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14. ABSTRACT The purpose of the AAP is to protect workers and properly manage and dispose of generated asbestos containing material (ACM) while performing Military Munitions Response Program (MMRP) activities at the Ramsdell Quarry Landfill MRS (RVAAP-001-R-01), the Fuze and Booster Quarry MRS (RVAAP-016-R-01), and the Sand Creek Dump (RVAAP-034-R-01). The USACE does not typically disturb ACM when possible under the MMRP since it is not considered a munitions constituent (MC) related to munitions and explosives of concern (MEC); however, the disturbance of incidental buried ACM may be necessary to evaluate for potential MEC and MC at each of these MRSs.						
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**Accident Prevention Plan Addendum for Asbestos Abatement for Military Munitions
Response Program Remedial Investigation Environmental Services
Version 2.0**

**Ravenna Army Ammunition Plant
Ravenna, Ohio**

**Contract No. W912DR-09-D-0005
Delivery Order 0002**

Prepared for:



**US Army Corps
of Engineers®**

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July 9, 2013

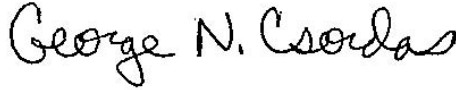
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**Contract No. W912DR-09-D-0005
Delivery Order 0002**

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Enclosure A	Activity Hazard Analyses
Enclosure B	Respiratory Protection Program
Enclosure C	Asbestos Certifications
Enclosure D	Medical Examination Certifications

Acronyms and Abbreviations

AAP	Asbestos Abatement Plan
AHA	activity hazard analysis
ANSI	American National Standards Institute
AOC	area of concern
APP	Accident Prevention Plan
APR	air-purifying respirator
ACM	asbestos containing material
AHAS	Asbestos Hazard Abatement Specialist
AHES	Asbestos Hazard Evaluation Specialist
CFR	Code of Federal Regulations
CP	Competent Person
DGM	digital geophysical mapping
EPA	U.S. Environmental Protection Agency
f/cc	fibers per cubic centimeter
FSA	field staging area
IRP	Installation Restoration Program
MEC	munitions and explosives of concern
MD	munitions debris
MMRP	Military Munitions Response Program
MRS	munitions response site
NEA	Negative Exposure Assessment
NESHAP	National Emission Standards for Hazardous Air Pollutants
NIOSH	National Institute for Occupational Safety and Health
ODH	Ohio Department of Health
OHARNG	Ohio Army National Guard
OSHA	Occupational Safety and Health Administration
PACM	presumed ACM
PCM	Phase Contrast Microscopy
PEL	Permissible Exposure Limit
PPE	personal protective equipment
RI	remedial investigation
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Applications International Corporation
Shaw	Shaw Environmental & Infrastructure, Inc.
SSHO	Site Safety and Health Officer
TEM	Transmission Electron Microscopy
TWA	time-weighted average
USACE	United States Army Corps of Engineers
UXO	unexploded ordnance

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1.0 INTRODUCTION

Shaw Environmental & Infrastructure (Shaw), a CB&I company, is submitting this *Asbestos Abatement Plan* (AAP) in accordance with the *Modification No. 04* to the *Multiple Award Military Munitions Services Contract No. W912DR-09-D-005, Delivery Order No. 002*. The Delivery Order is for performance-based, firm-fixed price environmental services at Military Munitions Response Program (MMRP) sites at the Ravenna Army Ammunition Plant (RVAAP) in Ravenna, Ohio. The Delivery Order was issued by the United States Army Corps of Engineers (USACE), Baltimore District on May 27, 2009. The *Modification No. 04* has been issued in support of the management and disposal of incidental asbestos containing material (ACM) that may be encountered during the work prescribed in the Delivery Order at two of the MMRP sites: the Ramsdell Quarry Landfill (RVAAP-001-R-01) and the Fuze and Booster Quarry (RVAAP-016-R-01) munitions response sites (MRSs). The modification was issued by the USACE, Baltimore District on April 18, 2013.

This AAP is considered an addendum to the *Accident Prevention Plan (APP) for Remedial Investigation Environmental Services*, Version 4.0 (Shaw, 2011a) that has been reviewed and approved by the USACE. This AAP has been prepared to ensure that all asbestos activities under the auspices of Shaw are conducted in a manner that will maximize the protection of personnel from accidental injury and/or illness in accordance with 29 Code of Federal Regulations (CFR) 1926.1101, *Asbestos (Construction Standard)*; and 40 CFR 61, Subpart M, *National Emission Standards for Hazardous Air Pollutants* (NESHAP) as directed in the *USACE Safety and Health Requirements Manual*, Engineer Manual 385-1-1.

1.1 Purpose and Scope

The purpose of this AAP is to protect workers and properly manage and dispose of generated ACM while performing the activities prescribed in the Delivery Order. The scope of work under the Delivery Order includes the completion of remedial investigation (RI) activities under the MMRP at 14 MRSs. Two of the 14 MRSs are the Ramsdell Quarry Landfill MRS (RVAAP-001-R-01) and the Fuze and Booster Quarry MRS (RVAAP-016-R-01) where ACM was encountered after the Delivery Order was issued to Shaw in 2009. The USACE does not typically disturb ACM when possible under the MMRP since it is not considered a munitions constituent related to munitions and explosives of concern (MEC); however, the disturbance of incidental buried ACM may be necessary to evaluate for potential MEC and munitions constituents at each of these MRSs. Additionally, ACM removal was previously performed at another of the 14 MRSs, the Sand Creek Dump MRS (RVAAP-034-R-01). The removal action was conducted in 2003, prior to the issuance of the Delivery Order, and the potential exists for encountering ACM as part of intrusive investigations at the Sand Creek

Dump MRS. Therefore, the protective measures and activities included in this AAP are considered applicable to intrusive investigations that will occur at the Sand Creek Dump MRS, as well as the Ramsdell Quarry Landfill MRS and the Fuze and Booster Quarry MRS, that is included in the modification to the Delivery Order.

1.2 Shaw Policy

Shaw considers safety as the highest priority during work at a site containing potentially hazardous materials and has established a goal of zero accidents for all projects. It is Shaw's intent to ensure that all work is performed in compliance with applicable laws and/or regulations and is consistent with the project-defined scope, schedule, budget, and level of quality. To accomplish this objective, Shaw will provide the appropriate qualified personnel, resources, and guidance at the MRSs where ACM support is required under the Delivery Order. Such resources include specialized expertise and licensing that may be provided from within Shaw or subcontracted to the appropriate company as necessary.

This AAP addresses procedures for the safe conduct of ACM abatement operations in support of the MMRP RI activities. The particular federal, state, and local requirements have been reviewed by the Shaw-designated Competent Person (CP). These requirements have been incorporated in this AAP in order to achieve the project objectives.

1.3 Site Backgrounds and Histories

The site backgrounds and histories for each of the MRSs addressed in this AAP are presented in this section. **Figure 1** through **Figure 6** for the sites are presented at the end of this section.

1.3.1 Ramsdell Quarry Landfill MRS (RVAAP-001-R-01)

The Ramsdell Quarry MRS (RVAAP-001-R-01) is comprised of two areas: a northern section (Area 1) where open burning and open detonation operations took place in an old quarry, and a southern area (Area 2) that contains a small inactive soil borrow pit and wooded area where installation personnel had found munitions debris (MD). Area 1 is approximately 2.02 acres in size and is collocated with an Installation Restoration Program (IRP) Area of Concern (AOC) that was a former landfill; this area is not part of the MRS. Area 1 is the focus of the additional work discussed in this AAP (**Figure 1**).

Soil removal activities associated with the IRP were initiated in Area 1 in July 2010 by Science Applications International Corporation (SAIC). During soil removal activities, a large amount of construction and miscellaneous debris that included ACM consisting of transite and roofing materials was encountered. In all, a total of 1,100 tons (estimated 1,000 cubic yards) of soil and construction debris (all considered friable ACM) were removed from

Area 1 and disposed off site. The entire Area 1 was not investigated to confirm that all ACM had been removed; therefore, the potential for encountering ACM at the site still remains (SAIC, 2011a).

In July and August of 2011, Shaw collected digital geophysical mapping (DGM) data at Area 1 to identify potential areas of MEC and/or material potentially presenting an explosive hazard. The results of the DGM survey identified over 500 individual anomalies and various contiguous areas with high densities of anomalies that required intrusive investigation via manual hand-digging and mechanical excavation. The proposed intrusive investigation activities at Area 1 are to be performed throughout the MRS and have the potential to disturb ACM (**Figure 2**).

1.3.2 Fuze and Booster Quarry MRS (RVAAP-016-R-01)

The Fuze and Booster Quarry MRS (RVAAP-016-R-01) is an undeveloped 5-acre area that is collocated with an IRP AOC. The site consists of three elongated ponds situated end to end and separated by berms constructed within an abandoned rock quarry (**Figure 3**).

The Fuze and Booster Quarry was used for the open burning of sawdust waste from 1945 to 1949. Following these activities, the Fuze and Booster Quarry was a landfill that reportedly accepted fuze and booster assemblies, projectiles, residual ash, and sanitary waste (engineering-environmental Management, Inc., 2007).

In December 2011, Shaw performed a DGM survey that included diving activities within the ponds at the MRS to identify potential areas of MEC and/or MD. Of the 4.9-acre MRS, the three ponds at the site take up 2.3 acres, while the terrestrial portion of the MRS consists of 2.6 acres. The results of the underwater survey identified small quantities of metallic debris that are not related to MD in the southern and central ponds; therefore, further investigation in the pond was not recommended. A total of 227 individual anomalies and 13 trench locations were selected for intrusive investigation at the land-based portions of the MRS (**Figure 4**).

Shaw commenced intrusive investigation activities in April 2012, but encountered transite pipe in the first trench location at the northwest corner of the northernmost pond. In addition, suspected ACM was encountered at selected individual anomaly locations at the southern portion of the MRS after moving from the trenches in the northwest corner. The intrusive investigation activities were immediately ceased following these findings, since there is a potential for disturbing ACM at the Fuze and Booster Quarry MRS at the remaining investigation locations.

1.3.3 Sand Creek Dump MRS (RVAAP-034-R-01)

The Sand Creek Dump MRS (RVAAP-034-R-01) is collocated with an IRP AOC and consists of 0.85 acres of undeveloped land that stretches approximately 1,000 feet along the banks of the Sand Creek (**Figure 5**). The dump, which operated from 1950 to 1960, reportedly held construction debris (i.e., concrete, wood, lab bottles, fluorescent light tubes, and ACM debris).

A removal action was performed at the Sand Creek Dump in 2003. The removal effort consisted of removing all existing unconsolidated surface debris, the limited removal of subsurface debris, transportation and disposal of debris, and restoration activities. Due to the presence of transite, all debris was disposed as ACM special waste. Approximately 1,118 tons of ACM material, including the subsurface transite, glass, and miscellaneous debris, were removed from the AOC. Sampling for asbestos was conducted in soil, sediment, and surface water adjacent to the AOC following the removal action, and the results were all nondetected (MKM Engineers, Inc., 2004).

Between April 2010 and January 2012, Shaw conducted DGM surveys at and in the immediate vicinity of the Sand Creek site where historical dumping activities occurred. The primary purpose of the surveys was to characterize the anomaly density at the site. The DGM data collected at the Sand Creek site were able to determine the broader limits of metallic waste materials as well as to define more localized regions within and outside the AOC footprint that contain relatively higher metal content. In all, two zones of localized high anomaly density were identified in addition to 225 individual anomalies located outside of the high anomaly density areas. The proposed activities at this MRS consist of intrusive investigations based on the DGM survey, which have the potential to disturb any potential buried ACM (**Figure 6**).

1.4 Asbestos Abatement Plan Organization

The contents and order of presentation of this AAP are prepared in accordance with 29 CFR 1910.1001; 20 CFR 1926.1101; 40 CFR 61, Subpart M as directed by the *USACE Safety and Health Requirements Manual*, Engineer Manual 385-1-1, Part 06.B.05, *Lead and Asbestos Hazard Control* (USACE, 2008). Specifically, this AAP includes the following sections:

- Section 1.0—Introduction
- Section 2.0—Overview of Regulatory Requirements
- Section 3.0—Description of Work
- Section 4.0—Personal Protective Equipment
- Section 5.0—Roles and Qualifications

- Section 6.0—Air Monitoring
- Section 7.0—Waste Management
- Section 8.0—Medical Surveillance
- Section 9.0—Asbestos Exposure Control Plan
- Section 10.0—References

Enclosures included at the end of this AAP are as follows:

- Enclosure A—Activity Hazard Analyses
- Enclosure B—Respiratory Protection Program
- Enclosure C—Asbestos Certifications
- Enclosure D—Medical Examination Certifications

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FIGURE 1 RAMSDELL QUARRY LANDFILL MRS

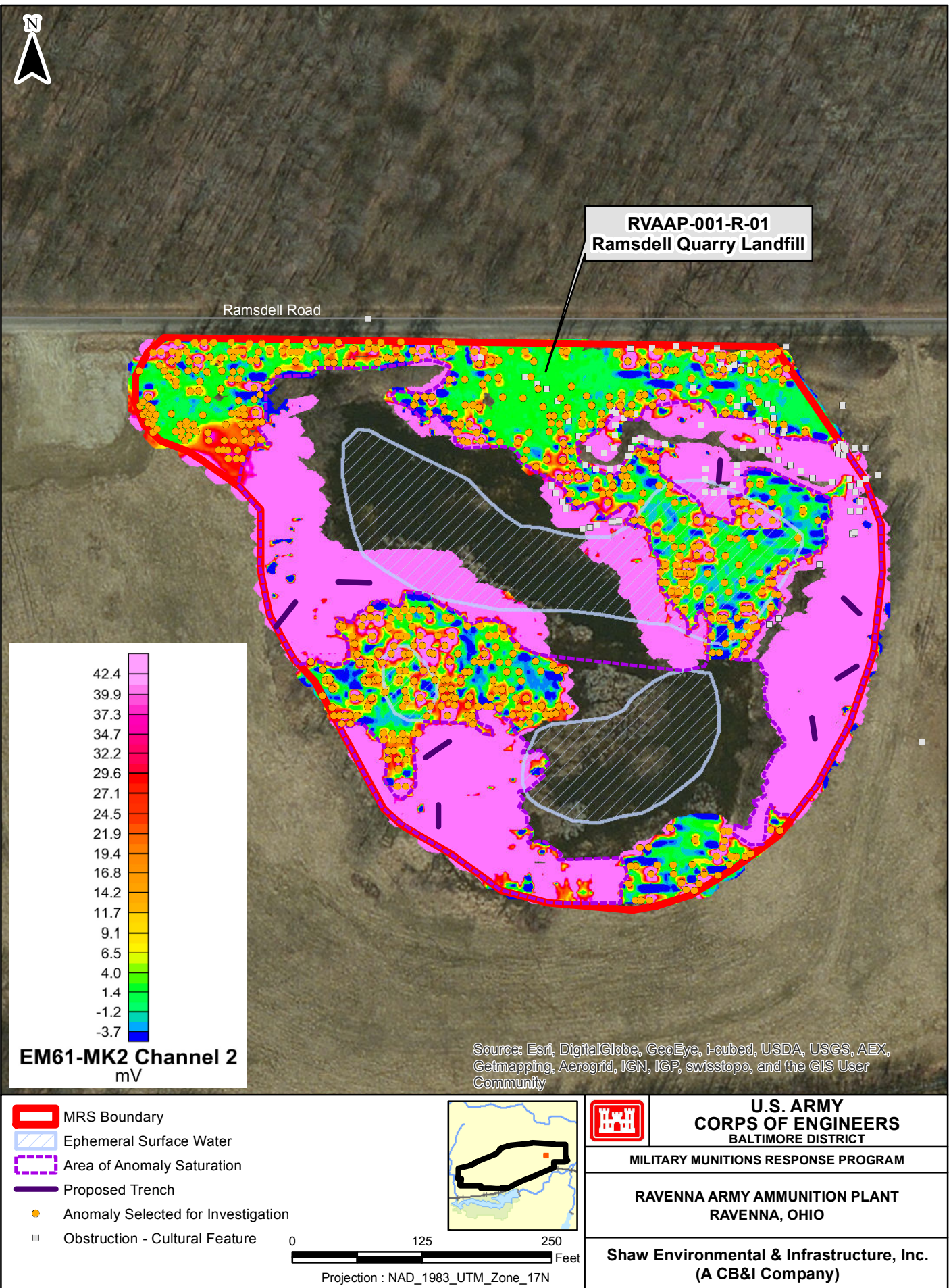




FIGURE 3 FUZE AND BOOSTER QUARRY MRS

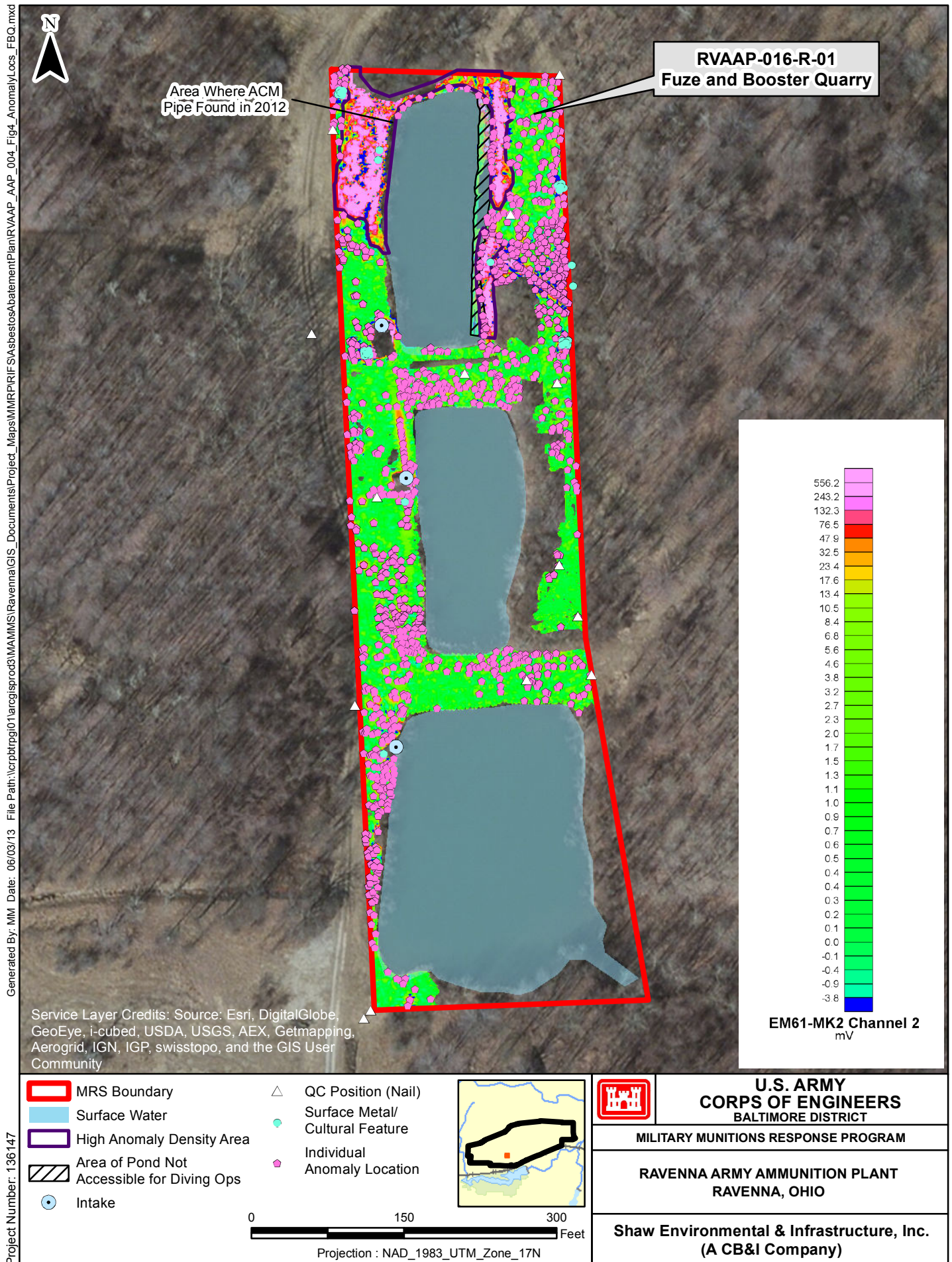
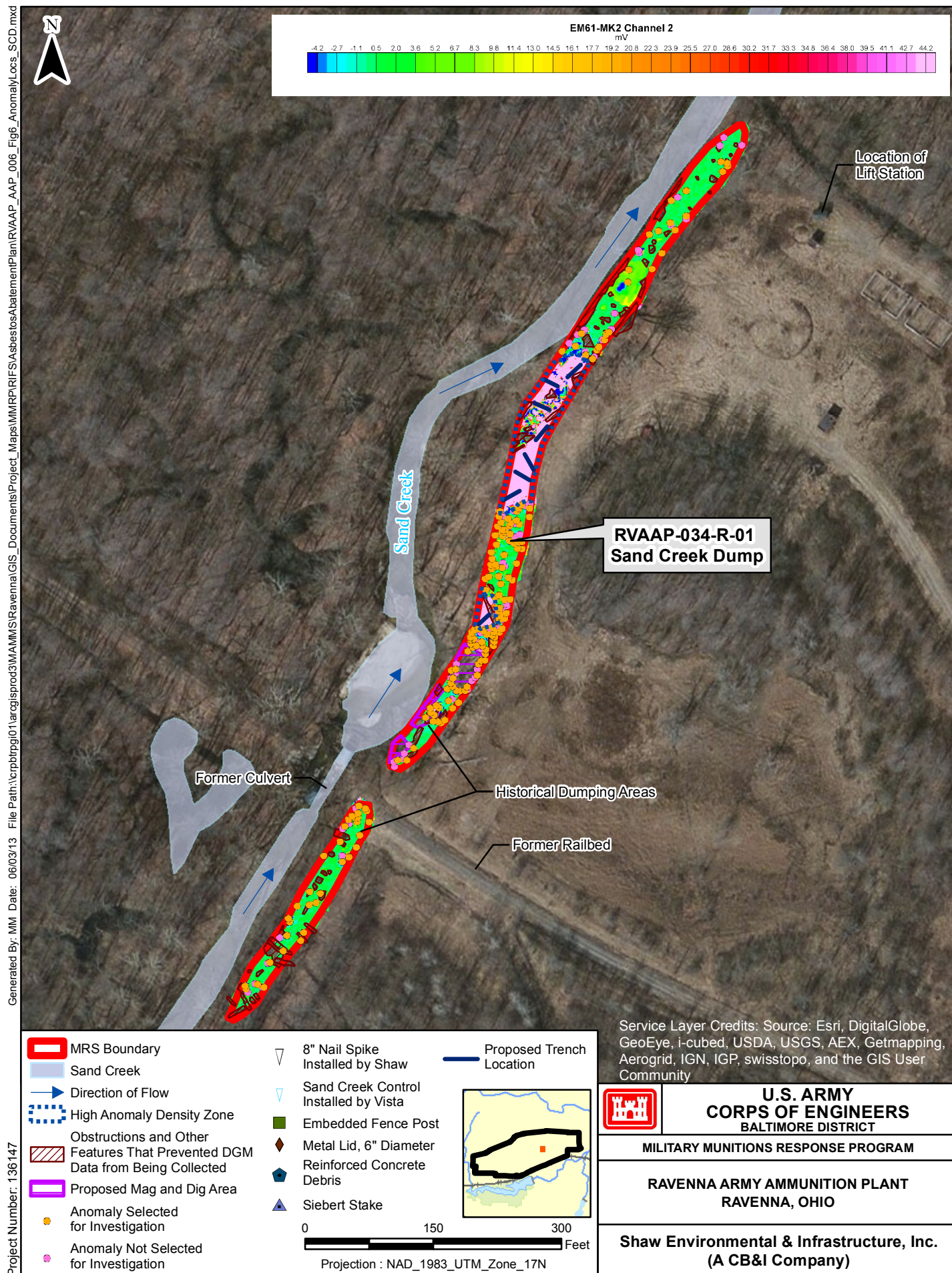


FIGURE 4 ANOMALY LOCATIONS AT FUZE AND BOOSTER QUARRY MRS



FIGURE 5 SAND CREEK DUMP MRS



2.0 OVERVIEW OF REGULATORY REQUIREMENTS

This section sets forth the governmental regulations that are included and incorporated herein by reference and made a part of this AAP. Requirements include adherence to work practices and procedures set forth in applicable codes, regulations, and standards. Federal and state requirements that govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

1. Occupational Safety and Health Administration (OSHA) standards, including but not limited to the following:
 - Occupational Exposure to Asbestos:
 - Title 29 CFR Part 1910, Section 1001
 - Title 29 CFR Part 1926, Section 1101
 - Respiratory Protection:
 - Title 29 CFR Part 1910, Section 134
 - Title 29 CFR Part 1926, Section 103
 - Personal Protective Equipment:
 - Title 29 CFR Part 1910, Subpart I
 - Title 29 CFR Part 1926, Subpart E
 - Access to Employee Exposure and Medical Records:
 - Title 29 CFR Part 1910, Section 1020
 - Title 29 CFR Part 1926, Section 33
 - Hazard Communication:
 - Title 29 CFR Part 1910, Section 1200
 - Title 29 CFR Part 1926, Section 59
 - Accident Prevention Signs and Tags:
 - Title 29 CFR Part 1910, Section 145
 - Title 29 CFR Part 1926, Section 200

- Construction Industry—General Safety and Health Provisions:
 - Title 29 CFR Part 1926, Subpart C
- 2. U.S. Department of Transportation standards, including but not limited to the following:
 - Hazardous Substances:
 - Title 49 CFR Parts 171–180
 - Hazardous Material Regulations, General Awareness, and Training Requirements for Handlers, Loaders, and Drivers:
 - Title 49 CFR Parts 171–180
 - Hazardous Material Regulations, Editorial and Technical Revisions:
 - Title 49 CFR Parts 171–180
- 3. U.S. Environmental Protection Agency (EPA), including but not limited to the following:
 - Asbestos Abatement Projects, Worker Protection Rule:
 - Title 40 CFR Part 763, Subpart G
 - Asbestos Hazard Emergency Response Act Regulation:
 - Title 40 CFR Part 763, Subpart E
 - NESHAP National Emission Standard for Asbestos:
 - Title 40 CFR Part 61, Subpart A and Subpart M (Revised Subpart B)
- 4. State of Ohio including but not limited to the following:
 - Asbestos Emission Control:
 - Ohio Administrative Code 3745-20

3.0 DESCRIPTION OF WORK

This section provides a description of the work and the proposed activities that may result in the disturbance of incidental ACM at the Ramsdell Quarry Landfill, the Fuze and Booster Quarry, and the Sand Creek Dump MRSs. A description of the complete scope of the field work to be completed at each of the MRSs under the MMRP are described in further detail in the *Final Work Plan for Military Munitions Response Program Remedial Investigation Environmental Services* (Shaw, 2011b).

3.1 Activities

The work to be performed at each of the three MRSs includes intrusive investigations of subsurface anomalies in support of RI activities under the MMRP. The subsurface anomalies were identified following DGM surveys that were previously performed at each of the MRSs. The intrusive activities may result in the disturbance of incidental buried ACM. The following activity hazard analyses (AHAs) have been generated and are, or may be, applicable for the intended work:

- AHA 1.0, *Mobilization and Demobilization*
- AHA 2.0, *Vehicle Operations*
- AHA 6.0, *Excavation of MEC*
- AHA 7.0, *MEC Demolition Operations*
- AHA 8.0, *Soil and Sediment Sampling*
- AHA 9.0, *Soil and Debris Excavation and Load-Out*
- AHA 13.0, *Equipment Decontamination*
- AHA 14.0, *Site Restoration*

In particular, work activities under AHAs 6.0 through 9.0 have the potential to disturb ACM at the MRSs. AHAs 1.0 through 14.0 are provided in Attachment 2 of the APP (Shaw, 2011a). AHA 15.0, *Asbestos Abatement*, and AHA 16.0, *Air Monitoring*, are site-specific for the Ramsdell Quarry Landfill, Fuze and Booster Quarry, and the Sand Creek Dump MRSs, and are included in **Enclosure A** of this AAP.

3.2 Category of Asbestos Work

There are four categories of ACM work as defined by OSHA and based on the intrusive investigations to be conducted at each of the MRSs; the category of work at each site is considered as Class III. Based on previous removal actions and investigations, the Class III

asbestos work will consist of disturbing ACM that is expected to consist mostly of transite and roofing materials.

3.3 Designation of Regulated Areas

The proposed intrusive activities will be conducted in accordance with the *Final Work Plan for Military Munitions Response Program Remedial Investigation Environmental Services* (Shaw, 2011b). The intrusive investigation activities will be performed by either manually hand-digging or by mechanical excavation (i.e., excavator) at each of the identified anomaly locations. In general, the intrusive investigations occur slowly and in 1-foot lifts. The excavations are guided by an unexploded ordnance (UXO)-qualified technician using a Schonstedt metal detector to detect and verify the depth of the anomaly. The primary objective of the RI intrusive activities is to evaluate for potential MEC at each of the anomaly target locations until the anomaly is identified and verified as MEC, MD, or other debris. The maximum depth of investigation for anomalies at any of the MRSs is expected to be between several inches to 3 feet below ground surface. If PACM is encountered during the intrusive activities, it will be verified as ACM by a State of Ohio licensed Asbestos Hazard Evaluation Specialist (AHES) prior to establishing the work location as a regulated area.

A regulated area will be established for all OSHA Class III asbestos work in accordance with 29 CFR 1926.1101(e). The regulated area will be demarcated with barrier tape to minimize the number of persons within the area and to protect persons outside the area. Signs will be displayed at the entrance to the regulated area such that employees may read the signs and take necessary protective steps before entering the area marked by the signs. The language required on the signs will read as follows:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY

Disposable personal protective equipment (PPE) will be worn within the regulated areas to minimize the potential for contamination. The PPE within the regulated areas will include an air-purifying respirator (APR). The PPE will be properly cleaned or disposed at the end of each use. The respirator will be properly decontaminated as the user passes through the decontamination area. Where the use of respirators and protective clothing is required in the regulated area, the warning signs shall include the following language as well:

RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

There are no buildings or other structures near any of the MRSs and the intrusive investigation activities will occur in open and isolated areas at the RVAAP. No containments are required to be constructed and the engineering controls discussed in Section 9.3 will be implemented in order to minimize ACM exposure and potential migration of asbestos fibers.

3.4 ACM Removal Procedures

The intrusive investigations will proceed to depth at each location until the anomaly is identified. If ACM is encountered in an investigation location, the excavation will only be investigated to the depth and areal extent required for assessment of the detected anomaly, regardless of whether ACM remains in the surrounding soil. Removal of bulk ACM that does not interfere with the intrusive investigation activities will not be performed as part of the ACM abatement activities.

If PACM is identified and detected anomalies still remain at the location, the UXO technicians will immediately stop work and notify the State of Ohio licensed AHES. The AHES will be escorted to the excavation by the UXO technicians in order to verify if the material is ACM. Any ACM identified will be required to be removed in the following manner by a State of Ohio licensed Asbestos Hazard Abatement Specialist (AHAS):

- The ACM will be wetted in the excavation with amended water using a low-pressure sprayer capable of providing a fine mist spray in order to reduce airborne fiber concentrations when the material is moved.
- Only ACM impeding the investigation of anomalies will be removed from the excavation and placed in 6-mil disposal bags or on 6-mil poly sheeting adjacent to the excavation.
- The disposal bags or wrapped ACM will be sealed air-tight using duct tape, and the outsides of the bag or poly sheeting will be wet-cleaned in the work area prior to transferring to the decontamination area.
- Once in the decontamination area, the bagged or wrapped ACM will be placed in a second 6-mil bag or covered by another 6-mil poly sheet prior to placement in the designated storage containment.

Primary containers/bags will be labeled with all required information pursuant to OSHA and NESHAP requirements (40 CFR 61.150) including the name of waste generator and the location where waste was generated. The AHAS will inspect the labeling process. The ACM waste management activities are discussed further in Section 7.0.

Once the ACM has been removed from the intrusive investigation location and all the anomalies at that location have been verified, then the soil will be replaced back into the excavation. Any munitions-related debris will be managed separate from ACM. No ACM that is removed from an intrusive investigation location will be replaced back into an excavation. No removal of potentially contaminated ACM soils will be performed.

3.5 ACM Abatement Equipment

Equipment required for ACM abatement activities varies based on the type of work. The work to be conducted at the RVAAP is considered OSHA Class III work. Work will be conducted outdoors in an open environment. The following is a list of equipment to be used during ACM abatement operations at RVAAP; there may be a need for additional tools based on field observations:

- Nondisposable PPE, which includes full-face APRs
- Scissors
- Low-pressure sprayer containing amended water
- Low-flow air sampling pumps and chargers
- Air-flow calibration device for air sampling pumps
- Shovel
- Container with extra amended water
- Buckets to be used for decontamination of items removed from the regulated area

Consumable materials will include, but are not limited to the following:

- Respirator cartridges
- Air filter sampling cassettes
- Disposable coveralls
- Disposable towels
- Detergent for amended water
- Disposal bags
- Disposal labels
- Barrier tape
- “Regulated Area” signs

- Reusable posts or stands to demarcate the regulated area
- Duct tape

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4.0 PERSONAL PROTECTIVE CLOTHING AND RESPIRATORY EQUIPMENT

This section presents the worker protective clothing and respiratory equipment necessary to perform ACM abatement activities at the Ramsdell Quarry Landfill, the Fuze and Booster Quarry, and the Sand Creek Dump MRSs in accordance with this AAP. All personnel must wear appropriate PPE when activities involve exposure to ACM.

4.1 Respiratory Protection

Respiratory protection equipment shall be National Institute for Occupational Safety and Health (NIOSH)-approved and respirator use will conform to American National Standards Institute (ANSI) Z88.2 and OSHA 29 CFR 1910.134 requirements. Shaw Procedure No. EIG-HS-HS601, "Respiratory Protection Program," details the selection, use, inspection, cleaning, maintenance, storage, and fit-testing of respiratory protection equipment. This procedure complies with the requirements contained within 29 CFR 1910.134 and will be maintained in the field along with other pertinent Shaw safety and health procedures. Shaw Procedure No. EIG-HS-HS601, "Respiratory Protection Program," is included in **Enclosure B** of this AAP.

All personnel, including visitors, using respiratory protection shall have successfully passed a respirator fit test in accordance with Shaw Procedure No. EIG-HS-HS601 within the last 12 months. Fit-testing and any training related to respiratory protection for site personnel will be documented on the Training Acknowledgment Form (Attachment 4 of the APP).

4.2 Personal Protective Equipment

PPE will be utilized within the designated regulated area and shall conform to the OSHA standard 29 CFR 1926.1101. The EPA terminology for levels of PPE used is Levels A, B, C, and D. Level C protection is the minimal level of protection that will be used for all activities that involve the disturbance of ACM for this project. Level C PPE, in general, consists of the following:

- Full-face APR with NIOSH-approved combination high-efficiency particulate air/organic vapor cartridges
- Work clothing as prescribed by weather
- Safety-toed work boots meeting ANSI Z41 specifications
- Hard hat meeting ANSI Z89.1 specifications (not required for personnel performing MEC operations when handling MEC or donor explosives)

- Tyvek coveralls with hoods, elastic wrists, and ankles
- Chemical resistant (polyvinyl chloride/latex) boot covers
- 100 percent cotton glove liners (inner)
- Vinyl or nitrile surgical gloves (middle)
- Leather or nitrile gloves (outer)
- Hearing protection (if necessary or required)
- Cooling vest (if necessary)
- Taped openings at ankles, wrists, and hoods

4.3 Donning/Doffing Personal Protective Equipment

All persons entering a regulated area shall be wearing the required PPE in accordance with the requirements of this AAP and the APP (Shaw, 2011a). When leaving the regulated area, PPE will be removed in order to minimize the spread of contamination.

4.4 Cartridge Change-out Schedule

The respirator cartridge change-out schedule is largely based on the concentrations of the site contaminants. The cartridge change-out schedule shall be determined for each task and documented on the Job Safety Analysis. In general, workers will change the filter cartridges when breathing resistance is noted or when workers notice any odor, irritation, or discomfort. Cartridges shall be changed at a minimum of once per day.

4.5 Inspection and Cleaning

Respirators shall be checked periodically by the Site Safety and Health Officer (SSHO), the AHAS, or other designated qualified individual, and inspected before each use by the wearer. All respirators and associated equipment will be decontaminated and hygienically cleaned after each use.

4.6 Fit Testing

Annual respirator fit tests are required of all personnel wearing negative-pressure respirators. The test will use isoamyl acetate or irritant smoke. The fit test must be for the style and size of the respirator to be used. The respirator shall provide a level of respiratory protection which supplies an airborne fiber level inside the respirator below 0.01 fibers per cubic centimeter (f/cc) as the minimum level of protection allowed.

4.7 Facial Hair

No personnel who have facial hair, which interferes with the respirator's sealing surface, will be permitted to wear a respirator and will not be permitted to work in areas requiring respirator use.

4.8 Corrective Lenses

Normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the respirator's sealing surfaces. For workers requiring corrective lenses, special spectacles designed for use with respirators will be provided.

4.9 Medical Certification

Only workers who have been certified by a physician as being physically capable of respirator usage will be issued a respirator. Personnel unable to pass a respiratory fit test or without medical clearance for respirator use will not be permitted to enter or work in areas on site that require respiratory protection. Employees will receive a written physician's opinion that they are fit for general hazardous waste operations as per 29 CFR 1910.120(f)(7).

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5.0 ROLES AND QUALIFICATIONS

The individual requirements and the necessary qualifications for on-site personnel during the ACM abatement operations are provided below.

5.1 Competent Person

The CP is responsible for the supervision of all asbestos work performed within regulated areas. The CP shall be capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for the asbestos exposure, and has the authority to take prompt corrective measures to eliminate those hazards. In addition, per 29 CFR 1926.1101(b), for Class I and Class II work, the CP shall be specially trained in a training course that meets the criteria of EPA's Model Accreditation Plan (40 CFR Part 763) for supervisors, or its equivalent and, for Class III and Class IV work, is trained in a manner consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2). Only trained and licensed individuals can handle PACM and ACM. The Ohio Department of Health (ODH) requires any individual responsible for oversight or supervision of asbestos hazard abatement activities be certified as an AHAS.

The ODH states that any individual responsible for the identification, detection, and assessment of ACM, including air and bulk sampling, the determination of appropriate response actions, or preparation of asbestos management plans, must be certified as an AHES. The specific responsibilities for the AHES will include the following:

- Conducting baseline and clearance monitoring;
- Conducting area monitoring during ACM abatement activities to determine ambient levels of airborne asbestos fibers;
- Inspecting and approving work area preparations prior to ACM abatement; and
- Inspecting abatement work practices.

Due to the minimal size of the project and the minimal amount of ACM that is expected, the duties of both the AHAS and the AHES will be performed by a single CP. The CP for this project will be Mr. George Csordas. Mr. Csordas' asbestos certifications are presented in **Enclosure C**.

5.2 UXO Personnel

The primary safety concern associated with the intrusive investigations at each of the MRSs is the potential for encountering explosive hazards. The concerns regarding explosives outweigh the concerns for potential exposure to ACM; therefore, these activities will be performed by UXO-qualified technicians who are not asbestos-trained. For the purposes of this project, the UXO technicians will stop work activities if PACM is encountered. The UXO technicians will escort the AHES to the investigation location in order for the AHES to verify if the material contains asbestos. Any ACM will be removed from the excavation by the AHAS and managed in accordance with Section 3.4. Since the UXO technicians are not expected to be in direct contact with ACM, the intrusive investigation activities are not classified as OSHA Class III work for these workers and they will not require extensive asbestos training and licensing. However, the ODH specifies that any individuals performing intrusive activities that may disturb ACM should at least have 2 hours of asbestos awareness training in accordance with 40 CFR Part 763.92(a). The asbestos awareness training will be provided by the AHES prior to the intrusive investigation activities.

5.3 Training Records

Shaw shall maintain all employee training records for a minimum of 1 year beyond the last date of employment.

6.0 AIR MONITORING

The performance and execution of the work will be continuously monitored by the AHAS during the intrusive investigation activities. Monitoring will be performed both inside and outside of the ACM work areas at each MRS to ensure compliance with this AAP and applicable regulations. The purpose of air monitoring is to detect airborne fiber levels that could significantly affect the ability of the work area isolation procedures to protect the area outside the asbestos work area from asbestos contamination.

An airborne fiber count in the asbestos work area equal to or less than the Permissible Exposure Limit (PEL) of 0.1 f/cc that is expressed as an 8-hour time-weighted average (TWA) or the 1.0 f/cc Excursion Limit, which is taken as a 30-minute short-term sample, will be maintained during the duration of ACM abatement activities. If laboratory analysis of the air monitoring results for the previous day's work indicates a fiber count above these levels, then the work will be immediately stopped and the procedures will be re-evaluated to determine the cause. Additional engineering controls and work practices may be required to be implemented to reduce airborne fiber levels below the prescribed levels in the work area. Work activities will not continue until authorized by the AHAS.

Air monitoring activities will consist of personal, baseline, area, and clearance monitoring to document airborne asbestos fiber concentrations. Descriptions of each of the monitoring procedures are presented in the following sections.

6.1 Personal Monitoring

The AHES shall perform the personal monitoring immediately before or at the initiation of the operation to determine exposures during that operation. The intrusive activities under the MMRP are typically performed by a crew of three to four UXO technicians that reacquire the anomaly location and then dig to verify the nature of the anomaly as MEC, MD, or other debris. A minimum of 25 percent or 1 person per crew will be monitored for potential asbestos exposure per work activity as well as the AHAS who will perform any necessary ACM abatement.

The personal monitoring results may be used as the basis for a Negative Exposure Assessment (NEA). A NEA is a demonstration which complies with the criteria set forth in 29 CFR 1926.1101(f)(2)(iii), that employee exposure during an operation is expected to be consistently below the PELs. The personnel samples will be analyzed by NIOSH Method 7400, Phase Contrast Microscopy (PCM), for fiber count and if a result exceeds the 8-hour TWA of 0.1 f/cc, it may require further analysis by NIOSH Method 7402, Transmission Electron Microscopy (TEM).

Personal air monitoring equipment will include the following:

- Low-volume, battery powered, body-attachable, portable personal pumps that can be calibrated to a constant airflow up to approximately 3.5 liters per minute when equipped with a sampling train of tubing and filter cassette, and a self-contained rechargeable power pack capable of sustaining the calibrated flow rate for a minimum of 10 hours. The pumps will also be equipped with an automatic flow control unit that shall maintain a constant flow even as filter resistance increases due to accumulation of fiber and debris on the filter surface. Cassettes will be monitored during sampling to prevent excessive loading.
- Standard 25-millimeter diameter, 0.8-micron pore size, mixed cellulose ester membrane filters and cassettes with nonconductive barrels and shrink bands, to be used with low-flow pumps in accordance with 29 CFR 1926, for personnel asbestos air sampling.
- Appropriate plastic tubing to connect the air sampling pump to the selected cassette.
- Flow calibrator capable of calibration to within plus or minus 2 percent of reading over a temperature range of minus 4 degrees Fahrenheit to plus 140 degrees Fahrenheit and traceable to a National Institute for Standards and Technology primary standard.

The AHES will perform personal monitoring as required in accordance with the OSHA requirements for maintenance of TWA fiber counts to confirm the correct selection of respiratory equipment.

6.2 Baseline Monitoring

Baseline monitoring is performed to provide a representative background concentration of asbestos fibers under ambient conditions. In the case of open areas such as the MRSs, the baseline samples will be collected along the boundaries of each site prior to performing intrusive activities. The AHES will collect a minimum of four baseline samples over an 8-hour period for each MRS prior to commencing intrusive activities. The samples will be collected from around the perimeter of the MRS and will be biased towards the direction of the prevailing wind conditions (**Figures 1, 3, and 5**). The samples will be analyzed using NIOSH Method 7400 (PCM), and for any result in fiber concentrations greater than 0.01 f/cc, the asbestos fibers may be confirmed for the presence of asbestos using NIOSH Method 7402 (TEM).

6.3 Area Monitoring

Periodic monitoring for asbestos fibers is required for Class III operations where exposures may exceed the PEL and the monitoring will be performed at intervals sufficient to document the validity of the exposure prediction. Area monitoring will be performed on a daily basis for the duration of Class III operations at each MRS to verify that no emission of asbestos fibers is occurring, unless a NEA has been established. As with the baseline samples, a minimum of four area samples will be collected on a daily basis from around the perimeter of each MRS. The area samples will be biased towards the direction of the prevailing wind conditions (**Figures 1, 3, and 5**). The samples will be analyzed using NIOSH Method 7400 (PCM) and for any result in fiber concentrations greater than 0.01 f/cc, the asbestos fibers may be confirmed for the presence of asbestos using NIOSH Method 7402 (TEM). Area monitoring may be discontinued if the results reveal that employee exposures, as indicated by statistically reliable measurements, are below the PEL for those employees whose exposures are represented by such monitoring.

6.4 Clearance Monitoring

Clearance air monitoring is generally conducted at the completion of abatement activities and consists of collecting air samples for up to 2 hours at a flow of less than 10 liters per minute. As an alternative, area air monitoring samples can be collected around the perimeter of the MRS at an air flow similar to those of personal air sampling. The purpose of these results is to document that no releases of asbestos exceeding 0.01 f/cc have occurred outside the work area in accordance with NIOSH Method 7400 (PCM). The personal samples can serve to document that no contamination has taken place inside the work area.

6.5 Notification of Results

The results for the personal monitoring analysis will be provided within 24 hours after receipt of the results. Each employee will be notified by a posting of the results in a prominent location on the jobsite.

6.6 Exposure Measurements Records

Shaw shall keep an accurate record of all measurements taken to monitor employee exposure to asbestos as prescribed in 29 CFR 1926.1101(f), *Exposure Assessments and Monitoring*. This record shall include at least the following information:

- The date of measurement;
- The operation involving exposure to asbestos that is being monitored;
- Sampling and analytical methods used and evidence of their accuracy;

- Number, duration, and results of samples taken;
- Type of protective devices worn, if any; and
- Name, social security number, and exposure of the employees whose exposures are represented.

Shaw is required to maintain this record for at least 30 years, in accordance with 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response*.

7.0 WASTE MANAGEMENT

The section describes the management, transport, and disposal of the types of ACM waste that is expected to be generated during the RI activities at the three MRSs. The handling of ACM will follow the methods outlined in 29 CFR 1926, the *Facility-Wide Sampling and Analysis Plan* (SAIC, 2011b), and the references herein. The following types of ACM wastes are anticipated to be generated:

- **Solid Waste** (solid waste and expendable waste debris): ACM, PPE, and disposable sampling equipment
- **Liquid Waste** (decontamination fluids): derived from the decontamination of sampling and intrusive investigation equipment

7.1 ACM Storage Containment

Decontamination fluids will be containerized separately from the solid waste and expendable waste debris. No MEC or ordnance-related scrap will be disposed with any of the solid waste containing ACM. Packaging of ACM shall conform to OSHA standard 29 CFR 1926.1101; the U.S. Department of Transportation standard 49 CFR 171, 172, and 173; the EPA standard 40 CFR Part 61; and the *Facility-Wide Sampling and Analysis Plan* (SAIC, 2011b). All ACM waste shall be placed in a wet condition into properly labeled disposal bags or sealed in two layers of 6-mil polyethylene sheeting wrapped air-tight and properly labeled.

Large items not able to fit into disposal bags shall be wrapped in two layers of 6-mil-thick plastic sheeting. The outer covering of asbestos waste packages will be cleaned using wet methods and/or vacuuming using a high-efficiency particulate air vacuum in the work area before transferring such items into the waste container.

Sealed objects shall be taken to the staging area and then completely plasticized with an additional layer of 6-mil polyethylene sealed with tape. The clean, containerized items shall be moved into a lockable waste container. Depending on the size and/or amount of ACM solid waste generated, waste containment will consist of either 55-gallon steel drums or sealable roll-off containers.

All containerized ACM waste will be labeled as specified in Section 7.2 of the *Facility-Wide Sampling and Analysis Plan* (SAIC, 2011b). Labels shall be affixed to all containers containing ACM waste. Labeled ACM waste containers or bags shall not be used for non-ACM debris or trash. Label information on each container will be written in indelible ink, in large bold letters on a contrasting background, and will include at a minimum: container number, contents, source of the waste, source location, project name and MRS identification,

physical characteristics of the waste, and generation dates. Each label will be placed on the side of each container at a location that will be protected from damage or degradation. Labels shall be used in accordance with the requirements of 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard, and shall contain the following information:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

7.2 Field Staging Areas

Central field staging areas (FSAs) will be coordinated with the RVAAP Facility Manager, Ohio Army National Guard (OHARNG)/Camp Ravenna environmental office, and the Ohio Environmental Protection Agency prior to generating waste. All waste shall remain at the designated FSAs until it has been characterized for disposal. The FSAs will be visibly identified with signage, and the drums/containers will be covered with poly sheeting or tarps if the FSAs are in an open location. Decontamination fluids will also be staged at the identification location within secondary containment structures. To avoid potential drum rupture due to freezing conditions, drums containing liquid waste will be filled only to 75 percent capacity. The AHAS will document the amount and number of ACM waste containers generated at each MRS in a field log book.

7.3 ACM Transport and Disposal

All ACM wastes, plastic, PPE, disposable equipment, and supplies will be disposed as contaminated waste according to EPA regulation (40 CFR, Part 61.152-61.156) and any other applicable federal, state, and local regulations pertaining to waste transportation. The procedures for hauling and disposal of ACM waste shall comply with 40 CFR, Part 61; 49 CFR, Part 171 and 172; Section 7.5 of the *Facility-Wide Sampling and Analysis Plan* (SAIC, 2011b), and other applicable state, regional, and local government regulations having jurisdiction over waste transport routes. All waste determined to be "ACM solid waste" will be disposed off site at a permitted waste facility. Non-contaminated expendable waste debris will be disposed as sanitary trash. Non-ordnance scrap metal will be sent off site for recycling. Potentially contaminated expendable waste debris will be disposed similar to the associated waste under which it was generated.

A properly completed and original "Waste Shipment Record" form shall accompany ACM waste that is transported to a disposal site. This form shall be signed and dated by each party who has control over the ACM waste, and a copy retained by each party as responsibility for

the waste is transferred to the next party. The approval signature on all Waste Shipment Record forms for the Army will be the RVAAP Facility Manager.

Shaw will be responsible for providing fail-safe packaging of bagged ACM waste in secondary solid waste containers during transport. If drums of ACM waste are generated, then trucks hauling asbestos waste shall be totally enclosed to prevent loss or damage to waste containers en route to the approved landfill. If roll-off containers are used, then the roll-off containers must be completely sealed. There must be no visible emission of asbestos dust during the transport of asbestos waste.

All vehicles used to transport the ACM waste material shall be marked with a visible warning sign during the loading and unloading process. The danger sign legend, text size, style, and arrangement shall conform to the requirements of EPA Standard 40 CFR Part 61.149 (d)(1).

7.4 Waste Disposal Records

As part of record-keeping requirements, Shaw will maintain the copies of each of the disposal records during the project period. Within 30 days of shipment, the disposal facility shall provide the RVAAP Facility Manager with original copies of the bills of lading or landfill receipt tickets duly executed by Shaw, the transporter, and the disposal facility. In addition, an *ACM After Action Report* will be submitted to the Army following the abatement activities that will include descriptions of the abatement activities performed at each of the MRSs, volumes of ACM generated, date of transport, and all required notes and verifications entered from the AHAS' field logs.

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8.0 MEDICAL SURVEILLANCE

Shaw utilizes the services of an occupational medicine physician for the medical surveillance requirements of all projects. Dr. William Nassetta (contact information below) reviews all Shaw medical examinations and is available for medical consultation on an “as needed” basis.

Dr. William Nassetta, MD, MPH
CORE Health Networks
12091 Bricksome Avenue, Suite B
Baton Rouge, Louisiana 70816
1-877-EHS-SHAW (1-877-347-7429)
225-614-9561 (office)
225-295-4846 (fax)

Currently no off-site subcontractors are anticipated for the proposed activities at the RVAAP; however, if deemed necessary, on-site subcontractors working in regulated areas should also utilize the services of an occupational medicine physician of their choice to meet any medical surveillance requirements.

8.1 Medical Examination

Each person performing ACM abatement will receive a physical examination initially when assigned abatement duties and yearly thereafter. Requirements for the exam and physicians report can be found in 29 CFR 1926.1101(m), *Medical Surveillance*. The employer shall obtain a written opinion from the examining physician. This written opinion shall contain the results of the medical examination and shall, among other things, include any recommended limitations on the employee or on the use of PPE such as respirators. Medical certification documentation for on-site personnel covered under these requirements is included as **Enclosure D**, “Medical Examination Certifications.”

8.1.1 Hearing Conservation Program

Personnel, including subcontractors, shall participate in a continuing, effective hearing conservation program whenever employee noise exposures equal or exceed an 8-hour TWA sound level of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of 50 percent.

8.2 Subcontractor Requirements

Subcontractors shall certify that their employees have successfully completed a physical examination by a qualified physician on the Training Acknowledgment Form (Attachment 4

of the APP), when applicable. For subcontractors working on site, the requirements for physical examination are the same as for Shaw employees (Section 8.1).

8.3 Medical Surveillance Records

Medical and personal exposure monitoring records will be maintained and will be kept for a minimum of 30 years. The confidentiality of employee medical records shall be maintained. The written medical opinion from the occupational physician is kept in site files.

8.4 Medical Restrictions

When a medical care provider identifies a need to restrict work activity, the employee's home office will communicate the restriction to the SSHO and the Project Health and Safety Manager. The terms of the restriction will be discussed with the employee and the SSHO. Every attempt will be made to keep the employee working, while not violating the terms of the medical restriction.

9.0 ASBESTOS EXPOSURE CONTROL PLAN

This section presents mandatory guidelines to protect the safety and health of all on-site workers where the potential to exposure to harmful concentrations of asbestos may be present at each of the MRSs. Specifically, this section establishes safe work practices, personal hygiene, engineering controls, and communication procedures for abatement work involving asbestos.

9.1 Decontamination Area

A decontamination area will be established adjacent to the regulated area at each MRS for decontamination of employees and equipment that is contaminated with asbestos. Each decontamination area shall consist of an area covered by poly sheeting on the ground. It will be sufficiently large enough to accommodate cleaning of equipment and removing PPE without spreading contamination beyond the area (as determined by visible accumulations). Any equipment or surfaces of containers filled with ACM must be cleaned prior to removing them from the area. The AHAS will be responsible for continuously inspecting the decontamination area in order to verify that asbestos contamination is contained. The size of the decontamination area at each MRS may be adjusted based on the equipment and materials used for the intrusive investigation activities.

The following items will be posted at the entranceway to the decontamination areas:

- A copy of the EPA regulations for Asbestos, 40 CFR 61 Subparts A and M and the OSHA regulations, 29 CFR 1926.1101.
- Map with location of hospital and/or emergency room; a list of telephone numbers for Post 1, local hospital, and local fire department; the name and telephone number of Shaw's site representatives, designee(s), and Project Manager.
- A copy of the Shaw respiratory program (EIG-HS-HS601), which conforms to the requirements of 29 CFR 1910.134(b).
- List of all employees, by name, social security number, and State of Ohio certification number (applicable for the CP only) who are working at the site.
- Legible copy of the CP's State of Ohio asbestos certification cards.
- Daily sign-in/out log that identifies persons by name and certification number (as applicable) who are/were at the site and the length of time each spent at the site.

The AHAS will inspect the decontamination areas daily to verify that the units are large enough for the personnel and equipment entering and leaving the regulated areas, that all

PPE and ACM waste has been removed, and that the areas are clean with no evidence of tears in the poly sheeting. Any deficiencies will be remedied by the AHAS prior to allowing workers to enter the regulated area.

9.2 Hygiene Facilities and Practices

The following provisions shall be made to address sanitation:

- Portable toilets shall be provided, as necessary, at convenient locations at the MRSs. Arrangements shall be made for the routine servicing and cleaning of these units.
- Safe drinking water is to be provided at each MRS and provisions shall be made as necessary to provide safe drinking water at individual field locations. One-serving-size individual bottles of water or disposable sanitary cups shall be provided along with receptacles for their disposal. All outlets dispensing nonpotable water (under Shaw or subcontractor control) shall be posted with appropriate warning signs. Systems furnishing nonpotable water and systems furnishing potable water shall be constructed to remain completely independent of each other.
- Portable washing facilities shall be provided at each MRS and in the decontamination area. Portable washing facilities shall consist of, at a minimum, soap, water, and paper towels.

9.3 Engineering Controls

Engineering controls will be used during any required ACM abatement activities to minimize ACM exposure. A low-pressure sprayer containing a wetting agent (amended water) will be used to thoroughly wet ACM during any removal and containerization operation. Additional amended water will be sprayed into the leak-tight container to adequately wet the ACM.

ACM will be carefully handled to minimize asbestos exposure. No power tools will be used during asbestos abatement.

Prohibited activities include any process that would render the material friable such as sanding, grinding, cutting, or abrading. There will not be any use of compressed air to remove ACM. There will be no dry sweeping, shoveling, or other dry cleanup of dust and debris containing ACM or PACM. Prohibited activities also include, but are not limited to, eating, drinking, smoking, or chewing gum or tobacco inside the regulated area.

9.4 Housekeeping Practices

Housekeeping shall be a priority at each MRS. The following provisions are specified to maintain a high standard of housekeeping:

- The importance of housekeeping and the expectations that good housekeeping shall be maintained will be regular topics of the morning safety meetings.
- Job sites and work areas shall be cleaned up on a daily basis.
- Dumpsters and adequate waste/trash receptacles shall be provided as necessary in sufficient quantities in active work areas and are to be emptied regularly. Potentially contaminated waste shall be segregated from sanitary waste for proper characterization and/or disposal. Hazardous waste containers shall be labeled according to applicable regulations.
- Housekeeping is an operational/safety item, which shall be regularly considered during routine inspections.

9.5 Hazardous Environmental Conditions

Effective abatement planning must provide for extremes in environmental conditions. Abatement operations will be discontinued if lightning or any other conditions exist that, in the opinion of the AHAS or SSHO, jeopardize the safety of the site personnel.

9.6 Communications

Adequate communication between on-site workers and support personnel outside the regulated area will be provided as follows:

- AHAS to support personnel outside the regulated area—The regulated area sizes may vary at the intrusive investigation locations at each of the MRSs. Voice commands may be exchanged for smaller regulated areas. Wireless electronic communications are preferred for larger regulated areas.
- Emergency assistance—Two-way radios will be provided to on-site field personnel during this project. In addition, Shaw will utilize two-way radios provided by Post 1 for immediate contact with Post 1 in the event of an emergency. Cellular telephones will also be available.

9.7 Fire and Medical Emergency Response Procedures

Fire and medical emergency response procedures for the project are discussed in detail in the *Emergency Response Plan* (Section 9.2) of the APP (Shaw, 2011a). Security procedures for

the project are discussed in detail in the *Site Control Plan* (Section 10.0) of the *Site Safety and Health Plan* included as Attachment 2 to the APP (Shaw, 2011a).

9.8 Multi-Employer Sites

On multi-employer worksites, an employer performing work requiring the establishment of a regulated area shall inform other employers on the site of the nature of the employer's work with asbestos, of the existence of and requirements pertaining to regulated areas, and the measures taken to prevent asbestos exposures of such employers. Due to the isolated nature of each of the MRSs at the RVAAP, it is anticipated that Shaw will be the only contractor working at each location. However, in the event that other contractors or members of the OHARNG are required to work at a site at the same time that Shaw is performing intrusive investigations with the potential to disturb ACM, Shaw will notify the other contractor(s) or the OHARNG. The other contractor(s) or OHARNG members will be required to review this AAP and attend the Shaw morning safety meeting where the material included in this AAP will be discussed.

10.0 REFERENCES

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Ohio Environmental Protection Agency, Ohio Department of Health (ODH). Ohio Administrative Code Chapter 3745-20, *Asbestos Emission Control*.

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SAIC, 2011b. *Final Facility-Wide Sampling and Analysis Plan*, Prepared for the U.S. Army Corps of Engineers, Louisville District, February.

Shaw Environmental & Infrastructure, Inc. (Shaw), 2011a. *Accident Prevention Plan (APP) for Remedial Investigation Environmental Services*, Version 4.0, March 31.

Shaw, 2011b. *Final Work Plan for Military Munitions Response Program Remedial Investigation Environmental Services*, Version 1.0, March 1.

U.S. Army Corps of Engineers (USACE), 2008. *Safety and Health Requirements*, Engineer Manual 385-1-1, November.

U.S. Department of Transportation. Title 49 of the Code of Federal Regulations, Parts 171 through 180, Subchapter C, *Hazardous Materials Regulations*.

U.S. Environmental Protection Agency (EPA). Title 40 of the Code of Federal Regulations, Part 61, *National Emission Standards for Hazardous Air Pollutants*.

EPA. Title 40 of the Code of Federal Regulations, Part 763, *Asbestos*.

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Enclosure A

Activity Hazard Analyses

Activity Hazard Analysis (AHA) # 15.0

Activity/Work Task: Asbestos Abatement		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: RVAAP		Risk Assessment Code (RAC) Matrix					
Contract Number: W912DR-09-D-0005, DO 0002		Severity	Probability				
Date Prepared: 05-31-2013			Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): David Crispo, P.E.		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by (Name/Title): James Joice, CIH, CSP, CHMM		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) This AHA serves as certification of hazard assessment.		Step 1: Review each “ Hazard ” with identified safety “ Controls ” and determine RAC (See above)					
		“ Probability ” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.					RAC Chart E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk
		“ Severity ” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible					
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.					
Job Steps	Hazards	Controls			EM 385-1-1	RAC	
Arrival of new personnel at site.	Unfamiliarity with: site, general site hazards, project safety rules, chain of command, and emergency procedures.	<ul style="list-style-type: none"> All personnel shall attend the site orientation training. 			01.B.03 01.E.01 28	M	
Removal of asbestos containing material (ACM).	Poor planning.	<ul style="list-style-type: none"> Complete Job Safety Analysis for each task, as specified in Shaw Environmental & Infrastructure, Inc. Procedure No. HS045, “Job Safety Analysis (JSA).” Use Hazard Assessment Resolution Program frequently – for each task to be completed. 			01.B.02	M	
	Exposure to asbestos and site contaminants.	<ul style="list-style-type: none"> All operations, materials, and equipment shall be evaluated to determine the presence of ACM or if ACM could be released into the work environment. Appropriate PPE (i.e., respirators, Tyvek coveralls, etc.) shall be instituted for all ACM work and for support personnel when engineering controls or work practices are not sufficient to limit exposure to ACM outside of the work area. Adequate hygiene facilities shall be provided in the regulated areas for workers that are exposed to ACM. 			06.A.01 06.A.02 06.A.03 06.A.04 06.B.02 06.B.05	M	
	Migration of asbestos outside of work area.	<ul style="list-style-type: none"> Engineering and administrative controls shall be used to control the potential for asbestos fibers to migrate outside of the work area. Testing shall be conducted around the perimeter of the work area to monitor asbestos migration. 			06.A.02 06.A.03	M	

Job Steps	Hazards	Controls	EM 385-1-1	RAC
Removal of asbestos containing material (ACM) (continued)	Heavy lifting, strains, and sprains.	<ul style="list-style-type: none"> No individual employee is permitted to lift any object that weighs over 60 pounds. Proper lifting techniques shall be used. Multiple employees or the use of mechanical lifting devices are required for lifting objects over the 60-pound limit. 	14.A.01	M
	Intrusive activities and underground utilities.	<ul style="list-style-type: none"> Follow procedure for Intrusive Activities Permit in Accident Prevention Plan (APP) prior to commencing excavation activities. Shaw E&I Procedure No. HS308, "Underground/Overhead Utility Contact Prevention," shall be followed. The Ohio Utilities Protection Service shall be contacted prior to any intrusive activities. 	25.A.01	M
	Munitions and explosives of concern (MEC).	<ul style="list-style-type: none"> Personnel shall attend MEC Awareness training. Personnel shall not enter any Munitions Response Area without the Senior Unexploded Ordnance Supervisor's approval and must be accompanied by an Unexploded Ordnance Technician using MEC avoidance techniques per EP 75-1-2. 	33.A.01 33.A.02 33.A.03	M
	Slips, trips, and falls.	<ul style="list-style-type: none"> Keep work areas clear and maintain housekeeping. Personnel shall not jump from elevated surfaces. Personnel shall use caution when walking on rocky, slippery, or uneven terrain. 	14.C.01-10	M
	Hand injuries.	<ul style="list-style-type: none"> Items to be handled shall be inspected for sharp edges prior to being handled. Personnel shall wear leather gloves when handling sharp materials. Personnel shall be aware of and avoid pinch-point hazards. 	05.A.08	L
	Use of heavy equipment.	<ul style="list-style-type: none"> Only qualified personnel shall be permitted to operate equipment. Heavy equipment shall be inspected daily after the initial U.S. Army Corps of Engineers inspection (and documented). Do not use unsafe equipment. All equipment shall have backing alarms. All equipment shall be operated at safe speeds and in a safe manner. Equipment operators shall wear safety belts. Personnel are only permitted to approach equipment after a signal from the operator. Ground personnel working near heavy equipment shall wear high-visibility conspicuity vests. Ground personnel shall not enter the swing radius of equipment. Ground personnel shall not position themselves between equipment and stationary objects. Personnel shall verify all mechanical guards are in place and functioning properly. Moving equipment shall be equipped with a back-up alarm. All equipment shall be shut down with energies dissipated prior to performing maintenance activities - lock out/tag out procedures may apply. Only qualified mechanics shall work on or repair heavy equipment. 	18.A 18.G 18.B 05.F	M

Job Steps	Hazards	Controls	EM 385-1-1	RAC
Removal of asbestos containing material (ACM) (continued)	Heat stress and cold stress.	<ul style="list-style-type: none"> Follow procedures outlined in the Site Safety and Health Plan (SSHP). 	06.I	M
	Insect bites/West Nile Virus.	<ul style="list-style-type: none"> Wear personal protective equipment (PPE) and tape joints to keep insects away from the skin. Use protective insect repellents containing N,N-Diethyl-m-toluamide, such as 3M Ultrathon or equivalent, and clothing with insecticide preparations containing permethrins (Repel Permanone or equivalent) to prevent insect bites. Check limbs/body for insects/insect bites before showering. Notify Site Safety and Health Officer (SSHO) of flu-like symptoms. 	06.D.01	L
	Contact dermatitis and poison ivy.	<ul style="list-style-type: none"> Check around work areas to identify if poison ivy is present. Wear long-sleeve shirts/trousers or Tyvek® coveralls to avoid skin contact with plants or other skin irritants. Learn to identify poisonous plants. Avoid unnecessary clearing of plant/vegetation areas. Cover vegetation with plastic (visqueen) where sampling position raises exposure potential. Apply protective cream/lotion to exposed skin to prevent poison ivy or similar reactions. Identify workers who are known to contract poison ivy. 	06.D.03	L
	Severe weather.	<ul style="list-style-type: none"> The SSHO will monitor weather conditions each day in order to plan and prepare for hazardous conditions. Work activities will be suspended prior to weather conditions becoming hazardous so that workers have ample time to seek shelter. Upon seeing lightning or hearing thunder, outdoor activities shall be suspended and personnel shall be evacuated to safe areas (inside vehicles, buildings, or tornado shelter as appropriate). Follow procedures outlined in the APP. 	06.I	L
	Dust.	<ul style="list-style-type: none"> Dust shall be monitored and controlled. Respiratory protection may be required if dust cannot be adequately controlled. 		L
	Fire.	<ul style="list-style-type: none"> Smoking shall be permitted in designated areas. Vehicles shall not be parked in tall, dry grass. Engines shall be shut off before refueling. A 2-A:10-B:C fire extinguisher shall be available in work areas and when refueling. Smoking shall not be permitted near fueling areas. Gasoline shall be stored in safety cans with flash arrestors and spring-loaded vents. 	09.E.01 09.A.06 09.B.08	L

Job Steps	Hazards	Controls	EM 385-1-1	RAC
Movement of asbestos containing material (ACM) out of regulated areas	Exposure to asbestos and site contaminants.	<ul style="list-style-type: none"> All operations, materials, and equipment shall be evaluated to determine the presence of ACM or if ACM could be released into the work environment. Appropriate PPE (i.e., respirators, Tyvek coveralls, etc.) shall be instituted for all ACM work and for support personnel when engineering controls or work practices are not sufficient to limit exposure to ACM outside of the work area. Adequate hygiene facilities shall be provided in the regulated areas for workers that are exposed to ACM. 	06.A.01 06.A.02 06.A.03 06.A.04 06.B.02 06.B.05	M
	Migration of asbestos outside of work area	<ul style="list-style-type: none"> Engineering and administrative controls shall be used to control the potential for asbestos fibers to migrate outside of the work area. Testing shall be conducted around the perimeter of the work area to monitor asbestos migration. 	06.A.02 06.A.03	M
	Heavy lifting, strains, and sprains.	<ul style="list-style-type: none"> No individual employee is permitted to lift any object that weighs over 60 pounds. Proper lifting techniques shall be used. Multiple employees or the use of mechanical lifting devices are required for lifting objects over the 60-pound limit. 	14.A.01	M
	Slips, trips, and falls.	<ul style="list-style-type: none"> Keep work areas clear and maintain housekeeping. Personnel shall not jump from elevated surfaces. Personnel shall use caution when walking on rocky, slippery, or uneven terrain. 	14.C.01-10	M
	Hand injuries.	<ul style="list-style-type: none"> Items to be handled shall be inspected for sharp edges prior to being handled. Personnel shall wear leather gloves when handling sharp materials. Personnel shall be aware of and avoid pinch-point hazards. 	05.A.08	L
	Heat stress and cold stress.	<ul style="list-style-type: none"> Follow procedures outlined in the Site Safety and Health Plan (SSHP). 	06.I	M
Manage asbestos containing waste prior to off-site transport	Improper storage of ACM.	<ul style="list-style-type: none"> Storage prior to transportation will be under the supervision of qualified personnel. All ACM generated at the work areas shall be sealed in double 6-mil bags or two layers of 6-mil poly sheeting. The sealed ACM will be placed into either 55-gallon drums or a roll-off container rated for ACM. All containers will be properly labeled. The containers will not be used to hold other materials unless they have been under hazardous waste and DOT requirements. 	06.B.03	M

Equipment to be Used	Training Requirements/Competent or Qualified Personnel Names	Inspection Requirements
<p><u>Personal Protective Equipment - Level D (UXO Technicians):</u></p> <ul style="list-style-type: none"> • Hard Hat (overhead hazards present and/or when working near heavy equipment) • Safety Glasses • Safety-Toed Boots • Work Gloves • ANSI Class 2 reflective warning vests (when working near operating heavy equipment or roadways) <p><u>Personal Protective Equipment - Level C (AHAS only):</u></p> <ul style="list-style-type: none"> • Full-face Respirator equipped with P100/organic vapor cartridges • Hard Hat (overhead hazards present and/or when working near heavy equipment) • Tyvek Coveralls • Cooling Vest (if necessary) • Cotton Glove Liners • Nitrile Gloves • Safety-Toed Boots • Work Gloves • ANSI Class 2 Reflective Warning Vests (when working near operating heavy equipment or roadways) <p><u>Equipment:</u></p> <ul style="list-style-type: none"> • Fire Extinguishers • Emergency Eyewash • First Aid Kit • Deep-Woods Off or Ultrathon and Repel Permanone • Drinking Water • Weather Radio or AM/FM Radio • Low-pressure Sprayer • Shovel • Respirator Cartridges • Barrier Tape • Detergent for Amended Water • 6-mil Poly and 6-mil Disposable Bags • 55-gallon Drums and/or Roll-off Containers • "Regulated Area" Signs 	<p><u>Competent Person (CP) / Qualified Person (QP):</u></p> <p>George Csordas—CP/AHAS and AHES Ken Morgan—CP/SSHO Robert Harrison—Alternate CP Ken Morgan—QP/First Aid and CPR Robert Harrison—QP/First Aid and CPR Eric Edwardson—QP/Heavy equipment operator Eric Edwardson—CP/Heavy equipment inspector</p> <p><u>Training Requirements:</u></p> <ul style="list-style-type: none"> • Site safety orientation • Asbestos Hazard Abatement Supervisor Training (AHAS only) • Asbestos Hazard Evaluation Supervisor Training (AHES only) • 2-hour ACM Awareness Training (UXO Technicians) • UXO Technicians must be qualified IAW DDESB TP 18 • Applicable AHAs • HAZWOPER 40-Hour • Qualified equipment operators • Lifting/back safety • Fire extinguisher use • Emergency procedures • Biological hazard identification and control • Tornado shelter location • National Lightning Safety Institute Lightning Safety Procedures 	<p>Daily site safety inspection of ACM regulated work areas (AHES)—George Csordas Daily site safety inspection (SSHO)—Ken Morgan Daily site safety inspection (QCO)—Braden Livingstone</p> <ul style="list-style-type: none"> • Vehicle inspection daily • Inspect ACM regulated area before and after work activities • Check Allergy/Sensitivity/Medical Questionnaire, training, and medical certifications against personnel roster • Mechanized equipment (U.S. Army Corps of Engineers form prior to use) • Mechanized equipment (daily) • Overhead and underground utilities • Housekeeping (daily) • Fire extinguisher (weekly) • Vehicle inspection daily • Equipment and tools inspection daily and before use • Survey areas for poisonous plants, insects, and animals • Check body for ticks

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Activity Hazard Analysis (AHA) # 16.0

Activity/Work Task: Air Monitoring		Overall Risk Assessment Code (RAC) (Use highest code)				L	
Project Location: RVAAP		Risk Assessment Code (RAC) Matrix					
Contract Number: W912DR-09-D-0005, DO 0002		Severity	Probability				
Date Prepared: 05-31-2013			Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): David Crispo, PE		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by (Name/Title): James Joice, CIH, CSP, CHMM		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) This AHA serves as certification of hazard assessment.		Step 1: Review each “ Hazard ” with identified safety “ Controls ” and determine RAC (See above)					
		“ Probability ” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely.					RAC Chart E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk
		“ Severity ” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible					
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.					
Job Steps	Hazards	Controls			EM 385-1-1	RAC	
Air Monitoring	Poor planning.	<ul style="list-style-type: none"> Complete Job Safety Analysis for each task, as specified in Shaw Environmental & Infrastructure, Inc. Procedure No. HS045, “Job Safety Analysis (JSA).” Use Hazard Assessment Resolution Program frequently – for each task to be completed. 			01.B.02	L	
	Munitions and explosives of concern (MEC).	<ul style="list-style-type: none"> Personnel shall attend MEC Awareness training. Personnel shall not enter any Munitions Response Area without the Senior Unexploded Ordnance Supervisor's approval and must be accompanied by an Unexploded Ordnance Technician using MEC avoidance techniques per EP 75-1-2. 			33.A.01 33.A.02 33.A.03	L	
	Heavy lifting, strains, and sprains.	<ul style="list-style-type: none"> No individual employee is permitted to lift any object that weighs over 60 pounds (including coolers). Proper lifting techniques shall be used. Multiple employees or the use of mechanical lifting devices are required for lifting objects over the 60-pound limit. 			14.A.01	L	
	Slips, trips, and falls.	<ul style="list-style-type: none"> Keep work areas clear and maintain housekeeping. Personnel shall not jump from elevated surfaces. Personnel shall use caution when walking on rocky, slippery, or uneven terrain. 			14.C.01-10	L	
	Hand injuries.	<ul style="list-style-type: none"> Items to be handled shall be inspected for sharp edges prior to being handled. Personnel shall be aware of and avoid pinch-point hazards. 			05.A.08	L	


Job Steps	Hazards	Controls	EM 385-1-1	RAC
Air Monitoring (continued).	Insect bites/West Nile Virus.	<ul style="list-style-type: none"> Wear PPE and tape joints to keep insects away from the skin. Use protective insect repellents containing N,N-Diethyl-m-toluamide, such as, 3M Ultrathon or equivalent, and clothing insecticide preparations containing permethrins (Repel Permanone or equivalent) to prevent insect bites. Check limbs/body for insects/insect bites before showering. Notify SSHO of flu-like symptoms. 	06.D.01	L
	Contact dermatitis and poison ivy.	<ul style="list-style-type: none"> Check around work areas to identify if poison ivy is present. Wear long-sleeve shirts/trousers or Tyvek® coveralls to avoid skin contact with plants or other skin irritants. Learn to identify poisonous plants. Avoid unnecessary clearing of plant/vegetation areas. Cover vegetation with plastic (visqueen) where sampling position raises exposure potential. Apply protective cream/lotion to exposed skin to prevent poison ivy or similar reactions. Identify workers who are known to contract poison ivy. 	06.D.03	L
	Severe weather.	<ul style="list-style-type: none"> The SSHO will monitor weather conditions each day in order to plan and prepare for hazardous conditions. Work activities will be suspended prior to weather conditions becoming hazardous so that workers have ample time to seek shelter. Upon seeing lightning or hearing thunder, outdoor activities shall be suspended and personnel shall be evacuated to safe areas (inside vehicles, buildings, or tornado shelter as appropriate). Follow procedures outlined in the APP. 	06.I	L
	Hazardous atmospheres.	<ul style="list-style-type: none"> Personnel shall immediately notify the SSHO if odors are detected. 	28.E.05	L
	Heat stress and cold stress.	<ul style="list-style-type: none"> Follow procedures outlined in the SSHP. 	06.I	L
	Fire.	<ul style="list-style-type: none"> Smoking shall be permitted in designated areas. Vehicles shall not be parked in tall, dry grass. A 2-A:10-B:C fire extinguisher shall be available in work areas and when refueling. 	06.K.02	L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel Names	Inspection Requirements
<p><u>Personal Protective Equipment - Level D - Modified:</u> Hard Hat (overhead hazards present and/or when working near heavy equipment) Safety Glasses Safety-Toed Boots Work Gloves Disposable Gloves (nitrile) Disposable Boot Covers ANSI Class 2 Reflective Warning Vests (when working near operating heavy equipment or roadways)</p> <p><u>Equipment:</u></p> <ul style="list-style-type: none"> • Fire Extinguishers • Emergency Eyewash Station • First Aid Kit • Deep-Woods Off or Ultrathon • Repel Permanone • Drinking Water • Weather Radio or AM/FM Radio • Low-flow Air Sampling Pumps and Chargers • Airflow Calibration Device for air sampling pumps • Air Filter Sampling Cassettes 	<p><u>Competent Person (CP) / Qualified Person (QP):</u> George Csordas—CP/AHAS and AHES Ken Morgan—CP/SSHO/UXOSO Robert Harrison—Alternate CP/SSHO/SUXOS Ken Morgan—QP/First Aid and CPR Robert Harrison—QP/First Aid and CPR</p> <p><u>Training Requirements:</u></p> <ul style="list-style-type: none"> • Site safety orientation • Asbestos Hazard Evaluation Supervisor Training (AHES only) • UXO Technicians must be qualified IAW DDESB TP 18 • Applicable AHAs • HAZWOPER 40-Hour • MEC Awareness • Lifting/back safety • Fire extinguisher use • Emergency procedures • Biological hazard identification and control • Tornado shelter location • National Lightning Safety Institute Lightning Safety Procedures 	<p>Daily site safety inspection of ACM regulated work areas (AHES)—George Csordas Daily site safety inspection (SSHO)—Ken Morgan Daily site safety inspection (QCO)—Braden Livingstone</p> <ul style="list-style-type: none"> • Housekeeping (daily) • Fire extinguisher (weekly) • Vehicle inspection daily • Monitoring equipment inspection daily and before use • Survey areas for poisonous plants, insects, and animals • Check body for ticks • Monitor approaching storms

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Enclosure B

Respiratory Protection Program

	Document Type: <h1>General</h1>	Level: 2 Owner: EH&S Origination Date: 4/25/2002 Revision Date: 12/1/2011
Group: E&I	Title: Respiratory Protection Program	No: EIG-HS-601 Revision No.: 1 Page 1 of 15

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1. PURPOSE

The purpose of this procedure is to prescribe the requirements of the company Respiratory Protection Program (RPP). This procedure provides information and guidance on the proper selection, medical evaluation, training, use, and care of respiratory protective equipment and complies with the requirements of 29 CFR 1910.134 (1998).

2. SCOPE

All operations which require the use of respiratory protection are subject to the provisions of this procedure.

2.1 Exception Provisions

Variances and exceptions may be requested pursuant to the provisions of Procedure EIG-HS-013, Health and Safety Procedure Variances.

3. REFERENCES

3.1 Internal References

- EIG-HS-013 Health and Safety Procedure Variances
- EIG-HS-040 Stop Work Authority
- EIG-HS-050 Training Requirement
- EIG-HS-052 Health and Safety Plans
- EIG-HS-102 Management of Employee Exposure and Medical Records
- EIG-HS-104 Employee Notification of Industrial Hygiene Monitoring Records
- EIG-HS-300 Confined Spaces
- EIG-HS-304 Compressed Gas Cylinders
- EIG-HS-600 Personal Protective Equipment

3.2 External References

- Title 29, Code of Federal Regulations, Section 1910.134.
- AIHA, *Respiratory Protection, A Manual and Guideline*, 1980.
- American National Standards Institute Practices for Respiratory Protection Z88.2-1992 (or most recent publication)
- NIOSH, *Certified Equipment List* (most recent version)

4. DEFINITIONS

- **Action Level (AL)**—Airborne contaminant concentration which is one-half of the Permissible Exposure Guideline (PEG).

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- **Air Purifying Respirator (APR)**—Negative pressure respirator (also referred to as a cartridge respirator) which filters contaminated air through chemical or mechanical filter elements. APRs include: cartridge, canister, gas masks, and single-use respirators (single-use respirators are not approved for use by the company).
- **Approved Respirator**—Any respirator, identified by manufacturer and model, that has been approved by NIOSH 42 CFR Part 84 and has been incorporated into the List of Approved Respiratory Protective Equipment (Attachment 2).
- **Assigned Protection Factor (APF)**—A term that is reserved in the OSHA Standard 1910.134 (January, 1998). Attachment 3 provided PFs for the respiratory protective equipment based upon type of device and method of fit testing. The company will continue to use the PFs established by NIOSH until OSHA issues their definition of APF.
- **Company**—All wholly-owned subsidiaries of Shaw Environmental & Infrastructure, Inc. (Shaw E & I).
- **Contractor Personnel**—A group of persons hired to perform a specific activity based on their expertise and ability to operate independent of direct supervision. Contractor personnel are supervised by their management group which reports to an employee of the company for project direction.
- **End-of-Service-Life Indicator (ESLI)**—A system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.
- **Emergency**—Emergency means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.
- **Exposure Limit**—Several published airborne contaminant concentration values exist which are used in establishing acceptable personnel exposures to contaminants. OSHA publishes the Permissible Exposure Limit (PEL), NIOSH publishes the Recommended Exposure Limit (REL), and the ACGIH publishes the Threshold Limit Value (TLV). All of these exposure limits are based on an 8-hour work shift, 40-hour work week, and 40-year work life. The values may vary from contaminant to contaminant as well as between publishing bodies.
- **Field Office**—Any office or satellite office performing field activities which may require the use of respiratory protection.
- **Filtering Facepiece (Dust Mask)**—A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.
- **Fit Factor (FF)**—This term means a quantitative estimate of the fit of a particular respirator to a specific individual and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn. The FF incorporates a safety factor of 10 because protection factors in the workplace tend to be much lower than the fit factors achieved during fit testing. Acceptable fit factors are 100 for a tight-fitting half facepiece and 500 for a tight-fitting full facepiece respirators.
- **HASP**—Health and Safety Plan.
- **Health and Safety Representative**—A member of the company Health and Safety Functional Resource Group who, through credentials, training, or experience, has the necessary qualifications and authority to specify respiratory protection and evaluate respiratory protection program elements.

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- **Immediately Dangerous to Life or Health (IDLH)**—An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.
- **Labor Pool Personnel**—Temporary personnel hired for a given expertise or ability. Labor pool personnel report directly to an employee of the company.
- **Nuisance Level**—Level of airborne contaminants which is below one-half the action level for that contaminant and presents no other health or safety hazard.
- **Permissible Exposure Guideline (PEG)**—This term designates a specific exposure limit and is based on the best available information. The PEG will be the lower (more protective) of the values for the PEL and TLV. However, the REL shall take precedence for Hazardous Waste Operations (subject to 29 CFR 1910.120 or 1926.65) if no PEL exists, or for contaminants where no PEL or TLV exists. If there is no PEL, TLV, or REL, a Health and Safety Representative shall determine an appropriate permissible exposure guideline.
- **Permissible Exposure Limit (PEL)**—An occupational exposure index promulgated by OSHA which carries the force of law. This value represents the allowable concentration to which it is believed an employee may be exposed to 8 hours a day, 40 days a week, for a 40-year working life without experiencing adverse health effects.
- **Positive Pressure Respirator**—A respirator in which the pressure inside the respirator exceeds the ambient air pressure outside the respirator.
- **Powered Air Purifying Respirator (PAPR)**—A positive pressure APR which incorporates a fan and battery pack unit. The system pulls contaminated air through the filter elements before delivery to the facepiece under positive pressure. Air pressure in the mask must remain above ambient pressure.
- **Qualitative Fit Test**—A procedure for assuring that the respirator provides adequate protection based on a pass/fail fit test that relies on the individual's response to the test agent. Standard fit test protocol will utilize the irritant smoke methods as described in Attachment 4.
- **Quantitative Fit Test**—A fit test that provides an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.
- **Respiratory Protection Program Coordinator (RPP Coordinator)**—A person designated by the Health and Safety Representative to administer and supervise the respiratory program at a local facility or project location. This person will have the necessary training or credentials to execute this task.
- **Recommended Exposure Limit (REL)**—An occupational exposure index published by NIOSH which is a recommended guideline for employee protection. This value represents the allowable concentration to which it is believed an employee may be exposed to 10 hours a day, 40 hours a week, for a 40-year working life without experiencing health effects.
- **Supplied Air Respirator (SAR)**—Positive pressure respirator which supplies an independent source of breathing air to the user. Two types of SARs are available: self-contained breathing apparatus (SCBA) and airline.
- **Threshold Limit Value (TLV)**—An occupational exposure index published by ACGIH which is recognized as an industry guideline and represents the concentration to which it is believed that nearly all employees may be exposed to 8 hours a day, 40 hours a week without experiencing adverse health effects.

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5. RESPONSIBILITIES

5.1 Procedure Responsibility

The Vice President, Health and Safety is responsible for the issuance, revision, and maintenance of this procedure.

5.2 Action/Approval Responsibilities

Program responsibilities are detailed throughout this procedure. The Responsibility Matrix summarizes these items and can be found as Attachment 1.

6. PROCEDURE

The company will employ engineering controls (e.g., enclosure, ventilation, material substitution, etc.) as the primary method to limit employee exposure. However, for those situations where engineering and administrative controls are ineffective at controlling employee exposure, the use of respiratory protective equipment may be required.

This RPP provides specific requirements for selection, assignment, training, and medical evaluation for persons expected to wear respiratory protection.

6.1 Assignment of Equipment to Contractor/Labor Pool Personnel

Contractor personnel shall provide their own respiratory protective equipment and shall also confirm meeting all other requirements of their own RPP and that of the company's RPP (i.e., medical clearance, training, etc.).

The company may provide the following respiratory protective equipment to Contractor Personnel:

- Disposable equipment such as filter elements.
- Hardware for airline systems (up to, but not including, the airline and facepiece) which employees are sharing.

The company will not provide the following respiratory protective equipment to Contractor Personnel:

- APR or PAPR facepieces.
- SCBAs, SAR respirators, or airline.

The company may provide respiratory protective equipment to Labor Pool Personnel if the following have been established:

- The labor pool personnel have successfully completed training as required by 29 CFR 1910.134 and other applicable regulations.
- The labor pool personnel have been fit tested in relation to projected exposure levels and contaminants to be encountered.
- The labor pool personnel have been medically approved to wear respirators.
- All other RPP requirements have been met.

6.2 Approval, Selection, and Purchase of Respiratory Protective Equipment

The following requirements are designed to guide correct selection of respiratory protective equipment.

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6.2.1 Approval

The Vice President, Health and Safety has approved respirators manufactured by Survivair as the primary respirators for use by employees. For employees who cannot achieve a satisfactory fit or comfort factor in Survivair respirator, Mine Safety Appliance (MSA) respirators will be selected. The list of approved model respirators is included in Attachment 2. Contractor personnel may select any respiratory protective equipment that has received approval from NIOSH.

6.2.2 Selection

The Health and Safety Representative shall base the selection of respiratory protective equipment upon an assessment of potential respiratory hazards that may be encountered. This assessment may utilize a variety of written information such as the NIOSH Pocket Guide to Chemical Hazards, Material Safety Data Sheets, analytical data, air monitoring results, or other applicable information. The selection process shall incorporate the following guidelines:

- Respiratory protection is to be selected by Health and Safety Representatives only. Full facepiece respirators are the usual preference because of superior protection factor and the face/eye protection afforded. Half facepiece respirators can only be used in situations where less than one-half the PEG is expected. The type of respirator selected will be documented in the Project HASP.
- Selection of the appropriate respiratory protective equipment shall include factors such as the chemical state and physical form of the chemical contaminant, atmospheric concentration during routine and emergency events, potential physical hazards, expected job task requirements, and the performance of the respirator in providing the appropriate level of protection against these hazards.
- Consideration shall be given to the nature of the hazardous operation, location of the hazardous area relative to nonhazardous breathing air supply, duration of wear, activities to be performed, and characteristics and function of the respiratory protective equipment to be worn.
- Selected respirators (i.e., Survivair or MSA) shall be NIOSH certified and used in compliance with the conditions of its certification when employees are exposed to toxic materials or other hazardous atmospheres.
- Respirators must provide adequate face and eye protection for the expected task.
- If an APR or PAPR is used, the respirator shall be equipped with an end-of-service life-indicator (ESLI) certified by NIOSH for the contaminant. If an ESLI is not available for the contaminant, a cartridge element change schedule shall be implemented which is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life. This information will be described in the HASP.
- The PF for the respirator selected (Attachment 3) shall be used according to the following relationship with the PEG to establish justification for selection:

$$PF \times PEG > \text{Maximum anticipated contaminant concentration}$$

If this equation is false, a respirator with a greater PF must be selected. Also review Attachment 3 to determine the required fit testing for the expected maximum anticipated contaminant concentration. The Health and Safety Representative may determine that a more conservative approach (e.g., 50 percent PF) may be needed. Decision to do so should be documented in the Project HASP.

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- Manufacturer-established limitations of the APR filter elements relative to the contaminants of concern shall be used to establish further justification for the selected respirator should the APR's FF not disqualify its use (e.g., maximum anticipated contaminant concentration).

6.2.3 Purchase

The purchase request of respiratory protective equipment (including cartridges, airlines, compressed air) should be reviewed by a Health and Safety Representative to indicate that the ordered material meets established requirements. **Under no circumstances may anyone (purchasing, warehouse, project manager, etc.) purchase or provide other than the specific respiratory protection equipment selected by the Health and Safety Representative.**

6.3 Medical Evaluation

No employee shall be assigned to a task that requires the use of a respirator unless it has been determined that he/she is physically able to perform the work while using the required respirator. The medical evaluation must be conducted prior to fit testing and work requiring the use of respiratory equipment.

The medical evaluation shall be performed by a physician typically in conjunction with a physical examination meeting the requirements of 29 CFR 1910.120 (f) *Medical Surveillance*. The physician will be informed of the type of work expected of the employee, the types of respiratory protection and personal protective equipment required, and other information indicating the expected stresses of the task. The company medical director shall be given a copy of the company RPP and a copy of 1910.134 (e) *Medical Evaluation*.

The company medical director shall provide a written recommendation regarding the employee's ability to use respiratory protection. The company shall ensure that the company medical director supplies the employee with a copy of this recommendation.

Additional medical evaluations will be provided to the employee if:

- Any medical signs or symptoms due to respirator use are reported by the employee, supervisory, or health and safety personnel.
- A change in workplace conditions (e.g., physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed on an employee.

6.4 General Program Requirements

6.4.1 Responsibilities.

The following information describes the responsibilities for the selection, use, and maintenance of respiratory protective equipment based upon job function:

6.4.1.1 Management

- Management shall take necessary and cost-effective measures to reduce, where possible, the need for respiratory protective equipment (e.g., enclosed cabs on heavy equipment to reduce airborne dust, operations performed upwind, etc.)
- Respiratory protective equipment shall be provided by management whenever it is determined that such equipment is necessary to protect the health of the employee or when requested by an employee and approved by the Health and Safety Representative.
- Management shall assign work tasks requiring the use of respiratory protective equipment to only those employees who are medically qualified to wear respiratory protective equipment.

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- Management shall ensure that employees are trained in the use of respiratory protection prior to being assigned to an activity that requires its use.
- Management shall provide the means for the maintenance of respiratory protection as required.

6.4.1.2 Health and Safety Representative

- Health and Safety Representatives shall determine appropriate respiratory protection for each job. The decision logic for this selection shall be documented in the Project HASP.
- Health and Safety Representatives shall monitor compliance with the various aspects of this program, provide technical assistance regarding respirator selection and use, evaluate the effectiveness of the RPP, and support respirator training and fit testing at locations under their control.
- Health and Safety Representatives shall conduct regular audits to determine compliance with this procedure. This audit can include a review of maintenance, training, medical and air monitoring records, and review the status of this procedure with regard to current regulatory requirements.
- Health and Safety Representatives shall maintain or oversee maintenance of all other records required by this RPP and shall provide for the training and fit testing of personnel assigned respiratory protective equipment.
- Health and Safety Representatives shall appoint a RPP Coordinator for each location which uses or may have a need to use respiratory protection. The Health and Safety Representative must assure the RPP Coordinator has the necessary training to fulfill his/her responsibilities.

6.4.1.3 RPP Coordinator

- The RPP Coordinator shall be responsible for cleaning, maintenance, and storage of all respirators not routinely used or not individually assigned.
- The RPP Coordinator shall maintain respirator supplies, including spare parts; submit purchase requests for new equipment; and assure that sufficient quantities of cartridges are available for each field office/project.
- The RPP Coordinator shall assure that air supply and emergency respiratory protection is properly inspected and maintained.
- Respirators shall be repaired by either qualified personnel under the direction of the RPP Coordinator, or by contracted supplier.
- The RPP Coordinator shall maintain models and sizes of respirators available for selection and fitting.
- The RPP Coordinator shall conduct fit testing.

6.4.1.4 Training Department

- Records pertaining to training and fit testing will be maintained by the Training Department.

6.4.1.5 Employee

- The employee shall use the provided respiratory protective equipment when instructed to do so in accordance with training received.

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- The employee shall clean, disinfect, and properly store the assigned respirator, unless other arrangements are made on a project level.
- The employee shall guard against damage to the assigned respirator.
- The employee shall inspect the respirator before each use and after cleaning.
- The employee shall report any malfunction of the respirator immediately to their supervisor and/or the RPP Coordinator.
- The employee shall report to their supervisor any change in their medical status that may impact their ability to wear a respirator safely.

6.4.2 Use of Corrective Lens Eyewear

In general, contact lenses are permitted to be worn when respiratory protection is used. Although in certain instances, client- or project-specific rules may not allow for their use.

If an employee chooses not to wear contact lenses, management shall assure that the appropriate frames or ophthalmic device attachments are obtained and provided at no cost to the employee.

6.4.3 Obstruction of Face Seal

Employees who wear respirators are required to be clean shaven to the extent that there is no obstruction between the wearer's skin and the facepiece. Trimmed mustaches and facial hair which does not interfere with the seal are allowable.

In addition, respirators shall not be worn when conditions prevent a good face-to-facepiece seal such as corrective lenses or goggles, or other personal protective equipment.

6.5 Instruction, Training, and Fit Test

6.5.1 Instruction and Training

The Training Department shall provide a standard respiratory protective equipment training program for use by qualified personnel such as the Health and Safety Representative or RPP Coordinator. The Training Department will support training at the project location if the project does not have the qualified personnel and/or the equipment to support its own program. As an alternative, the project location may use a respiratory manufacturer's training program if the program meets company requirements, a competent person conducts the training, adequate equipment is available for demonstration, and fit testing is conducted along guidelines established in this procedure. The Training Department must approve all alternative training methods.

The basic respirator training program shall include, as a minimum, the following:

- Training and annual retraining of employees in the selection, use, maintenance, and limitation of each respirator type used.
- Instruction on the nature of the respiratory hazards and potential health effects resulting from exposure.
- Opportunity for "hands on" experience with the respiratory protective equipment.
- Proper fitting, including demonstrations and practice in wearing, adjusting, and determining the fit of the respirator. A selection of respirators shall be available to determine the most comfortable respirator and the best fit.
- Instruction on how to test the face-to-facepiece seal.

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- A familiarization period of wear in ambient air.
- For APRs, wearing the respirator in a test atmosphere (typically irritant smoke) for qualitative fit testing. The qualitative fit test shall follow the guidelines outlined in Section 5.5.2.
- Training to recognize and cope with emergency situations (including respirator failure).
- Training and fit testing shall be repeated annually, unless specific OSHA regulations require a more frequent time period (e.g., asbestos, lead operations). Each person receiving training shall complete the Respirator Fit Test Form (Attachment 5).
- Training records will be maintained by the Training Department and the location Health and Safety Representative. On-site records of training and fit testing will be maintained as required by specific regulation (e.g., asbestos work) (refer to Section 5.8).
- It is the responsibility of the RPP Coordinator to verify that all project personnel meet the requirements of this RPP.

6.5.2 Fit Testing

Prior to the use of any negative or positive pressure tight-fitting facepiece, the employee must be fit tested.

- All employees assigned to operations requiring the use of respiratory protective equipment shall have been fit tested within 12 months, or as required by specific regulations (e.g., asbestos, lead operations). Fit test and qualification cards (or a copy of the completed Attachment 5) must be available during operations.
- The employee shall be fit tested with the same size and model as they are expected to wear.
- Qualitative fit test (QLFT) shall be used when a protection factor of 10 or less is required for a negative pressure respirator.
- Quantitative fit test (QNFT) shall be used when a protection factor of greater than 10 is required for a negative pressure respirator. When executing the QNFT, the acceptable test result is 100 for tight fitting half-facepiece respirators and 500 for full-facepiece respirators.
- Fit testing for tight-fitting atmosphere supplying respirators and tight-fitting APRs shall be in a negative pressure mode regardless of the mode of operation that is used for respiratory protection.
- Assessment of comfort shall be made after allowing adequate time for this evaluation. This evaluation shall include reviewing the following points with the employee: positioning of the mask on nose, room for eye protection if required, room to talk, and positioning of the mask on the face and cheeks.
- The following criteria shall be used to help determine the adequacy of the respirator fit: chin properly placed, strap tension, fit across the nose bridge, and tendency to slip.
- If physical obstruction (e.g., facial hair, eyeglasses) interferes with the face-to-facepiece seal, then it shall be altered or removed so as to eliminate any interference and allow for a satisfactory fit. If the employee refuses to alter the physical obstruction, then they shall be denied a satisfactory fit report and referred to his/her supervisor for consideration.
- The fit test protocol (Attachment 4) shall be followed. The Health and Safety Representative and Training Department shall determine which fit test protocol shall be followed depending upon the situation.

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6.6 Maintenance Program

Each RPP Coordinator is responsible for verifying the respirator maintenance program is implemented in an effective manner for the facility or project site, the working conditions, and the potential hazards involved. As a minimum, the following aspects must be implemented:

- Inspection
- Cleaning and sanitizing
- Repair
- Respirator storage
- Inspection and repair documentation, as required
- Compliance with manufacturer recommendations.

Detailed information regarding cleaning, inspection, maintenance, and storage is found in Attachment 7. The RPP Coordinator shall verify compliance with the maintenance program by periodic inspections and field audits.

6.6.1 Inspection

- All respiratory protective equipment systems shall be inspected by the wearer for defects and/or deterioration immediately prior to and after each use.
- Any defects shall be reported to their supervisor immediately and the respirator removed from use until it can be repaired or replaced.
- Respiratory protective equipment systems not used routinely (including all SCBAs and equipment designated only for emergency use) shall be inspected before and after each use and at least every 30 days. Cylinders shall be recharged whenever the pressure falls below 90 percent of the manufacturer's recommended pressure level. This inspection shall be documented by some method on the unit (i.e., tag). Records of inspections shall be kept through appropriate documentation. Attachment 6 provides an example of inspection documentation for SCBAs. At a minimum, these records will include: date, inspector, and any unusual finding or condition. Any repairs or modifications shall be documented in detail.
- General field inspection shall include a check of the following: tightness of all connections, facepiece, valves, and any connecting tubes or filtering elements.
- Employees who are manufacturer-qualified repair technicians shall be used for all maintenance beyond field inspections, tests, and user-performed cleaning.
- Air supplied respiratory systems shall be inspected by a manufacturer's authorized representative at the manufacturer's recommended schedule. Manufacturers typically require an annual flow test and a complete overhaul every 5 to 7 years.
- **Specific inspection procedures are outlined in Attachment 7.**

6.6.2 Cleaning and Sanitizing

Employees maintaining their own respirators shall be thoroughly briefed on how to clean and disinfect them. On projects where employees clean their own respirator, the generally accepted procedure involves washing with detergent and warm water using a soft brush, submersion in sanitizing agent, thoroughly rinsing in clean water, drying in a clean place, and storage in sealed

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plastic bags or equivalent. Precautions to be taken to prevent damage from rough handling during this procedure are detailed in Attachment 7.

At locations where employees share respirators, a centralized cleaning and maintenance facility with specialized equipment and/or materials and personnel trained in respirator maintenance must be established. Cleaning and inspection is primarily the responsibility of the user.

6.6.3 Repair

The company will only use respiratory protective equipment that is physically sound.

- If defects are found during any inspection, two remedies are possible. If parts and trained personnel are available, repair and/or adjustment may be made immediately. If parts or trained repair people are unavailable, the device shall be removed from service until it can be repaired. Under no circumstances shall a device that is known to be defective remain in service.
- Replacement or repair shall be done by adequately trained personnel. For negative pressure respirators, the Health and Safety Representative or RPP Coordinator may train or supervise personnel in the replacement of items such as inhalation/exhalation valves, head harness, cartridge adapters, and lenses. For air-supplied respirators, field repairs are limited to replacement of head harness and lenses. All other work must be completed by a factory-certified repair person.

Repair shall only be made with parts designed for the respirator. Substitution of parts from a different brand or type invalidates the respirator's approval and is prohibited.

6.6.4 Storage

- Respirators must be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture, damaging chemicals, and mechanical damage.
- Respirators shall be stored in such a manner that the facepiece, exhalation valve, and straps are not distorted.
- Respirators shall be stored in sealable containers (e.g., ziplock bags) after cleaning and disinfecting.
- The storage location of emergency respiratory protection shall be readily accessible and prominently identified.
- Respirators shall be stored in an area free of contamination.

6.7 Field Use

The following guidelines for the use of respirators (or equivalent) shall be incorporated into the Project HASP as appropriate. Additional guidelines may be required based on working conditions and hazards involved. Each location where respiratory protective equipment is required or worn shall include in the Project HASP justification for the selected respiratory protective equipment systems worn as outlined in Section 5.2 of this procedure.

6.7.1 General Requirements

The following general requirements shall be followed whenever respiratory protection is used:

- Employees shall be allowed to leave the regulated area to readjust the facepiece or to wash their faces and to wipe clean the facepieces of their respirators in order to minimize potential skin irritation associated with respirator use.

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- Respiratory protective equipment shall not be passed on from one person to another until it has been cleaned and sanitized, per program requirements.
- Respirators will be inspected, and a positive/negative pressure test performed prior to each use.
- Entry into oxygen-deficient (< 19.5 percent O₂) atmospheres, Immediately Dangerous to Life and Health (IDLH) atmospheres, or areas requiring EPA Level A protection is prohibited without the prior approval of the Vice President, Health and Safety or the CIH assigned to the business line.
- Head coverings such as Tyvek hoods shall not be allowed to pass between the face-to-facepiece seal.
- The harness straps of tight-fitting respirators shall not be positioned or worn over hard hats.

6.7.2 Specific Requirements

The following information details specific requirements by respirator class:

6.7.2.1 Air Purifying Systems

- When APRs are worn, new filter elements shall be installed at the beginning of operations. The filter elements shall be changed whenever the ESLI (color indicators) indicates that cartridge life has expired (e.g., mercury cartridges). When no ESLIs are available, filter replacement will be based on the calculations performed by the Health and Safety Representative. Additionally, the cartridges will be replaced if “breakthrough” is perceived or whenever an increase in breathing resistance is detected. In most cases, the cartridges will be replaced a minimum of once daily, usually at the end of the work shift.

6.7.2.2 Powered Air Purifying Systems

- When PAPRs are worn, employees shall change filter elements after each day’s activities. The filter elements shall be changed whenever the ESLI (color indicators) indicates that cartridge life has expired (e.g., mercury cartridges). When no ESLIs are available, filter replacement will be based on the calculations performed by the Health and Safety Representative. Additionally, the cartridges will be replaced if “breakthrough” is perceived or when airflow through filter elements decreases to an unacceptable level as indicated by the manufacturer’s test device.

6.7.2.3 Compressed Air

- Compressed air used for breathing shall meet at least the requirements of the specification for Grade D breathing air or better (D, E, or G; not A, K, or L) as described in the American National Standard Commodity Specification for Air, ANSI/CGA G-7.1-1989. Further information is provided in Attachment 7, Guide to Respiratory Protective Equipment Cleaning, Inspection, Maintenance, and Storage.
- Breathing air suppliers must provide certification of analysis stating conformance, as a minimum, to Grade D breathing air standards as previously referenced for each cylinder and/or air lot.
- Air delivered in bulk, e.g., tube trailers, shall have each tube or unit, or a representative number of tubes or units verified as to oxygen content prior to using that tube.
- Pure oxygen shall NOT be used at any time in open-circuit SCBAs or airline respirators.
- Breathing air cylinders shall be legibly identified with the word “AIR” by means of stenciling, stamping, or labeling as near to the valve end as practical.

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- Breathing air cylinders may be stored on their sides provided the valve caps are in place.

6.7.2.4 Supplied Air Breathing Systems

- Airline couplings shall be incompatible with outlets for other gas systems to prevent inadvertent servicing of airline respirators with nonrespirable gases or oxygen.
- Standard airline couplings for breathing air systems are Foster quick connect fittings with locking dots. Hansen quick connect fitting may also be used, but must not be used where they can be inadvertently actuated and disconnected. For example, Hansen fittings could be used at the regulator connection, but not on the airline unless protected from disconnection by some other means.
- The hose line length shall not exceed 300 feet from the air bank regulator to the user.
- No more than three connections, excluding the connection to the regulator and final connection to the respirator, shall be between the breathing air cylinders and the user.
- Breathing air hose shall be protected from direct contact with chemical materials which may permeate the hose. Acceptable methods of protection include suspension of the hose from the surface or covering with a commercially available sleeve or visqueen. Breathing air hose which has become contaminated will be removed from service and disposed of properly.
- The breathing air regulator shall be adjusted to provide air pressure as per the manufacturer's recommendations. For Survivair units, this pressure shall be between 80 to 125 psi pressure.
- Cascade systems shall be equipped with low pressure warning alarms or similar warning devices to indicate air pressure in the manifold below 500 psi.
- When a cascade system is used to supply breathing air, a worker outside the Exclusion Zone shall be assigned as safety standby within audible range of the low pressure alarm.
- When a cascade system is used to recharge SCBA air cylinders, it shall be equipped with a high-pressure supply hose and coupling rated at a capacity of at least 3,000 psi. The supply hose and coupling shall be relatively short (≤ 3 feet) and secured to prevent whipping when pressurized.
- Large supplied air cylinders shall be stored and handled to prevent damage to the cylinder or valve. Cylinders shall be stored upright with the protective valve cover in place and in such a way (e.g., supported with substantial rope or chain in the upper one-third of the cylinder, or in racks designed for the purpose) as to prevent the cylinder from falling. Cylinders shall not be dropped, dragged, rolled, or allowed to strike each other or to be struck violently. Cylinders shall never be exposed to temperatures exceeding 125 degrees F. Cylinders with visible external damage, evidence of corrosion, or exposure to fire shall not be accepted or used.
- Only cylinders within current hydrostatic test periods shall be used. For fiber wrapped bottles designated by the DOT-E label, hydrostatic testing shall be completed every 3 years. Maximum service life for these cylinders is 15 years. Steel or aluminum cylinders shall be hydrostatically tested every 5 years. No maximum service life is established for steel or aluminum cylinders.
- SCBAs shall only be used in the positive pressure mode when in the Exclusion Zone.
- Standby SCBA equipment must be present when air supply systems are used in IDLH or potentially IDLH atmospheres.

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6.7.2.5 Escape/Egress Units

- These respirators are intended for use in areas where escape with a short-term (5 minute) air supply is necessary. They may be used as adjuncts to airline respirators as a backup air supply, or as independent emergency devices in areas where respiratory protective equipment is not normally required.
- Appropriate training shall be accomplished and documented prior to assigning employees to tasks or locations subject to the use of these respirators.
- Escape/egress units (5-minute air supply) shall never be used as primary standby respirators for confined space entry.
- Escape/egress units shall never be used to enter, or continue working in, a hazardous atmosphere.

6.7.3 IDLH Atmospheres

For all IDLH atmospheres, the company shall ensure that:

- One employee or, when needed, more than one employee is located outside the IDLH atmosphere.
- Visual, voice, or signal line communication is maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere.
- The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue.
- The employer or designee is notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue.
- The employer or designee authorized to do so by the employer, once notified, provides necessary assistance appropriate to the situation.
- Employee(s) located outside the IDLH atmosphere are equipped with:
 - Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied air respirator with escape/egress unit.
 - Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry. Equivalent means of rescue can be considered.

6.8 Recordkeeping

The following documents must be part of the site recordkeeping program:

- Employees' medical clearances for respirator use
- Respirator training and fit testing forms.

6.9 Program Evaluation

This RPP shall be reviewed annually at the direction of the Vice President, Health and Safety.

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7. ATTACHMENTS

- Attachment 1, Responsibility Matrix
- Attachment 2, List of Approved Respiratory Protective Equipment
- Attachment 3, Respirator Type, Protection Factor, and Fit Testing Method
- Attachment 4, Mandatory Respirator Fit Test Protocol
- Attachment 5, Respirator Fit Test Form
- Attachment 6, Emergency Respiratory Protective Equipment Monthly Inspection Checklist
- Attachment 7, Guide to Respiratory Protective Equipment Cleaning, Inspection, Maintenance, and Storage

8. FORMS

9. RECORDS

- Respirator Fit Test Form
- Emergency Respiratory Protective Equipment Monthly Inspection Checklist

10. REVISION HISTORY AND APPROVAL

Revision Level	Revision Description	Responsible Manager
Revision Date		
00	Initial issue	Troy Allen
04/25/2002		
01	Modified format only to align with Governance Management framework.	Andrew Johnson
12/1/2011		

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**Attachment 1
Respiratory Matrix**

Action	Procedure Section	Responsible Party					
		Employee	Health and Safety Representative	Project/ Location Management	VP, Health and Safety	Training	RPP Coordinator
Issue, Revise, and Maintain Procedure	3.1				X		
Assure Proper Selection of Respirators	5.2.2		X				
Review Purchase Requests for Respiratory Equipment	5.2.3		X				
Conduct Fit Testing	5.4		X				X
Assure Compliance with RPP	5.4		X	X			X
Assure Training	5.4		X	X			X
Audit Program Compliance	5.4		X		X		X
Assist/Approve Local Training Program	5.4					X	
Maintenance Program	5.6	X	X	X			X
Field Use	5.7	X	X	X			X
Recordkeeping	5.8	X	X			X	X
Program Evaluation	5.9				X		

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Attachment 2
List of Approved Respiratory Protective Equipment

AIR PURIFYING RESPIRATORS (APR)					
Respirator Class	Respirator Type	Respiratory Performance	Manufacturer	Model Name	Model Number
Standard APR	Half-Face	Negative Pressure	Survivair	Blue 1	2100-10 S 2200-10 M 2300-10 L
			MSA	Comfo II	479529 S 479428 M 479530 L
	Full-Face	Negative Pressure	Survivair	20/20	202062 S 202072 M 202082 L
			MSA	Ultra Twin	480263 S 480259 M 480267 L
Powered APR	Hood	Continuous Positive Pressure	Survivair MSA	PAPR Optimair 6	5200-15 480251 S 480247 M 480255 L

SUPPLIED AIR RESPIRATORS (SAR)					
Respirator Class	Respirator Type	Respiratory Performance	Manufacturer	Model Name	Model Number
Airline SAR	Full-Face	Positive Pressure Demand	Survivair	Panther	P968455
			MSA	Premaire	497291
SCBA SAR	Full-Face	Positive Pressure Demand	Survivair MSA	Cougar MMR WorkMask 2216	P 9643310 Varies on Components
Emergency	Escape/Egress Unit	Continuous Flow	Survivair	5 min. EEGA	9750870
			MSA	Custom Air V	484353



Title:
Respiratory Protection Program

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Attachment 3
Respirator Type, Protection Factor, and Fit Testing Method

Respirator Type	Protection Factor	QLFT	QNFT
Half-Face, Negative Pressure (<100 Fit Factor) ¹	10	Yes	Yes
Full-Face, Negative Pressure (<100 Fit Factor) Used in Atmosphere up to 10 Times the PEG	10	Yes	Yes
Full-Face, Negative Pressure (<100 Fit Factor) Used in Atmosphere Over 10 Times the PEG ²	50	No	Yes
PAPR	100	Yes	Yes
SCBA/SAR Used in Positive Pressure (Pressure Demand Mode)	10,000	Yes	Yes

Footnotes:

1. If quantitatively fit tested, the device must demonstrate a fit factor of at least 100.
2. If quantitatively fit tested, the device must demonstrate a fit factor of at least 500.

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Attachment 4
Mandatory Respiratory Fit Test Protocol

OSHA-Accepted Fit Test Protocols

A. Fit Testing Procedures - General Requirements

The company shall conduct fit testing using the following procedures. The requirements in this attachment apply to all OSHA-accepted fit test methods, both QLFT and QNFT. There are several OSHA-accepted fit test protocols for QLFT. This procedure includes only the irritant smoke protocol since it requires less equipment and is more practical for field use.

1. The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.
2. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension, and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, because it is only a review.
3. The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.
4. The test subject shall be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit.
5. The more acceptable facepieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in the following Item A.6. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.
6. Assessment of comfort shall include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:
 - a) Position of the mask on the nose;
 - b) Room for eye protection;
 - c) Room to talk; and
 - d) Position of mask on face and cheeks.
7. The following criteria shall be used to help determine the adequacy of the respirator fit:
 - a) Chin properly placed;
 - b) Adequate strap tension, not overly tightened;
 - c) Fit across nose bridge;
 - d) Respirator of proper size to span distance from nose to chin;
 - e) Tendency of respirator to slip; and
 - f) Self-observation in mirror to evaluate fit and respirator position.

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8. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and retested if the test subject fails the user seal check tests.
9. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache, or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.
10. If a test subject exhibits difficulty in breathing during the tests, he/she shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing his/her duties.
11. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.
12. *Exercise Regimen:* Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.
13. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit.
14. *Test Exercises:* The following test exercises are to be performed for all fit testing methods prescribed in this attachment, except for the controlled negative pressure (CNP) method. A separate fit testing exercise regimen is contained in the CNP protocol.

Each test exercise shall be performed for one minute, except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

The test subject shall perform exercises, in the test environment, in the following manner:

- a) *Normal Breathing:* In a normal standing position, without talking, the subject shall breathe normally.
- b) *Deep Breathing:* In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.
- c) *Turning Head Side to Side:* Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.
- d) *Moving Head Up and Down:* Standing in place, the subject shall slowly move his/her head up and down for 1 minute. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling). After the moving head up and down exercise, the subject shall hold his/her head full up and hold his/her breath for 10 seconds during test measurement. Next, the subject shall hold his/her head full down and hold his/her breath for 10 seconds during test measurement.
- e) *Talking:* The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song for 1 minute. After the talking exercise, the

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subject shall hold his/her head straight ahead and hold his/her breath for 10 seconds during the test measurement.

Rainbow Passage:

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

- f) *Grimace*: The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT.)
- g) *Bending Over*: The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.
- h) *Normal Breathing*: Same as Item A.14.a.

B. Qualitative Fit Test (QLFT) Protocols


1. General:

- a) The employer shall ensure that persons administering QLFT are able to perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order.
- b) The employer shall ensure that QLFT equipment is kept clean and well maintained so as to operate within the parameters for which it was designed.

2. Irritant Smoke (Stannic Chloride) Protocol: This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

a) General Requirements and Precautions:

- 1. The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).
- 2. Only stannic chloride smoke tubes shall be used for this protocol.
- 3. No form of test enclosure or hood for the test subject shall be used.
- 4. The smoke take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject.
- 5. The fit test shall be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the buildup of irritant smoke in the general atmosphere.


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- b) Sensitivity Screening Check: The person to be tested must demonstrate his/her ability to detect a weak concentration of the irritant smoke.
 1. The test operator shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb. The test operator shall cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.
 2. The test operator shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his/her eyes closed while the test is performed.
 3. The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine if he/she can detect the irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he/she can detect it.
- c) Irritant Smoke Fit Test Procedure:
 1. The person being fit tested shall don the respirator without assistance, and perform the required user seal check(s).
 2. The test subject shall be instructed to keep his/her eyes closed.
 3. The test operator shall direct the stream of irritant smoke from the smoke tube toward the face seal area of the test subject, using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the facepiece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within 6 inches of the respirator.
 4. If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.
 5. The exercises identified in Item A.14 of this attachment shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator at a distance of six inches.
 6. If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being retested must repeat the entire sensitivity check and fit test procedure.
 7. Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a second sensitivity screening check, with the smoke from the same smoke tube used during the fit test, once the respirator has been removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.
 8. If a response is produced during this second sensitivity check, then the fit test is passed.

C. Quantitative Fit Test (QNFT) Protocols

The following quantitative fit testing procedures have been demonstrated to be acceptable: quantitative fit testing using a nonhazardous test aerosol (such as corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS], or sodium chloride) generated in a test chamber, and employing instrumentation to quantify the fit of the respirator; quantitative fit testing using ambient aerosol as the test agent and appropriate instrumentation (condensation nuclei counter) to quantify the respirator fit; quantitative fit testing using controlled

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negative pressure and appropriate instrumentation to measure the volumetric leak rate of a facepiece to quantify the respirator fit.

1. General:

- a) The employer shall ensure that persons administering QNFT are able to calibrate equipment and perform tests properly, recognize invalid tests, calculate fit factors properly, and ensure that test equipment is in proper working order.
- b) The employer shall ensure that QNFT equipment is kept clean, and is maintained and calibrated according to the manufacturer's instructions so as to operate at the parameters for which it was designed.

2. Ambient Aerosol Condensation Nuclei Counter (CNC) Quantitative Fit Testing Protocol:

The ambient aerosol CNC quantitative fit testing (Portacount®) protocol quantitatively fit tests respirators with the use of a probe. The probed respirator is only used for quantitative fit tests. A probed respirator has a special sampling device, installed on the respirator, that allows the probe to sample the air from inside the mask. A probed respirator is required for each make, style, model, and size that the employer uses and can be obtained from the respirator manufacturer or distributor. The CNC instrument manufacturer, TSI Inc., also provides probe attachments (TSI sampling adapters) that permit fit testing in an employee's own respirator. A minimum fit factor pass level of at least 100 is necessary for a half-mask respirator and a minimum fit factor pass level of at least 500 is required for a full facepiece negative pressure respirator. The entire screening and testing procedure shall be explained to the test subject prior to conducting the screening test.

a) Portacount® Fit Test Requirements:

1. Check the respirator to make sure the sampling probe and line are properly attached to the facepiece and that the respirator is fitted with a particulate filter capable of preventing significant penetration by the ambient particles used for the fit test (e.g., NIOSH 42 CFR 84 Series 100, Series 99, or Series 95 particulate filter) per manufacturer's instruction.
2. Instruct the person to be tested to don the respirator for five minutes before the fit test starts. This purges the ambient particles trapped inside the respirator and permits the wearer to make certain the respirator is comfortable. This individual shall already have been trained on how to wear the respirator properly.
3. Check the following conditions for the adequacy of the respirator fit: chin properly placed; adequate strap tension, not overly tightened; fit across nose bridge; respirator of proper size to span distance from nose to chin; tendency of the respirator to slip; and self-observation in a mirror to evaluate fit and respirator position.
4. Have the person wearing the respirator do a user seal check. If leakage is detected, determine the cause. If leakage is from a poorly fitting facepiece, try another size of the same model respirator, or another model of respirator.
5. Follow the manufacturer's instructions for operating the Portacount® and proceed with the test.
6. The test subject shall be instructed to perform the exercises in Item A.14 of this attachment.
7. After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried.

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b) Portacount® Test Instrument:

1. The Portacount® will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is what counts. The Pass or Fail message will indicate whether or not the test was successful. If the test was a Pass, the fit test is over.
 2. Since the pass or fail criterion of the Portacount® is user programmable, the test operator shall ensure that the pass or fail criterion meet the requirements for minimum respirator performance in this attachment.
 3. A record of the test needs to be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style, and size of respirator used; and date tested.
3. Controlled Negative Pressure (CNP) Quantitative Fit Testing Protocol—The CNP protocol provides an alternative to aerosol fit test methods. The CNP fit test method technology is based on exhausting air from a temporarily sealed respirator facepiece to generate and then maintain a constant negative pressure inside the facepiece. The rate of air exhaust is controlled so that a constant negative pressure is maintained in the respirator during the fit test. The level of pressure is selected to replicate the mean inspiratory pressure that causes leakage into the respirator under normal use conditions. With pressure held constant, air flow out of the respirator is equal to air flow into the respirator. Therefore, measurement of the exhaust stream that is required to hold the pressure in the temporarily sealed respirator constant yields a direct measure of leakage air flow into the respirator. The CNP fit test method measures leak rates through the facepiece as a method for determining the facepiece fit for negative pressure respirators. The CNP instrument manufacturer, Dynatech Nevada, also provides attachments (sampling manifolds) that replace the filter cartridges to permit fit testing in an employee's own respirator. To perform the test, the test subject closes his/her mouth and holds his/her breath, after which an air pump removes air from the respirator facepiece at a pre-selected constant pressure. The facepiece fit is expressed as the leak rate through the facepiece, expressed as milliliters per minute. The quality and validity of the CNP fit tests are determined by the degree to which the in-mask pressure tracks the test pressure during the system measurement time of approximately five seconds. Instantaneous feedback in the form of a real-time pressure trace of the in-mask pressure is provided and used to determine test validity and quality. A minimum fit factor pass level of 100 is necessary for a half-mask respirator and a minimum fit factor of at least 500 is required for a full facepiece respirator. The entire screening and testing procedure shall be explained to the test subject prior to conducting the screening test.


a) CNP Fit Test Requirements:

1. The instrument shall have a non-adjustable test pressure of 15.0 mm water pressure.
2. The CNP system defaults selected for test pressure shall be set at 15 mm of water (-0.58 inches of water) and the modeled inspiratory flow rate shall be 53.8 liters per minute for performing fit tests.

(Note: CNP systems have built-in capability to conduct fit testing that is specific to unique work rate, mask, and gender situations that might apply in a specific workplace. Use of system default values, which were selected to represent respirator wear with medium cartridge resistance at a low-moderate work rate, will allow inter-test comparison of the respirator fit.)
3. The individual who conducts the CNP fit testing shall be thoroughly trained to perform the test.
4. The respirator filter or cartridge needs to be replaced with the CNP test manifold. The inhalation valve downstream from the manifold either needs to be temporarily removed or propped open.
5. The test subject shall be trained to hold his/her breath for at least 20 seconds.

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6. The test subject shall don the test respirator without any assistance from the individual who conducts the CNP fit test.
 7. The QNFT protocol shall be followed according to Item C.1 of this attachment with an exception for the CNP test exercises.
- b) CNP Test Exercises:
1. Normal Breathing: In a normal standing position, without talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject needs to hold head straight ahead and hold his/her breath for 10 seconds during the test measurement.
 2. Deep Breathing: In a normal standing position, the subject shall breathe slowly and deeply for 1 minute, being careful not to hyperventilate. After the deep breathing exercise, the subject shall hold his/her head straight ahead and hold his/her breath for 10 seconds during test measurement.
 3. Turning Head Side to Side: Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side for 1 minute. The head shall be held at each extreme momentarily so the subject can inhale at each side. After the turning head side to side exercise, the subject needs to hold head full left and hold his/her breath for 10 seconds during test measurement. Next, the subject needs to hold head full right and hold his/her breath for 10 seconds during test measurement.
 4. Moving Head Up and Down: Standing in place, the subject shall slowly move his/her head up and down for 1 minute. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling). After the moving head up and down exercise, the subject shall hold his/her head full up and hold his/her breath for 10 seconds during test measurement. Next, the subject shall hold his/her head full down and hold his/her breath for 10 seconds during test measurement.
 5. Talking: The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song for 1 minute. After the talking exercise, the subject shall hold his/her head straight ahead and hold his/her breath for 10 seconds during the test measurement.
 6. Grimace: The test subject shall grimace by smiling or frowning for 15 seconds.
 7. Bending Over: The test subject shall bend at the waist as if he/she were to touch his/her toes for 1 minute. Jogging in place shall be substituted for this exercise in those test environments such as shroud-type QNFT units that prohibit bending at the waist. After the bending over exercise, the subject shall hold his/her head straight ahead and hold his/her breath for 10 seconds during the test measurement.
 8. Normal Breathing: The test subject shall remove and re-don the respirator within a one-minute period. Then, in a normal standing position, without talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject shall hold his/her head straight ahead and hold his/her breath for 10 seconds during the test measurement. After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of a respirator shall be tried.

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c) CNP Test Instrument:

1. The test instrument shall have an effective audio warning device when the test subject fails to hold his/her breath during the test. The test shall be terminated whenever the test subject failed to hold his/her breath. The test subject may be refitted and retested.
2. A record of the test shall be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style, and size of respirator used; and date tested.



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**Attachment 5
Respiratory Fit Test Form**

NAME (Please Print): _____ SIGNATURE: _____
SSN: _____ - _____ - _____ HOME DEPT: _____ DATE: _____
CONDUCTED BY: _____ LOCATION: _____

FIT TEST PROTOCOL

QUANTITATIVE:

Fit Factor _____

QUALITATIVE:

Irritant Smoke:

Other (specify): :

**TYPE OF RESPIRATOR
(Circle Appropriate One)**

APR/HF
SAR/EGS

APR/FF
PAPR

SCBA
OTHER

Respirator Manufacturer: _____

Model: _____

Size _____

INITIAL:

1. I understand why respiratory protection is needed and where and when it should be used.
2. I know how to use this respirator properly.
3. I know how to clean and inspect this respirator.
4. I understand the limitations and restrictions of this respirator.
5. I wore this respirator in normal air and performed the user seal.
6. I wore this respiratory equipment in a test atmosphere.
7. I understand that a good gas-tight faceseal cannot be achieved with obstructions such as facial hair or glasses.
8. I understand that corrective lenses compatible with the full facepiece are available by my manager.

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**Attachment 6
Emergency Respiratory Protective Equipment
Monthly Inspection Checklist**

INSPECTED BY (Print): _____


DATE: _____

BACKPACK #: _____

AIR CYLINDER #: _____

Protection Factor		QLFT	PASS	FAIL
A Backpack and Harness Assembly	1. Straps	Inspect for complete set	<input type="checkbox"/>	<input type="checkbox"/>
		Inspect for damaged straps	<input type="checkbox"/>	<input type="checkbox"/>
	2. Buckles	Inspect for mating ends	<input type="checkbox"/>	<input type="checkbox"/>
		Check locking function	<input type="checkbox"/>	<input type="checkbox"/>
	3. Backplate and Cylinder Lock	Inspect backplate for cracks, missing screws/rivets	<input type="checkbox"/>	<input type="checkbox"/>
		Inspect cylinder hold down strap	<input type="checkbox"/>	<input type="checkbox"/>
		Inspect strap tightener	<input type="checkbox"/>	<input type="checkbox"/>
B Cylinder and Cylinder Valve Assembly	1. Cylinder	Cylinder tight to backplate	<input type="checkbox"/>	<input type="checkbox"/>
		Current Hydrostatic Test	<input type="checkbox"/>	<input type="checkbox"/>
		Inspect cylinder for dents, gouges	<input type="checkbox"/>	<input type="checkbox"/>
		Is cylinder at least 90% filled?	<input type="checkbox"/>	<input type="checkbox"/>
	2. Head and Valve Assembly	Inspect cylinder valve lock for presence	<input type="checkbox"/>	<input type="checkbox"/>
		Inspect cylinder gauge for condition	<input type="checkbox"/>	<input type="checkbox"/>
		Proper function of cylinder valve lock	<input type="checkbox"/>	<input type="checkbox"/>
		Test for cylinder leakage	<input type="checkbox"/>	<input type="checkbox"/>
C Regulator and High Pressure Hose	1. High Pressure Hose and Connector	Leakage in hose	<input type="checkbox"/>	<input type="checkbox"/>
		Leakage in hose to cylinder connector	<input type="checkbox"/>	<input type="checkbox"/>
	2. Regulator and Low Pressure Alarm	Read regulator gauge (at least 1,000 psi)	<input type="checkbox"/>	<input type="checkbox"/>
		Low pressure alarm sounds at 500 psi	<input type="checkbox"/>	<input type="checkbox"/>
		Test integrity of diaphragm	<input type="checkbox"/>	<input type="checkbox"/>
		Test for positive pressure	<input type="checkbox"/>	<input type="checkbox"/>
		Test bypass system	<input type="checkbox"/>	<input type="checkbox"/>
D Facepiece and Corrugated Breathing Tube	1. Facepiece	Inspect harness for deterioration	<input type="checkbox"/>	<input type="checkbox"/>
		Inspect facepiece body for deterioration	<input type="checkbox"/>	<input type="checkbox"/>
		Inspect lens	<input type="checkbox"/>	<input type="checkbox"/>
		Inspect exhalation valve	<input type="checkbox"/>	<input type="checkbox"/>
	2. Breathing Tube and Connector	Inspect breathing tube for deterioration	<input type="checkbox"/>	<input type="checkbox"/>
		Inspect connector for threads and gasket	<input type="checkbox"/>	<input type="checkbox"/>
	3. Leak Test and Cleaning	Perform negative pressure test on facepiece/ breathing tube	<input type="checkbox"/>	<input type="checkbox"/>
		Clean and sanitize facepiece	<input type="checkbox"/>	<input type="checkbox"/>

NOTE: Any item marked "Fail" will place the equipment out of service until repaired or replaced.

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Attachment 7

Guide to Respiratory Protective Equipment: Cleaning, Inspection, Maintenance, and Storage

A program for the maintenance of respirators shall include the following:

- Cleaning and sanitizing
- Inspection for defects
- Maintenance and repair
- Storage
- Assurance of breathing air quality.

The following maintenance, inspection, and storage program is recommended.

1. Cleaning and Sanitizing.

Respirators issued to an individual shall be cleaned and sanitized regularly. Each respirator shall be cleaned and sanitized before being worn by different individuals. Respirators intended for emergency use shall be cleaned and sanitized after being used. The following shall be completed in addition to the manufacturer's instruction for cleaning:

- a) Remove, when necessary, the following components of respiratory inlet covering assemblies before cleaning and sanitizing:
 1. Filters, cartridges, canisters
 2. Speaking diaphragms
 3. Valve assemblies
 4. Any components recommended by the respirator manufacturer.
- b) Wash respiratory inlet covering assemblies in warm (43 degrees C or 110 degrees F maximum temperature) cleaner sanitizer solution. A stiff bristle (not wire) brush may be used to facilitate removal of dirt or other foreign material.
- c) Rinse the respirator inlet covering assemblies in clean, warm (43 degrees C or 110 degrees F maximum temperature) water.
- d) Drain all water, and air dry the respiratory inlet covering assemblies.
- e) Clean and sanitize all parts removed from the respiratory inlet covering assemblies as recommended by the manufacturers
- f) If necessary to remove foreign material, hand wipe respiratory inlet covering assemblies, all parts, and all gasket-and valve-sealing surfaces with damp, lint-free cloth.
- g) Inspect parts and replace any that are defective.
- h) Reassemble parts on respirator inlet covering assemblies.
- i) Visually inspect and, where possible, test parts and respirator assemblies for proper function.
- j) Place assembled respirators in appropriate containers for storage.

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Machines may be used to expedite the cleaning, sanitizing, rinsing, and drying of large numbers of respirators. Extreme care shall be taken to ensure against tumbling, agitation, or exposure to temperatures above those recommended by the manufacturer (normally 43 degrees C or 100 degrees F maximum), as these conditions are likely to result in damage to the respirators.

Ultrasonic cleaners, clothes washing machines, dishwashers, and clothes dryers have been specially adapted and successfully used for cleaning and drying respirators.

Cleaner sanitizers that effectively clean the respirator and contain a bactericidal agent are commercially available. The bactericidal agent frequently used is a quaternary ammonium compound. Strong cleaning and sanitizing agents and many solvents can damage rubber or elastomeric respirator parts. These materials must be used with caution.

Alternatively, respirators may be washed in a detergent solution and then sanitized by immersion in a sanitizing solution. Some sanitizing solutions that have proven effective are:

- a) a hypochlorite (bleach) solution (50 parts per million chlorine), 2-minute immersion;
- b) an aqueous iodine solution (50 parts per million of iodine), 2-minute immersion; or
- c) a quaternary ammonium solution (200 parts per million of quaternary ammonium compounds in water with less than 500 parts per million total hardness), 2-minute immersion.

Inflammation of the skin of the respirator user (dermatitis) may occur if the quaternary ammonium compounds are not completely rinsed from the respirator. The hypochlorite and iodine solutions are unstable and break down with time; they may cause deterioration of rubber or other elastomeric parts and may be corrosive to metallic parts. Immersion times should not be extended beyond the mentioned time periods, and the sanitizers shall be thoroughly rinsed from the respirator parts.

Respirators may become contaminated with toxic materials. If the contamination is light, normal cleaning procedures should provide satisfactory decontamination; otherwise, separate decontamination steps may be required before cleaning.

2. Inspection

The user shall inspect the respirator immediately prior to each use to ensure that it is in proper working condition. After cleaning and sanitizing, each respirator shall be inspected to determine if it is in proper working condition, if it needs replacement parts or repairs, or if it should be discarded. Each respirator stored for emergency or rescue use shall be inspected at least monthly.

Respirator inspection shall include a check for tightness of connections; for the condition of the respiratory inlet covering, head harness, valves, connecting tubes, harness assemblies, hoses, filters, cartridges, canisters, end-of-service indicators, electrical components, and shelf-life date(s); and for the proper function of regulators, alarms, and other warning systems. Each rubber or other elastomeric part shall be inspected for pliability and signs of deterioration. Each air and oxygen cylinder shall be inspected to ensure that it is fully charged according to the manufacturer's instructions.

A record of inspection dates shall be kept for each respirator maintained for emergency or rescue use. Respirators that do not meet applicable inspection criteria shall be immediately removed from service (a temporary replacement assigned) and repaired or permanently replaced.

Inspection of hoop-wrapped air cylinders will follow the recommendations set forth in the Compressed Gas Association, Inc. publication CGA C-6.2-1988, "Guidelines for Visual Inspection & Requalification of Fiber Reinforced High Pressure Cylinders," and will be examined for the following five types of damage:

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- Abrasion is damage caused by wearing, grinding, or rubbing away by friction. Abrasions less than 0.005 inch (0.127 mm) deep are acceptable and should have no adverse effects on the safety of the cylinder. Abrasions with isolated groups of fibers exposed or flat spots with a depth greater than 0.005 inch (0.127 mm) but less than 0.0075 inch (0.191 mm) are acceptable if the damage is repaired. Cylinders abraded in excess of 0.0075 inch (0.191 mm) should be taken out of service until professionally inspected.
- Cuts are damage inflicted by a sharp object. Cuts or scratches less than 0.005 inch (0.127 mm) deep are acceptable regardless of length, number, or direction. For cuts greater than 0.005 inch (0.127 mm) deep and up to a depth of 0.015 inch (0.038 mm) with a maximum 1- or 2-inch (25.4 mm or 50.8 mm) length transverse to the fiber direction, the cylinder should be removed from service until repaired. Cylinders with cuts greater than 0.015 inch (0.038 mm) with a maximum greater than 2 inches (50.8 mm) length transverse to the fiber direction or with bare metal showing through must be condemned.
- Impact damage is caused by a cylinder striking or being struck by another object. Impact damage is considered slight if a frosted area is noted in the impact area. These cylinders may be returned to service. Impact damage is severe if evidence of fiber cutting, delamination, and possible structural damage is apparent. Cylinders sustaining severe impact damage should be evaluated using the guidelines for cuts and structural damage.
- Structural damage is damage which causes a visual change in original cylinder configuration. This change can include any evidence of bulges, a cocked end fitting, concave areas on the domes or on the cylinder section, or, if by visual inspection of the cylinder interior, there is evidence of damage involving deformation of the liner. Structurally damaged cylinders must be immediately removed from service and condemned.
- Heat or fire damage to a cylinder is evident by discoloration, charring, or burning of the composite, labels, paint, or plastic components of the valve. Such damage would cause a cylinder to be removed from service and condemned. Note: If the cylinder is only soiled from smoke or other debris and is found to be intact underneath, it may be returned to service.

3. Maintenance and Repair

Replacement of parts or repairs shall be done only by persons trained in proper respirator maintenance and assembly. Replacement parts shall be only those designated for the specific respirator repaired. Reducing or admission valves, regulators, and alarms shall be adjusted or repaired by the respirator manufacturer or a technician trained by the manufacturer. Instrumentation for valve, regulator, and alarm adjustments and tests should be calibrated to a standard traceable to the National Institute of Standards and Technology (NIST), at a minimum of every 3 years.

4. Storage

Respirators shall be stored in a manner that will protect them against physical and chemical agents such as vibration, shocks, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respirators shall be stored to prevent distortion of rubber or other elastomeric parts. Respirators shall not be stored in such places as lockers and tool boxes, unless they are protected from contamination, distortion, and damage. Emergency and rescue respirators that are placed in the work areas shall be quickly accessible at all times, and the storage cabinet or container in which they are stored shall be clearly marked.

	Title: Respiratory Protection Program	No: EIG-HS-601 Attachment No. 7
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5. Assurance of Breathing Air Quality

Compressed gaseous air, compressed gaseous oxygen, liquid air, and liquid oxygen used for respiration shall be of high purity. Compressed gaseous air shall meet at least the requirements of the specification for Type I-Grade D breathing air, and liquid air shall meet at least the requirements for Type II-Grade B breathing air as described in ANSI/CGA G-7.11989.

The CGA designation for Grade D and Grade E breathing air is as follows:

- Grade D breathing air, as per ANSI/CGA G-7.1-1989, shall contain between 19.5 and 23.5 percent oxygen with the balance predominantly nitrogen, a maximum of 5 mg/m³ oil (condensed), a maximum of 10 ppm carbon monoxide, no pronounced odor, and a maximum of 1,000 ppm carbon dioxide.
- Grade E breathing air, as per ANSI/CGA G-7.1-1989, shall contain between 20 and 22 percent oxygen with the balance predominantly nitrogen, a maximum of 5 mg/m³ oil (condensed), a maximum of 10 ppm carbon monoxide, no pronounced odor, a maximum of 500 ppm carbon dioxide, and 25 ppm total hydrocarbon content (as methane).
- Note: The quality verification for oil is not required for synthesized air whose oxygen and nitrogen components are produced by air liquefaction. Carbon monoxide quality verification is not required for Grade D breathing air if synthesized air when nitrogen component was previously analyzed and meets National Foundry (NF) specification and when the oxygen component was produced by air liquefaction and meets United States Pharmacopeia (USP) specification.

Compressed gaseous air may contain low concentrations of oil introduced from equipment during processing or normal operation. If high-pressure oxygen passes through an oil- or grease-coated orifice, an explosion or fire may occur. Therefore, compressed gaseous oxygen shall not be used in supplied air respirators or in open-circuit type self-contained breathing apparatus that have previously used compressed air. Oxygen concentrations greater than 23.5 percent shall be used only in equipment designed for oxygen service or distribution.

The dew point of air used to recharge self-contained breathing apparatus shall be –65 degrees F or lower (less than 25 ppm water vapor). The driest air obtainable (dew point of –100 degrees F or lower) should be used for recharging SCBA cylinders to be used in environments with ambient temperatures below –25 degrees F. The dew point of breathing air used with supplied air respirators should be lower than the lowest ambient temperature to which any regulator or control valve on the respirator or air-supplied system will be exposed.

Breathing air couplings shall be incompatible with outlets for nonrespirable plant air or other gas systems to prevent inadvertent servicing of supplied air respirators with nonrespirable gases. **It is recommended that Foster or Hansen fittings be reserved for breathing air systems.** Breathing air outlets shall be labeled.

Breathing air may be supplied to supplied air respirators from cylinders or air compressors. Cylinders shall be tested and maintained in accordance with applicable DOT specifications for shipping containers (49 CFR 173 and 178). Breathing gas containers shall be marked in accordance with ANSI/CGA C-4-1990. Specific test recommendations for purchased breathing air are given in the following table.

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Method of Preparation	Analysis Recommended
Compression: Supplier does not fill cylinders with any other gases.	Check 10% of cylinders from each lot for ppm CO and odor.
Compression: Supplier fills cylinders with gases other than air.	Analyze all cylinders for percent oxygen. Check 10% of cylinders from each lot for ppm CO and odor.
Reconstitution.	Analyze all cylinders for percent oxygen. Check 10% of cylinders from each lot for ppm CO and odor.

A compressor shall be constructed so as to avoid entry of contaminated air. For all air compressors, including portable types, the air intake location shall be carefully selected, and monitored closely to ensure continued quality of air supply to the compressor. The system shall be equipped as necessary with a suitable in-line air-purifying sorbent bed and filter to further assure breathing air quality. Maintenance and replacement/refurbishment of compressor and associated air-purifying/filter media shall be performed periodically, by trained personnel following manufacturer's recommendations and instructions.

As part of acceptance testing, and prior to initial use, representative sampling of the compressor air output shall be performed to ensure that it complies with the requirements in Paragraph 1 of this section. To ensure a continued high-quality air supply, and to account for any distribution system contaminant input, a representative sample should be taken at distribution supply points. Samples should be collected on a periodic basis, as directed by the Program Coordinator. Specific test recommendations are given in the following table.

Type/Sample	Oil Lubricated	Non-Oil Lubricated	Combustion Engine Powered
Water Vapor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Carbon Monoxide	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Condensed Hydrocarbon	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Carbon Dioxide			<input checked="" type="checkbox"/>
Odor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

NOTES:

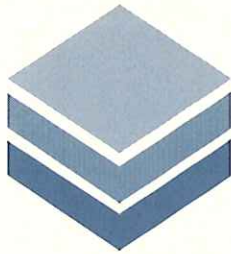
1. When using air compressors, intake location shall be carefully selected and monitored closely to ensure air supplied to the compressor is of adequate quality.
2. No frequency for periodic checks of air quality is specified, due to wide variation in equipment types, use, working environments, and operating experience.
3. Continuous monitoring of temperature and carbon monoxide are not required.
4. For non-oil lubricated compressors that operate at less than 35 psi, no sampling for water is required.
5. These requirements apply to systems designed for breathing air, other air-supply systems need to be evaluated on a case-by-case basis for the type and frequency of testing.

Further details on sources of compressed air and its safe use can be found in CGA G-7-1988.

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Enclosure C

Asbestos Certifications



M·E·T·A
Mayhew Environmental Training Associates
I N C O R P O R A T E D

Certificate # 7ME12041201AMPR009

This is to certify that

George Csordas

*has on 12/04/2012, in Nashville, TN
completed the requirements for asbestos accreditation under Section 206 of TSCA Title II, 15 U.S.C. 2646*

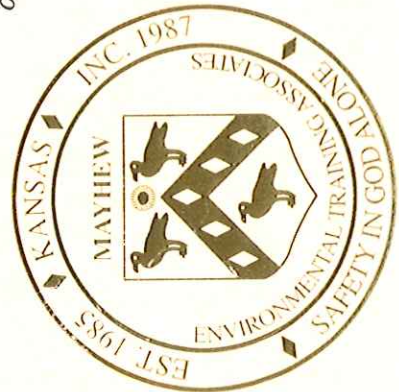
AHERA Asbestos Management Planner Refresher Course*

*as approved by the U.S.E.P.A. under 40 C.F.R. 763 (AHERA)
on 12/04/2012 - 12/04/2012 and passed the associated examination on 12/04/2012
with a score of 70% or better
CM = 0.50 Pts.*

* It has been verified that the above student has completed the required
Asbestos Building Inspector Course

Accreditation Expires: 12/4/13

META - P.O. Box 786 - Lawrence KS 66044 - 800-444-6382

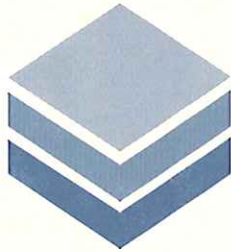


Dean C. Althage

Instructor
Dean Althage

Thomas Bradford Mayhew

President
Thomas Bradford Mayhew



M·E·T·A
Mayhew Environmental Training Associates
I N C O R P O R A T E D

Certificate # 7ME03191204AS000002

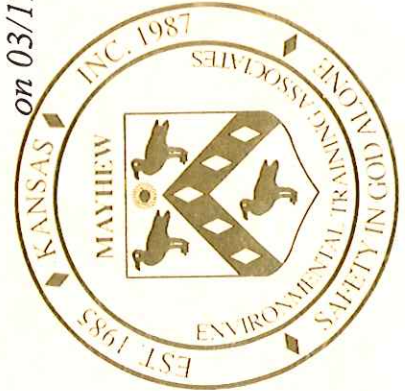
This is to certify that

George Csordas

*has on 03/23/2012, in Lawrence, KS
completed the requirements for asbestos accreditation under Section 206 of TSCA Title II, 15 U.S.C. 2646*

AHERA Asbestos Abatement Contractor/Supervisor Initial Course

*as approved by the U.S.E.P.A. under 40 C.F.R. 763 (AHERA)
on 03/19/2012 - 03/23/2012 and passed the associated examination on 03/23/2012
with a score of 70% or better
CM = 5.00 Pts.*



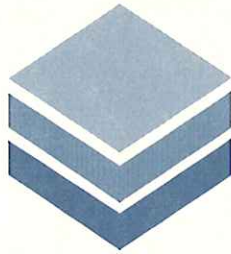
Robert J. Baer

Instructor
Robert Baer

Thomas Bradford Mayhew

Accreditation Expires: 3/23/13
President
Thomas Bradford Mayhew

META - P.O. Box 786 - Lawrence KS 66044 - 800-444-6382



M·E·T·A
Mayhew Environmental Training Associates
I N C O R P O R A T E D

Certificate # ME87255BDEC82545A

George Csordas

has on 2/8/2013 in Nashville, TN completed the requirements for asbestos accreditation under Section 206 of TSCA Title II, 15
USC 2646

Asbestos Abatement Contractor/Supervisor Refresher

as approved by the US EPA under 40 CFR 763 (AHERA)
from 2/8/2013 to 2/8/2013 and passed the associated exam on 2/8/2013 with a score of at least 70%



SSN: XXX-XX-5805
Expiration: 2/8/2014

P.O. Box 786 - Lawrence, KS. 66044 - 800.444.6382
www.metaenvironmental.net

Dean C. Althage

Dean Althage
Instructor

Thomas Mayhew

Thomas Mayhew
President

State of Ohio
Department of Health
Division of Quality Assurance - Asbestos Program

Asbestos Hazard Abatement Specialist



George N Csordas
CB & I
5050 Section Avenue
Cincinnati OH 45212

DOB: 04/23/1966

Certification Number Expiration Date
AS21894 **06/17/2014**

This certification is issued pursuant to Chapter 3710 of the
Revised Code and 3701-34 of the Ohio Administrative Code

Certification Card is
not valid if altered

State of Ohio
Department of Health
Division of Quality Assurance - Asbestos Program

Asbestos Hazard Evaluation Specialist



George N Csordas

**2887 Fender Road
Melbourne KY 41059**

DOB: 04/23/1966

Certification Number **ES3889** Expiration Date **02/12/2014**

This certification is issued pursuant to Chapter 3710 of the
Revised Code and 3701-34 of the Ohio Administrative Code

Certification Card is
not valid if altered

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Enclosure D

Medical Examination Certifications

Physician's Written Opinion

HAZWOPER & RESPIRATOR CLEARANCE

Periodic Field Labor FFD



Name: Robert Harrison

Date: 12.26.12

Social Security Number: XXX-XX-0684

On this date, CORE Health Networks has reviewed the above employee's recent medical examination and associated medical tests in accordance to OSHA 1910.120 pertaining to workers exposed to hazardous wastes and make the following statements:

1. Are there any detected medical conditions that would place the employee at increased risk of material impairment of the employee's health while working in the above job position?
☐ Yes ☒ No
2. Are there any recommended limitations upon the employee's assigned work?
☐ Yes ☒ No
3. Has the employee been informed of the examination results?
☒ Yes ☐ No

MEDICAL RECOMMENDATIONS FOR RESPIRATOR USE

On this date, CORE Health Networks has examined the above employee according to OSHA 1910.134 Federal Regulation pertaining to respiratory protection and make the following statements:

- ☒ No limitations have been placed on use of a respirator
- ☐ Medically not able to wear a respirator
- ☐ May wear a respirator for escape only
- ☐ These limitations have been placed on the use of a respirator

- ☒ A copy of this document has been provided to the employee
- ☐ A follow-up evaluation is to be scheduled on _____

A handwritten signature in black ink, appearing to read "W. Nassetta".

William J. Nassetta, MD, MPH

1.04.2013

Date

Employee Signature

Supervisor Signature

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Physician's Written Opinion

HAZWOPER & RESPIRATOR CLEARANCE

Periodic Field Labor FFD



Name: Braden Livingstone

Date: 1.22.13

Social Security Number: XXX-XX-6303

On this date, CORE Health Networks has reviewed the above employee's recent medical examination and associated medical tests in accordance to OSHA 1910.120 pertaining to workers exposed to hazardous wastes and make the following statements:

1. Are there any detected medical conditions that would place the employee at increased risk of material impairment of the employee's health while working in the above job position?
☐ Yes ☒ No
2. Are there any recommended limitations upon the employee's assigned work?
☐ Yes ☒ No
3. Has the employee been informed of the examination results?
☒ Yes ☐ No

MEDICAL RECOMMENDATIONS FOR RESPIRATOR USE

On this date, CORE Health Networks has examined the above employee according to OSHA 1910.134 Federal Regulation pertaining to respiratory protection and make the following statements:

- ☒ No limitations have been placed on use of a respirator
- ☐ Medically not able to wear a respirator
- ☐ May wear a respirator for escape only
- ☐ These limitations have been placed on the use of a respirator

- ☒ A copy of this document has been provided to the employee
- ☐ A follow-up evaluation is to be scheduled on _____

A handwritten signature in black ink, appearing to read "W. Nassetta".

William J. Nassetta, MD, MPH

1.29.2013

Date

Employee Signature

Supervisor Signature

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Physician's Written Opinion

HAZWOPER & RESPIRATOR CLEARANCE

Periodic Field Labor FFD



Name: Thomas Mallory

Date: 5.9.13

Social Security Number: XXX-XX-7894

On this date, CORE Health Networks has reviewed the above employee's recent medical examination and associated medical tests in accordance to OSHA 1910.120 pertaining to workers exposed to hazardous wastes and make the following statements:

1. Are there any detected medical conditions that would place the employee at increased risk of material impairment of the employee's health while working in the above job position?
☐ Yes ☒ No
2. Are there any recommended limitations upon the employee's assigned work?
☐ Yes ☒ No
3. Has the employee been informed of the examination results?
☒ Yes ☐ No

MEDICAL RECOMMENDATIONS FOR RESPIRATOR USE

On this date, CORE Health Networks has examined the above employee according to OSHA 1910.134 Federal Regulation pertaining to respiratory protection and make the following statements:

- ☒ No limitations have been placed on use of a respirator
- ☐ Medically not able to wear a respirator
- ☐ May wear a respirator for escape only
- ☐ These limitations have been placed on the use of a respirator

☒ A copy of this document has been provided to the employee

☐ A follow-up evaluation is to be scheduled on _____

A handwritten signature in black ink, appearing to read "W. Nassetta".

William J. Nassetta, MD, MPH

5.13.2013

Date

Employee Signature

Supervisor Signature

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