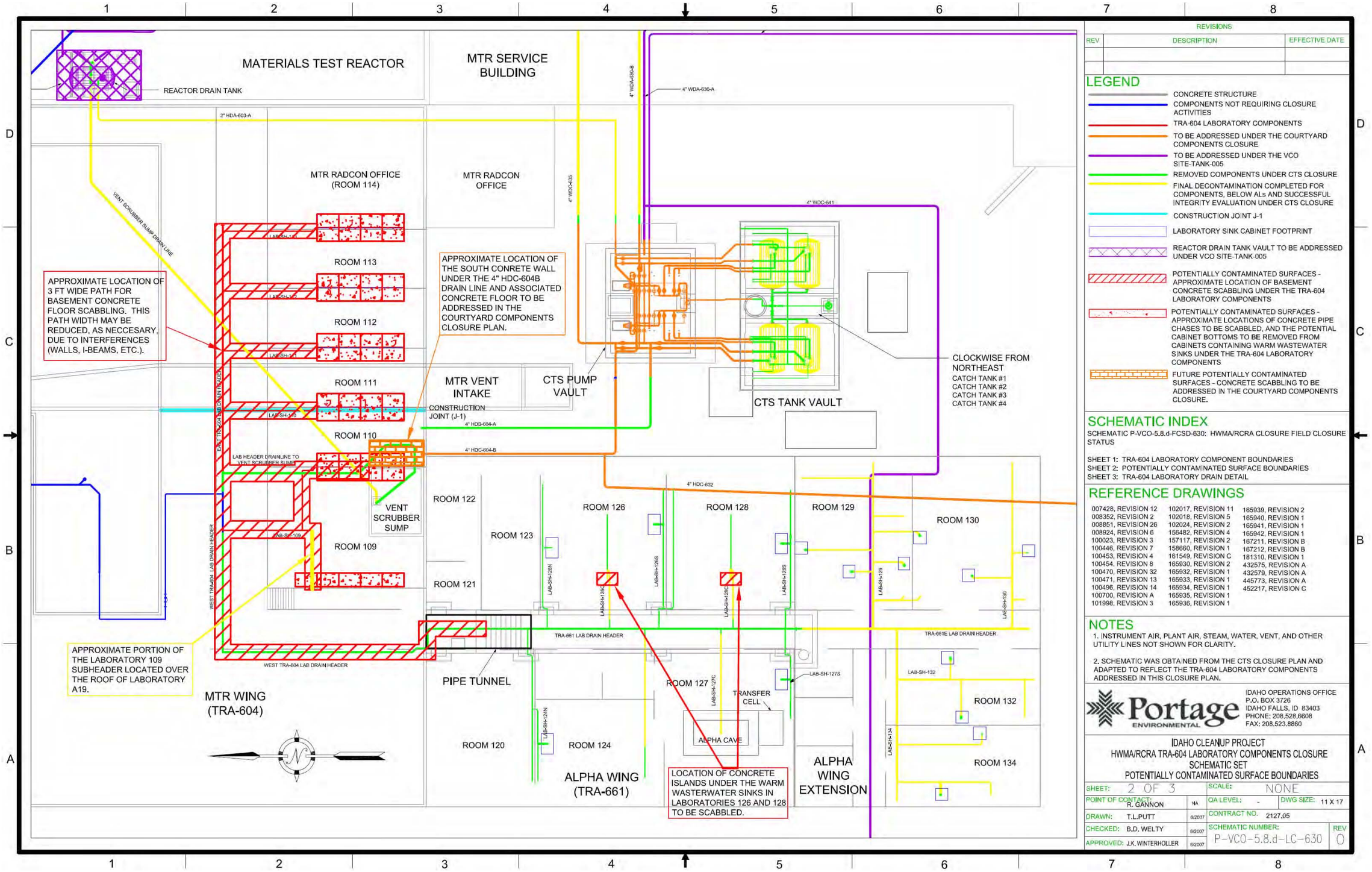

Figure A-2. Schematic P-VCO-5.8.d-RCP-630: HWMA/RCRA Closure Schematic Set, Sheet 2: Potentially Contaminated Surface Boundaries.

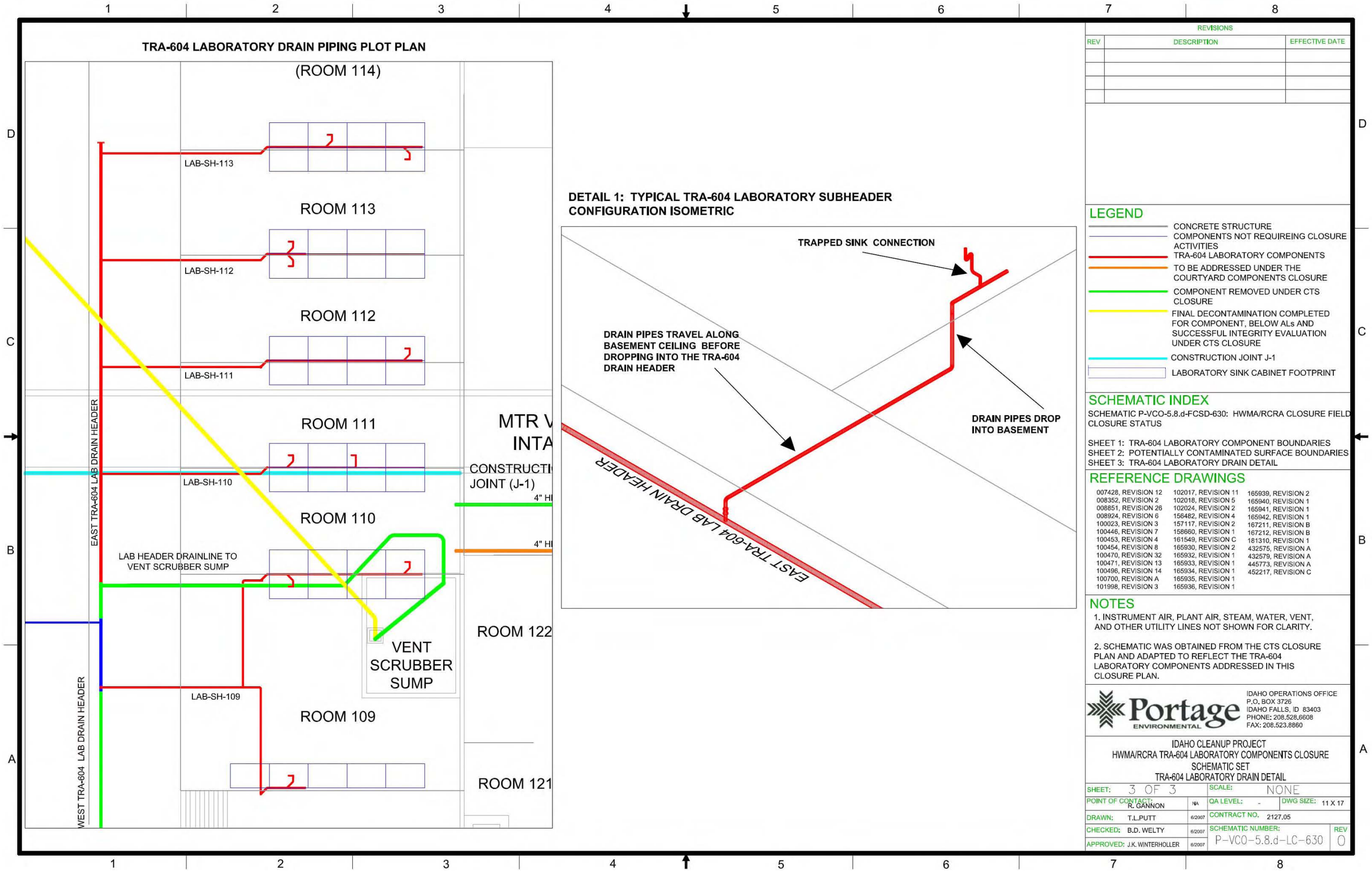

Figure A-3. Schematic P-VCO-5.8.d-RCP-630: HWMA/RCRA Closure Schematic Set, Sheet 3: TRA-604 Laboratory Drain Detail.

Appendix B

Photographs

Appendix B

Photographs

The following photographs pertain to HWMA/RCRA closure of some of the components addressed in this closure plan. The photographs were taken by D. Fackrell on March 29, 2007. These photographs are presented to clarify locations of select closure activities.

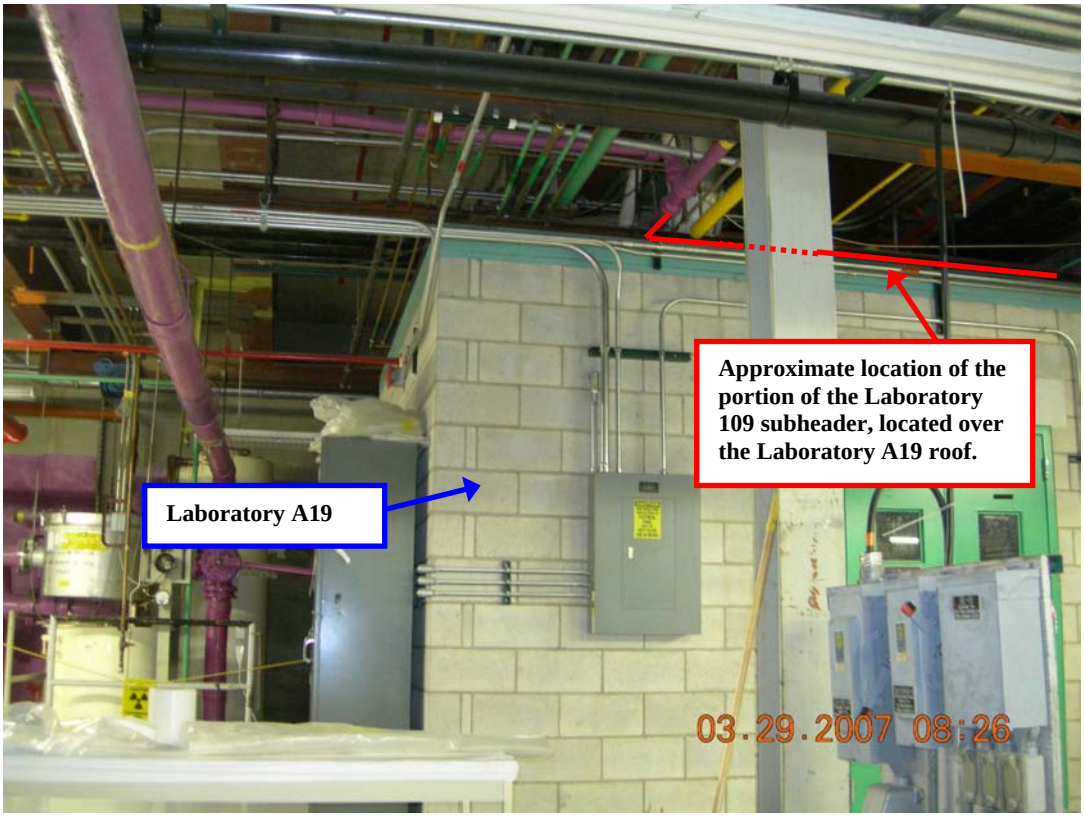

Figure B-1. The portion of the Laboratory 109 subheader, located over the Laboratory A19 roof.

Figure B-2. The south wall in TRA-604 basement located under the 4” HDC-604-B drain pipe.

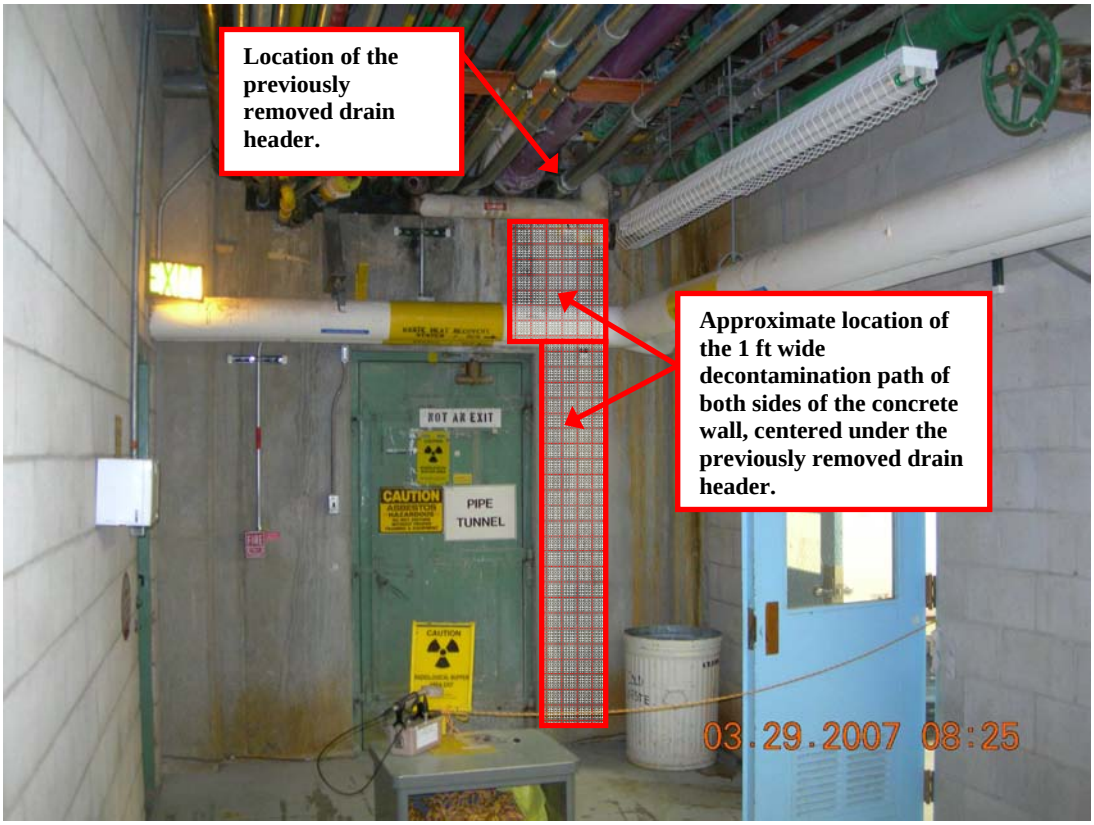

Figure B-3. The wall between the TRA-661 pipe tunnel and the TRA-604 basement. Photo was taken from the TRA-604 basement.