

ORDNANCE SYSTEMS INC.  
Radford Army Ammunition Plant  
4050 Pepper's Ferry Road  
Radford Virginia 24141

September 14, 2015

Leslie Romanchik  
Hazardous Waste Program Manager  
Virginia Department of Environmental Quality  
629 East Main Street  
Richmond, Virginia 23219

**Subject: RFAAP Incinerator Permit Application NOD Response  
Radford Army Ammunition Plant, Radford, Virginia  
EPA ID#: VA1210020730**

Dear Ms. Romanchik:

Attached, please find our responses to the notice of deficiency (NOD) issued by the Virginia Department of Environmental Quality (DEQ) March 20, 2015, for the Incinerator Resource Conservation and Recovery Act (RCRA) renewal application submitted in April 2012, and the amended version of that NOD provided by DEQ on August 7, 2015. For each NOD provided by DEQ, we have summarized our conversations to date, made additional comments where appropriate, and summarized the action items resulting from the NOD. All NODs provided in the original March 2015 letter are numbered according to their section (general comments - section 1, specific comments - section 2) and specific NOD number within that section. All NODs provided in Attachment A of the revised letter from DEQ dated August 2015 are numbered beginning with an "A" and then following the same protocol as the numbering of the initial NODs.

Along with each of the responses, we have provided a proposed submittal date for the revised application materials addressed by each NOD. As agreed previously with DEQ during our December 2014 and January 2015 meetings, we have structured this schedule into several tiers or phases of submittal based on the complexity of the adjustment that is required. These tiers are proposed as follows:

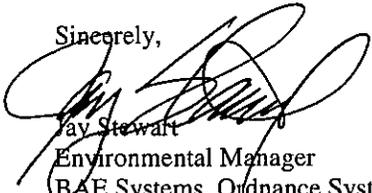
- Tier 2A items - As per our extension request submitted September 10, 2015, and your September 14, 2015 approval, we will submit the revised application materials by November 16, 2015. These items require a more involved response that requires coordination with those currently involved in the union contract negotiations.
- Tier 3 items - We are not proposing a submittal schedule at this time as these items will require further DEQ review and comment before we can prepare the complete response. These include outstanding questions concerning the Risk Assessment Protocol. We recognize that the response to these items will depend on DEQ resource availability and subsequent communications. We will continue to work in a progressive manner with DEQ on these issues.

In those cases where a section of a permit application has deficiencies that fall within multiple tiers, that section will be submitted according to the latest tier associated with the section. This will be done to prevent multiple submittals/revisions of the same section.

In addition to a revised response table, we are providing application materials generated as requested for each of the NODs summarized below. These responses satisfy the majority of the Tier 2 items described in our June 2015 submittal and due by September 16, 2015. For a complete history of the NOD issuance, RFAAP response, and DEQ comment, please consult the attached NOD table referenced above.

If you have any questions or concerns regarding our responses, please contact Mr. Matt Alberts at 540/639-8722 (matt.alberts@baesystems.com).

Sincerely,



Jay Stewart  
Environmental Manager  
BAE Systems, Ordnance Systems Inc.

Enclosures:

Attachment 1 - Written Description of Application Revisions included with this Submittal  
Attachment 2 - Summary of Specific NOD Discussions and Action Items (NOD table)  
Attachment 3 - Revised sections to the EWI RCRA permit application  
Attachment 4 - Detection Limit Comparison  
Attachment 5 - Historical Flood Documentation

c: Russ McAvoy, VDEQ-CO  
Ashby Scott, VDEQ-CO

Coordination:



J. McKenna

bc: J. Stewart, BAE Staff  
J. McKenna, Army Staff  
Matt Alberts, BAE Staff  
Michele Gehring, Coterie Environmental  
Env. File

## Attachment 1

Written Description of Application  
Revisions included with this Submittal

Comments and responses provided herein reflect those associated with the RCRA Permit notice of deficiencies for which permit application revisions are being submitted at this time. Additional revisions and responses have been provided previously in June 2015 and/or are planned for submittal in October 2015.

*1.1 Please submit a revised Risk Assessment per the attached document entitled "Virginia Department of Environmental Quality - Hazardous Waste Part B, Combustion Facility, RCRA, Permit Renewals - Requirements for Revised Risk Assessments Section I. Risk Assessment Revision - Risk Inputs Requirements." [DEQ has determined that RAAP may use the data from the previous risk burn for the current permit for use in the revised risk assessment to be submitted. If RAAP wishes to use CPT data, as it has indicated in its response, the data will be evaluated by the same standards for RCRA risk burn data to determine if the CPT data is sufficient for use with the risk assessment. Regardless, the previous risk burn data and/or CPT data may only be used provided the following conditions are met, otherwise another risk burn will have to be performed.*

*1) The data are in compliance with current data quality standards established by EPA methods for use in a hazardous waste permitting risk assessment. This includes evaluating the current detection limits for constituents against the previous risk burn to make sure the risk burn numbers are below the detection limit values. If data from the CPT are to be used the data must include all of the constituents evaluate for the previous Risk Burn in order to be considered sufficient for use in the revised risk assessment.*

*2) No modifications have been made to the incinerator since the last RCRA permit issuance.*

*3. No modifications have been made to the process in which the waste groups are generated which changes the chemical composition of the permitted waste streams being fed to the incinerator for treatment.*

*(Clarification shown in brackets provided by DEQ in March 20, 2015, response).*

As requested, RFAAP has performed a comparison between the detection limits achieved in the previous risk burn analyses and those achieved in the recent CPT analyses for those constituents that were common to both testing efforts. This comparison is provided in Attachment 4. As shown in the comparison, the detection limits between the two tests are comparable. Therefore, RFAAP asserts that detection limit concerns should not prevent RFAAP from using the old risk burn data for the new risk assessment. In regards to the other two conditions specified in DEQ's response for use of risk burn data, RFAAP has not modified the incinerator in any way that would impact emissions since the last test burn and has not modified the processes generating the waste such that they have altered the chemical composition of the incinerated wastes. Therefore, the risk burn data should be appropriate for use in the subsequent risk assessment.

*1.4 Please submit a revision to Attachment II.F which outlines the procedure by which RAAP will submit a petition for extension of closure time as no such language was included in RAAP's submitted Part B renewal application.*

With this submittal, we are providing a revised Attachment II.F. As requested, we have added language concerning an extension of the closure period to this document. Please refer to the third paragraph of Section II.F.7.

*1.6 Please submit a revision to Attachment II.F which incorporates the boilerplate closure risk assessment language which is as follows:*

*"Closure Risk Assessment:*

*In the event the facility is not able to demonstrate closure of any part of the facility in accordance with the closure standards listed in this plan, the facility will engage the Virginia DEQ to determine the appropriateness of, and procedures for, demonstrating closure in accordance with a risk assessment approach (including the submission and approval of any necessary permit closure plan modifications).*

*Risk Assessment Protocol:*

*In accordance with the VHWMR and the RCRA, 40 CFR Part 264, Subpart G, the Permittee will close the hazardous waste management units (HWMU) in compliance with 40 CFR Part 264, Subpart G § 264.111 Closure Performance Standards. Compliance with the closure performance standards will be demonstrated in accordance with the decontamination standards for the HWMUs as above or in accordance with the risk based standards specified below.*

*The concentrations of the closure constituents in the compliance samples shall be at levels that meet the acceptable risk-based performance standards using the appropriate risk-based assessment criteria and standards specified below:*

*Risk Assessment Standards and Criteria:*

*Clean Closure may be demonstrated by a risk-based assessment as an alternative to the non-detection decontamination standard or the statistical comparison of compliance samples to background levels. The facility may demonstrate that the concentrations of hazardous constituents detected and remaining in the hazardous waste management unit, equipment, structures, soils and sub-soils do not pose an unacceptable level of risk to human health and the environment.*

*If a risk assessment is performed to determine compliance with the closure standards, the risk assessment criteria shall comply with one or more of the following DEQ guidance documents and other DEQ risk-based guidance, as applicable:*

*1. Guidance for Development of Health Based Cleanup Goals Using Decision Tree/Risk Exposure and Analysis Modeling System (REALMS) Program, 1994, and Risk Based Methodology, as amended by the DEQ. Modeling shall also include fate transport modeling with SESOIL as a preferred model.*

*2. DEQ Guidelines for Developing Health-based Cleanup Goals Using Risk-based Assessment at a Hazardous Waste Site Facility for Restricted Industrial Use, June 1995.*

*3. DEQ's Draft Guidance Manual for Closure Plans and Post Closure Plans for Hazardous Waste Management Facilities, dated September 28, 2001.*

*In accordance with DEQ closure guidance, if the site cannot be closed for residential use, then the option to pursue restricted closure (commercial/industrial) may also be exercised."*

With this submittal, we are providing a revised Attachment II.F. As requested, we have incorporated the boiler plate language into Section II.F.4a of this revision. Please note that slight rearrangement of the language was made to incorporate it into the discussions provided in this section. Despite these modifications, we believe the new language to contain all requirements specified above.

*1.8 The submitted permit application has removed the phrase "stored and treated" and replaced it with "managed" in various parts of the application. The language should not be changed to reflect the proper regulatory term for the permitted activity.*

The revised Attachment II.F included with this submittal has been modified to reference storage and treatment of hazardous waste in place of management of hazardous waste where appropriate.

*1.9 There are various references to ATK in the permit. While ATK was the contractor who submitted the application at the time the references need to be changed to the current operating contractor, BAE, in the revised version of the permit application.*

We are including with this submittal revisions to Attachment II.B, II.H, and III.2.A to rectify this deficiency. Absent these sections and those submitted previously, we did not identify any other locations that contain a reference to ATK.

*1.10 The phrase "Standard Operating Procedure (SOP)" and any supplemental documents which reference the SOP in the submitted permit application have been removed. The references to the SOP and associated attachments or appendices shall be included in the revised permit application. [...After discussion with the facility the DEQ will accept copies of the current SOP with the revised permit application for review but not inclusion into the permit document itself as long as the SOPs are deemed adequate by DEQ." (Clarification shown in brackets provided by DEQ in January 13, 2015, response).*

The revised Attachment II.H included with this submittal has been modified to incorporate the information from removed SOPs into the document. The flood response procedures are properly outlined within the document. No SOP references are necessary.

*2.12 Attachment II.B, Section II.B.1, Page II.B-1, Waste Characteristics, RAAP has included language in the first paragraph of the waste characteristics section which mentions waste generated by tenant organizations at the facility and at the NRU which is described as being nearby. As stated previously in Comment 3, a declaration of waste composition and amount/rate to be treated, hazardous waste listing/characteristics, and potential impact on the hazardous waste multi-pathway risk assessment are required for the proposed NRU and tenant organizations which are served by the incinerator.*

Per our discussions with DEQ, the modified Attachment II.B included with this submittal no longer references any NRU wastes. RFAAP has decided that incorporating the NRU wastes into their daily feed mix is not necessary. The addition

of NRU wastes was a concept being explored by the previous operating contractor and is of no interest to BAE Systems, Ordnance Systems, Inc. at this time.

*2.18 Attachment II.B, Waste and Residue Sampling, The following are the specific language in different sections which define sampling frequency for waste analysis. With the exception of the frequency of sampling for incinerator ash in II.B.4b all are technically adequate. Please revise the language of II.B.4b accordingly:...*

*II.B.4b, Residue Sampling - "Composite samples of the incinerator residues are collected periodically as required to characterize the wastes for offsite disposal." The sampling frequency is not technically adequate to ensure compliance with the permit limitations. A regular testing frequency based on time or amount of incinerator ash residue collected should be established.*

RFAAP has modified Section II.B.4b in the revised Attachment II.B included with this submittal to indicate that the incinerator ash will be sampled and analyzed once per shipment.

*2.19 Attachment II.B, Waste Accumulation and Handling, Page II.B-6, RAAP will need to clarify whether the proposed NRU qualifies as an off-site generator and therefore will need to generate their own waste analysis plan and comply with that to demonstrate compliance with the waste sampling and analysis requirements for the Part B renewal permit.*

Per our discussions with DEQ, the modified Attachment II.B included with this submittal no longer references any NRU wastes. RFAAP has decided that incorporating the NRU wastes into their daily feed mix is not necessary. The addition of NRU wastes was a concept being explored by the previous operating contractor and is of no interest to BAE Systems, Ordnance Systems, Inc. at this time.

*2.20 Attachment II.B, Waste Analysis Requirements, Page II.B-8, The test methods and procedures for waste incompatibility need to be clarified further than the current description which follows:*

*"The compatibility testing is performed utilizing a multi-test apparatus methodology, which, when completed, provides the data necessary to determine the compatibility of the waste groups."*

*The specific testing methodology needs to be cited, or if a comparable facility method is to be used, and the actual specific volume of gas generated during the described testing method for each waste group needs to be identified.*

A reference to and description of the Department of Defense procedures that are used to establish compatibility has been added to Section II.B.5 of the revised Attachment II.B included with this submittal. Information on the volume of gas deemed "incompatible" has been provided as requested. As discussed previously with DEQ, the wastes themselves are not tested or compatibility. The compatibility testing is performed on the propellants and raw ingredients. As the wastes are simply wasted propellants or intermediates, determining the compatibility of the products and intermediates is equivalent to determining the compatibility of the wastes.

*2.21 Attachment II.B, Sections II.B.5, Page II.B-8 Waste Analysis Requirements, The following are a list of the test methods for the hazardous waste to be incinerated along with the resulting residue and corresponding sections in which they can be found:*

*II.B.5, Waste Analysis Requirements, Last Paragraph - Compatibility testing for waste streams, a reference to actual test procedure being performed should be included if there is a standard established for it...*

A reference to and description of the Department of Defense procedures that are used to establish compatibility has been added to Section II.B.5 of the revised Attachment II.B included with this submittal. As discussed previously with DEQ, the wastes themselves are not tested or compatibility. The compatibility testing is performed on the propellants and raw ingredients. As the wastes are simply wasted propellants or intermediates, determining the compatibility of the products and intermediates is equivalent to determining the compatibility of the wastes.

*2.30 Attachment II.E, Section II.E.2b.ii.2, Purpose, Page II.E-6, References to the grind house slurry tanks shall include "hazardous waste" in their descriptions.*

We have made revisions to the revised Attachment II.E included with this submittal to address this NOD. Please note that other comments related to Attachment II.E that are due with the extended Tier 2 deadline of November 16, 2015, will result in substantial revisions to this attachment. Therefore, any revisions made to this attachment to fulfill this submittal are considered intermediate and temporary. The revised Attachment II.E that will be included with the November 2015 submittal will provide final resolution of this NOD.

*2.31 Attachment II.E, Section II.E.2.c.i, Composition of Waste, Page II.E-8, The submitted language has struck out the last sentence of the first paragraph of the section, which describes the 19 waste streams. As noted in the previous comments, the 19 waste streams are to be included in the revised permit application. The revised language shall be as follows:*

*"These wastes may be hazardous due to the ignitability, reactivity, or toxicity characteristics. These categories are segregated into 19 distinct waste groups, as listed in Table 2; all wastes that are stored, treated, and incinerated at the facility will fall into one of these groups."*

We have added the requested text to Section II.E.2.c.i of the revised Attachment II.E included with this submittal. Please note that other comments related to Attachment II.E that are due with the extended Tier 2 deadline of November 16, 2015, will result in substantial revisions to this attachment. Therefore, any revisions made to this attachment to fulfill this submittal are considered intermediate and temporary. The revised Attachment II.E that will be included with the November 2015 submittal will provide final resolution of this NOD.

*2.33 Attachment II.E, Section II.E.3, Emergency Coordinators, Table II.E-1, The table provided does not provide the name, telephone number and address of all emergency coordinator contacts as required by 40 CFR 264.52(d).*

During a January 2015 meeting with DEQ, RFAAP explained that security precautions prevent identification of home addresses and telephone numbers in the Permit. DEQ was satisfied with this explanation but requested that RFAAP modify the emergency contact list to reference the security procedures that are in place. RFAAP has modified the referenced table in the revised Attachment II.E that is included with this submittal. In this revision, we have specified that such information is withheld for security purposes but is readily available for review and inspection at the facility upon request.

Please note that other comments related to Attachment II.E that are due with the extended Tier 2 deadline of November 16, 2015, will result in substantial revisions to this attachment. Therefore, any revisions made to this attachment to fulfill this submittal are considered intermediate and temporary. The revised Attachment II.E that will be included with the November 2015 submittal will provide final resolution of this NOD.

*2.46 Attachment II.F, Sections II.F.2a.2.1 and II.F.2b.2.2., General RFAAP Setting and Incinerator Conditions, The submitted permit language has struck out two sections which detail the geologic conditions of the facility. This language is standard in all closure plans in RCRA permits and shall be included in the revised permit application/*

We recognize the DEQ is requesting addition of the geological condition descriptions to the Closure Plan under the authority granted them by the RCRA Omnibus provision of 40 CFR § 270.32(b)(2). While we disagree that this information is necessary to protect human health and the environment, we have revised Attachment II.F to include geological characterizations of the RFAAP and the incinerator area. Please reference the new Section II.F.3a provided in the revised Attachment II.F included with this submittal.

*2.49 Attachment II.F, Section II.F.5a, Pages II.F-15 through II.F-17, The revised language is not sufficient to demonstrate compliance with the requirements of 40 CFR 264.112(b)(3). The language removed from this section in the red-line/strikeout version of the permit application will be kept in the permit condition language. [The procedure described for removing water or free liquids from the slurry is also stated as a preparation for disposal in the open burning grounds or manifested for off-site disposal and not just off-site disposal only. RAAP may submit what a potential off-site facility's shipping requirements are at the time of closure but since the waste will most likely be treated in the facility's open burning grounds the procedural steps struck out shall be included in the revised language submitted to DEQ. Regarding the other struck out language if RAAP's intent was to eliminate duplicative language an explicit reference to the location of this language in other sections of the revised permit application must be included in order to be deemed acceptable by DEQ.] (Clarification shown in brackets provided by DEQ in January 13, 2015, response). [The DEQ will evaluate the revised language submitted to determine if it satisfies the comment made]. (Clarification shown in brackets provided by DEQ in March 20, 2015, response).*

As clarified by RFAAP in our response to the January 13, 2015, NOD letter, the presumption that any remaining waste will be disposed at the onsite open burning ground is likely incorrect, as the Nationwide trend is to reduce the amount of open burning of wastes in the future. Therefore, the more likely fate of any closure-related wastes will likely be an offsite treatment/disposal facility. Given that RFAAP cannot be certain of the specific requirements that the yet unidentified receiving facility will impose on the wastes, we cannot specify the waste preparation steps at this time. Therefore, in the revised Attachment II.F included with this submittal, we have added general language concerning the

preparation and packaging of wastes for disposal. Please reference the new language provided in the fourth paragraph of Section II.F.5a, beginning with "At the time that...".

*2.50 Attachment II.F, Sections II.F.5b, II.F.5c and II.F.5d, Pages II.F-17 through II.F-25, The revised permit language is not sufficient to demonstrate compliance with the standards in 40 CFR 264.112(b)(4). The language referencing the Waste Analysis Plan, analysis for toxicity and reactivity and disposed of off-site at a RCRA permitted facility, analysis using SW 846 methods and the change of the number of wash water samples from five to three shall remain in the permit. [The struck language from the permit application is necessary to make the determination as to whether the incinerator ash, scrubber sludge, and filter bags are hazardous or non-hazardous solid waste. While disposal in a Subtitle C permitted landfill may not be appropriate for all wastes generated from the thermal treatment process that determination will be made during closure using the appropriate testing methods described in this section, which have been struck out and will be included in the revised permit application...Please provide a technical explanation as to why the waste residues should not be tested in accordance with the waste streams included in the WAP. While the DEQ agrees that the sampling methods for material potentially contaminated with hazardous waste such as the filter bags and/or packing material may not be appropriate and testing methods specific to these materials should be performed, the incinerator ash and scrubber water have the potential to be classified as hazardous waste and treated as such. Additionally, please provide an explanation as to why the sampling would be performed at an off-site commercial laboratory when, given the nature of the facility, the DEQ would expect RAAP to have the necessary equipment on-site to be able to perform the laboratory testing themselves.] (Clarification shown in brackets provided by DEQ in January 13, 2015, in response to RFAAP's more specific citation of deficiencies with the referenced text).*

The revised Attachment II.F included with this submittal includes multiple revisions to address this series of comments. As clarified in RFAAP's December 2014 response, RFAAP made many of the modifications to the referenced sections to remove the presumption that the collected residues would be hazardous. In response to DEQ's request, we have added language to the revised Attachment II.F to clarify that all residues will be tested to determine whether they are hazardous and then will be disposed accordingly. Please reference the revised text in Sections II.F.5a and II.F.5b.

In addition, RFAAP further clarified that the WAP sampling and analytical procedures are specific to the hazardous wastes managed at the site and would not likely be appropriate for hazardous waste residues resulting from the closure operations. Furthermore, the onsite RFAAP laboratory is certified and setup for analysis of propellant waste samples not water and ash residue samples. Therefore, an offsite laboratory would most likely be employed. Recognizing that laboratory has not been identified, the actual analytical methods to be employed cannot be specifically stated at this time. However, a general reference to SW-846 methods as provided in Section II.F.5b is appropriate and has been included.

Finally, the number of rinse and wipe samples has been increased from three to five as requested to provide statistical significance to the results.

*2.52 Attachment II.F, Section II.F.5e, Site Restoration, Page II.F-25, The submitted language has struck out the following language, which shall be included in the revised application:*

*"Additional constituents may be added to the analyses at the time of closure, pending VDEQ approval."*

The revised Attachment II.F included with this submittal includes the requested language in Section II.F.5e.

*2.53 Attachment II.F, Section II.F.5e, Post-Closure Care And Groundwater Monitoring, Page II.F-26, The submitted language has struck out the following language, which shall be included in the revised application:*

*"Section 9.0 of this Closure Plan addresses the permit modification process in general that would be necessary to amend the Closure Plan in accordance with 40 CFR 264.112(c)." [Revising the intended language in of Section II.F.6 on page II.F-27 will satisfy the comment made.] (Clarification shown in brackets provided by DEQ in January 13, 2015, response).*

The revised Attachment II.F included with this submittal includes the requested language in Section II.F.6.

*2.54 Attachment II.F, Section II.F.5b, Decontamination Verification, The language in this section referring to sampling locations shall include the following: Oversize Propellant Hopper, Metal Containing Propellant Hopper, Bucket Conveyor and all Associated Piping.*

The revised Attachment II.F included with this submittal includes the requested language in Section II.F.5b.

2.55 Attachment II.G, Section II.G.4, Page II.G.3, The revised permit language is not sufficient to demonstrate controlled entry to the facility consistent with the requirements of 40 CFR 264.14(b)(2)(ii). The language which was struck out of the revised section of the permit application shall be included to ensure compliance with the standard. [DEQ has evaluated the language again at RAAP's request and again comments that the language as submitted is deficient and does not demonstrate compliance with the controlled entry requirements in 40 CFR 264.14(b)(2)(ii). In addition, the DEQ has found the language to be deficient in demonstrating compliance with 40 CFR 264.14(b)(2)(i) as well. For clarity DEQ is including the citations language as follows:

"§ 264.14 Security.

b) Unless the owner or operator has made a successful demonstration under paragraphs (a)(1) and (2) of this section, a facility must have:

(2)(i) An artificial or natural barrier (e.g., a fence in good repair or a fence combined with a cliff, which completely surrounds the active portion of the facility; and

(ii) A means to control entry, at all times, through the gates or other entrances to the active portion of the facility (e.g., an attendant, television monitors, locked entrance, or controlled roadway access to the facility.)"

To satisfy the comment RAAP will include the following language which was struck from the permit in the initial application. This language describes in detail the security fence and how access is controlled by on-site security guards:

"The outer perimeter of the installation is enclosed with a FE-1 five-strand barbed wire fence. Security personnel at installation entrances record the name and other pertinent data of each person not possessing a Radford Army Ammunition Plant personnel identification badge.

Seventy-two percent of Radford Army Ammunition Plant's acreage is enclosed in three limited areas. All propellant manufacturing, storage, testing, and support activities except administration are included in limited areas. There is a six-foot high cyclone fence (FE-6 or FE-7) with two feet of barbed wire on top that surrounds limited areas.

The six active entrances into the limited areas are controlled by armed Security Guards. Entering persons must first be authorized by the Plant Manager, Commander, or their designated representatives and then processed by the security personnel."

(Clarification shown in brackets provided by DEQ in March 20, 2015, response).

Recognizing the nature of activities at the RFAAP, there are concerns regarding extensive description of security measures, such as fence construction and number of gates and security posts, in publically available documents. Furthermore, it is important to note that the National Security picture is very different at this point in time than it was at the time the last permit application was prepared in the late 1990's.

The available information on security measures, facility protection, etc., is specified by the United States Army. In light of this, we reviewed the language proposed by DEQ in their March 2015 response with our command group. The U.S. Army reviewed the descriptions in the submitted plan and those requested by DEQ from an operations security (OPSEC) standpoint. In their review, the U.S. Army determine that details of specific security procedures, equipment (such as fencing), means to control entry, number of gates, and security guard force status (armed versus unarmed) cannot be included in the permit because of OPSEC concerns. Such details reveal critical information about the Radford Army Ammunition Plant that could be of intelligence use to terrorists or adversaries targeting the installation. Details, whether separately or collectively, that reveal critical information cannot be made available to the public through an open source document such as a permit because of the potential to compromise installation force protection. To prevent exploitation of critical information, permit language discussing security provisions should be restricted to general statements and not contain specific details.

As a result of this review, we are not revising the text from that provided with the original renewal application.

2.57 Attachment II.H, Section II.H.2, Page II.H-1, The submitted language needs to document the actual heights of units treating or storing hazardous waste at the facility. The following language which was struck out of the previous permit for the submitted application should be included:

"The 100-year flood elevation is 1700 ft. MSL at the incinerators. The lowest entry point is at Building 442 at 1703.83 ft. MSL. The incinerator kilns are above 1700 ft. MSL."

The revised Attachment II.H included with this submittal contains the struck language. The referenced equipment and structure elevations have been updated based upon a recent survey of the area and equipment.

*2.58 Attachment II.H, Sections II.H.3, II.H.4 and II.H.5, Pages II.H-1 through II.H-4, The permit language as written in Section II.H.3 for the flood proofing is not adequate to ensure washout of the hazardous waste containment areas will be prevented...The water level, described as 1695 ft at the New River Bridge, at which information will be collected and logged, in Section II.H.4, and at which the flood plan will be implemented, in Section II.H.5, is too close to the 100 year flood plain level of 1700 ft to ensure the flood plan procedures will have adequate time to be implemented. The permit language should be revised to lower the water level threshold to a level which allows the facility adequate time to implement the flood plan procedures, recommended as 1690 ft...[Per the conversation in the meeting with RAAP on December 10-11th regarding the NOD and specifically this comment RAAP will provide documentation proving the current flood plan measures have been adequate to prevent flooding of the unit. Once this documentation has been reviewed and deemed adequate to satisfy the concerns DEQ has this comment will be determined to be satisfied.] (Clarification shown in brackets provided by DEQ in January 13, 2015, response).*

In the prior permit, DEQ agreed that the notification level of 1,697 feet at the River Bridge (3-feet below the 100-year flood level) provided sufficient time for activation of the flood protection plan and provided ample protection of human health and the environment. As discussed with DEQ during our meetings in December 2014, we are providing documentation that this action level has proven protective of the subject hazardous waste management unit and has prevented the wash-out of hazardous waste due to a 100-year flood. This documentation along with a written summary of some of the historical flooding events is provided as Attachment 4 to this letter. Please note that we do not intend this information to be incorporated to the Permit but are providing it for DEQ's review in assessment of the flood plan provided in Attachment II.H.

*2.64 Attachment III.2.A, Table III.A-1, Pages III.2.A-8 through III.2.A-18, Table III.A-1 as submitted needs to be revised to include the frequency of monitoring for equipment which does not have a monitoring frequency included in the table.*

In their March 2015, response, RFAAP clarified that those items not defined were those not subject to any set interval under RCRA Subpart BB. As specified on page III.A-4, the attachment specifies that RCRA only requires monitoring of these items if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method. To clarify this in the referenced table, RFAAP has added a footnote with the regulatory citation and monitoring requirement to the revised Attachment III.2.A included with this submittal.

*2.68 Attachment III.2.A, Section III.2.A.1, Pages III.2.A-1 through III.2.A-9, The revised permit application language has removed the description of the incinerator equipment and operations. While the permit states that compliance with 40 CFR Part 63 Subpart EEE The Hazardous Waste Combustor MACT, demonstrates compliance with the RCRA requirements for incinerators a change in the design of the incinerator may cause the emissions from the stack to exceed levels established by the risk assessment and therefore a permit modification shall be required if a physical change in the design of the incinerators is implemented. The language shall remain in the permit. [RAAP will submit a description of equivalent level of detail to the language currently included in the permit or the comment will remain unsatisfied...]. (Clarification shown in brackets provided by DEQ in January 13, 2015, response).*

In their March 2015, response, RFAAP reviewed discussions held with DEQ on this issues. In these discussions, DEQ concurred that the 20 pages of equipment descriptions provided in the permit was likely not necessary but requested more than what was provided in the renewal application. RFAAP agreed to provide a write-up with an increased level of detail from that previously provided. The revised Attachment III.2.A provided with this submittal includes the revised description of the incinerator and associated equipment.

## Attachment 2

### Summary of Specific NOD Discussions and Action Items (NOD table)

The NODs presented in the following table were provided to RFAAP in March 2015 after several meetings between DEQ and RFAAP concerning DEQ's initial NODs on the EWI RCRA Permit Application. These NODs were presented in a letter on the EWI Permit Application that was provided on March 20, 2015.

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
1.1	DEQ requests that RFAAP perform a new risk assessment for the incinerators. The extent of revisions to the prior assessment should be determined from DEQ guidance.	<p>RFAAP does not believe that new emissions sampling is necessary, as no changes have been made to the waste groups incinerated and no changes have been made to the incinerator design. RFAAP believes that new air modeling may be warranted given the availability of new weather data adjacent to the facility.</p> <p>DEQ agreed on performing new air modeling. They expressed two concerns regarding stack testing: 1) emissions analyses were not conducted by a VELAP lab (as VELAP did not exist at the time), and 2) improved detection limits could result in the inclusion of compounds that were previously excluded because they were non-detect. In a subsequent review, DEQ indicated the old risk burn data would be sufficient provided that detection limits are acceptable and quality criteria can be satisfied.</p> <p>On the issue of detection limits, RFAAP indicated that little data is available to compare because risk-assessment like testing is generally not being performed anymore. However, RFAAP will compare detection limits in the risk burn for dioxins/furans and metals to those achieved in the latest CPT.</p>	RFAAP will provide a comparison between detection limits from the risk burn to those from the latest CPT.		✓	Submitted 09/16/2015
			DEQ to review the detection limit study and provide final direction on stack testing requirements.	✓		To be determined based on DEQ resource availability
			RFAAP will prepare a risk assessment protocol pending final direction on stack testing requirements.		✓	To be determined based on DEQ response to detection limit study

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
1.2	DEQ requests that RFAAP submit a traffic flow diagram with the application as required by Part 270.	No current traffic diagram was available for the site. RFAAP is creating one. The map will be centered around the incinerator area. It will not be a traffic map for the entire RFAAP property.  DEQ agreed that this was acceptable.	RFAAP to create the traffic map and submit it for DEQ review.		✓	Submitted 06/17/2015
1.3	DEQ requests that a written tank assessment be included for the slurry tanks.	RFAAP has been unable to locate the prior assessment and is scheduling a new assessment to be performed. Discussions were had on the need for future assessments (are these required once per Permit term, etc.?) Under process safety management (PSM), the tanks will likely be inspected every three years.	RFAAP will complete an initial inspection for the permit application and will repeat this inspection every three years in conjunction with the PSM inspections.		✓	Submitted 06/17/2015
1.4	DEQ requests that the closure plan include language outlining the process required for extending the closure process.	RFAAP expressed concern over including direct regulatory language in the Permit as opposed to simple regulatory references. (This makes the Permit a static document rather than one that evolves with regulatory changes). DEQ feels that the Permit should be static, reflecting the status of the regulations at the time of issuance.	RFAAP will modify the closure plan to include the requested language.		✓	Submitted 09/16/2015
1.5	DEQ requests that material be added to the closure plan that describes sampling of secondary containment structures.	RFAAP directed DEQ to the language provided under Section II.F.5c of the plan on Page II.F-24.  DEQ concurred that this language is sufficient.	None required.	--	--	--
1.6	DEQ requests that the closure plan include language outlining closure risk assessment procedures and references.	RFAAP expressed concern over including direct regulatory language in the Permit as opposed to simple regulatory references. (This makes the Permit a static document rather than one that evolves with regulatory changes). DEQ feels that the Permit should be static, reflecting the status of the regulations at the time of issuance.	RFAAP will modify the closure plan to include the requested language.		✓	Submitted 09/16/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
1.7	DEQ does not concur with the modifications made by RFAAP to Module I, as the components of this module are boilerplate language for all permits.	RFAAP expressed concern over missing regulatory citations and site-specific considerations. Specifically, - Adding regulatory citations removes ambiguity with compliance requirements - Adding language to allow site-specific sampling methods is necessary as our streams require unique handling.  DEQ understands these concerns and recommended that a section be added to the end of Module I that adds the non-boilerplate information.	RFAAP will prepare a modified Module I that contains a list of regulatory references at the end of the boiler plate section, as well as any other clarifications they feel are necessary.		✓	Submitted 08/17/2015
1.8	DEQ expressed concern over the change in the application from “stored and treated” when describing hazardous waste operation to “managed”.	In general, RFAAP understands this comment. However, we need to review each instance to make sure that none of the changes were made to correct erroneous descriptions.	RFAAP will review all changes to see if any require further discussion. Pending none, then RFAAP is okay with implementation.		✓	Submitted 09/16/2015
1.9	DEQ noted that the application still references ATK in several places.	RFAAP will review the permit application and remove any remaining references to ATK.	RFAAP will make the requested revisions.		✓	Submitted 08/17/2015 and 09/16/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
1.10	DEQ did not concur with the removal of SOPs or their references from the permit application.	<p>RFAAP believes that inclusion of the SOPs in the Permit either by attachment or reference unnecessarily increases the compliance burden. (Significant discussion over SOP steps that do not relate to environmental compliance and making them RCRA requirements by inclusion in the Permit). Export control and confidentiality requirements were also discussed at length. In further discussions concerning rules and regulations addressing confidential business information and International Traffic in Arms Regulations (ITAR), RFAAP expressed concern over DEQ management and compliance with the ITAR requirements. (Anything that is subject to ITAR has to be protected from non-US citizen review, etc.).</p> <p>In light of these considerations and discussions on how the SOPS were used (or rather not used) to ensure environmental compliance, DEQ concurred that their inclusion in the permit either by reference or actual inclusion was not necessary. (This is further supported 40 CFR Part 264 and 270, which do not require inclusion of the SOPs). SOPs should be maintained onsite for inspection and review; however, no references to them need to be included in the Permit.</p>	None required.	--	--	--

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
1.11	DEQ did not concur with the removal of inspection checklists or logs from the permit application.	<p>RFAAP believes that inclusion of the daily logs or inspection sheets in the Permit unnecessarily increases the compliance burden. As neither 40 CFR Part 264 or 270 require inclusion of the actual inspection forms, RFAAP believes that descriptions of the forms and checklists should be appropriate.</p> <p>DEQ concurred that the logs and checklists themselves do not need to be included but a description of the inspection schedule should be. DEQ clarified that by not including the checklists, RFAAP is assuming the burden of ensuring that their checklists match the inspection schedule provided in the Permit.</p>	RFAAP will provide examples of their current checklists for DEQ to compare to the inspection schedule. In the future, if any significant changes are made to an inspection sheet, RFAAP will provide an example to DEQ to confirm that it covers all required information. However, all parties agreed that neither these example checklists nor direct references to form numbers, etc., will be included in the Permit.		✓	Submitted 06/17/2015
2.1	An incorrect citation was included in the Permit application.	None	The citation will be corrected		✓	Submitted 08/17/2015
2.2	RFAAP removed required records from the record retention requirements in Module II. These record requirements should be reinstated.	The language in question was inadvertently moved from the five-year retention section during the markup of the Permit.	RFAAP will return the language in question to the five-year retention section.		✓	Submitted 08/17/2015
2.3	DEQ requests that boilerplate language regarding new tank additions be included in the Permit application.	<p>RFAAP contends that this information is not appropriate as they have no new tanks at the facility. The requested language should be added if and when RFAAP submits a Permit modification request to add new tanks.</p> <p>DEQ indicated that the language has to be included in the Permit, as it is boilerplate language and standard in all VDEQ permits.</p>	RFAAP to add the requested language to the permit application.		✓	Submitted 08/17/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.4	DEQ requests that language concerning the proximity of RFAAP to nearby communities be returned to the Permit application.	<p>RFAAP does not believe this specific level of detail is necessary to satisfy the facility location provision of 40 CFR § 270(b)(11) but noted that this information is shown on the topographic maps included to satisfy 40 CFR § 270(b)(19). Furthermore, considering the continuously growing extents of our surrounding community, any such information could easily become inaccurate and outdated.</p> <p>DEQ contends that this information is appropriate to describe the physical location of the facility to nearby communities. The topographic map location data is not sufficient.</p>	RFAAP will add an updated version of this text to the application.		✓	Submitted 08/17/2015
2.5	DEQ questioned the removal of two buildings from the treatment and storage area description provided in the application.	<p>RFAAP clarified that Building 431 is the old incinerator control room. The building is used as a storage shed to store miscellaneous equipment and supplies. It is not part of the incineration process. Building 447 is the current incinerator control room.</p> <p>After discussion, DEQ concurred that Building 431 could be removed from the description. Building 447 should remain.</p>	RFAAP will modify the text to include Building 447 and exclude building 431.		✓	Submitted 08/17/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.6	DEQ requests that struck language concerning otherwise applicable RCRA and HWC MACT requirements be added to the application.	<p>RFAAP expressed concern over including a general reference to a broad regulatory requirement instead of specific citations of regulatory requirements (and the ambiguity that could create in the duty to comply).</p> <p>DEQ explained that the Permit is not inclusive of all RCRA requirements and despite the broad nature of the reference, RFAAP is obligated to fulfill all requirements, regardless of whether they are specifically detailed in the Permit.</p>	RFAAP will add the requested language.		✓	Submitted 08/17/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.7 (NRU)	DEQ expressed concern over the management of NRU wastes and proper handling of these under the RCRA program.	<p>RFAAP explained that management of these materials falls under the military munitions rule (MMR). Specifically, RFAAP contends that under the MMR, the material is not a waste until it is removed from storage with the intent to destroy. Specific reference was provided to both regulatory language and preamble language.</p> <p>DEQ disagrees with this interpretation and believes that the materials should be handled as off-site waste and their management at the RFAAP constitutes the management of off-site wastes.</p> <p>Upon further internal investigation, RFAAP determined that the primary purpose of NRU transfers would occur only in emergencies involving military munitions or explosives. We believe these situations can be handled separately under the provisions of 40 CFR §§ 264.204 and 270.61 . Therefore, any necessity for including NRU wastes or reference to them in the RCRA permit application for the incinerators is removed. As such, all NRU references will be removed.</p>	RFAAP will remove all references to handling NRU material from the EWI permit application.		✓	Submitted 08/17/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.7 (Tenants)	DEQ expressed concern over the addition of tenant waste management to the Permit.	<p>RFAAP explained that the tenant waste issue was handled during the last Permit modification. DEQ was not looking at that version of the Permit when reviewing the permit application, as it was made after the application was submitted. In light of this, RFAAP does not believe any further information is necessary to facilitate tenant waste.</p> <p>Note on required notifications. Per the referenced Class 1 permit modification in August 2012, RFAAP must notify DEQ when they intend to incinerate tenant wastes. All existing tenant wastes at the time of the modification were henceforth approved. After August 2012, any new tenant wastes must be approved on a case by case basis prior to incinerating them for the first time. (Note this modification applies only to wastes that can be classified into one of the existing waste groups in RFAAP's permit. Any wastes that do not meet this classification would require a permit modification before they could be incinerated).</p>	<p>DEQ will modify the Permit language to be consistent with the latest modification (and allow tenant waste management), changing the language from:</p> <p><i>“Only wastes generated at RFAAP by the permittees may be stored or treated at the permitted treatment and storage areas”</i></p> <p>to</p> <p><i>“Only wastes generated at RFAAP may be stored or treated at the permitted treatment and storage areas.”</i></p>	✓		To be determined based on DEQ resource availability
2.8	DEQ requested that the struck Auer land use analysis be included in the revised application.	RFAAP does not believe that this type of analysis (or level of detail) is necessary to satisfy the requirements of 40 CFR § 270(b)(19). DEQ concurs that a specific Auer land use analysis is not required but contends that a textual description of land use is required.	RFAAP will add a discussion to the permit application that provides a textual description of the information displayed in Figure II.A-4.		✓	Submitted 08/17/2015
2.9 2.10	DEQ expressed several concerns regarding the topographic map submitted with the permit application.	RFAAP provided explanation for the maps that were provided and concurred that a wind rose was absent from the map as indicated.	RFAAP will add a windrose to the topographic map.		✓	Submitted 06/17/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.11	DEQ requested that a higher resolution flood map be provided with the application.	RFAAP explained that the floodplain boundaries provided are those specified by FEMA for the flood rate insurance map for the area. More "sharply" clarified boundaries for this data are not available.  DEQ agreed this data was acceptable.	None.	--	--	--
2.12 2.13	DEQ requested further information to facilitate management of NRU and tenant waste.	See prior discussions on NRU and tenants waste management provided with NOD 2.7.	See action items provided with NOD 2.7.		✓	Submitted 09/16/2015
2.14	DEQ requested that further information be included on characterization of the wastes (for risk assessment purposes).	RFAAP explained that the information provided in Section II.B.2 and Table II.B-1 is sufficient to properly classify the wastes for RCRA. Given that no constituent feed rate limits for metals, chlorine, ash, etc., remain under the RCRA permit, no further characterization of the wastes should be required for management under this Permit.  DEQ indicated that this information may be required depending on the results of the risk assessment. (For example, if feed rate limits are required for a constituent, information on that constituent will need to be included in the description).  In discussion, RFAAP and DEQ agreed that the need for further detail should be tabled pending the results of the risk assessment.	None at this time. Issue will be revisited following completion of the risk assessment.	--	--	--

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NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.15	DEQ requested that further information be included on the previously referenced "sampling plan."	<p>RFAAP explained that the referenced "sampling plan" was never developed outside the context of the Permit or the standard operating procedures as a standalone document. Therefore, they removed the misleading reference and added language to describe the sampling that is performed.</p> <p>DEQ agreed that this was acceptable.</p>	None required.	--	--	--
2.16	DEQ requested that information on the higher heating value and viscosity of the wastes be added to the waste characterizations.	<p>RFAAP explained that the parameters of higher heating value and viscosity are not appropriate indicators of combustion for the wastes that they incinerate. RFAAP's wastes are subautogenous in that they do not support their own combustion. All of the "heat" for the incineration operations is provided and maintained by the natural gas burners. The minimum temperature limits in MACT assure adequate combustion. The viscosity of the waste is more relevant to liquid wastes that are incinerated through waste nozzles located in burners themselves. The RFAAP wastes do not enter the combustion chamber through the burner. They enter the combustion chamber on the opposite side of the front face of the burner and are fired through an externally atomized nozzle.</p> <p>Given these explanations, DEQ indicated that the information was not required but did request some discussion on this in the NOD response letter.</p>	None required. The information clarified in RFAAP's response is sufficient.	--	--	--

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NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.17	This NOD clarified the methods used for waste analysis as understood by DEQ.	Information stated is correct. There is no standard established for compatibility testing, and material compatibility is established by the Department of Defense during product military standard development.	RFAAP to modify the procedural descriptions to reflect issues on compatibility testing identified in NOD 2.20.	--	✓	Submitted 09/16/2015
2.18(a)	This NOD clarified the waste sampling methodology as understood by DEQ.	The referenced procedure has been revised to include more frequent sampling.	RFAAP will update the language in the application to match the current procedure.		✓	Submitted 09/16/2015
2.18(b)	These NODs clarified the method used for waste compatibility assessments.	Information stated is correct. There is no standard established for compatibility testing, and material compatibility is established by the Department of Defense (DOD) during product military standard development.	RFAAP to modify the procedural descriptions to reflect issues on compatibility testing identified in NOD 2.20.	--	✓	Submitted 09/16/2015
2.18(c)		DEQ expressed concern over this statement and the apparent contradiction to it offered elsewhere in the permit application (See II.B.5 regarding initial compatibility testing).  The referenced language is perhaps unclear as written. The materials used for generation of the products and hence waste are tested for compatibility by the DOD prior to initiation of the production and, consequently, prior to the initial generation of the waste.	RFAAP to further modify the language provided I Section II.B.5 of the WAP to clarify the initial compatibility evaluation is done by the DOD on a product basis. Actual waste compatibility is not evaluated by DOD.			Submitted 09/16/2015
2.18(d)	This NOD clarified the process for the annual waste determination as understood by DEQ.	Information stated is correct.	None required.	--	--	--
2.19	DEQ requested further information to facilitate management of NRU waste.	See prior discussions regarding the NRU under NOD 2.7.	See action items provided with NOD 2.7.	--	✓	Submitted 09/16/2015

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NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.20	DEQ requested further information on the methods used for compatibility testing of wastes.	<p>RFAAP explained that all wastes are inherently compatible because they primarily consist of the same ingredients. Any compatibility concerns between products or process materials are addressed by the Department of Defense during development of the military specifications for the products that are made at the RFAAP. Furthermore, RFAAP clarified that the materials in the slurry tanks don't truly mix together. Instead, the propellant is ground into 1/4-inch chunks that are then suspended in water. (The slurry is not a solution or even a dispersion, it is a mixture of chunks of propellant in water). Therefore, concerns with mixing of ingredients, as one may have when mixing liquid organic waste streams, is not a concern.</p> <p>With this explanation, DEQ was satisfied with the issue of waste compatibility. No additional testing is required.</p>	RFAAP will add some discussion on these issues into the compatibility testing section of the waste analysis plan.		✓	Submitted 09/16/2015
2.21	DEQ requested inclusion of inspection checklists in the permit application.	See prior discussions regarding inspection sheets under NOD 1.11.	See action items provided with NOD 1.11.		✓	Submitted 06/17/2015
2.22	DEQ requested information on inspection of Subpart BB and Subpart CC equipment.	This equipment is included on the inspection schedule in Table II.C-1 at a daily frequency.	None required.	--	--	--
2.23	DEQ requested that struck information concerning inspection records be reinstated.	The struck language was moved to earlier in the referenced paragraph to add clarity to the requirement.	None required.	--	--	--

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.24(a)	DEQ requested that struck information concerning PPE requirements be reinstated.	RFAAP explained that PPE requirements were removed from this table as they vary depending on the situation and wastes being managed. DEQ requests that some information on PPE still be included. RFAAP suggested footnoting the table to indicate that PPE specified would vary depending upon the situation.	RFAAP to modify table to include examples of PPE (and specify that they are in fact examples and not applicable to all situations).		✓	Submitted 08/17/2015
2.24(b)	DEQ indicated that all persons should have a means for summoning outside assistance in the event of an emergency.	<p>RFAAP explained that procedures for summoning outside assistance are closely managed at the facility through the fire department. For example, any outside assistance that is provided must be escorted to the location at which it is needed and must be briefed on the hazards at hand in that location. (Ambulances or fire officials cannot simply come through the gate and respond to an incident). Therefore, outside assistance and the summoning and management of it must be closely regulated by the facility. All operators carry cellular phones or radios that can contact the control room and the fire department. The fire department will then contact outside aide if necessary.</p> <p>DEQ, after reviewing the explanation on outside service management, was satisfied with the resources and procedures available.</p> <p>RFAAP shall add language to the referenced section of the permit that more closely explains this process.</p>	RFAAP to modify the description on outside assistance to describe how it is summoned and managed.		✓	Submitted 08/17/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.25	DEQ requested that struck information concerning names of responsible individuals be reinstated.	RFAAP explained that names of individuals are withheld for security reasons but are available to inspectors upon request. DEQ requested that a statement to this effect be added to the permit application.	RFAAP to add a statement concerning personnel security requirements to the permit application.		✓	Submitted 08/17/2015
2.26	DEQ requested that "training coordinator" be renamed to "training director."	RFAAP explained that the same terminology was used between all of the facility's RCRA permits and they wished to maintain this consistency.	None required. The current terminology is acceptable.	--	--	--
2.27	DEQ requested that information concerning six specific training requirements be added to the training plan.	RFAAP explained that this training plan was written to be consistent with the training plan in the other RCRA permits for the facility. DEQ understood the need for consistency but feels that these specific elements should be more clearly addressed.	RFAAP will add a bullet list to the training plan clarifying that these elements are discussed and providing a brief description of how they are addressed.		✓	Submitted 08/17/2015
2.28	DEQ requested that some of the language struck from the training plan be reinstated.	RFAAP clarified that the desired language is still in the permit but has been shifted to another location.	RFAAP to provide direction to DEQ on where they can find the missing language.		✓	Submitted 08/17/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.29	DEQ requested that information on the Spill Control and Countermeasures Plan be reinstated.	<p>RFAAP explained their concerns about incorporating non-RCRA required plans into the Contingency Plan. As a result, RFAAP removed all of the referenced and included non-RCRA plans from the Contingency Plan and added detail as necessary to supplement that removal.</p> <p>DEQ requested submittal of the omitted SPCC plan for review against the Contingency Plan provided in the permit application.</p> <p>RFAAP respectfully requests that DEQ assess the Contingency Plan against the RCRA requirements for Contingency Plans to determine if it is complete and satisfies all RCRA requirements. RFAAP is concerned with evaluating the adequacy and completeness of the Contingency Plan against SPCC documents and/or requirements.</p>	<p>DEQ conducted a review of the Contingency Plan against the RCRA Contingency Plan requirements instead of SPCC contents and/or requirements. Comments resulting from this review were provided by DEQ on August 7, 2015. These comments were issued as Attachment A to the initial NOD correspondence.</p> <p>See individual comments A1.1 through A2.16 for discussion and action items.</p>	--	--	--

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NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.30	DEQ requested that the slurry tanks be described as hazardous waste storage tanks.	<p>RFAAP noted that both hazardous and non-hazardous wastes are handled in the slurry tanks.</p> <p>DEQ expressed concern over the management of non-hazardous wastes in the slurry tanks and their characterization relative to the risk assessment and WAP.</p> <p>RFAAP further explained that all wastes, regardless of whether they are hazardous or non-hazardous, are subject to the same waste analysis requirements provided for compliance with the RCRA permit (risk assessment) and the HWC NESHAP compliance program. Both the hazardous and non-hazardous waste streams are described and characterized in the WAP. No wastes (hazardous or non-hazardous) other than those described in the WAP are managed in the tanks.</p>	<p>RFAAP will correct the description of the tanks to reference both hazardous and non-hazardous tanks.</p> <p>Pending further DEQ response on the management of non-hazardous wastes, no further action is required to satisfy DEQ concerns.</p>		✓	Submitted 9/16/2015 with an intermediate revision to Attachment II.E
2.31	DEQ requested that struck information on the managed wastes be reinstated.	RFAAP recognizes the need for the waste descriptions in the Contingency Plan given the standalone nature of the plan. We will add a description of the waste to this Plan.	RFAAP will add a description of the managed wastes to the Contingency Plan. This description will be consistent with the WAP.		✓	Submitted 9/16/2015 with an intermediate revision to Attachment II.E
2.32	DEQ requested clarification on the size of the slurry tanks (1,700 gallon or 1,900 gallon)	RFAAP clarified that the sizes of the tanks included in the original permit application were in error. If a search of the prior application is made, you can find references to both sizes. The correct volume is 1,900 gallons per tank.	None required.	--	--	--

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NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.33	DEQ requested that more detailed information on the emergency coordinators and the way in which they should be contacted be added to the contingency plan.	RFAAP provided an explanation of the way in which emergency coordinators are contacted. DEQ requested that this information (and reference to DUP-RQ call list if appropriate) be added to the permit application. RFAAP also explained the security precautions that prevent listing of home addresses and telephone numbers in the Permit.  DEQ was satisfied with this explanation.	RFAAP will make the necessary additions to the emergency coordinator contact list and add reference to the security procedures that are in place.		✓	Submitted 9/16/2015 with an intermediate revision to Attachment II.E
2.34(a)	DEQ requested that RFAAP establish a numerical threshold that would trigger implementation of the Contingency Plan.	RFAAP expressed concerns over incorporating non-RCRA based implementation and reporting requirements ( <i>e.g.</i> , CERCLA reporting levels) into the Contingency Plan.  DEQ explained that they needed some finite direction in the plan to provide the emergency coordinator on implementing the plan. However, a numerical limit was not necessarily required. Information on types of offsite impacts that should be considered when implementing the contingency plan would be sufficient.	RFAAP to modify the language concerning plan implementation to address the consideration of offsite impacts. If any of these triggers are satisfied, then the contingency plan should be implemented.		✓	60 days
2.34(b)	DEQ requested that struck language concerning EC implementation of the Contingency Plan be reinstated.	RFAAP explained that the referenced language was duplicative of language found at the beginning of this section and directed DEQ to the first paragraph in Section II.E.4, which contains the requested language.	None required.	--	--	--

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NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.35	DEQ requested justification for two conditions that were removed from the list of emergency shutdown triggers for the incinerators.	<p>RFAAP explained that the list in the existing permit was not correct and not protective of human health and the environment and detailed reasons why an emergency shutdown would not be desirable for the two struck conditions.</p> <p>DEQ expressed satisfaction with the technical justification provided and indicated they were okay with removing burner loss and interlock failure from the shutdown list.</p>	None required.	--	--	--
2.36	DEQ expressed concern over the removal of CERCLA-based reporting requirements from the Contingency Plan.	<p>See discussion under NOD 2.34(a).</p> <p>DEQ also commented that a Contingency Plan was required for the less than 90 day storage areas and questioned if one existed.</p>	<p>See follow-up items under NOD 2.34(a).</p> <p>RFAAP will review the requirements for less than 90 day storage areas and respond appropriately.</p>		✓	60 days

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.37	DEQ requested that struck language concerning emergencies at the open burning ground be reinstated.	<p>RFAAP expressed concern over including the OBG in this permit application, as there is a separate Permit covers operation of the OBG. In the OBG application, RFAAP is taking efforts to make sure that the emergency response and cleanup actions are similar and differ only when appropriate based on the technical and locational differences of the two areas. The incinerators and the OBG are not located physically near one another and a hazardous waste emergency at one unit will not impact the operations at the other unit. Therefore, inclusion of references in this plan to managing emergencies at the open burning ground is not appropriate.</p> <p>DEQ was satisfied with this explanation and no further action is required. DEQ understands that the plans for both permits will be similar.</p>	None required.	--	--	--
2.38	DEQ requested further information concerning recordkeeping for compatibility assessments.	See comments regarding compatibility testing under NOD 2.20.	See action items concerning compatibility testing under NOD 2.20.		✓	60 days
2.39(a)	DEQ requested that struck language concerning response procedures for leaking tanks be reinstated.	RFAAP directed DEQ to the requested language, which was included in the permit application but had been relocated for clarity. (Reference the second paragraph of Section II.E.6e(i)).	None required.	--	--	--

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.39(b)	DEQ requested that drawings on the tank system be included in the permit application.	RFAAP directed DEQ to drawings (PFDs and P&IDs) that were included in the permit application. (Reference drawings in Attachment III.1.A ).  DEQ requested either a color copy or a darker copy of these drawings. Absent that, no further information is required.	RFAAP to provide additional copies of the subject drawings.		✓	Submitted 06/17/2015
2.39(c)	DEQ requested that a struck reference to 40 CFR 264.196(e) be reinstated.	RFAAP requested that if specific language from the CFR will be incorporated to the Permit, the exclusions provided in that reference (40 CFR § 264.196(e)) also be included. DEQ was satisfied with this request.	RFAAP to modify the language as proposed.		✓	60 days
2.39(d)	DEQ requested that a struck reference to a general operating procedure (GOP) be reinstated.	See discussion under NOD 1.10 regarding inclusion of operating procedures in the permit application.	None required.	--	--	--
2.40	DEQ requested that copies of the mutual aid agreements be included in the Contingency Plan.	RFAAP expressed concern over including the actual mutual aid agreements in the Contingency Plan. DEQ agreed that these documents do not need to be incorporated into the application or the Permit. However, DEQ would like to see them to confirm that they are in fact in place.	RFAAP to provide copies of the mutual aid agreements for DEQ review. Both parties agreed that these agreements will not be included in the actual Permit or application.		✓	Submitted 06/17/2015
2.41	DEQ requested that struck language concerning internal reporting practices be reinstated.	RFAAP explained that the language stricken from the Permit application concerned internal and non-RCRA based reporting obligations. The language that remains is an exact mirror of the RCRA reporting requirements.  DEQ was satisfied with this response.	None required.	--	--	--

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.42	DEQ requested that struck language describing the wastes managed at the incinerator be reinstated.	RFAAP recognizes the need for the waste descriptions in the Contingency Plan given the standalone nature of the plan. We will add a description of the waste to this Plan.	RFAAP will add a description of the managed wastes to the Contingency Plan. This description will be consistent with the WAP.		✓	60 days
2.43	DEQ requested that RFAAP establish a numerical threshold that would trigger implementation of the Contingency Plan.	See prior discussion on this issue under NOD 2.34(a).	See action items concerning this issue under NOD 2.34(a).		✓	60 days
2.44	DEQ requested that struck references to EPA methods used for establishing the reactivity of materials be reinstated.	RFAAP discussed that their internal laboratory does not use SW-846 methods for reactivity testing. They use an internal procedure that is currently undergoing VELAP review. Therefore, the referenced text should refer to either the SW-846 procedures or the internal RFAAP procedures.  DEQ was satisfied with this discussion and requested the text be revised accordingly.	RFAAP will modify the text to reference both the SW-846 procedures and the internal procedures.		✓	60 days

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.45	DEQ requested that struck references to the RFAAP Disaster Control Plan and RFAAP Plant Protection Plan be reinstated.	<p>RFAAP explained their concerns about incorporating non-RCRA required plans into the Contingency Plan. Detail that was included in these plans concerning hazardous waste emergencies was added to the Contingency Plan in place of the struck references.</p> <p>DEQ requested submittal of the omitted RFAAP Disaster Control plan and Plant Protection plan for review against the Contingency Plan provided in the permit application.</p> <p>RFAAP respectfully requests that DEQ asses the Contingency Plan against the RCRA requirements for Contingency Plans to determine if it is complete and satisfies all RCRA requirements. RFAAP is concerned with evaluating the adequacy and completeness of the Contingency Plan against the RFAAP Disaster Control Plan or the RFAAP Plant Protection Plan. RFAAP's intent is to satisfy the requirements for preparedness and prevention with the Contingency Plan and only the Contingency Plan. If further information is required to satisfy these requirements, we request that DEQ specify the provision and requirement and we will supply language to fulfill it.</p>	<p>DEQ conducted a review of the Contingency Plan against the RCRA Contingency Plan requirements instead of SPCC contents and/or requirements. Comments resulting from this review were provided by DEQ on August 7, 2015. These comments were issued as Attachment A to the initial NOD correspondence.</p> <p>See individual comments A1.1 through A2.16 for discussion and action items.</p>	--	--	--
2.46	DEQ requested that struck information concerning geological conditions at the site be reinstated.	RFAAP could not locate a regulatory requirement for this information and requested that one be provided if available. DEQ cited RCRA Omnibus authority as the driver (it is included in all VA Contingency Plans).	RFAAP will provide a brief description of geologic conditions in the permit application.		✓	Submitted 09/16/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.47	DEQ expressed concern over the removal of a reference to a building placard that states the capacity of the Grinder Building.	<p>RFAAP explained that the referenced placard is required by the Department of Defense Explosive Safety Board (DDESB), not RCRA. By incorporating a reference to this placard in the Permit, it makes that placard a RCRA requirement. This seemed unnecessary for ensuring Permit compliance and unnecessarily increased the compliance burden.</p> <p>DEQ concurred with RFAAP's concerns and determined that the struck reference can be removed.</p>	None required.	--	--	--

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.48	DEQ requested that struck language concerning the presumed disposition of the wastes resulting from closure of the incinerator area be reinstated.	<p>RFAAP reconsidered the description provided and deemed it to be incorrect, explaining that the waste materials stored in the tanks and pumped through the slurry lines are actually not reactive at the levels typically used during normal operations. They are considered reactive out of an abundance of caution. (While the propellant itself is reactive, addition of water to it at the quantities used during normal operation makes it not reactive or at least, non-detonatable.) Therefore, it is entirely possible that significant portions of the waste handling equipment would not be hazardous.</p> <p>DEQ was satisfied with this technical justification and removal of the reference language but requested that RFAAP include language to state that the material will be presumed hazardous until proven otherwise.</p> <p>RFAAP believes that the requested language can be found in Section II.F.4b: "<i>A hazardous waste determination will need to be performed for each waste stream followed by the necessary waste characterization.</i>" The "waste streams" referred to in this context are the dismantled equipment described earlier in the same paragraph. RFAAP further indicates that any necessary decontamination will be performed in lieu of sending the waste offsite as a hazardous waste (reference paragraph 2 on Pg. II.F-13). A further, description of this characterization process can be found later in the Closure Plan on Pg. II.F-18.</p>	None required.	--	--	--

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.49	DEQ requested that struck language concerning the procedures to be used for packaging slurry waste after closure be reinstated.	<p>The referenced language described the steps necessary to "package" the waste for shipment and disposal at a third party facility. As of this time, the facility that will take the waste has not been identified, nor will it be identified until such time that unit closure is a reality. As a result, RFAAP cannot be certain of the specific requirements that the receiving facility will impose on the wastes that we ship them. Therefore, we removed this detail, as it may change with direction provided from the receiving facility or the US Army command group.</p> <p>DEQ was satisfied with this response but requested that some general language concerning packaging and shipping of closure wastes be added to the plan.</p>	RFAAP to add general information concerning waste packaging for shipment to the closure plan. Language should indicate that materials will be packed according to the requirements of the receiving facility.		✓	Submitted 09/16/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.50	DEQ requested that additional information be added to the closure plan to demonstrate compliance with the standards in 40 CFR 264.112(b)(4). The language referencing the Waste Analysis Plan, analysis for toxicity and reactivity and disposed of off-site at a RCRA permitted facility, analysis using SW 846 methods and the changing of the number of wash water samples from five to three shall remain in the permit.	<p>RFAAP requested more information on the specific deficiencies that DEQ identified, as the NOD was written more generally. DEQ agreed to provide this information.</p> <p>RFAAP explained that residue analysis will likely be looking for considerably lower concentrations of pollutants than does RFAAP's normal waste analysis. Therefore, the procedures used by the internal laboratory for waste analysis may not be appropriate. Furthermore, offsite analysis will likely be used instead of the internal laboratory due to turnaround times, capabilities, etc.</p> <p>DEQ did request that five rinse samples be collected instead of the three that were specified. RFAAP understands that this request is based on statistical significance and will make the requested modification.</p> <p>DEQ also requested that language concerning waste determinations be added to make it clear that hazardous waste will not be sent to a solid waste landfill. RFAAP will add this statement.</p>	<p>RFAAP to change rinsate samples to five and to add a sentence concerning waste determinations.</p> <p>RFAAP to add language indicating that a hazardous waste determination will be made at the time of closure.</p>		✓	Submitted 09/16/2015
2.51	DEQ requested that additional information be added to the closure plan to demonstrate compliance with the standards in 40 CFR 264.112(b)(4).	This was determined to be a duplicative comment.	No action required.	--	--	--
2.52	DEQ requested that struck language concerning closure analyses be reinstated.	None.	RFAAP will add the requested language to the Permit application.		✓	Submitted 09/16/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.53	DEQ requested that struck language concerning closure plan amendment be reinstated.	RFAAP believes that the NOD contains an erroneous reference and requested clarification before making the change.	RFAAP will revise the language as requested.		✓	Submitted 09/16/2015
2.54	DEQ requested that struck language concerning sampling locations be reinstated.	RFAAP concurs that these items will likely be contaminated and sampling of them is prudent.	RFAAP will add the requested language to the Permit application.		✓	Submitted 09/16/2015
2.55	DEQ requested that further detail be added regarding controlled entry procedures to satisfy 40 CFR 264.14(b)(2)(ii).	<p>RFAAP reviewed the text and could not identify any information that was missing per the regulatory citation. DEQ agreed to provide a secondary review of this section.</p> <p>In their subsequent review, DEQ determined that the descriptions of the fence that are provided in the revised application are not sufficient.</p> <p>RFAAP reviewed the text suggested by DEQ with our command group, who assessed it against OPSEC specifications. Our command group determined that any further level of specification would jeopardize facility security and present a National Security concern. As a result, no changes have been made to the text.</p>	No changes made. See detailed response.	✓		Submitted 09/16/2015
2.56	DEQ requested that struck language regarding the flood plain locations be reinstated.	RFAAP directed DEQ to the location of the requested information, which had been relocated.	None required.	--	--	--
2.57	DEQ requested that struck language concerning the elevations of various equipment foundations be reinstated.	RFAAP explained that they could not locate any drawings or data to substantiate the elevation data provided. Therefore, they removed the data. RFAAP is going to resurvey the units and obtain actual elevations. Those elevations will be referenced, as appropriate, in revised application.	RFAAP to add equipment elevations to the permit application after the equipment survey is complete.		✓	Submitted 09/16/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.58(a)	DEQ questioned the effectiveness of the flood protection procedures included in the application for preventing washout of the hazardous waste containment areas.	RFAAP indicated that the descriptions provided in the flood plan were not substantially changed from the prior version of the permit and requested more detail on specific inadequacies.  DEQ requested that RFAAP provide documentation to document that the current procedures have been effective at protecting human health and the environment.	RFAAP will provide demonstration that the current response procedures has proven protective multiple times in the past. This information will be provided outside the application itself.		✓	Submitted 09/16/2015
2.58(b)	DEQ questioned the effectiveness of the stated action level for implementation of the flood protection program and requested that the specified river level be lowered to provide more protection.	RFAAP questioned DEQ's desire to further restrict the action level for the flood protection plan, considering that the level provided in the plan (1,697 feet) has proven protective on multiple occasions in the past. Recognizing this, DEQ agreed that the current level could remain provided that RFAAP submits documentation demonstrating its effectiveness with the NOD response.	RFAAP will provide demonstration that the current action level of 1,697 feet has proven protective multiple times in the past. This information will be provided outside the application itself.		✓	Submitted 09/16/2015
2.59	DEQ requested that struck language concerning Procedure T testing be reinstated.	RFAAP questioned the need for including the verification report in the permit application if it is updated each year.  DEQ wishes to review this report each year after it is completed, however, they agreed that report does not need to be included in the Permit itself. This will relieve the necessity for modifying the permit annually to reflect the latest report. If the annual analysis ever determines that the building does not meet the Procedure T criteria, this topic will be revisited.	None required	--	--	--

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.60	DEQ requested that struck language concerning the control device study be reinstated.	RFAAP questioned the basis for the 3-year scope of work control device study for tank emission controls, arguing that the frequency was too excessive. DEQ asked if the current frequency is presenting a burden to the facility and explained that moving from once every three years to once per permit terms results in a frequency reduction of 2/3 from the prior Permit and seemed excessive. DEQ asked if RFAAP would be okay with a requirement of once every 5 years. RFAAP found this acceptable.	RFAAP will modify the language to reflect that the control device study will be updated once every five years. RFAAP is currently requesting quotes from qualified consultants to perform the study.		✓	Submitted 08/17/2015
2.61	DEQ requested that struck references to facility standard operating procedures be reinstated.	See discussion on including SOPs and their references under NOD 1.10.  Note that in their latest response, DEQ indicated that the SOPs should be submitted along with the permit application materials. As noted earlier in NOD 1.10, DEQ concluded that in light of the fact that SOPs are not used to ensure environmental compliance, their inclusion in the permit either by reference or actual inclusion was not necessary. Furthermore, their submittal with application materials was not necessary. (This is further supported 40 CFR Part 264 and 270, which do not require inclusion of the SOPs). SOPs should be maintained onsite for inspection and review; however, no references to them need to be included in the Permit.	None required.	--	--	--
2.62	DEQ requested that struck language concerning onsite wastes be reinstated.	Discussion on this issue concerned interpretation of the military munitions rule and the NRU wastes. See prior discussions on NRU waste management provided with NOD 2.7.	See action items specified for NOD 2.7.		✓	Submitted 08/17/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.63	DEQ indicated that the process knowledge used to determine the organic concentration in the wastes was not adequately documented.	RFAAP explained the methodology that was used and pointed DEQ to the description in the application.  DEQ was satisfied with this response.	None required.	--	--	--
2.64	DEQ requested that information on the frequency of LDAR monitoring be added to the permit application.	RFAAP explained that per RCRA Subpart BB requirements, this frequency is not set at any regular periodic interval, but instead, as discussed in the first paragraph on page III.A-4, is only required if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method.	RFAAP will add a footnote to the referenced table explaining this. No further change to frequency of monitoring is required.		✓	Submitted 09/16/2015
2.65	DEQ requested that struck language concerning the VHWMP requirements be reinstated.	RFAAP expressed concern over non-specific references to regulatory requirements. However RFAAP agreed to reinstate the requested language.	RFAAP will reinstate the referenced language.		✓	Submitted 08/17/2015

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.66	DEQ requested that the NFPA standard reference be updated to reflect the latest standard.	RFAAP expressed concern over holding already designed and installed tanks to a new design standard. (Basically, when a tank is installed, it is designed to the applicable standard at the time). DEQ questioned what the expected life of the current tanks is? RFAAP was not certain as the current tanks have demonstrated no sign of impending failure or mechanical stress. DEQ perceived the new NFPA standard to only be a minimal wording change from the prior standard and questioned whether the tanks would meet it regardless. They clarified that the old standard currently referenced in the RCRA provisions no longer exists.	RFAAP will review the new NFPA standard against the old NFPA standard and the materials handled in the tanks to determine if the tanks can meet (and have to meet) the new standard. If the new standard is just a minor wording change from the old standard and the evaluator deems this standard applicable to the materials managed in it, RFAAP will not oppose integrating it into the Permit.		✓	60 days
2.67	DEQ requested that struck language concerning the fraction of the slurry loop that is directed to each incinerator be reinstated.	RFAAP explained that the hazardous waste incinerators operate in compliance with a maximum waste feed rate limit under the HWC MACT program. The percentage of the main slurry line that is tapped off and sent to the incinerators is irrelevant provided that this maximum waste feed rate limit is satisfied.  DEQ was satisfied with this response.	None required.	--	--	--

**Table 1. Summary of Specific NOD Discussions and Action Items**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
2.68	DEQ requested that struck language on the design and construction of the incinerators be reinstated.	While RFAAP understands DEQ's concerns regarding design changes and permit modification, we do not concur that the level of detail previously included in this section previously is appropriate considering the switch to primary operation under HWC MACT. DEQ concurred that the 20 pages of equipment descriptions is likely not necessary but requested more than what was provided in the permit application. RFAAP will provide a revised description for DEQ's review. DEQ also requested a statement be added to the permit regarding notification procedures for changes in equipment design.	RFAAP will provide a modified process description for DEQ's review. The Appendix to 40 CFR § 270.42 will be reviewed to help establish the appropriate level of detail.		✓	Submitted 09/16/2015

The NODs presented in the following table were provided to RFAAP in August 2015 after DEQ's review of the June 2015 NOD submittal and DEQ's secondary review of the Contingency Plan versus the RCRA requirements. These NODs were presented as Attachment A in a letter on the EWI Permit Application that was provided on August 7, 2015.

**Table 2. Summary of Specific NOD Discussions and Action Items from Attachment A of EWI NODs Received August 2015**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
A.1.1	DEQ requested that RFAAP include regulatory citations along with each of the headings on in the Contingency Plan to make the document easier to review.	RFAAP will make the requested changes.	RFAAP will add the citations as requested.		✓	60 days
A.1.2	DEQ requested that RFAAP add a table to the contingency plan outlining the emergency response requirements for the incinerator.	RFAAP will review the example table and incorporate changes as requested.	RFAAP to add the table to the plan as requested.		✓	60 days
A.2.1	DEQ requested that a list of less than 90 day accumulation areas be added to the Contingency Plan.	RFAAP originally intended to address the less than 90 day requirements under a separate, independent Contingency Plan. However, RFAAP can amend the incinerator plan as requested.	RFAAP to add a list of less than 90 day areas as requested.		✓	60 days
A.2.2	DEQ requested that specific regulatory citations be added to Seciton II.E.1a of the Contingency Plan.	RFAAP can make the additions as requested.	RFAAP to add requested citations.		✓	60 days
A.2.3	DEQ requested that information be added to the plan that details practices for responding to container spills.	RFAAP clarified that no such language was included in the plan as RFAAP has no permitted container storage areas included in this Permit. However, after discussion with DEQ, RFAAP agreed to add a brief description of spill cleanup and containment procedures to the Contingency Plan.	RFAAP to add description of spill cleanup and containment as request.		✓	60 days

**Table 2. Summary of Specific NOD Discussions and Action Items from Attachment A of EWI NODs Received August 2015**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
A.2.4	DEQ requested that RFAAP include regulatory citations alongside each checklist item in Section II.E.1b. to make the document easier to review.	RFAAP will make the requested changes.	RFAAP will add the citations as requested.		✓	60 days
A.2.5	DEQ requested that a reference to BAE Systems Ordnance Systems be added to Section II.E.2b(i).	RFAAP will make the requested changes.	RFAAP will add the BAE reference as requested.		✓	60 days
A.2.6	DEQ requested that a reference that specifically excludes the less than 90 day areas from the Contingency Plan be removed.	RFAAP clarified that the referenced language was included in the plan as RFAAP originally intended to address the less than 90 day requirements under a separate, independent Contingency Plan. However, RFAAP can amend the incinerator plan as requested.	RFAAP will remove the referenced language.		✓	60 days
A.2.7	DEQ requested that information concerning the identification of hazardous materials be added to the Contingency Plan.	RFAAP will make the requested changes.	RFAAP will add the language as requested.		✓	60 days
A.2.8	DEQ requested that several examples of common emergency scenarios be added to the general list of scenarios provided in Section II.E.2d.	RFAAP will make the requested changes.	RFAAP will add the examples as requested.		✓	60 days
A.2.9	DEQ requested that previously removed language concerning the potential impact of various emergency scenarios be reinstated.	RFAAP will reinstate the language as requested.	RFAAP to revise the plan to include the previously deleted information.		✓	60 days

**Table 2. Summary of Specific NOD Discussions and Action Items from Attachment A of EWI NODs Received August 2015**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
A.2.10	DEQ requested that information from excluded SOPs be added to the Contingency Plan.	RFAAP will add the requested information from the SOPs.	RFAAP to add the detail requested.		✓	60 days
A.2.11	DEQ requested that language concerning barricade construction be added to the Contingency Plan.	RFAAP clarified that barricades are constructed per the prevailing requirements at the time the process area is sited. No re-examination of barricade design or update of such design to new or revised DOD requirements is performed unless other modifications to the area or adjacent areas require a resiting of the process. Therefore, adding the language concerning barricade design would be incorrect and not in accordance with standard DOD procedures.	No action required.	--	--	--
A.2.12	DEQ requested that specifications on emergency equipment sizing (e.g., fire extinguisher volume specifications, etc.) be added to Page II.E.17.	RFAAP indicated that they would have to review the requirements for the area and determine if the site fire safety standards require specific volume or type of extinguishers or SCBAs at the incinerator. If these specifications exist, they will be provided. However, if RFAAP fire safety standards do not require a specific volume extinguisher or SCBA, then no such specification will be added.	RFAAP to review site fire and safety specifications for emergency equipment and provide detail where such detail exists in the specifications.		✓	60 days
A.2.13	DEQ requested that RFAAP include more specific regulatory citations and specifications in Section II.E.6e(i).	RFAAP will make the requested changes.	RFAAP will add the citations and additional language as requested.		✓	60 days
A.2.14	DEQ requested amendment of a sentence in Section II.E.6e(i) to clarify requirements.	RFAAP will amend the language as requested.	RFAAP will revise the referenced sentence.		✓	60 days

**Table 2. Summary of Specific NOD Discussions and Action Items from Attachment A of EWI NODs Received August 2015**

NOD#	Summary of NOD	Discussion	Action Item	Assigned To		Submittal Timeline <sup>1</sup>
				DEQ	RFAAP	
A.2.15	DEQ requested that language be added to Section II.E.6g to describe the procedures for ensuring that all equipment is cleaned and fit for use.	RFAAP referred DEQ to language included in the paragraph immediately preceding Section II.E.7. RFAAP agreed to add a reference to the regulatory provision associated with this paragraph for clarification.	RFAAP to add regulatory citation regarding equipment cleanup following an emergency.		✓	60 days
A.2.16	DEQ requested information on the new facility alarm system be added to Section II.E.8.	RFAAP clarified that the alarm system did not exist at the time the application was submitted. The new alarm system was instituted in 2015.	RFAAP will add a description of the new alarm system to the Contingency Plan.		✓	60 days

## Attachment 3

# Revised Sections to the EWI RCRA Permit Application

## Attachment 4

# Detection Limit Comparison

Pollutant	Detection Limit	
	2015 CPT	1998 Risk Burn
2,4-Dinitrotoluene	1.4 ug	2 ug
Diphenylamine	1.1 ug	Not reported
2,3,7,8-TCDD	9.9 pg	4.6 pg
1,2,3,7,8-PeCDD	4.9 pg	4.2 pg
1,2,3,4,7,8-HxCDD	3.7 pg	4.7 pg
1,2,3,6,7,8-HxCDD	3.6 pg	3.7 pg
1,2,3,7,8,9-HxCDD	3.6 pg	4.1 pg
1,2,3,4,6,7,8-HpCDD	5.2 pg	37 pg
OCDD	3.5 pg	5 pg
2,3,7,8-TCDF	4.9 pg	4.2 pg
1,2,3,7,8-PeCDF	3.7 pg	4.1 pg
2,3,4,7,8-PeCDF	3.7 pg	4.3 pg
1,2,3,4,7,8-HxCDF	2.4 pg	3.9 pg
1,2,3,6,7,8-HxCDF	2.2 pg	3.4 pg
2,3,4,6,7,8-HxCDF	2.3 pg	4.9 pg
1,2,3,7,8,9-HxCDF	2.6 pg	5.5 pg
1,2,3,4,6,7,8-HpCDF	3.2 pg	3.7 pg
1,2,3,4,7,8,9-HpCDF	4 pg	4.8 pg
OCDF	4.4 pg	13 pg
Mercury	0.08 ug	0.03 ug
Arsenic	0.37 ug	0.4 ug
Beryllium	0.015 ug	0.1 ug
Cadmium	0.021 ug	0.1 ug
Chromium	0.32 ug	0.3 ug
Lead	0.52 ug	0.2 ug
Hydrogen chloride	0.1 ug/mL	100 ug/mL
Chlorine	0.1 ug/mL	200 ug/mL

## Attachment 5

# Historical Flood Documentation

**ATTACHMENT II.B**  
**WASTE ANALYSIS PLAN**

## ATTACHMENT II.B – WASTE ANALYSIS PLAN

### II.B.1. Waste Characteristics

~~Those hazardous wastes that may be managed at the permitted treatment and storage areas or the incinerator are waste propellants energetic materials and spill "clean-up" residues generated at the Radford Army Ammunition Plant (RFAAP) by either the contracted operator (the Permittees) or one of the RFAAP tenant organizations, or waste energetic materials generated by the Permittees or tenants at the nearby New River Unit (NRU). The NRU is under the same management and control as the RFAAP, but is not adjoined to the contiguous property defined as the RFAAP. No wastes generated outside of the RFAAP or the NRU will be received, stored, or treated at the permitted storage and treatment area.~~

~~The managed wastes which are hazardous due to their ignitability (D001), or reactivity (D003), and/or toxicity for certain metals and organics. Only hazardous wastes, which are consistent with the requirements of the facility's RCRA Permit and this Waste Analysis Plan will be stored, treated, or incinerated. No wastes generated outside of RFAAP will be received, stored, or treated at the permitted treatment and storage areas. Only wastes generated at RFAAP by the Permittees may be stored or treated at the permitted treatment and storage areas.~~

~~Only those hazardous wastes that are within the specifications of the facility's RCRA Permit and this Waste Analysis Plan will be managed. Wastes managed in accordance with the facility's RCRA Permit will be limited to the following in the permitted storage and treatment area. Neither radioactive wastes, nor mixed radioactive and hazardous wastes, nor wastes that are listed pursuant in 9 VAC 20-60-261, incorporating 40 CFR 261.31, 32, and 33 by reference, will be managed at the permitted treatment and storage areas.~~

In general, the managed wastes include

- ~~Wwastes which that exhibit only the following hazardous characteristic(s);~~
- i. Reactivity (hazardous waste number D003) as specified in 9 VAC 20-60-261, incorporating 40 CFR 261.23 by reference; or
  - ii. ~~Reactivity (hazardous waste number D003) as specified in 9 VAC 20-60-261, incorporating 40 CFR 261.23 by reference, and the characteristic of~~ Toxicity, as specified in 9 VAC 20-60-261, incorporating 40 CFR 261.24 by reference, for one or more of the following contaminants:
    - a) Arsenic (hazardous waste number D004);

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Comment [RFAAP1]: Note – there are no new waste codes being added with this permit application. We are simply updating the text to be consistent with the codes managed and the information previously specified elsewhere in this section.

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- b) Barium (hazardous waste number D005);
- c) Cadmium (hazardous waste number D006);
- d) Chromium (hazardous waste number D007);
- e) Lead (hazardous waste number D008); and
- f) Mercury (hazardous waste number D009);
- g) Selenium (hazardous waste number D010);
- h) Silver (hazardous waste number D011); and
- 2,4-Dinitrotoluene (hazardous waste number D030);.
- i) ~~Barium (hazardous waste number D005)~~

iii. Ignitability (hazardous waste number D001) as specified in 9 VAC 20-60-261, incorporating 40 CFR 261.21 by reference. ~~Ignitable wastes are limited to clean up residue of propellant ingredients. Ignitable wastes are mixed with sawdust and are not a liquid when brought to the permitted treatment and storage area.~~

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~~— Wastes which are not listed pursuant in 9 VAC 20-60-261, incorporating 40 CFR 261.31, 32, and 33 by reference; and~~

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~~— Wastes which are one of the following:~~

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~~— Off-specification propellants and propellant intermediates, generated at RFAAP;~~

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~~— Liquid wastes, consisting of water and diethylene or triethylene glycol;~~

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~~— Load, assemble and pack waste, consisting of energetic materials from assembling cartridges~~

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~~— Specialty product wastes containing propellant with nitrocellulose, nitrate esters, nitroguanidine, solid explosives, and one of the following combinations of additional materials:~~

- ~~— 40 CFR 261, Appendix VIII constituents (D003)~~
- ~~— 40 CFR 261, Appendix VIII constituents, chlorides and/or perchlorates (D003)~~
- ~~— 40 CFR 261, Appendix VIII constituents and/or metals (D003, D004 D010)~~

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~~— Other miscellaneous waste, described in Appendix II.B-1 Table I, as one of the following:~~

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- ~~— Ignitable and reactive liquids in sawdust (D001, D003)~~
- ~~— Propellant laboratory waste (D003, D008, D030, D004)~~
- ~~— Pit cotton (Waste Nitrocellulose)~~
- ~~— Dinitrotoluene and Trinitrotoluene Wastes from manufacturing that are not listed wastes~~

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A specific list of those wastes permitted for management in the incinerator area is provided in Table I of Appendix II.B-1. As shown in the table, the wastes identified above are classified into one of 19 different waste groups that are described in detail in Section II.B.2. described in more detail in Section II.B.2 and in Tables I and II of Appendix II.B-1. Tables I and II delineate the Group numbers for the respective wastes. These Group numbers were assigned as the information on the waste Group numbers was collected. There is no significance to the order of the discussion in Section II.B.2 below and or the Group numbers in Appendix II.B-1, Tables I and II Table I of Appendix II.B-1.

~~Neither radioactive wastes nor mixed radioactive and hazardous wastes will be stored or treated at the permitted treatment and storage areas.~~

#### II.B.2. Waste Composition and Characterization

The composition of the ~~waste propellant~~ energetic waste mixtures generated and fed to the incinerators varies due to changes in the production schedule. ~~Off-specification propellants and propellant intermediates, dinitrotoluene (including production intermediates), liquid wastes, load, assemble and pack waste, specialty product waste, and other miscellaneous wastes, as presented in Table I of Appendix II.B-1, are the categories of wastes which may be stored or treated.~~ However, all of the wastes can be categorized into one of the

~~Appendix II.B-1 Table I provide 19 Groups of waste identified in Table I of Appendix II.B-1s. This table identifies each waste by group number and specifies the RCRA hazardous waste codes that may be applicable to that group. Information on the 40 CFR Part 261 Appendix Wastes that are stored or treated fit into one of these Groups. Waste materials from all 19 Groups may be treated by incineration. Appendix II.B-1 Table II, Profiles of RFAAP Waste Groups, presents the constituents that may be found in each of the 19 Groups and provides the percentage range of waste constituents that may be in the 19 Groups. VIII constituents that may be present in each group is provided in Table II of Appendix II.B-1.~~

If the Permittees wish to manage waste whose formulation is not consistent with one of the ~~Group~~ groups identified in ~~Table Table I of Appendix II.B-1 of Appendix II.B-1 of this Waste Analysis Plan~~, the Permittees will submit a request for permit modification.

#### II.B.2a. Off-Specification Propellant and Propellant Production Intermediates

~~Table Table I of Appendix II.B-1 of Appendix II.B-1 identifies nine Groups groups that contain single, double, or triple base propellants and propellant~~

intermediates. These three categories of propellant differ in their primary energetic constituents, which are as follows:

- Single base propellants contain nitrocellulose;
- Double base propellants contain two energetics, typically nitrocellulose and nitroglycerin; and
- Triple base propellants contain three energetics, typically nitrocellulose, nitroglycerin, and nitroguanidine.

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Primary Category	Primary Constituent(s)
Single Base	Nitrocellulose
Double Base	Nitrocellulose, nitroglycerin, nitroglycerin
Triple Base	Nitrocellulose, nitroglycerin, nitroglycerin, nitroguanidine

These nine groups These categories have been further divided into a total of nine waste Groups, based the primary propellant category and on other waste constituents that distinguish them from each other. As an example, Group 8, identified as a single base propellant with nitrocellulose, is distinguishable from Group 9, which is a single base propellant with nitrocellulose and dinitrotoluene. The nine Groups-groups are as shown in Table I in Attachment II.B, Appendix II.B-1:

- 
- Group 7 – Single base propellants with nitrocellulose and lead (D003, D008)
  - Group 8 – Single base, propellants with nitrocellulose (D003)
  - Group 9 – Single base propellants with nitrocellulose and dinitrotoluene (D003, D030)
  - Group 10 – Double base propellants with nitrocellulose and nitrate esters (D003)
  - Group 11 – Double base propellants with nitrocellulose, nitrate esters, and perchlorate salts (D003)
  - Group 12 – Double base propellants with nitrocellulose, lead, and nitrate esters (D003, D008)
  - Group 13 – Double base propellant with nitrocellulose, nitrate esters, and solid explosives (D003)
  - Group 14 – Triple base propellant with nitrocellulose, nitrate esters and nitroguanidine (D003)
  - Group 16 – Single base propellant with nitrocellulose, dinitrotoluene and lead (D003, D008, D030)

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II.B.2b. Liquid Wastes with Glycol

The waste streams containing diethylene glycol (DEG) and triethylene glycol (TEG) are generated from the washing of nitroglycerin (NG) and diethylene glycol dinitrate (DEGDN) with water to remove the desensitizing agents DEG and TEG from the NG and DEGDN. These waste streams are non-hazardous. They contain water (80-85%) and glycol (15-20%) and are may be used in the production of slurry batches for incineration in Tanks T-1A and T-1B. The waste Groupgroups for these streams are identified in Table I of Appendix II.B-1 as Group 5 (TEG Water) and GroupGroup 6 (DEG Water). ~~The streams are used in slurry makeup to produce a feed of glycol wastewater and waste propellant, which is then incinerated.~~

II.B.2c. Load, Assemble, and Pack Waste

~~The load, assemble, and pack waste consists of Energetic wastes is~~ generated when ammunition cartridges are assembled. The waste consists of materials that are placed in the cartridges such as HMX, RDX, and propellants. These wastes are identified in Appendix II.B-1 Table I as GroupGroup 15.

The finished products from the load, assemble, and pack operations, including the Off-specification projectiles that contain with energetic materials, cases with primers, and primers shall not be treated or stored at the permitted tanks and incinerators.

II.B.2d. Specialty Products Waste

The specialty products waste Groupgroups (17, 18, and 19) contain propellant energetic materials such as with nitrocellulose, nitrate esters, nitroguanidine, solid explosives, and 40- CFR- 261, Appendix VIII constituents, and are generated in small quantities. The specialty products wastes identified as GroupGroup 18 on Table I of Appendix II.B-1 also contain chlorides or perchlorates. The specialty products wastes identified as GroupGroup 19 on Table I of Appendix II.B-1 contain metals in addition to the other materials contained in specialty product wastes.

~~The volume of specialty product waste is less than 5,000 pounds per year.~~

II.B.2e. Miscellaneous Wastes

The miscellaneous wastes listed in Table I of Appendix II.B-1 include:

- a) Ignitable and reactive liquids in sawdust;
- b) Propellant laboratory waste;
- c) ~~Pit cotton~~Waste nitrocellulose; and

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d) Dinitrotoluene and ~~T~~trinitrotoluene ~~Wastes-wastes~~ from manufacturing that are not listed wastes.

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The term ignitable and reactive liquids in sawdust refers to ~~a~~wastes containing a nitrate ester (any liquid explosive, *i.e.*, ~~nitroglycerin~~nitroglycerin, diethylene glycol dinitrate), triacetin, acetone, alcohol, or ether, and sawdust. The ignitable or reactive liquids with sawdust typically originate from cleaning operations or spills in the production area. ~~Triacetin is used to desensitize the reactive liquids.~~ These wastes are identified as Group 1 wastes

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The propellant laboratory waste ~~included in Group 2~~ consists of waste materials from ~~Quality-quality Assurance-assurance~~ and ~~Quality-quality Control-control~~ testing. ~~The P~~propellant laboratory waste is a variable mixture of reactive materials and reagent chemicals used to perform laboratory analysis.

Waste nitrocellulose, ~~a material known as "pit cotton",~~ is non-reusable scrap from production operations, and scrap from the nitrocellulose dehydrating press operations. All such nitrocellulose is ~~generated and generally stored-accumulated~~ in a water-wet state. In the water-wet state this material is not reactive. ~~These wastes, which are classified as Group 3 wastes, are not hazardous. Only water-wet nitrocellulose, which is not a hazardous waste, may be managed at the permitted treatment and storage area as a solid waste.~~

~~Off specification dinitrotoluene may result from the manufacture of commercial dinitrotoluene at the facility. The manufacturing process is not currently operational. Prior to future operation, RFAAP will evaluate the manufacturing process for compliance with the hazardous waste regulations and submit the results to the Department of Environmental Quality for approval.~~

### II.B.3. Waste ~~Storage-Accumulation~~ and Handling

Waste materials from the 19 waste ~~Group~~groups that are to be treated in the incinerators ~~or open burned~~ are ~~stored-managed~~ in less than 90-day ~~storage/~~accumulation buildings throughout RFAAP in 20 gallon tubs. These tubs of waste are ~~retrieved by incinerator personnel and~~ transported to the Grinder Building, where they are prepared for incineration ~~or to the Open-Burning Grounds, where they are prepared for open burning.~~ The frequency of waste pickup varies according to production schedules, occurring as often as daily, however in most cases weekly. All hazardous waste is retrieved, incinerated, or burned, at a minimum, before the 90-day ~~accumulation storage~~ period expires.

Each container of waste managed in the permitted storage and treatment area is accompanied by an internal manifest sheet that documents the generator of the waste (the Permittee, or a RFAAP tenant organization, or the NRU), the point of origin of the waste, the specific type of waste (e.g., type of energetic or waste mixture), and the date on which the waste was generated. Prior to transporting the waste to the permitted storage and treatment area, the waste handler inspects the waste to ensure that it matches the characterization provided on the internal manifest form and to make sure that it fits into one of the 19 categories of waste permitted for treatment in the incinerators.

II.B.4. Waste and Residue Sampling

~~Alliant Ammunition and Powder Company, LLC, the permitted operator of the treatment and storage facilities, has prepared a waste sampling plan to help ensure collection of representative samples for analysis. The intent of the sampling plan is to provide representative data to maintain compliance with the state and federal solid and hazardous waste regulations. All sampling will be conducted in accordance with the facility's sampling and analysis plan and maintained as part of the Facility Operating Record.~~ Two types of sampling are conducted to comply with this Permit: waste sampling and residue sampling. This section provides a description of the techniques employed for both.

II.B.4a. Waste Sampling

Samples for characterizing the managed wastes are collected on a daily basis; ~~Monday through Friday during the daylight shift,~~ as waste is loaded onto the trolley conveyor in preparation to be ground and incinerated. The operator collects grab samples from tubs of each waste group that is being processed. The grab samples are collected into separate sample containers for each group. Each sample container is labeled with the month, the group number or propellant type, the "composite" notation for sample type, and the sampler's initials. At the end of the month, the operator splits the composite sample for one of the waste groups and numbers the container (~~this~~ The duplicate samples is generated ~~is done to~~ generate a duplicate sample for quality assurance, ~~and~~ quality control, or results validation). At least one of the duplicate samples is analyzed each month to evaluate the sampling procedure). A sample number is then affixed to each container and the samples are sent to the laboratory for analysis as required to comply with this Permit.

If DEG or TEG water (Groups 5 and 6) are used for slurry makeup water, samples will be collected daily. At the end of the month, all daily samples of DEG or TEG water will be composited into one sample per group. These composites will then be analyzed as required to comply with this Permit.

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To ensure that proper sampling technique is employed, all operators that collect samples of the waste streams will be trained in the sample collection procedure during their initial on-the-job training.

II.B.4b.

Residue Sampling

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Composite samples of the incinerator residues are collected periodically as required to characterize the wastes for offsite disposal. Samples are collected once per shipment.

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II.B.5.

Waste Analysis Requirements

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All hazardous wastes managed in accordance with the facility's Permit will be subjected to waste analysis pursuant to the Permit and this Waste Analysis Plan prior to being ~~stored or treated~~ managed at the permitted treatment and storage areas. The Permittee maintains the responsibility for sampling and analyzing all wastes managed in the permitted storage and treatment area regardless of whether it was generated by the Permittee or, a RFAAP tenant organization, ~~or the NRU.~~

For each solid or hazardous waste ~~which~~ that may be used as a slurry component (see Section II.B.2.) for incineration, a hazardous waste determination will be made in accordance with 9 VAC 20-60-262, adopting 40 CFR 262.11 by reference. At a minimum, the determination will identify:

- i. Whether the waste is radioactive;
- ii. Whether the waste is listed under 9 VAC 20-60-261, adopting 40 CFR 261 Subpart D by reference; and
- iii. Whether the waste is a characteristic hazardous waste in accordance with 9 VAC-20-60-261, adopting 40 CFR 261.20 through 261.24 by reference.

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This determination may be made through a combination of process knowledge and laboratory analysis. The results of all hazardous waste determinations will be maintained in the ~~Facility~~ facility ~~Operating~~ operating Record record.

In addition to the hazardous determination for each waste ~~Group~~ group, all wastes ~~stored or treated~~ managed at the facility are tested for compatibility. As the wastes themselves are merely wasted versions of propellant products or ingredients, the compatibility testing is performed on the individual propellants and intermediates rather than the waste materials. If the propellants and propellant ingredients are compatible, then the wasted versions of those propellants will also be compatible.

The goal of the compatibility testing is to evaluate the reactivity between the items being tested. Compatibility at the RFAAP is measured by two of the three methods per *Department of the Army Technical Manual, TM 9-1300-214*. The first type of compatibility testing is the Taliani test. This test utilizes a multi-test

apparatus, which, when completed, provides the data necessary to determine the compatibility of the propellants in the waste groups. Compatibility is based on the amount of gas produced by the mixture of explosive and contact material that is in excess of the amount of gas produced by the materials themselves. The materials are deemed "incompatible" if a mixed sample of the materials generates a specific volume of gas more than the sum of the associated unmixed specimens. ~~with nitroglycerin (NG) and nitratability when they are first generated. Compatibility on a daily basis is not of concern, as compatibility with other materials is addressed upon generation of the material.~~

The second compatibility test performed at RFAAP is a Heat Test. Heat tests are performed at various designated controlled temperatures (maintained within 0.5 degrees Celsius) over specified time-frames for single-base, double-base, and triple-base propellants. Compatibility is based on the time required for an indicator paper to change color.

~~The Compatibility testing is performed utilizing a multi-test apparatus methodology, which, when completed, provides the data necessary to determine the compatibility of waste Group groups. Compatibility is based on the amount of gas produced by the mixture of explosive and contact material that is in excess of the amount of gas produced by the materials themselves. Test criteria establishes The wastes are deemed "incompatible" if as a mixed sample of the wastes which generates a specific volume of gas more than the sum of the associated unmixed specimens. Compatibility tests are performed by the on-site laboratory.~~

Once this initial compatibility testing is completed on the propellants and the propellant ingredients, no further compatibility analysis is performed while the waste is being generated. All propellants manufactured at the RFAAP and their ingredients have been determined to be compatible with one another using one of these two methods.

#### II.B.5a. Analysis of Waste ~~Group~~Groups

All waste ~~Group~~groups are analyzed to determine a profile for the ~~Group~~group. This analysis is described in more detail below.

##### Waste Profiling Analysis

At all times an accurate profile of every hazardous waste ~~stored, incinerated, or open-burned~~ managed at the permitted treatment and storage areas will be maintained in the ~~Facility~~ facility ~~Operating~~ operating ~~Record~~ record. A hazardous waste profile will identify the hazardous constituents and characteristics necessary for proper designation and management of the waste stream. The profile will also include concentrations of all 40 CFR 261 Appendix VIII (adopted by reference in 9 VAC 20-60-261) constituents in that waste.

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Each hazardous waste profile will include or consist of:

- a. Existing published or documented data on the hazardous waste or on waste generated from similar processes. The use of existing published or documented data will include confirmation by the generator that the process generating the hazardous waste has not significantly changed; **and/or**
- b. Laboratory analysis of the waste stream consisting of chemical, physical, and/or biological analyses using appropriate tests from the EPA document SW-846 Test Methods for Evaluating Solid Waste, 3rd Edition, 1986, as updated, or by facility standard operating methods that achieve the performance specifications specified in the equivalent SW-846 method.

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Every waste profile will be reviewed at least annually in order to confirm that it still accurately represents the waste stream. A waste stream will be re-profiled whenever the Permittees have reason to believe that the process or operation generating the hazardous waste has significantly changed.

II.B.5b. Analysis of Waste Residues and Other Materials

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Incinerator ash, which consists of the solids that accumulate at the kiln breeching, evaporative cooler, and fabric filter, is accumulated in 55-gallon DOT approved containers. Ash and packing media generated from the pre-cooler and scrubber on an infrequent basis is also accumulated in 55-gallon DOT approved containers and handled the same way as the incinerator ash. A composite sample is collected for ash accumulated in this manner. **This composite sample -and-** is analyzed for reactivity by methods specified in Appendix II.B-3-2 and for toxicity by the Toxicity Characteristic Leaching Procedure (TCLP), SW-846 Method 1311. If the ash exhibits a characteristic **for** reactivity it will be taken to the Open Burning Ground for treatment. If the ash does not exhibit a characteristic for reactivity but is a hazardous waste according to 9 VAC 20-60-261.24, then it will be managed as a hazardous waste in accordance with all applicable requirements of 9 VAC 20-60. If the ash does not exhibit a characteristic of a hazardous waste it may be managed as a solid waste in accordance with all applicable requirements of 9 VAC 20-80-10 *et seq.*

Incinerator scrubber liquid drains from the gas pre-cooler and packed bed liquid scrubber and is collected in the neutralization tank. In the neutralization tank, plant water is added as necessary for volume make-up and the solution pH is adjusted by the addition of caustic. Effluent from the neutralization tank returns directly to the gas pre-cooler and packed bed liquid scrubber. Effluent from the neutralization tank also flows to the brine tank and subsequently to the evaporative cooler. The incinerator scrubber liquid is not discharged under normal operating conditions; but rather is recirculated throughout the system. In the event that the

scrubber water is not recirculated through the system, it will be collected and transferred to the on-site wastewater treatment facility and disposed of according to the VPDES permit or used as makeup water for grinds.

II.B.5c. Quality Assurance and Quality Control

All sampling and analyses performed in accordance with this Waste Analysis Plan will, at a minimum, achieve all performance specifications specified in the equivalent SW-846 methods and Tables 2-5, as appropriate. Records of specific analytical methods utilized from SW-846 or standard facility operating methods and procedures and appropriate QA/QC documentation will be maintained at RFAAP with the results of all analyses.

**Appendix II.B-1**

**Waste ~~Group~~ Group Composition Data**

**TABLE I**  
**WASTE GROUPS BURNED AT THE RFAAP INCINERATORS**

Group No.	Description	Defining Characteristics	RCRA Waste Codes <sup>1</sup>
1	Miscellaneous Waste	Ignitable and reactive liquids and sawdust <del>D001, D003</del>	D001, D003
2	Miscellaneous Waste	Propellant Laboratory Waste <del>D003, D008, D030, D004</del>	D001, D003, D004-D011, D030
3	Miscellaneous Waste	<del>Pit Cotton</del> (Waste Nitrocellulose) Solid Waste	N/A
4	Miscellaneous Waste	Dinitrotoluene and Trinitrotoluene Wastes from manufacturing that are not listed wastes <del>D030</del>	D003, D030
5	Liquid Waste	Water Containing Triethylene Glycol Solid Waste	N/A
6	Liquid Waste	Water Containing Diethylene Glycol Solid Waste	N/A
7	Single Base Propellants	Propellant with Nitrocellulose and Lead <del>D003, D008</del>	D001, D003, D008
8	Single Base Propellants	Propellant with Nitrocellulose <del>D003</del>	D001, D003
9	Single Base Propellants	Propellant with Nitrocellulose and Dinitrotoluene <del>D003, D030</del>	D001, D003, D030
10	Double Base Propellants	Propellant with Nitrocellulose and Nitrate Esters <del>D003</del>	D001, D003
11	Double Base Propellants	Propellant with Nitrocellulose, Nitrate Esters and Perchlorate salts <del>D003</del>	D001, D003
12	Double Base Propellants	Propellant with Nitrocellulose, Nitrate Esters and Lead <del>D003, D008</del>	D001, D003, D008
13	<del>Double Base Propellants</del> Energetics with solid explosives	Propellant with Nitrocellulose, Nitrate Esters <del>and-or</del> Solid Explosives <del>D003</del>	D001, D003
14	Triple Base Propellants	Propellant with Nitrocellulose, Nitrate Esters and Nitroguanidine <del>D003</del>	D001, D003
15	Load, Assemble, & Pack Waste	Energetic materials from manufacturing cartridges <del>D003</del>	D001, D003
16	Single Base Propellants	Propellant with Nitrocellulose, Dinitrotoluene, <del>and/or</del> Lead <del>D003, D008, D030</del>	D001, D003, D008, D030
17	Specialty Products Waste	<del>Propellant</del> Energetics with Nitrocellulose, Nitrate Esters,	D001, D003, D004-D010, D030

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		Nitroguanidine, Solid Explosives, or Appendix VIII <sup>1</sup> -VIII <sup>2</sup> Constituents <del>D003</del>	
18	Specialty Products Waste	<del>Propellant</del> -Energetics with Nitrocellulose, Nitrate Esters, Nitroguanidine, Solid Explosives, and Appendix VIII <sup>1</sup> Constituents, Chlorides, or Perchlorates <del>D003</del>	D001, D003, D004-D010, D030
19	Specialty Products Waste	<del>Propellant</del> -Energetics with Nitrocellulose, Nitrate Esters, Nitroguanidine, Solid Explosives, and Appendix VIII <sup>1</sup> Constituents, or Metals <del>D003, D004-D010</del>	D001, D003, D004-D010, D030

1. Codes shown represent those RCRA waste codes that the waste **may** exhibit. Not all of the specified codes may apply to every canister of waste treated within this group.
2. 40 CFR 261, Appendix VIII

TABLE II

**PROFILES OF RFAAP WASTE GROUPS  
PRESENTED IN RANGES OF COMPOSITION (wt. %) APPENDIX VIII CONSTITUENTS PRESENT IN RFAAP WASTES  
(wt%)**

Constituent	GRP 1	GRP 2	GRP 3	GRP 4	GRP 5	GRP 6	GRP 7	GRP 8	GRP 9	GRP 10	GRP 11	GRP 12	GRP 13	GRP 14	GRP 15	GRP 16	GRP 17	GRP 18	GRP 19
<b>D001</b>																			
Acetone	<20	<5								<5				0 7	<5				
Alcohol	<20	<5						0 26	0 17	<5				0 11	<5				
Ethanol		<5																	
Ether	<20	<5						0 74	0 25										
Isopropanol	<20	<5																	
Methanol	<20	<5																	
1-Methoxy-2-propanol	<20	<5																	
1-Methoxy-2-propanol acetate	<20	<5																	
Methyl chloride	<20	<5																	<5
<b>D003</b>																			
2-Nitrateethyl nitramine		<5																	0 100
2-Hydroxy methyl-2-methyl-1,3-propanediol trinitrate (TMETN)	<20	<5								0 45	0 45	0 45	0 45	0 45			0 45	0 45	0 45
Ammonium perchlorate		<5											0 100		0 100				0 100

**Comment [RFAAP2]:** This table was revised to be consistent with other changes made to transition control of incinerator operation from RCRA to HWC NESHAP. The individual constituent feed rates to the incinerator are now regulated under the HWC NESHAP. Therefore, the only relevant constituent details are those required to characterize the waste. This table was revised to show the Appendix VIII constituents in the waste.

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(wt%)**

Constituent	GRP 1	GRP 2	GRP 3	GRP 4	GRP 5	GRP 6	GRP 7	GRP 8	GRP 9	GRP 10	GRP 11	GRP 12	GRP 13	GRP 14	GRP 15	GRP 16	GRP 17	GRP 18	GRP 19
Butanol	<20	<5								0 45	0 45	0 45	0 45	0 45			0 45	0 45	0 45
Diethylene glycol dinitrate (DEGDN)	<20	0 45								0 45							0 45	0 45	0 45
Metriol trinitrate	<20	<5								0 45		0 38.5					0 45	0 45	0 45
N-propanol	<20	<5																	
Nitroglycerin (NG)	<20	0 45								0 45	0 35.5	0 45	15 17	17.0 23.5	42.5 45.5		0 45	0 45	0 45
Nitroguanidine (NQ)		<5															<5	<5	<5
Toluene	<20	<5															<5	<5	<5
Triethylene glycol dinitrate (TEGDN)	<20	<5								0 45	0 35	0 40.6	0 17	0 23.5	42.5 45.6		0 45	0 45	0 45
Cyclonite (RDX)													0 35		0 35		0 50	0 50	0 50
Cyclotetramethylenetetra- nitramine (HMX)													0 35		0 35		0 50	0 50	0 50
<del>D004-D011</del>																			
Arsenic		<5																	<5
Barium N.O.S		<5																	<5
Lead compounds N.O.S.		<5					1.2					0.8 5.4				0.8 2.0	<5	<5	<5

**Comment [RFAAP2]:** This table was revised to be consistent with other changes made to transition control of incinerator operation from RCRA to HWC NESHAP. The individual constituent feed rates to the incinerator are now regulated under the HWC NESHAP. Therefore, the only relevant constituent details are those required to characterize the waste. This table was revised to show the Appendix VIII constituents in the waste.

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Constituent	GRP 1	GRP 2	GRP 3	GRP 4	GRP 5	GRP 6	GRP 7	GRP 8	GRP 9	GRP 10	GRP 11	GRP 12	GRP 13	GRP 14	GRP 15	GRP 16	GRP 17	GRP 18	GRP 19	
Mercury		<5																		<5
Silver		<5																		
<b>40 CFR 261, Appendix VIII</b>																				
2,4 Dinitrotoluene		0 10		5 100					60 ±15							5 10	<5	<5	<5	
<b>2-Nitrodiphenylamine</b>		<5								1.5 2.5		0 2.5	0.0 1.2				<5	<5	<5	
Antimony sulfide		<5															<5	<5	<5	
Chlorobenzene		<5															<5	<5	<5	
Chromium nitrate		<5															<5	<5	<5	
Dibutyl phthalate		<5				<5		<5 3	<5 3			0 910		<50 3.3	<5 3	<5 0	<5	<5	<5	
Diethyl phthalate		<5								<5 3		0 150.5					<5	<5	<5	
Diphenylamine		<5						<50.4 1.7	<50.5 1.3	<5						0 10	<5	<5	<5	
Hexachloroethane		<5															<5	<5	<5	
Mercuric chloride		<5															<5	<5	<5	
Methylene chloride		<5								0 25							<5	<5	<5	

**Comment [RFAAP2]:** This table was revised to be consistent with other changes made to transition control of incinerator operation from RCRA to HWC NESHAP. The individual constituent feed rates to the incinerator are now regulated under the HWC NESHAP. Therefore, the only relevant constituent details are those required to characterize the waste. This table was revised to show the Appendix VIII constituents in the waste.

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Constituent	GRP 1	GRP 2	GRP 3	GRP 4	GRP 5	GRP 6	GRP 7	GRP 8	GRP 9	GRP 10	GRP 11	GRP 12	GRP 13	GRP 14	GRP 15	GRP 16	GRP 17	GRP 18	GRP 19
Potassium perchlorate		↔									7.8 8.05						↔	↔	↔
<b>OTHERS</b>																			
Akardit II		↔								0 +									
Aluminum		↔								0 1.50	0 1.5								
Aluminum-magnesium alloy		↔																	
Antioxidant		↔																	
Benzene carboxylic acid		↔																	
Black copper oxide (cupric oxide, CuO)		↔																	
Boric acid		↔																	
Butyl stearate		↔							↔										
Candella wax		↔								0.1 0.2	0 0.2				0 0.2				
Carbolac		↔																	
Carbon black		↔						0.4		0.05 0.5	0.60 1.2	0 0.05		0 0.1	0.1 0.3				
Cellulose acetate		↔								↔									

**Comment [RFAAP2]:** This table was revised to be consistent with other changes made to transition control of incinerator operation from RCRA to HWC NESHAP. The individual constituent feed rates to the incinerator are now regulated under the HWC NESHAP. Therefore, the only relevant constituent details are those required to characterize the waste. This table was revised to show the Appendix VIII constituents in the waste.

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(wt%)**

Constituent	GRP 1	GRP 2	GRP 3	GRP 4	GRP 5	GRP 6	GRP 7	GRP 8	GRP 9	GRP 10	GRP 11	GRP 12	GRP 13	GRP 14	GRP 15	GRP 16	GRP 17	GRP 18	GRP 19
Charcoal		<5						9 10											
Chlorowax		<5																	
Chlorowax-70		<5																	
Copper carbonate		<5																	
Copper chromite		<5																	0 1
Copper oxide (Cu <sub>2</sub> O)		<5																	
Copper oxychloride		<5																	
Copper salicylate		<5										0 2.5							
Cryolite		<5												0 0.4					
Dextroamphetamine sulfate (dextrine)		<5																	
Dihydrate, tetrasodium pyrophosphate		<5																	
Di-N-propyl adipate		<5								0.4		0 3.3							
1,3-Diphenylguanidine		<5																	
Ethyl-centralite		<5						0.4 0.6	1.0 1.4	0.25 2.0	0 0.9	0 2.3		0 1.6	1.7 2.3				0.60

**Comment [RFAAP2]:** This table was revised to be consistent with other changes made to transition control of incinerator operation from RCRA to HWC NESHAP. The individual constituent feed rates to the incinerator are now regulated under the HWC NESHAP. Therefore, the only relevant constituent details are those required to characterize the waste. This table was revised to show the Appendix VIII constituents in the waste.

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(wt%)**

Constituent	GRP 1	GRP 2	GRP 3	GRP 4	GRP 5	GRP 6	GRP 7	GRP 8	GRP 9	GRP 10	GRP 11	GRP 12	GRP 13	GRP 14	GRP 15	GRP 16	GRP 17	GRP 18	GRP 19
Ethyl-cellulose		<5								<5									
Ethylene-vinyl acetate-polymer		<5													<5				
Ferrous-ammonium-sulfate		<5																	
Graphite		<5					0.10	0	0	0.2		0		0	<5				0.30
Herkote		<5						0.4	0.4	0.4		0.5		0.2					
Hydrocarbon-resin		<5																	
Iron		<5																	
Isopropyl-acetate		<5																	
Lactoge-shellae		<5																	
Lactose		<5																	
Magnesium		<5																	
Magnesium-carbonate		<5																	
Magnesium-oxide		<5								0									0.05
Methyl-centralite		<5						0.5											
								6.0											

**Comment [RFAAP2]:** This table was revised to be consistent with other changes made to transition control of incinerator operation from RCRA to HWC NESHAP. The individual constituent feed rates to the incinerator are now regulated under the HWC NESHAP. Therefore, the only relevant constituent details are those required to characterize the waste. This table was revised to show the Appendix VIII constituents in the waste.

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(wt%)**

Constituent	GRP 1	GRP 2	GRP 3	GRP 4	GRP 5	GRP 6	GRP 7	GRP 8	GRP 9	GRP 10	GRP 11	GRP 12	GRP 13	GRP 14	GRP 15	GRP 16	GRP 17	GRP 18	GRP 19
Morpholine		≤5																	
N-butyl acetate		≤5																	
N-butyl stearate							0 3.0		0 3.3										
Nitrocellulose		0 45	0 30				94	14 98	13.0 90	53 80	0 59	48.5 53	18 52	20.5 29.5	50 54	55 85	0 80	0 80	0 80
Orasol blue		≤5								≤5									
Orasol yellow		≤5								≤5									
Oxamide		≤5											0 5.5						
Perchloric acid		≤5																	
Phenolite resin		≤5																	
Phosphorous pentoxide		≤5																	
Polyvinyl chloride		≤5																	
Potassium benzoate		≤5																	
Potassium chlorate		≤5																	
Potassium hydrogen phthalate		≤5																	

**Comment [RFAAP2]:** This table was revised to be consistent with other changes made to transition control of incinerator operation from RCRA to HWC NESHAP. The individual constituent feed rates to the incinerator are now regulated under the HWC NESHAP. Therefore, the only relevant constituent details are those required to characterize the waste. This table was revised to show the Appendix VIII constituents in the waste.

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(wt%)**

Constituent	GRP 1	GRP 2	GRP 3	GRP 4	GRP 5	GRP 6	GRP 7	GRP 8	GRP 9	GRP 10	GRP 11	GRP 12	GRP 13	GRP 14	GRP 15	GRP 16	GRP 17	GRP 18	GRP 19	
Potassium nitrate		↵						0 65		0 1.5										0.075
Potassium salts		↵						0 2.2												
Potassium sulfate		↵					0 1.25	0 77	0.1 1.5	↵		0 1.5		0 1.5	↵	0 1.0				
Red gum—N.F.V.		↵																		
Remix		↵								↵										
Resin		↵																		
Shellac		↵																		
Slilcon		↵																		
Sodium acetate		↵																		
Sodium alkyl benzene sulfonates		↵																		
Sodium bicarbonate		↵																		
Sodium carbonate		↵																		
Sodium citrate		↵																		
Sodium dichloro 3 triazinetrione		↵																		

**Comment [RFAAP2]:** This table was revised to be consistent with other changes made to transition control of incinerator operation from RCRA to HWC NESHAP. The individual constituent feed rates to the incinerator are now regulated under the HWC NESHAP. Therefore, the only relevant constituent details are those required to characterize the waste. This table was revised to show the Appendix VIII constituents in the waste.

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(wt%)**

Constituent	GRP 1	GRP 2	GRP 3	GRP 4	GRP 5	GRP 6	GRP 7	GRP 8	GRP 9	GRP 10	GRP 11	GRP 12	GRP 13	GRP 14	GRP 15	GRP 16	GRP 17	GRP 18	GRP 19
Sodium methoxide		≤5																	
Sodium oxalate		≤5																	
Sodium salicylate		≤5																	
Sodium sulfate anhydrous		≤5																	
Stearic acid		≤5																	
Strontium carbonate		≤5																	
Strontium nitrate		≤5																	
Sulfur		≤5						6 7											
Tetra-bromethane		≤5																	
Titanium		≤5																	
Titanium dioxide		≤5								≤5									
Triacetin	10 25	≤5								0 3.25		0 3.25							
Vinisol		≤5								≤5									
Ethyl lactate												0 37.8							

**Comment [RFAAP2]:** This table was revised to be consistent with other changes made to transition control of incinerator operation from RCRA to HWC NESHP. The individual constituent feed rates to the incinerator are now regulated under the HWC NESHP. Therefore, the only relevant constituent details are those required to characterize the waste. This table was revised to show the Appendix VIII constituents in the waste.

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<b>Constituent</b>	<b>GRP 1</b>	<b>GRP 2</b>	<b>GRP 3</b>	<b>GRP 4</b>	<b>GRP 5</b>	<b>GRP 6</b>	<b>GRP 7</b>	<b>GRP 8</b>	<b>GRP 9</b>	<b>GRP 10</b>	<b>GRP 11</b>	<b>GRP 12</b>	<b>GRP 13</b>	<b>GRP 14</b>	<b>GRP 15</b>	<b>GRP 16</b>	<b>GRP 17</b>	<b>GRP 18</b>	<b>GRP 19</b>
Butyl acetate												0 69.8							
Di-normal-propyl adipate												0 2.0							
Sawdust	57 79			0 95															
Ash	0 57	0.2 4.5	0 0.6	0.2 45	0.7 1.2	0.7 0.8	0.9 2.4	0.2 75.2	0 5.3	0 4.1	0.1 3.1	0.2 9.3		0 1.1	0.2 8.3	0.4 2.5			0.9 1.6
<b>Maximum Theoretical Heat of Explosion —(BTU/pound)</b>	<b>110</b>	<b>2350</b>	<b>0</b>	<b>270</b>	<b>0</b>	<b>0</b>	<b>1350</b>	<b>1800</b>	<b>1440</b>	<b>2340</b>	<b>1980</b>	<b>1800</b>	<b>2340</b>	<b>1530</b>	<b>2340</b>	<b>1130</b>	<b>2340</b>	<b>1980</b>	<b>1980</b>

**Comment [RFAAP2]:** This table was revised to be consistent with other changes made to transition control of incinerator operation from RCRA to HWC NESHAP. The individual constituent feed rates to the incinerator are now regulated under the HWC NESHAP. Therefore, the only relevant constituent details are those required to characterize the waste. This table was revised to show the Appendix VIII constituents in the waste.

**Appendix II.B-2**  
**Reactivity Test Methods**

**Remove this page and insert the following:**

| Appendix BB-3 from Sept. 2000 permit appl-



**ATTACHMENT II.E**  
**CONTINGENCY PLAN**

**ATTACHMENT II.E – CONTINGENCY PLAN**

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    II.E.2a Facility Location ..... 4

    II.E.2b Facility Operations ..... 4

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**Comment [RFAAP1]:** Due to the more stand alone nature of this attachment, we added a table of contents to the document.

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**LIST OF FIGURES**

- Figure II.E-1 – Location of the RFAAP**
- Figure II.E-2 – Area Map**
- Figure II.E-3 – Process Flow Diagram**
- Figure II.E-4 – Emergency Equipment Locations**
- Figure II.E-5 – Contingency Plan Implementation Logic Diagram**

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**Figure I.I.E-6 – Area Evacuation Routes**

**LIST OF TABLES**

**Table I.I.E-1\_\_Notification Action Summary**

**Table I.I.E-2\_\_Emergency Equipment Locations at RFAAP**

**Table I.I.E-3\_\_Evaluation Criteria for Implementation of the Contingency Plan**

**Table I.I.E-4\_\_Spill Response Measures**

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The following text was excerpted from RFAAP's January 12, 2001 submittal. The original formatting and numbering scheme is retained in order to simplify the anticipated inclusion of additional hazardous waste management units (e.g., the Open Burning Grounds).

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## II.E.1 1.0—INTRODUCTION AND GENERAL INFORMATION

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This Contingency Plan (Plan) has been prepared for the ~~Waste Propellant Incinerator hazardous waste incinerators~~ and the ~~storage/treatment-permitted hazardous waste storage tanks~~ (herein referred to as the Incinerator), ~~permitted treatment and storage units~~, at the Radford Army Ammunition Plant (RFAAP). This Plan has been compiled as a stand-alone document for the permitted treatment and storage area and has been structured to be consistent with other plans and procedures in use at the RFAAP.

### II.E.1a 1.1—Purpose

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In accordance with Subpart D of 40 CFR Part 264, this document describes the Contingency Plan that will be activated in the event of a fire, explosion, or release of hazardous waste or hazardous waste constituents, ~~which~~ that could threaten human health or the environment. A current copy of the Plan will be maintained in the RFAAP ~~Facility~~ facility ~~Operating-operating Record-record~~ as well as in the Environmental Manager's files.

The overall objective of this Contingency Plan is to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water. This plan defines the actions to be taken in the event of an emergency within the permitted storage and treatment area. ~~This Plan is designed to address the requirements of Subpart D of 40 CFR Part 264. Management plans, Army installation procedures, and plant operating procedures exist outside the text of this Plan. The purpose of these other documents is to handle emergency situations that might occur at the RFAAP, but that may or may not be directly associated with hazardous waste management. Although these documents are not required under Subpart D of 40 CFR Part 264, and are not part of this Plan, a brief description of the contents of these documents and a listing of the established operating procedures applicable to RFAAP emergency and disaster situations are included in Table 1. Appendix A contains a copy of the table of contents for the RFAAP Disaster Control Plan (RFAAP-DCP) and the Plant Protection Plan.~~

### II.E.1b 1.2—Plan Contents

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This Contingency Plan contains pertinent information to be used during an emergency situation. The various sections and content of the plan are listed below.

- Section II.E.2 describes facility operations and the types of hazardous wastes managed at the Incinerator-;
- Section II.E.3 identifies the RFAAP Emergency Coordinator and alternates-;
- Section II.E.4 discusses Contingency Plan implementation-;
- Section II.E.5 presents a description of release prevention measures-;
- Section II.E.6 describes emergency response procedures-;
- Section II.E.7 describes coordination agreements between RFAAP and surrounding communities-;
- Section II.E.8 presents the permitted treatment and storage area evacuation plan-;
- Section II.E.9 outlines release-reporting requirements-; and

- Section II.E.10 includes requirements for Contingency Plan modifications.

## II.E.2 2.0 — FACILITY LOCATION, OPERATIONS, ~~AND~~ WASTES MANAGED

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This section provides background information that may be useful as part of an emergency situation. This information includes the location of the facility, operations performed at the facility, types of wastes managed, and potential emergency situations that could be encountered.

### II.E.2a 2.1 — Facility Location

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The RFAAP is located in southwest Virginia within Pulaski and Montgomery Counties as shown in Figure II.E-1. The RFAAP is located approximately 5 miles northeast of the City of Radford, 10 miles west of Blacksburg, and 47 miles southwest of Roanoke. The main entrance to the RFAAP is located on Virginia Route 114 between the Towns of Christiansburg and Radford. The RFAAP address is as follows:

Radford Army Ammunition Plant  
Route 114  
P.O. Box 1  
Radford, Virginia 24141-0100

The RFAAP encompasses approximately 4,104 acres. The New River separates Pulaski and Montgomery counties and also divides the RFAAP into two portions commonly known as the Horseshoe Area and the Main Manufacturing Area. These two areas and the approximate boundary of the RFAAP are shown on Figure II.E-1.

The Incinerator is located within the north central portion of the Horseshoe Area as shown in Figure II.E-1 and is used for the incineration of ~~waste propellant~~ energetic wastes. Figure II.E-2 shows the Incinerator boundary and the locations of the actual structures. Figure II.E-3 is a schematic diagram that shows how ~~waste propellants~~ the energetic wastes are processed as part of the treatment process.

### II.E.2b 2.2 — Facility Operations

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General operations performed at the RFAAP and at the permitted treatment and storage area are described in the following sections.

#### i) 2.2.1 — RFAAP Operations

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RFAAP is a government-owned, contractor-operated (GOCO) industrial installation responsible to the U.S. Army ~~Armament, Munitions and Chemical Command~~. The RFAAP's ~~whose~~ mission is to manufacture propellants, explosives, and chemical materials as assigned. ~~The Alliant Ammunition and Powder Company, L.L.C. (Alliant) currently is the operator of the facility under a Facility Use contract.~~ As a GOCO operation, RFAAP has both Government and Contractor organizations. For the purpose of this permit application, the facility consists of all contiguous portions of the RFAAP. ~~under the control of the either the U.S. Army or Alliant (Permittees).~~ The facility specifically includes both the Horseshoe Area and the Main

Manufacturing area. Wastes from onsite activities (including those of both the operating contractor and tenants) are managed in the permitted storage and treatment area. Additionally, wastes from the nearby New River Unit (NRU) are handled at the site.

The facility was first constructed in 1940 and began operations producing smokeless powder (single base, double base, and triple base propellants) in 1941. Since that time various processes/products have been added to the facility including production of cast propellants, trinitrotoluene (TNT), commercial propellants, and load, assemble and pack facilities. Specific operations vary based upon contracted capacity and products from the Department of Defense and U.S. allies.

### ii) ~~2.2.2~~ — Incinerator Operations

Operations included in the permitted storage and treatment areas ~~part of the Incinerator~~ include grinding, tank storage ~~and treatment~~, and incineration equipment. The primary structures included in the permitted storage and treatment area are as follows:

- The Grinder Building (identified as Building/Account No. 442), where wastes are ground into small pieces prior to being mixed into the slurry and incinerated. The Grinder Building houses the two permitted hazardous waste storage tanks.
- Incinerators 440 and 441 (identified as Accounts 440 and 441), where the slurried wastes are treated in accordance with this Permit and the Hazardous Waste Combustor National Emission Standards for Hazardous Air Pollutants.

#### • ~~Grind Houses (Structures 430 and 442)~~

- ~~Control Houses (Structures 431 and 447)~~
- ~~Incinerator Buildings (Structures 440 and 441); and~~
- ~~Ancillary Buildings (Structures A-440, B-440, and A-441)~~

The following areas are specifically excluded from the “permitted treatment and storage area” (refer to Figure II.E-2 for structure designations) as these are included in the USEPA RCRA Corrective Action Permit or were closed under previous closure plans administered by the DEQ:

- Settling Ponds #1 and #2 (identified as Accounts 445 and 446), which are included as Solid Waste Management Unit (SWMU) No. 39 in the USEPA RCRA Corrective Action Permit;
- Incinerator Fuel Oil Storage Units, including Structures 432 and 443, which were underground storage tanks used for fuel oil storage and were previously closed under a plan administered by the DEQ;
- Spray Pond (identified as Account 444), which was identified as Hazardous Waste Management Unit (HWMU) No. 39 and was previously closed under a plan administered by the DEQ; and
- Ancillary Building A-444, which served as the pumphouse for the spray pond and was previously closed under a plan administered by the DEQ.

In addition to these areas, there are several other structures in the general vicinity of the incinerators that are not included in the permitted storage and treatment area because they are not

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used to accumulate waste for periods greater than 90 days. These buildings and structures include:

- The incinerator control room and adjacent supply area (identified as Buildings 431 and 447);
- Temporary waste accumulation area (identified as Building 430), which is used to accumulate wastes for < 90 periods prior to treatment in the incinerator; and
- Ancillary buildings in the incinerator complex that store supplies and/or instrument equipment and calibration gases (identified as Accounts A-440, B-440, and A-441).

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Structures that are specifically excluded from the Incinerator include the following:

- Incinerator fuel oil storage units (including Structures 432 and 443)
- Spray pond (Structure 444)
- Settling ponds #1 and #2 (Structures 445 and 446); and
- Ancillary Building (Structure A-444).

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The Spray Pond has been clean closed for soils by the VDEQ and Settling Ponds #1 and #2 are currently managed through the U.S. Environmental Protection Agency (EPA).

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Specific operations that are performed at the Incinerator are listed-described below.

Figure- II.E-3 is a schematic diagram that shows how the wastes propellants are processed as part of the treatment process.

1. Waste materials are transported from production areas in < 20 gallon containers to an < 90 day accumulation area at Building 430 or Building 4601-7. (Note: the wastes are accumulated for less than 90 days and therefore these buildings is-are not a-permitted container storage facility-for these containersies).
2. At the Grind House (Building 442) the waste-propellant-energetic waste is loaded into-onto a trolley, -and-dumped into a hopper, and fed onto a conveyor. The material is sprayed with water to minimize the chance of a waste explosion. Oversize and metallic materials are removed from the waste stream on the conveyor which-is-and-then-dropped into the grinder feed hopper. Again the waste is sprayed with water to minimize the potential for an explosion. The waste is then ground and added to one of two slurry tanks. In the slurry tanks the waste is mixed with water to form a slurry for incineration. These slurry tanks are not completely emptied every 90 days; therefore, these tanks have been permitted as >greater than 90 day hazardous waste storage tanks-storage-permit-is-being-sought-for-the-slurry-tanks-in-the-Grinder-Building.
3. The waste slurry is circulated through a piping system to the incinerators' feed pump house and back to the slurry tank to prevent settling and build up of solids in the lines. Portions of this flow are directed from the feed pump house to the incinerators for treatment.

4. Residue from the ~~incinerators~~ incineration system is collected in ~~an~~ ash ~~buggybuggies~~ and drums and is accumulated. The ash is staged on-site pending sample analysis and is then disposed~~al~~ in a properly permitted disposal facility. ~~Residue is also collected from the Bag House and evaporative cooler.~~

### ~~2.2.3~~ Reserved

## ~~II.E.2c~~ ~~2.3~~ Wastes Managed

The hazardous wastes that are managed (~~treated and stored~~) at the permitted facility include waste ~~propellants~~ energetic materials and spill “cleanup” residues generated at the facility or the nearby NRU. These wastes ~~which~~ are hazardous due to their ~~ignitability~~ (D001) and/or reactivity (D003). Additionally, some of the wastes may exhibit the toxicity characteristic for certain metals and/or 2,4-dinitrotoluene. A detailed description of the wastes is provided in the ~~Only hazardous wastes identified in this Permit's~~ Waste Analysis Plan in Attachment II.A of the Permit. ~~will be treated or stored at the Incinerator. These wastes include the following:~~

1. ~~Wastes which exhibit only the following hazardous characteristic(s):~~
  - a. ~~Reactivity (hazardous waste number D003) as specified in 9 VAC 20-60-261; 40 CFR Part 261.23;~~
  - b. ~~Reactivity (hazardous waste number D003) as specified in 9 VAC 20-60-261; 40 CFR 261.23 and the characteristic of toxicity, as specified in 9 VAC 20-60-261; 40 CFR 261.24, for one of the following constituents:~~
    - i. ~~Lead (hazardous waste number D008);~~
    - ii. ~~2,4 Dinitrotoluene (hazardous waste number D030); and/or~~
    - iii. ~~Barium (hazardous waste number D005)~~
  - c. ~~Ignitability (hazardous waste number D001) as specified in 9 VAC 20-60-261; 40 CFR 261.21. Ignitable wastes are limited to clean up residue of propellant ingredients. Ignitable wastes are mixed with sawdust and are not a liquid when brought to the permitted treatment and storage area.~~
2. ~~Wastes which are not listed pursuant to 9 VAC 20-60-261; 40 CFR 261.31, 32, and 33; and~~
3. ~~Wastes which are one of the following (as identified in the Waste Analysis Plan):~~
  - a. ~~Off specification propellants and propellant intermediates, generated at the facility;~~
  - b. ~~Liquid wastes, consisting of water and diethylene or triethylene glycol;~~
  - c. ~~Load, assemble and pack waste, consisting of energetic materials from assembling cartridges;~~
  - d. ~~Specialty product wastes containing propellant with nitrocellulose, nitrate esters, nitroguanidine, solid explosives, and one of the following combinations of additional materials:~~

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- i. ~~40 CFR 261 Appendix VIII constituents (D003)~~
- ii. ~~40 CFR 261 Appendix VIII constituents, chlorides and/or perchlorates (D003)~~
- iii. ~~40 CFR 261 Appendix VIII constituents and/or metals (D003, D004-D010)~~
- e. ~~Other miscellaneous waste, described in Module II, Attachment II.B, Appendix II.B-1, Table I, as one of the following:~~
  - i. ~~Ignitable and reactive liquids in sawdust (D001, D003)~~
  - ii. ~~Propellant laboratory waste (D003, D008, D030, D004)~~
  - iii. ~~Pit cotton (Waste Nitrocellulose)~~
  - iv. ~~Dinitrotoluene and Trinitrotoluene Wastes from manufacturing that are not listed wastes~~

**i) ~~2.3.1~~ — Composition of Waste**

The composition of the ~~waste-propellant-mixtures-wastes~~ fed to the Incinerator varies over time due to changes in the production schedule at the RFAAP. ~~Generally, these wastes include Off-specification propellants and propellant intermediates, dinitrotoluene (including production intermediates), liquid wastes, load, assemble and pack waste, specialty product waste and other miscellaneous energetic wastes are the categories of wastes which may be stored, treated and incinerated at the Incinerator.~~ These wastes may be hazardous due to the ignitability, reactivity, or toxicity characteristics. ~~The wastesse categories~~ are segregated into 19 distinct waste groups, as listed in Table II.E-21; all wastes that are stored, treated, and incinerated at the facility fall into one of these groups.

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These waste streams are processed as described in Sections 2.2.2 and 2.2.3 and are handled in accordance with the Waste Analysis. There are no wastes managed in the ~~facility permitted storage and treatment area~~ that are incompatible ~~with the waste-propellants (reactive waste) with one another.~~

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**ii) ~~2.3.2~~ — Identification and Quantity of Waste**

~~Hazardous wastes treated at the Incinerator consist primarily of off-specification/waste propellants as described above.~~ The specific identification of wastes to be ~~stored and treated managed~~ at the permitted storage and treatment area(s) is recorded on an internal manifest form that accompanies the waste from the generation area. ~~This permits easy identification of any material that is released. Consequently, the identity of any released material can be identified.~~

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The quantity and location of hazardous wastes that are maintained on-site at the Incinerator are listed below:

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- ~~3,400-800~~ gallons of waste slurry in two ~~1,700-900~~ gallon ~~hazardous waste storage~~ tanks;
- Accumulated waste awaiting processing in the grinder (quantity varies based on production schedule); and
- Potentially hazardous ash (quantity varies depending on wastes treated).

## II.E.2d 2.4—Potential Emergency Situations

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There are several situations that could lead to the release of hazardous waste at the Incinerator area that would require implementation of the Contingency Plan. The most common scenarios that could lead to such a release of hazardous waste are listed below:

1. Release of waste slurry due to slow leak or failure of slurry tanks and/or related piping.
2. Release of liquid wastes during transfer to slurry tanks.
3. Release of solid waste during transfer or processing at Grind Houses or during processing in Grind Houses in the Grinder Building.
4. Release as the result of a fire or an explosion of reactive wastes during processing or handling.

The most serious situation at the Incinerator would be an explosion, as such an incident would pose an immediate danger to facility personnel and could allow for the release of a significant quantity of material. A non-explosive release of waste at the Incinerator presents less of an immediate danger to personnel, but response measures are still important as a safety issue for facility personnel and as a long-term issue for protection of human health and the environment.

## II.E.3 3.0—EMERGENCY COORDINATORS

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The primary Emergency Coordinator (EC) for all environmental emergencies is the on-call representative from the Environmental Department. Additionally, the facility Incident Site Commander (EC/ISC) will provide coordination of emergency response such as fire protection, medical attention, etc. at the facility is the Plant Protection Specialist on duty. The EC/ISC has the authority to determine and implement the Disaster Control Plan, RFAAP Hazardous Material Emergency Response Plan, and Plant Protection Plan as well as this Contingency Plan and commit the necessary resources to do so. The EC will receive assistance in these duties from the ISC where appropriate if deemed necessary.

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The facility has an on-site Fire Department and Hazardous Materials Emergency Response Team. Environmental emergencies are primarily communicated to and handled by the Environmental Manager and the Environmental Engineering Staff in accordance with applicable regulations. The Environmental Manager coordinates all pollution control and remediation activities including monitoring, containment, control, countermeasures, clean-up, and disposal activities. The Environmental Manager and the EC/ISC also have the authority to commit all necessary resources to carry out emergency response under this plan.

Other facility employees are designated as alternate EC/CSs and are qualified to act as EC in event the primary EC is unavailable. A (primary or alternate) emergency coordinator (EC) will be available or on call at all times. The facility personnel who are designated as ECs are listed in Table II.E-3-12 (the Notification Action Summary sheet). The alternate ECs are called on in the order listed to act as the EC in the event of an emergency in the order listed in the table.

Table II.E-3-12 also lists the names, addresses, and phone numbers (office and home) of the emergency coordinators-ECs and alternate ECs. All of these persons are qualified by

experience and training to act as ~~Emergency Coordinator~~the EC. All of these persons hold management positions at the facility, ~~and~~ have been trained to respond to emergencies dealing with hazardous waste management, and have extensive experience in the propellant manufacturing environment.

#### **II.E.4 4.0 — IMPLEMENTATION**

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The Contingency Plan will be implemented whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents, ~~which~~that could threaten human health or the environment. The EC will be responsible for evaluation of any situation to determine if the Contingency Plan will be implemented.

—It shall be the duty of all facility personnel to follow the direction of the EC when the decision has been made to implement the Contingency Plan.

#### **4.1 — Implementation at the Incinerator**

The person observing an emergency situation at the Incinerator will most likely be someone other than the EC. That person is to take the following actions to involve the EC as soon as possible:

1. Ensure his/her personal safety.
2. Activate the emergency warning alarm system if the incident occurs at ~~Building 442 (Grind House)~~the Grinder Building (Bldg. 442) or immediately notify the EC if it is at a location other than Building 442.
3. Telephone, radio, or otherwise notify the ~~Control House~~control room of any observed releases (*e.g.*, spills, fires, or explosions) ~~at the Incinerator area~~ and report: his/her name, location, and nature and extent of the release. The ~~Control House~~control room personnel will immediately notify the Security Dispatcher and the Foreman. The Security Dispatcher will immediately notify the EC.
4. Remain available to assist the EC with information about initial observations of the incident.

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5. ~~The EC will determine whether the Contingency Plan should be implemented.~~

#### **4.2 — Reserved**

#### **II.E.5 5.0 — RELEASE PREVENTION MEASURES AND CONTROL PROCEDURES**

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RFAAP has general facility-wide control procedures to minimize the potential for fires, explosions, and chemical releases as part of overall facility operations. Additional measures have been implemented at the Incinerator to prevent and/or control the propagation of such incidents.

### **II.E.5a 5.1—RFAAP Control Procedures**

The RFAAP is designed so that process, raw material storage and product storage facilities present a minimal threat of fire, explosion or material release. These process and storage operations are not subject to RCRA regulation. However, in the course of normal operation and maintenance, hazardous wastes are generated. Because safeguards exist for the non-RCRA regulated processing operations, this also protects against hazards once the waste is generated in the plant.

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In the event of a ~~The facility has provisions for response to fires,~~ explosions or spills involving hazardous waste, ~~as follows:~~ The EC will notify the ~~on-site supervisor/area foreman~~ to direct personnel to contain, absorb, package, or redirect spilled materials as deemed necessary to protect human health or the environment. For this purpose, the plant maintains an adequate supply of hand and motorized tools and clean, empty containers for recovering ~~waste propellants and other spilled~~ hazardous wastes.

The EC has the authority to direct, ~~through the on-site plant fire chief,~~ trained fire crews to contain and control fires and cool affected areas to prevent ~~spread of~~ further ~~spread of~~ hazard. ~~This direction shall be coordinated through the onsite plant fire chief.~~

### **II.E.5b 5.2—Incinerator Operating Procedures**

Standard operating procedures for the operation of the Incinerator include provisions for monitoring and shutdown of the treatment and processing equipment. Process operations are monitored remotely from the control room and include safety features to ensure safe operation of the unit. Should an emergency situation occur ~~at the incinerator,~~ the system will be shutdown to prevent danger to human health or the environment. ~~Depending on the location and nature of the emergency, the Incinerator units may remain in operation to continue treatment of waste and residual within the Incinerator units themselves.~~

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### **II.E.5c 5.3—Prevention of Recurrence or Spread of Fires, Explosions or Releases**

Numerous precautions are taken at the permitted ~~TSD/F-storage and treatment area in order~~ to reduce the likelihood that fires, explosions, or other unsafe conditions occur. These precautions ~~are incorporated into the standard operating procedures for the area and the include general response to procedures for responding to~~ fires at the Incinerator, ~~as well as procedures for the Grind House (management of waste slurry) and procedures for the Incinerator units.~~

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Sprinklers, when activated ~~in an emergency,~~ automatically provide notification ~~also activate alarms connected~~ to the RFAAP Fire Department. Fire extinguishers are also on hand for immediate use (refer to Section ~~II.E.6.3c~~ of this Plan for a complete list and location of available emergency equipment).

Barricades at the ~~tank grinder~~ and incinerator buildings help prevent the propagation of explosions due to flying fragments impacting nearby operations at the facility. In addition, a number of measures have been implemented to prevent and/or control the spread of fires, explosions, or other releases ~~at the Grind House~~ as noted below:

1. The waste slurry ~~stored-managed~~ in the tanks and pipes is an aqueous solution of ~~waste-propellant-energetic wastes~~. The grinding of the waste ~~propellants-energetic~~ to form an aqueous slurry helps prevent the occurrence of fires and explosions. This also allows for a closed loop feed system to the incinerators ~~which and~~ minimizes the operator handling of the waste ~~propellants-materials~~.
2. Operating procedures for shutting down the grinder are part of the facility's plant emergency procedures. These procedures are designed to help prevent the release of ~~waste-propellants and/or-propellant-slurry-hazardous wastes~~ should a system upset ~~of-or~~ malfunction occur.
3. Secondary containment systems for the two ~~hazardous~~ waste slurry tanks (described in Section ~~II.E.66.5.1e~~) help prevent any released material from entering the environment.
4. Process equipment in ~~the Grinder Building 442~~ includes a grinder fail-safe system, which flushes the slurry lines with water in order to clear the lines of residual slurry. The fail-safe system is activated in the event of either a process air system or electrical shutdown. (Compressed air is used to operate several pneumatically actuated valves within the Building.) Thus, if the facility operations are stopped, the lines will be cleared of ~~propellant-waste~~ slurry and slurry from the tanks will be collected in the containment system. After the slurry lines flush, the operators ~~will~~ turn off the fail-safe system, evacuate to the control room, and monitor the fail-safe system and incinerator controls during an emergency response.

The incinerators have built-in safeguards against equipment failure during emergency conditions. These safeguards help prevent fires, explosions, ~~and~~ the release of ~~propellant-waste~~ slurry. ~~The following conditions will trigger an emergency shutdown of the incinerator~~ Safeguards ~~consist of an alarm horn that will sound under the following conditions:~~

- ~~The control system fails;~~ ~~The incinerator burner stops burning;~~
- An electrical power failure occurs;
- The induced draft fan fails;
- The kiln stops rotating;
- ~~When safety interlock feed pump~~
- ~~These,~~ cooling and recirculating pump fail-safe systems ~~activate;~~
- ~~The ,and/or~~ air compressor fail-safe system ~~are-is~~ activated; ~~or~~
- A ~~H~~high temperature (safety) limit is reached ~~in the kiln, afterburner, or~~ evaporative cooler.

Should there be a fire, explosion, or release of hazardous materials at the Incinerator, the EC and other environmental and operational personnel will review the incident after response and clean-up activities are completed. Based on this review, the cause will be determined, if possible, facility operating procedures or design will be revised as necessary, and other corrective actions will be taken in order to help prevent a reoccurrence. The Contingency Plan will also be revised as necessary ~~in order~~ to improve facility response to future incidents.

**II.E.6 6.0 — EMERGENCY RESPONSE PROCEDURES**

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This section outlines procedures to be followed during an emergency. Information on the EC responsibilities, the required notifications, control, cleanup, and mitigation procedures is presented. ~~situation including the following information:~~

- ~~• The responsibilities of the EC;~~
- ~~• Notification procedures for facility personnel and regulatory agencies; and~~
- ~~• Various procedures for responding to and controlling an emergency situation.~~

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**II.E.6a 6.1 — Emergency Coordinator's Responsibilities**

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When the decision has been made to implement the Contingency Plan, the ~~Emergency Coordinator~~EC's responsibilities will include, but will not be limited to, the following:

1. Identifying hazardous materials and assessing hazards;
2. Accounting ~~of for~~ facility personnel;
2. ~~Implementation~~Implementing of internal notifications;
3. Coordinating ~~of~~ first-aid activities;
4. Controlling and monitoring site conditions;
5. ~~Activation~~Activating of the Evacuation Plan, if required; ~~and~~
- 5.6. ~~Notifying~~ation of appropriate State and local authorities (coordinated notification requirements with the Environmental Department); -
7. Coordinating the storage, treatment, and disposal of released material; and
8. Providing post-emergency management.

**II.E.6b 6.2 — Notifications**

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Procedures for the notification of RFAAP personnel and appropriate federal, state and local agencies are included in this section. The Notification Action Summary is provided in Table II.E-3-12 of this Contingency Plan. ~~Should the EC be offsite at the time of the emergency, these notifications shall be made by the designated alternate EC or another onsite designee.~~

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**i) 6.2.1 — Internal RFAAP Notifications**

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Internal communication systems (telephone or two-way radios) will be used to notify RFAAP personnel. The appropriate alarms will be activated and the EC will be notified in an effort to implement the Contingency Plan as outlined in Section II.E-4.0.

**ii) 6.2.2 — Notification of Federal, State, and Local Agencies**

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The Environmental Manager (or a designated alternate) will notify appropriate state and local agencies as outlined in this plan and as listed below.

~~— Release Greater Than Reportable Quantity: State and federal regulations require immediate notification whenever there is a release of a hazardous substance greater than a~~

Comment [RFAAP2]: Modifications were made to this section to address RCRA concerns only. notification requirements outside those in the RCRA regulations have been removed.

~~reportable quantity as listed in 40 CFR 302.4. The list on the following page are the substances that are at RFAAP that have an RQ. Not all of the substances listed are at the incinerator or burning ground but are on site.~~

<b>CHEMICALS AND SUBSTANCES</b>			
<b>Chemical</b>	<b>Reportable Quantity (lbs.)</b>	<b>Chemical</b>	<b>Reportable Quantity (lbs.)</b>
Acetone	5,000 lbs (755 gal)	<b>Nitric acid (any percentage)</b>	<b>1,000 lbs (80 gal @ 100% conc.)</b>
<b>Ammonia (anhydrous)</b>	<b>100 lbs</b>	Nitroglycerin (NG)	10 lbs (<1 gal)
<b>Chlorine</b>	<b>10 lbs</b>	Petroleum products (oils, fuels, used or waste products)	150 lbs (25 gallons to land)
Dibutyl phthalate (DBP)	10 lbs (1 gal)	Petroleum products (oils, fuels, used or waste products)	Visible sheen on outfall or river
Diethyl phthalate (DEP)	1,000 lbs (100 gal)	Phosphoric acid	5,000 lbs (329 gal @100% conc.)
Ethyl ether	100 lbs (17 gal)	Sodium hydrosulfide	5,000 lbs
2,4-dinitrotoluene (DNT)	10 lbs	Sodium hydroxide (any solution)	1,000 lbs (100 gal @20% caustic)
Lead	10 lbs	<b>Sulfur dioxide</b>	<b>500 lbs</b>
Mercury	1 lb (1.3 ounces)	<b>Sulfuric acid (any percentage)</b>	<b>1,000 lbs (66 gal @ 100% conc.)</b>
<b>Mixed acids (any percentage)</b>	<b>1,000 lbs (80 gal)</b>	Toluene	1,000 lbs (138 gal)
<b>OTHER HAZARDOUS SUBSTANCES, WASTES, OR AIR EMISSIONS</b>			
Sludge from Bioplant	10 lbs	Wastewater with a pH of ≤ 2.0 or pH ≥ 12.5	100 lbs (12 gal)
Sludge from NG Pre- Treatment Plants	10 lbs	DNT Contaminated Wastewater	225 lbs (27 gallons)
Waste propellant	100 lbs	Visible air emissions for > 1 hour	—
Ash from Propellant and Contaminated Waste Incinerator	10 lbs	Any other material identified as hazardous waste	—

Note: Chemicals in bold print are "OSHA Extremely Hazardous Substances" and require special consideration of health effects in emergency response efforts.

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1. ~~The National Response Center (800-424-8802) must be notified of any release greater than a reportable quantity in accordance with Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and as listed in 40 CFR Part 302.~~

2. ~~The Director of the Virginia Department of Environmental Quality must be notified within 24 hours of any release of hazardous waste in a quantity greater than the Reportable Quantity.~~

~~**Release That Threatens Off-Site Impacts:** In the event that a release occurs that could threaten human health or the environment outside the facility, Pursuant to 40 CFR 264.56(d), if the Emergency Coordinator determines that the facility has had a release, fire, or explosion, which could threaten human health or the environment outside the facility, he the EC shall report his/her findings as follows pursuant to 40 CFR 264.56(d). Accordingly, :~~

1. ~~If his assessment indicates that evacuation of local areas may be advisable, he shall immediately notify appropriate local authorities. He shall be available to help appropriate officials decide whether local areas should be evacuated; and~~

2. ~~He shall immediately notify the local government official designated as the on-scene coordinator for that area, and the State Emergency Response Team of the Virginia Department of Emergency Management at 800/468-8892.~~

3. ~~the EC shall A release that poses an immediate or imminent threat to public health and requires notification of notify:~~

- ~~- The National -Response Center at (800) 424-8802;~~
- ~~- must also be reported to the-The Virginia Department of Environmental Quality at (540) 562-6814 or (540) 562-6700,;~~
- ~~- -The Virginia Department of Emergency Management at (800) 468-8892,; and~~
- ~~- The local emergency planning committee offices as follows:~~
  - ~~o The Montgomery County and the Local Emergency Planning Committee at (540) 382-2951 if the emergency is within Montgomery County; or~~
  - ~~—The Pulaski County Emergency Management Coordinator at (540) 980-7705 if the emergency is within Pulaski County.'s Office.~~
  - ~~o~~

Additionally, if the EC determines that an evacuation of local areas may be advisable, he/she shall immediately notify appropriate local authorities. The EC shall be available to help appropriate officials decide whether local areas should be evacuated.

In the event that an emergency situation occurs that requires notification of outside agencies, the following information shall be reported:

1. Name and telephone number of notifier;
2. Name and address of facility;

3. ~~Date, Time~~, and type of incident;
4. Name and quantity of material(s) involved to the extent known;
5. The extent of injuries, if any; and
6. The possible hazards to human health or the environment outside the facility.

#### **II.E.6c 6.3—Emergency Equipment Available**

The emergency equipment available and “on-call” for use at the unit ~~is listed in MOP 4-27.2. This MOP list, and information obtained from the safety manager and the fire chief at RFAAP,~~ is summarized in Table II.E-6-23 and Figure II.E-54. The numbers (1-12) in Table II.E-6-23 indicate the different physical locations and Figure II.E-54 shows these locations within the facility.

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In addition to the equipment listed in Table II.E-623, other fire, personnel protection, and cleaning equipment is available as follows. Fire protection equipment includes sprinkler systems (Building 442), portable fire extinguishers, a mobile carbon dioxide extinguishing system, and fire hydrants near the hazardous waste facilities and at various locations within the plant. Cleaning equipment such as brooms, dustpans, and sawdust is found in the Grinder Building (Building 442). Additional spill cleanup equipment is located in the Roads and Grounds Building (Building 7217).

#### **II.E.6d 6.4—Containment, Countermeasures, Clean-Up and Disposal**

General response measures that will be implemented during an emergency situation at the Incinerator ~~and/or the OG Ground~~ are presented below.

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1. ***Ensure Personal Safety, Sound Alarm and Notify Emergency Coordinator:*** Upon identification of a fire, explosion, or other release personnel shall ~~ensure~~ <sup>fire</sup> their personal safety and then activate the alarm system and notify the EC. The alarm system consists of radio and telephone. Both forms of alarm are accessible at the Incinerator. The alarms will be used to contact the Security Dispatcher, which is staffed 24 hours a day, 7 days a week.
2. ***Evacuation:*** Personnel will evacuate the area as outlined in the Evacuation Plan in Section II.E-8-~~9~~ <sup>0</sup> and as directed by the EC.
3. ***System Shutdown:*** In the event of a fire, explosion, material release or other system ~~upset~~ <sup>emergency</sup>, the incinerator operations will be shut down so that personnel can enter the area to respond.
4. ***Identify the Material(s) Involved:*** The specific identification of wastes will be determined from the internal manifest forms, which identify the materials that are sent to the Incinerator ~~and to the OB Ground~~. Copies of the manifests are carried in the transport vehicles carrying the waste. Upon delivery to the treatment facility, the manifests are transferred from the transport vehicles and ~~are~~ <sup>are</sup> kept at the Incinerator Control Room ~~or at the OB Ground Trailer, depending on the waste~~.

destination. In addition, copies of the manifests are kept at the operational office for each accumulation area from which the waste is generated.

~~Each waste transport vehicle also utilizes a hazard classification placard system to allow firefighting forces to quickly and easily determine the methods by which any emergency situations involving the waste materials should be handled. A description of the hazard classification placard system is included in Appendix B.~~

5. **Assessment:** Upon arrival at the scene, the EC (or the designated alternate) will take control of the affected area including all resources necessary to deal with the emergency. The EC will maintain this authority and control until the emergency has been eliminated and cleanup is complete.

After taking control of the affected area, the EC will determine the source, extent, and nature of the involved hazardous waste and assess any primary and secondary hazards. Waste generation, source and analytical data are to be used to make this determination. These records shall be kept on-site. The evaluation criteria used by the EC to determine if the Contingency Plan is to be implemented are presented in Table II.E-43.4. A logic diagram representing the evaluation process is shown as Figure II.E-65.

6. **Alert Local Authorities for Assistance:** Should the situation require resources beyond those available at the RFAAP, local fire, police, and/or medical support will be requested as described in Section II.E-7.0.
7. **Implement Spill Response Measures:** Spill response measures will be implemented as outlined in Table II.E-5.4 using spill response equipment available at the facility as listed in Table II.E-6.23 and materials provided by supporting communities as needed. Response measures include evaluation of safety issues, containment of the release, regulatory notifications, waste treatment, and monitoring. Response measures will be performed by the RFAAP Fire Department and Emergency Response Team under the direction of the EC with assistance from other local agencies as needed.
8. **Storage Accumulation and Treatment of Released Material:** If a spill or leak occurs in the ~~grinder~~ Grinder building, the released material (~~an aqueous waste propellant slurry~~) will be contained in the secondary containment system. The slurry will drain to a sump ~~from which it is that can be~~ pumped to the catch tank. If ~~waste propellant slurry hazardous waste~~ is released to the ground such as may occur due to a failure in the slurry feed line, applicable spill response measures outlined in Table II.E-5.45 will be followed. Recovered ~~energetic waste propellant~~ will be treated at the open burning ground, if appropriate.

Ash from fires will be treated similar to incinerator ash. The ash will be analyzed for reactivity, TCLP toxicity, and other constituents as specified in the Waste Analysis Plan in Attachment II.B of this Permit. If the ash fails for either or both characteristics, or is a listed hazardous waste, it will be taken to a RCRA permitted

facility. If it is not determined to be a hazardous waste does not fail, it will be disposed in an appropriately permitted solid waste landfill, if such disposal is in accordance with that permit.

9. **Incompatible Wastes:** There are no wastes managed in the facility-permitted storage and treatment area that are incompatible with the waste propellants (reactive waste) one another. All waste from production propellant operations are treated in tanks and incinerated. Thus Therefore, the danger of the mixing of incompatible wastes during cleanup procedures is very unlikely.

## **II.E.6e 6.5—Incinerator-Specific Response Measures**

Specific measures for the grinder-slurry tanks and for the incinerators are included in the following sections.

### **i) 6.5.1—Tank Spills and Leakage**

In the event of a spill or release from the hazardous waste tank system, the released material should be contained in the secondary containment system. Tank level indicators are monitored by operators in the control room. Should indication of a leak or spill be provided, A visual inspection of the area will be conducted immediately. in the event of a leak or spill from the slurry tanks to the secondary containment system. Additionally, Tthe secondary containment system is inspected every 24 hours to determine whether any leaks have occurred in accordance with 40 CFR 264.193(c)(3). The containment system in Building 442 consists of the makeup tank and a sump pump drainage system. Liquid or slurry, which that collects in the sump, is pumped to the exterior catch tank. From there, the liquid can be pumped back into the makeup tank or the slurry tanks, or, can be pumped into a portable tanker truck for accumulation or transfer.

Upon detection and visual inspection of a leak or spill, RFAAP will comply with all applicable requirements of 9 VAC 20-60-264 and 40 CFR 264.196. Waste treatment and incineration Grinding operations will immediately cease, and any leaking tank will be emptied. The spilled or residual waste from the sump, basement of the building, or catch tank will be placed into waste containers and removed. The wastes will either be sent to the open burning ground or placed in the other tank and incinerated when operations are able to resume. Waste will be removed from the tanks, containment system, and/or floor sump within 24 hours. Any leaking tank will be inspected, the cause of the failure determined, and the defect repaired pursuant to the requirements of 9 VAC 20-60-264 and 40 CFR 264.196-(e), and certified (if necessary) pursuant to 40 CFR 264.196(f) prior to being returned to service. In the event that a repaired tank is returned to service, the Director of the Virginia Department of Environmental Quality must be notified that the repaired tank has been returned to service within seven (7) days. If a leaking tank cannot be repaired, the tank system will be closed in accordance with 9 VAC 20-60-264 adopting 40 CFR 264.196(e) by reference.

In the event of a tank overflow/rupture or pipe rupture, the standard procedures to for handling an explosive liquid spill (GOP 4-15-53) will be followed. Any contaminated equipment will be decontaminated and reused or decontaminated and disposed of as excess equipment. The procedures describing these actions are also found in GOP 4-15-53. Spilled waste collected in

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containers will receive treatment as soon as one of the explosive waste incinerators is properly operating again. The waste will be stored-kept at the facility's container storage-management area in accordance with 9 VAC 20-60-262 and 40 CFR 262.30 through 34 until the time that treatment begins.

#### ii) 6.5.2 — Incinerator Spills and Leakage

A release of materials from the slurry loop line or in the area of the waste-propellant incinerator may occur due to failure of the slurry line either by rupture or gasket failure. Spill response measures to such an incident are outlined in Table II.E-545. The Emergency CoordinatorEC will direct the spill response program. Procedures are provided in these tables and associated permit paragraphs concerning safety, containment, evaluation, notification, treatment, and monitoring as related to each spill incident.

The perimeter of the concrete slab on which the incinerators are located contains a grated gutter to capture washdown water. Any slurry whichthat may leak onto the slab will be washed into the gutter and will be pumped into the same external catch tank which-serves-that provides as containment for the Grinder Building (Bldg. 442). Response procedures to leaks or spills outside of the incinerator slab are outlined in Table II.E-545. Decontamination and repair of the unit will be accomplished depending on the type of repair required. For example, if welding is required, the material must first be decontaminated with heat. If welding is not required, the material can be decontaminated with water.

#### II.E.6f 6.6 — Disposal of Miscellaneous Waste and Debris

Wastes generated as part of a response action will be collected and contained. Those materials that cannot be treated in the incinerator or the open burning area will be characterized and disposed of off-site in accordance with state and federal laws. Such wastes may include but is are not limited to the following:

- Personal protective equipment;
- Plastic sheeting used for decontamination or containment;
- Absorbent materials; and
- Soil and/or water.

#### II.E.6g 6.7 — Post-Emergency Equipment Maintenance

Post-emergency provisions are designed to prevent recurrence, to clean up and dispose of residuals, to decontaminate equipment, and to provide for personnel debriefing.

The Emergency-CoordinatorEC will take all necessary steps to ensure that a secondary release, fire or explosion does not occur after the initial incident. Procedures that will be carried out in the affected area include:

1. Inspection for any leaks or cracks in pipes, valves, tanks, and incinerators;
2. Inspection for excess heat generation at the incident area; and
3. Isolation of residual waste materials.

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All waste ~~propellant energetics~~ and other cleanup residues will be tested for RCRA characteristics and other parameters as necessary to meet waste profiling requirements. The material will then be transported to a RCRA permitted facility should ~~they-it~~ be determined to be a hazardous waste. If the residues are determined to be non-hazardous, they will be disposed in a permitted solid waste landfill.

All equipment used during the cleanup will be decontaminated on-site and readied for future use. Site personnel will remove and properly dispose of contaminated clothing as necessary. Fire extinguishers will be recharged, personnel protective equipment ~~will be~~ replaced, and tools ~~will be~~ restocked. Before operations are resumed, all safety equipment will be inspected.

## ~~II.E.7 7.0~~ COORDINATION AGREEMENTS

— Mutual assistance agreements have been made with the ~~following~~ communities identified in Table 1 of Appendix II.E-1.  ~~:Dublin, Fairlawn, Radford, Christiansburg, Riner, Longshop/McCoy, and Blacksburg located near the facility.~~ Copies of the Mutual Assistance Agreements and Supplemental Agreements are ~~included in Appendix C~~ maintained onsite in the facility operating record. These mutual assistance agreements pertain to the local fire departments. Furthermore, there is close cooperation between local ~~county~~ law enforcement officials and RFAAP Security personnel for traffic control in the plant area if a significant disaster should occur.

Facility staff will contact selected local and regional entities and authorities that may be involved in an emergency situation according to the anticipated needs at the plant. Personnel from these organizations may be asked to support RFAAP personnel in response to fires, explosions, or chemical releases if RFAAP personnel cannot adequately address the situation internally. Personnel from these agencies will act under the direction of the EC and will be directed and escorted by plant personnel.

Arrangements with local hospitals have also been made through ~~verbal~~ agreements between RFAAP and surrounding medical facilities. ~~Table 2 in Appendix II.E-1 identifies those agreements that are in place. Copies of these agreements are maintained onsite in the facility operating record. Immediate support is available at New River Valley Medical Center (15 minutes traveling time) and the Montgomery County Community Hospital in Blacksburg (12 minutes traveling time). Helicopter service is available upon request from the New River Valley Medical Center.~~ In addition, the RFAAP medical staff ~~nurses are~~ familiar with the properties of the hazardous wastes handled at the facility and the types of injuries or illnesses ~~which that~~ could result from fires, explosions or releases at the facility, and ~~There is a reference book, Medical Directives for Occupational Health Nurses, for the local nurses to follow in addition to their experience in anticipation of the RFAAP doctor's arrival or aid from a local hospital. To supplement the aforementioned resources,~~ RFAAP firemen are state-certified emergency medical technicians.

Due to RFAAP's in-house fire department, medical staff, and security force, and the unique wastes to be dealt with, the facility EC will act as the primary authority during emergency

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situations. RFAAP security personnel are responsible for escorting local fire department and emergency response teams to any emergency site within the plant. Emergency units from ~~off-plant-offsite~~ will not be allowed to respond inside RFAAP without an escort. For incidents in the horseshoe area, units from Dublin, Fairlawn, Blacksburg, Riner, Longshop/McCoy, or Radford ~~will may~~ be asked to assemble at Gate 10 ~~or the main gate on Route 114~~. For incidents in the Main Plant Area and larger incidents in the ~~horseshoe-Horseshoe areaArea~~, units from Radford, Christiansburg and Blacksburg ~~will may~~ be asked to assemble at the Main Gate on Route 114. Entry to the manufacturing area will usually be through Gate 1.

## **II.E.8 8.0 EVACUATION PLANS**

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### **8.1—Incinerator Evacuation Plan**

The Incinerator is located within the north central portion of the Horseshoe Area of the facility. This area is an isolated location as shown on Figure II.E-1. The New River acts as a protective barrier on the northern and southern exposures of this area. Thus, if an emergency situation should develop at this area, evacuation of the entire facility is not likely to be necessary. The Incinerator operating personnel should be the only persons immediately endangered during an emergency situation at the facility.

Evacuation procedures for ~~Bldg. 442, Bldg. 440/441, and Bldg. 4601-7, are given in GOP 4-3-2~~the incinerator area direct personnel to assemble at Building 447 (Control Room) in the event of a fire, explosion, or other event in the area. ~~Evacuation will occur in the event of fires and electrical storms. For electrical storms specifically, evacuation will be conducted as described in the operating procedure. The procedural steps extracted from GOP 4-3-2 are as follows~~Should evacuation of the area be deemed necessary, it will proceed as follows:

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1. The grinder operation ~~shall will~~ be shut down ~~during electrical storms~~ and all personnel will ~~remain gather~~ in the control room.
2. Container accumulation area operations shall be ~~stopped~~ and ~~secured~~. All personnel at the container accumulation area shall return to the ~~Control control Roomroom~~.
- ~~3.—The incinerator shall remain operational during electrical storms. (NOTE: This is to complete the treatment of the residual slurry.)~~
- 4.3. Propellant feed into incinerators will be stopped. The incinerator slurry feed line will be flushed.
- 5.4. Slurry will continue to circulate through loop system.
- 6.5. Operations will be resumed when directed by supervisory personnel.

~~There are a minimum of two people and a maximum of five people assigned per shift at the Waste Propellant Incinerator Area.~~ During process operations, the operators are either located in or near the control room; or are within the permitted treatment and storage area. Personnel will remain in the control room, an underground, blast-proof facility, during evacuation periods. Communication among the operators will be through existing two-way radio communication systems, telephones, ~~in the grinder building (Bldg. 442)~~ or through the warning horn located on the ~~grinder-Grinder building-Building~~ and activated at the incinerator complex. The small number of people in the area, the accessible communication systems, and the close

proximity of the evacuation area help ensure a safe evacuation plan at the permitted treatment and storage area.

The primary evacuation route for persons within the permitted treatment and storage area is shown in Figure II.E-76. ~~The evacuation location is Building 447, the control room, which is an underground, blast-proof control house. While the primary route for evacuation to the control room is via a This control house is accessible from a direct paved path from Bldg. 442 and Bldg. 440/441. The area surrounding area near~~ the facilities is unoccupied, so alternate evacuation routes from the hazardous waste facilities to the control house may take any number of paths through the grass turf.

## ~~8.2~~ — Reserved

## II.E.9 ~~9.0~~ REQUIRED REPORTS

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~~Reporting requirements for emergency situations to regulatory agencies and to the U.S. Army are presented in this section.~~

### ~~9.1~~ — Incident Reports

Pursuant to 9 VAC 20-60-264; 40 CFR 264.56(ji), the time, date, and details of any incident, ~~which that~~ requires implementation of the Contingency Plan, will be noted in the facility operating record. In addition, within 15 days after the incident, a written report will be submitted to the Director of the Virginia Department of Environmental Quality. The report will include:

1. Name, address and telephone number of the owner or operator;
2. Name, address and telephone number of the facility;
3. Date, time, and type of incident;
4. Name and quantity of material(s) involved;
5. The extent of injuries, if any;
6. An assessment of actual or potential hazards to human health or the environment, where this is applicable;
7. Estimated quantity and disposition of recovered material that resulted from the incident; and,
8. Such other information specifically requested by the Director, ~~which that~~ is reasonably necessary and relevant to the purpose of an operating record.

Pursuant to 9 VAC 20-60-264; 40 CFR 264.196-(d), for any tank system or secondary containment, any release to the environment, except as provided in item 1 below, will be reported to the Department within 24 hours of its detection. If the release has been reported pursuant to 40 CFR Part 302 ~~(see Section 6.2 of this Contingency Plan)~~, that report will satisfy this requirement.

1. A leak or spill of hazardous waste is exempted from the reporting requirements of ~~section~~ Section II.E-9.0 of this Contingency Plan, if it is:
  - a. Less than or equal to a quantity of one pound, and

- b. Immediately contained and cleaned-up.

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~~2. Within 30 days of detection of a release to the environment, a report containing the following information shall be submitted to the Department:~~

- ~~a. Likely route of migration of the release;~~
- ~~b. Characteristics of the surrounding soil (soil composition, geology, hydrogeology, climate);~~
- ~~c. Results of any monitoring or sampling conducted in connection with the release (if available). If sampling or monitoring data relating to the release are not available within 30 days, this data shall be submitted to the Department as soon as they become available;~~
- ~~d. Proximity to downgradient drinking water, surface water, and populated areas; and~~
- ~~e. Description of response actions taken or planned.~~

#### ~~9.2 U.S. Army Material Command Notification~~

~~—RFAAP also follows U.S. Army Material Command notification procedures. If a release occurs, a report similar to the one required by Federal and State agencies is submitted to the U.S. Army Material Command. The reported information required by 40 CFR 264.56(j) and delineated above shall also be incorporated into the facility's permanent operating record.~~

~~—RFAAP will notify the Director and other appropriate Commonwealth and local authorities that:~~

- ~~1. Cleanup procedures have been completed; and~~
- ~~2. All emergency equipment listed in the Contingency Plan is cleaned and fit for its intended use prior to resuming operations in the affected area(s) of the facility.~~

#### ~~II.E.1010.0 MODIFICATION OF PLAN~~

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Pursuant to 9 VAC 20-60-264; 40 CFR 264.54, this Contingency Plan is subject to review and amendment, if:

- a. The plan fails in an emergency;
- b. The facility permit is revised;
- c. The facility changes in design, construction, operation, maintenance, or other circumstances; in a way that materially increases the potential for fires, explosions, or releases of hazardous waste constituents; or changes the response necessary in any emergency;
- d. The list of emergency coordinators changes; or
- e. The list of emergency equipment changes.

When the contingency plan is amended for any reason the Permittees will request a permit modification pursuant to 40 CFR 270.42.

## FIGURES

## Remove this page and insert the following:

~~Figure II.E-1 – Location of the RFAAP Figure 1 from Contingency Plan submitted with ATK ltr dtd 12 Jan. 2001~~

~~Figure II.E-2 – Figure 2 from Contingency Plan submitted with ATK ltr dtd 12 Jan. 2001 Area Map~~

~~Figure II.E-3 – Figure 3 from Contingency Plan submitted with ATK ltr dtd 12 Jan. 2001 Process Flow Diagram~~

~~Figure II.E-5.4 – Figure 5 from Contingency Plan submitted with ATK ltr dtd 12 Jan. 2001 Emergency Equipment Locations~~

~~Figure 6.II.E-5 – Figure 6 from Contingency Plan submitted with ATK ltr dtd 12 Jan. 2001 Contingency Plan Implementation Logic Diagram~~

~~Figure 7.II.E-6 – Figure 7 from Contingency Plan submitted with ATK ltr dtd 12 Jan. 2001 Area Evacuation Routes~~

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**TABLES**

**Comment [RFAAP3]:** Many of the changes in the following tables were made to be consistent those tables presented in the post-closure care

**TABLE 1**  
**EMERGENCY PROCEDURES**

RFAAP Disaster Control Plan (RFAAP-DCP) provides plans for:

- 1) — Equipment and/or facility damage
- 2) — Oil and hazardous substance control
- 3) — Chemical, nuclear or radiological accidents
- 4) — Emergency situation reporting
- 5) — Search and rescue operations
- 6) — Crisis emergency/relocation plan
- 7) — Communications-electronics

Spill Prevention, Control and Countermeasure (SPCC) Plan and Installation Spill Contingency Plan (ISCP) for spills other than hazardous waste described in the Part B permit.

SPCC provides:

- 1) — The location and capacity of tanks containing process materials and wastes
- 2) — A description of equipment and/or operation
- 3) — Spill potential information (types of failure, description of flow, maximum loss anticipated, detection methods, time to reach river)

ISCP is concerned with the recognition, reporting, containment and notification procedures in the event of leaks and spills.

Fire Prevention and Protection Program Describes:

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1) Employee and Fire Department personnel responsibilities for fire prevention and protection

2) Inspection and use of equipment and supplies

3) Fire Department training program

4) Building evacuation procedures

5) Annual Fire Prevention and Protection Program

6) Prefire plan and other fire plans

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RFAAP Hazardous Material Emergency Response Plan provides:

1) Emergency response notification requirements

2) Training requirements

3) Medical surveillance

4) HAZCOM-MSDS information

5) List of hazardous materials at RFAAP

6) PPE selection criteria

7) Available material and equipment

8) Emergency response procedure

9) Incident command structure and response

10) Emergency response guidelines (per chemical basis)

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**TABLE 1**  
**EMERGENCY PROCEDURES (Continued)**

Oil Discharge Contingency Plan provides:

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- 1) Regulated petroleum tank information
- 2) Emergency notification requirements
- 3) Worst case discharge information
- 4) Disaster plan strategies
- 5) I.D. of natural responses at risk or facilities
- 6) Oil discharge drills
- 7) Facility staffing, equipment and material levels and inventories
- 8) Training requirements
- 9) Inspection procedures
- 10) Facility security

Plant Protection Plan (PPP)

Outlines plant protection/security procedures including the security of explosives, intrusion detection systems, protective communications and key and lock control.

Procedures

4-27-2: Maintenance Responsibilities During Disaster and Major Emergencies

Applicable Plant Operating Procedure: Protective Clothing and Equipment

Attachment II.H of this Permit: Flood Proofing/Protection Plans and Specifications and 100-Year Response Procedures

4-15-53: Clean-up and Decontamination of NG/Nitrate Ester and Other Hazardous Spills

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4-3-2: Area General Waste Propellant Incinerator Facility

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**TABLE II.E-12**  
**WASTE GROUPS BURNED AT THE INCINERATORS**  
**RADFORD ARMY AMMUNITION PLANT**

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<b>Group No.</b>	<b>Description</b>	<b>Defining Characteristics</b>
1	Miscellaneous Waste	Ignitable and reactive Liquids and Sawdust D001, D003
2	Miscellaneous Waste	Propellant Laboratory Waste D003, D008, D030, D004
3	Miscellaneous Waste	Pit Cotton (Waste Nitocellulose) Solid Waste
4	Miscellaneous Waste	Dinitrotoluene and Trinitrotoluene Wastes from manufacturing that are not listed wastes D030
5	Liquid Waste	Water Containing Triethylene Glycol Solid Waste
6	Liquid Waste	Water Containing Diethylene Glycol Solid Waste
7	Single Base Propellants	Propellant with Nitrocellulose and Lead D003, D008
8	Single Base Propellants	Propellant with Nitrocellulose D003
9	Single Base Propellants	Propellant with Nitrocellulose and Dinitrotoluene D003, D030
10	Double Base Propellants	Propellant with Nitrocellulose and Nitrate Esters D003
11	Double Base Propellants	Propellant with Nitrocellulose, Nitrate Esters and Perchlorate salts D003
12	Double Base Propellants	Propellant with Nitrocellulose, Nitrate Esters and Lead, D003, D008
13	Double base Propellants	Propellant with Nitrocellulose, Nitrate Esters and Solid Explosives D003
14	Triple base Propellants	Propellant with Nitrocellulose, Nitrate Esters and Nitroguanidine D003
15	Load, Assemble, & Pack Waste	Energetic materials from manufacturing cartridges D003
16	Single Base Propellants	Propellant with Nitrocellulose, Dinitrotoluene and Lead D003, D008
17	Specialty Products Waste	Propellant with Nitrocellulose, Nitrate Esters, Nitroguanidine, Solid Explosives, or Appendix 3.6 Constituents D003
18	Specialty Products Waste	Propellant with Nitrocellulose, Nitrate Esters, Nitroguanidine, Solid Explosives, and Appendix 3.6 Constituents, Chlorides or Perchlorates D003
19	Specialty Products Waste	Propellant with Nitrocellulose, Nitrate Esters, Nitroguanidine, Solid Explosives, and Appendix 3.6 Constituents or Metals D003, D004-D010

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**TABLE II.E-321**  
**NOTIFICATION ACTION SUMMARY**

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ON-SITE Emergency Coordinators

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Contacts to be made include:

<b>Emergency Coordinator</b>	<b>Office Phone</b>	<b>Home Phone</b>	<b>Home Address</b>
Plant Security	Ext 7323	NA	NA
Plant Fire	Ext 16	NA	NA
Environmental Emergency On-Call Representative <b>(Primary EC)</b>	Cell 230-8970	NA	NA
Safety On-Call Representative <b>(Alternate EC)</b>	Security will Contact	NA	NA
Environmental Manager – <del>Paige Holt</del> <b>(Alternate EC)</b>	Withheld for security purposes. Security will contact. Ext 8658 Cell 540-257-3752 540-961-0907		4815 Nature's Way Blacksburg, VA 24060 Withheld for security purposes <sup>1</sup>
Environmental Lead Engineer – <del>Hazardous Waste</del> – <del>Jeremy Flint</del> <b>(Alternate EC)</b>	Withheld for security purposes. Security will contact. Ext 7668 Pager 540-953-6781 540-381-6207		Withheld for security purposes <sup>1</sup> 1850 Playground Court Riner, VA 24149
Safety Manager – <del>Joseph Betteken</del> <b>(Alternate EC)</b>	Withheld for security purposes. Security will contact. Ext 8781 Cell 540-239-6562 Use cell phone		Withheld for security purposes <sup>1</sup> 7530 Bluffview Drive Radford, VA 24141

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<sup>1</sup> Names, phone numbers, and home addresses of stated personnel have been withheld in interest of national security. This information is readily available for review and inspection at the facility upon request. The relevant data is also readily available to plant security and supervision to respond to an emergency.

ON-SITE Notifications

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In addition to the notifications listed above, the EC or a designated representative should provide notification of all major emergencies to the environmental and operations management team.

OFF-SITE Notifications

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To be made by the Environmental Manager or a designated representative as needed:

1. Army Administrative Contracting Officer – Operations Division Chief Cell (540) 239-4475
2. Virginia Department of Environmental Quality Blue Ridge Regional Office 540-562-6700

3. National Response Center (for releases above an RQ) 1-800-424-8802
4. Virginia Department of Emergency Management 1-800-468-8892
6. Montgomery County Local Emergency Planning Committee (LEPC) (540) 382-2951
7. Pulaski County Local Emergency Planning Committee (LEPC) (540) 980-7705
8. Emergency Service Resources (Fire, Ambulance, Police) 911
9. Chemtrec 1-800-424-9300

**Responsible Unit:** \_\_\_\_\_ **Phone Number**

**Waste Propellant Incinerator Control House:** \_\_\_\_\_ **Extension 7770**

	Office Phone #	Home Phone #	Home Address
<b>Emergency Coordination</b>			
Administrative Contracting Officer	540-639-8647		
D. D. Facemire Safety Specialist	540-639-7182	540-731-1595	7678 Brandon Road Radford, VA 24143
J. M. Slaughter Safety Specialist	540-639-8731	540-980-4621	Rt. 1, Box 393 Pulaski, VA 24301
D. M. Hurley Safety Specialist	540-639-8313	540-382-3698	350 Pepper Street, Crestview #305G Christiansburg, VA 24073
P. K. McMillian Safety Specialist	540-639-8671	540-755-3577	Box 388 Cana, VA 24317
T. E. Lawley Security Manager	540-639-7119	540-552-7995	2804 Farmview Dr. Blacksburg, VA 24060
C. A. Jake Environmental Manager	540-639-7214	540-639-6215	4107 Gedney Park Drive Blacksburg, VA 24060
J. S. Pack Environmental Engineer	540-639-8369	540-639-6675	2190 Wintergreen Drive Radford, VA 24141
J. J. Redder Environmental Engineer	540-639-7536	540-951-3064	P. O. Box 10925 Blacksburg, VA 24060
C. A. Williams Hazard Analysis Supervisor	540-639-7225	540-726-2835	304 W. Westview Narrows, VA 24124
R. A. Bond Acid Area Manager	540-639-7393	540-639-7488	1234 Shady Grove Road Indian Valley, VA 24105-3047

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**TABLE I.I.E-23  
EMERGENCY EQUIPMENT LOCATIONS AT RFAAP**

<b>Location # on Figure 5</b>	<b>Location Description</b>	<b>Equipment Available</b>
1.	Bldg. 1034, Electric Shop	Rubber gloves and respirators
2.	Bldg. 1039	Self-contained breathing apparatus (2)
3.	Roads and Grounds Bldg	Respirators, goggles, air fed respirators, safety belts, shoe cleats, air compressors (250 and 700 CFM ratings), portable pumps (50, 100, and 700 GPM capacities), cranes, bulldozers, movers, graders, tow tractors, portable electric generators
4.	Bldg. 1908	Absorbent materials and booms
5.	Bldg. 350, Fire Department	Ladder truck, engine, utility truck, brush truck, ATV's, command vehicle, and ambulance.
6.	Bldg. 222	HAZMAT trailer with response gear, special operations trailer, and 2boats.
7.	Bldg 201, Main Laboratory	Nitroglycerin remover
8.	Warehouse No. 9387-2	Soda ash
9.	Bldgs. 440 and 441 (incinerators)	Fire Extinguishers
10.	Bldg. 442	Telephone access
11.	Bldg 4601-7	Telephone access and spill cleanup equipment

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**TABLE 3  
NOTIFICATION ACTION SUMMARY (CONTINUED)**

**OFF-SITE NOTIFICATION**

**TO BE MADE BY THE ENVIRONMENTAL SUPERVISOR OR STAFF (OR HIS DESIGNATED REPRESENTATIVE):**

- 1. ADMINISTRATIVE CONTRACTING OFFICER, RFAAP 540-639-8482 OR 8611**
- 2. DEPARTMENT OF ENVIRONMENTAL QUALITY WATER DIVISION 540-562-6700 (DAYS)**
- 3. DEPARTMENT OF ENVIRONMENTAL QUALITY WASTE DIVISION 540-562-6700**
- 4. NATIONAL RESPONSE CENTER 1-800-424-8802**
- 5. VIRGINIA DEPARTMENT OF EMERGENCY MANAGEMENT (VDEM) 1-800-468-8892**
- 6. U. S. ENVIRONMENTAL PROTECTION AGENCY 215-814-5000**
- 7. CHEMTREC (IF NEEDED) 1-800-424-9300**
- 8. MONTGOMERY COUNTY SHERIFF (LOCAL EMERGENCY PLANNING COMMITTEE) 540-382-2951**
- 9. BLACKSBURG FIRE DEPT./HOSPITAL AMBULANCE (IF NEEDED) EMERGENCY 911**
- 10. NEW RIVER VALLEY MEDICAL CENTER AMBULANCE SERVICE (IF NEEDED) EMERGENCY 911**
- 12. DEPARTMENT OF ENVIRONMENTAL QUALITY WASTE DIVISION 540-562-6872 (AZIZ FARAHMAND)**

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**TABLE 4I.E-34**  
**EVALUATION CRITERIA ~~FOR~~ IMPLEMENTATION ~~OF~~ THE**  
**CONTINGENCY PLAN**

In accordance with the Contingency Plan Implementation Logic Diagram (Figure II.E-5), the following are examples of when the contingency plan would need to be implemented:

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For a fire and/or explosion:

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- If the fire causes a release of toxic fumes that go off plant or impacts personnel
- If the fire could spread (is not contained), thereby possibly igniting materials in other locations on-site or off-site, or could cause heat induced leaks or explosions
- If the use of fire suppressant could result in contaminated runoff that cannot be contained.
- If an explosion has or could:
  - Result in damage from flying fragments or shock waves
  - Ignite other hazardous waste at the facility
  - Release toxic materials that could cause harm to human health or the environment or cannot be contained.
- Or if a fire or explosion endangers human health or the environment for any other reason.

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For spills or material releases

- If a spill endangers human health or the environment.

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Fire and/or Explosion

- ~~Fires causes the release of toxic fumes~~
- ~~The fire could spread, thereby, possibly igniting materials in other locations on-site or off-site, or could cause heat induced leaks or explosions~~
- ~~The use of fire suppressant could result in contaminated runoff~~
- ~~Explosion has or could:~~
  - ~~Result in danger from flying fragments or shock waves~~

—Ignite other hazardous waste at the facility

—Release toxic materials

●Fire or explosion endangers human health or the environment for any other reason

#### Spills or Material Releases

●A spill could release toxic or explosive liquids, thus causing a fire or explosion hazard

●A spill could result in off-site or on-site soil contamination and/or ground or surface water contamination

●A spill constitutes a release of a “reportable quantity” of a hazardous substance under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

●A spill endangers human health or the environment for any other reason

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**TABLE II.E-455  
SPILL RESPONSE MEASURES**

The spill response program will be coordinated by the Emergency Coordinator or designated representative. Guidelines are provided concerning safety, containment, evaluation, notification, treatment and monitoring as related to each spill incident.

**1. Safety**

- a. Evaluate the hazard of the spilled chemical to personnel that may be involved in containment, clean up, treatment and monitoring operations.
- b. Assure proper clothing and protective equipment is available and used by personnel involved in the spill response.

**2. Containment**

- a. Establish the expected flow path of the spilled material.
- b. Locate the nearest proposed damming site.
- c. Erect a dam -- notify Roads and Grounds regarding construction of dam.

**3. Evaluation of Spill Extent**

- a. Obtain pH readings at site if chemical spilled was an acid or base.
- b. Confirm stoppage of leak at source.

**4. Initial Notification**

- a. Delegated to the Emergency Coordinator
- b. Notify appropriate agencies (see Notification Action Summary)

**5. Treatment**

- a. Straw or other absorbers will be supplied to entrap hazardous wastes that are spilled. Sites/locations within the plant containing straw and other entrapment materials are controlled by Roads and Grounds.

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## 6. Monitor Program

Upon receiving notification of an accidental loss to the industrial sewer or surface streams, personnel will obtain grab samples at specified locations and time intervals as determined by the Emergency Coordinator.

### a. In-Plant Sites

i. Suggested sampling sites will be determined based on the location of the spill

ii. Samples will be collected at internal locations as designated.

### b. New River Site

i. Sampling at the New River site will be performed on a staggered basis since the river flow approximates one mile per hour. Sampling will be performed by the operator at Building 4330.

## 7. Final Treatment

a. Determine disposition of impounded material depending on type and quantity of spill. Ensure EPA and DEQ concur with disposition.

b. Provide monitoring for duration of disposition.

Explosion fragments and materials as well as contaminated soils will be decontaminated in either the decontamination oven or the decontamination incinerator on-site at Radford AAP provided they are not TCLP toxic or reactive. The decontaminated materials will then be disposed of in a permitted landfill or as decontaminated scrap. The spill response program will be coordinated by the Emergency Coordinator. Guidelines are provided concerning safety, containment, evaluation, notification, treatment and monitoring as related to each spill incident.

### 1.—Safety

a.—Evaluate the hazard of the spilled chemical to personnel which may be involved in clean-up, treatment and monitoring operations.

b.—Assure proper clothing and protective equipment is available and used by personnel involved in the spill response.

### 2.—Containment

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- a. — Establish the expected flow path of the spilled material.
- b. — Locate the nearest proposed damming site.
- c. — Erect a dam — notify Roads and Grounds regarding construction of dam.

### 3. — Evaluation of Spill Extent

- a. — Obtain pH meter readings at site if chemical spilled was an acid or base.
- b. — Confirm stoppage of leak at source.

### 4. — Initial Notification

- a. — Delegated to the Emergency Coordinator
- b. — Notify appropriate agencies (see Notification Action Summary).

### 5. — Treatment

- a. — Straw or other absorbent materials will be supplied to entrap hazardous wastes which are spilled. Sites/locations within the plant containing straw and other entrapment materials are controlled by Roads and Grounds.

**TABLE 5**  
**SPILL RESPONSE MEASURES (Continued)**

6.—Monitoring Program

Upon receiving notification of an accidental loss to the industrial sewer or surface streams, personnel will obtain grab samples at intervals and from the points described by the Emergency Coordinator.

a. — In-Plant Sites

1.—Suggested sampling sites will be determined based on the location of the spill

2.—Samples will be collected at intervals/locations designated.

b. — New River Sites

Sampling at the New River sites will be performed on a staggered basis since the river flow approximates one mile per hour. Sampling will be performed.

7.—Final Treatment

a. — Determine disposition of impounded material depending on type and quantity of spill. Ensure EPA and DEQ concur with disposition.

b. — Provide monitoring for duration of disposition.

Explosion fragments and materials and possible propellant contaminated materials and soils will be analyzed using SW846 Method 8332 for explosives and 8330 for nitroglycerine. If the analyses indicate that the materials are reactive, they will be handled as hazardous waste. Hazardous soils and residual reactive wastes will be treated at the OB Ground or sent off site for disposal. If the analyses indicate that the materials are non-reactive, they will be disposed of as solid waste.

**TABLE 6  
EMERGENCY EQUIPMENT LOCATIONS AT RFAAP**

<u>Location No. on Figure 5</u>	<u>Location Description</u>	<u>Equipment Available</u>
1	Bldg. 1034, Electric Shop	Raincoats, rubber gloves, respirators
2	Bldg. 1039	Self-contained breathing apparatus (2)
3	Roads and grounds	Respirators, goggles, air fed respirators, safety belts, shoe cleats, air compressors (250 and 700 CFM ratings), portable pumps (50, 100 and 700 GPM capacities), cranes, bulldozers, movers, graders, tow tractors, portable electric generators, backhoes, front end loaders, portable tankers, absorbent pads, booms, cloths
5	Bldg. 1999	Farm wagon with spill control materials
6	Bldg. 222, Fire Department	1 ladder truck, 1 engine, 1 utility truck, 1 tanker, 1 brush truck, 1 HAZMAT trailer with response gear, 3 boats with trailers
7	Bldg. 4018	Boats, motors, hoses, nozzles and other supply equipment

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**TABLE 6**  
**EMERGENCY EQUIPMENT AT RFAAP (Continued)**

8	Bldg. 201, Main Laboratory	nitroglycerine remover
9	Bldgs. 440 and 441 (incinerators)	Halon 1211 Model 1300 Hal. type ABC fire extinguishers
10	Bldg. 442	Telephone access
11	Bldg. 4601-7	Telephone access and spill cleanup equipment

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**APPENDIX A**  
**TABLE OF CONTENTS**  
**RFAAP DISASTER CONTROL PLAN AND**  
**RFAAP PLANT PROTECTION PLAN**

RFAAP DISASTER CONTROL PLAN  
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**APPENDIX B**

**HAZARD CLASSIFICATION PLACARD SYSTEM**

**~~Remove this page and insert the following:~~**

**~~Appendix B~~** - Appendix B from Contingency Plan submitted with  
ATK ltr dtd 12 Jan. 2001

APPENDIX ~~C~~**I**.E-1

~~EXAMPLE~~ MUTUAL ASSISTANCE AGREEMENTS

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**TABLE 1**  
**MUTUAL ASSISTANCE AGREEMENTS WITH LOCAL MUNICIPALITIES**

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<b>ENTITY</b>	<b>DATE OF AGREEMENT</b>	<b>SERVICES INCLUDED</b>
Twin Community Volunteer Fire Department	August 2, 2011	Firefighting equipment and personnel
City of Radford	July 11, 2011	Firefighting equipment and personnel
Fairlawn Volunteer Fire Company	July 11, 2011	Firefighting equipment and personnel
Riner Volunteer Fire Company	June 30, 2011	Firefighting equipment and personnel
Riner Volunteer Rescue Squad	June 30, 2011	Emergency medical services
Town of Dublin	November 18, 2010	Firefighting equipment and personnel
Pulaski County Board of Supervisors	January 22, 2007	FCC licensed radio frequencies for communication
Town of Christiansburg	October 4, 2006	Firefighting equipment and personnel
Community of Riner	August 31, 2006	Firefighting equipment and personnel
Federal Bureau of Investigation, Richmond Division	June 9, 2003	Law enforcement for major disruptions or special threats
Town of Blacksburg	October 8, 2002	Firefighting equipment and personnel
Town of Pulaski	2002	Firefighting equipment and personnel
Community of Long Shop/McCoy	September 10, 2002	Firefighting equipment and personnel
United States Army Research, Development, and Acquisition Information Services Activity	June 26, 1992	Force-Protection Support Responsibilities

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**TABLE 2**  
**MUTUAL ASSISTANCE AGREEMENTS WITH LOCAL MEDICAL FACILITIES**

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<b>ENTITY</b>	<b>DATE OF AGREEMENT</b>	<b>SERVICES INCLUDED</b>
LewisGale Hospital Montgomery	August 18, 2011	Emergency medical services
Carilion New River Valley Medical Center	July 14, 2011	Emergency medical services
LewisGale Hospital Pulaski	July 7, 2011	Emergency medical services
Pulaski Community Hospital	September 14, 2010	Emergency medical services

**~~Remove this page and insert the following:~~**

**~~Appendix C~~** -Appendix C from Contingency Plan submitted with  
ATK ltr dtd 12 Jan. Sept. 2001

**ATTACHMENT II.F**  
**CLOSURE PLAN**

## ATTACHMENT IIF – CLOSURE PLAN

~~The following text was excerpted from RFAAP's January 12, 2001 submittal. The original formatting and numbering scheme is retained in order to simplify the anticipated inclusion of additional hazardous waste management units (e.g., the Open Burning Grounds).~~

### **II.F.1 1.0—INTRODUCTION**

This Closure Plan has been prepared for the ~~Waste Propellant Incinerator~~ hazardous waste incinerators and associated storage/treatment tanks (herein referred to as ~~the Incinerator~~); the permitted ~~treatment and storage and treatment units~~ area; at the Radford Army Ammunition Plant (RFAAP). ~~The Incinerator is a permitted treatment and storage unit.~~ This section presents the purpose of the Closure Plan, background information on the RFAAP, ~~I~~ and the incinerators, and a summary of information contained within the Closure Plan.

#### **II.F.1a 1.1—Purpose**

This Closure Plan has been prepared for the facility as part of a Hazardous Waste Management Permit Application for the RFAAP. The purpose of the Closure Plan is to develop a closure strategy that assures the RFAAP will close the hazardous waste facilities in a manner that:

- (a) Minimizes the need for further maintenance; ~~and~~
- (b) 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; and
- (c) Complies with the closure requirements of 9 VAC 20-60-264, 40 CFR 264 Subpart G and 264.197 and 264.351.

#### ~~II.F.1a~~ **II.F.1b 1.2—Background**

This section provides a brief overview of the operations at RFAAP and those operations performed at the ~~Incinerator~~ permitted storage and treatment area.

##### **1.2.1—RFAAP Operations**

The RFAAP encompasses approximately 4,104 acres and is located in southwest Virginia within Pulaski and Montgomery Counties as shown in Figure ~~4II.F-1~~. ~~The RFAAP is located approximately 5 miles northeast of the City of Radford, 10 miles west of Blacksburg, and 47 miles southwest of Roanoke.~~ The New River separates Pulaski and Montgomery counties and also divides the RFAAP into two portions commonly known as the Horseshoe Area and Main Manufacturing Area. These two areas and the approximate boundary of the RFAAP are shown on Figure ~~4II.F-2~~.

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The permitted storage and treatment area is located within the north central portion of the Horseshoe Area as shown in Figure II.F-2 and is used for the incineration of waste energetics. Figure II.F-3 shows the boundary of the area and the locations of the actual structures.

RFAAP is a government-owned, contractor-operated (GOCO) industrial installation responsible to the U.S. Army ~~Armament, Munitions and Chemical Command~~ whose mission of the RFAAP is to manufacture propellants, explosives, and chemical materials as assigned. ~~The Alliant Powder and Ammunition Company, L.L.C. (Alliant) currently is the operator of the facility under a Facility Use contract.~~ As a GOCO operation, RFAAP has both Government and Contractor organizations. For the purpose of this permit application, the facility consists of all contiguous portions of the RFAAP ~~under the control of either the U.S. Army or Alliant (permittees).~~ The facility specifically includes both the Horseshoe Area and the Main Manufacturing area. Wastes from onsite activities (including those of both the operating contractor and tenants) are ~~managed~~ stored and treated in the permitted storage and treatment area. ~~Additionally, wastes from the nearby New River Unit (NRU) are handled at the site. No other "offsite" wastes are managed at the facility.~~

The facility was first constructed in 1940 and began operations producing smokeless powder (single base, double base, and triple base propellants) in 1941. Since that time various processes/products have been added to the facility including production of cast propellants, trinitrotoluene (TNT), commercial propellants, and load, assemble and pack facilities. Specific operations vary based upon contracted capacity and products from the Department of Defense and U.S. allies.

### 1.2.2 Incinerator Operations

~~The Incinerator is located within the north central portion of the Horseshoe Area as shown in Figure 1 and is used for the incineration of waste propellant. Figure 2 shows the Incinerator boundary and the locations of the actual structures.~~

Operations included in the permitted storage and treatment area include grinding, ~~tank~~ storage and treatment, and incineration equipment. The primary structures included in the permitted storage and treatment area are as follows:

- ~~The Grinder Building (identified as Building/Account No. 442), where wastes are ground into small pieces prior to being mixed into the slurry and incinerated. The Grinder Building houses the two permitted storage tanks.~~
- ~~Incinerators 440 and 441 (identified as Accounts 440 and 441), where the slurried wastes are treated in accordance with this Permit and the Hazardous Waste Combustor National Emission Standards for Hazardous Air Pollutants.~~

~~The following areas are specifically excluded from the "permitted treatment and storage area" (refer to Figure II.F-3 for structure designations) as these are included in the USEPA RCRA Corrective Action Permit or were closed under previous closure plans administered by the DEQ:~~

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- Settling Ponds #1 and #2 (identified as Accounts 445 and 446), which are included as Solid Waste Management Unit (SWMU) No. 39 in the USEPA RCRA Corrective Action Permit;
- Incinerator Fuel Oil Storage Units, including Structures 432 and 443, which were underground storage tanks used for fuel oil storage and were previously closed under a plan administered by the DEQ;
- Spray Pond (identified as Account 444), which was identified as Hazardous Waste Management Unit (HWMU) No. 39 and was previously closed under a plan administered by the DEQ; and
- Ancillary Building A-444, which served as the pumphouse for the spray pond and was previously closed under a plan administered by the DEQ.

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In addition to these areas, there are several other structures in the general vicinity of the incinerators that are not included in the permitted storage and treatment area because they are not used to accumulate waste for periods greater than 90 days. These buildings and structures include:

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- The incinerator control room and adjacent supply area (identified as Buildings 431 and 447);
- Temporary waste accumulation area (identified as Building 430), which is used to accumulate wastes for < 90 periods prior to treatment in the incinerators; and
- Ancillary buildings in the incinerator complex that store supplies and/or instrument equipment and calibration gases (identified as Accounts A-440, B-440, and A-441).

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~~Operations included as part of the Incinerator include grinding, tank storage and treatment, and incineration equipment as follows:~~

- ~~• Grind Houses (Structures 430 and 442)~~
- ~~• Control Houses (Structures 431 and 447)~~
- ~~• Incinerator Buildings (Structures 440 and 441); and~~
- ~~• Ancillary Buildings (Structures A-440, B-440, and A-441)~~

~~Structures that are specifically excluded from the Incinerator include the following:~~

- ~~• Incinerator fuel oil storage units (including Structures 432 and 443)~~
- ~~• Spray pond (Structure 444)~~
- ~~• Settling ponds #1 and #2 (Structures 445 and 446); and~~
- ~~• Ancillary Building (Structure A-444).~~

~~The Spray Pond has been clean closed for soils by the VDEQ and Settling Ponds #1 and #2 are currently managed through the U.S. Environmental Protection Agency (EPA).~~

Specific operations that are performed at the Incinerator are described below. Figure II.F-4 is a schematic diagram that shows how the wastes are processed as part of the treatment process.

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1. Waste materials are transported from production areas in < 20 gallon containers to a < 90 day accumulation area at Building 430 or Building 4601-7. (Note: the wastes are accumulated for less than 90 days and therefore these buildings are not permitted container storage facilities).
2. At the Grind House (Building 442) the energetic waste is loaded onto a trolley, dumped into a hopper, and fed onto a conveyor. The material is sprayed with water to minimize the chance of a waste explosion. Oversize and metallic materials are removed from the waste stream on the conveyor and dropped into the grinder feed hopper. Again the waste is sprayed with water to minimize the potential for an explosion. The waste is then ground and added to one of two slurry tanks. In the slurry tanks the waste is mixed with water to form a slurry for incineration. These slurry tanks are not completely emptied every 90 days; therefore, these tanks have been permitted as > 90 day storage tanks.
3. The waste slurry is circulated through a piping system to the incinerators' feed pump house and back to the slurry tank to prevent settling and build up of solids in the lines. Portions of this flow are directed from the feed pump house to the incinerators for treatment.
4. Residue from the incineration system is collected in ash buggies and drums and is accumulated. The ash is staged onsite pending sample analysis and is then disposed in a properly permitted disposal facility. ~~Specific operations that are performed at the Incinerator are listed below. Figure 3 is a schematic diagram that shows how waste propellants are processed as part of the treatment process.~~

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- ~~1. Waste materials are transported from production areas in <20 gallon containers to an accumulation area at Building 430 or Building 4601-7. (Note: the wastes are accumulated for less than 90 days and therefore the building is not a permitted storage facility for these containers).~~
- ~~2. At the Grind House (Building 442) the waste propellant is loaded into a trolley and dumped into a hopper and fed onto a conveyor. The material is sprayed with water to minimize the chance of a waste explosion. Oversize and metallic materials are removed from the waste stream on the conveyor which is then dropped into the grinder feed hopper. Again the waste is sprayed with water to minimize the potential for an explosion. The waste is then ground and added to one of two slurry tanks. In the slurry tanks the waste is mixed with liquid to form a slurry for incineration. These slurry tanks are not completely emptied every 90 days; therefore, the storage permit is being sought for the slurry tanks in the Grinder Building.~~
- ~~3. The waste slurry is circulated through a piping system to the incinerators' feed pump house and back to the slurry tank to prevent settling and build up of solids in the lines. Portions of this flow are directed from the feed pump house to the incinerators for treatment.~~

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~~4. Residue from the incinerators is collected in an ash buggy. The ash is staged on-site pending sample analysis and disposal in a properly permitted disposal facility. Residue is also collected from the Bag House and evaporative cooler.~~

~~1.2.3 Reserved~~

~~II.F.1b1.3 REPORT FORMAT~~

~~THIS CLOSURE PLAN CONTAINS THE REQUIRED INFORMATION FOR A HAZARDOUS WASTE UNIT CLOSURE PLAN AS IDENTIFIED IN 9 VAC 20-60-264 AND 40 CFR PART 264 SUBPART G. THE CONTENTS OF THIS PLAN ARE AS LISTED BELOW.~~

- ~~SECTION 2 CONTAINS A SUMMARY OF GEOLOGIC, HYDROGEOLOGIC, AND HYDRAULIC SETTINGS OF THE INCINERATOR.~~
- ~~SECTION 3 DESCRIBES THE TYPES OF HAZARDOUS WASTES MANAGED AT THE INCINERATOR.~~
- ~~SECTION 4 EVALUATES SOIL AND GROUNDWATER IMPACTS THAT ARE KNOWN TO BE OR MAY BE EXPECTED TO BE PRESENT AT THE INCINERATOR.~~
- ~~SECTION 5 CONTAINS A DESCRIPTION OF THE GENERAL CLOSURE APPROACH AND OBJECTIVES.~~
- ~~SECTION 6 PRESENTS THE DETAILED CLOSURE APPROACH AND PROCEDURES.~~
- ~~SECTION 7 DESCRIBES POST CLOSURE CARE THAT MAY BE REQUIRED.~~
- ~~SECTION 8 PRESENTS THE CLOSURE SCHEDULES.~~
- ~~SECTION 9 INCLUDES REQUIREMENTS FOR CLOSURE PLAN MODIFICATION.~~

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**II.F.2 2.0 — GEOLOGIC, HYDROGEOLOGIC AND HYDROLOGIC SUMMARY**

**Comment [RFAAP2]:** Removed this as it is not an applicable requirement for a closure plan.

~~THIS SECTION PROVIDES A SUMMARY OF RELEVANT PHYSIOGRAPHIC, GEOLOGIC, HYDROGEOLOGIC, AND HYDROLOGIC CONDITIONS PRESENT AT THE RFAAP, THE INCINERATOR.~~

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**II.F.2a 2.1 — GENERAL RFAAP SETTING**

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~~THE RFAAP IS LOCATED WITHIN THE VALLEY AND RIDGE PHYSIOGRAPHIC PROVINCE, WHICH IS PART OF THE APPALACHIAN HIGHLANDS. ELONGATED, NARROW, RIDGES CONSISTING OF RELATIVELY RESISTANT SANDSTONES CHARACTERIZE THIS AREA AND DOLOMITES THAT STRIKE SOUTHWEST TO NORTHEAST WITH NARROW VALLEYS OF VARYING LENGTH AND WIDTH BETWEEN THESE RIDGES. THIS TOPOGRAPHY IS THE RESULT OF A COMPLEX SEQUENCE OF THRUST FAULTING AND FOLDING OVER THE PAST 100 MILLION YEARS.~~

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~~SEDIMENTARY ROCKS CONSISTING OF LIMESTONE, DOLOMITE, AND MINOR SANDSTONE UNDERLIE THE RADFORD AREA. THESE ROCKS ARE COMPLEXLY FOLDED, FAULTED, AND FRACTURED. THE RFAAP SITE IS CONSTRUCTED ABOVE THE ELBROOK FORMATION, WHICH IS OF THE CAMBRIAN ERA AND CONSISTS OF DOLOMITE, SHALE, AND MINOR LIMESTONE. TYPICAL FEATURES OF THIS FORMATION ARE SINKHOLES, SOLUTION CHANNELS, AND A PINNACLED BEDROCK SURFACE. SURFICIAL MATERIAL CONSISTS OF RESIDUAL SOILS CONSISTING PRIMARILY OF SILTS AND CLAYS DERIVED FROM THE UNDERLYING ROCK. ALLUVIAL DEPOSITS ARE ALSO PRESENT ALONG THE BANKS OF THE NEW RIVER AND ADJOINING FLOOD PLAIN. THESE ALLUVIAL SOILS CONSIST MICACEOUS SILTS AND SANDY CLAYS UNDERLAIN BY COARSER DEPOSITS OF SILTY AND CLAYEY SANDS AND GRAVEL. COBBLES AND BOULDERS ARE SCATTERED WITHIN THE ALLUVIAL DEPOSITS.~~

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~~GROUNDWATER IN THE VICINITY OF THE RFAAP OCCURS AT RELATIVELY SHALLOW DEPTHS IN BOTH SOIL AND BEDROCK AND IS TYPICALLY RECHARGED BY PRECIPITATION AND STREAM FLOWS. GROUNDWATER IN THE TERRACE FORMATIONS TYPICALLY IS FOUND NEAR THE SOIL-BEDROCK INTERFACE. IN FLOOD PLAIN AREAS, GROUNDWATER IS TYPICALLY PRESENT WITHIN THE ALLUVIAL MATERIAL. IN THE LIMESTONE AND DOLOMITE FORMATIONS, GROUNDWATER IS TYPICALLY FOUND IN FRACTURES AND SOLUTION CHANNELS AS IS TYPICAL FOR SUCH CARBONATE FORMATIONS.~~

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~~THE NEW RIVER FLOWS THROUGH THE RFAAP AS SHOWN ON FIGURE 1. THE RIVER SEPARATES PULASKI AND MONTGOMERY COUNTIES AND SERVES TO DIVIDE THE RFAAP FACILITY INTO TWO DISTINCT SECTIONS. SURFACE WATER FLOWS GENERALLY DRAIN TO THE NEW RIVER WITH~~

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~~THE EXCEPTION OF PORTIONS OF THE SOUTHEASTERN AREA OF THE PLANT. SURFACE WATER IN THIS AREA FLOWS TO STROUBLES CREEK, WHICH EMPTIES INTO THE NEW RIVER (ENGINEERING SCIENCE, 1985, COMMONWEALTH OF VIRGINIA, 1993).~~

~~II.F.2b2.2 — INCINERATOR CONDITIONS~~

~~THE INCINERATOR IS SITUATED ON RELATIVELY FLAT TERRACED LAND APPROXIMATELY 800 FEET FROM THE NEW RIVER AND AT AN ELEVATION OF APPROXIMATELY 1,700 FEET ABOVE MEAN SEA LEVEL (MSL). BASED UPON OTHER WORK PERFORMED IN THE VICINITY OF THE PERMITTED TREATMENT AND STORAGE AREA, 5 TO 10 FEET OF SILTY CLAYS, CLAYEY SILTS, AND CLAYEY/SILTY SANDS UNDERLIE THE SITE. BETWEEN 10 TO 20 FEET BELOW GROUND SURFACE, THE SOILS BECOME COARSER GRADING TO SILTY SANDS AND SILTY/SANDY GRAVELS. BEDROCK CONSISTING OF LIMESTONE AND SOME DOLOSTONE IS PRESENT AT A DEPTH OF APPROXIMATELY 20 FEET BELOW GROUND SURFACE. SOLUTION CHANNELS AND SOME VOIDS HAVE BEEN IDENTIFIED IN THE LIMESTONE BEDROCK.~~

~~GROUNDWATER APPEARS TO BE PRESENT AT A DEPTH OF APPROXIMATELY 20 FEET BELOW GROUND SURFACE. THE WATER TABLE IS PRESENT AT THE SOIL/BEDROCK INTERFACE OR IN THE UPPER PORTION OF THE BEDROCK (DRAPER ADEN ASSOCIATES, 1999).~~

~~SURFACE WATER RUNOFF FROM THE INCINERATOR FLOWS OVERLAND INTO DRAINAGE DITCHES. THESE DITCHES CONVERGE AND FLOW NORTH TO THE NEW RIVER.~~

~~2.3 RESERVED~~

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~~II.F.2 3.0~~  
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**HAZARDOUS WASTE CHARACTERISTICS ANALYSIS**

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This section provides a general discussion of the types and sources of hazardous wastes managed that are stored and treated at the Incinerator ~~permitted storage and treatment area~~. This information includes the general types of wastes managed, specific waste streams, and maximum hazardous waste inventory.

~~II.F.3a~~II.F.2a 3.1 **General Waste Types**

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Comment [RFAAP3]: Revised these sections to be consistent with other sections of the permit.  
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~~The hazardous wastes that are managed (treated and stored) at the permitted facility include waste energetic materials and spill "cleanup" residues generated at the facility or the nearby NRU. These wastes are hazardous due to their ignitability (D001) and/or reactivity (D003). Additionally, some of the wastes may exhibit the toxicity characteristic for certain metals and/or 2,4-dinitrotoluene. A detailed description of the wastes is provided in the Waste Analysis Plan in Attachment II.A of this Permit. The hazardous wastes that are managed (treated and stored) at the permitted facility include waste propellants and spill "cleanup" residues generated at the facility which are hazardous due to their ignitability (D001) or reactivity (D003). Only hazardous wastes identified in the permit Waste Analysis Plan will be treated or stored at the Incinerator and/or treated at the OB Ground. These wastes include the following:~~

- ~~1. Wastes which exhibit only the following hazardous characteristic(s):
  - ~~a. Reactivity (hazardous waste number D003) as specified in 9 VAC 20 60 261; 40 CFR Part 261.23;~~
  - ~~b. Reactivity (hazardous waste number D003) as specified in 9 VAC 20 60 261; 40 CFR 261.23 and the characteristic of toxicity, as specified in 9 VAC 20 60 261; 40 CFR 261.24, for one of the following constituents:
    - ~~i. Lead (hazardous waste number D008);~~
    - ~~ii. 2,4 Dinitrotoluene (hazardous waste number D030); and/or~~
    - ~~iii. Barium (hazardous waste number D005)~~~~
  - ~~c. Ignitability (hazardous waste number D001) as specified in 9 VAC 20 60 261; 40 CFR 261.21. Ignitable wastes are limited to clean up residue of propellant ingredients. Ignitable wastes are mixed with sawdust and are not a liquid when brought to the permitted treatment and storage area.~~~~
- ~~2. Wastes which are not listed pursuant to 9 VAC 20 60 261; 40 CFR 261.31, 32, and 33; and~~
- ~~3. Wastes which are one of the following (as identified in the Waste Analysis Plan):~~

- a. ~~Off specification propellants and propellant intermediates, generated at the facility;~~
- b. ~~Liquid wastes, consisting of water and diethylene or triethylene glycol;~~
- c. ~~Load, assemble and pack waste, consisting of energetic materials from assembling cartridges;~~
- d. ~~Specialty product wastes containing propellant with nitrocellulose, nitrate esters, nitroguanidine, solid explosives, and one of the following combinations of additional materials:~~
  - i. ~~40 CFR 261 Appendix VIII constituents (D003)~~
  - ii. ~~40 CFR 261 Appendix VIII constituents, chlorides and/or perchlorates (D003)~~
  - iii. ~~40 CFR 261 Appendix VIII constituents and/or metals (D003, D004 D010)~~
- e. ~~Other miscellaneous waste, described in Module II, Attachment II.B, Appendix II.B-1, Table I, as one of the following:~~
  - i. ~~Ignitable and reactive liquids in sawdust (D001, D003)~~
  - ii. ~~Propellant laboratory waste (D003, D008, D030, D004)~~
  - iii. ~~Pit cotton (Waste Nitrocellulose)~~
  - iv. ~~Dinitrotoluene and Trinitrotoluene Wastes from manufacturing that are not listed wastes~~

**~~II.F.3b~~II.F.2b3.2 Waste Composition**

~~The composition of the wastes fed to the incinerators varies over time due to changes in the production schedule at the RFAAP. Generally, these wastes include miscellaneous energetic wastes. For purposes of classification under RCRA, these wastes have been segregated into waste groups that differ based on their primary components and RCRA waste codes. There are no wastes managed-stored or treated in the permitted storage and treatment area that are incompatible with one another.~~

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~~The composition of the waste propellant mixtures fed to the Incinerator varies over time due to changes in the production schedule at the RFAAP. Off specification propellants and propellant intermediates, dinitrotoluene (including production intermediates), liquid wastes, load, assemble and pack waste, specialty product waste and other miscellaneous wastes are the categories of wastes which may be stored, treated and incinerated at the Incinerator. These categories are segregated into 19 distinct waste groups, as listed in Table 1; all wastes that are stored, treated, and incinerated at the facility fall into one of these groups.~~

~~These waste streams are processed as described in Sections 1.2.2 and 1.2.3 and are handled in accordance with the Waste Analysis Plan.~~

**~~II.F.3c~~II.F.2c 3.3 Incinerator Maximum Hazardous Waste Inventory**

~~At any given point in time, the hazardous wastes present in the permitted storage and treatment area are as follows:~~

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- Waste slurry contained in the two slurry tanks;
- Accumulated waste awaiting processing in the grinder; and
- Potentially hazardous ash accumulated in collection chambers at the incinerators.

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The actual maximum quantity of reactive material (waste ~~propellant~~energetics) allowed in the Grinder Building at any time is 5,000 pounds per building explosive design criteria. This actual maximum quantity includes any waste ~~propellant~~energetic material in the two slurry tanks, as well as any waste ~~propellant~~energetic material in the Grinder Building that is waiting to be placed into the slurry tanks. However, the actual inventory of waste energetic material in the building prior to closure should be significantly less, as the slurry lines and tanks would be burned out and flushed with water prior to initiating closure. ~~This 5,000 pound maximum quantity limit is an administrative control established by the permittees. A placard stating the 5,000 pound maximum is affixed to the entrance of the Grinder Building. As part of the overall facility safety controls, this limit on the maximum quantity of waste propellant allowed in the Grinder Building serves to minimize the effects that any potential fires or explosions would have on surrounding structures.~~

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~~The two slurry tanks each have a capacity of 1,700 gallons, for a total capacity of 3,400 gallons. Using the most conservative figures, the slurry consists of a mixture of 3.5 parts water to 1 part waste propellant (by weight). At this mixture ratio, the slurry is not explosive as long as the slurry agitators are operating constantly. Assuming that the tank systems are filled to capacity with slurry at this mixture ratio, the potential maximum quantity of waste propellant that could be present in 3,400 gallons of slurry is 6,719 pounds. This would exceed the waste propellant administrative control limit of 5,000 pounds for the Grinder Building.~~

~~Because of this administrative control, the maximum amount of waste at the Incinerator to be treated would be 5,000 pounds. The waste in containers will be treated at either the OB Ground or another permitted facility. The contents of the slurry tanks will be characterized for treatment at a permitted facility.~~

~~The actual inventory of waste propellant within the slurry prior to closure should be significantly less, as the slurry lines and tanks would be flushed with water. This water would be incinerated prior to the initiation of closure activities.~~

~~**3.4 Reserved**~~

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Comment [RFAAP4]: Updated this section based on new data that is available.

This section contains a review of potential impacts to soil and groundwater in the permitted treatment and storage facilities as a result of hazardous waste management activities. These potential impacts will be evaluated and appropriately addressed as part of the closure activities.

II.F.3a Geological Considerations

In assessing the potential impacts to the surrounding area, it is important to consider the physiographic, geologic, hydrogeologic, and hydrologic conditions in and around the permitted hazardous waste storage and treatment area.

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RFAAP is part of the Appalachian Highlands in the portion characterized as the valley and ridge physiographic province. Elongated, narrow, ridges consisting of relatively resistant sandstones characterize this area and dolomites strike southwest to northeast with narrow valleys of varying length and width between these ridges. This topography is the result of a complex sequence of thrust faulting and folding over the past 100 million years. Sedimentary rocks consisting of limestone, dolomite, and minor sandstone underlie the area. These rocks are complexly folded, faulted, and fractured. RFAAP is constructed above the Elbrook Formation, which is of the Cambrian Era and consists of dolomite, shale, and minor limestone. Typical features of this formation are sinkholes, solution channels, and a pinnacled bedrock surface. Surface coverage consists primarily of residual silts and clays derived from the underlying rock. Alluvial deposits are also present along the banks of the New River and adjoining flood plain. These alluvial soils consist of Micaceous silts and sandy clays underlain by coarser deposits of silty and clayey sands and gravel. Cobbles and boulders are scattered within the alluvial deposits.

The incinerator itself sits on the flat terraced land adjacent to the New River. The underlying soils in this portion of the plant consist primarily of a 5 to 10-foot layer of silty clays, clayey silts, and clayey/silty sands. Between 10 to 20 feet below ground surface, the soils become coarser, grading to silty sands and silty/sandy gravels. Bedrock consisting of limestone and some dolostone is present at a depth of approximately 20 feet below ground surface. Solution channels and some voids have been identified in the limestone bedrock.

Groundwater in the vicinity of the RFAAP occurs at relatively shallow depths in both soil and bedrock and is typically recharged by precipitation and stream flows. Groundwater in the terrace formations typically is found near the soil-bedrock interface. In flood plain areas, groundwater is typically present within the alluvial material. In the limestone and dolomite formations, groundwater is typically found in fractures and solution channels. At the incinerator, groundwater has been found at a depth of approximately 20 feet below ground surface. The water table is present at the soil/bedrock interface or in the upper portion of the bedrock.

The New River flows through the RFAAP and separates the main area of the plant from the Horseshoe area, where the incinerators are located. In addition, the river serves as the dividing line between Pulaski and Montgomery counties. Surface water flows, including those

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in the incinerator area, generally drain to the New River with the exception of portions of the southeastern area of the plant. Surface water in this area flows to Stroubles creek, which then empties into the New River.

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~~4.1 Incinerator~~

~~II.F.3b4.1.1 Impacts to Soil~~

In accordance with the EPA Corrective Action Permit, a Plant-wide Background Study was completed in September, 2000. The soil samples collected during the Plant-wide Background Study were analyzed for all of the hazardous constituents listed in Appendix VIII of 40 CFR Part 261. ~~The report on these analyses was submitted to and approved by the VDEQ in May 2002. Data from this sampling event or another existing and more recent event The analytical results for the Plant-wide Background Study were not yet available at the time of this Closure Plan; however, the analytical results will be forwarded to the VDEQ when they become available. This data will be used in the evaluation of soils during Incinerator closure, if it is deemed appropriate and current by the VDEQ at the time of actual closure. If the data is not acceptable to the VDEQ, alternative background sampling locations and analytical results will be submitted to the VDEQ for approval.~~

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~~II.F.3c 4.1.2 Impacts to Groundwater~~

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Groundwater in the vicinity of the ~~Incinerator~~ incinerators ~~has been~~ was evaluated for potential impacts ~~in relation to the closed~~ as part of the RCRA Facility Investigation (RFI)/Corrective Measures Study (CMS) of solid waste management unit (SWMU 39) near the incinerators. ~~Incinerator Spray Pond~~ The results of this study were submitted to the VDEQ in August 2005. ~~in accordance with the Virginia Hazardous Waste Management Regulations (9 VAC 20-60) and Title 40 of the Code of Federal Regulations, Part 265.93 (40 CFR 265.93).~~ This data ~~and/or other~~ or other existing data from a more recent groundwater ~~information~~ investigation will be used in the evaluation of groundwater during facility closure ~~if it is deemed appropriate and current by the VDEQ at the time of actual closure. If the data is not acceptable to the VDEQ, alternative groundwater monitoring locations and/or analytical results will be submitted to the VDEQ for approval.~~

~~II.F.5~~

~~II.F.5a4.2 RESERVED~~

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## 5.0 GENERAL CLOSURE ANALYSIS

This section presents the general goals and criteria for developing a closure strategy and developing criteria for closure. Feasible options for closure of the facilities are reviewed and evaluated with regard to regulatory requirements and environmental protection, economic feasibility, and practicality.

### II.F.4a 5.1 General Closure Criteria

As stated in the introduction, the purpose of the Closure Plan is to develop a closure strategy that assures the RFAAP will close the hazardous waste facilities in a manner that:

- (a) Minimizes the need for further maintenance; ~~and~~
- (b) 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; and
- (c) Complies with the closure requirements of 9 VAC 20-60-264; 40 CFR 264 Subpart G, and 264.197 and 264.351.

In accordance with the VHWMR and the RCRA, 40 CFR Part 264, Subpart G, RFAAP will close the hazardous waste management units (HWMU) in compliance with 40 CFR 264.111, Closure Performance Standards. RFAAP intends to remove all hazardous waste and all hazardous waste constituents at the Incinerator at the time of closure to levels at or below the standards established herein (clean closure) ~~(clean closure). This will be accomplished by assessing samples against cleaning to established background standards and/or, or by cleaning to risk based standards if cleaning to background standards cannot be accomplished. The risk based standards~~. This clean closure will be accomplished via one of two methods:

- Comparison to background levels - RFAAP will compare the levels of constituents remaining in the hazardous waste management unit, equipment, structures, soils and/or sub-soils are below detection or, when statistically evaluated, are below representative background levels.
- Risk Assessment - The facility may demonstrate that the concentrations of hazardous constituents detected and remaining in the hazardous waste management unit, equipment, structures, soils and/or sub-soils do not pose an unacceptable level of risk to human health and the environment.

If a risk assessment is performed to determine compliance with the closure standards, the risk assessment criteria shall comply with one or more of the following DEQ guidance documents or other DEQ risk-based guidance, as applicable:

- Guidance for Development of Health Based Cleanup Goals Using Decision Tree/Risk Exposure and Analysis Modeling System (REAMS) Program, 1994, and Risk Based Methodology, as amended by the DEQ. Modeling shall also include fate transport modeling with SESOIL as a preferred model.

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- DEQ Guidelines for Developing Health-based Cleanup Goals Using Risk-based Assessment at a Hazardous Waste Site Facility for Restricted Industrial Use, June 1995.
- DEQ's Draft Guidance Manual for Closure Plans and Post Closure Plans for Hazardous Waste Management Facilities, dated September 28, 2001.

Any and all risk-based standards used in certifying a risk-based closure will be established in concert with DEQ. As part of this process, RFAAP will submit a risk assessment protocol for review and approval by DEQ and will also revise this closure plan as appropriate. If closure to residential standards/use is not possible, then the option to pursue restricted-use closure (e.g., commercial or industrial use) may also be exercised.

~~used will be those that are current at the time of closure. The risk assessment protocol to be used will be submitted for VDEQ approval at the time of closure.~~

## ~~II.F.6b~~II.F.4b5.2 Closure Alternatives

Various alternatives are available for closure of the Incinerator. The various components of the facilities that will need to be addressed as part of the closure process include the physical structures included as part of the Incinerator as well as the soil and groundwater underlying these facilities.

### ~~5.2.1~~ Closure Alternatives for Structures

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Once hazardous waste treatment and/or storage operations cease ~~at the Incinerator~~ it will be necessary to partially ~~or completely~~ close ~~or close~~ the facilities as appropriate. Two basic options are available for closure of these facilities.

First a hazardous waste contractor can dismantle the equipment subject to closure. The dismantled equipment can then be shipped ~~off site~~offsite for treatment/disposal. A hazardous waste determination will need to be performed for each waste stream followed by the necessary waste characterization. ~~Due to the types of wastes treated it is likely that much of the waste handling equipment would require handling as a hazardous waste.~~

The second closure option would require that all waste handling equipment be decontaminated. Once decontaminated the equipment can then be dismantled and disposed of as non-hazardous solid waste or recycled as scrap material. This option will require greater ~~on-site~~onsite management of decontamination fluids, wash water, decontamination verification, and overall management. However, overall costs should be significantly lower as the only hazardous waste generated that would require ~~off site~~offsite treatment or disposal would likely be the decontamination/wash water as opposed to significant quantities of contaminated debris as generated in the first option.

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Based upon the economic advantages and potential for reduced quantities of hazardous wastes, RFAAP will decontaminate equipment to be closed prior to dismantling.

### ~~5.2.2~~ Closure Alternatives for Soil and Groundwater

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Once the closed structures have been decontaminated it will be necessary to address any potential impacts to soil and groundwater. The first step in this process will be to implement a sampling protocol to determine the following:

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1. If soils under the Incinerator structure(s) have been contaminated; and
2. If any impacts that did occur have migrated through the soil to the uppermost aquifer.

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Once the extent of any impacts is determined, a closure approach for the soils and groundwater will be developed. ~~Four~~ Three basic closure options are available depending on the impacts encountered:

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- Option 1: If no impact to groundwater is encountered, pursue clean closure or risk-based closure for any contaminated soil ~~impacts are feasible options.~~
- Option 2: If limited impact to groundwater is encountered, ~~then~~ removal of source material or "hot spots" and perform limited follow-on monitoring as appropriate ~~followed by a period of monitoring may be appropriate.~~
- Option 3: ~~If~~ ~~finally, should~~ significant groundwater impact ~~be~~ is discovered, remove source ~~removal material and/or provide control along with~~ some means of groundwater ~~treatment/containment control may be necessary.~~

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~~If there is no adverse impact to groundwater, RFAAP will pursue a clean closure option. However, the use of risk based closure for soils may be desirable if the quantity of soil requiring treatment is large enough to make clean closure economically unrealistic. In such a scenario, a risk based cleanup goal will be determined that protects the surrounding areas while allowing high levels of waste materials to remain in soils at the closed facility. A deed restriction will be required as part of such actions.~~

~~If limited groundwater impact is encountered it may be feasible for RFAAP to remove source material in the overlying soils and monitor groundwater quality as part of a natural attenuation program.~~

~~Finally, should significant soil and groundwater impacts be detected it will then be necessary to implement source soil removal/containment actions as well as groundwater containment or treatment measures.~~

At this time there are various options for excavating soil for ~~off-site~~ ~~offsite~~ treatment/disposal as well as various ~~on-site~~ ~~onsite~~ and in-situ treatment methods that may be applicable depending upon the exact nature of impacts to soil. For the purpose of this Closure Plan it is assumed that any potential soil impacts will be limited in nature and that soil excavation will be a feasible and cost effective closure option.

It should be noted that actual closure of the facilities is not anticipated for some time. As such, innovative treatment alternatives may become available that may be more favorable to excavation and ~~off-site~~ ~~offsite~~ treatment/disposal. Based upon the actual extent of any impacts

and technological advances, RFAAP may choose to modify this Closure Plan based upon findings when each facility is closed.

**II.F.4c 5.3 Partial and Final Closure**

Final closure of the units is not anticipated in the near future, nor is ~~P~~partial closure ~~is not~~ anticipated for any portions of the Incinerator. At such time that closure is expected, this Closure Plan will be reviewed and updated as necessary to reflect any changes to the closure philosophy or expected procedures. Additionally, ~~However,~~ should any portions of the facilities be closed prior to final closure, those portions will be closed in accordance with all applicable closure procedures in this Closure Plan or an appropriate updated version of it.

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**II.F.7II.F.5**

## 6.0 DETAILED CLOSURE PROCESS

This section presents ~~more~~ a detailed ~~processes~~ description of the closure process that is anticipated for the permitted storage and treatment area, considering the ~~that will be used to close the Incinerator based upon the~~ closure alternative selected in Section ~~II.F.54.0~~. RFAAP has implemented a number of standard operating procedures that will be used to support the Incinerator closure. Pertinent elements of these procedures are incorporated into the closure process as described in the following sections. This process will include the following steps:

1. Inventory Removal
2. Site Preparation
3. Closure Construction
4. Soil Treatment
5. Sampling and Analysis
6. Cover System Evaluation
7. Interim Actions

~~RFAAP will remove all hazardous waste and all hazardous waste constituents at the Incinerator at the time of closure (clean closure). All equipment and structures which may have contacted hazardous waste will then be decontaminated. Therefore, after closure, no waste is expected to be present at the facilities and post closure maintenance is not anticipated. Figure II.F-5 provides a flow chart outlining the closure approach that is planned. Closure operations will occur following a predetermined approach as detailed and listed below and shown in the flow chart in Figure 5.~~

~~Specific items that are included in this section include the following:~~

- ~~1. Inventory Removal~~
- ~~2. Site Preparation~~
- ~~3. Closure Construction~~
- ~~4. Soil Treatment~~
- ~~5. Sampling and Analysis~~
- ~~6. Cover System Evaluation~~
- ~~7. Interim Actions~~

### ~~II.F.7a~~II.F.5a 6.1 Inventory Removal

The initial step in the closure process will be treatment and removal of the remaining hazardous waste. ~~The procedures for treating/removing the waste inventory is included along with procedures for managing any remaining wastes.~~

#### ~~6.1.1 Treatment of Remaining Waste and Collection of Residuals~~

##### ~~6.1.1.1 Incinerator~~

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After receipt of the final quantity of hazardous waste at the facility (or specific portion thereof identified for partial closure), all hazardous waste inventory will be removed by processing through the grinder, ~~treatment and storage~~ slurry tanks, and incinerators in the usual manner. ~~Any remaining waste that cannot be processed through the incinerator will be transported for treatment/disposal at a permitted facility. Likewise, all incinerator ash will be collected and disposed of in accordance with standard operating procedures.~~

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Any hazardous waste or waste slurry remaining in Tanks 1A- or 1B, the make-up tank, or the catch tank ~~that cannot be incinerated~~, as well as any slurry or rinseate resulting from the slurry loop line backflush after completion of incineration of the final hazardous waste batch, will be removed for treatment or disposal as hazardous waste. Tanks will be emptied of any remaining waste or waste slurry in accordance with the ~~using the~~ general steps listed below.

1. Any remaining waste slurry will be collected in containers for disposal as hazardous waste.
2. The make up tank will be inspected for propellant fines ~~and~~; cleaned as necessary. ~~The contents of the tank will be and the contents~~ transferred to the slurry tanks.
3. Propellant fines will ~~then~~ be drained from the slurry tank and collected for disposal. Propellant fines are typically collected by draining the liquid that remains in the tank through a muslin bag.
4. The slurry tank will then be flushed with water, again collecting any propellant fines.
5. The slurry tank operation will then be shut down.

After all of the tanks are emptied, ~~the~~ secondary containment structures, and the floors and sumps ~~of the tank/grinder in the Grinder building-Building~~ and at the incinerators will be visually inspected for any spilled waste. Any waste on the floors will be cleaned up. ~~All and~~ sumps will be cleaned by removing waste with non-sparking tools.

#### ~~6.1.1.2~~ ~~Reserved~~

### ~~6.1.2~~ ~~Management of Residual Wastes~~

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#### ~~6.1.2.1~~ ~~Incinerator~~

Any ~~Remaining~~ waste slurry collected from the tanks either initially or after the ~~emptying~~ and subsequent cleaning operations will be ~~screened to remove the excess water or mixed with sawdust to absorb all free liquids. to create a solid hazardous waste. The procedure will involve mixing 30 pounds of sawdust with 2.5 gallons of waste slurry in a tub to create a maximum of 47 pounds of solid hazardous waste material. The 47 pound tubs of waste material will be labeled as hazardous waste.~~ This material, along with any solid propellant fines collected during the emptying and cleaning operations, will be sent for destruction at the facility's open burning ~~unit~~ ~~(OB-Ground)~~ ground or will be manifested to a RCRA permitted ~~off site~~ offsite treatment or disposal facility ~~which~~ that is capable of handling the material in accordance with all state and federal laws. At the time that a decision is made as to the final disposition of these waste materials (*i.e.*, onsite versus offsite treatment), any steps necessary to further prepare and

package the wastes for treatment and/or shipment to an offsite facility will be identified and implemented. Any shipping of hazardous wastes will be done in accordance with all applicable RCRA and DOT requirements.

~~Li~~Any residual liquids emptied from the tanks will be processed in the facility's wastewater treatment system, if ~~allowable-permissible~~ under the facility's VPDES Permit. RFAAP will analyze the liquid to determine if the material is compatible with operations at the biological wastewater treatment plant (WWTP). If treatment is feasible, RFAAP will request a modification to the facility VPDES permit to allow such treatment, *if necessary*. If such treatment is not feasible, the material will be transferred to drums or other acceptable containers; and ~~will be characterized for the hazardous characteristics of reactivity and toxicity as required for offsite disposal.~~ If the material is determined to be hazardous, the material will then be manifested to a RCRA permitted ~~off-site~~offsite treatment or disposal facility that is capable of handling the waste in accordance with all state and federal laws. If non-hazardous, the material will be transported to an appropriate ~~off-site~~offsite treatment or disposal facility in accordance with all state and federal laws.

~~6.1.2.2~~ **Reserved**

~~II.F.7b~~II.F.5b **6.2 Site Preparation**

Once the remaining hazardous waste inventory is treated, a series of preparatory activities will be performed prior to the start of actual facility closure. These activities will include the following: ~~items:~~

1. Delineation of exclusion zones around the various work areas as needed for the safety of workers involved with the closure operations and those of RFAAP staff in surrounding areas. Specific items will be addressed as part of RFAAP safety policies and health and safety plans developed by any subcontractors involved in the closure operations.
2. Establishment of decontamination areas for personnel and equipment involved in the closure operations.
3. Establishment of staging areas for uncontaminated demolition debris, contaminated scrap/debris, contained liquids, and other waste streams including containers for any contaminated material. No waste or contaminated material shall be placed on the ground with or without a liner.
4. Establishment of temporary facilities required for closure activities (e.g., storage trailers, field office, *etc.*)
5. ~~Visual inspection of~~ *All* secondary containment and/or building floor/sump surfaces ~~will be visually inspected for the presence of~~ cracks or gaps. All such cracks or gaps will be sealed with an epoxy sealant ~~in order~~ to assure that wash solution will not migrate into or through the material.
6. Other permitting that may be required (*e.g., modification of VPDES permit for treatment of wastes generated as part of the closure activities, VPDES storm water permit for construction activities, etc.*).

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## ~~II.F.7e 6.3 — Decontamination and Closure of the Incinerator Equipment and Structures~~

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### ~~6.3.1 — Decontamination and Closure of Incinerators~~

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This section presents the processes that will be used to initiate closure of the Incinerator. ~~by performing a burn-out of the incinerator after treatment of the final hazardous waste inventory is completed.~~ This includes a discussion of the burn-out process and a description of how the waste materials will be contained.

#### ~~6.3.1.1 — Burn-Out Process~~

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After incineration of the final quantity of hazardous waste, the incinerators will be operated at or above minimum operating temperature for a period of not less than eight hours. During this period only natural gas fuel will be burned and only clean water will be fed to the incinerator through the slurry feed system. It is the intent of this burn-out process to destroy any residual waste explosives that may remain within the incinerator units.

After the burnout period, the incinerator and air pollution control system will be visually inspected for the presence of any accumulated solid residues. If detected, such residue will be removed as noted ~~in Section 6.3.1.2 below.~~

#### ~~6.3.1.2 — Burn-Out Process Waste Management~~

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Waste generated and/or accumulated at the end of the burn-out process will be collected, analyzed ~~in accordance with the Waste Analysis Plan as specified herein,~~ and properly disposed ~~of.~~ The types of wastes that are expected to be encountered include the following:

- ~~1.~~ • Incinerator ash (consisting of the ash and incinerated solids ~~which that~~ accumulate at the kiln breeching, the evaporative cooler, the fabric filter, the precooler, and the scrubber);
- ~~2.~~ • ~~scrubber-Scrubber~~ water and any scrubber sludge; and
- ~~3.~~ • Fabric filter bags and scrubber packing material (after burn-out process is complete).

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~~These W~~wastes will be managed as described below.

1. All ~~Incinerator-incinerator~~ ash residue will be analyzed as required for offsite disposal and sent to an appropriately permitted facility. If determined to be hazardous waste via analysis or treated as such through an abundance of caution, the ash will be sent to a properly permitted RCRA facility. ~~for reactivity and toxicity and disposed of off-site at a RCRA permitted facility.~~
2. Scrubber water will be processed in the RFAAP's wastewater treatment system and discharged in accordance with VPDES permit regulations if the waste is compatible with treatment processes (the VPDES permit will be modified to allow such discharge as needed). Scrubber water ~~that ,which~~ cannot be ~~or is otherwise not~~ processed in the RFAAP wastewater treatment system; ~~will be sent off-site for~~

- ~~treatment and/or disposal in accordance with applicable regulations~~ be analyzed as required for offsite disposal and sent to an appropriately permitted facility.
3. Scrubber sludge will be analyzed ~~for toxicity and disposed of off site at a RCRA-permitted facility~~ as required for offsite disposal and sent to an appropriately permitted facility. If determined to be hazardous waste via analysis or treated as such through an abundance of caution, the sludge will be sent to a properly permitted RCRA facility.
  4. ~~The fabric filter bags and the scrubber packing material will be analyzed for toxicity and disposed of off site at a RCRA~~ ~~appropriately permitted facility~~. If determined to be hazardous waste via analysis or treated as such through an abundance of caution, the bags will be sent to a properly permitted RCRA facility.

#### 6.3.1.3 Decontamination Verification

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Samples will be collected from the incinerator equipment ~~and analyzed~~ to verify that ~~burn-out the decontamination process has been successful before it procedures on the equipment are sufficiently completed prior to is dismantling. After the burn out process is completed~~ Wipe samples will be taken from throughout the incinerator and air pollution control system. ~~Specifically samples will be taken~~ from the following locations:

- Oversize propellant hopper
- Metal containing propellant hopper
- Bucket conveyor and associated piping
- Refractory of primary combustion chamber
- Refractory of secondary combustion chamber
- Gas ducts
- Ash hoppers
- Internal surfaces of the evaporative cooler
- Internal surfaces of the fabric filter
- Internal surfaces of the pre-cooler
- Internal surfaces of the scrubber
- Exhaust stack

A minimum of ~~three-five~~ wipe samples will be taken from various locations in each of the items specified above. A minimum of ~~three-five~~ background samples will also be taken. Background samples will be taken from exterior building surfaces in the vicinity of the incinerator. The location of background sampling locations ~~shall-will~~ be approved by the Department prior to sampling.

Samples will be collected by applying a detergent solution to a piece of 11-centimeter (cm) diameter filter paper (*e.g., Whatman 40 ashless, Whatman "50" smear tabs, or equivalent*) or gauze pad. The moistened filter paper or gauze pad will be used to thoroughly swab a 100 cm<sup>2</sup> area. A template may be used to assist in the collection of a 100 cm<sup>2</sup> sample. When a template is used, it will be thoroughly cleaned between samples to prevent cross contamination of

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subsequent samples of the template or disposable templates will be used for each independent sampling location.

The wipe samples collected as part of ~~the this decontamination verification~~ process will be analyzed ~~using analytical methods as specified in the latest version of SW-846 at the time of closure. The wipe samples will be analyzed~~ for reactivity as well as for all of the hazardous constituents listed in Table II.F-21. The constituents presented in this table represent those hazardous constituents presented in Appendix VIII of 40 CFR Part 261 that are present or are expected to be present in the wastes burned in the incinerator. This list was determined through a combination of process knowledge, analytical data, and Material Safety Data Sheets.

~~T~~The samples will be analyzed for reactivity by the appropriate test method specified in the Waste Analysis Plan. The samples will be analyzed for the presence of hazardous constituents by appropriate methods from SW-846, latest edition. The method with the lowest acceptable detection limit for each constituent of interest will be used. All applicable sample handling and preservation procedures of SW-846 Chapter Three will be observed. At least one blank, which will consist of a moistened filter paper or gauze pad, will be taken daily when sampling is ongoing.

~~The constituents presented in Table 2 are derived from the Waste Analysis Plan for the facility. The compounds listed in the Waste Analysis Plan were compared to the list of hazardous constituents presented in Appendix VIII of 40 CFR Part 261. In addition, the comparison process included an evaluation of the Material Safety Data Sheets for the proprietary compounds and other generic substances listed in the Waste Analysis Plan in order to determine the specific chemical constituents of those substances. Those constituents that comprise the substances listed in the Waste Analysis Plan and that are also listed in Appendix VIII of 40 CFR Part 261 are presented in Table 2.~~

Lack of contamination will be adequately demonstrated if the concentration of an constituent in a wipe sample is equivalent to or less than the concentration of the average background concentration. Those areas from which wipe samples exhibit a concentration of greater than the average background concentration will require further decontamination.

Further decontamination will consist of a high-pressure spray wash similar to that described for ~~structures in Section 6.3.2~~the Grinder Building and associated equipment below; or will involve scrubbing with a detergent solution. After further decontamination, the subject areas will again be sampled with wipe samples. ~~Samples will be~~, analyzed as before, and again compared to background. This process will be repeated until all sampled areas are adequately decontaminated. Wash water will be handled in the same manner as the decontamination wastes described ~~in Section 6.4~~later in this section.

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**6.3.2 Decontamination of the Grinder Building-House, Tanks, and Associated Equipment**

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All tanks and equipment ~~which~~ that may have contacted hazardous waste will be decontaminated prior to dismantling. These tanks and equipment include, but are not limited to, the following:

- Slurry ~~Tanks~~tanks (Tanks 1A and 1B);
- Make-up tank;
- Catch tank;
- Feed hopper;
- Conveying ~~Mechanisms~~mechanisms;
- Metal ~~Detector~~detector;
- Oversize ~~Detector~~detector;
- Pumps;
- Grinder;
- Tank ~~Agitator~~agitators; and
- Slurry piping lines.

The general requirements of these procedures and related waste management practices are included in the following sections.

### 6.3.2.1 Equipment Decontamination Procedures

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All potentially contaminated tanks and equipment will be cleaned and decontaminated prior to dismantling. Decontamination procedures will be performed in accordance with various RFAAP operating procedures and will include the steps noted below:

1. Equipment will be cleaned using properly grounded and inspected pressure washers or steam sprayers until contamination is visibly removed or adequately softened for subsequent scraping and cleaning.
2. Remaining material will be removed by scraping, dipping parts in caustic solutions, *etc.*
3. Equipment bays and/or adjacent areas will be washed down; ~~and.~~
4. Any catch basins or floor sumps will be cleaned out.

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All wash water will be collected. ~~If deemed compatible, these wash waters will be sent to the onsite WWTP for processing. If incompatible with the materials processed at the WWTP, the collected wash water will be characterized as required to facilitate offsite disposal. ~~and~~All analyses will be performed ~~for the third washing, the water from each area will be analyzed for the hazardous constituents for reactivity as well as for all of the hazardous constituents listed in Table 2. The samples will be analyzed for reactivity by the appropriate test method specified in the Waste Analysis Plan. The samples will be analyzed for the presence of hazardous constituents by using~~ the appropriate methods from SW-846, latest edition, or onsite procedures, if appropriate. The method with the lowest acceptable detection limit for each constituent of interest will be used.~~

The wash downs and analysis of the wash water will continue until the decontamination process is complete. Complete decontamination will be demonstrated by the achievement of the numerical limits of concentration in wash water for all hazardous constituents specified in Table II.F-21. Alternatively, complete decontamination may be demonstrated through the use of a statistical comparison of clean, pre-rinse, water with the post-rinse wash water.

If a statistical comparison is used, at least ~~five-three~~ samples of wash water from each area and ~~five-three~~ samples of clean water will be analyzed for all constituents in Table II.F-21. Complete decontamination will be demonstrated by no significant difference between clean water and wash water for all constituents. The statistical procedure used will be the Student's t-Test with one-tailed t values at the 0.05 level of significance.

After ~~the~~ tanks and associated equipment are removed from the facility the following process will be used to wash down and decontaminate all floors, sumps, and containment structures in the ~~tank/grinder Grinder building-Building and incinerators to remove residual contamination that may be present.~~

1. Any spilled liquids and solids will be removed for disposal.
2. All surfaces will be visually inspected for the presence of additional cracks or gaps discovered upon removal of decontaminated equipment. All such cracks or gaps

will be sealed with an epoxy sealant in order to assure that wash solution will not migrate into or through the material.

3. All surfaces will be washed at least three times with a high pressure, low volume water spray. The specifications for the pressure cleaner will be a minimum achievable pressure of 2000 psi and a flowrate of less than 10 gpm. A minimum of 0.25 gallons per square foot of surface will be used for the pressure wash. Wash water will be collected after each rinse and will be collected separately from each area undergoing cleaning.

Again, all wash water will be collected and after the third washing, the water from each area will be evaluated to determine if it is compatible with the WWTP and treated therein if appropriate. If it is not possible to treat these waters onsite, they will be characterized as required to facilitate offsite disposal. ~~be analyzed for the hazardous constituents for reactivity as well as for all of the hazardous constituents listed in Table 2 as described above.~~

The wash downs and analysis of the wash water will continue until decontamination is complete. As before, complete decontamination will be demonstrated by the achievement of the limits of concentration in wash water for all hazardous constituents specified in Table II.F-21. Alternatively, complete decontamination may be demonstrated through the use of a statistical comparison of clean, pre-rinse, water with the post-rinse wash water.

#### 6.3.2.2 Management of Decontamination Wastes

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Waste generated and/or accumulated as part of the equipment decontamination process will be collected, analyzed ~~in accordance with the Waste Analysis Planas specified herein,~~ and properly disposed ~~of~~. A description of each type of waste generated from the decontamination process and anticipated management practices are presented below.

Decontaminated tanks and equipment will either be sold, used at a different location at the facility, or shipped ~~off-site~~ as scrap. Residues removed from equipment during decontamination at the facility will be collected and ~~tested for the hazardous characteristics of reactivity and toxicity~~ analyzed as required to facilitate offsite disposal. If this material is found to be non-hazardous, it will be disposed of ~~on-site~~ or ~~off-site~~ as solid waste. If this material is found to be hazardous, it will be disposed of ~~off-site~~ in accordance with all state and federal laws.

After each washing, the wash water will be collected ~~and analyzed for reactivity and the other hazardous constituents listed in Table 2.~~ If the wash water is compatible with the RFAAP wastewater treatment system it will be processed in said system. Again such wastewaters will be analyzed to assure that they are compatible with the wastewater treatment system processes. ~~If the waste stream is suitable for treatment the facility VPDES permit will be modified to allow treatment.~~ If ~~on-site~~ treatment is not feasible, the water will be contained, characterized as required for offsite disposal, and transported ~~off-site~~ (as a hazardous or non-hazardous waste based upon the analyses) in accordance with state and federal regulations.

~~II.F.7d6.4~~ — Reserved

~~II.F.7e~~II.F.5c 6.5 Evaluation of Surface and Subsurface Impact

~~6.5.1~~ — Incinerator

As stated in ~~Section 6.2 Site Preparation~~ previously, all secondary containment and/or building floor/sump surfaces within the ~~tank/grinder~~ Grinder building, slurry loop line, and incinerators will be surveyed for visible signs of a material release or potential release routes (i.e., cracks, gaps, etc.). During site preparation, all such cracks or gaps will be sealed with an epoxy sealant in order to assure that decontamination wash solution will not migrate into or through the material.

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Any cracks or gaps sealed with epoxy prior to decontamination shall be investigated at the time of demolition using coring techniques in order to determine whether they fully penetrate the concrete to the soil. Where such cracks are observed to be fully penetrating, a sampling and analysis program will be undertaken to determine the extent of impact. A comprehensive soil sampling and analysis plan will be prepared at the time of ~~incinerator~~ closure if necessary and submitted to the VDEQ for approval. It is anticipated that the program would progress as follows:

1. ~~Collect and analyze~~ soil samples from the cored locations. Survey these locations prior to demolition of the structure.
2. ~~Following~~ demolition and removal of the concrete, relocate the original sample locations using the survey information. These original locations will be the starting points for sampling grids to delineate the horizontal and vertical extent of any impacts.
3. ~~Analyze~~ the soil samples ~~will be analyzed~~ for all of the hazardous constituents listed in Table II.F-2-1 using the analytical methods specified in the latest version of SW-846 at the time of closure. ~~The constituents presented in Table 2 are derived from the Waste Analysis Plan for the facility. The compounds listed in the Waste Analysis Plan were compared to the list of hazardous constituents presented in Appendix VIII of 40 CFR Part 261. In addition, the comparison process included an evaluation of the Material Safety Data Sheets for the proprietary compounds and other generic substances listed in the Waste Analysis Plan in order to determine the specific chemical constituents of those substances. Those constituents that comprise the substances listed in the Waste Analysis Plan and that are also listed in Appendix VIII of 40 CFR Part 261 are presented in Table 2.~~

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If there is no apparent release or potential for release observed, a simplified sampling program will be implemented to confirm that a release has not occurred.

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## ~~II.F.7~~II.F.5d 6.6 Management and Disposal of Miscellaneous Materials

The cleanup operations will likely result in the generation of other miscellaneous materials that may be contaminated during the cleanup process. ~~Potentially contaminated items used in the clean up operations will likely be generated.~~ Such materials may include but may not be limited to the following:

- Brushes, brooms, mops, buckets and related cleaning supplies;
- Shovels, absorbents, and other tools; and
- Plastic sheeting.

All such waste materials will be ~~properly~~ characterized as required to facilitate offsite disposal ~~(including the hazardous characteristics of reactivity and toxicity and other parameters as appropriate) in accordance with state and federal laws.~~ Based upon these characterizations, the wastes will be disposed at a properly permitted facility in accordance with state and local laws. Liquid wastes may be discharged to the RFAAP ~~wastewater treatment facility~~ in accordance with the facility VPDES permit if such wastes are compatible with the treatment processes.

## II.F.5e 6.7 Site Restoration

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Once the waste materials and decontaminated equipment have been removed from the site, the area of the Incinerator will be restored. In the event that demolished foundation structures and/or other materials must be excavated for disposal ~~off-site~~offsite, site restoration will include backfill and compaction of any excavations, grading, and revegetation of the affected area(s). All backfill material must be analyzed before use at the site to ensure that it is "clean fill." The backfill material will be analyzed for the constituents specified in Table II.F-2-1 by appropriate methods from SW-846, latest edition. Additional constituents may be added to the analyses at the time of closure, pending VDEQ approval. In the event that it becomes necessary to conduct excavations at the time of closure, a detailed plan of the proposed excavation and site restoration activities will be submitted to the VDEQ for approval.

## ~~II.F.7~~II.F.5f

**6.8 Certification of Closure**

Within 60 days of completion of the closure ~~procedures~~ process, the Permittees will submit, by registered mail, a certification that the Incinerator has been closed in accordance with the specifications of this Closure Plan. The certification will be signed by an independent, Virginia registered professional engineer. The certification will also be signed by the Installation Commander ~~and or an Alliant-a~~ principal corporate officer or duly authorized representative(s) of the contracted operator pursuant to 9 VAC 20-60-264 and 40 CFR Part 264.115.

~~II.F.8-~~

~~II.F.9II.F.6~~

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## **7.0 POST-CLOSURE CARE AND GROUNDWATER MONITORING**

As previously discussed it is the intent of RFAAP ~~to "Clean Close" close~~ the Incinerator ~~such that there is unrestricted future landuse of the area~~. As such, no specific provisions for site monitoring, land restrictions, etc. have been included in this Closure Plan. Should site conditions change that would necessitate a change in the closure approach, such post closure care and monitoring may be warranted. If necessary, details of such activities will be developed in a future amendment to the Closure Plan. Section ~~9.0II.F.8~~ of this Closure Plan addresses the ~~general~~ permit modification process ~~in general~~ that would be necessary to amend the Closure Plan in accordance with 40 CFR 264.112(c).

**II.F.7 8.0 CLOSURE COST AND SCHEDULE**

Federal facilities are exempt from the closure financial requirements pursuant to 9 VAC 20-60-264 and 40 CFR 264.110140(c).

The Department will be notified at least 45 days before final ~~(clean)~~ closure of the Incinerator is expected to begin. The date upon which closure is expected to begin will be the date upon which the final volume of hazardous waste is received at the Incinerator. Table ~~II.F-3~~ **2** shows the proposed schedule from notification of the department through submittal of the closure certification. As shown in the ~~Table~~ **table**, all closure activities are to be completed within 180 days **after receiving the final volume of hazardous waste**. Certification of closure must be made within 60 days after the completion of closure activities, ~~or at or before day 240 of closure~~. This time frame allows for the required sample analyses, additional decontamination and/or soil removal (as needed), and resampling.

In the event that the ~~proposed timeframe proves insufficient for the completion of RFAAP is unable to complete closure of the incinerators within the timeframe established above and outlined in 40 CFR 264.113, RFAAP will request an extension to the closure period. In making this request, RFAAP will provide a demonstration that the required closure activities will take longer than 180 days to complete and RFAAP has and will continue to take all steps necessary to prevent threats to human health and the environment from the unclosed but not operating hazardous waste management unit, including compliance with all applicable permit requirements. Pursuant to 40 CFR § 264.113(c)(2), the request for an extension of the closure period will be made at least 30 days prior to expiration of the 180-day period allotted for closure.~~

~~closure activities, the permittees will submit a demonstration for the need for additional time.~~

If the facility's permit is terminated, or if the facility is otherwise ordered, by judicial decree or Order of the Board, to cease receiving hazardous waste, the Incinerator will be closed in accordance with the deadlines established in 9 VAC 20-60-264 and 40 CFR 264.113.

**II.F.8**

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## 9.0 MODIFICATION TO CLOSURE PLAN

The permittees will submit a written request for a permit modification to authorize a change in the approved Closure Plan whenever:

1. Changes in operating plans or facility design affect the Closure Plan;
2. There is a change in the expected year of closure, if applicable; or
3. In conducting partial or final closure activities, unexpected events require a modification of the approved Closure Plan.

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The permittees will submit a written request for a permit modification including a copy of the amended Closure Plan for approval as follows:

- At least 60 days prior to the proposed change in facility design or operation; or
- No later than 60 days after an unexpected event has occurred ~~which-that~~ has affected the Closure Plan.

If an unexpected event occurs during the partial or final closure period, the permittees will request a permit modification no later than 30 days after the unexpected event. The Department will approve, disapprove or modify this amended plan in accordance with the procedures in 40 CFR Parts 124 and 270. In accordance with 40 CFR 270.32, the approved Closure Plan will become a condition of this Permit.

## **Figures**

**Remove this page and insert the following:**

**Figure II.F-1** — ~~Figure 1 from Closure Plan submitted with ATK  
ltr dtd 12 Jan. 2004~~ Location Map

**Figure II.F-2** — ~~Figure 2 from Closure Plan submitted with ATK  
ltr dtd 12 Jan. 2004~~ Plot Plan

**Figure II.F-3** — ~~Figure 3 from Closure Plan submitted with ATK  
ltr dtd 12 Jan. 2004~~ Area Map

**Figure II.F-4** — WPI Schematic

**Figure II.F-5** — ~~Figure 5 from Closure Plan submitted with ATK  
ltr dtd 12 Jan. 2004~~ Logic Diagram

## **Tables**

**TABLE II.F-1  
WASTE GROUPS BURNED AT THE INCINERATORS  
Radford Army Ammunition Plant**

<b>Group No.</b>	<b>Description</b>	<b>Defining Characteristics</b>
1	Miscellaneous Waste	Ignitable and reactive Liquids and Sawdust D001, D003
2	Miscellaneous Waste	Propellant Laboratory Waste D003, D008, D030, D004
3	Miscellaneous Waste:	Pit Cotton (Waste Nitocellulose) Solid Waste
4	Miscellaneous Waste	Dinitrotoluene and Trinitrotoluene Wastes from manufacturing that are not listed wastes D030
5	Liquid Waste	Water Containing Triethylene Glycol Solid Waste
6	Liquid Waste	Water Containing Diethylene Glycol Solid Waste
7	Single Base Propellants	Propellant with Nitrocellulose and Lead D003, D008
8	Single Base Propellants	Propellant with Nitrocellulose D003
9	Single Base propellants	Propellant with Nitrocellulose and Dinitrotoluene D003, D030
10	Double Base Propellants	Propellant with Nitrocellulose and Nitrate Esters D003
11	Double Base Propellants	Propellant with Nitrocellulose, Nitrate Esters and Perchlorate salts D003
12	Double Base Propellants	Propellant with Nitrocellulose, Nitrate Esters and Lead, D003, D008
13	Double base propellants	Propellant with Nitrocellulose, Nitrate Esters and Solid Explosives D003
14	Triple base propellants	Propellant with Nitrocellulose, Nitrate Esters and Nitroguanidine D003
15	Load, Assemble, & Pack Waste	Energetic materials from manufacturing cartridges D003
16	Single Base Propellants	Propellant with Nitrocellulose, Dinitrotoluene and Lead D003, D008
17	Specialty Products Waste	Propellant with Nitrocellulose, Nitrate Esters, Nitroguanidine, Solid Explosives, or Appendix 3.6 Constituents D003
18	Specialty Products Waste	Propellant with Nitrocellulose, Nitrate Esters, Nitroguanidine, Solid Explosives, and Appendix 3.6 Constituents, Chlorides or Perchlorates D003
19	Specialty Products Waste	Propellant with Nitrocellulose, Nitrate Esters, Nitroguanidine, Solid Explosives, and Appendix 3.6 Constituents or Metals D003, D004, D010



Methylene chloride	75-09-2	8260B	5
Nitroglycerine	55-63-0	8332	10 mg/L
Total Phenols (found in phenolic resin)	108-95-2	9066	5
Silver	7440-22-4	6020	2
Toluene	108-88-3	8260B	5

N.O.S: Not Otherwise Specified. **s**Signifies those members of the general class not specifically listed by name in Appendix VIII of 40 CFR Part 261.

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**TABLE II.F-32**  
**PROPOSED CLOSURE SCHEDULE**  
**Incinerator**  
**Radford Army Ammunition Plant**

Days From Beginning of Closure	Event
- 45	Notification of Department
0	Receive last volume of waste
0-2	Treat/Incinerate final volume of waste
2-5	Remove residuals from tanks
5-7	Incinerator burnout
7-10	Remove incinerator ash, scrubber water, and scrubber sludge
10-15	Select tentative locations for background sampling, seek approval from Department
15-20	Inspect for cracks in secondary containment, building floors, and sumps
20-30	Clean and decontaminate tanks
20-30	Visually inspect incinerator, remove solid residue
30-35	Remove fabric filter and scrubber packing material
30-50	Dismantle, decontaminate, remove tanks and equipment
50-55	Visually inspect, seal cracks and gaps in structures
55-70	Decontaminate incinerators (if necessary)
55-70	Decontaminate structures
55-75	Sampling - structures, wash water, Incinerator
55-100	Sample analysis
55-75	Soil sampling
100-125	Soil removal (if necessary)
90-125	Repeat sampling and analysis (if necessary)
110-140	Additional soil removal (if necessary)
90-150	Repeat sampling and analysis (if necessary)
180	Completion of closure activities
240	Submit signed closure certification to the Department

Times, in days, are from the date upon which closure begins.

**ATTACHMENT II.H**

**FLOOD PROOFING/PROTECTION PLANS AND SPECIFICATIONS AND  
100-YEAR FLOOD RESPONSE PROCEDURES**

**ATTACHMENT II.H – FLOOD PROOFING/PROTECTION PLANS AND SPECIFICATIONS AND 100-YEAR FLOOD RESPONSE PROCEDURES**

II.H.1. Floodplain Standard

Figure II.H-1 provides a depiction of the 100-year flood plain elevations near the permitted storage and treatment area. This data was obtained from a combination of sources. The National Flood Insurance Program, Flood Insurance Rate Map dated November 7, 2011, was used to obtain information on 100-year flood elevations in the area near the incinerator. This data was then combined with more detailed topographic contour data from a 1992 contour analysis of the RFAAP to provide a more accurate representation of flood tendencies within the permitted storage and treatment area. ~~The foundations of Building 442 (tanks) and Buildings 440 and 441 (incinerators) are located within the 100-year floodplain. The source of data for this determination is the National Flood Insurance Program, Flood Insurance Rate Map, Community Panel Number 510099-0025-A, October 17, 1978. However, the operating floors of the buildings are above the 100-year flood plain elevation. The approximate location of the 100-year floodplain is presented in Figure II.H-1.~~

II.H.2. Demonstration of Compliance

As shown in the figure, the foundations of Building 442, which houses the slurry tanks, and Buildings 440 and 441, which represent the incinerators, are located within the 100-year floodplain. However, the operating floors of the buildings are above the 100-year flood plain elevation. Therefore, while the building foundations may be wetted from a 100-year flood, the portions of those buildings holding hazardous waste (the slurry tanks and the incineration chambers) are above the 100-year flood elevation. Therefore, the waste itself is not at risk from a flood. The 100-year flood elevation is 1700 ft. MSL at the incinerators. The lowest entry point to the main operating floor, which stores hazardous waste is at Building 442 ~~at is 1703.83~~ 1,702.13 ft. MSL. The incinerator kilns and afterburners are above 1700 ft. MSL, with the lowest point being the kiln outlet on Incinerator 440 at 1,704.75 ft. MSL. Given the proximity of the structures to the 100-year flood elevation, however, ~~ATK~~RFAAP has instituted ~~the~~ flood proofing and flood-protection plans ~~are in place because of the proximity to the 100-year flood elevation.~~ described herein.

II.H.3. Flood Proofing and Flood Protection Measures

Located between the New River and ~~incinerators and the~~ permitted waste storage and treatment facility are some of RFAAP's railroad lines. These railroad lines are elevated and would serve as a barrier to prevent flooding of the area except that culverts (transverse drains) have been built through the railroad embankment. The culverts have been constructed to drain water from the area surrounding the

facilities. During a 100-year flood however, the flood waters will flow in the opposite direction through the culverts and toward the facilities. If facility personnel were to block the entrances to these culverts in the event of an anticipated 100-year flood occurrence, water would not be expected in the permitted treatment and storage area. This preventative action is the most desirable flood protection measure. In the case that the culverts are not adequately blocked during a 100-year flood and flooding is imminent, ~~potential flooding of the area is addressed in the following section.~~ the procedures described below will be followed.

II.H.4.

Plant-Wide Flood Plan

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The Flood Plan for RFAAP is located in ~~Alliant's~~ Management Manual No. 2-1.9; ~~Issue 7~~, titled "Flood Watch" (or current update). This procedure was written in the event that flooding conditions at RFAAP are imminent. The procedure discusses safety precautions, flood watch procedures, reporting, flood levels and buildings affected by high waters.

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Utilities personnel are responsible for monitoring the river elevations at the River Bridge. When flooding appears imminent, readings are taken at the River Bridge at a minimum of once per hour. At an elevation of 1,695 feet at the River Bridge (five feet below flood stage at the bridge), or if conditions warrant, a Utilities Division representative shall collect information from local sources to help ~~call the American Electric Power (AEP) Company's Roanoke office, obtain~~ evaluate the flooding potential ~~and log the following information:~~. This information will be updated

- ~~• Time call was made~~
- ~~• Person talked to~~
- ~~• Claytor Lake gate openings~~
- ~~• Flow through gates CFS~~
- ~~• Total flow turbines and gates CFS~~
- ~~• Radford gage reading~~
- ~~• Galax gage reading~~
- ~~• Weather prediction~~

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~~Knowing the gate opening, the corresponding elevation at the New River Bridge can be read from a table in the procedure. These calls will be placed on an hourly basis~~ provided the river level is rising and/or is in flood stage.

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The time the flood waters will take to reach the facility varies depending on the amount of discharge at Claytor Dam. It is estimated that a flood crest starting at Claytor Dam will reach the facility in approximately 2 to 3 hours.

Utilities personnel shall request the Security Police Dispatcher to notify key personnel in the instance of the following events:

- ~~• The Claytor Lake dam gates are opened 20 feet or more;~~
- ~~• The water level reaches an elevation of 1,697 feet at the River Bridge;~~ or
- ~~• Flooding conditions are predicted.~~

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The Environmental Department shall coordinate any corrective action and cleanup activities that are necessary. Engineering is responsible for estimating damages to physical facilities and equipment.

II.H.5.

Additional Flood Plan Procedures for the Permitted Storage and Treatment Area

In the event that the New River height at the River Bridge reaches 1,695 ft MSL (five feet below flood stage at the bridge), ~~ATKRF~~FAAP will institute the flood protection plan for the permitted storage and treatment areas. When this plan is activated, ~~a~~Any containerized waste, ~~which~~ that has not been ground and slurried ~~in the treatment process~~, will be returned to the facility hazardous waste accumulation area, which is above the 100-year flood elevation. ~~If possible, all~~ Any waste already slurried and in the ~~waste present in the treatment and storage~~ slurry tanks will be incinerated if possible before the river reaches the 100-year flood level. (Note the burnout times listed in Table II.H-14). This measure will help ~~This will be done to~~ alleviate any inspection requirements during the flood period. However, if the tanks cannot be fully emptied due to unit outages or other problems, the slurry will be left to remain in them, as the lowest entry point to the Grinder Building is above the 100-year flood elevation. ~~Should the incinerator be inoperable during the waste removal operations, the waste in the slurry tanks will be left in the tanks. As indicated in Section II.H.1 above, the floor to Building 442 (Grinder Building) is above the 100-year flood level, therefore, it will be safe to leave the slurry in the tanks.~~

Table II.H-1 lists the locations, activities and timing involved in removing the waste from the area in the event of flooding. ~~Dedicated and trained personnel are available to carry out the necessary activities.~~ In general, ~~a~~Ample time exists between flood notification and the arrival of flood waters at the facility to implement the flood plan activities. As shown in Table II.H-1, the time required to move the wastes from Building 442 is an hour for the solid wastes and ~~up to~~ three hours to treat ~~the aqueous slurry~~ one tank of aqueous slurry, provided that both incinerators are in operation. These activities can be performed simultaneously, as

~~The activities involved in removing both types of waste from the building can be accomplished simultaneously.~~ There are an adequate number of trained waste incinerator area personnel to independently accomplish the tasks.

Incinerator ash will also be removed ~~by area personnel~~ in the event the water level ~~in~~ of the New River at the facility is anticipated to reach the 100-year flood level. Ash containers will be loaded into a powder van and transferred to a hazardous waste accumulation area ~~that is above the anticipated flood height~~. There are no incompatibility restrictions on the incinerator ash and the untreated propellant at the accumulation area. The procedures and equipment used to move the ash are similar to those for moving the waste propellant containers. ~~The waste propellant incinerator area personnel are responsible for moving the incinerator ash.~~

#### II.H.6. Waiver for Land Storage and Disposal Facilities

The incinerators are not land storage or disposal facilities. Therefore, a waiver from the floodplain standard is not applicable to this permit application.

II.H.7. Plan for Future Compliance with Floodplain Standard

The incinerators' foundations currently lie within the 100-year floodplain. Plans have not been initiated for their removal or alteration. RFAAP has procedures in place ~~a SOP~~ for advanced warning and notification in the event of flooding of the New River that provides adequate protection for the hazardous wastes managed in these facilities. These procedures are documented herein and have been demonstrated effective in protecting the permitted storage and treatment area from washout on numerous occasions.

**TABLE II.H-11**

**REMOVING WASTE IN THE EVENT OF FLOODING**

Type of Waste Material	Location to which waste will be moved	Procedures and equipment to be used	Personnel to be Used	Time required for waste movement
Solid <del>Waste-waste Propellant</del> propellant in containers	Facility Hazardous Waste Accumulation Area	Move wastes to the Explosive Hold House per standard procedures using powder vans <del>UOP 4-3-2H: Pickup and Transporting Waste Explosive material to the Explosive Hold House</del>	Trained <del>storage and</del> treatment <del>and storage</del> -area personnel	Loading: 25 minutes (max, 36 cans) Transport: 10 minutes (3300 feet) Unloading: 25 minutes Total: 60 minutes
Slurried waste propellant in tank(s)	Incinerator or <del>facility</del> -Facility Hazardous Waste Accumulation Area	<del>SOP RD-0000-K-002</del> Incinerate wastes following standard operating procedures	Trained <del>storage and</del> treatment <del>and storage</del> -area personnel	<u>Incineration</u> Two incinerators: 2½ - 3 hours <del>per slurry tank</del> One incinerator: 5 – 6 hrs <del>per slurry tank</del>  <u>Removal</u> Approximately 3 hrs
Incinerator <del>Ash</del> ash	Facility Hazardous Waste Accumulation Area	<del>SOP RD-0000-K-002</del> Transport waste to accumulation area using powder vans following standard procedures	Trained <del>storage and</del> treatment <del>and storage</del> -area personnel	Approximately 2 hrs

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**Figure II.H-1** — ~~“Incinerator—Site Map and 100-Year Flood  
Plain Designation” from ATK ltr dtd 17 Jan. 2001~~Flood Map

**ATTACHMENT III.A**

**AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS**

## ATTACHMENT III.A – AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS

### III.A.1. Applicability

These regulations apply to the permitted treatment and storage area of the facility. ~~Alliant Ammunition and Powder Company, LLC is the operator of the Radford Army Ammunition Plant (RFAAP). At this plant, where~~ hazardous wastes with organic concentrations of 0 to 30 percent by weight are treated, stored and/or disposed via incineration in two RCRA permitted rotary kiln incinerators and ancillary equipment.

The equipment subject to the Air Emissions Standards for Equipment Leaks (9 VAC 20-60-264; 40 CFR 264, Subpart BB) is that equipment that contains or contacts hazardous waste with organic concentrations of at least 10 percent by weight. The subject equipment, listed in ~~Table I~~Table III.A-1, is the equipment that comes into contact with the waste slurry, a light liquid, before it is fed to the rotary kiln incinerators. ~~Figures III.A-1 through III.A-4 shows the general area within which the provide a graphical depiction of each piece of equipment subject to Subpart BB monitoring; subject equipment is located.~~ This equipment includes various pumps, valves, and miscellaneous connections, each of which is marked in a manner such that they can be readily distinguished from other equipment. There are no compressors, pressure relief devices, sampling connecting systems, or open ended valves or lines that contact or contain such waste.

The maximum possible organic concentration of the waste that this equipment contacts or contains was determined from the maximum organic concentration (100%) of any propellant generated at the RFAAP ~~Facility~~. Before being burned in the incinerator, all propellants are ground into a slurry that is, at a minimum, 3.5 parts water for every part propellant. ~~(This water to propellant ratio is a safety limitation, not a regulatory limitation.)~~ Based on this specification, the maximum possible organic concentration (attributable to solid propellant) that the equipment listed in ~~Table I~~Table III.A-1 could contain or contact would be 22%. This is the basis used for the organic concentration of < 30% listed in ~~Table I~~Table III.A-1.

### III.A.2. Definitions

All definitions used in this attachment have the meaning given them in 40 CFR Parts 260 to 266, including 264.1051.

### III.A.3. Standards: Pumps in Light Liquid Service

Each pump identified in ~~Table I~~Table III.A-1 is subject to the standards of 9 VAC 20-60-264; 40 CFR 264.1052 for pumps in light liquid service. These pumps will be monitored monthly using Reference Method 21, along with other procedures

set forth in 9 VAC 20-60-264~~;~~ and 40 CFR 264.1063(b). Additionally, each of these pumps shall be visually inspected each calendar week for indications of liquids dripping from the pump seal.

A leak will be detected if an instrument reading of greater than 10,000 ppm is measured, or if visual observation indicates that liquids are dripping from the pump seal.

If a leak is detected, it will be repaired as soon as possible, but no more than 15 days after the initial detection, unless conditions exist to delay repair of the pump as described in Section III.A.6. A first attempt of repair will be made for all pumps within 5 days of the initial leak detection.

Of the pumps listed in ~~Table I~~Table III.A-1, none are equipped with dual mechanical seal systems that include a barrier fluid system, nor are any equipped with a closed vent system capable of capturing and transporting any leakage from the seal(s) to a control device. Therefore, none of these pumps are exempt from the monthly leak detection and repair standards.

If, at any point in time, one of the pumps indicated above~~;~~ should be designated by the operator for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, it will be tested for compliance initially upon designation, annually, and at any other time as requested by the Department. Any pump designated as such will have no externally actuated shaft that penetrates the pump housing~~;~~ and will operate with emissions less than 500 ppm above background.

#### III.A.4. Standards: Valves in Gas/Vapor Service or Light Liquid Service

Each valve identified in ~~Table I~~Table III.A-1 is subject to the standards of 9 VAC 20-60-264~~;~~ and 40 CFR 264.1057 for valves in light liquid service. These valves, except for those with special designations, will be monitored monthly using Reference Method 21, along with other procedures set forth in 9 VAC 20-60-264~~;~~ and 40 CFR 264.1063(b).

A leak will be detected if an instrument reading of greater than 10,000 ppm is measured.

If a leak is detected, it will be repaired as soon as possible, but no more than 15 days after the initial detection, unless conditions exist to delay repair of the valve as described in Section III.A.6. A first attempt of repair will be made for all valves within 5 days of the initial leak detection. Repair attempts may include, but are not limited to, tightening the bonnet bolts, replacing the bonnet bolts, tightening the packing gland nuts, or injecting lubricant into the lubricated packing.

If results from valve monitoring indicate that no leaks have been detected on that valve for two successive months, the valve will be monitored the first month of every succeeding quarter, beginning with the next quarter. If, during the quarterly monitoring, a leak is detected on one of the valves under quarterly monitoring, the valve will return to monthly monitoring.

Additionally, if, at any point in time, one of the valves indicated above, should be designated by the operator for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, it will be tested for compliance initially upon designation, annually, and at any other time as requested by the Department. Any valve designated as such will have no external actuating mechanism in contact with the hazardous waste stream, and will operate with emissions less than 500 ppm above background.

Some of the valves in light liquid service have been designated as difficult to monitor because the valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface. The hazardous waste management unit within which these valves are located was in operation prior to June 21, 1990. Each of the valves designated as difficult to monitor will be monitored at least once per calendar year.

Some of the valves in light liquid service have been designated as unsafe to monitor because they are located in the basement of the Grinder Building, which is a confined space. Personnel entering this area are required to wear oxygen monitoring equipment and may only remain in the area for a limited time. In addition, such monitoring exposes personnel to the pumping of waste slurry containing explosives, which can be unsafe. Each of the valves designated as unsafe to monitor will be monitored at least once per calendar year.

~~If the owner or operator should decide to designate any of the valves in Table I as unsafe to monitor, those valves will be incorporated into a written plan for monitoring, which will require that the valve be tested as frequently as possible during safe to monitor times. A valve will be designated as unsafe to monitor if monitoring personnel will be exposed to an immediate danger while trying to comply with the monthly monitoring requirements.~~

III.A.5. Standards: Pumps and Valves in Heavy Liquid Service, Pressure Relief Devices in Light Liquid or Heavy Liquid Service, and Flanges and Other Connectors

This facility has no pumps or valves in heavy liquid service, or pressure relief devices in light liquid service that are regulated by 9 VAC 20-60-264, or 40 CFR 264.1058. However, this facility does have some flanges and other connectors, listed in ~~Table~~ Table III.A-1, that contain or contact hazardous waste with organic concentrations of at least 10 percent by weight, and therefore, are subject to the standards of 9 VAC 20-60-264, and 40 CFR 264.1058.

Each of the connectors identified in ~~Table I~~Table III.A-1 are subject to the standards for flanges and other connectors. These connectors will be monitored within 5 days using Reference Method 21, along with other procedures set forth in 9 VAC 20-60-264~~;~~ and 40 CFR 264.1063(b), if evidence of a potential leak is found by visual, audible, olfactory or any other detection method.

A leak will be detected if an instrument reading of greater than 10,000 ppm is measured.

If a leak is detected, it will be repaired as soon as possible, but no more than 15 days after the initial detection, unless conditions exist to delay repair of the connector. A first attempt of repair will be made for all flanges and other connectors within 5 days of the initial leak detection. Repair attempts may include, but are not limited to, tightening the bonnet bolts, replacing the bonnet bolts, tightening the packing gland nuts, or injecting lubricant into the lubricated packing.

#### III.A.6. Delay of Repair

Delay of repair, as regulated by 9 VAC 20-60-264~~;~~ and 40 CFR 264.1059, will be allowed for the equipment subject to these regulations if the repair is technically infeasible without a hazardous waste management unit shutdown. If the repair is delayed because of this reason, ~~repair it~~ will be completed before the end of the next hazardous waste management unit shutdown.

Additionally, repair may be delayed for equipment that is isolated from the hazardous waste management unit, provided that the piece of equipment does not continue to contain or contact hazardous waste with organic concentrations of at least 10 percent by weight.

If repair is to be delayed for valves, the owner or operator will have determined that emissions of purged material resulting from immediate repair are greater than those resulting from delay of the repair. When the repair is completed, the purged material will be collected and destroyed, or recovered in a control device.

Delay of repair for valves beyond the unit shutdown will be allowed if replacement of the valve assembly is necessary during the unit shutdown, and if the valve assembly supplies were sufficiently stocked, but have since been depleted. Delay of repair beyond the next unit shutdown will not be permitted unless the shutdown occurs within 6 months of the previous hazardous waste management unit shutdown.

Leaks from pumps for which delay of repair is permitted will be those leaks that require the use of a dual mechanical seal system, equipped with a barrier fluid, to complete repair. Such leaks from pumps will be repaired no later than 6 months after the leak is detected.

III.A.7. Test Methods and Procedures

Leak detection monitoring shall be conducted in accordance with 9 VAC 20-60-264, 40 CFR 264.1063, and, consequently, Reference Method 21 as described in 40- CFR Part 60, by traversing the probe around and as close as possible to all potential leak interfaces.

The detection instrument used will meet the performance standards set forth in this method, and will be calibrated before use on each day of its use by the procedures indicated in Reference Method 21. The calibration gases for the leak detection instrument will be zero air, with less than 10 ppm of hydrocarbon in the air, and a mixture of methane or n-hexane and air at a concentration of at least 10,000 ppm methane or n-hexane.

If, at any time, the operator designates any of the equipment listed in ~~Table I~~ **Table III.A-1** for no detectable emissions, a performance test will be conducted. The methods used to conduct these performance tests, including determination of the background level, will be determined as described in Reference Method 21. The difference between the maximum concentration indicated by the instrument reading and the background level will be less than 500 ppm to confirm compliance.

~~Determinations of the organic concentration in the waste stream at each piece of equipment have been made using process knowledge as detailed previously in Section III.A. I will be made using one of the following methods: ASTM Method D 2267-88, E 169-87, E 168-88, E 260-85 (or the most current version of these ASTM methods), Method 9060 or 8260 of SW-846, or application of process knowledge. The samples used to make this determination will be representative of the highest total organic content hazardous waste that is expected to be contained in, or contact the equipment. When process knowledge is used to determine organic concentrations, appropriate documentation will be supplied to support the determination.~~

~~Once a determination is made for a piece of equipment, it can only be revised using the ASTM and SW-846 methods specified above. Additionally, if the owner/operator and the Director do not agree on a determination for a piece of equipment, a determination shall be made using either the ASTM or SW-846 methods.~~

~~Once a determination is made regarding the organic concentrations in the waste at a piece of equipment, the determination of light liquid service will be made using the vapor pressures for constituents, as given in standard reference texts, or as determined using ASTM D-2879-86.~~

III.A.8. Recordkeeping Requirements

The Permittees will maintain, in ~~a~~the facility operating record, the following information for each piece of equipment subject to the Air Emissions Standards for Equipment Leaks, as required by 9 VAC 20-60-264~~;~~ and 40 CFR 264.1064:

- The equipment identification number and hazardous waste management unit identification~~;~~;
- The location of the subject equipment within the facility, indicated on ~~- These locations will be described on a facility plot plan-~~;
- The type of equipment (e.g. pump, or valve);
- The percent-by-weight total organics in the hazardous waste stream at the equipment;
- The hazardous waste state at the equipment (e.g. gas/vapor, or liquid); and
- The method of compliance with the standard (e.g. monthly leak detection and repair).

Should a leak be detected, a weatherproof and readily visible identification tag, marked with the equipment ID number, the date evidence of a potential leak was found, and the date the leak was detected, will be attached to the piece of equipment. For all equipment, except valves, this tag will be removed once the leak is repaired. For valves, this tag will be removed after the valve has gone two successive months without a leak being detected.

Leak detection information will be recorded in an inspection log that is kept with the facility operating record. This log will indicate the following for each piece of equipment for which a leak is detected:

- The instrument and operator identification numbers, and equipment ID number~~;~~;
- The date that evidence of a potential leak was found~~;~~;
- The date that the leak was detected, and the dates of each repair attempt~~;~~;
- The repair method(s) applied in each attempt to repair the leak~~;~~;
- The results of the repair attempt, recorded as one of the following~~:- These results will be recorded as one of the following-~~:
  - “Above 10,000” if the equipment is still leaking~~;~~;
  - “Repaired” if the repair has been completed~~;~~; or
  - “Repair Delayed” if the repair can-not be completed within 15 days after discovery of the leak~~;~~;
- If “Repair Delayed” is recorded, the reason for delay and the expected date of repair will also be recorded~~;~~;
- The documentation supporting the delay of repair of a valve past a hazardous waste management unit shutdown, accompanied with a signature of the owner, operator, or designate who made the decision that repair of the valve would be delayed~~;~~; and
- The date of successful repair of the leak.

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In addition to the information above, the following information will be kept in a log that is recorded in the facility operating record. This information will be available upon request of the Director.

- A list of identification numbers for each piece of equipment subject to the regulations-;
- A list of identification numbers, signed by the owner or ~~operation~~operator, for equipment designated for no detectable emissions-; and
- A list indicating the dates of each compliance test, the background level measured during the test, and the maximum instrument reading measured for the equipment.

A list will be maintained of the identification numbers for those valves which are designated as either unsafe or difficult to monitor. With this list, the explanation for each designation, and the schedule for monitoring each valve will also be recorded.

All of the records described above relating to leak detection and repair results will be kept for at least 3 years in the facility operating record.

**ATTACHMENT III.A, TABLE III.A-1**

**EQUIPMENT SUBJECT TO THE AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS**

<b>Equipment ID- ID No.</b>	<b>Unit No.- Monitoring Point ID</b>	<b>Location</b>	<b>Type of Equipment</b>	<b>Service</b>	<b>% Organic</b>	<b>Method of Compliance</b>
P-1A	<del>Tank-AC</del>	Grinder Building	Pump	Light Liquid	0 to 30%	Monthly LDAR
P-1B	<del>Tank-BC</del>	Grinder Building	Pump	Light Liquid	0 to 30%	Monthly LDAR
P-440	<del>440ED</del>	440 Pump House	Pump	Light Liquid	0 to 30%	Monthly LDAR
P-441	<del>441CD</del>	441 Pump House	Pump	Light Liquid	0 to 30%	Monthly LDAR
V-A-440A	<del>440DV</del>	440 Pump House	Valve	Light Liquid	0 to 30%	Monthly LDAR
V-B-440B	<del>440DZ</del>	440 Pump House	Valve	Light Liquid	0 to 30%	Monthly LDAR
V-A-441A	<del>BY441</del>	441 Pump House	Valve	Light Liquid	0 to 30%	Monthly LDAR
V-B-441B	<del>CA441</del>	441 Pump House	Valve	Light Liquid	0 to 30%	Monthly LDAR
V-14	<del>Tank-ACM</del>	Grinder Building	Valve: Unsafe to monitor	Light Liquid	0 to 30%	<del>Monthly</del> -Annual LDAR
V-15	<del>Tank-BB</del>	Grinder Building	Valve: Unsafe to monitor	Light Liquid	0 to 30%	Annual <del>Monthly</del> -LDAR
V-17A	<del>Tank-ACW</del>	Grinder Building	Valve: Unsafe to monitor	Light Liquid	0 to 30%	Annual <del>Monthly</del> -LDAR
V-17B	<del>Tank-BL</del>	Grinder Building	Valve: Unsafe to monitor	Light Liquid	0 to 30%	Annual <del>Monthly</del> -LDAR
V-18A	<del>Tank-ACV</del>	Grinder Building	Valve: Unsafe to monitor	Light Liquid	0 to 30%	Annual <del>Monthly</del> -LDAR
V-18B	<del>Tank-BK</del>	Grinder Building	Valve: Unsafe to monitor	Light Liquid	0 to 30%	Annual <del>Monthly</del> -LDAR
V-27A	<del>Tank-AEN</del>	Grinder Building	Valve: Unsafe to monitor	Light Liquid	0 to 30%	Annual <del>Monthly</del> -LDAR
V-27B	<del>Tank-BBW</del>	Grinder Building	Valve: Unsafe to monitor	Light Liquid	0 to 30%	Annual <del>Monthly</del> -LDAR
V-130A	FU	Grinder Building	Valve: Unsafe to monitor	Light Liquid	0 to 30%	Annual LDAR
V-130B	FT	Grinder Building	Valve: Unsafe to monitor	Light Liquid	0 to 30%	Annual LDAR
V-300	N	Grinder Building	Valve: Unsafe to monitor	Light Liquid	0 to 30%	Annual LDAR
MBV-1	FY	Grinder Building	Valve: Unsafe to monitor	Light Liquid	0 to 30%	Annual LDAR
MBV-2	GA	Grinder Building	Valve: Unsafe to monitor	Light Liquid	0 to 30%	Annual LDAR
V-440S	AG440	Slurry Loop	Valve: Difficult to Monitor	Light Liquid	0 to 30%	Annual LDAR

**ATTACHMENT III.A, TABLE III.A-1**

**EQUIPMENT SUBJECT TO THE AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS**

<b>Equipment ID- ID No.</b>	<b>Unit No.- Monitoring Point ID</b>	<b>Location</b>	<b>Type of Equipment</b>	<b>Service</b>	<b>% Organic</b>	<b>Method of Compliance</b>
V-440R	<del>AF440</del>	Slurry Loop	Valve: Difficult to Monitor	Light Liquid	0 to 30%	Annual LDAR
V-441S	<del>AH441</del>	Slurry Loop	Valve: Difficult to Monitor	Light Liquid	0 to 30%	Annual LDAR
V-441R	<del>BC441</del>	Slurry Loop	Valve: Difficult to Monitor	Light Liquid	0 to 30%	Annual LDAR
<del>Tee-1A</del> CON-A	<del>Tank-AA</del>	Grinder Building	<del>Flanged</del> Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Tee-1B</del>	<del>Tank-B</del>	<del>Grinder Building</del>	<del>Flanged Connection</del>	<del>Light Liquid</del>	<del>0 to 30%</del>	<del>LDAR for Connectors</del>
CON-D	D	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-E	E	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-F	F	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-G	G	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-H	H	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-M	M	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-O	O	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-Q	Q	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-R	R	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-S	S	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-T	T	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BO	BF	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BO	BO	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BP	BP	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BQ	BQ	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BO	BR	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BS	BS	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>

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**ATTACHMENT III.A, TABLE III.A-1**

**EQUIPMENT SUBJECT TO THE AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS**

<b>Equipment Id-ID No.</b>	<b>Unit No. Monitoring Point ID</b>	<b>Location</b>	<b>Type of Equipment</b>	<b>Service</b>	<b>% Organic</b>	<b>Method of Compliance</b>
CON-BU	BU	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-CN	CN	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-CO	CO	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-CP	CP	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-CQ	CQ	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-CR	CR	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-CS	CS	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-CU	CU	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FA	FA	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FB	FB	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FC	FC	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FD	FD	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FE	FE	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FF	FF	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FG	FG	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FH	FH	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FI	FI	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FJ	FJ	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FK	FK	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FL	FL	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FM	FM	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FN	FN	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>

**ATTACHMENT III.A, TABLE III.A-1**

**EQUIPMENT SUBJECT TO THE AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS**

<b>Equipment ID- ID No.</b>	<b>Unit No.- Monitoring Point ID</b>	<b>Location</b>	<b>Type of Equipment</b>	<b>Service</b>	<b>% Organic</b>	<b>Method of Compliance</b>
CON-FO	FO	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FP	FP	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FQ	FQ	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FR	FR	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FS	FS	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FV	FV	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FW	FW	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FX	FX	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-FZ	FZ	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-GB	GB	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-GC	GC	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-GD	GD	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-GE	GE	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-GF	GF	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-GG	GG	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-GH	GH	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-GI	GI	Grinder Building	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
SG-1	440/441BV	Grinder Building	<del>Flanged</del> Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
PIT-1	440/441PIT-1	Grinder Building	<del>Screwed</del> Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
PIT-2	440/441PIT-2	Grinder Building	<del>Screwed</del> Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Fee A-</del> 440CON-DW	440DW	440 Pump House	<del>Flanged</del> Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Fee B-</del>	440DX	440 Pump House	<del>Flanged</del> Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>

**ATTACHMENT III.A, TABLE III.A-1**

**EQUIPMENT SUBJECT TO THE AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS**

<b>Equipment ID- ID No.</b>	<b>Unit No. Monitori ng Point ID</b>	<b>Location</b>	<b>Type of Equipment</b>	<b>Service</b>	<b>% Organic</b>	<b>Method of Compliance</b>
440CON-DX						
<del>Tee C-</del> 440CON-DY	440DY	440 Pump House	<del>Flanged</del> Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Tee D-</del> 440CON-EA	440EA	440 Pump House	<del>Flanged</del> Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-EB	EB	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-EC	EC	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-EE	EE	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-EF	EF	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-EG	EG	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-EH	EH	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-EJ	EJ	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-EK	EK	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-EL	EL	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-JA	JA	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-JB	JB	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-JC	JC	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-JD	JD	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-JE	JE	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-JF	JF	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-JG	JG	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-JH	JH	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-JH	JL	440 Pump House	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>

**ATTACHMENT III.A, TABLE III.A-1**

**EQUIPMENT SUBJECT TO THE AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS**

<b>Equipment ID-ID No.</b>	<b>Unit No. Monitoring Point ID</b>	<b>Location</b>	<b>Type of Equipment</b>	<b>Service</b>	<b>% Organic</b>	<b>Method of Compliance</b>
<del>Fee A-441CON-AQ</del>	441AQ	441 Pump House	<del>Flanged</del> Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Fee B-441CON-AR</del>	441AR	441 Pump House	<del>Flanged</del> Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Fee C-441CON-AS</del>	441AS	441 Pump House	<del>Flanged</del> Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Fee D-441CON-AT</del>	441AT	441 Pump House	<del>Flanged</del> Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp A-440CON-BZ</del>	440BZ	441 Pump House <del>440 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp B-440CON-CB</del>	440CB	441 Pump House <del>440 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp C-440CON-CC</del>	440CC	441 Pump House <del>440 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp D-440CON-CE</del>	440CE	441 Pump House <del>440 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp E-440CON-CF</del>	440CF	441 Pump House <del>440 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp F-440CON-CG</del>	440CG	441 Pump House <del>440 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp G-440CON-CH</del>	440CH	441 Pump House <del>440 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>

**ATTACHMENT III.A, TABLE III.A-1**

**EQUIPMENT SUBJECT TO THE AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS**

<b>Equipment ID- ID No.</b>	<b>Unit No. Monitoring Point ID</b>	<b>Location</b>	<b>Type of Equipment</b>	<b>Service</b>	<b>% Organic</b>	<b>Method of Compliance</b>
<del>Adp H-440</del> CON-CI	440CI	441 Pump House <del>440 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp A-441</del> CON-HA	441HA	441 Pump House <del>441 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp B-441</del> CON-HB	441HB	441 Pump House <del>441 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp C-441</del> CON-HC +	441HC	441 Pump House <del>441 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp D-441</del> CON-HD +	441HD	441 Pump House <del>441 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp E-441</del> CON-HE +	441HE	441 Pump House <del>441 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp F-441</del> CON-HF +	441HF	441 Pump House <del>441 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp G-441</del> CON-HG +	441HG	441 Pump House <del>441 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>Adp H-441</del> CON-HH +	441HH	441 Pump House <del>441 Pump House</del>	<del>Connection</del> <del>Hose Adapter</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>III A-440</del> CON-HI	440HI	441 Pump House <del>440 Pump House</del>	<del>Connection</del> <del>Flanged</del> <del>Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>

**ATTACHMENT III.A, TABLE III.A-1**

**EQUIPMENT SUBJECT TO THE AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS**

<b>Equipment ID- ID No.</b>	<b>Unit No. Monitoring Point ID</b>	<b>Location</b>	<b>Type of Equipment</b>	<b>Service</b>	<b>% Organic</b>	<b>Method of Compliance</b>
		House				
<del>EH-B-440</del> CON-HJ	440HJ	441 Pump House <del>440 Pump House</del>	Connection <del>Flanged Connection</del>	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-U	U	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-V	V	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-W	W	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-X	X	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-Y	Y	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-Z	Z	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AA	AA	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AB	AB	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AC	AC	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AD	AD	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AE	AE	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AI	AI	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AJ	AJ	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AK	AK	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AL	AL	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AM	AM	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AN	AN	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AO	AO	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AP	AP	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>

**ATTACHMENT III.A, TABLE III.A-1**

**EQUIPMENT SUBJECT TO THE AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS**

<b>Equipment Id-ID No.</b>	<b>Unit No. Monitoring Point ID</b>	<b>Location</b>	<b>Type of Equipment</b>	<b>Service</b>	<b>% Organic</b>	<b>Method of Compliance</b>
CON-AU	AU	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AV	AV	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AW	AW	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AX	AX	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AY	AY	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-AZ	AZ	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BA	BA	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BB	BB	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BD	BD	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BE	BE	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BF	BF	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BG	BG	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BH	BH	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BI	BI	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BJ	BJ	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BK	BK	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BL	BL	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BM	BM	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-BN	BN	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-CY	CY	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-CZ	CZ	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DA	DA	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>

**ATTACHMENT III.A, TABLE III.A-1**

**EQUIPMENT SUBJECT TO THE AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS**

<b>Equipment Id-ID No.</b>	<b>Unit No. Monitoring Point ID</b>	<b>Location</b>	<b>Type of Equipment</b>	<b>Service</b>	<b>% Organic</b>	<b>Method of Compliance</b>
CON-DB	DB	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DC	DC	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DD	DD	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DE	DE	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DF	DF	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DG	DG	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DH	DH	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DI	DI	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DJ	DJ	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DK	DK	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DL	DL	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DM	DM	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DN	DN	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DO	DO	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DP	DP	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DQ	DQ	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DR	DR	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DS	DS	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DT	DT	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-DU	DU	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-JI	JI	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
CON-JJ	JJ	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>

**ATTACHMENT III.A, TABLE III.A-1**

**EQUIPMENT SUBJECT TO THE AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS**

<b>Equipment Id-ID No.</b>	<b>Unit No./Monitoring Point ID</b>	<b>Location</b>	<b>Type of Equipment</b>	<b>Service</b>	<b>% Organic</b>	<b>Method of Compliance</b>
CON-JK	JK	Slurry Loop	Connection	Light Liquid	0 to 30%	LDAR for Connectors <sup>1</sup>
<del>EII-A-441</del>	<del>441</del>	<del>441 Pump House</del>	<del>Flanged Connection</del>	<del>Light Liquid</del>	<del>0 to 30%</del>	<del>LDAR for Connectors</del>
<del>EII-B-441</del>	<del>441</del>	<del>441 Pump House</del>	<del>Flanged Connection</del>	<del>Light Liquid</del>	<del>0 to 30%</del>	<del>LDAR for Connectors</del>

<sup>1</sup>. Any component for which the method of compliance is shown as "LDAR for Connectors" will be monitored within 5 days using Reference Method 21, along with other procedures set forth in 9 VAC 20-60-264; and 40 CFR 264.1063(b), if evidence of a potential leak is found by visual, audible, olfactory or any other detection method. Absent this, no set monitoring frequency is specified.

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**Figure III.A-1** — ~~Figure 2-3 from HHRAP~~ Subpart BB  
Monitoring Points

**Figure III.A-2** — Subpart BB Monitoring Points in the Grinder  
Building

**Figure III.A-3** — Subpart BB Monitoring Points in the 440 Pump  
House

**Figure III.A-4** — Subpart BB Monitoring Points in the 441 Pump  
House

**ATTACHMENT III.2.A**

**PLANS AND SPECIFICATIONS FOR INCINERATORS**

## **ATTACHMENT III.2.A – PLANS AND SPECIFICATIONS FOR INCINERATORS**

**Comment [RFAAP1]:** Changes to this section reflect complete conversion of incinerators to MACT regulation (absent RCRA general requirements).

### **III.2.A.1. Detailed Engineering Description and Drawings of Incinerator**

The incinerator complex at Radford AAP consists of two identical rotary kiln incinerators, referred to as **Incinerators 440 and 441**. These two units are identical in every aspect of their design and operations. All components, materials, and proportions are the same.

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The two incinerators were designed to incinerate off-specification or production waste **propellant energetic** mixtures. These mixtures are brought from the production area to the Grinder Building, where they are ground and mixed with water to form a slurry. A pump system located in the Grinder Building supplies both incinerators with this slurry feed on a continuous basis. The incinerators and Grinder Building may be in operation 24 hours per day, 365 days per year. **On average, at least one of the two kilns is operating approximately 60-65% of the year.** Downtime occurs due to changes in production demands, scheduled maintenance periods, or unscheduled maintenance activities relating to mechanical difficulties.

The incinerators burn a wide variety of **propellant energetic** mixtures based on the production schedules of the facility. Figure III.2.A-1 is a process schematic of the incinerator facility at RFAAP. Each incinerator consists of the following components:

- Waste Feed System (not shown)
- ~~Combustion System Rotary Kiln~~
- ~~Afterburner~~
- ~~Auxiliary Fuel System~~
- Gas Conditioning and Air Pollution Control System ~~Evaporative Cooler~~
- ~~Fabric Filter~~
- ~~Gas Pre-cooler~~
- ~~Packed-bed liquid scrubber with demister~~
- Induced Draft Fan (Prime mover)
- Exhaust stack
- ~~Brine System (Neutralization, Brine and Caustic Tanks)~~

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In addition to the components listed above, each incinerator is also equipped with an instrumentation package to monitor, control and record the combustion process parameters.

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In accordance with 40 CFR 264.340(b), *Integration of MACT Standard*, and 270.62, all RCRA waste analysis, performance standards, operating requirements, monitoring requirements, and inspection requirements for the incinerators no longer apply once the facility demonstrates compliance with the Hazardous Waste Combustor National Emission Standards for Hazardous Air Pollutants (HWC NESHAP) and submits their Notification of Compliance. ~~ATK~~RFAAP completed this process in May 2004. Accordingly, most of the information specified by 40 CFR

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270.19 is no longer applicable. Details related to operation and design of the incinerators and associated equipment are now addressed under the Clean Air Act's HWC NESHP. General RCRA requirements for these incinerators are addressed elsewhere in this Permit. A summary of the permitted system is provided in the sections that follow.

#### II.2.A.1 Waste Feed System

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Off-specification and production waste propellant mixtures are brought from the production area to the Grinder Building (Bldg. 442) in specially labeled 20-gallon waste containers, where they are ground and mixed with water to form a slurry. Prior to the preparation of each batch, or grind, the propellant buckets are loaded onto a suspended conveyor system, which transports the buckets up to the grinder feed chute. The actual process of grinding the propellant and preparing the batch is controlled by the operators in the control room. Ground propellant is fed to one of two 1,900-gallon slurry feed tanks and is mixed with makeup water to form the slurry for incineration. A pump system located in the Grinder Building supplies both incinerators with slurry feed on a continuous basis.

When the waste preparation or grinder operation is started, the conveyor carries each propellant bucket up to the feed chute and dumps the contents of the bucket into the chute. The bulk propellants travel down the feed chute to the grinder, where they are chopped into small pieces of propellant. This propellant is then dropped into one of the slurry feed tanks. Once the entire batch of propellant has been ground and added to the feed tank, the tank is decanted down to the desired level. Before the tank is sent to the slurry loop and the incinerators, the agitator on the tank is started to fully mix the propellant and water into the waste slurry mixture.

The slurry feed system is a recirculating flow loop from the slurry tanks to the incinerators' feed pumps and back to the slurry tank. The slurry feed pump, located in the Grinder Building, pumps the slurry around this flow loop. At each incinerator, another pump pulls slurry from the loop into the slurry pickup line and injects it into the kiln at the burner end. The slurry recycle line is equipped with a water flush system to purge the lines of slurry when the slurry pumps are turned off.

#### II.2.A.2 Combustion System

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The incinerators' combustion system includes a rotary kiln primary combustion chamber followed by an afterburner. The primary fuel for both of these combustion chambers is natural gas.

Waste feed enters the rotary kiln through the slurry feed nozzle. The rotary kiln is designed to incinerate water based slurries of bulk explosives and propellants. The kiln shell is a horizontal cylinder that rotates between two fixed ends or breechings. The kiln rotation causes a tumbling action that allows the water in the slurry to evaporate and the waste explosive or propellant solids to burn in a controlled environment.

To help prevent fugitive emissions between the fixed breechings and rotating drum, each kiln is equipped with seals at both the feed and discharge ends. These seals prohibit fugitive emissions from the kiln and minimize air infiltration.

Inert ash from incineration of the propellant is removed from the discharge breeching by a dry ash removal system. This system consists of a slide gate that is periodically opened, with the waste feed off, to allow ash to empty into an ash holding bin.

Combustion gas exits the kiln and enters the afterburner through a refractory lined duct. The afterburner is a stationary horizontal cylinder with flue gas inlet and outlet ports located on either end. The afterburner incorporates an internal vertical baffle system that increases the gas turbulence to promote effective combustion gas mixing.

### II.2.A.3 Gas Conditioning and Air Pollution Control System

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Each incineration system includes a dedicated gas conditioning and air pollution control (APC) system that is designed to condition and remove acid gases, particulate, and metals from the combustion gases. The gas conditioning and APC devices in use at the RFAAP include the following units:

- Evaporative cooler
- Fabric filter baghouse
- Gas pre-cooler
- Packed bed scrubber

In addition to the components mentioned above, the brine system, including the neutralization and brine tanks, circulates brine through the wet APC devices to cool and scrub the combustion gases.

#### II.2.A.3.1 Evaporative Cooler

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High temperature flue gases exiting the afterburner pass into the evaporative cooler, where the gases are cooled before entering the downstream APC system. The evaporative cooler is a vertical cylinder with the gas entrance on the top center and the gas exit on the side bottom. The evaporative cooler is considered a piece of gas conditioning equipment, serving the sole purpose of cooling the flue gases before they enter the fabric filter baghouse. No air pollution control is intended with its design.

The evaporative cooler is equipped with a bottom hopper to collect any residue that may drop out of the flue gas as it passes through the cooler on its way to the APC. A rotary valve on the hopper discharge removes the ash, while providing a seal to prevent air in-leakage. Ash is collected in a holding bin and disposed of with kiln ash.

#### II.2.A.3.2 Fabric Filter Baghouse

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Cooled combustion gases exiting the evaporative cooler are routed to the fabric filter baghouse. The fabric filter is a pulse-jet style baghouse designed to remove particulate matter from the flue gas. The filter bags are suspended from an internal tubesheet near the top of the baghouse. This tube sheet separates the outlet or clean side of the baghouse from the inlet or dirty side. As flue gases flow through the filter bags from the outside to the inside, particles are collected on the outside of the bags. Inside each bag is a rigid wire cage that keeps the filter bag from collapsing while under vacuum. Upon exiting the bags, the gas enters a clean gas outlet plenum and exits the module through a ductwork connection.

As the filter cake on the outer surface of the bags builds up, the pressure drop through the fabric filter increases. When the pressure drop reaches a programmed level, the pulse-jet cleaning cycle is initiated. During the cleaning cycle, each bag is pulsed with a blast of compressed air. Each row of filter bags is pulsed in a programmed sequence by activating solenoid valves that are connected to a common compressed air manifold. The pulse of compressed air sends a pressure wave down the interior of the filter bag, causing the bag to bulge slightly. This pulsing action causes the filter cake on the outside of the bag to be knocked off. As the filter cake is knocked off, it falls to the bottom conical hopper of the baghouse where it accumulates. The cleaning cycle continues to pulse the filter bags in sequential order until the baghouse pressure drop returns to a pre-set minimum. A rotary valve on the discharge hopper removes the accumulated fly ash, while providing a seal to prevent air in-leakage. Ash is collected in a holding bin and disposed of with kiln ash.

#### II.2.A.3.3 Gas Pre-Cooler

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Combustion gas exits the fabric filter and travels through a duct into the gas pre-cooler. The pre-cooler is a direct contact quench system that utilizes multiple water sprays to cool the gas from the baghouse exit temperature to the saturation temperature. The pre-cooler is a vertical cylinder, equipped with a conical bottom sump for collecting excess water and residual contaminants. This excess brine water is gravity drained from the pre-cooler bottom to the neutralization tank.

#### II.2.A.3.4 Packed Bed Scrubber

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Once cooled and saturated in the pre-cooler, the combustion gases are routed to the packed bed scrubber, which is designed to scrub acid gases. Gas flows through the scrubber upwards from the entrance at the bottom of the scrubber through the packing and exits at the top. Gas flow is countercurrent to water flow in this scrubber. The excess water collected at the bottom of the scrubber is gravity drained from the bottom sump to the neutralization tank.

The scrubber is a vertical cylindrical vessel that houses a section of scrubber packing to increase gas to liquid interaction and help achieve the design control efficiency. One spray nozzle located above the packing in the scrubber sprays water countercurrent to the gas flow. Four additional

nozzles located below the packing, spray water in the direction of the gas flow. The spray nozzles are supplied with brine water from the scrubber/neutralization recycle pumps.

#### II.2.A.4 Induced Draft Fan

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The ID fan is located downstream of the packed bed scrubber. The ID fan is the prime mover and provides the necessary vacuum to overcome the pressure drop through the entire incineration system. The fan is equipped with a variable speed drive that controls flow and draft to maintain a negative pressure at the rotary kiln.

#### II.2.A.5 Exhaust Stack

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The discharge of the ID fan is routed into the exhaust stack, where it is then dispersed into the air as a cooled, scrubbed gas stream. The exhaust stack is a 35-foot high cylinder. It is equipped with an inlet duct, inspection port and upper and lower sampling ports.

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The primary and secondary combustion system, consisting of the rotary kiln and the afterburner, are described in detail in Section III.2.A.2. The remaining components of the incineration system are described in Section III.2.A.7.

#### III.2.A.2. Description of the Incinerator

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##### General System Description—Combustion Components

Each incineration unit is comprised of a primary combustion chamber (rotary kiln), followed by an afterburner system that elevates gas temperature to high temperatures to ensure the destruction of any unburned organic constituents and carbon monoxide (CO) in the kiln exit gas.

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##### Description of the Rotary Kiln

The rotary kiln is designed to incinerate water based slurries of bulk explosives and propellants, which are mixed at the Grinder Building and pumped into the incinerator through the waste feed system described later in Section III.2.A.3. The kiln rotation causes a tumbling action that allows the water in the slurries to evaporate, and the waste explosive or propellant to slowly burn in a controlled environment.

Each kiln is equipped with a variable speed drive system connected to a mechanical gear reducer. This mechanical drive unit is connected via a drive shaft to four trunnion rollers to provide a friction rotary drive.

The kiln feed breeching and discharge breeching are both stationary, with the kiln barrel rotating between the breechings. The kiln is equipped with seals to promote a seal between the rotating barrel and fixed breechings. These feed and discharge breeching seals prohibit fugitive emissions from the kiln and minimize infiltration of un-monitored air. In addition, these seals allow for a slight negative pressure, or vacuum, to be maintained in the kiln, hence preventing leaks to the external environment.

Slurries of propellant and water are fed into the burner end of the kiln through a slurry nozzle and progress through the kiln to the discharge end. These slurries are fed at rates which are designed to impede or eliminate any detonations. Propellant ash is removed from the discharge breeching by the ash removal system. This system consists of a slide gate that is periodically opened to allow ash to fall through into an ash holding bin. Materials collected from this bin are analyzed for reactivity and toxicity. If the results of this analysis indicate that the ash is a hazardous waste, it will be disposed of in an approved hazardous waste landfill; if analyses prove the ash to be non-hazardous, it will be disposed of in a permitted, off-site solid waste landfill.

The kiln shell is a carbon steel cylinder. The inside of the shell is refractory lined. The feed breeching and discharge breeching are also lined.

#### Description of the Afterburner

Combustion gas exits the kiln and enters the afterburner through a refractory lined duct. The afterburner is a horizontal cylinder with a gas inlet and outlet located on either end. The afterburner shell is fabricated from carbon steel and is refractory lined. The afterburner's internal, vertical baffle system, constructed of refractory brick, increases the gas turbulence and hence, promotes combustion gas mixing. Adequate mixing, along with a maximum temperature elevation, ensures the destruction of unburned organic constituents and CO.

The afterburner is equipped with two burners. These burners, which are fueled by natural gas, are located 180 degrees apart on the cylinder shell near the gas inlet end. Combustion air and atomizing air are supplied by a blower common to both the kiln and afterburner.

#### III.2.A.3. Description of the Waste Feed System

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Bulk propellants are blended with water at the Grinder Building, to form a mixture of water and propellant, which is referred to as the waste slurry. The mixture is created in two slurry tanks and pumped to the incinerator through a slurry feed system. Each tank has capacity of 1,700 gallons to the overflow.

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Processing of the bulk propellants occurs at the Grinder Building. Here, bulk propellants from throughout the RFAAP facility are sent in specially labeled 20-gallon waste containers to be ground and incinerated. Prior to a grind, these buckets are loaded onto a suspended conveyor system, which transports the buckets up to the tank feed chute. All buckets to be used in a grind are loaded on the conveyor prior to grinding of any batch. The process of grinding the propellant is completely controlled by the operators in the control room. When a batch is to be ground, the conveyor is started. The conveyor carries each bucket up to the feed chute, and dumps the contents of the bucket into the feed chute. The bulk propellants travel down the feed chute to the grinder, where they are chopped into very small pieces of propellant. This propellant is then dropped into one of two feed tanks. Once the entire batch of propellant has been added to the feed tank, the tank is filled with water. The amount of water added to the tank is calculated by a computer-based program, which evaluates the amount of water needed to meet all feed limits. Once the water is added, the agitator on the tank is initiated to form a homogenous mixture of propellant and water, which is called the slurry.

The slurry feed system is a re-circulating flow loop with a water flush system. The slurry feed pump, located in the Grinder Building, pumps slurry through this flow loop. Another pump, located at the incinerator, pulls slurry from the loop into the slurry pickup line and injects it into the kiln slurry lance. This metering pump is non-reversing. Whenever waste feed is cut-off, fresh water is manually injected into the pickup line to flush the residual slurry in the line after the metering pump through the slurry lance into the kiln. This procedure is executed manually to avoid sending too much water to the kiln and prevents propellant from remaining in the pickup line when waste feed has been discontinued.

#### III.2.A.4. — Description of the Auxiliary Fuel System

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The auxiliary fuel system is used to initiate and maintain the temperature of the incinerator and the afterburner during incinerator operation. Natural gas, the auxiliary fuel, is fed to the kiln and the afterburner through a supply line that splits flow to both devices. These lines are separate from the slurry feed lines described earlier.

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The auxiliary fuel system is used to initially bring both the kiln and the afterburner up to desired operating temperatures, described below. Following start-up of the incinerator and afterburner, the auxiliary fuel system feeds fuel to the incinerator and afterburner to maintain desired temperatures, as the waste is subautogenous and cannot support its own combustion without supplemental fuel.

The rotary kiln is equipped with a single burner, which is located on the feed breeching. This burner is designed to burn natural gas as the auxiliary fuel source. An automatic flame safety supervisor monitors flame status and controls burner start-up and shut-down sequences, including the feed of auxiliary fuel to the burner. Additionally, the kiln is equipped with a thermocouple that is connected to temperature controller that transmits to the control room. This temperature controller modulates the natural gas valve to vary flow of auxiliary fuel to the kiln and to control the kiln temperature.

The auxiliary fuel system helps the afterburner elevate and maintain the gas temperature. Initially, the auxiliary fuel system is used to raise the temperature of the afterburner before any incineration/processing of wastes begins. This is accomplished by feeding the auxiliary fuel to the afterburner's two burners. These burners, much like the kiln's burner, are equipped with a flame safety supervisor that monitors flame status and controls start-up and shutdown sequences.

#### III.2.A.5. — Capacity of Prime Mover

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The prime mover for the incinerator system at RFAAP is an induced draft (ID) fan, located downstream of the packed bed scrubber, described in Section III.2.A.7. The ID fan drafts combustion gases through the entire incineration system and maintains a negative pressure (vacuum) throughout the system.

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A damper, located on the discharge of the ID fan, is manually adjusted to control the amount of gas pulled through the incineration system. The damper is set to maintain a negative pressure at the rotary kiln. The control damper position is adjusted and the position manually logged prior to incinerating waste. The ID fan inlet temperature is measured at the scrubber exit, continuously recorded, and transmitted to the control room.

### III.2.A.6. Air Pollution Control Devices

#### Air Pollution Control Devices

In the Air Pollution Control System (APCS), the combustion gases from the rotary kiln and afterburner are conditioned to remove acid gases, particulate and metals. An ID fan maintains a vacuum throughout the unit and provides the motive force for the gas cleaning. The Air Pollution Control Devices (APCDs) in use at the RFAAP facility include the following units, all of which are described in this section:

- Evaporative Cooler
- Fabric Filter
- Gas Pre-Cooler
- Packed-Bed Scrubber
- Induced Draft (ID) Fan
- Exhaust Stack

In addition to the components mentioned above, the brine system, including the Neutralization Tank and Brine Tanks, circulates brine through the various APCDs to cool and scrub combustion gas. Figure 3 depicts process flow through the APCS.

The gas from the rotary kiln proceeds through the afterburner, where further destruction of organic constituents and carbon monoxide (CO) occurs. From the afterburner, the gas travels through refractory lined ductwork into the evaporative cooler, where it is cooled. Once cooled, the gas moves to the fabric filter, where contact with a baffle and flow through filter bags causes particulate matter to fall out. Following particulate removal, the gas travels through insulated ducts and enters the pre-cooler, where it is cooled to saturation. The packed-bed scrubber, located downstream from the pre-cooler, is responsible for scrubbing acid gas and further removing particulate matter from the gas stream. From the packed-bed scrubber, gas is drawn through the ID fan and the associated damper. The cooled, scrubbed gas stream travels through the exhaust stack and is dispersed into the air. All ductwork is primed and painted on both the interior and exterior.

Each of these components is described in detail in the following sections:

#### Evaporative Cooler

Combustion gas exiting the afterburner is routed by refractory lined ductwork to the evaporative cooler. Scrubber system brine is sprayed into the evaporative cooler to reduce the combustion gas temperature.

The evaporative cooler is a vertical steel cylinder with the gas entrance on the top center and the gas exit on the side bottom. The top part is refractory lined to protect against high temperature.

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The evaporative cooler is equipped with a bottom hopper to collect any residue that falls out of the combustion gas. A rotary valve on the hopper discharge removes the ash, while providing a seal and maintaining vacuum inside the cooler. Ash is collected in a holding bin and disposed of with kiln ash.

Nozzles spray brine into the gas stream for evaporation. The brine nozzles use compressed air to atomize the brine. Brine is supplied by the brine pumps discussed later in this section. Another nozzle is provided for emergency quenching should the brine supply fail. Plant water, a protected water supply, is connected to the emergency nozzle.

#### Fabric Filter

Cooled combustion gas exiting the evaporative cooler is routed to the fabric filter via ductwork. The gas strikes a ladder-vane baffle as it enters the fabric filter. Contact with the baffle causes larger particles to fall out and distributes the gas evenly throughout the matrix of bag filters. As gas flows through the bag fabric from outside to inside, particles are collected on the outside of the bags. Inside each bag is a rigid wire cage that keeps the bag from collapsing. The cleaned combustion gas then flows out the top of the bag through an opening in the tubesheet. Upon exiting the bags, the gas enters a clean gas plenum and exits the module through a ductwork connection.

The fabric filter, fabricated from carbon steel, is rectangular in shape, and has an ash collection hopper on the bottom. The carbon steel is factory coated, both internally and externally, to prevent corrosion. Gas enters the fabric filter through the bottom side connection and exits via the top side connection.

As particulate collects on the bags, the pressure drop across the bags increases. The fabric filter local panel automatically initiates the cleaning sequence when the buildup of particulate causes the pressure differential across the fabric filter to reach a pre-determined value. Solenoid-piloted diaphragm valves are opened by the local panel to provide a burst of compressed air that travels the entire length of the bags, causing the bags to snap outward. This jet-pulsed air, directed counter current to normal gas flow, dislodges the particulate from the bags. This method of cleaning permits only one row of bags to be cleaned at a time. The particulate, once loosened, falls into a hopper located below the bags. Particulate is discharged by a rotary valve located on the hopper bottom to an ash removal cart where it accumulates before being transferred for disposal.

Bypass ductwork, constructed from carbon steel, is installed around the fabric filter. Pneumatically operated valves on the fabric filter inlet duct (butterfly valve) and the bypass duct (puppet valve) are manually or automatically opened and closed by the local panel to isolate and bypass the fabric filter should the evaporative cooler exit temperature become too low or high.

#### Gas Pre-Cooler

Combustion gas exits the fabric filter and travels through a duct into the gas pre-cooler. The pre-cooler, a direct contact quench system, utilizes water sprays to cool the gas from the fabric filter exit to the saturation temperature.

The pre-cooler is a vertical, metal, cylindrical vessel. The pre-cooler is equipped with a conical bottom for water and particulate removal. Excess water is gravity drained from the pre-cooler bottom to the neutralization tank. The supernatant from the pre-cooler is recycled and reused in the gas cooler and scrubber.

The pre-cooler is serviced by conical spray nozzles that spray water counter-current to the gas flow. The cooling water is pumped to the nozzles by scrubber water pumps in the brine system.

#### Packed-Bed Scrubber

The gas, once cooled in the pre-cooler, is routed to the packed-bed scrubber, which is designed to scrub acid gas and further remove particulate matter.

The packed-bed scrubber is a cylindrical vessel and is constructed of stainless steel. Gas flow through the scrubber proceeds from the entrance at the bottom of the scrubber through the exit at the top. The internals consist of packing in the lower section and a mist eliminator in the upper section.

A conical spray nozzle, located within the packing in the scrubber, sprays water countercurrent to the gas flow. Additional nozzles, located below the packing, spray water in the direction of the gas flow. The excess water is drained to the neutralization tank. The spray nozzles are fed water from the scrubber water pumps in the brine system.

#### ID Fan

The ID fan is located downstream of the packed-bed scrubber and is responsible for drafting combustion gases through the entire incineration system.

The radial tip stainless steel fan is arranged in a bottom angular configuration for counter-clockwise rotation. The drive for the fan is provided by an electric motor.

#### Exhaust Stack

The discharge of the ID fan is routed into the exhaust stack, where it is then dispersed into the air as a cooled, scrubbed gas stream.

The exhaust stack is a reinforced fiberglass cylinder. It is equipped with an inlet duct, inspection port, and upper and lower sampling ports. The sampling ports are used for stack gas sampling and for the stack gas analyzer connection, which is used for the continuous emission monitoring system.

#### Brine System

The brine system used to cool and scrub gas consists of a neutralization tank, a brine tank, a caustic tank, and associated pumps and piping.

The neutralization tank system consists of the neutralization tank and two scrubber water pumps. The cylindrical neutralization tank collects brine which is gravity drained from the gas pre-cooler

and the packed bed liquid scrubber. The scrubber water pumps re-circulate brine to the pre-cooler and packed bed liquid scrubber spray nozzles and transfer scrubber water to the brine tank on level control. The fiberglass-reinforced plastic tank has a capacity of 1100 gallons.

Caustic is pumped to the neutralization tank to neutralize the brine drained from the pre-cooler and scrubber. The pH is automatically maintained by controlling the caustic input to obtain the desired pH value. Makeup water is supplied to the neutralization tank from the plant water supply.

Brine is transferred from the neutralization tank to the brine tanks by the scrubber water pumps mentioned previously. The brine tanks along with the brine recirculation pumps are part of the brine tank system. The brine recirculation pumps move the brine from the tanks to the evaporative cooler nozzles to cool the combustion gas. The cylindrical fiberglass-reinforced tanks each have a capacity of 8500 gallons.

#### III.2.A.7. Nozzle and Burner Design

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Nozzles and burners are used throughout the incineration system at the RFAAP and provide various process inputs. Nozzles provide water or waste slurry to the incineration system. Burners provide heat during system start-up and control temperatures throughout the burning of waste due to the subautogenous nature of RFAAP's wastes. Descriptions of each of these nozzles and burners are given below.

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#### Rotary Kiln Nozzle

A slurry nozzle, located within the rotary kiln, feeds slurries of propellant and water into the kiln at the burner end. The slurry spray is atomized to increase the mixing of the stream and to achieve the greatest use of the kiln surface area. The spray is atomized by an external air atomizer, which blows pressurized air upwards towards the nozzle exit.

#### Rotary Kiln Burner

The rotary kiln is equipped with a burner located on the feed breeching. This burner is designed to burn natural gas. Combustion air and atomizing air are supplied to the burner by an air blower. The kiln burner is equipped with a flame safety supervisor. This flame safety supervisor monitors flame status and controls burner start-up and shut-down sequences.

#### Afterburner

The afterburner is equipped with two burners. These burners are located 180 degrees apart on the cylinder shell near the gas inlet. The burners use natural gas as fuel. Combustion air and atomizing air are supplied by a blower, common to both the kiln and afterburner. The burners are equipped with a flame safety supervisor that monitors flame status and controls start-up and shutdown sequences.

#### Evaporative Cooler Nozzles

The evaporative cooler is equipped with spray nozzles. Of these three nozzles, two are designed to spray brine into the gas stream for evaporation. These nozzles spray brine (total) in a full cone pattern. The third nozzle is designed to provide water for emergency quenching operations.

#### Gas Pre-Cooler Nozzles

The pre-cooler is serviced by conical spray nozzles that spray water counter-current to the gas flow. The water for these nozzles is supplied by the two scrubber water pumps, near the neutralization tank.

#### Packed-Bed Liquid Scrubber Nozzles

The packed-bed liquid scrubber is equipped with conical spray nozzles that provide water spray counter-current to the gas flow. These nozzles are located below the packing in the lower section of the packed-bed liquid scrubber. The water for these nozzles is supplied by the two scrubber water pumps, near the neutralization tank.

### III.2.A.8. Construction Materials

All components of the RFAAP incineration system, including the air pollution control devices (APCDs) described in the previous section, are constructed of specific materials.

The rotary kiln and afterburner are both fabricated from steel and lined with refractory. In addition, the feed breeching and discharge breeching of the kiln, along with the afterburner's internal vertical baffle system, are also lined with castable refractory. The pre-cooler, also lined with refractory, is constructed from a steel shell. The packed-bed liquid scrubber and the exhaust stack are also constructed of steel. The brine and neutralization system tanks are constructed from fiberglass reinforced plastic.

#### Rotary Kiln

The rotary kiln consists of a carbon steel shell. The kiln is refractory lined with firebrick that covers the entire length of the kiln. In addition to the kiln shell, the feed breeching and discharge breeching are also lined with castable refractory.

#### Afterburner

The ductwork leading from the kiln to the afterburner is refractory lined. The afterburner is constructed of a carbon steel shell. This shell, like the duct from the kiln, is also refractory lined with firebrick. In addition to the afterburner shell and the duct from the kiln, the afterburner's internal vertical baffle system is also lined with refractory brick.

#### Evaporative Cooler

The evaporative cooler is constructed of a carbon steel shell. The shell is coated, both internally and externally to prevent corrosion of the steel. The top section of the evaporative cooler is refractory lined with firebrick.

#### Fabric Filter

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The fabric filter, like the evaporative cooler, is constructed of carbon steel shell, coated, both internally and externally to prevent corrosion. Filter bags occupy the inside of the fabric filter. The bypass duct around the fabric filter is constructed of a carbon steel shell.

#### Gas Pre-Cooler

The pre-cooler is a metal cylinder, lined with castable refractory.

#### Packed-Bed Liquid Scrubber

The packed bed liquid scrubber is constructed from stainless steel. The lower portion of the scrubber is packed with packing. A demister is located above the packing, prior to the scrubber exit.

#### ID Fan

The ID fan, the driving force for the incineration system, is constructed of stainless steel.

#### Exhaust Stack

Each exhaust stack is constructed of stainless steel.

#### Neutralization, Brine and Caustic Tanks

The brine and neutralization system tanks are constructed of fiberglass reinforced plastic.

**Remove this page and insert the following:**

**Figure III.2.A-1** — Incinerator Process Schematic

## **Flood Watch Summary for Explosive Waste Incinerator**

The Radford Army Ammunition Plant (RFAAP) flood watch follows a protocol established to be protective of the various facilities along the New River. This protocol has been in effect since 1978 and is evaluated annually for its effectiveness. The flood watch is managed by the Water Department, which is staffed on plant 24 hours a day, 7 days a week. The flood watch protocol is as follows:

When the river level reaches 1,695 feet on the plant gauge, or sooner if conditions warrant, a Water Department Division representative calls the American Electric (AEP) Roanoke office. Upon placing the call, the water department representative logs the following information:

- Time the call was made;
- The AEP official on the call;
- Claytor lake information such as gate openings and flows in cubic feet per second;
- Galax gage reading; and,
- Any updates AEP may have on the weather prediction.

If or when the river level reaches 1,697 feet on the plant gage, the Security Dispatcher is notified. The Security Dispatcher then proceeds to notify the various areas of the plant of the impending flood and directs them to initiate the local flood protection activities. These may include shutting down the process, removing material and/or waste from low lying areas, etc. One of the facilities notified is the explosive waste incinerator (EWI). Specific actions that the EWI area takes upon receiving such notice are provided in the Flood Plan, Attachment II.H of the RCRA permit application.

Flood stage for RFAAP is 1,700 feet on the plant gauge. The EWI sets between 1,700 feet and 1,720 feet elevation (refer to Att II.E.2-Zoomed Topo.pdf in EWI permit application of 2012). It is also located in the RFAAP magazine area where various low and high areas exist, such as ditches for low areas and barricades and berms for the higher areas. The nearest building to the EWI is a rest house (B4601-7). Building 4601-7 is located at the 1,720 foot elevation.

Flood waters have been observed near and around the EWI; however, the EWI complex has no records of succumbing to floodwaters either via equipment flooding or washout of waste.

## **Examples of Flood Watch Planning and Incidents**

According to the flood watch records, the primary wet years since 1978 have been 2003 and 2013 despite various storm and hurricane warnings throughout the years. In 2003 the primary events were in September and November. In September 2003, Hurricane Isabel was expected to be a major storm. Pre-planning occurred with the Roanoke office of the Virginia Department of Environmental Quality (VA DEQ) as shown in Attachment 1. The RFAAP monitored the storm as shown in Attachment 2; however, the storm by-passed RFAAP and the Flood Watch Plan was not implemented.

The primary environmental events for each year of a major flood occurrence for 2003 and 2013 follow.

### *November 2003 - Flood with VPDES Impacts*

In November 2003, flood waters impacted the permitted Virginia Pollution Discharge Elimination System (VPDES) outfalls at the RFAAP. The Flood Watch Plan was implemented and monitoring occurred for two days (Attachment 3). This was reported as required to the Roanoke office of the VA DEQ. The

VPDES components impacted were the major discharge outfalls along the New River. These outfalls are at an elevation of 1,707 feet. Even though the plant gage did not exceed 1700 feet (Attachment 3), the flow was fast and the wind caused back splashing of river water into the outfalls. On November 20, 2003, flow was estimated at Outfalls 005, 006, 007, and 029 due to the New River surpassing its flood stage. The storm continued and on November 22, 2003, flows were estimated at Outfalls 005, 006, and 007 due to a power outage.

Initial contact from the Water Department to AEP was made on November 19, 2003, at 9:15 p.m., when the river gage at the RFAAP reached 1,695 feet. Contact with AEP continued over the next few days until waters receded below the 1,695-foot action level on November 22, 2003 (refer to Attachment 3).

During this event, the EWI flood plan was enacted per the permit and no environmental incidents were recorded.

#### *January 2013 - Flood with OBG Impacts*

In January 2013, the Propellant Open Burning Ground (OBG) was overcome by flood waters. This incident was reported as required to the Roanoke office of the VA DEQ. On January 30, 2013, heavy rains occurred as forecasted. Based on this forecast, no open burning activities were initiated. The OBG area sets between 1,664 feet and 1,710 feet elevation with many of the pans at 1,683 feet or higher (refer to Figure II.A-3, "Area Map" in the 2015 OBG permit application). During this event, the OBG was inundated by floodwaters. This forced evacuation of the OBG. Because of the precautions provided by the flood watch plan and the local procedures concerning unit operation, no ash was present in the pans, no damage occurred to the ash drum storage area, and no washout of hazardous waste occurred.

On January 30, 2013, the river gauge at the RFAAP reached 1,695 feet between 8:00 pm and 8:00 am (Attachments 4 and 5), and the Water Department began contacting AEP hourly as per the flood watch plan. Between 8:00 p.m. on the 30th and 8:00 a.m. on the 31st, the secondary action level of 1,697 feet was reached and the security department was notified of an impending flood. The river crested at 1,703 feet between 8:00 p.m. on the 31st and 8:00 a.m. on the 1st of February. Hourly reports with AEP continued until the river gage returned below the actionable level of 1,695 feet.

During this event, the EWI flood plan was enacted per the permit and no environmental incidents were recorded.

#### *April 2015 - Flood with No Environmental Impacts*

The latest implementation of the Flood Watch Plan occurred April 20, 2015. The Water Department began contacting AEP at 1100 am (Attachment 6) with plant-wide notifications occurring for several days (April 20 – April 21) as shown in Attachment 7. No facility environmental impacts were recorded during this event.

### **Conclusion**

The Flood Watch Plan is implemented as required. The RFAAP Team watches the weather, plans for potential flooding events, implements the Flood Watch Plan as necessary, and reports environmental events including those events impacted by flooding. The current action level for implementation of the Flood Plan has proven protective at the incinerator area on multiple occasions. In fact, despite other environmental incidents at the facility, no incidents at the incinerator were reported during any of the major flooding events over the prior Permit term.

**Attachment 1**  
**Suggested Pre-Hurricane Activities for Water and Wastewater Facilities**  
**9/17/03**

-----Original Message-----

**From:** Brian Blankenship [<mailto:bblankenship@vdh.state.va.us>]

**Sent:** Thursday, September 18, 2003 10:41 AM

**To:** Don Cumbee; Fred Krebs; Wayne Nelson; CHRISTOPHER PRITT; David Dent; Doug Canody; Duane Cox; [h2o4u@usit.net](mailto:h2o4u@usit.net); Nickle, Jack; James Whited; [jettie@bellatlantic.net](mailto:jettie@bellatlantic.net); John Talbott; Michael J. Kirk; PCPSA; Pearisburg; [radh2o@msn.net](mailto:radh2o@msn.net); Roger Jones

**Subject:** [Fwd: [Fwd: Suggested Pre-Hurricane Activities for Water and WastewaterFacilities9/17/03]]

I am sending this out directly because two of our six field offices do have their networks up and running. Most you have in your ERPs and are common sense, but in case you forgot something, I am forwarding for your information.

**EPA's List of Suggested Pre-Hurricane Activities for Water and Wastewater Facilities 9/17/03**

As the East Coast prepares for potential emergencies related to hurricane Isabel's landfall, the U.S. Environmental Protection Agency's Water Security Division has developed a check list to assist drinking water and wastewater facilities in hurricane readiness. Recognizing that water utilities will want to remain in operation (e.g., sustaining adequate pressure and disinfection) as long as possible, water facilities might consider the following steps in preparation for severe weather conditions. (Another checklist focusing on restoring services is under preparation.)

A. General:

1. Line up and schedule emergency operations and clean up crews.
2. Notify State and Federal Agencies (FEMA and others) of location and telephone numbers of the emergency operating center or command post for the utility. For public water systems, be sure to line up contacts to request emergency water supply, if necessary.
3. Notify media where to access information and press advisories.
4. Arrange for food and water for the crews.
5. Notify and set up clear lines of communication with local authorities, such as police and fire in case of an injury or other emergency.
6. Make arrangements with the local power utility to be prepared to disconnect power to the plant if plant is evacuated or if power lines are downed and to restore power as a primary customer.
7. Make arrangement with local companies to purchase materials and supplies and to borrow/lease heavy equipment needed to make repairs to the plant.

8. Make arrangement with local companies to have materials and chemicals delivered to the plant as soon as it is safe and units are repaired and ready for operation.

B. Grounds and Common Areas:

9. Check inventory of emergency repair equipment and supplies (i.e., sand and sand bags, hand shovels, power equipment, fuel, batteries, flashlights, portable radio, first aid kits, etc.). Resupply if possible.

10. Stock service vehicles with equipment and supplies.

11. Fuel all vehicles and emergency generators.

12. Move service vehicles to high ground (above expected flood crest).

13. Check all communications equipment and charge or replace batteries (i.e., two way radios, cell phones, walkie-talkies, pagers, etc.).

14. Sand bag critical areas.

15. Board up critical windows and doors to prevent wind damage.

16. Shut down exposed pipes at river crossing to prevent discharge of raw sewage or to prevent loss or contamination of potable water, if the pipes break.

C. Administration and Laboratory Buildings:

17. Remove portable electrical equipment and small motors from the flood zone.

18. Remove all sensitive laboratory equipment from the flood zone, where possible.

19. Remove or store computers in a safe area.

20. Remove or store all important records in a safe area.

21. Move vital records such as built drawings, wiring diagrams, etc. to the emergency operations center or command post.

22. Remove or store furnishings in a safe place, when practical.

23. Disconnect electrical power to the building, if it is evacuated.

D. Treatment Plant and Pumping Stations:

24. Fill empty tanks with water to prevent floating.

25. Disconnect power to all units in the flood zone. Have the power utility disconnect power to the entire plant, if ordered to evacuate the facility.

26. Remove or move chemicals to a safe area. If chemicals are removed from an underground or above ground tank, fill the tank with water to prevent floating.

27. Remove fuel from under ground tanks to prevent contamination of the fuel and to protect the environment. If possible move above ground fuel storage tanks to a safe area (fuel will be need for emergency and plant vehicles until new supplies arrive. If it is not practical to move above ground fuel storage tanks, remove the fuel and fill tanks with water.

28. Remove electrical motors, where possible.

**Attachment 2**  
**Possible Hurricane Path to RFAAP**

**From:** Kelly, Robert (Radford)  
**Sent:** Wednesday, September 17, 2003 3:00 PM  
**To:** Plant-wide Management  
**Subject:** FW: Possible Hurricane Path To RFAAP

## Storm Update

Based on the projected path of this hurricane it is possible that we will be on the edge or even in the path of the storm. This will result in high winds and lots of rain with the possibility of flooding. Storm is projected to hit our area late Thursday /early Friday.

With high winds there is a risk of power loss, building & door damage, flying debris (garbage cans, powder cans, lids, drums, branches, roofing, etc..)

With the potential excess rain there may be a chance of flooding. We are protected by a flood control system and will be notified in the event that flooding is likely.



**Attachment 3  
November 2003 Flood Watch Reports from the Water Department**

**Note: The report sheets transitioning from 4-12 shift on November 19 to mid-night shift on November 20 appear to have a typo from PM to AM.**

DUP 3635 (2/82)

NEW RIVER FLOOD WATCH REPORT

When conditions of New River appear to be approaching flood stage, the following action is to be taken:

Call Appalachian Power Company, Roanoke, Virginia, Telephone No. 985-2300, Ext. 2803, when river level reaches 1695' on gauge. Record the following information. Make call hourly as long as river level rises. Ask for Flood Coordinator. Make calls to APCo. 15 minutes after the hour.

1. Time call was made 9: <sup>15</sup> P.M.
2. Person talked to Richard Musselman
3. Gate openings, Claytor 42'
4. Elevation of Claytor 1846.94
5. Total flow turbines and gates - CFS 62,875
6. Radford gauge reading 18.35
7. Galax gauge reading 10.96
8. Weather prediction RAIN ENDING

Report Prepared By H.J. Hatfield  
Date 11-19-03

RIVER GAUGE 1695.0 - 9: <sup>00</sup> P.M.

RADFORD FLOOD STAGE - 14 FT.

NEW RIVER FLOOD WATCH REPORT

When conditions of New River appear to be approaching flood stage, the following action is to be taken:

Call Appalachian Power Company, Roanoke, Virginia, Telephone No. 985-2300, Ext. 2803, when river level reaches 1695' on gauge. Record the following information. Make call hourly as long as river level rises. Ask for Flood Coordinator. Make calls to APCo. 15 minutes after the hour.

1. Time call was made 10:15<sup>00</sup> P.m.
2. Person talked to Richard Mosse/Man
3. Gate openings, Claytor 42'
4. Elevation of Claytor 1846.80
5. Total flow turbines and gates - CFS 62,866
6. Radford gauge reading 18.70
7. Galax gauge reading 10.80 FT.
8. Weather prediction RAIN ENDING - PARTIAL CLEARING

Report Prepared By H. J. Hatfield

Date 11-19-03

RIVER GAUGE - 1698.0 - 10:00<sup>00</sup> P.m.

NOTE - RADFORD FLOOD STAGE - 14'

NEW RIVER FLOOD WATCH REPORT

When conditions of New River appear to be approaching flood stage, the following action is to be taken:

Call Appalachian Power Company, Roanoke, Virginia, Telephone No. 985-2300, Ext. 2803, when river level reaches 1695' on gauge. Record the following information. Make call hourly as long as river level rises. Ask for Flood Coordinator. Make calls to APCo. 15 minutes after the hour.

1. Time call was made 11: <sup>15</sup> P.M.
2. Person talked to Richard Musselman
3. Gate openings, Claytor 42'
4. Elevation of Claytor 1846.75
5. Total flow turbines and gates - CFS 42,836
6. Radford gauge reading 19.5 ft.
7. Galax gauge reading 10.54
8. Weather prediction PARTLY CLOUDY  
20% chance of precip.

Report Prepared By A. J. Hatfield  
Date 11-19-03

RIVER GAUGE - 1699.0 - 11: <sup>00</sup> P.M.

NEW RIVER FLOOD WATCH REPORT

When conditions of New River appear to be approaching flood stage, the following action is to be taken:

Call Appalachian Power Company, Roanoke, Virginia, Telephone No. 985-2300, Ext. 2803, when river level reaches 1695' on gauge. Record the following information. Make call hourly as long as river level rises. Ask for Flood Coordinator. Make calls to APCo. 15 minutes after the hour.

1. Time call was made 12:15 Pm
2. Person talked to Richard Musselman
3. Gate openings, Claytor 41'
4. Elevation of Claytor 184670
5. Total flow turbines and gates - CFS 62721
6. Radford gauge reading 19.74 Peak/Crest
7. Galax gauge reading 1024
8. Weather prediction windy

Report Prepared By J. Anderson

Date 11-19-03

River gauge 1699.6 @ 11:45 Pm.

NEW RIVER FLOOD WATCH REPORT

When conditions of New River appear to be approaching flood stage, the following action is to be taken:

Call Appalachian Power Company, Roanoke, Virginia, Telephone No. 985-2300, Ext. 2803, when river level reaches 1695' on gauge. Record the following information. Make call hourly as long as river level rises. Ask for Flood Coordinator. Make calls to APCo. 15 minutes after the hour.

1. Time call was made 1:10 Am
2. Person talked to Richard Musselman
3. Gate openings, Claytor 37'
4. Elevation of Claytor 1846.73
5. Total flow turbines and gates - CFS 59,900
6. Radford gauge reading 19.70
7. Galax gauge reading 9.86
8. Weather prediction Will drop slowly rest of night.

Report Prepared By V. Anderson  
Date 11-~~14~~-63

River gauge 1700.0 @ 12:45 Pm

NEW RIVER FLOOD WATCH REPORT

When conditions of New River appear to be approaching flood stage, the following action is to be taken:

Call Appalachian Power Company, Roanoke, Virginia, Telephone No. 985-2300, Ext. 2803, when river level reaches 1695' on gauge. Record the following information. Make call hourly as long as river level rises. Ask for Flood Coordinator. Make calls to APCo. 15 minutes after the hour.

1. Time call was made 2:15 Am
2. Person talked to Richard Musselman
3. Gate openings, Claytor 35'
4. Elevation of Claytor 1846.75
5. Total flow turbines and gates - CFS 54,244
6. Radford gauge reading 19.30
7. Galax gauge reading 9.52
8. Weather prediction constant - windy

Report Prepared By V. Anderson

Date 11-20-03

River Gauge 1700.0 @ 1:45 Am.

4:20 Am 16 1/2' - going down.

**Attachment 4  
January 2013 Flood Notes from Water Department**

Sections from Water Department Log Book (January 30 through February 1, 2013) showing security was notified when flood stage was reached and notifications issued when the New River crested.

<b>134</b>		
1-30/31-13 Wed/Thurs	NROP water pressure: 45 psi @ 0600 Safety: Downed powerlines and electrical Hazards	1.31.13 GA-OP
	- Notified Security Dispatch that we had reached a gage height of 16ft and have reached Flood stage.	✓

<b>136</b>		
1-31-13 @ GA-OP A:E (continued)	- <b>New River</b> : New River crested at 1703 on RFAAP BRIDGE STAFF GAGE. ALL NECESSARY NOTIFICATIONS WERE MADE. RIVER CAME DOWN SIGNIFICANTLY AT LOC THIS.  - <b>Pat closure 2357</b> : ORDERED (1) TUNNEL WAS OF PAT TODAY. DUE FOR RECOVERY ON 7 FEB 13.	2.1.2013 GA-OP A:E
		

**Attachment 5**  
**Flood Notification and Additional Information from NWS-January 2013**

**From:** Williams, Chucky (US)  
**Sent:** Thursday, January 31, 2013 8:40 AM  
**To:** Radford Staff; Radford Partners; Radford Army Staff  
**Subject:**  
**From:** Williams, Chucky (US)  
**Sent:** Thursday, January 31, 2013 8:40 AM  
**To:** Radford Staff; Radford Partners; Radford Army Staff  
**Subject:** Flood Notification additional information from NWS

Flood Warning in effect until 4:17 PM EST 2/1/13  
702 AM EST THU JAN 31 2013

...FORECAST FLOODING INCREASED FROM MODERATE TO MAJOR SEVERITY...THE  
FLOOD WARNING CONTINUES FOR THE NEW RIVER AT RADFORD

- \* UNTIL FRIDAY AFTERNOON
- \* AT 06AM THURSDAY THE STAGE WAS...18.6 FEET.
- \* MODERATE FLOODING IS OCCURRING AND MAJOR FLOODING IS FORECAST.
- \* FLOOD STAGE IS 14.0 FEET.
- \* FORECAST...THE RIVER WILL CONTINUE RISING TO NEAR 20.7 FEET BY THIS  
AFTERNOON. THE RIVER WILL FALL BELOW FLOOD STAGE TOMORROW LATE  
MORNING.
- \* THIS CREST COMPARES TO A PREVIOUS CREST OF 19.8 FEET ON NOV 20 2003.

Chucky A. Williams, CSP  
Safety Manager  
BAE Systems  
Radford Army Ammunition Plant  
(540) 639-7225  
(540) 480-0775 cell

**From:** Williams, Chucky (US SSA)  
**Sent:** Thursday, January 31, 2013 8:03 AM  
**To:** Radford Staff; Radford Partners; Radford Army Staff  
**Subject:** Flood Notification  
**Importance:** High

As of 0740 this morning, the New River was 1-foot above flood level. Current reports are that the burning grounds road is submerged and not traversable. Operations that are near the river need to be aware and take precautions due to the high river levels.

Chucky A. Williams, CSP  
Safety Manager  
BAE Systems  
Ordnance Systems Inc.  
Radford Army Ammunition Plant  
Building 220, Office 2315  
4050 Peppers Ferry Rd  
Radford, VA 24141  
(540) 639-7225  
(540) 480-0775 cell

Attachment 6  
April 2015 Flood Watch Report from the Water Department

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4-20-15 Continued

Flood Watch

- 0824 - Staff Gage = 11692
- 0930 - Staff Gage = 11693.5
- 1030 - Staff Gage = 11695

Called Claytor Lake-AEP = Spoke with Palmer @ 1100 hrs.

31 Total feet of Gate openings

41,600 CFS through gates

49,100 CFS through TURBINES + GATES

Radford gage = 14.56 ft

Galax gage = 8.25 ft

1130 - Staff Gauge = 11695.5

Spoke with Palmer around 1215 hrs

32 feet of gate, 41,600 CFS gates, 49,100 CFS through TURBINE + GATES

Radford Gage - 14.98 ft, Galax - 7.89 ft

1230 - Staff Gauge = 11696

1330 - Staff Gauge = 11696.8'

1430 - Staff Gauge = 11697'

1530 - Staff Gauge = 11697'

1630 " " = 11697'

1730 " " = 11697'

1845 - Contacted AEP @ 1445 spoke w/ Andrew

33' of gate, 43,000 CFS, 50,500 CFS through TURBINE + GATES

Radford level, 14.06' ; Galax 8.12'

(Cannot get in contact with AEP since 1500 hrs)

R. Dendun

## Attachment 7 April 2015 Flood Watch Notifications

**From:** Radford Facilities [<mailto:radfordfacilities@radford-aap.com>]  
**Sent:** Tuesday, April 21, 2015 8:01 AM  
**To:** Radford Staff; Radford Partners; Radford Army Staff  
**Subject:** FW: Update: Flood Watch in effect

At 6:00 am this morning the river was down to 1693 feet; the Flood Watch plan is no longer in effect.

**From:** Radford Facilities  
**Sent:** Monday, April 20, 2015 10:01 PM  
**To:** Radford Staff; Radford Partners; Radford Army Staff  
**Subject:** FW: Update: Flood Watch in effect

Update:

Claytor Lake contacted at 9:30 pm and they said New River has peaked.  
It's projected the river will begin to go down at approx. 1:00am.

River Bridge gauge reading at 9:30pm: 1697 feet

**From:** Radford Facilities  
**Sent:** Monday, April 20, 2015 4:35 PM  
**To:** Radford Staff; Radford Partners; Radford Army Staff  
**Subject:** FW: Update: Flood Watch in effect

Update:

River Bridge gauge reading at 4:00pm: 1697 feet  
(At 1697 ft. Security Dispatcher notified per PPS)

Claytor lake contacted at 2:30 pm  
Claytor Lake gate opening: 33 total feet  
(Based gate opening, we could see 1699.5 ft. at River Bridge)  
Flow through gates: 43,000 CFS  
Total flow turbines and gates: 50,500 CFS  
Radford City gauge reading: 14.06 feet  
Galax gauge reading: 8.12 feet

**From:** Radford Facilities  
**Sent:** Monday, April 20, 2015 12:51 PM  
**To:** Radford Staff; Radford Partners; Radford Army Staff  
**Subject:** Update: Flood Watch in effect

Update:

River Bridge gauge reading: 1696

Claytor lake contacted at 12:30 pm  
Claytor Lake gate opening: 32 total feet  
Flow through gates: 41,600 CFS  
Total flow turbines and gates: 49,100 CFS  
Radford City gauge reading: 14.98 feet  
Galax gauge reading: 7.89 feet

**From:** Radford Facilities  
**Sent:** Monday, April 20, 2015 11:51 AM  
**To:** Radford Staff; Radford Partners; Radford Army Staff  
**Subject:** Flood Watch in effect

The Flood Watch plan is in effect due to the river level reaching 1,695 feet on the plant gauge located at the River Bridge. The Water Department is monitoring the river every hour and have been in contact with Claytor Lake on current conditions. Please refer to PPS 1.70, Flood Watch, for details.

Claytor lake contacted at 11:24 am  
Claytor Lake gate opening: 31 total feet  
Flow through gates: 41,600 CFS  
Total flow turbines and gates: 49,100 CFS  
Radford City gauge reading: 14.56 feet  
Galax gauge reading: 8.25 feet