DRAFT

PROJECT SAFETY, HEALTH, AND ENVIRONMENTAL PLAN (PSHEP)

PARSONS

OWN ZERO

WEST LAKE LANDFILL SUPERFUND SITE
OU-1 REMEDIAL DESIGN
BRIDGETON, MISSOURI

MARCH 30, 2020

PARSONS

40561242

West Lake Landfill Superfund Site, Operable Unit 1 Remedial Design

Parsons
Project Safety, Health, and Environmental Plan

Revision Date: 3/30/2020

Contract Identification: JOB NO: 451662 - WEST LAKE LANDFILL OU-1
Client: West Lake Landfill Trust

Reviewer Name: Darrell Pruitt
Reviewer Title: SH&E Manager

Reviewer Signature: _____ Date Reviewed: _____

Approver Name: Ray D'Hollander
Approver Title: Project Manager

Approver Signature: _____ Date Approved: _____

This PSHEP covers Parsons and Parsons-contracted work performed at the West Lake Landfill Superfund Site Operable Unit 1 (OU-1).

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Acronyms and Abbreviations

Acronym	Definition
AHA	Activity Hazard Analysis
ANSI	American National Standards Institute
BS OHSAS	British Standard Occupational Health and Safety Assessment Series
BU	Business Unit
DI	Design Investigation
ESHARP	(Parsons) Environment, Safety, Health and Risk Program
ETA	estimated time of arrival
HAZWOPER	Hazardous Waste Operations and Emergency Response
ISO	International Organization for Standardization
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PM	Project Manager
PPE	Personal protective equipment
PSHEP	Project Safety, Health, and Environmental Plan
RD	Remedial Design
RODA	Record of Decision Amendment
SH&E	Safety, health and environmental
SHSO	Site Health and Safety Officer
SSHEP	(Contractor) site-specific safety, health, and environmental plan

Scope of Work

The Scope of the Project Safety, Health, and Environmental Plan (PSHEP) is presented in the Remedial Design Statement of Work, Operable Unit 1 (OU-1) West Lake Landfill Superfund Site, dated April 2019. Specifically, the PSHEP scope of work is focused on collecting additional information necessary to design and implement the Record of Decision Amendment (RODA) remedy by conducting additional field investigations in support of a Design Investigation (DI). Additional activities may be authorized following the Remedial Design (RD). This PSHEP will be modified accordingly should the scope of work change. Activities covered by this PSHEP include:

- Drilling to sample subsurface media in and around the relevant portions of the West Lake Landfill Superfund Site, and associated land-clearing and survey;
- Using downhole instrumentation and analysis of borings collected in Areas 1 and 2 of the West Lake Landfill OU-1;
- Sampling soil using hand tools in the Buffer Zone and Lot 2A2;
- Sampling surface water and sediment from Areas 1 and 2;
- Performing waste characterization sampling including soil boring spoils, decontamination water, and contaminated personal protective equipment (PPE) and sampling materials;
- Decontaminating equipment and PPE used during the design investigation;
- Performing environmental monitoring of work areas for exposure assessment; and
- Conducting a topographic and geophysical survey.

Parsons SH&E Policy Statement

Safety, Health & Environment Policy

As an industry-leading engineering, construction, and technical services firm, Parsons is firmly committed to maintaining a safe, healthy, and environmental workplace at all its offices and project facilities, guided by the following tenets:

- SH&E stewardship is a core value.
- Executive management leads our SH&E processes and strives to continually improve our SH&E management systems.
- SH&E is a responsibility shared by all.
- SH&E performance is a key business performance indicator.
- SH&E performance will be communicated openly.
- Employees are given the expectations, knowledge, and skills necessary to perform their work to ensure they achieve high levels of SH&E performance.
- Employees and stakeholders are authorized and expected to stop work when conditions warrant it.
- Our SH&E efforts extend beyond our workplaces to include travel, our homes, and our communities.

To meet our SH&E performance objectives, all employees and stakeholders are expected to be actively engaged in SH&E issues. This requires the combined efforts of a concerned leadership team, responsible and knowledgeable line supervisors, and conscientious, well-trained employees and stakeholders.

At regular intervals, the executive management shall lead, monitor, and improve the performance of our SH&E management systems to ensure its continuing suitability, adequacy, and effectiveness.

Parsons shall meet or exceed legal and other requirements for SH&E and shall strive to conform to the international standards to which we subscribe. We will continually monitor and improve operations, procedures, technologies, and programs that are conducive to maintaining safe, healthful, and environmentally sound workplaces.

Charles L. Harrington
Chairman and Chief Executive Officer

PARSONS

Parsons' goal is zero health, safety and environmental incidents. To achieve this, the OU-1 RD project team, led by the Project Manager (PM), shall systematically, routinely, and continually identify the safety, health, and environmental (SH&E) risks to project personnel, processes, equipment, the general public, and the environment, and develop effective and reliable control measures to minimize or eliminate these SH&E risks. As the project work changes, the SH&E risks change, and these risks shall be continually assessed, with control measures continually refined as work progresses.

Stop Work Authority

Each Parsons employee and Parsons-contracted person is a critical leader for preventing injuries, illnesses, and adverse environmental impacts. Achieving SH&E excellence requires a personal commitment. Therefore, each employee is authorized to stop work immediately if a safety, health, or environmental concern exists or if the work is not going according to plan. Once work is stopped, each employee is expected to communicate the work stoppage to the other affected parties (i.e., other employees, Field Project Managers, Project

Managers, clients, and regulatory agencies, as necessary) and further evaluate the Site conditions and adjust the work plan to resolve the safety, health, or environmental concern before restarting the work.

Each employee shall understand that he or she has the authority and the responsibility to stop work at any time when he or she notices an unplanned or unexpected issue that he or she believes will adversely affect the project's safety, health, or environmental risk. This concept is consistent Parsons SH&E core value.

Sometimes, the idea of "stop work" suggests that the project is shut down and all employees end their workday until the catastrophe is averted. Though this is a dramatic example of a legitimate stop work event, most stop work events are much simpler.

S.T.O.P.

1. Stop the task you are doing or intervene with a co-worker/contractor if appropriate.
2. Take immediate measures to notify any others affected. If there is no imminent danger, notify the appropriate field supervisors and site leaders. This is also a good time to make any other notifications, such as to the client.
3. Offer correction or get help if needed. Keep it positive. Affected parties shall discuss and gain agreement on the resolution of the stop work issue. The initiator of the stop work event shall be thanked for his or her concern.
4. Prepare to resume once the concern has been resolved. If necessary, suspend that task until the adjusted work plan can be reviewed and revised, when needed. When opinions differ regarding the validity of the stop work issue or adequacy of the resolution, the appropriate site leader shall make the final determination, giving full weight to all opinions and views. Positive feedback shall be provided to affected personnel regarding the resolution of the stop work issue.

There is no circumstance where retribution or retaliation may be directed toward an employee who conscientiously exercised his or her stop work authority.

PSHEP Authority

This PSHEP outlines requirements and guidelines developed by Parsons for project work. When implemented, these requirements help protect project personnel, visitors, the public, and the environment from the effects of SH&E risks. Parsons employees should never perform a task that may endanger their own safety and health, the safety and health of coworkers or the public, or the environment. This PSHEP shall be updated as conditions or work phases change. All Parsons employees and contractors shall receive a copy of this PSHEP, understand it, and implement the provisions contained in it.

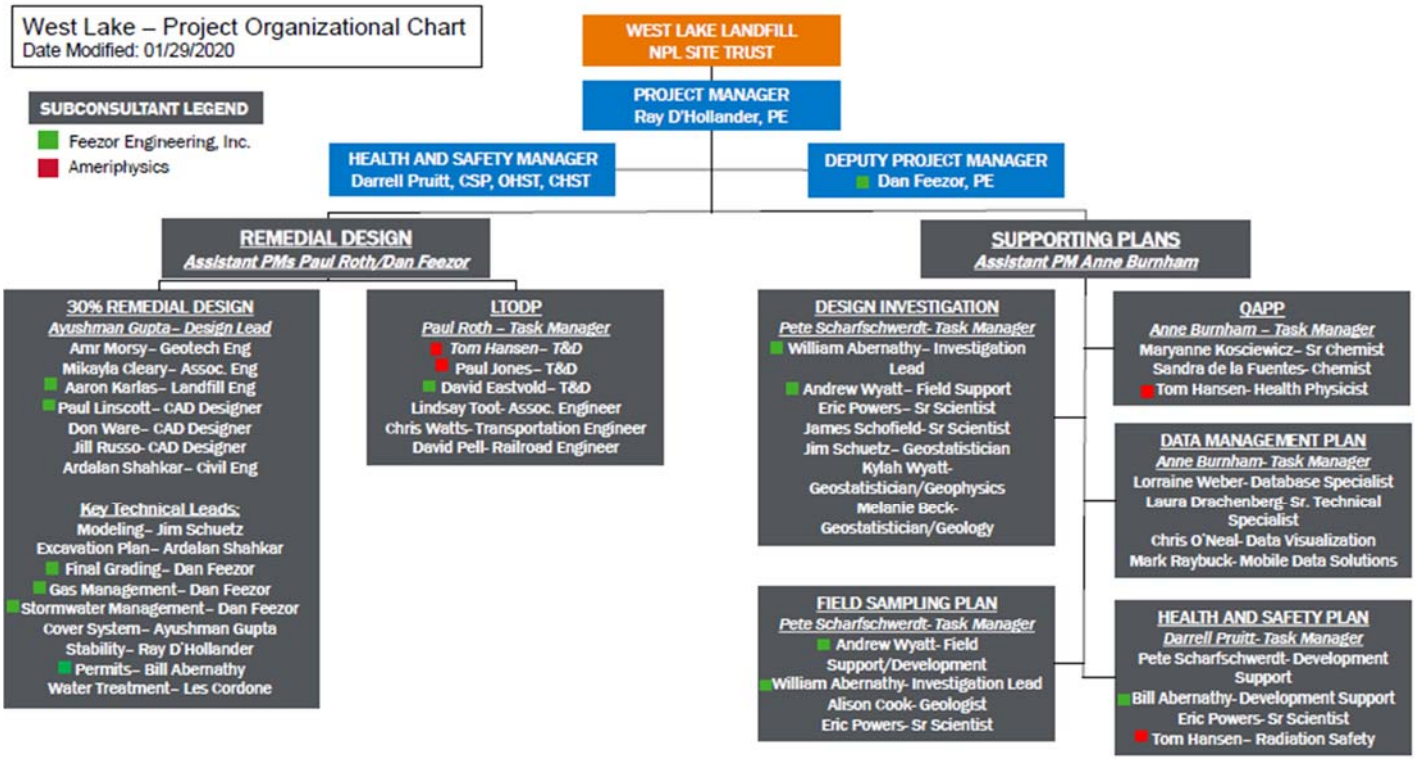
Parsons contractors shall establish their own SH&E programs for their work and employees. Contract specifications require each Parsons contractor to accept provisions of the Parsons PSHEP and prepare its own contractor site-specific safety, health, and environmental plan (SSHEP) for work activities that the contractor is responsible for performing. The PSHEP requirements identified for project personnel (e.g., incident reporting, training, certifications of competence and qualification, substance abuse identification and testing) shall apply to contractors and their workers, and such provisions shall be included in each contractor's SSHEP.

This PSHEP and its associated legal compliance register, risk register, hazard and risk analyses, work plans, procedures, contractor SSHEPs, compliance programs, best practices, training matrix, and certifications of competence and qualification apply to all locations, facilities, operations, tasks, and project work.

Organizational Structure

Parsons project personnel responsibilities are outlined in the following organization chart. The site safety organization is structured so that field personnel report to the Site Health and Safety Officer (SHSO) who, in turn, reports to the Project Health and Safety Manager for safety-related issues. Subcontractors report to their own health and safety personnel. The Parsons Field Team Lead or designee is responsible for authorizing all

work performed on any given day by reviewing the tasks and associated hazards with the assigned workers. This shall be done in cooperation with the Deputy PM from Feezor Engineering and the Radiation Safety Officer from Ameriphysics.



Key Project Stakeholders

PARSONS		
Project Manager	Ray D'Hollander, PE Ray.dhollander@parsons.com	315-552-9683 315-720-7954
Project SH&E Representative	Darrell Pruitt, CSP, ASP, OHST, CHST, STSC Darrell.pruitt@parsons.com	812-605-2108
INF SH&E Director	John Barker John.Barker@parsons.com	704-558-4209
FEEZOR ENGINEERING		
Deputy Project Manager	Daniel Feezor, PE dfeezor@feezorengineering.com	217-836-8842
AMERIPHYSICS		
Radiation Safety Officer	Tom Hansen tom@ameriphysics.com	865-228-1997
BRIDGETON LANDFILL		
Landfill Division Manager	Erin Fanning efanning@republicservices.com	209-227-9531
ENGINEERING MANAGEMENT SUPPORT		
Project Coordinator	Paul Rosasco Paulrosasco@emsidenver.com	303-808-7227

Legal Compliance Register

Parsons shall comply with regulatory, legal, and other similar requirements in the jurisdictions where work is performed for the project. The legal compliance register identifies the SH&E-related laws, regulations, ordinances, and legal obligations that may impact the project. As legal requirements change during the lifecycle of the project, the changes shall be updated in the legal compliance register and their effects considered.

The project Legal Compliance Register is included in Appendix A of this document.

Risk Register

Parsons shall continually identify project SH&E risks and seek effective and reliable means to control these risks to an acceptable level. From these identified SH&E risks, additional policies, procedures, equipment, compliance programs, or special training required to control the risk of project activities shall be developed, communicated, monitored, and adjusted.

Hazard analysis and risk assessment planning, the basis of the risk register, is an ongoing process occurring throughout the life of the project. Hazard analysis and risk assessment planning should address items such as: routine and non-routine activities; activities of all persons having access to the workplace (including contractors, lower-tier contractors, visitors, and client representatives); any outside hazards that might impact the workplace or the people in the workplace; hazards associated with materials or equipment being used in the workplace; any changes or modifications in design, processes, legal obligations, safety system changes; and any human factors or capability issues.

The project Risk Register is included in Appendix B of this document.

Compliance programs completed, reviewed, and approved for the West Lake Landfill project include:

- Radiation Safety Plan: see Item 25 of the legal compliance register (Appendix A)
- Emergency Response Plan: see Item 12 of the legal compliance register (Appendix A)
- Loading, Transportation, and Disposal Plan: see Items 16 and 17 of the legal compliance register (Appendix A)

- This PSHEP: see Items 1-11, 13-15, and 18-23 of the legal compliance register (Appendix A)

Activity Hazard Analyses (AHAs) included in this PSHEP (Appendix C) include:

- Drilling oversight (includes waste management and decontamination)
- Sediment sampling
- Sampling environmental media (includes waste management and decontamination)
- Driving on and off site
- Performing inspections, surveys, and monitoring

Training, Certifications, Qualifications, and Competencies

The project training matrix is included as Appendix D of this document.

All employees working on site shall have the following current training/certifications:

- 24- or 40-Hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training (see Item 2 of the legal compliance register)
- Site-specific hazardous communication training (see Item 11 of the legal compliance register)
- Site-specific hazard mitigation training (e.g., PPE, AHA) (see Item 7 of the legal compliance register)
- Radiation safety training (see Item 25 of the legal compliance register)

One supervisor on site shall have Supervisory HAZWOPER training, see Item 2 of the legal compliance register in Appendix A. One field team member per team shall have first aid and CPR training, see Item 3 of the legal compliance register in Appendix A.

Records of completed training for Parsons and Feezor Engineering employees are maintained at the project field office. Copies of Parsons employee training completion records and certificates can be obtained by contacting Darrell Pruitt at darrell.pruitt@parsons.com or calling his phone number at 812-605-2108. Copies of Feezor Engineering employee training completion records and certificates can be obtained by contacting Bill Abernathy at babernathy@feezorengineering.com or calling his phone number at 314-502-1299.

Contractor Qualification, Management, and Site-Specific SH&E Plans

Contractor Qualification

All contractors to be engaged in providing field services shall pass a contractor qualification process prior to engagement. The project shall provide the following information to each contractor prior qualifying and selecting the contractor:

- Detailed statement of work
- SH&E hazards and risks
- Parsons minimum SH&E expectations

To assist with the contractor qualification process, the contractor shall identify the following:

- Types of field activities to be conducted
- Location of workplaces
- Timing and sequence
- Facilities, tools, and equipment to be used
- Materials and consumables to be used

In addition, the contractor shall provide as much of the following information as possible:

- Contractor's SH&E policy statement

- A statement or proof that the contractor has an occupational safety and health or environmental management system compliant with standards such as American National Standards Institute (ANSI) Z10, British Standard Occupational Health and Safety Assessment Series (BS OHSAS) 18001, International Organization for Standardization (ISO) 14001, or the Occupational Safety and Health Administration's (OSHA's) Voluntary Protection Programs
- The names and qualifications of those with SH&E responsibilities for this work (on site and off site)
- SH&E training compliance program and copies of training records for contractor employees expected to perform work on this contract
- A copy of the contractor's compliance programs, competent person designations (United States), and other employee-related SH&E compliance certifications and qualifications (e.g., powered industrial truck driver, PPE user, qualified electrical worker)
- SH&E awards earned
- Occupational injury and illness statistics for the past three years
- Explanations for any SH&E enforcement notices issued against the contractor by any SH&E regulator
- Lists of anticipated/preferred lower-tier subcontractors and suppliers
- Its proposed SSHEP and associated site-specific risk assessments or AHAs for the work.

This information shall be evaluated by the project SH&E representative and the PM (or delegate) using the Teaming Partner/Contractor SH&E Qualification Scorecard form and the SSHEP Review form (see Appendix E).

Contractor Management

Contractors are accountable and responsible for their employees and work activities. However, the PM shall ensure that contractors' work (and that of their lower-tier subcontractors) is:

- Being performed in compliance with the contracts;
- Being managed consistent with the project's SH&E processes and with Parsons' Environment, Safety, Health and Risk Program (ESHARP) Guidebook; and
- Meeting the project's SH&E expectations.

The PM shall conduct SH&E alignment meetings, kickoff and premobilization meetings, two-week look-ahead meetings, weekly/daily progress meetings, and other routine meetings to gauge the contractors' progress and understanding of the work. Such meetings shall include lower-tier subcontractors, when applicable.

The PM and the SH&E representative shall conduct and document contractor-specific SH&E inspections, SH&E audits, and other engagement activities to validate that the contractors' work meets Parsons' SH&E expectations. Such inspection, audits, and engagement activities shall include lower-tier subcontractors, when applicable.

Contractor Site-specific Safety, Health, and Environmental Plans (SSHEPs)

Hazard analysis and risk assessment planning is an ongoing process occurring throughout the life of the project. Hazard analysis and risk assessment planning should address items such as:

- Routine and non-routine activities;
- Activities or modifications in design, processes, legal obligations, safety system changes; and
- Any human factor or capability issues.

Feezor Engineering's SSHEP is included as Appendix F.

Ameriphysics' SSHEP is included as Appendix G.

New Employee and Visitor Orientation

Employee Orientation

Each person assigned to a project team shall receive an initial project- and site-specific orientation beginning on their first day of work. Such persons include new Parsons employees, existing Parsons employees reassigned to the project, contractors, lower-tier contractors, teaming and JV partner employees, suppliers, vendors, client representatives, members of the leadership team, and other stakeholder employees.

No worker shall start work on tasks for which he or she does not have the verified knowledge, skills, training, certifications, qualifications, and competencies to complete successfully, consistent with the risk control strategies defined in the risk register (Appendix B) and its associated risk assessments.

A general employee orientation will be provided for workers and visitors to the site by the Site Supervisor or a designee. In addition, the Bridgeton Landfill Contractor Safety Orientation is required every 12 months and is administered by the Bridgton Landfill Environmental Manager. Site workers will likely need radiation safety certification to be determined and administered by the Radiation Safety Officer. Finally, personnel on site will need to be trained and fit-tested for use of a respirator.

Visitor Orientation

Visitors to a project shall receive an orientation briefing appropriate for their visits.

No visitor shall be permitted access to the project site unless s/he has completed visitor orientation and is escorted continually by a knowledgeable member project team.

Industrial Hygiene Monitoring

Industrial Hygiene Monitoring

The following assignments, roles, tasks, operations, or worksites may require baseline, initial, routine, or continual industrial hygiene monitoring.

- Radiation - Site monitoring for radiation will be instituted for the OU-1 RD. Initial ambient radiation surveys, personnel exposure monitoring, area air sampling, and equipment radiation screening are all aspects of the Radiation Safety Plan in Appendix H. All workers directly involved with handling radiation impacted material are required to wear personal dosimetry.

  Evaluation of area and personnel monitoring results is performed by the on-site radiological control supervisor. Details on action limits for site conditions and dosimetry are included in the attached Radiation Safety Plan.

- Respirator - If employees are working at the jobsite and will have “less than 30 days” of potential exposure over the course of 12 months, they will only need to fill out the WorkCare – OSHA Respirator Questionnaire long version form (Appendix B-8 of the Design Investigation Work Plan).
  1. This form will need to be completed by the employee and sent to Parsons’ SH&E Representative, who will send over to WorkCare for review and approval.
  2. If the employee has not had a recent fit test completed, they must do so.
  3. WorkCare results will be sent to the PM and employee for their records.

  If an employee will be working at the jobsite and will have more than 30 days of potential exposure over the course of 12 months, they will need to reach out to the Parsons SH&E representative for an inpatient appointment
  1. WorkCare will contact the employee with directions to the clinic and what to bring with them.
  2. The employee will need to take their respirator with them to this appointment.

3. Once clearance is received from WorkCare, the Parsons SH&E representative will send it to the PM and employee for their records.
4. The clearance will be good for one year.

Industrial hygiene monitoring results are maintained at the site field office. Copies of industrial hygiene monitoring results may be obtained by contacting Darrell Pruitt at darrell.pruitt@parsons.com or calling him at 812-605-2108.

Emergencies and Emergency Management

To report any emergency by phone, dial 911 and be prepared to describe the emergency and its location. Other relevant emergency response contacts include:

Daniel Feezor – Emergency Response Manager	217-836-8842
Erin Fanning – Bridgeton Landfill Division Manager	209-227-9531
Christine Jump – EPA Region 7 Regional Project Manager	913-551-7141
MDNR Environmental Response Spill Line	573-645-8943
Maynard Howell – Robertson Fire Department	314-575-5011
Battallion Chief – Pattonville Fire Department	314-393-4802
Assistant Fire Chief – Jim Usyr	314-393-4807
Donald Hood – Bridgeton Police Chief	314-420-9112
Mark Diedrich – St. Louis County Office of Emergency Management	314-615-9500

The project shall display posters and stickers with the proper emergency number near phones and in common areas.

The following are nearby hospitals and urgent care centers.

SSM Health DePaul Hospital
12303 De Paul Drive, Bridgeton, Missouri 63044
314-344-6000

SSM St. Joseph Health Center
300 First Capitol Drive, Saint Charles, Missouri 63301
636-947-5000

Total Access Urgent Care
12409 St. Charles Rock Road, Bridgeton, Missouri 63044
-314-455-4046

Concentra Medical Center
1794 Zumbehl Road, Saint Charles, Missouri 63303
636-947-1666

Each project stakeholder shall be familiar with the kinds of alarms on their project site and know how to effectively respond when an alarm sounds or when an emergency order is given. In addition, project workers shall be familiar with, and participate in, worker accountability protocols. Project-specific emergency response roles and responsibilities, and worker accountability protocols are described in the site-specific emergency action plan.

The West Lake Landfill Project Emergency Response Plan is included with the Design Investigation Work Plan as Appendix B-5.

The project has a Business Continuity Plan incorporated into the attached Emergency Response Plan that will be followed when an emergency occurs. Project workers shall understand their roles in helping to ensure the continuity of critical operations and services during and after an emergency.

Incident Reporting, Investigation, and Management

Incident Reporting

An incident that triggers Parsons' incident reporting, investigation, and management process is any of the following:

- An injury of any significance is sustained by anyone on a Parsons-controlled or Parsons-managed worksite;
- An injury of any significance is sustained by any Parsons employee while the employee is in a travel status in support of Parsons business;
- An illness of any significance is sustained by anyone and manifests its signs or symptoms on a Parsons-controlled or Parsons-managed worksite;
    - Attachment 1 of this PSHEP includes information related to Coronavirus, also known as COVID-19.
- An illness of any significance is sustained by any Parsons employee and manifests its signs or symptoms while the employee is in a travel status in support of Parsons business;
- An injury or illness of any significance is sustained by anyone and is related to Parsons-controlled or Parsons-managed work activities;
- An unplanned, unauthorized, or non-permitted release of a hazardous substance or other environmentally significant substance occurs on a Parsons-controlled or Parsons-managed worksite, irrespective of whether the release meets any threshold for regulatory reporting;
- A hazardous substance release on a Parsons-controlled or Parsons-managed worksite exceeds an environmental permit requirement or a regulatory threshold;
- An unplanned release of a hazardous substance or other environmentally significant substance occurs anywhere and affects Parsons-controlled or Parsons-managed work activities;
- An unplanned security or law enforcement event of any significance occurs on a Parsons-controlled or Parsons-managed worksite;
- An unplanned security or law enforcement event occurs that directly affects a Parsons employee while the employee is in a travel status in support of Parsons business;
- An unplanned event involving property damage occurs on a Parsons-controlled or Parsons-managed worksite;
- A motor vehicle-related event of any significance occurs involving vehicle or facility damage on a Parsons-controlled or Parsons-managed worksite, or in support of Parsons work;
- A motor vehicle-related event of any significance occurs involving vehicle or facility damage and involving a Parsons employee, while the Parsons employee is in a travel status in support of Parsons business; or
- An unplanned event occurs on a Parsons-controlled or Parsons-managed worksite that could have caused an injury, an illness, environmental damage, or property damage, but did not because of the

intervention of random or fortunate circumstances and conditions. These types of incidents also are called near misses, near hits, and close calls.

When a person detects an incident, the person shall immediately implement the following incident reporting process.

Step 1: Does the person perceive that the incident is an emergency?

- No: Proceed to Step 2.
- Yes: Stop work, summon the appropriate emergency services, activate an alarm, or direct, by name, a nearby person to summon emergency assistance. Render first aid or another emergency assistance, as appropriate. Follow the site-specific emergency action plan to respond to the emergency. Follow the instructions of qualified emergency responders. Proceed to Step 2.

Step 2: Report the incident to: Daniel Feezor, the project Emergency Response Manager.

Step 3: Report the incident to: Erin Fanning, Bridgeton Landfill Support.

Step 4: Does the incident involve a work-related injury or illness?

- No: Proceed to Step 5.
- Yes: Did a Parsons employee working in the United States or Canada sustain the injury or illness?
- No: Proceed to Step 5.
- Yes: The affected employee, supervisor, or project SH&E representative shall call WorkCare at (888) 449-7787 when first aid beyond simple or obvious self-care may be needed. For example, WorkCare shall be called for work-related muscle strains, sprains, possible fractures, lacerations or punctures, head injuries, eye injuries, joint injuries, or concerns related to ill health. Proceed to Step 5.

Step 5: Cooperate with any related investigations or reviews.

The PM (or delegate) shall make an initial report of the incident to the Business Unit (BU) SH&E Director (or delegate). Further investigation may be necessary.

For significant work-related injuries, illnesses, environmental incidents, security incidents, or property damage incidents, the PM (or delegate) shall make the above initial incident report telephonically and immediately. This immediate initial incident report is essential as Parsons may have to report the significant incident to one or more regulatory authorities within a few hours of the occurrence of the incident. Examples of significant incidents are those that involve:

- One or more fatalities;
- One or more injuries or illnesses requiring a worker to be treated in an emergency room or requiring in-patient hospitalization;
- An injury to a visitor or member of the public;
- An event that may present adverse media press to Parsons or the project;
- A release of a substance requiring a report to a governmental regulator;
- A criminal injury;
- A law enforcement arrest; or
- Property loss or damage exceeding an initial estimate of USD $50,000.

After the immediate telephonic notification (for significant incidents), or after determining that an immediate telephonic report is unnecessary (for all other incidents), the PM (or delegate) shall create and submit the initial report of the incident in IndustrySafe (Parsons' incident reporting software) within 4 hours of the occurrence of the incident, or as soon as practical.

All project team members, including those directly affected by the incident, shall cooperate fully with any related incident investigations and management system process reviews.

Incident Investigation

The PM shall ensure that significant incidents (including significant near misses) are formally investigated. Incident investigations seek facts, not fault. The result of a properly conducted incident investigation is thoughtful identification of root causes of the incident and effective corrective actions and recommendations to prevent similar incidents from recurring. Incident summaries and any documents associated with incident investigations shall be submitted and retained within the IndustrySafe record associated with the incident.

The investigation process starts as soon as the initial report of the investigation is submitted. The PM (or delegate) shall lead the investigation and shall seek assistance from the project SH&E representative or BU SH&E Director (or delegate) for subject matter expertise and investigation support. Depending on the incident's complexity and consequences (or potential consequences), the BU SH&E Director may commission a corporate investigation team to work collaboratively with the PM's investigation process. A formal incident investigation report with corrective actions and accountability assignments shall be distributed to the appropriate members of the project team and Parsons leadership team and submitted in IndustrySafe as a part of the IndustrySafe record of the incident.

After the investigation report is submitted, the PM shall ensure that the project team is aware of any findings, lessons learned, and the status of the corrective actions identified in the incident investigation report. In addition, the PM shall prepare for an Executive Incident Review to formally involve the Parsons executive leadership team.

Incident Management

For an incident involving a Parsons employee who sustained a work-related injury or illness, the PM shall designate a project team member or a Parsons workers' compensation specialist to communicate with the affected worker to collaborate with his or her care and treatment and to help ensure that the medical providers understand the employee's job roles and opportunities for the employee to engage in alternative work. Parsons' objective is to ensure our employees receive the right care as soon as possible and can return to work with maximum medical improvement. The PM shall make an effort to communicate with the affected employee as soon as practical to ensure the employee knows Parsons and the project team are concerned with the employee's health and welfare.

If care at a clinic or hospital for an injured Parsons employee is required, the forms in the Workers' Compensation section related to treatment and workers' compensation billing should be provided directly to the care provider.

If an injured or ill employee is out of work, is restricted from his or her usual work-related activities, or is transferred to an alternative work role, the PM (or delegate) shall routinely communicate with the affected employee, the designated Parsons workers' compensation specialist, and the project SH&E representative to see how the employee is progressing, to ensure the employee knows Parsons and the project team remain concerned with the employee's continuing health and welfare, and to receive an update on the employee's return-to-work status. The PM (or delegate) shall then update the employee's return-to-work status (and any other details) within the IndustrySafe record associated with the incident.

The PM shall require direct contractors on the project team to submit routine status reports related to their workers who have sustained work-related injuries or illnesses while performing Parsons work on Parsons-controlled or Parsons-managed worksites. These status reports, at a minimum, shall describe the current condition of the injured or ill worker (until the worker has reached maximum medical improvement) and the worker's return-to-work status. The PM (or delegate) shall then update the worker's return-to-work status (and any other details) within the IndustrySafe record associated with the incident.

Workers' Compensation

Donna Miller (donna.miller@parsons.com; 661-904-0978) is the Parsons point of contact for this project for all workers' compensation matters. When an employee is injured or made ill as a result of work-related activities, it is essential that we abide by local workers' compensation laws and regulations. Additional information is included in Attachment 2. The following information will be needed when seeing to the evaluation and treatment of Parsons employees who sustain work-related injuries or illnesses.

Medical Providers

Total Access Urgent Care PC
Urgent Care Center/Walk-In
12409 Saint Charles Rock Rd
Bridgeton, MO 63044
314-455-4046

Concentra Medical Center
Occupational/Industrial Medicine
Urgent Care Center/Walk-In
1794 Zumbehl Road
Saint Charles, MO 63303
636-947-1666

Hospitals

SSM Health St. Joseph Hospital - St. Charles
Hospital - General
300 1st Capitol Dr
Saint Charles, MO 63301
636-947-5000

SSM Health DePaul Hospital
Hospital - General
12303 De Paul Dr
Bridgeton, MO 63044
314-344-6000

In Missouri, in the event of a non-emergency work-related injury, Parsons has the right to select the treating provider (medical control for life of claim) within Parsons' insurance carrier's network. In an emergency, the employee may be treated by the closest emergency room for the initial visit. An employee cannot choose to use their own provider for either emergency or non-emergency situations.

Internal Notification Requirements of Managers for a Work-Related Injury or Illness:

The employee's Manager must complete an IndustrySafe incident report within 4 hours of his or her knowledge of the incident.

The employee's Manager must promptly (i.e., the same day) notify the SH&E Director and Parsons' Workers' Compensation Claims Manager Donna Miller (donna.miller@parsons.com or 661-904-0978).

If the work-related incident is serious/life threatening or requires emergency response, the project manager will first call 911 or local emergency medical services before contacting the SH&E Director, filing the IndustrySafe online incident report, or involving WorkCare.

For all other work-related injury(s) or illness(s), Parsons' employees shall promptly contact WorkCare, before seeking medical care, because this will provide the greatest opportunity for appropriate intervention.

After consulting with WorkCare, if medical care is indicated or requested, the Field Manager (preferred) or designated alternate shall accompany the injured worker to the office/project's designated occupational medical clinic listed below.

WorkCare's Incident Intervention is available for all Parsons employees, 24 hours a day, 7 days a week, and 365 days a year (24/7/365).

WorkCare:

- When dialing from North America: 888-449-7787
- When dialing from outside of North America: 714.456.2104

Unless the injury or illness is life threatening, a medical emergency, or after-hours at the occupational medical clinic, efforts should be made for the injured employee to be seen at the Occupational Medical Clinic listed above and not at a hospital emergency room.

The procedures above are intended to enhance our incident reporting and investigation processes, assure quality care for injured employees, and ensure hazards are resolved to prevent recurrence.

Inspections, Self-assessments, and Audits

The scope of the project's inspection, self-assessment, and audit protocols includes all site and facility locations controlled by the project, including sites and facilities not typically occupied, such as material and equipment storage areas, as-needed fabrication areas, and parking areas. In addition, these protocols include the physical site, grounds, and outdoor environmental infrastructure controlled by the project. Contractor-controlled worksites and operations are included.

SH&E Inspections

An SH&E inspection is an in-person, on-site verification (by direct observation) that work is being performed and equipment and infrastructure is being used and maintained in accordance with the risk register and associated SH&E policies, procedures, regulations, laws, and best practices.

The findings of SH&E inspections and associated non-conformances arising out of the inspections shall be documented, and non-conformances shall be resolved as soon as practical.

The following daily and start-of-shift SH&E inspections shall be conducted and documented by each supervisor (or knowledgeable person) prior to conducting work.

- Drill rig inspections (see drilling contractor's SSHEP)
- When drilling, prior to advancing mechanical drills, complete the subsurface clearance checklist (see Appendix B-8 of the Design Investigation Work Plan)

Focused SH&E Inspections

Focused SH&E inspections shall be conducted by the PM and other designated knowledgeable people in accordance with the following schedule. This schedule includes contractor worksites and operations over which Parsons has contractual authority. On a weekly basis, a PM- or designee-led SH&E audit will be performed using the attached form. Information documented during the audit shall be entered into IndustrySafe by the auditor or the project SH&E manager. Deficiencies or improvement observations should be assigned a corrective action, responsible person, and deadline for implementation.

SH&E Compliance Inspection

SH&E compliance inspections shall be conducted in accordance with the following schedule. This schedule includes contractor worksites and operations over which Parsons has contractual authority. Semi-annual SH&E compliance inspections will be led by a project SH&E representative. This compliance inspection will audit the project against the attached legal compliance register (Appendix A) and risk register (Appendix B).

ESHARP Self-assessments

An ESHARP self-assessment is a snapshot of how well the project is conforming to the principles in the ESHARP Guidebook. The PM shall complete an ESHARP self-assessment in IndustrySafe once each quarter for projects with a staffed duration lasting six months or more, with five or more full-time employees (or 25 or more contractor workers) at a field site.

SH&E Audits

An SH&E audit is an internal review of the project's SH&E management systems, including the SH&E management systems of contractors and lower-tier contractors performing project field activities. SH&E audits led by a qualified SH&E auditor appointed by the BU SH&E Director (or delegate) shall be performed semi-annually. This schedule includes contractor SH&E management systems associated with work over which Parsons has contractual authority.

Employee-based Safety / Peer-based Observations

The employee-based safety / peer-based observations are designed to help the project leadership team understand the safe and unsafe actions that are occurring so that programmatic attention can be focused on the processes that need improvement. Conscientious employees can offer (and receive) tangible feedback for safety-conscious acts and behavior and for acts and behavior that need improvement. Observations are anonymously reported to a designated project team member.

SH&E Performance Measurement

No more than three business days after the close of the monthly reporting period, the PM (or delegate) shall report the following information through the project's organizational chain of command and to the BU SH&E Director (or delegate).

Leading Indicators of SH&E Performance

- Number of focused SH&E inspections performed and documented
- Number of SH&E compliance inspections performed and documented
- Number of near misses reported and investigated
- Number of SH&E-related rewards and recognitions dispensed among project stakeholders
- Number of direct contractors not used due to SH&E disqualification

Trailing (Lagging) Indicators of SH&E Performance (Parsons Employees)

- Number of hours worked on the project by Parsons employees
- Number of Parsons employee injuries or illnesses leading to lost time
- Number of Parsons employee injuries or illnesses leading to restricted duty or transfer
- Total number of all Parsons employee recordable injuries or illnesses

Trailing (Lagging) Indicators of SH&E Performance (Direct Contractors)

- Number of hours worked on the project by all direct contractor employees
- Number of direct contractor worker injuries or illnesses leading to lost time
- Number of direct contractor worker injuries or illnesses leading to restricted duty or transfer
- Total number of direct contractor worker recordable injuries or illnesses

Meetings

Risk communication and planning meetings shall routinely take place on the project. This section of the PSHEP describes these meetings, their structure, their participants, their expected frequency, and whether they are to be documented. If these meetings are to be documented, then this section of the PSHEP also describes what is documented and where these documented meeting records are maintained.

Other meetings beyond these listed may be needed to help ensure that project risks are communicated and risk controls are planned adequately.

- Stakeholder SH&E Alignment Meetings
  - Relevant members of the project staff and stakeholders introduce Parsons SH&E expectations to new contractors or other stakeholders performing work on the project.
  - These meetings shall be formally documented, with names of attendees, the agenda, meeting minutes, and actions items coming from the meeting. Action items shall be tracked to resolution.
  - Meeting documentation will be maintained at the on-site field office.
- Project Kickoff and Premobilization Meetings (PM, staff, line supervisors, stakeholders)
  - Meeting is held to establish initial site conditions, verify field office and site infrastructure availability, verify that initial supplies, tools, and equipment are available, and reinforce work initiation and SH&E expectations among stakeholders,
  - Attendees confirm that necessary work instructions, AHAs, SH&E programs, and SH&E training and qualifications have been completed and have been communicated to the necessary personnel.
  - Unresolved PSHEP implementation tasks are identified, and there is an agreed path to their resolution.
  - These meetings shall be formally documented, with names of attendees, the agenda, meeting minutes, and actions items coming from the meeting. Action items shall be tracked to resolution.
  - Meeting documentation will be maintained at the on-site field office
- Two-week Look-Ahead Meetings (PM, staff, line supervisors)
  - Relevant members of the project staff and stakeholders plan the work activities over the next two or more weeks to ensure adequate SH&E planning is built into the schedule and that the planned risk controls are still valid and consistent with the risk register (Appendix B).
  - These meetings shall be formally documented (see form in Appendix B-8 of the Design Investigation Work Plan), with names of attendees, the agenda, meeting minutes, and actions items coming from the meeting. Action items shall be tracked to resolution.
  - Meeting documentation will be maintained at the on-site field office.
- Daily/Pre-task Briefings (line employees and line supervisors)
  - Line employees and line supervisors conduct briefings prior to beginning any task using AHA or other job-specific risk assessment tool.
  - Meeting documentation will be maintained at the on-site field office.

- Work Pause/"Take 5" Briefings (line employees and line supervisors)
  - Line employees and line supervisors conduct these briefings when something occurs that was not planned and requires a brief reassessment of the work to continue.
  - An AHA or other job-specific risk assessment process is used, with modifications applied as necessary to account for the unplanned event.
  - Meeting documentation will be maintained at the on-site field office.
- Stop-Work Meetings (line employees, line supervisors, PM/staff)
  - Any employee who notices an unsafe condition, act, or behavior that precludes continuing the work as planned, may conduct a stop-work meeting.
  - An AHA or other job-specific risk assessment process will be used, with modifications applied as necessary to account for the unplanned event.
  - A stop-work meeting may involve a lengthy work stoppage and invoke other reporting requirements to ensure the work is ready to resume. The stop-work meeting will determine the need for alterations to the work, and result in those changes. "Lessons learned" will developed and distributed both with the OU-1 RD Team and others, as applicable.
  - These meetings shall be formally documented, with names of attendees, the agenda, meeting minutes, and actions items coming from the meeting. Action items shall be tracked to resolution.
  - Meeting documentation will be maintained at the on-site field office.
- Toolbox Talks (PM, staff, line supervisors, stakeholders, line employees)
  - Talks will be conducted by stakeholders and employees regularly.
  - Talks will include a briefing, prepared by the primary presenter) on an SH&E topic relevant to the work group.
- Weekly All-Hands Meetings (all employees and stakeholders)
  - The PM typically leads these meetings to encourage the project team, to recognize and reward outstanding employees and stakeholders, and to ensure the Parsons SH&E core value is expressed.
  - These meetings shall be formally documented, with names of attendees, the agenda, meeting minutes, and actions items coming from the meeting. Action items shall be tracked to resolution.
  - Meeting documentation will be maintained at the on-site field office
- Other Meetings
  - Other meetings include those with building trades councils, unions, guilds, and collective bargaining units and meetings with SH&E regulators.
  - These meetings shall be formally documented, with names of attendees, the agenda, meeting minutes, and actions items coming from the meeting. Action items shall be tracked to resolution.
  - Meeting documentation will be maintained at the on-site field office.

Employee SH&E Committees

This section of the PSHEP describes the constituency and protocols of the project's employee SH&E committees. A properly commissioned employee SH&E committee has a charter, a description of its authority and responsibilities, operating procedures, and committee member roles and responsibilities.

The committee will include at least one member from Parsons, and at least one member from each of the subcontractors. All team members present on the day of a meeting are encouraged to attend. Written records of the minutes, actions, and recommendations of each employee on the SH&E committee shall be maintained. This section of the PSHEP also describes where the SH&E committee records are maintained.

Purpose

The purpose of the committee is to bring all Parsons and subcontractor employees together to achieve and maintain a safe, healthful workplace.

Objective

The committee has four objectives:

1. Involve employees in achieving a safe, healthful workplace;
2. Promptly review all safety-related incidents, injuries, accidents, illnesses, and deaths;
3. Conduct monthly workplace inspections, identify hazards, and recommend methods for eliminating or controlling the hazards; and
4. Annually evaluate the workplace safety-and-health process and recommend to management how to improve the process.

Goal

The goal of the employee SH&E committee is to eliminate workplace injuries and illnesses by involving employees and managers in identifying hazards and suggesting how to prevent them.

Representatives

The employee SH&E committee will have one representative from each company working at the project. Employee representatives can volunteer, or their peers can elect them. Each representative will serve a continuous term of at least six months.

Chairman and Vice-Chairman

The employee SH&E committee will have two officers: Chairman and Vice-Chairman.

The Chairman will be an employee representative, and the Vice-Chairman will be a management representative.

- Duties of the Chairman:
  - Schedule regular committee meetings
  - Develop written agendas for conducting meeting
  - Conduct the committee meeting
  - Approve committee correspondence and reports
  - Supervise the preparation of meeting minutes

- Duties of the Vice-Chairman:
  - In the absence of the chair, assume the duties of the chair
  - Perform other duties as directed by the chair
- Election of Chairman and Vice-Chairman

  A new Chairman or Vice-Chairman will be elected during the monthly committee meeting before the month in which the incumbent's term expires. If the Chairman or Vice-Chairman leaves office before the term expires, an election will be held during the next scheduled safety-committee meeting; the elected officer will serve for the remainder of the term.
- Terms of Service

  The Chairman and Vice-Chairman will each serve a one-year term.

Training

New representatives will receive training in safety-committee functions, hazard identification, and near misses.

Meetings

The committee will meet the first Monday of each month, except when the committee conducts monthly workplace safety inspections.

- Attendance and Alternates

  Each representative will attend regularly scheduled committee meetings and participate in monthly workplace inspections and other committee activities. Any representative unable to attend a meeting will appoint an alternate and inform the Chairman before the meeting. An alternate attending a meeting on behalf of a regular representative will be a voting representative for that meeting.
- Agenda

  The agenda will prescribe the order in which the committee conducts its business. The agenda will also include the following when applicable:
  - A review of new safety and health concerns.
  - A status report of employee's safety and health concerns and suggestions under review.
  - A review of all workplace near misses, accidents, illness, or deaths occurring since the last committee meeting.
- Minutes

  Minutes will be recorded at each committee meeting and distributed to all employees. The committee will submit a copy of the minutes to the personnel office. The office will retain the copy for three years. The minutes will include all reports, evaluations and recommendations of the committee. The minutes will also identify representatives who attended monthly meeting and representatives who were absent.
- Voting Quorum

  Five voting representatives constitute a quorum. A majority vote of attending representatives is required to approve all safety-committee decisions. The committee will forward issues not resolved by majority vote to management for resolution. Final approval will be determined by the PM, Ray D'Hollander.

Employee Involvement

The employee SH&E committee will encourage employees to identify workplace, health and safety hazards. Employees will present concerns raised by employees or contractors to the committee in writing. The committee will review new concerns at the next regularly scheduled monthly meeting.

- Safety Log

  The committee will maintain a log of all employee concerns, including the date received, recommendations to management and the date it resolved the concern.

- Response

  The committee will respond to employee concerns in writing. It will work with management to resolve them. The committee will present written recommendations for resolving concerns to management. Within 60 days of receipt of written recommendations, management will respond in writing to the committee indicating acceptance, rejection or modification of the recommendations.

- Workplace Inspections

  The committee will conduct monthly workplace inspections of all company facilities. The ESHARP monthly office inspection protocol will be followed for inspection of job trailers and mobile offices. Inspections will be on the requisite inspection form.

- Written Report

  The committee will use the Monthly Office ESHARP inspection form found in IndustrySafe to document deficiencies found during monthly facility inspections and track corrective actions related to those deficiencies.

Communication, Consultation, and Awareness Campaigns

- Weekly all-hands meetings will be used as the forum for informing important SH&E-related information to the project stakeholders. Lessons learned, observations, identification of new site personnel, one-week task look-ahead, employee recognition, and project accolades will be shared.
- SH&E campaigns will be shared by the SH&E Manager to disseminate at the all hands meetings. This may include handouts or pledges.

Rewards and Recognition

Employees and non-Parsons project staff will be recognized for performing work safely and encouraging a safety-conscious mindset on the project. Specifically, workers will be encouraged to formally submit near-misses and implement Take-5 moments. Recognition of workers displaying these safe work practices will be rewarded with hi-visibility long sleeve shirts designed for the OU-1 RD team.

Enforcement and Discipline

The PM has established a fair and consistent project policy for the disciplinary process related to employees and project stakeholders who are unable to abide by the project's SH&E expectations.

Continual improvement is an essential aspect of Parsons SH&E core value. The PM, supervisors, and project stakeholders shall identify and immediately address unacceptable actions and behaviors. All members of the project team shall be on the lookout continually for any conditions, actions, or behaviors that increase the risk of injury, illness, property damage, or environmental insult. The first step to addressing at-risk conditions, actions, and behaviors is through personal communication, coaching, or mentoring.

Most enforcement and disciplinary activities are informal – peers counseling peers and supervisors counseling subordinates. If an employee is unable or unwilling to improve his or her SH&E performance or change at-risk

behaviors, the PM, the worker's direct supervisor, and a Talent Management professional will administer formal enforcement and disciplinary action. Workers who intentionally create or contribute to situations that are immediately dangerous to life, health, the environment, or the security of the project are subject to immediate termination. The PM and the project's assigned talent management professionals ensure that enforcement and discipline matters are handled fairly and fully consistent with applicable contracts, collective bargaining agreements, local, regional, and national laws and regulations, and the Parsons SH&E core value.

Substance Abuse Identification and Testing

Parsons is committed to providing a drug-free and healthful work environment. In collaboration with the Talent Management professionals assigned to the project, the PM has established a fair and reliable substance abuse and identification and testing program.

Without exception, employees, contractor workers, and other project stakeholders shall be fit for duty while conducting work on behalf of Parsons, while on Parsons work sites, and while driving.

Pre-employment / pre-appointment screenings

- Offers of employment are contingent upon successful completion of substance abuse screening, regardless of employment category.

For-cause screenings

- A Parsons employee who is involved in any type of incident while operating a company or fleet vehicle must be screened for the use of intoxicating substances within four hours of the incident.
- A Parsons employee who is involved in an incident associated with powered machinery or equipment or while working on a high-risk site must be screened for the use of intoxicating substances within four hours of the incident.
- A Parsons employee who is involved in an incident involving property damage or an injury may be screened for the use of intoxicating substances.

If an employee is involved in accident while operating a Parsons-owned or leased vehicle during business hours 6am PST to 5pm PST (7am CST and 7pm CST):

- The employee must immediately contact their Manager. Employee will be required to take a drug and alcohol test within four hours.
- The Manager must contact People Central (Parsons' human resources equivalent) by logging a ticket with Concierge (Parsons personnel reporting system). The following points must be provided in the Description field:
  - Employee name
  - Cell phone number
  - Current zip code/location of accident
  - Date of accident
- Manager must contact People Central at: 1.888.288.5522 to alert them of accident and ensure the Concierge ticket was received.
- People Central will search the Accurate Background database for the nearest testing facility to the current zip code provided.
- People Central will provide order confirmation to the Project Manager and employee. Confirmation will include:
  - Order number

    - Testing facility address
    - Facility phone number
- If the Field Project Manager and employee are not near a computer or do not have a device with email functionality, People Central will provide the order confirmation number and site information via phone. The employee cannot drive to the testing facility. The employee MUST be driven to the testing facility by either their Project Manager or another employee or call a taxi/Lyft/Uber.
- The employee, Field Project Manager and PM must follow Parsons Risk Management Accident Reporting procedures.

If the employee is involved in accident while operating a Parsons-owned or leased vehicle after business hours:

- The employee must promptly notify their Project Manager to let the Manager know they will be calling EMSI Fleet Program Post Accident Testing Scheduling Center for post-accident drug and alcohol testing. The glove compartment of the fleet vehicle should have a chain-of-custody form with the after-hours instructions.
- The employee must call the EMSI Fleet Program Post-Accident Testing Scheduling Center at 1-866-236-3674 opt 1, then 6. The scheduling center is open 24/7. Provide the Parsons Fleet Program EMSI Account #282700285.
- The employee will advise the scheduling center that s/he is requesting a call-out collection. Depending on the location and other factors, the call-out technician may meet the employee at their current location or meet at an agreed upon location.
- The call center may need the employee to call back with an estimated time of arrival (ETA) or confirmation details, so the employee must have a phone number available where they can be reached.
- If the EMSI Fleet Program Post-Accident Testing Technician requires that the employee meet at another specified location, the employee should not drive themselves to the meeting point. The employee MUST be driven to the meeting point by either their PM or another employee or call a taxi/Lyft/Uber.
- If vehicle does not have chain-of-custody forms, the employee should let the call-out technician know. The technician can bring chain-of-custody forms with them to the meeting point.
    - Employee must present their photo ID.
    - The technician will give the employee a copy of the chain-of-custody form.
    - The employee must send a copy of the form to their PM by either scanning or taking a picture and sending it via email/text.
    - The PM must then notify/send a copy of the chain-of-custody form by logging a ticket with Concierge. The ticket will route to People Central.
    - If the results come back as “does not meet requirements,” People Central will contact the PM and Talent Leader for further action.

Appendix A – Legal Compliance Register

PARSONS

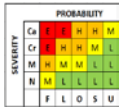
Appendix A
Legal Compliance Register
West Lake Landfill Project
Content Revision Date: 2/5/2020

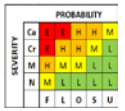
Item #	Description / identity of relevant SH&E risk	Identity / citation of related legal compliance obligation	How does one gain access to the text of this legal compliance obligation?	Remarks
1	General Safety & Health	• US OSHA 29 CFR 1926.20 • US ACE EM 385-1-1 01.A	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
2	Safety Training	• US OSHA 29 CFR 1926.21 • US ACE EM 385-1-1 01.B.01	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
3	First Aid and Medical	• US OSHA 29 CFR 1926.23 • US OSHA 29 CFR 1926.50 • US ACE EM 385-1-1 03.A	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
4	Fire Protection and Prevention	• US OSHA 29 CFR 1926.24 • US OSHA 29 CFR 1926.150-155 • US OSHA 29 CFR 1926.352 • US ACE EM 385-1-1 09.A	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
5	Housekeeping	• US OSHA 29 CFR 1926.25 • US ACE EM 385-1-1 14.C	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
6	Sanitation	• US OSHA 29 CFR 1926.27 • US OSHA 29 CFR 1926.51 • US ACE EM 385-1-1 02.A	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
7	Personal Protective Equipment	• US OSHA 29 CFR 1926.28 • US OSHA 29 CFR 1926.95-98 • US OSHA 29 CFR 1926.100-107 • US ACE EM 385-1-1 05.A	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
8	Emergency Employee Action Plans	• US OSHA 29 CFR 1926.35 • US ACE EM 385-1-1 01.E	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
9	Noise Exposure	• US OSHA 29 CFR 1910.95 • US OSHA 29 CFR 1926.52 • US ACE EM 385-1-1 05.C	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
10	Gases, Vapors, Dusts and Mists	• US OSHA 29 CFR 1926.55	• www.osha.gov	
11	Hazard Communication	• US OSHA 29 CFR 1926.59 • US ACE EM 385-1-1 1.B.06	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
12	Hazardous Waste Operations and Emergency Response	• US OSHA 29 CFR 1910.120 • US OSHA 29 CFR 1926.65 • US ACE EM 385-1-1 28.A • 42 USC §9603 • 42 USC §11004	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx • https://www.govinfo.gov/app/details/USCODE-2010-title42	
13	Accident prevention signs and tags	• US OSHA 29 CFR 1926.200 • US ACE EM 385-1-1 08.A	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
14	Signaling	• US OSHA 29 CFR 1926.201 • US ACE EM 385-1-1 08.B	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
15	Barricades	• US OSHA 29 CFR 1926.202	• www.osha.gov	
16	Material Storage	• US OSHA 29 CFR 1926.250 • US ACE EM 385-1-1 14.B	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
17	Waste Disposal	• US OSHA 29 CFR 1926.252 • US ACE EM 385-1-1 14.D • US 40 CFR §300.440	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	

		• US 40 CFR §261.4(e) • US 42 USC §9621(d)(3)	• https://www.govinfo.gov/app/details/USCODE-2010-title42 • https://www.govinfo.gov/app/details/CFR-2008-title40-vol27/	
18	Tools	• US OSHA 29 CFR 1926.300-307 • US ACE EM 385-1-1 13.A	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
19	Motor Vehicles, Mechanized Equipment	• US OSHA 29 CFR 1926.600-603 • US ACE EM 385-1-1 18.A	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
20	Site Clearing	• US OSHA 29 CFR 1926.604 • US ACE EM 385-1-1 31.A	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
21	Excavations	• US OSHA 29 CFR 1926.650-652 • US ACE EM 385-1-1 25.A	• www.osha.gov • www.usace.army.mil/SafetyandOccupationalHealth.aspx	
22	Internal Traffic Control	• US ACE EM 385-1-1 8.D	• www.usace.army.mil/SafetyandOccupationalHealth.aspx	
23	Traffic Movement Restriction Times	• US ACE EM 385-1-1 8.C	• www.usace.army.mil/SafetyandOccupationalHealth.aspx	
24	Waste Transportation and Handling	• US 40 CFR part 262, subpart E • US 40 CFR section 263.20	• www.dot.gov	
25	Radiation Safety Training	• US OSHA 10 CFR 20.1101 • US OSHA 10 CFR 20.1201 • US OSHA 10 CFR 20.1208 • US OSHA 10 CFR 20.1301 • LAC 33 XV SS 1499 Appendices A&B	• www.osha.gov • Deq.louisiana.gov/assets/docs/Legal_Affairs/ERC	
26	Nuclear Gauge Safety Trainng	• 32 IL 330.220 (b) • US DOT 49 CFR 172.704	• www.iema.illinois.gov • www.transportation.gov	

Appendix B – Risk Register

Appendix B
West Lake Landfill Project
Risk Register





Activity	HOC Confirmation	Hazard Identification	At Risk	Pre-Risk Mgt Evaluation Matrix			Pre-Risk Mgt Treatment	Risk Management & Control – Safety & Health		Risk Management & Control – Environmental			Responsible Person	Cost Contingency	Post-Risk Mgt Evaluation Matrix			Residual Risk Action
				Probability	Severity	RAC (Pre-Risk)		Engineering/ Administrative Controls	PPE	Waste Management	Engineering/ Administrative Controls	Site Condition Controls			Probability	Severity	RAC (Post-Risk)	
Drilling Oversight	Yes	Radiation exposure, Heat/Cold Stress Injuries, Biological Hazards, Slips Trips Falls, Driving on site, underground and overhead utilities, spilled fluids, struck by, pinch points, back injury	Site personnel	Occasional	Catastrophic	HIGH	Reduce	Monitor radiation/air quality, wear Tyvek when sampling, carry respirator, Activity Hazard Analysis, follow procedures, keep distance from drill when possible	Level D - Modified to include Tyvek	Used clothing and other investigation-derived waste. Soil cuttings. Waste water from decontamination. Waste to be handled at the facility.	Permits, Procedures, Regulatory Requirements, Training/education, Checklists/audits, Instructions, personal radiation monitoring	Sitewide air monitoring	Site Supervisor	Covered in Budget	Unlikely	Catastrophic	MODERATE	NA
Driving	Yes		Site personnel	Seldom	Catastrophic	HIGH	Reduce	Follow procedures, seat belts, no cellular activity, no distracted or fatigued driving	Level D	NA	NA	NA	Site personnel	None	Unlikely	Catastrophic	MODERATE	
Hand Augering	Yes	Ergonomic Hazards, Hand injuries, Slips Trips Falls, heat stress	Site personnel	Occasional	Critical	HIGH	Reduce	Use correct auger for the job.	Level D - Modified to include Tyvek	Used clothing and other investigation-derived waste. Soil cuttings. Waste water from decontamination. Waste to be handled at the facility.	Permits, Procedures, Regulatory Requirements, Training/education, Checklists/audits, Instructions, personal radiation monitoring	Sitewide air and weather monitoring	Site Supervisor	Covered in Budget	Unlikely	Critical	LOW	NA
Inspections, Surveying, and Monitoring	Yes	Radiation exposure, Heat/Cold Stress Injuries, Biological Hazards, Slips Trips Falls, Driving on site	Site personnel	Occasional	Catastrophic	HIGH	Reduce	Monitor radiation/air quality. Carry respirator. Review AHAs and driving conditions. Wear sun screen or protective clothing.	Level D	NA	Permits, Procedures, Regulatory Requirements, Training/education, Checklists/audits, Instructions	Sitewide air monitoring	Site Supervisor	Covered in Budget	Unlikely	Catastrophic	MODERATE	NA
Groundwater Sampling	Yes	Radiation exposure, Inhalation and contact with hazardous substances, Struck by, back injuries, Heat/Cold Stress Injuries, Biological Hazards, vehicle traffic	Site personnel	Occasional	Catastrophic	HIGH	Reduce	Monitor radiation/air quality. Wear Tyvek and other disposable layers when sampling. Carry respirator. Review AHAs and driving conditions. Wear sun screen or protective clothing.	Level D - Modified to include Tyvek	Used clothing and other investigation-derived waste. Waste water from purging. Waste to be handled at the facility.	Permits, Procedures, Regulatory Requirements, Training/education, Checklists/audits, Instructions, personal radiation monitoring	Sitewide air monitoring	Site Supervisor	Covered in Budget	Unlikely	Catastrophic	MODERATE	NA

Appendix C – Activity Hazard Analysis (AHA)

Activity Hazard Analysis (AHA)

Activity/Work Task:	Drilling Oversight / Soil Sampling	**Overall Risk Assessment Code (RAC) (Use highest code)**	**Moderate**
Project Location:	**West Lake Landfill**		
Job Number:	**451662**		
Date Prepared: 2/4/2020	**Date Revised:**		
Prepared by (Name/Title): Erik Powers, Senior Scientist			
Reviewed by (Name/Title): Darrell Pruitt, Health and Safety Manager			
Employer/GBU:	**INF**		

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	**Likely**	**Occasional**	**Seldom**	**Unlikely**
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)
Modified Level D PPE Required including:

- Tyvek coverings for all body parts, excluding head and hands.
- Steel toed boots
- Safety glasses
- High Visibility Safety Vest
- Nitrile gloves when handling site soil or groundwater
- Hard hat
- Hearing protection recommended when in close proximity to the operating drill rig
- Personal radiation dosimeter

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above). **The RAC is developed after correctly identifying all the hazards and fully implementing all controls.**

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "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.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

Job Steps	Hazards	Controls	P	S	RAC
1. Overseeing the staging of equipment/moving the drill rig	1a. Trip & fall	1a. Position equipment and tools as to NOT create a trip hazard. 1a. Maintain good housekeeping throughout the project. 1a. Keep pathways clear of tools/equipment, vegetation, and debris. 1a. Mark, identify, or barricade potential hazards	U	Ca	**M**
	1b. Musculoskeletal Disorders (MSD)	1a&b. Never carry a load that blocks your vision of the pathway in front of you. 1b. Observe proper lifting techniques – lift with legs, elbows in, and keep back straight.			

Job Steps	Hazards	Controls	P	S	RAC
		1b. Obey sensible lifting limits (50-lb Maximum per person manual lifting). 1b. Team lift large/awkward loads. 1b. Use mechanical means to lift if the weight is awkward or the weight is greater than 50 pounds individually or 80 pounds for team lifting 1b. Avoid prolonged bending, awkward positions, and repetitive movements.			
	1c. Poor planning resulting in hazard, incident, or injury	1c. Prior to beginning the day's activities, hold a H&S toolbox with the work crew detailing the potential hazards. 1c. Review in detail the activities to be conducted that day. 1c. Prior to beginning drilling activities each day, ensure that the drill crew has performed their daily rig inspection.			
	1d Struck by Moving Equipment	1d. Wear orange/reflective safety vest for visibility if working in areas with traffic. 1d. Make eye contact with the operator to ensure that they see you if you are working in their area. 1d. Assume that the vehicle operator does not see you and stay out of their way. 1d. Stay clear of area where equipment is being positioned. 1d. Heavy equipment to be operated by professional/licensed operator and company authorized competent persons only. Competent person forms will be received in advance of mobilization. 1d. Equipment must have functional back-up alarms. 1d. Familiarize yourself with Emergency Stop Button (ESB) locations on the heavy equipment. Pushing the stop button will immediately shut down the truck engine if the PTO lever is ON (engaged).			
	1e. Overhead and Underground Utilities	1e. Confirm local "One Call" or other appropriate locaters have been called and have responded to mark-out requests.			

Job Steps	Hazards	Controls	P	S	RAC
		1e. Identify utility markings near boring, if appropriate. Check for signs of buried utilities including pavement patches, gas and water meters, manholes, vertical conduit or vents on buildings or utility poles, etc. 1e. Ensure that the plant has cleared all drilling locations for sub surface and overhead utilities in advance to mobilization. 1e. Ensure that one call has been notified at least 48 hours in advance to mobilization. 1e. Each subsurface location will be hand cleared to 5ft below land surface before drilling commences. 1e. Prior to raising rig derrick, visually observe the area above to ensure clearance. 1e. Relocate well location accordingly to avoid overhead/underground utilities. 1e. Drill rig must have a 20-foot setback from overhead utilities. 1e. Have use orange Hi-Vis safety cones around work area.			
	1f. Positioning the Rig results in hazard, incident, or injury	1f. Rig should be positioned on as firm a footing and as level as possible. Ensure that outriggers are used to stabilize equipment. 1f. Do not allow the rig to be positioned near ditches, holes, embankments, or other terrain features which may collapse under the drill rig's weight.			
	1g. Spilled fluids (hydraulics /fuel/ etc.)	1g. A spill kit should be available to clean up any fluid leaks from the drill rig or support vehicles. Make sure a drum is available to store leaked fluids for later disposal. 1g. Ensure that all equipment is inspected and documented as required in the PSHEP.			

Job Steps	Hazards	Controls	P	S	RAC
2. Overseeing the drilling process including driving and retrieving augers	2a. Site chemicals of concern	2a. Monitor the breathing zone of the drillers and the Parsons field team with air monitoring devices as per the PSHEP. Upgrade to respirators if air quality warrants. 2a. Use disposable outwear (Tyvek) during intrusive activities and remove this during decontamination before leaving the control zone. 2a. Ensure an eye wash station is located close by or have a portable eye wash station located with the drill rig. 2a. Locate the rally location and locate an alternate rally location in case of an emergency.	U	Ca	**M**
	2b. Struck by augers/pipes	Never cross down wind of an emergency condition 2b. Discuss with the driller the location for the Parsons Geologist or Environmental Scientist to set up for contractor oversite.			
	2c. Pinch points	2b. If you must approach the rig, make sure the lead driller is aware of your presence. 2c. Only those individuals properly trained are permitted to handle augers.			
	2d. Musculoskeletal Disorders (MSD)	2c. Ensure that crew is wearing the appropriate PPE.			
	2e. Moving and rotating parts and guarding	2d. Ensure drillers are team lifting augers or using the winch as necessary. 2e. Drillers and helpers are not touching rotating augurs. Avoid moving and rotating parts. Keep loose clothing away from moving parts.			
	2f. Grout splash	Inspections should be conducted to identify any missing guards.			
	2g. Licensed driller	2f. Ensure that when mixing grout the driller uses goggles to prevent eye splash.			
	2h. Spilled fluids (hydraulics /fuel/ etc.)	2g. Ensure that the drilling contractor is licensed in the state of Missouri before drilling commences. 2h. Make sure that a spill kit is available to clean up any fluid leaks from the drill rig or support vehicles. Make sure a drum is available to store leaked fluids for later disposal.			
	2i. Changing conditions				

Job Steps	Hazards	Controls	P	S	RAC
		2h. Ensure that all equipment is inspected and documented as required in the PSHEP. 2i. If conditions encountered in the field are not what is expected ANY TEAM MEMBER MAY STOP WORK to ensure the team and the sites safety.			
3. Soil Sampling (Parsons Geologist or Environmental Scientist)	3a. Site chemicals of concern	3a. Monitor the breathing zone of the drillers and the Parsons field team with air monitoring devices as per the PSHEP. 3a. Use disposable outwear (Tyvek) during intrusive activities and remove this during decontamination before leaving the control zone. 3a. Ensure an eye wash station is located close by or have a portable eye wash station located with the drill rig. 3a. Locate the rally location and alternate rally location in case of an emergency. Never cross down wind of an emergency condition	U	Cr	L
	3b. Struck by augers/pipes	3b. Discuss with the driller the location for the Parsons Geologist or Environmental Scientist to set up for soil logging. 3b. If you must approach the rig, make sure the lead driller is aware of your presence.			
	3c. Pinch points	3c. Ensure that crew and the geologist are wearing the appropriate PPE. 3c. Always be aware of where you place your hands.			
	3d. Changing conditions	3d. If conditions encountered in the field are not what is expected ANY TEAM MEMBER MAY STOP WORK to ensure the team and the sites safety.			
4. Overseeing the containerizing of drill cuttings and staging filled drums	4a. Musculoskeletal Disorders (MSD)	4a. Never carry a load that blocks your vision of the pathway in front of you. 4a. Observe proper lifting techniques – lift with legs, elbows in, and keep back straight. 4a. Obey sensible lifting limits (50 lb Maximum per person manual lifting). 4a. Team lift large/awkward loads.	**U**	**Cr**	**L**

Job Steps	Hazards	Controls	P	S	RAC
	4b. Pinch & Crush Points 4c. Equipment failure	4a. Use mechanical means to lift if the weight is awkward or the weight is greater than 50 pounds individually or 80 pounds for team lifting 4a. Avoid prolonged bending, awkward positions, and repetitive movements. 4b. Only those individuals properly trained are permitted to stage drums. 4b. Ensure that Drillers wear heavy work gloves during drum moving activities. 4b. Ensure that the drums have not been damaged and the drums are stored in the approved location or locations before the drillers de-mob. 4c. Ensure that a certified operator drives bobcats or forklifts if used. 4c. Ensure that the load capacity of the machine, or tool used to maneuver the drums, is designed to lift the weight of the drums and that the load rating is clearly labeled.			
5.Overseeing the decontamination of drilling components (steam cleaning)	5a. Water jet cut 5b. Chemical adsorption, inhalation, ingestion 5c. Hot steam can burn skin, and cause eye damage. 5d. Slip/ trip/ fall	5a. Stay a minimum of 20 feet from decontamination area and upstream of steam cleaner wand operations. 5b. Stand upwind to avoid overspray 5c. Ensure drill crew are utilizing appropriate PPE including: Tyvek, face shield with safety glasses, heavy nitrile gloves, and steel toe boots. 5d. Ensure the team maintains good housekeeping while steam cleaning. Managing equipment, decontamination water, and soil removed in a way as to limit chances for slip, trips, and falls.	**U**	**Cr**	**L**
6. Site Exposure	6a. Dehydration	6a. Provide sufficient amounts of cool water, at least one quart per employee per hour for the entire workday. 6a. Watch for signs of heat stress in the Parsons and the drillers team. If high humidity and or high temperature conditions arise institute heat stress monitoring and prevention protocols. 6a. Use the “buddy system” to monitor fellow employees for signs of heat stress/stroke. 6a. Provide access to shaded area.	**U**	**Cr**	**L**

Job Steps	Hazards	Controls	P	S	RAC
	6b. Environmental Hazards Including: insects, poison ivy, snakes, rodents, etc. 6c. Sunburn 6d. Trip and Fall 6e. Thunderstorms 6f. First Aid 6g. Communications 6h. Site Contaminants of Concern	6a. Try to schedule work during the cooler hours of the day. 6b. Watch for spiders, flying insects, snakes, etc. 6b. Be mindful of poison ivy, oak and sumac. Remember: Leaves of three; let it be. 6c. Wear sunscreen and hat as necessary 6d. Configure operations (equipment, coolers, etc.) as to minimize trip hazards. 6d. Mark-out or barricade potholes and other trip hazards. 6e. If lightning is observed or thunder is heard, suspend work until 30 minutes have passed without the occurrence of lightning/thunder. Allow time to secure equipment from potential heavy rain, heavy wind, and hail and seek proper cover. 6f. Parsons truck is equipped with a first aid kit and eye wash. 6f. Contact Work Care at (888) 449-7787 for medical guidance and notify the project team of any incident. 6g. All field personnel must be equipped with a cellular phone. 6h. Wear the appropriate PPE – review the Notes on page 1 of this AHA.			

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
Sonic/Auger/Direct Push Drill rig	The drilling company will be qualified and licensed as per State and Local requirements The equipment operators will be certified as competent people as per the PSHEP	Have drill crew to inspect their rig prior to operation each day. If a Bobcat, backhoe, or forklift is used to manage waste then the equipment will be inspected daily.

Activity Hazard Analysis (AHA)

Activity/Work Task:	Groundwater Sampling	**Overall Risk Assessment Code (RAC) (Use highest code)**	**Moderate**
Project Location:	**West Lake Landfill**		
Job Number:	**451662**		
Date Prepared: 2/4/2020	**Date Revised:**		
Prepared by (Name/Title): Erik Powers, Senior Scientist			
Reviewed by (Name/Title): Darrell Pruitt, Health and Safety Manager			
Employer/GBU:	**INF**		

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	**Likely**	**Occasional**	**Seldom**	**Unlikely**
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)
Modified Level D PPE Required including:

- Tyvek coverings for all body parts, excluding head and hands.
- Steel toed boots
- Safety glasses
- High Visibility Safety Vest
- Nitrile gloves when handling site soil or groundwater
- Hard hat
- Personal radiation dosimeter

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above). **The RAC is developed after correctly identifying all the hazards and fully implementing all controls.**

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "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.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

Job Steps	Hazards	Controls	P	S	RAC
1. Groundwater Sampling	1a. Inhalation and contact with hazardous substances	1a. Provide field personnel with proper skin, eye, and respiratory protection based on the exposure hazards 1a. Review hazardous properties of site contaminants and engineering controls, including PPE and vapor control measures, prior to field operations 1a. Field personnel should remain cross-wind or upwind of the well head and purge water 1a. Keep all sampling equipment, supplies, and bottles upwind or cross-wind	U	Ca	**M**

Job Steps	Hazards	Controls	P	S	RAC
		1a. Implement vapor controls measures to minimize the presence of vapors in the breathing zone. 1a. Upgrade PPE to include respiratory protection if area and personnel monitoring warrant. 1a. Purge water should be containerized by pumping purge water into closed container. 1a. The container should be placed so that vapors vent downwind or cross-wind of the breathing zone. 1a. Field parameters should be collected via an inline flow through cell or by opening a t-valve over an open container. Care should be taken to minimize the volume of water that accumulated in the open purge container. 1a. While filling sample bottles, the sampler should sit upwind of the sample bottles and should avoid leaning close to the purge container while filling sample bottles. The purge container should be repositioned as necessary to remain upwind during sampling. 1a. Purge water should be decanted carefully into a lidded transport container (e.g., a 55-gallon drum with lid) using a funnel or equivalent to avoid spilling or splashing.			
	1b. Struck by/against flying particles	1b. Wear Tyvek, safety glasses with side shields, steel or composite toe boots at all times 1b. Wear safety glasses when cleaning or decontaminating equipment. 1b. Wear safety glasses when filling sample bottles and performing field test kit analyses. 1b. Grip well cap tightly when removing. Lean away from the well to avoid being struck by a well cap under pressure.			
	1c. Back injuries; musculoskeletal disorders (MSD)	1c. Proper lifting/carrying techniques 1c. Obey sensible lifting limits (50 lb. maximum per person for manual lifting) 1c. Use mechanical lifting equipment (handcarts, trucks) or more than one person to move large, awkward loads.			

Job Steps	Hazards	Controls	P	S	RAC
	1d Injuries from improper use of hand tools and equipment	1d. Select the appropriate tool for each task 1d. Maintain all tools in a safe, good working condition 1d. Provide training on proper operation of tools and equipment 1d. Keep guards in place during use 1d. All power tools will have insulated handles, be electrically grounded, or be double insulated 1d. When using cutting tool, always cutting away from body and hands			
	1e. Adverse weather	1e. Monitor the weather 1e. Know and observe for the warning signs of adverse weather 1e. Identify a safe shelter prior to field work			
	1f. Vehicle traffic in area	1f. When working near roadways or parking areas wear high visibility vests and place safety cones (or equivalent) around the work area..			
	1g. Biological hazards	1g. Be alert for biological hazards 1g. Wear appropriate PPE. 1g. Use an appropriate tool rather than hands when opening wells.			
	1h. Heat Stress	1h. Monitor for heat stress in accordance with health and safety procedures 1h. Provide fluids to prevent work dehydration 1h. Take breaks at appropriate frequency based on weather conditions. 1h. Adhere to the heat stress monitoring program			

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
PID, Landfill Gas Meter, Bladder pumps	N/A	N/A

Activity Hazard Analysis (AHA)

Activity/Work Task:	**Sampling with Hand Auger**
Project Location:	**West Lake Landfill**
Job Number:	**451662**
Date Prepared: 2/25/2020	**Date Revised:**
Prepared by (Name/Title): Erik Powers Senior Scientist	
Reviewed by (Name/Title): Darrell Pruitt Health and Safety Manager	
Employer/GBU:	**INF**

Notes: (Field Notes, Review Comments, etc.)
Modified Level D PPE Required including:

- Steel toed boots
- Safety glasses
- High Visibility Safety Vest
- Nitrile gloves when handling site soil or groundwater
- Hard hat
- Personal radiation dosimeter

Overall Risk Assessment Code (RAC) (Use highest code) **Low**

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above). **The RAC is developed after correctly identifying all the hazards and fully implementing all controls.**

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "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.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

Job Steps	Hazards	Controls	P	S	RAC
1. Equipment & Tool Usage	1a. Ergonomic Hazards	1a. Use a hand auger efficient enough to execute the required objective at the earliest time. Using adequately functioning equipment allows the fastest completion of the task so the risk of injuries is automatically minimized. 1a. Different types of hand augers catering to varying needs are available. Use the auger that is most appropriate for the job to be done. Augers unsuitable for the situation not only increase the time taken to finish the task but also increases the risk of injury.	U	Cr	L

Job Steps	Hazards	Controls	P	S	RAC
	1b. Eye, feet, hands getting cut or mashed 1c. Thermal stress – heat and cold injuries 1d. Underground obstructions	1a. Employ hand movements that exert minimum pressure on wrist bones. 1b. Eye/Face Protection – Safety glasses with side shields. 1b. Appropriate work gloves and footwear as required. 1b. Remove excavated soil only after stopping the hand auger. 1c. Train workers/supervisors in heat stress, cold stress/hypothermia recognition, prevention, and control. 1c. Use of WBGT (weather station) readings when working in extreme temperatures. 1c. Provide water/fluids. Provide adjacent thermal recovery (cool down/warm up) area. 1d. Before excavation, find out if there are any underground power lines, cables or telephone lines running through the area. Use the underground obstruction protocol as necessary. 1d. Take precautions to prevent the hand auger from getting entangled in any type of underground cover that may be used for environmental, engineering or alternative purpose.			
2. Accessing/Working in Field.	2a. Tripping, falling, dangerous wildlife	2a. Awareness of potential slippery surfaces and tripping hazards. 2a. Inform field coordinator or Site Safety Manager of any slip, trip, or fall hazards. 2a. Use “buddy” system. 2a. Be alert for snakes, bees, and diseased animals.	U	Cr	**L**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
PID, Landfill Gas Meter, Bladder pumps	N/A	N/A

Activity Hazard Analysis (AHA)

Activity/Work Task:	Inspections, Surveying, and Monitoring
Project Location:	**West Lake Landfill**
Job Number:	**451662**
Date Prepared: 2/4/2020	**Date Revised:**
Prepared by (Name/Title): Erik Powers	**Senior Scientist**
Reviewed by (Name/Title): Darrell Pruitt	**Health and Safety Manager**
Employer/GBU:	**INF**

Notes: (Field Notes, Review Comments, etc.)
Modified Level D PPE Required including:

- Steel toed boots
- Safety glasses
- High Visibility Safety Vest
- Nitrile gloves when handling site soil or groundwater
- Hard hat
- Personal radiation dosimeter

Overall Risk Assessment Code (RAC) (Use highest code) **Moderate**

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above). **The RAC is developed after correctly identifying all the hazards and fully implementing all controls.**

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "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.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

Job Steps	Hazards	Controls	P	S	RAC
1. Conduct Pre-mobilization meetings	1a. Overlook potential hazards; unprepared in emergencies	1a. Develop specific controls for each potential hazard. 1a. Verify field conditions match work instructions. 1a. Assign workers qualified for the task. 1a. Check in with the Radiation Safety Officer and follow recommended procedures for radiation monitoring/mitigation. 1a. Select appropriate Personal Protective Equipment (PPE) based on task.	U	Cr	L

Job Steps	Hazards	Controls	P	S	RAC
		1a. Know evacuation assembly points and routes. 1a. Know and distribute emergency phone numbers and procedures. 1a. Be familiar with applicable SHEPs. 1a. Team leaders/foremen will be able to account for working personnel at all times.			
2. Equipment & Tool Usage	2a. Ergonomic Hazards	2a. Reduce bending, twisting, kneeling, using alternating work, rotating workers and periodic stretching break to reduce static or awkward postures. 2a. Use team lifting and lifting aids to minimize lifting weights over 25-lbs above the shoulders, below the knees, or at arm length.	U	Ca	**M**
	2b. Cuts, punctures, electrical shock by faulty tool or cord	2b. All equipment and tools will be used and maintained in accordance with manufacturer's instructions and recommendations, and will be only used for the purpose for which designed. 2b. Portable power tools will be in good repair and with all required safety devices installed and properly adjusted. Portable power tools having defects that will impair their strength or render them unsafe will be removed from service. 2b. Portable power tools with guards will be equipped with such guards; ensure guards are in place and operational at pinch and nip points and control loose clothing, gloves, jewelry and hair. 2b. Ensure all portable power tools will use ground fault circuit interrupters. Check cords for cuts and frays. 2b. Secure all equipment properly when not in use.			
	2c. Burns, fire	2c. Keep appropriate fire extinguishers on hand. 2c. Know procedures and escape routes in case of rapidly moving brush fires.			
	2d. Airborne dust/particulates inhalation and in eyes	2d. Ensure local ventilation/engineering controls are in place. 2d. Monitor exposure and area; upgrade to respiratory protection if needed. 2d. Use safety goggles.			

Job Steps	Hazards	Controls	P	S	RAC
	2e. Eye, feet, hands getting cut or mashed 2f. Thermal stress – heat and cold injuries	2e. Eye/Face Protection – Safety glasses with side shields. 2e. Appropriate work gloves and footwear as required. 2e. Caution near moving parts. 2f. Train workers/supervisors in heat stress, cold stress/hypothermia recognition, prevention, and control. 2f. Use of WBGT (weather station) readings when working in extreme temperatures. 2f. Provide water/fluids. Provide adjacent thermal recovery (cool down/warm up) area.			
3. Vehicle Operations (Automobiles, Trucks and Forklifts).	3a. Accidents while driving, loading, unloading equipment and material 3b. Accidents due to unfamiliar vehicles, navigating in unfamiliar areas, driving while fatigued.	3a. Vehicle Operators will follow and adhered to all local, state or foreign rules of Safe Vehicle Operations. 3a. Drivers will have a valid driver license. 3a. All occupants will wear seat belts at all times. 3a. Employ defensive driving techniques. 3a. Obey posted speed limits, traffic signals and signs, weight and height restrictions for any overweight or overweight vehicles, and common courtesy on the road. 3a. Be aware of road conditions and hazards. 3a. Use of cellular phones by vehicle operators while driving and during refueling operations is prohibited. 3a. Secure unsteady or unbalanced loads in vehicles or on forklifts. Keep within load limit of equipment and know the weight of load. 3a. Secure all heavy equipment vehicles when not in use (locks, chock blocks, de-energize, etc.). 3b. Make adjustments to mirrors, seats, electronic controls, and steering wheel before driving vehicle. 3b. Read and memorize directions prior to driving, use current maps. Do not attempt to read maps or directions while driving. 3b. Be aware of local laws applicable to motor vehicle operation. 3b. Get proper rest before travelling.	U	Ca	**M**

Job Steps	Hazards	Controls	P	S	RAC
4. Accessing/Working in Field.	4a. Tripping, falling, dangerous wildlife	4a. Awareness of potential slippery surfaces and tripping hazards. 4a. Inform field coordinator or Site Safety Manager of any slip, trip, or fall hazards. 4a. Use "buddy" system. 4a. Be alert for snakes, bees, and diseased animals.	Ua	Cr	**L**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
PID, Landfill Gas Meter, Bladder pumps	N/A	N/A

Activity Hazard Analysis (AHA)

Activity/Work Task:	Ponar Dredge Use
Project Location:	West Lake Landfill
Job Number:	451662
Date Prepared: 3/23/2020	**Date Revised:**
Prepared by (Name/Title):	Dale R. Dolph, CHST
Reviewed by (Name/Title):	Darrell Pruitt
Employer/GBU:	INF

Notes: (Field Notes, Review Comments, etc.)
Modified Level D PPE Required including:

- Tyvek coverings for all body parts, excluding head and hands.
- Steel toed boots
- Safety glasses
- High Visibility Safety Vest
- Leather work gloves while handling sampler and rope/line
- Nitrile gloves when handling site soil or sediment
- Hard hat
- Hearing protection as needed
- USCG Approved Personal Floatation Device (PFD) for all on or near water operation
- Personal radiation dosimeter

Overall Risk Assessment Code (RAC) (Use highest code) **Moderate**

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above). **The RAC is developed after correctly identifying all the hazards and fully implementing all controls.**

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "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.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

Job Steps	Hazards	Controls	P	S	RAC
1. Boating Operations	1a. Hazards associated with on the water work activities	1a. Review the AHA "Working on Barge or Boat"	U	Ca	M
2. Use of Ponar Dredge	2a. Pinch points/lacerations/abrasions	2a. Always utilize leather gloves when setting Pinch-pin on dredge. Ensure pin is inserted with the flat portion down. Be careful not to place hands or fingers in tripping mechanism pinch points.			

Job Steps	Hazards	Controls	P	S	RAC
		2a. Use gloves when handling line to lower the sampler through the water column			
	2b. Musculoskeletal Disorders (MSD)	2b. Observe proper lifting techniques – lift with arms, elbows in, and keep back straight. Use team lift to share the load. Avoid awkward body position. Lift the dredge to the surface in a slow even manner. 2b. Consider using mechanical means to lift if the weight is awkward or the weight is greater than 40 pounds individually or 80 pounds for team lifting 2b. Avoid prolonged bending, awkward positions, and repetitive movements.			
	2c. Boat Tip over/Falling out of boat	2c. Always remain seated when retrieving dredge, draining water from top of the sampler or emptying the contents of the dredge.			
3. Collection of sediments	3a. Chemical exposure to sediments	3a. If required, monitor the breathing zone with the appropriate air monitoring device as per the PSHEP. Follow Action Levels per PSHEP COCs Table. 3a. Avoid all skin and clothing contact with lake sediments. 3a. If exposure to contaminated materials occurs, promptly wash contaminated skin using soap or mild detergent and water 3a. Ensure an eye wash station is located close by or have a portable eye wash bottle located on the boat. All persons involved in the sampling activity will wear the appropriate eye protection at all times. 3a. Wash sediments from boat deck back into the lake following each sampling location.			
	3b. Chemical exposure during decontamination	. 3b. If decontamination of the sampling dredge with chemicals containing physical or health			

Job Steps	Hazards	Controls	P	S	RAC
		hazards are required, ensure the SDS is reviewed and ensure adequate PPE is used and 1st Aid measures are in place. 3b. Ensure an eye wash station is located close by or have a portable eye wash bottle located on the boat.			

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
• Level D PPE Minimum. Task Dependent • Safety eyewear • Proper Gloves (Insulated, leather palm, cut resistant, chemical resistant) • Ring Buoy & Rope, Safety belt / lifeline. Throw line, • PFDs • Hearing protection as needed • Personal dosimeter as required • Repellent, Sunscreen, Potable Water • Rain Gear • Fire Extinguishers, • Communication Devices • 40 Hour HAZWOPER/8-Hour Refresher	• The boat will be operated by experienced, authorized personnel only. This may include training such as boating safety course, navigation regulations and emergency procedures as required. • Ensure that the boat is launched and retrieved from the water at a safe entry point (e.g. Avoid entry/exit on steep slopes, slick surfaces, thick vegetation, etc.)	• The Competent Person (Captain/Operator) will ensure that the vessel is inspected for operational readiness prior to any on the water operations • All waterer craft will be properly registered for use in waterways in accordance with local, state and federal requirements. • Ensure appropriate safety equipment is present in the boat, i.e. air horn, signal device, full and inspected A/B/C fire extinguisher prior to launch. • If conditions encountered in the field are not what is expected **ANY TEAM MEMBER MAY STOP WORK** to ensure the team and the sites safety.

Activity Hazard Analysis (AHA)

Activity/Work Task:	Work Operations – Barge or Boat
Project Location:	West Lake Landfill
Job Number:	451662
Date Prepared: 3/23/2020	**Date Revised:**
Prepared by (Name/Title):	Dale R. Dolph, CHST
Reviewed by (Name/Title):	XXXX
Employer/GBU:	INF

Notes: (Field Notes, Review Comments, etc.)
Modified Level D PPE Required including:

- Tyvek coverings for all body parts, excluding head and hands.
- Steel toed boots
- Safety glasses
- High Visibility Safety Vest
- Nitrile gloves when handling site soil or sediment
- Hard hat
- Hearing protection as needed
- USCG Approved Personal Floatation Device (PFD) for all on or near water operation
- Personal radiation dosimeter

Overall Risk Assessment Code (RAC) (Use highest code) **Moderate**

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above). **The RAC is developed after correctly identifying all the hazards and fully implementing all controls.**

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "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.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

Job Steps	Hazards	Controls	P	S	RAC
1. Boarding and De-boarding Boat	1a. Slips, Trips & Falls	1a. Use proper footing and handrails for boarding and de-boarding of boat. Be aware of any objects on the boat and dock that may present a tripping hazard. 1a. Assure that boat is firmly grounded before attempting to exit boat. Assure ground is firm before stepping out of boat. 1a. Check for wet or icy surfaces before stepping into or out of boat.			

Job Steps	Hazards	Controls	P	S	RAC
		1a. Maintain three points of contact when boarding or de-boarding boat. 1a. Do not board or de-board boat while carrying a load. Always transfer loads from barge or boat. 1a. Always place foot on flat, stable surfaces when boarding or de-boarding. Step to center of boat when entering. Never step on sidewalls.			
	1b. Musculoskeletal Disorders (MSD)	1a&b. Never carry a load that blocks your vision of the pathway in front of you. 1b. Observe proper lifting techniques – lift with legs, elbows in, and keep back straight. 1b. Obey sensible lifting limits (40-lb Maximum per person manual lifting).			
2. Boating Operations	2a. Drowning	2a. **Personal Flotation Device (PFD)** 2a. Employees working over or near water, where the danger of drowning exists, shall be provided with U.S. Coast Guard-approved life jacket or buoyant work vests. 2a. PFD types must be approved by the United States Coast Guard (USCG). 2a. **Rescue line & Ring Buoy** 2a. A rescue ring buoy, with 90 feet of line must be kept both on shore in close proximity to the actual work site in order to be accessed in case of an emergency as well as inside the boat used for work operations. 2a. **Shoreline Spotter** 2a. All on water work activity will be conducted with a shoreline spotter/support present. 2a. The shoreline spotter will be present in the immediate area at all times when on the water work is being performed. That individual must be specifically designated to respond to water emergencies.	U	Ca	**M**
	2b. Hypothermia	2b. If water temperature is below 50 deg F, survival suits/jackets are required to be worn by all personnel on board for all on the water work activities.			

Job Steps	Hazards	Controls	P	S	RAC
		2b. Provisions will be made for rescue and or emergency procedures prior to any on the water activity each day. 2b. If a person falls in the water, use flotation device and retrieval rope to assist the person. Once onboard, move person to shore immediately and allow to dry off and warm up. Stand by to assist the victim and observe for signs of hypothermia			
	2c. Fire	2c. Ensure an inspected A/B/C Fire extinguisher of appropriate size is present in the boat and on shore.			
3. Severe Weather/Lightning	3a. Electrocution/Exposure	3a. Weather reports must be checked prior to work each day. 3a. Both shore support and onboard personnel must have access to severe weather alerts via radio or phone 3a. If lightning is observed or thunder is heard, suspend work until 30 minutes have passed without the occurrence of lightning/thunder. Allow time to secure equipment from potential heavy rain, heavy wind, and hail and seek proper cover.			
	3b. Changing conditions	3b. If conditions encountered in the field are not what is expected ANY TEAM MEMBER MAY STOP WORK to ensure the team and the sites safety.			

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
• Level D PPE Minimum. Task Dependent • Safety eyewear • Proper Gloves (Insulated, leather palm, cut resistant, chemical resistant) • Ring Buoy & Rope, Safety belt / lifeline. Throw line, • PFDs • Hearing protection as needed • Personal dosimeter as required • Repellent, Sunscreen, Potable Water • Rain Gear • Fire Extinguishers, • Communication Devices. • 40-Hour HAZWOPER/8-Hour Refresher	• The boat will be operated by experienced, authorized personnel only. This may include training such as boating safety course, navigation regulations and emergency procedures as required. • Ensure that the boat is launched and retrieved from the water at a safe entry point (e.g. Avoid entry/exit on steep slopes, slick surfaces, thick vegetation, etc.)	• The Competent Person (Captain/Operator) will ensure that the vessel is inspected for operational readiness prior to any on the water operations • All waterer craft will be properly registered for use in waterways in accordance with local, state and federal requirements. • Ensure appropriate safety equipment is present in the boat, i.e. air horn, signal device, full and inspected A/B/C fire extinguisher prior to launch. • If conditions encountered in the field are not what is expected **ANY TEAM MEMBER MAY STOP WORK** to ensure the team and the sites safety.

Appendix D – Training Matrix

Appendix D
West Lake Landfill Project
Training Matrix
Revision Date: 2/5/2020

Employee Name / Employee Title / Employee Function	Required Compliance / Risk Control / Risk Management Training	Required Licenses / Designations of Authority / Competencies / Qualifications / Certifications	Frequency of Required Refresher Training / Assessment of Continuing Competency
Parsons and subcontractor field staff performing field work.	Site orientation / PSHEP review and sign-off (Parsons field staff) / SSHEP review and sign-off (Subcontractor field staff)	Sign PSHEP / SSHEP	Prior to working on site (or property (typical))
Parsons and subcontractor personnel performing field work	24 or 40-Hr Hazwoper Training	Obtain 24 or 40-hr Hazwoper training certificate	Minimum training for working on site
Parsons and subcontractor personnel performing field work	8-Hr Hazwoper Refresher Training	Obtain 8-hr Hazwoper refresher training certificate	Minimum training for working on site
One field staff per team	First Aid / CPR / AED	Designated provider of first aid / CPR	Every 2 years (with bloodborne pathogens training)
Parsons and subcontractor field staff performing field work	Emergency Action Plan	Can be included in PSHEP review or provided verbally during tailgate safety meeting.	On initial assignment; upon material changes to emergency action plan changes
Parsons field staff including project manager, construction manager, site construction representatives, samplers, property representative, and subcontractor field staff	Hazard Communication	PSHEP review and location of SDS	On initial assignment; when new chemicals are added to the work environment
Project field personnel including visitors	Minimum PPE: Hardhats, gloves, eye protection, safety boots, safety vests and hearing protection (where required) Additional PPE as required by task specific AHAs	PSHEP review	On initial assignment; upon changes to PPE use
Project field personnel who in one year may receive at least 100 mrem of radiation from West Lake Landfill.	Radiation Safety Training Module 2 – administered by Ameriphysics	Completion and passing a written examination	On initial assignment and annual refresher.
Radiation Safety Officer	RSO 40-hr certification	Obtain 40-hr RSO certificate	Annual

Note: Training referenced above is limited to worker health and safety. It does not cover other subcontractor non-health and safety-related training requirements.

Appendix E - Forms

PARSONS
Daily SH&E Planner (Sheet 1 of 3)

Personal Safety & Health Planner for Your Daily SH&E Huddle

Employee Name:	Date:
Employee Number:	Craft:
Supervisor:	Location of Work:
Work Description:	

Employee Planning Checklist

Complete the checklist for each new work operation. Check the "YES" box for those items needed to safely perform your work. All boxes marked "YES" should be properly addressed before the work operation begins.

Employee Daily Work Area Assessment

All conditions must be satisfied in order to start or continue working. Formally check your work area at least four times a day and at the start of teach new work operation. Report all problems to your supervisor.

Employee Planning Checklist

Personal Protective Equipment	Yes	N/A
Hard Hat/Safety Glasses	☐	☐
Face Shield	☐	☐
Goggles – Cutting, Chemical, Dust	☐	☐
Hearing Protection	☐	☐
Respirator	☐	☐
Gloves – Type	☐	☐
Clothing – Type	☐	☐
Foot Protection	☐	☐
Other	☐	☐
Special Equipment	**Yes**	**N/A**
Harness/Double Lanyards/Decelerator Device	☐	☐
Life Line – Horizontal, Vertical, Retractable	☐	☐
Air Monitor	☐	☐
Tripod/Rescue Devices	☐	☐
Barricades/Flagging	☐	☐
Fire Extinguishers	☐	☐
Signs	☐	☐
Electrical Insulating Materials, Blankets, Tools, Gloves	☐	☐
Chemical/Oil Spill Kits	☐	☐
Communication Devices – Radios, Horns	☐	☐

PARSONS
Daily SH&E Planner (Sheet 2 of 3)

Employee Planning Checklist (Contd)

Environmental Issues	Yes	N/A
Resource Conservation/Sustainability	☐	☐
Air Pollution/Emissions	☐	☐
Wastewater Discharges	☐	☐
Drinking Water	☐	☐
Management of Hazardous Materials and Hazardous and Solid Wastes	☐	☐
Emergency Response to Spills and Releases	☐	☐
Environmental Assessments	☐	☐
Buried Items	☐	☐
Protected Ecological and Cultural Resources	☐	☐
Specific Reports (Required by Environmental Regulation) on Toxic or Hazardous Chemicals Usage and Storage	☐	☐
Other	☐	☐
	☐	☐
	☐	☐
Work Permits	**Yes**	**N/A**
Activity Hazards Analysis	☐	☐
Trench and Excavation Notice	☐	☐
Confined Space Permit	☐	☐
Welding and Cutting Permit	☐	☐
Crane and Hoist Lift Plan	☐	☐
Crane Suspended Work Platform	☐	☐
Other	☐	☐
Tagging Procedure	**Yes**	**N/A**
Scaffolding	☐	☐
Lockout and/or Tagout	☐	☐
Other	☐	☐

PARSONS

PARSONS
Daily SH&E Planner (Sheet 3 of 3)

Employee Daily Work Area Assessment					
Times					
Initials					
				Yes	**N/A**
A means of safe access and egress is provided to my work area.				☐	☐
My work area is clean and organized.				☐	☐
I have the tools and equipment necessary to perform my work.				☐	☐
My work area has adequate lighting.				☐	☐
I know how to, and have the means available, to summon emergency assistance.				☐	☐
I have a copy of, or have been trained on, the MSDS for the hazardous material I am working with.				☐	☐
The equipment I am working on, or working in, has been properly tagged out/ locked out, cleaned, vented, and drained, as well as stored energy released as required.				☐	☐
My work operation is properly controlled so that other workers will not be adversely affected by dust, fumes, sparks, slag, welding flash, floor holes, fall hazards, falling objects, overhead loads, slippery surfaces, etc.				☐	☐
I have performed an act of safety.				☐	☐
I have the necessary training to safely perform my work.				☐	☐
I will not be handling liquid chemicals, fuels, etc. and do not need spill response equipment and supplies; or I have the materials and know how to get assistance if needed.				☐	☐
I will not be discharging any wastewater or storm water from my work area.				☐	☐
The work I am doing is not covered by an environmental permit.				☐	☐
I do not generate any chemical wastes as part of work.				☐	☐
I have the authority to stop unsafe operations!				☐	☐

Supervisor's Safety & Health Audit									
Times:									
Initials:									

Safety, Health, and Environmental Suggestions:

ESHARP 2-WEEK LOOK AHEAD MEETING

SH&E Plan for Week Ending:		Contractor:	
Project/ Location:		Meeting Date:	
Plan Prepared by:		Date Prepared:	

Next Two Weeks' Scope of Work:

Identified SH&E Risks / Exposures / Hazards / Issues:

Identify Tasks requiring environmental construction permitting (e.g., storm water permit) or involving other environmental regulatory issues (e.g., generation of new, uncharacterized waste):

Tasks with environmental risk of significant spills or releases:

Control Measures:

Additional Activity Hazards Analysis Required:

Contractors and Subcontractors Mobilizing / Demobilizing:

Audits/Inspections Scheduled:

Competent Person Changes:

Planned Orientation / Training:

Recommendations / Comments / Concerns:

Note: This information shall be incorporated into the meeting minutes.

PARSONS

Initial Contractor Employee Training Acknowledgment

Name, title, and employer of trainer: _____

Training subject: _____

Training materials used: _____

Name of contractor employee trained: _____

Date of hire/assignment: _____

I, certify that I have received training as described above in the following areas.

Name of Contractor Employee (Printed)

- The potential occupational hazards in general in the work area and associated with my job assignment.
- General SH&E requirements indicate the safe work conditions, safe work practices, personal protective equipment, and environmental requirements required for my work.
- The hazards of any chemicals to which I may be exposed and my right to information contained on material safety data sheets for those chemicals, and how to understand this information.
- My right to ask questions, or provide any information to the employer on safety, health, or environment either directly or anonymously without any fear of reprisal.
- Disciplinary procedures the employer will use to enforce compliance with general safety requirements.

I understand this training and agree to comply with general safety requirements for my work area.

_____ _____

Contractor Employee Signature **Date**

SAFETY, SECURITY, HEALTH, AND ENVIRONMENTAL ORIENTATION ACKNOWLEDGMENT

I, (printed name of new project employee), acknowledge receiving, reviewing, and understanding the safety, security, health, and environmental orientation information for working on this project. I understand that I shall not perform work on this project unless I am knowledgeable and have received the necessary training to safely and effectively carry out the work I am assigned. I understand that I have the authority and responsibility to stop work and ask my supervisor about any safety, security, health, and environmental matters for which I am unsure or for which I am untrained.

Subject matter covered in my orientation included the following.

<Insert the new project employee's custom orientation plan subject matter here. Use two columns, if necessary.

Refer to the Sample Custom Orientation Plan in Appendix 14.4-1.>

_____	_____
Signature of New Project Employee	Signature of New Project Employee's Supervisor
_____	_____
Date Signed by New Project Employee	Signature of New Project Employee's Mentor

Signed acknowledgments shall be maintained in the new project employee's training file.

CONTRACTOR KICKOFF / PREMOBILIZATION SH&E MEETING CHECKLIST

Date:	Project/Location:
Parsons Representative:	Contractor Representative:
The following project site safety, health, security, and environmental requirements, procedures, and hazards have been identified and reviewed with the contractor:	

Mark with "X"	Item	Mark with "X"	Item	Mark with "X"	Item
☐	Air Pollution and Emissions	☐	Fall Protection, Guardrails, and/or Scaffolding	☐	Personal Protective Equipment
☐	Asbestos			☐	Process Safety Management (PSM)
☐	Buried Items	☐	Fire Protection		
☐	Competent / Qualified Person	☐	Hazardous Materials and Wastes	☐	Protected Ecological and Cultural Resources
☐	Confined Spaces (Permit / Non-Permit)	☐	Hot Work, Welding, and/or Cutting	☐	Resource Conservation and Sustainability
☐	Cranes / Hoists / Annual Inspection Certificate(s)	☐	Ladders	☐	Site Security, Visitor Control, and Public Exposure
☐	Demolition	☐	Lead Paint	☐	Specific Reports (Required by Environmental Regulation) on Toxic or Hazardous Chemicals Usage and Storage
☐	Drinking Water	☐	Lockout / Tagout		
☐	Electrical	☐	Management of Hazardous Materials and Hazardous Solid Wastes		
☐	Emergency Response to Spills and Releases			☐	SSHEP, Emergency Mgmt. and Response Plan
☐	Environmental Assessments	☐	Overhead Power Lines	☐	Wastewater Discharges
☐	Excavations and Trenches	☐	Permits (Excavations, Scaffolding, Demolition, Traffic, Confined Spaces, etc.)	☐	Vehicle and Heavy Equipment
				☐	Other:

Protection of the Public:
Additional Project Concerns:

Attendees:

Name	Title	Company

PARSONS

SAFETY – MAKE IT PERSONAL! – TAKE 5 FOR SAFETY

Date: _____

Project/Task: _____

Your Name: _____

Before you begin any new task, pause for 5 minutes and ask yourself the following questions. Take corrective actions as necessary prior to beginning work.

- ☐ Do I know exactly what I am doing?
- ☐ Have I reviewed the AHA for this task?
- ☐ Do I have all the right people involved?
- ☐ Is there any potential that I or my coworkers could get hurt?
- ☐ Are there any questions I should be asking fellow employees?
- ☐ Should I talk to my supervisor?
- ☐ Have I read the work plan and fully understand the procedures relating to this job?
- ☐ Am I using the proper tools?
- ☐ Do I have the proper PPE?
- ☐ Will I be working as safely as I know how?
- ☐ Do I see anything that just doesn't look quite right?
- ☐ Am I in a hurry? Would I be safer if I slowed down?

You must honestly and completely answer "YES" to each of these questions before you begin your work. No task in Parsons is so important that you must jeopardize your safety. You can stop or pause any work activity if you need to.

Job Hazards? (List the hazards of the task and how you will be protected from them.)

1. Hazards: _____

   Protection: _____

2. Hazards: _____

   Protection: _____

3. Hazards: _____

   Protection: _____

Work Area	Yes	No
Work area clean?	☐	☐
Permits obtained?	☐	☐
Standard PPE being used *(hard hat, vest, eye protection, gloves, safety boots)?*	☐	☐
Any additional PPE needed? List it here and then go get it if you don't have it with you.		

Briefly review the hazards and protection again after taking a break.

Appendix F – SSHEP Freezor

Information Required in an SSHEP

Section	Title	Section	Title
1	Project Owner, Project Name, and Contractor's Safety, Health, and Environmental Policy Statement	11	Integration of SH&E Risk Mitigation Planning in 2-Week Look-ahead Submissions
2	Scope of Work Evaluation	12	Employee Participation and Consultation
3	Responsibility and Identification of Key Personnel	13	Emergency Action Plan
4	Overall Assessment of SH&E Hazards, Exposures, and Risks	14	Site-specific Medical Emergency Plan
5	Relevant SH&E Compliance Programs, Associated Compliance Information, and Personnel Responsibility Assignments	15	Incident Reporting, Investigation, and Corrective Action Processes
6	SH&E Compliance Training Matrix and Training / Education Processes	16	Work Site Inspection and Program Audit Processes
7	Site-specific Worker Orientation Program	17	Progressive Disciplinary Program
8	Identification of Competent / Qualified Personnel	18	Recordkeeping / Document Retention Processes
9	Hazard Identification, Notification, and Correction Process	19	Other (as defined by Contractor or Parsons)
10	Specific Hazard and Risk Control Measures (e.g., Activity Hazard Analyses, Operational Risk Management Processes)	20	Other (as defined by Contractor or Parsons)

Date: 2/5/2020 **Project/Location:** West Lake Landfill OU-1 Design Investigation

Contractor Name: Feezor Engineering, Inc. **Parsons SH&E Representative:** Darrell Pruitt

The information provided here is based on a review of the contractor site-specific safety, health, and environmental plan (SSHEP). Areas identified as incomplete shall be revised based on the standards in the contract specifications and the project safety, health, and environmental plan (PSHEP). Contractors shall resubmit revised sections of the SSHEP to the project manager within 1 week of receiving this review documentation.

Section	Complete	Incomplete	Section	Complete	Incomplete
Statement of SH&E Policy	☐	☐	Specific Activity Hazard Analyses (AHAs) and Operational Risk Assessments	☐	☐
Scope of Work Evaluation	☐	☐	Adequate Hazard / Risk Controls	☐	☐
Key Line Personnel Identified	☐	☐	2-Week Look-ahead Planning	☐	☐
Overall Assessment of Hazards and Risks	☐	☐	Employee Participation and Consultation	☐	☐
Relevant SH&E Compliance Programs (Hazard Communication, PPE, HAZWOPER, Hazardous Energy Control, Fall Protection, Confined Space Entry, RCRA, etc.)	☐	☐	Emergency Action Plan	☐	☐
SH&E Compliance Program Responsibilities Assigned	☐	☐	Site-specific Medical Emergency Plan	☐	☐
Compliance Training and Education Programs	☐	☐	Incident Reporting, Investigation, and Corrective Action Processes	☐	☐
Site-specific Worker Orientation Program	☐	☐	Work Site Inspection and Program Audit Processes	☐	☐
Competent and Qualified Personnel Identified	☐	☐	Progressive Disciplinary Program	☐	☐
Hazard Identification, Notification, and Correction Process	☐	☐	Recordkeeping / Document Retention Processes	☐	☐

Additional Comments / Other SSHEP Sections or Information Required

_____

_____

_____

_____

Reviewed by:

Name	Title	
_____	_____	_____

Feezor Engineering, Inc.

West Lake Landfill OU-1 Design Investigation

Contractor Site-specific Safety, Health, and Environmental **Plan (SSHEP)**

March 2020

Table of Contents

Contractor's Safety, Health, and Environmental Policy Statement

This plan contains the minimum requirements for an effective contractor site-specific safety, health, and environmental Plan (SSHEP) by Feezor Engineering, Inc. for the West Lake Landfill OU-1 Design Investigation. This SSHEP shall be implemented and maintained by Feezor Engineering, Inc. This SSHEP applies to all persons of our company.

The leadership team is responsible for ensuring that all SH&E policies and procedures are clearly communicated and understood by all employees. Managers and supervisors are expected to enforce the rules fairly and uniformly.

All employees are responsible for using safe work practices, following all directives, policies and procedures, and assisting in maintaining a safe work environment.

Our system of ensuring that all workers comply with the rules and maintain a safe work environment includes the following.

- Informing workers of the provisions of this SSHEP
- Evaluating the SH&E performance of all workers
- Recognizing employees who consistently perform SH&E work practices very well
- Providing training to workers whose SH&E performance is deficient
- Disciplining workers for failure to comply with safe, healthful, and environmentally responsible work practices

Scope of Work Evaluation

Field tasks to be performed by Feezor Engineering, Inc. during the West Lake Landfill OU-1 Design Investigation will include the following:

Task 1 – Provide assistance and associated field support for the survey contractor during staking of the proposed borehole locations within OU-1 Areas 1 & 2

Task 2 – Provide assistance and associated field support for the radiological services contractor during performance of overland gamma surveys at the proposed borehole locations within OU-1 Areas 1 & 2

Task 3 – Provide assistance and associated field support for the construction services contractor during construction of borehole access routes and drilling pads at locations within OU-1 Areas 1 & 2, within Bridgeton Landfill's North Quarry, and at any other Design Investigation (DI) drilling locations, as warranted

Task 4 – Oversee drilling/sampling activities and provide associated field support for the drilling contractor as needed

Task 5 – Record pertinent information obtained during drilling/sampling activities in a log book, including blow counts, weather conditions, dates/times of notable events or developments, notes on any problems encountered, etc.

Task 6 – Provide assistance and associated field support for the radiological services contractor during core sample collection/storage, preliminary core scanning activities, and downhole gamma logging activities

Task 7 – Provide assistance and associated field support for the drilling contractor during borehole abandonment activities

Task 8 – Provide assistance and associated field support for the radiological services contractor during decontamination activities as needed

Task 9 – Visually inspect and geologically log core samples, photo-document core samples, and collect laboratory samples from the cored material

Task 10 – Provide assistance to the radiological services contractor during performance of detailed radiological core scanning activities

Task 11 – Coordinate core handling/storage activities and the packaging/shipment of laboratory samples, including the completion of chains-of-custody and assisting the radiological services contractor in preparing radioactive shipments, if any

Responsibilities and Identification of Key Personnel

These personnel have authority and responsibility to implement this program.

Contractor:	Feezor Engineering, Inc.	
Address:	3377 Hollenberg Drive, Bridgeton, Missouri 63044	
Telephone	**Fax**	**Email**
n/a	n/a	n/a
Company Executive responsible for project		**Contact No.**
Dan Feezor		Direct Line: n/a Cell Phone: 217-836-8842 Email: dfeezor@feezorengineering.com
Manager/Superintendent:		**Contact No.**
Bill Abernathy		Direct Line: n/a Cell Phone: 314-502-1299 Email: babernathy@feezorengineering.com
Safety Representative/Manager:		**Contact No.**
Bill Abernathy		Direct Line: n/a Cell Phone: 314-502-1299 Email: babernathy@feezorengineering.com
Key Foreperson or Forepersons:		**Contact No.**
Jon Wilkinson		Direct Line: n/a Cell Phone: 636-578-8635 Email: jwilkinson@feezorengineering.com
Client Project Management Point of Contact:		**Contact No.**
Dan Feezor		Direct Line: n/a Cell Phone: 217-836-8842 Email: dfeezor@feezorengineering.com

All managers and supervisors are responsible for implementing and maintaining the SSHEP in their work areas and for answering worker questions about the SSHEP. Managers and supervisors shall make a copy of this SSHEP available to all workers.

Overall Assessment of SH&E Hazards, Exposures, and Risks

Task	Potential Hazards	Mitigation/Response Actions
Location survey assistance	- Traversing uneven terrain - Radiological exposure inside Areas 1/2 - Vehicular traffic at locations near roads	- Be alert to surroundings - Follow RWP and/or site PPE reqs - Hi-vis outerwear, traffic control equip
Overland survey assistance	- Traversing uneven terrain - Radiological exposure	- Be alert to surroundings - Follow RWP PPE requirements
Construction assistance	- Noise - Heavy equipment - Muscle strain - Radiological exposure inside Areas 1/2	- Use hearing protection - Stay >15 ft from equipment and be alert to operators' limited visibility - Use safe lifting technique/ergonomics - Follow RWP and/or site PPE requirements, utilize dust suppression
Drilling oversight	- Noise - Heavy equipment - Muscle strain - Rotating equipment/pinch points - Falling objects - Radiological exposure from excavated materials, open boreholes	- Use hearing protection - Stay >15 ft from equipment and be alert to operators' limited visibility - Use safe lifting technique/ergonomics - Watch moving parts, overhead activity - Follow RWP and/or site PPE requirements, utilize dust suppression
Field notes/documentation	- Inattentiveness/distraction - Radiological exposure inside Areas 1/2	- Stay alert to surroundings at all times - Follow RWP and/or site PPE reqs
Rad services assistance	- Muscle strain - Radiological exposure from excavated materials, open boreholes	- Use safe lifting technique/ergonomics - Follow RWP and/or site PPE requirements
Borehole abandonment	- Noise - Heavy equipment - Rotating equipment/pinch points - Falling objects - Radiological exposure inside Areas 1/2	- Use hearing protection - Stay >15 ft from equipment and be alert to operators' limited visibility - Watch moving parts, overhead activity - Follow RWP and/or site PPE reqs
Decontamination support	- Splashing liquids - Muscle strain - Slips, trips, falls	- Splash shields, spray control/avoidance - Use safe lifting technique/ergonomics - Watch footing, use slip-resistant equip
Core logging/sampling	- Muscle strain - Radiological exposure from cores	- Use safe lifting technique/ergonomics - Follow RWP PPE requirements - Dampen cores to shield alpha decay
Core scanning assistance	- Radiological exposure from cores	- Follow RWP PPE requirements
Core/sample management	- Muscle strain - Rad exposure from cores/samples	- Use safe lifting technique/ergonomics - Follow RWP PPE requirements

Activities shall be evaluated and activity hazards analyses (AHAs) or other effective risk management process shall be developed. AHAs and other risk management processes are described in Section 10 and included in this SSHEP.

SH&E Compliance Programs

Feezor Engineering, Inc. shall comply with relevant SH&E laws and regulations. Written compliance programs shall be implemented on our job sites and coordinated with other site contractors, our lower-tier subcontractors, and with Parsons, as appropriate. Our employees shall be aware of these programs, receive adequate training, and perform their work consistent with these compliance programs where applicable. Programs include but are not limited to:

- 40-Hr Hazardous Waste Operations & Emergency Response certification (HAZWOPER) in accordance with 29 CFR 1910.120 (administered by others)
- 8-Hr HAZWOPER Refresher certification within the preceding 12 months in accordance with 29 CFR 1910.120(e) and (p) (administered by others)
- Bridgeton Landfill Contractor Safety Orientation certification within the preceding 12 months (administered by Matt Stewart-Environmental Manager, Bridgeton Landfill 314-656-2130)
- Radiation Safety certification (TENORM Worker, GERT, etc.) in general accordance with recommendations for instructional training described in Federal Register 52:17 p. 2832 (administered by others)
- A valid Contractor Permit issued by the Missouri Department of Natural Resources-Division of Geology and Land Survey (administered by MDNR-DGLS 573-368-2165)
- Asbestos Inspector training in accordance with Missouri 10 CSR 10-6.250 and certification within the preceding 12 months by the Missouri Department of Natural Resources-Air Pollution Control Program (administered by MDNR-APCP 573-751-4817)
- Feezor Engineering, Inc. Voluntary Respiratory Protection Program for Bridgeton/West Lake Landfills in accordance with 29 CFR 1910.134 (administered by Bill Abernathy-FEI 314-502-1299). See **Attachment 1** for program documentation.

SH&E Compliance Training Matrix and Training / Education Processes

All workers, including managers and supervisors, shall receive competent and relevant site-specific SH&E training. This training shall include site-specific SH&E compliance training and general site training on SH&E best practices. Our employees shall be properly prepared for conducting their work and shall comply with the relevant SH&E programs and general site-specific SH&E practices.

A written training matrix shall be established and maintained that identifies the workers (by name or by title/role), all of the SH&E-related training they must have, and the frequency for refresher (if needed).

Training shall be provided:

- When the SSHEP is established;
- To all new workers;
- To all workers with new job assignments for which training has not been previously provided;
- When new substances, processes, procedures, or equipment are introduced to the workplace and represent a new hazard, potential exposure, or risk;
- When the employer is made aware of a new or previously unrecognized hazard, exposure, or risk;
- To familiarize supervisors with the SH&E hazards, exposures, or risk to which workers under their immediate direction and control may be exposed; and
- To all workers for hazards, exposures, or risks specific to their job assignment and in compliance with related SH&E compliance programs.

Workplace safety and health practices for all work locations shall include, at a minimum:

- An explanation of the SSHEP, the Parsons Project Safety, Health, and Environmental Plan (PSHEP), the site's emergency action plan and fire prevention plan, and the measures to report unsafe conditions, work practices, injuries, and/or a recognized need for additional instruction;
- The general purpose, availability, use, limitations, and disposal of outerwear and personal protective equipment;
- Locations of sanitation, hand-washing, and drinking water facilities;
- Provisions for medical services and first aid, including emergency procedures;
- Response procedures for environmental spills or releases; and
- Specific instructions to workers on hazards unique to their job assignment to the extent such information is not covered in other training.

License/Certification	Employee
OSHA HAZWOPER 40-hr + 8-Hr Refresher	B. Abernathy, D. Feezor, D. Hale, A. Roberts, M. Spurgeon, B. Vits, A. Weber, J. Wilkinson, A. Wyatt
Missouri Asbestos Inspector	B. Abernathy, B. Vits, A. Weber, J. Wilkinson
Missouri Well Contractor's Permit	B. Abernathy, J. Wilkinson

Radiation Safety Training (TENORM Worker, GERT, etc.)	B. Abernathy, D. Feezor, D. Hale, A. Roberts, M. Spurgeon, B. Vits, A. Weber, J. Wilkinson, A. Wyatt
Missouri RG	B. Abernathy
Bridgeton LF Annual H&S	B. Abernathy, D. Feezor, D. Hale, A. Roberts, M. Spurgeon, B. Vits, A. Weber, J. Wilkinson, A. Wyatt
FEI Voluntary Respiratory Protection Program	B. Abernathy, D. Feezor, B. Vits
Radiation Safety Officer 40-hr Certification	B. Abernathy, J. Wilkinson

Site-specific Worker Orientation Program

All new workers on our jobsite shall receive site-specific orientation training before conducting their work. This training shall consist of SH&E compliance training and general site SH&E practices related to their work.

Employees completing orientation shall acknowledge in writing completing and understanding the site-specific orientation subject matter. Employees who do not understand one or more subjects shall be retrained.

Site orientation training is provided by Matt Stewart-Environmental Manager, Bridgeton Landfill.

Identification of Competent / Qualified Persons

Contractor Competent Person Certification (United States)

Definition

A competent person is a formally-designated person having the ability to recognize existing and predictable hazards and has the authority to correct them.

Responsibility

The designated contractor competent person is responsible for recognizing and correcting SH&E risks/hazards. This person has the authority to stop work due to a perceived SH&E concern on the jobsite. This contractor manager and designated competent person are considered field contacts for Parsons projects.

This form shall be completed by each contractor manager and the contractor-designated competent person. ***Where a contractor is responsible for multiple crafts, it will be necessary to maintain additional designated competent persons and forms.*** Each contractor on a Parsons project shall submit this completed form to the Parsons project manager before beginning work on the project and must update it any time the designated competent person changes.

Acknowledgment

I, Dan Feezor representing, Feezor Engineering, Inc.

Contractor Manager (Printed) **Contractor Company Name (Printed)**

have assigned Bill Abernathy to be the competent person in the areas indicated and

Contractor Competent Person (Printed)

I acknowledge that this individual has been thoroughly trained, is experienced in hazard recognition, and has the authority to stop work and correct hazards in the event of a potential hazardous or imminent danger situation.

_____

Contractor Manager (Signature) **Date**

I acknowledge that I have been thoroughly trained and have the experience to perform the duties as the competent person in the areas marked below, and I understand that I have the responsibility and authority to correct hazards and to stop work in the event of a potential hazardous or imminent danger situation.

_____ _____

Contractor Competent Person (Signature) **Date**

(Check the areas in which the designated competent person is permitted to execute the role of Contractor Competent Person.)

☒	Air Pollution and Emissions	☒	Environmental Assessments	☐	Mechanical Demolition
☒	Asbestos	☐	Excavations and Trenches	☐	Protected Ecological and Cultural Resources
☐	Bolting, Riveting, and Fitting	☐	Fall Protection	☐	Resource Conservation
☐	Buried Items	☐	First Aid and CPR	☒	Respiratory Protection
☐	Concrete, Forms, and Shoring	☐	Hearing Protection	☐	Rigging
☐	Cranes and Derricks	☐	Ladders	☐	Scaffolding
☐	Demolition	☐	Lead	☐	Tunnels and Shafts
☒	Drinking Water	☒	Management of Hazardous Materials and Hazardous Solid Wastes	☐	Underground Construction
☐	Electrical			☒	Wastewater
☐	Emergency Response to Spills and Releases	☐	Marine Work and Diving	☐	Welding and Cutting
		☐	Material and Personnel Hoists		
☐	Other				

Applicable certifications for FEI Contractor Competent Person Bill Abernathy are attached as **Attachment 2**.

Hazard Identification, Notification, and Correction Process

Each employee is the critical leader for preventing injuries, illnesses, and adverse environmental impacts, Achieving SH&E excellence requires a personal commitment. Therefore, each employee is authorized to stop work immediately if a safety, health, or environmental concern exists or if the work is not going according to plan. Once work is stopped, each employee is expected to communicate the work stoppage to the other affected stakeholders and further evaluate the condition and adjust the work plan to resolve the safety, health, or environmental concern before restarting the work.

Each employee shall understand that he or she has the **authority** and the **responsibility** to stop work at any time when he or she notices an unplanned or unexpected issue that he or she believes will adversely affect the project's safety, health, or environmental risk. This concept is consistent Parsons SH&E core value.

There is no circumstance where retribution may be directed toward an employee who conscientiously exercised his or her stop work authority.

When should work be stopped? Here are some examples.

- An unsafe act is observed.
- An unsafe condition is observed in the work area.
- An incident or near miss occurs in the work area.
- There is an emergency.
- Alarms sound.
- There is a change in the planned work conditions.
- There is a change in the planned personnel associated with the work.
- There is a change in the planned in scope of work.
- A change is needed in the work plan.
- One or more personnel associated with the work task appear to be confused or demonstrate that they do not understand one or more parts of the work plan.
- Someone believes that personnel, the environment, facilities, or equipment, is exposed to an unacceptable level of risk.

Unsafe, unhealthful, or environmentally damaging work conditions, practices, or procedures shall be corrected in a timely manner based on the severity of the risk posed.

Specific Hazard and Risk Control Measures

Activities shall be evaluated by workers and other subject matter experts to determine the appropriate hazard and risk controls that shall be implemented when performing the activity. In most cases, formal activity hazard analyses (AHAs) shall be communicated and used; however, some activities may require more sophisticated risk management schemes.

See **Attachment 3** for Job Safety Analyses previously developed for OU-1 site activities.

Integration of SH&E Risk Mitigation Planning in 2-Week Look-ahead Submissions

The risk mitigation 2-week look ahead form, below, will be used to plan integrated risk mitigation strategies at weekly progress meetings.

SH&E Risk Mitigation 2-week Look-ahead Form

SH&E Plan for Week Ending:		**Contractor:**	
Project/ Location:		**Meeting Date:**	
Plan Prepared by:		**Dated:**	

Next Two Weeks' Scope of Work:

Identified SH&E Risks/Exposures/Hazards Issues:

Identify Tasks requiring environmental construction permitting (e.g., stormwater permit) or involving other environmental regulatory issues (e.g., generation of new, uncharacterized waste):

Tasks with environmental risk of significant spills or releases:

Control Measures:

Additional Activity Hazards Analysis Required:

Contractors and Subcontractors Mobilizing/Demobilizing:

Audits/Inspections Scheduled:

Competent Person Changes:

Planned Orientation/Training:

Recommendations/Comments/Concerns:

Note: This information shall be incorporated into the meeting minutes.

Employee Participation and Consultation

Open, two-way communication between the leadership team and line employees on SH&E issues is essential to an injury-free, productive, and environmentally sound workplace. The following system provides for the flow of SH&E information.

- Continually maintaining an environment where any worker can report SH&E concerns without any risk of retribution.
- A collaborative approach to resolving worker SH&E concerns, using worker knowledge and experience in developing appropriate risk control measures.
- New worker orientation, including specific orientation to SH&E policies and procedures
- Reviews of the SSHEP and the Parsons PSHEP
- Workplace SH&E training programs
- Regular SH&E meetings
- Posted or distributed SH&E information (awareness program)
- Procedures to anonymously inform SH&E management of workplace hazards, exposures, or risks
- An employee (or labor/management) SH&E committee that: 1) meets regularly and prepares written records, 2) reviews results of periodic scheduled inspections, 3) reviews incident investigations, 4) assesses work risk, 5) reviews reports of hazards, exposures, or adverse environmental conditions, and 6) makes suggestions to management to prevent future incidents.

Emergency Action Plan

Emergency Action planning and response actions for the site are described in West Lake Landfill's Emergency Response Plan and Site Management Pl, and in Bridgeton Landfill's Incident Management Plan**,** included in **Appendix H** of the HASP.

Any incident occurring on the site will be entered into IndustrySafe™ within four hours of occurrence, and the Parsons field team lead (FTL) and safety manager will be notified immediately.

Site-specific Medical Emergency Plan

Medical Emergency planning and response actions for the site are described in West Lake Landfill's Emergency Response Plan and Site Management Pl, and in Bridgeton Landfill's Incident Management Plan**,** included in **Appendix H** of the HASP.

Incident Reporting, Investigation, and Corrective Action Processes

Incident reporting, investigation, and corrective action strategies for the site are described in West Lake Landfill's Emergency Response Plan and Site Management Pl, and in Bridgeton Landfill's Incident Management Plan**,** included in **Appendix H** of the HASP.

Work Site Inspection and Program Audit Process

Site SH&E inspections shall be performed by one or more knowledgeable employees prior to beginning work each day in areas where work will take place during the shift. Designated competent persons shall perform frequent inspections and assessments of the areas and activities under their oversight throughout the day. Deficiencies shall be corrected as soon as possible.

The superintendent or project manager shall perform documented weekly SH&E inspections of all work sites. Deficiencies shall be tracked to closure in a timely manner.

The following SH&E inspections shall be performed. Findings shall be tracked to timely closure.

Competent Person / Inspector	Area of Responsibility	Frequency
Bill Abernathy	Tailgate Health & Safety Meetings	Daily
Jon Wilkinson	Tailgate Health & Safety Meetings	Daily
Bill Abernathy	JSA development/distribution	Daily
Jon Wilkinson	Work Site H&S inspections	Daily
Dan Feezor	Tailgate Health & Safety Meetings	Twice weekly
Bill Abernathy	Area 2 Cover Inspections	Bi-weekly
Jon Wilkinson	Areas 1/2 Cover Inspections	Monthly

The following compliance programs shall be reviewed and audited. Findings shall be tracked to timely closure.

Reviewer / Auditor	Compliance Program	Frequency

Progressive Disciplinary Program

Feezor Engineering, Inc. does not maintain a Progressive H&S Disciplinary Program.

Recordkeeping / Document Retention Processes

All records shall be maintained no less than 3 years beyond the end of the contracted work, unless a longer period of retention is required by a regulatory agency.

Feezor Engineering, Inc.'s SH&E document retention process for the site is limited to:

- Electronic retention of licensing, certification, and training records of FEI field staff;
- Retention of SDS's for materials stored or used in the course of routine FEI OU-1 work;
- Review and retention of Health & Safety plans and employee training records provided by OU-1 subcontractors where applicable; and
- Retention of medical respirator approval forms and fit testing results for employees who voluntarily participate in FEI's Respiratory Protection Program for West Lake Landfill.

Attachments

Attachment 1

Supporting Documentation

FEI Initial Respirator Training - Overview

Feezor Engineering, Inc. has developed a Respiratory Protection Program (RPP) for work-related activities at the Bridgeton/West Lake Landfills. The RPP, developed in accordance with OSHA's Respiratory Protection Standard (29 CFR 1910.134), is applicable to any FEI employee who has the potential to encounter respiratory hazards during operations conducted at these landfills and associated properties. Potential hazards include radiologically-impacted materials (RIM), asbestos-containing materials (ACM), methane, hydrogen sulfide, carbon monoxide, volatile organic compounds (VOCs), and particulates.

Air monitoring at Bridgeton/West Lake has indicated that concentrations of potential respiratory hazards are below values requiring respiratory protection, therefore the RPP is based on voluntary use of respiratory protection by the company's employees. The RPP's purpose is to ensure that any company employee who voluntarily uses a respirator does so in a manner that is appropriate and protective.

The OSHA standard requires FEI to provide respirator training to any employee before he/she uses their respirator on the job for the first time. The OSHA Standard specifies that the training will discuss/explain the contents of the RPP, the employee's responsibilities under it, and the standard itself. The training must be comprehensive and understandable such that employees can demonstrate knowledge of the following:

- Why the respirator is necessary and how its protective effect can be compromised:
- What the limitations and capabilities of the respirator are;
- How to use the respirator effectively in emergency situations, i.e. respirator malfunction;
- How to inspect, put on and remove, use, and check the seals of the respirator;
- What the procedures are for maintenance and storage of the respirator; and
- How to recognize medical signs/symptoms that may limit or prevent effective use.

Company asbestos inspectors will maintain their annual accreditation by participating in any required third-party asbestos hazard and/or respirator training, in addition to participating in the Company's respirator training (in-house or contracted).

Company employees will be re-trained annually or more frequently as needed (i.e. change in work area conditions or hazards, change in respirator type, etc.). Company employees must demonstrate their understanding of the topics covered in the initial training through hands-on exercises and a written test. Respirator training will be documented by the RPA and will include the make, model, type, and size of each respirator for which an employee has been trained and fit tested. If the RPA or an employee's supervisor observes that an employee displays deficiencies in knowledge or understanding of proper respirator use after satisfactory completion of the described training, those deficiencies will be addressed, if necessary, by re-training and validation.

This module has been developed to satisfy FEI's initial respirator training requirement for a voluntary program. The module consists of a copy of the company's RPP for Bridgeton/West Lake Landfills, links to a series of training videos, and a written test to be used to gauge the effectiveness of the initial training.

Should you have any questions regarding this initial respirator training module, please contact FEI's Respiratory Program Administrator (Bill Abernathy) at 314-502-1299 or babernathy@feezorengineering.com at your convenience.

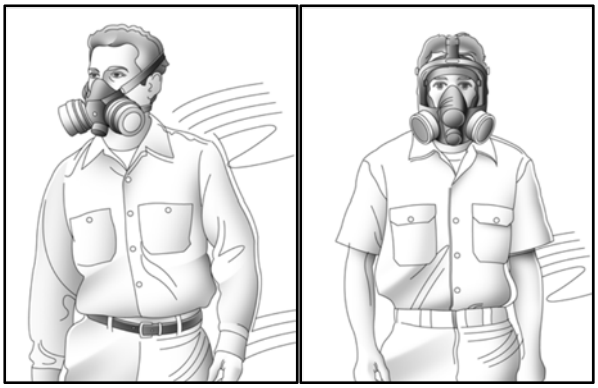
Respiratory Protection Program

Bridgeton/West Lake Landfills
Bridgeton, Missouri

for

Feezor Engineering Inc.

406 E. Walnut Street
Chatham, IL 62929



PROGRAM CONTENTS

Section I

Respiratory Protection Program

A. Purpose

Feezor Engineering, Inc. (the Company) has determined that employees have the potential to encounter respiratory hazards during operations conducted at Bridgeton Landfill and West Lake Landfill, and associated properties, and at other landfill facilities. The potential hazards at Bridgeton/West Lake Landfills (the Facilities) include, but may not be limited to, radiologically-impacted materials (RIM), asbestos-containing materials (ACM), methane, hydrogen sulfide, carbon monoxide, volatile organic compounds (VOCs), and particulates encountered during drilling, excavation, sampling, monitoring, inspection, and other activities. The Company considers the likelihood of encountering such hazards at the Facilities, at concentrations requiring respiratory protection, to be minimal. The purpose of this program is to ensure that all Company employees who voluntarily use respirators do so in a manner that is appropriate and protective. Company employees who are credentialed Asbestos Inspectors will be required to use respiratory protection when collecting bulk samples of suspect ACM.

This document is designed to comply with OSHA 29 CFR 1910.134, which requires a written Respiratory Protection Program for those employees who will wear respirators while working, whether mandatory or voluntary, and with relevant sections of the OSHA Asbestos Standard for Construction 29 CFR 1926.1101. This program applies to employees of the Company only. It does not apply to contractors or other employers performing work at the Facilities. Contractor requirements for respiratory protection and general health and safety, as applicable, are to be addressed in project contracts.

Engineering controls and work practices designed to minimize employee exposure are the first line of defense at the Company. In outdoor situations at the Facilities where the likelihood of encountering an intransient, actionable level of a given respiratory hazard is low, most engineering controls are not feasible. If unforeseen circumstances or emergencies are encountered, respirators and other appropriate protective equipment will be required as long as the potential hazard exists.

B. Scope and Application

This program applies to all Company employees who voluntarily wear a respirator (i.e. when a respirator is not required) during performance of non-ACM related activities at the Facilities, including drilling, soil and/or waste sampling, groundwater and/or leachate sampling, excavation work, and examining/logging core samples. These employees are subject to the medical evaluation, fit testing, training, and respirator cleaning/maintenance/storage requirements of this program and must be provided with information pertaining to the requirements and resources for the information.

Based on ongoing and anticipated tasks to be performed at the Facilities, the Company does not foresee conditions that would require mandatory use of respirators except for ACM-

related activities as noted previously. In the event that conditions which require respiratory protection are encountered or anticipated, this program would apply to all affected employees.

TABLE 1
RESPIRATOR USAGE

TASK	RESPIRATOR	TYPE USAGE
Trenching/excavation	½ mask or full-face APR w/ P100 cartridge or ½ mask or full-face APR w/ P100+organic vapor cartridge	Voluntary
Drilling	½ mask or full-face APR w/ P100 cartridge or ½ mask or full-face APR w/ P100+organic vapor cartridge	Voluntary
Sampling/logging	½ mask or full-face APR w/ P100 cartridge or ½ mask or full-face APR w/ P100+organic vapor cartridge	Voluntary
ACM bulk sample collection	½ mask or full-face APR w/ P100 cartridge	Mandatory

C. Responsibilities

Program Administrator

The Respiratory Program Administrator (RPA) for the Company is **Bill Abernathy**. The RPA is responsible for administrating the respiratory protection program including the following duties:

a. Identifying work areas, processes or tasks that may require workers to wear respirators, and evaluating potential respiratory hazards.
b. Selection of respiratory protection options.
c. Monitoring respirator use to ensure that they are used in accordance with their certifications.
d. Arranging for and/or conducting training.
e. Ensuring proper storage, cleaning, inspections, and maintenance of respiratory protection equipment.
f. Arranging for and/or conducting qualitative fit testing with a regulatory compliant media (irritant smoke, saccharin, Bitrex®, etc.) or arranging for quantitative fit testing to assess respirator fit by numerical measurement.
g. Administering the medical surveillance program.
h. Maintaining records required by the program.
i. Evaluating the program.
j. Updating the program as needed.

Supervisors

Supervisors are responsible for ensuring that the respiratory protection program is implemented in their particular areas. In addition to being knowledgeable about the program requirements for their own protection, supervisors must also ensure that the program is understood and followed by the employees under their charge. Duties include:

1. Ensuring employees under their supervision (including new hires) have received the medical evaluation, appropriate initial and annual training, initial and annual fit testing, and appropriate respirators and accessories.
2. Being aware of tasks that may require the use of respiratory protection.
3. Ensuring the availability of appropriate respirators and accessories.
4. Enforcing the proper use of respiratory protection when necessary.
5. Ensuring that respirators are properly cleaned, maintained, inspected, and stored according to the respiratory protection program.
6. Verifying with supervised employees that their respirators do not cause discomfort.
7. Continually monitoring work areas and operations to identify potential respiratory hazards and/or changing conditions.
8. Coordinating with the RPA on how to address respiratory hazards or other concerns that employees may have regarding the program.

Employees

Each Company employee has the responsibility to wear his/her respirator when and where required and in the manner in which he/she was trained. Each employee must also:

1. Care for, maintain, and store his/her respirator(s) as instructed.
2. Inform their supervisor if the respirator no longer fits without discomfort, and request a new one that does.
3. Inform their supervisor or the RPA of any respiratory hazards that he/she feels are not adequately addressed in the workplace and of any other concerns that he/she has regarding the program.
4. Inform their supervisor of the need for a medical reevaluation (for example, if the use of the respirator is causing unusual physical stress).

D. Program Elements

Hazard Assessment and Respirator Selection Procedures

The RPA will select the respirators to be used based on the hazards to which Company employees are expected to be exposed, and in accordance with applicable OSHA standards. The RPA will conduct a hazard evaluation for each operation, process, task, or work area where respiratory hazards may be present in routine operations or during an emergency. The hazard evaluation will include:

1) Identification and development of a list of hazardous substances used or likely to be encountered in the work area or during the operation, process, or task.
2) Review of work processes to determine where potential exposures to the identified hazardous substances may occur. The review will include surveying the work area, reviewing process records, and talking with employees and supervisors.
3) Exposure monitoring to quantify potential hazardous exposures. This hazard assessment task may be performed by a contractor to the Company or delegated to employee(s) who have been or will be adequately trained to perform the monitoring.

Information obtained from exposure monitoring will be tabulated as shown below or in a similar format:

HAZARD ASSESSMENT - (DATE)

	ACTIVITY/TASK	HAZARD	CONCEN	PEL	PRACTICES/CONTROLS
a.	_____	_____	_____	_____	_____
b.	_____	_____	_____	_____	_____
c.	_____	_____	_____	_____	_____

Monitoring data provided by _____

4) For ACM bulk sampling activities, if personal air monitoring results from similar projects meeting the requirements of a "Negative Exposure Assessment" are not available, potential exposures will be assumed to be above applicable asbestos PELs.

Records of project monitoring and exposure/hazard assessments will be maintained by the Company. For asbestos-related projects and/or tasks, the records will be maintained for no less than 30 years. Records will be maintained in both hard copy and electronic format unless the RPA determines that electronic format alone is sufficient.

It is not anticipated that protection exceeding that which is provided by negative pressure half mask air-purifying respirators (APRs) will be required during any Company activity. Employees electing to wear respirators or who are required to wear respirators will be allowed to choose from the list of respirators presented in Table 2. The list will be updated periodically to provide a sufficient number of options for the employee. All respirators will be certified by the National Institute for Occupational Safety and Health (NIOSH).

TABLE 2
COMPANY APPROVED RESPIRATORS

BRAND	MODEL or SERIES	STYLE	SIZES
3M	6000 or 7500/6000	½ mask/full face	S, M, L
MSA	Advantage 420/4000	½ mask/full face	S, M, L
North	7700/7600	½ mask/full face	S, M, M/L, L
Scott	Xcel/ProMask 25	½ mask/full face	S, M/L

Updating the Hazard Assessment

The RPA must revise and update the hazard assessment as needed (i.e. new tasks are to be performed, work processes are amended, or other changes to the project or work conditions that may affect potential exposures).

For non-ACM related activities, if a Company employee feels that respiratory protection is needed during a particular activity, and that activity has not been addressed in the hazard assessment for the project, he/she may voluntarily don their respirator while performing the activity and contact their supervisor or the RPA. The RPA will evaluate the potential

hazard associated with the activity (arranging for outside assistance as necessary) if the hazard assessment performed for the project did not already do so. The RPA will communicate the results of the assessment for said activity back to the employee, and if it is determined that respiratory protection may be warranted, the program will be updated accordingly. All other elements of the program will be in effect for previously evaluated tasks/activities while the new activity is being assessed and the program updated.

NIOSH Certification

All respirators must be certified by NIOSH and shall be used in accordance with the terms of that certification. All filters, cartridges, and canisters must be labeled with the appropriate NIOSH-approval label. The label must not be removed or defaced while it is in use.

Voluntary Respirator Use

The Company will provide respirators to its employees for voluntary use during performance of non-ACM related work activities for which respiratory hazards have been assessed. The Company will provide employees (or allow employees to use their own if listed in Table 2) full-face or ½ mask APRs and cartridges appropriate for the evaluated hazards (particulates, radiologically-impacted materials, gases and vapors, etc.).

The RPA will provide all employees who voluntarily choose to wear approved respirators with a copy of Appendix D of 29 CFR 1910.134, which details the requirements for voluntary use of respirators by employees. Employees choosing to wear either a full-face or ½ mask APR must comply with the procedures described in this program for Medical Evaluation, Fit Testing, Respirator Use, Respirator Cleaning, Maintenance/Inspection, Change-Out Schedule, and Storage, and Respirator Training.

The RPA shall authorize voluntary use of respiratory protective equipment as requested by any Company employee performing non-ACM related project activities on a case-by-case basis. Authorization or prohibition of respirator use will be based on 1) an evaluation of specific workplace conditions and 2) the results of the employee's medical evaluation.

Medical Evaluation

Company employees who are either required to wear respirators, or who choose to wear an APR voluntarily (excluding dust masks), must pass a medical examination before being permitted to wear a respirator on the job. Company employees are not permitted to wear respirators to perform job- or project-related work until a physician has determined that they are medically able to do so. Any Company employee refusing the medical evaluation will be prohibited from working in an area or performing a job task requiring respirator use, and from voluntarily wearing a respirator on the job.

For Company employees whose work activities at the Bridgeton/West Lake Landfills may involve respirator use, a licensed physician from a Concentra Medical facility (urgent care

or clinic) will perform the medical evaluations. Medical evaluation procedures are as follows:

- The medical evaluation will be conducted in conjunction with the questionnaire provided in Appendix C of the respiratory protection standard (29 CFR 1910.134). The RPA will provide a copy of this questionnaire to each Company employee requiring a medical evaluation.

- To the extent feasible, the Company will assist any employee who is unable to read the questionnaire. If such assistance is not feasible, the employee will be sent directly to the physician for medical evaluation.

- Each affected employee will be given a copy of the medical questionnaire to complete during their normal work day, on Company time. The employee will also be provided a postage-paid, pre-addressed envelope in which the employee can enclose, seal, and forward the completed questionnaire to the Concentra physician, or he/she may hand-deliver the questionnaire to Concentra personally.

- The RPA will provide the Concentra physician with a copy of the respiratory protection program, a copy of the OSHA standard, the list of potential respiratory hazards for the project, and for each Company employee requiring an evaluation, 1) his/her work area or job title, 2) the approved respirator types and weights, 3) an estimate of how long the employee will be required to wear the respirator on a given day, 4) the expected physical work load (light, moderate, or heavy), 5) the expected temperature and humidity extremes, and 6) a list of any additional protective clothing likely to be required.

- An employee will be granted the opportunity to speak with the physician about his/her medical evaluation, if they so request, at any time prior to, during, or following their examination. Follow-up medical exams will be granted to Company employees as required by the standard, and/or as deemed necessary by the physician. All examinations and questionnaires are to remain confidential between the Company employee and the physician.

- After an employee has received clearance to wear a respirator, and has begun to do so, follow-up medical evaluations will be provided by the Company if:
    1. the employee reports signs or symptoms related to their ability to use a respirator, such as shortness of breath, dizziness, or chest pain,
    2. the physician or the employee's supervisor informs the RPA that the employee needs to be re-evaluated,
    3. observations made during fit testing and program evaluation indicate a need for re-evaluation, or
    4. changes occur in workplace conditions that may result in an increased physiological burden on the employee.

- Any employee required for medical reasons to wear a positive pressure air purifying respirator will be provided one by the Company.

A list of Company employees included in medical surveillance and fit testing for respiratory use (except as noted) is provided in Table 3 of this program.

For employees wearing respirators for protection during ACM-related activities, the medical examinations described above will be conducted annually. Alternatively, and additionally, if a Company employee performs ACM-related sample collection activities for no less than 30 days per year, that employee will be given a medical examination meeting the requirements of 29 CFR 1926.1101 (m). Such an examination will be conducted within 10 days of the 30th day of activity.

Fit Testing

Company employees who are required to wear, or voluntarily wear, ½ mask and/or full face APRs will be fit tested:

- prior to wearing any respirator with a tight-fitting faceplate during Company work,
- at least annually, and
- when warranted by changes in the employee's physical condition that may have affected their respirator's fit (e.g. obvious change in body weight, facial scarring, dental work, etc.).

A Company employee will be fit tested using a respirator of the same make, model, and size of the one he/she will actually wear. The employee will be provided with options for the type and size of respirator to be worn in order that he/she may find an optimal fit. Fit testing of powered APR's, if necessary, will be conducted in negative pressure mode.

The RPA or an outside provider may conduct qualitative fit tests (QLFT) following the OSHA-accepted protocol described in Appendix A of 29 CFR 1910.134. A QLFT represents a pass/fail test that assesses the adequacy of the respirator's fit based on an individual's response to a test agent. A QLFT may only be used to fit test a negative-pressure APR (½ mask or full face).

For the subject Facilities, the RPA has determined that quantitative fit tests (QNFT), which assess the adequacy of a respirator's fit by numerically measuring the amount of leakage into the respirator, are **not** required, but may substitute for QLFT if doing so is appropriate. If project or work conditions affecting respirator use change, the RPA will evaluate whether QNFT are required on a case-by-case basis.

Respirator Use

The following Company personnel have undergone medical surveillance and fit testing (except as noted) in accordance with the respiratory protection standard:

TABLE 3
COMPANY PERSONNEL

NAME	TITLE	RESPIRATOR(S) TESTED
Dan Feezor	Project Team Leader	3M 6000 (½ mask)
Bill Abernathy	RPA/Project Geologist	3M 6000 (½ mask)
Paul Eastvold	Project Supervisor	3M 6000 (½ mask)
Brad Vits	Project Eng Technician	(not fit tested)
Matt Stewart	Project Geologist	3M 6000 (½ mask)
Jon Wilkinson	Project Engineer	3M 6000 (½ mask)

General Respirator Use Procedures

- Company employees will use their respirators (voluntarily or as required) while performing the tasks/activities at the Facilities as specified by this program, and in accordance with the training they receive for the respirators they'll be using. The manner in which a respirator is used shall not conflict with the manufacturer's recommendations nor the unit's NIOSH certification.

- Company employees will conduct user seal checks to ensure that an adequate seal is achieved each time the respirator is donned, in accordance with Appendix B-1 of 29 CFR 1910.134. Either the positive and negative pressure checks listed in the appendix, or the respirator manufacturer's recommended user seal check method, will be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

- Company employees will be permitted to leave the work area to 1) clean their respirator (if impeding their ability to work), 2) change filters or cartridges, 3) replace parts, or 4) inspect their respirator if it stops functioning as intended. Employees should notify their supervisor before leaving the area.

- Company employees will be prohibited from wearing tight-fitting respirators (either voluntarily or when required) if they have facial scars, facial hair, or other physical conditions that prevent them from achieving a good seal during their user seal check, even if they were previously fit tested. Employees will be prohibited from wearing headphones, jewelry, eyeglasses, or other articles while using their respirator if doing so prevents them from achieving and maintaining a good seal.

Emergency Respirator Use Procedures

- The OSHA respiratory protection standard defines an emergency situation as any occurrence that may (or does) result in an uncontrolled significant release of an airborne contaminant, such as equipment failure, rupture of containers, or failure of control equipment.

- The RPA has determined that, within the Facilities work areas and during performance of the job tasks specified in Table 1, there currently are no reasonably foreseeable emergency situations as defined by the standard, therefore escape-only respirators will **not** be provided/available for Company employees during work at the Facilities.

Respirator Malfunction

- If malfunction of an APR occurs, i.e. leakage around the faceplate or seals, canister/filter breakthrough, exhalation valve problems, etc., the Company employee must inform his/her supervisor that their respirator does not function as intended and leave the work area. The supervisor will ensure that the malfunction is corrected, or provide the employee with a new respirator approved for the employee to use, before the employee returns to the work area.

Respirator Cleaning, Maintenance/Inspection, Change-Out Schedule, and Storage

Respirator Cleaning

Respirators are to be cleaned regularly and disinfected in an area outside of the work area, such as a job trailer, office, or locker room, or outdoors if weather permits. Since Company respirators are assigned for an employee's exclusive use (or owned by the employee for his/her exclusive use), the employee is responsible for cleaning his/her respirator. Respirators should be cleaned as often as necessary, including whenever visible materials are detected on the respirator, before each use, and at least once each day the respirator is used. Either alcohol-based or alcohol-free wipes can be used for routine cleaning, depending on the respirator manufacturers' recommendations.

The following procedures are to be used when more in-depth cleaning of an employee's respirator is warranted:

- Disassemble the respirator, removing any filters, canisters, or cartridges and setting them aside.
- Wash the faceplate, valves, and other parts in a mild detergent/warm water solution. Do not wash filters/canisters/cartridges. Do not use organic solvents.

- Rinse the washed parts in clean warm water.
- Wipe the washed/rinsed parts with disinfectant wipes containing not less than 70% isopropyl alcohol.
- Air dry the washed/rinsed/wiped parts in a clean area.
- Reassemble the respirator, replacing any defective parts if necessary.
- Reattach filters, canisters, or cartridges if appropriate.
- Place the reassembled respirator in a clean, dry plastic bag or other sealed container.

The RPA will provide appropriate cleaning and disinfection supplies, to be stored in a designated location. If the inventory of supplies becomes limited, employees should contact their supervisor, who will inform the RPA.

Respirator Maintenance/Inspection

Respirators are to be maintained and inspected by Company employees to ensure that they will function properly and provide the intended protection against respiratory hazards when in use. Respirator maintenance includes frequent visual inspections for cleanliness and defects. Worn or deteriorated parts will be replaced prior to use. Replacing or repairing components must be in accordance with the manufacturers' recommendations.

The following components of the Company employee's respirator (whether owned by the employee or provided/assigned to him/her) will be inspected for the noted issues:

- Faceplate or facepiece:
  - cracks, tears, or holes
  - distortion
  - cracked or loose lenses (full face respirators)

- Straps:
  - breaks or tears
  - broken/missing buckles

- Valves:
  - residue or dirt inhibiting seals
  - cracks, tears, or holes in seals/valve material

- Filters/Cartridges :
  - approval designation
  - missing or torn gaskets
  - damaged housings
  - proper filter/cartridge for hazard

Company employees will be permitted to leave the work area to perform minor maintenance on their respirators in an area free of respiratory hazards. Minor

maintenance includes washing the facepiece of skin or eye irritants, replacing filters, cartridges, or canisters, and replacing broken straps. Employees should notify their supervisor before leaving their work area. If an employee detects vapors due to filter/cartridge breakthrough, experiences leakage in the facepiece that cannot be rectified by tightening the straps, or detects any potentially compromising damage to their respirator or its components, they should leave their work area immediately then notify their supervisor of the issue; more in-depth maintenance may be required.

Change-Out Schedules

A change-out schedule details how often filters/cartridges should be replaced if they are being utilized in the work area, and includes the information used to develop the schedule. The service life of a filter/cartridge, defined as the usage period during which it provides adequate protection from respiratory hazards, depends upon factors such as temperature, humidity, an employee's breathing rate, the cartridge's filtering capacity, chemical interferences, and the actual concentrations of respiratory hazards in the work area.

The OSHA respiratory protection standard requires the Company to develop change-out schedule(s) based on available information about the specific work area hazards and conditions, as well as the equipment to be used by its employees. Information may come from sources such as exposure/hazard assessments, cartridge breakthrough test results, mathematical estimates, and/or reliable use recommendations from the respirator/cartridge supplier. Reliance on odor thresholds and other warning properties of the anticipated or actual respiratory hazards, if any, is not allowed to be the primary basis for determining the service life of a cartridge or developing the change-out schedule. Note that the Company's respiratory protection program does not rely on the use of end-of-service-life indicators, therefore respirator filters/cartridges are to be changed in accordance with the usage schedule developed.

(a) Organic Vapor/Acid Gas Cartridges

In developing a change-out schedule for organic vapor/acid gas cartridges, the Company has relied upon the results of air sampling performed at the Facilities on April 5, 2013. The results of the air sampling, performed by Stantec Inc., have been tabulated below, and include the compounds detected in air samples collected upwind and/or downwind of a series of leachate sparge tanks previously located at the Facilities. Samples of ambient air were obtained using evacuated SUMMA canisters and analyzed for compounds by EPA Method TO-15. In cases where a compound was detected in both the upwind sample and the downwind sample, the higher value has been listed.

In the table, an analyte's PEL, or Permissible Exposure Limit, represents OSHA's enforceable limit for exposure of an employee to the analyte, and is a time-weighted average (TWA) for an 8-hour period. RELs are Recommended Exposure Limits

provided by NIOSH, and are recommended 8-hr TWAs intended to limit exposures to hazardous substances in workplace air. They were developed by NIOSH using medical, biological, engineering, chemical, and trade information relevant to a given hazard. Finally, TLVs in the table represent Threshold Limit Values provided by ACGIH, a private, non-governmental scientific association that develops recommendations and guidelines to assist in the control of occupational health hazards. TLVs are health-based values (not legal standards) that are believed by ACGIH to represent conditions under which nearly all workers may be repeatedly exposed, day after day, over a working lifetime, without adverse effects. TLVs, widely recognized as authoritative, have been listed in the table where there are no established PELs or RELs for a given analyte.

Analyte	CAS #	PEL/REL/TLV (mg/m^3)	Result (mg/m3)
Propene	115-07-1	860 (TLV)	0.0030
DCDFM	75-71-8	4,950 (REL)	0.0022
Chloromethane	74-87-3	207 (PEL)	0.00071
Ethanol	64-17-5	1,900 (REL)	0.0360
Acetone	67-64-1	590 (REL)	0.0370
TCFM	75-69-4	5,600 (REL)	0.0015
Methylene chloride	75-09-2	86 (PEL)	0.00082
2-Butanone (MEK)	78-93-3	590 (REL)	0.0095
Tetrahydrofuran	109-99-9	590 (REL)	0.0041
Benzene	71-43-2	0.3 (REL)	0.0068
Toluene	108-88-3	377 (REL)	0.00073
N-Butanal	123-72-8	73 (TLV)	0.0038
N-Heptanal (Sudan)	85-86-9	not available	0.0026
Propane	74-98-6	1,800 (REL)	0.0033
Isobutane (reported)	75-28-5	1,900 (REL)	0.0031
(CAS # reported as 13183-68-1 2-Methylpropane-2-d)			
Acetaldehyde	75-07-0	360 (PEL)	0.0028
N-Butane	106-97-8	1,900 (REL)	0.0066
N-Pentane	109-66-0	350 (REL)	0.0027
Methyl acetate	79-20-9	610 (REL)	0.0064
2-Methylfuran (Sylvan)	534-22-5	not available	0.0053
1-Butanol	71-36-3	150 (REL)	0.0043
Cyclohexanone (reported)	108-94-1	100 (REL)	0.0031
(CAS # reported as 108-93-0 Cyclohexanol)			

Based on the results presented, Company employees who voluntarily wear APRs equipped with organic vapor/acid gas cartridges while performing tasks at the Facilities must change the cartridges on their respirators every 44 hours of use to ensure their continued effectiveness. This value has been assigned in consideration of 1) the lowest listed VOC exposure limit (benzene 0.3 mg/m^3), 2) the benzene concentration detected at the site (0.0068 mg/m^3), 3) an air consumption rate of about 4 m^3 in an 8-hr day, and 4) a safety factor of 2.

(b) Particulate Filters

Company employees who voluntarily wear APRs equipped with P100 particulate filters while performing tasks at the Facilities must change the filters on their respirators when they first begin to experience difficulty breathing (i.e., resistance)

while wearing their respirator. This schedule is based on the NIOSH certification of particulate filters, which states that 1) if oil particles are present in the work area and the filter is to be used for more than one work shift, only a P-series filter may be used, 2) the filters may be used without particle size analysis or filter penetration testing, and 3) service life is non-specific as to time use limitations, due to considerations of hygiene, damage, and breathing resistance. 3M echoes the NIOSH recommendations, stating that their P-series filters should be replaced whenever they become damaged, soiled, or begin to cause noticeably increased breathing resistance.

Respirator Storage

Respirators must be stored in a clean, dry container, and in accordance with the manufacturers' recommendations. Company employees will clean and inspect their assigned APRs in accordance with the provisions of this program and will store their respirator accordingly. Respirator storage containers (original manufacturer's packaging, sealable plastic bags or boxes, etc.) will have the employee's name affixed and will be used to store only that employee's respirator. Respirators and cartridges/filters will be kept by the RPA at a designated location near the work area. Respirator and cartridge/filter use will be documented per the example below:

Work Area	Employee	Hazard	Conc. (mg/m^3)	Respirator Usage	Est. Service	Storage & Reuse OK?	Change Schedule	Cartridge	# Pairs In Stock
OU1	B. Abernathy	RIM	TBD	5 hrs/day	n/a	Yes	w/ resistance	P100	4
OU1	P. Eastvold	RIM	TBD	2 hrs/day	n/a	Yes	w/ resistance	P100	4
-----	----------	BTEX	0.0075	8 hrs/day	n/a	Yes	44 hrs	OV/AG	6

Respirators or filters/cartridges that are defective will be taken out of service. If a Company employee discovers a defect in his/her respirator during an inspection, the employee will bring it to the attention of his/her supervisor, who in turn will provide the RPA with the defective equipment. The RPA will, at his/her discretion, 1) take the respirator out of service (and tagged out-of-service) until it or its components can be repaired, 2) perform minor repair(s) to the respirator or components and return it to the supervisor, or 3) dispose of the defective respirator (or components) if irreparably damaged, and provide the supervisor with a new one of the same make, model, and style. If a suitable replacement for the irreparably damaged respirator cannot be provided immediately, another make/model/style may be substituted. However, the employee must be fit-tested for the substitute (or provide evidence that he/she has been fit-tested for the replacement unit) if it is different in style (full face vs ½ mask) or size (S vs L) from the damaged/defective unit.

Respirator Training

The RPA will provide or arrange for training for Company employees (and their supervisors) who will voluntarily wear, or be required to wear, respirators. The training will take place prior to the employees/supervisors being allowed to use respirators on the job. Training will discuss/explain the contents of the Company's respiratory protection

program, the employee/supervisor responsibilities under it, and OSHA's Respiratory Protection Standard. Company asbestos inspectors will maintain their annual accreditation by participating in any required third-party asbestos hazard and/or respirator training, in addition to participating in the Company's respirator training (in-house or contracted).

Respirator training will cover the following topics:

- the Company respiratory protection program contained herein
- general requirements of the OSHA Respiratory Protection Standard
- respiratory hazards and their health effects
- selection and use of respirators
- limitations and capabilities of respirators
- respirator inspection, donning/doffing, and user seal (fit) checks
- qualitative and quantitative fit testing
- effective use in emergency situations
- maintenance and storage
- recognition of medical signs & symptoms that may limit or prevent effective use

Company employees will be re-trained annually or more frequently as needed (i.e. change in work area conditions or hazards, change in respirator type, etc.). Company employees must demonstrate their understanding of the topics covered in the training through hands-on exercises and a written test. Respirator training will be documented by the RPA and will include the make, model, type, and size of each respirator for which an employee has been trained and fit tested. If the RPA or an employee's supervisor observes that an employee displays deficiencies in knowledge or understanding of proper respirator use after satisfactory completion of the described training, those deficiencies will be addressed, if necessary, by re-training and validation.

Disciplinary Action

If the RPA or an employee's supervisor observes a willful violation of the Company's respiratory protection program, such as failure to wear a respirator when required or falsification of respirator records, the Company will issue the employee a written warning. If a second instance occurs, the Company may, at its discretion, issue a second warning or terminate the employee.

E. Program Evaluation

The RPA will conduct periodic evaluations of the work area(s) to ensure that the provisions of this program are being implemented. The evaluations will include regular consultations with employees who use respirators and their supervisors, periodic site inspections, review of air monitoring results if available, and review of respiratory program records.

Problems identified during a program evaluation will be noted in an evaluation log and addressed by the RPA. Findings from the evaluation, and a plan/timeline to correct any deficiencies in the respirator program, will be reported to Dan Feezor.

F. Documentation and Recordkeeping

Written copies of the Company respiratory protection program and the OSHA respiratory protection standard will be kept in the RPA's office and at a designated location near the jobsite. The copies will be available to any Company employee for his/her review.

The RPA will maintain copies of respirator training and fit test records of Company employees. These records will be updated as new employees receive training, as existing employees receive refresher training, and as employees are fit tested. The RPA will maintain copies of medical evaluations containing physicians' signatures attesting to an employee's ability to use a respirator. Medical questionnaires and all physician's findings/records for a Company employee are confidential and for the employee's and doctor's use only.

Section II

OSHA Respiratory Protection Standard
29 CFR 1910.134

This section applies to General Industry (part 1910), Shipyards (part 1915), Marine Terminals (part 1917), Longshoring (part 1918), and Construction (part 1926).

1910.134(a)
Permissible practice.

1910.134(a)(1)
In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to this section.

1910.134(a)(2)
A respirator shall be provided to each employee when such equipment is necessary to protect the health of such employee. The employer shall provide the respirators which are applicable and suitable for the purpose intended. The employer shall be responsible for the establishment and maintenance of a respiratory protection program, which shall include the requirements outlined in paragraph (c) of this section. The program shall cover each employee required by this section to use a respirator.

1910.134(b)
Definitions. The following definitions are important terms used in the respiratory protection standard in this section.

Air-purifying respirator means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Assigned protection factor (APF) means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section.

Atmosphere-supplying respirator means a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

Canister or cartridge means a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

Demand respirator means an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

Emergency situation 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.

Employee exposure means exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

End-of-service-life indicator (ESLI) means 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.

Escape-only respirator means a respirator intended to be used only for emergency exit.

Filter or air purifying element means a component used in respirators to remove solid or liquid aerosols from the inspired air.

Filtering facepiece (dust mask) means 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 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.

Fit test means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)

Helmet means a rigid respiratory inlet covering that also provides head protection against impact and penetration.

High efficiency particulate air (HEPA) filter means a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

Hood means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

Immediately dangerous to life or health (IDLH) means 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.

Interior structural firefighting means the physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage. (See 29 CFR 1910.155)

Loose-fitting facepiece means a respiratory inlet covering that is designed to form a partial seal with the face.

Maximum use concentration (MUC) means the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC on the basis of relevant available information and informed professional judgment.

Negative pressure respirator (tight fitting) means a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Oxygen deficient atmosphere means an atmosphere with an oxygen content below 19.5% by volume.

Physician or other licensed health care professional (PLHCP) means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e) of this section.

Positive pressure respirator means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

Powered air-purifying respirator (PAPR) means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Pressure demand respirator means a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

Qualitative fit test (QLFT) means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative fit test (QNFT) means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respiratory inlet covering means that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.

Self-contained breathing apparatus (SCBA) means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

Service life means the period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.

Supplied-air respirator (SAR) or airline respirator means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

This section means this respiratory protection standard.

Tight-fitting facepiece means a respiratory inlet covering that forms a complete seal with the face.

User seal check means an action conducted by the respirator user to determine if the respirator is properly seated to the face.

1910.134(c)

Respiratory protection program. This paragraph requires the employer to develop and implement a written respiratory protection program with required worksite-specific procedures and elements for required respirator use. The program must be administered by a suitably trained program administrator. In addition, certain program elements may be required for voluntary use to prevent potential hazards associated with the use of the respirator. The Small Entity Compliance Guide contains criteria for the selection of a program administrator and a sample program that meets the requirements of this paragraph. Copies of the Small Entity Compliance Guide will be available on or about April 8, 1998 from the Occupational Safety and Health Administration's Office of Publications, Room N 3101, 200 Constitution Avenue, NW, Washington, DC, 20210 (202-219-4667).

1910.134(c)(1)

In any workplace where respirators are necessary to protect the health of the employee or whenever respirators are required by the employer, the employer shall establish and implement a written respiratory protection program with worksite-specific procedures. The program shall be updated as necessary to reflect those changes in workplace conditions that affect respirator use. The employer shall include in the program the following provisions of this section, as applicable:

1910.134(c)(1)(i)

Procedures for selecting respirators for use in the workplace;

1910.134(c)(1)(ii)

Medical evaluations of employees required to use respirators;

1910.134(c)(1)(iii)
Fit testing procedures for tight-fitting respirators;

1910.134(c)(1)(iv)
Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations;

1910.134(c)(1)(v)
Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators;

1910.134(c)(1)(vi)
Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators;

1910.134(c)(1)(vii)
Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations;

1910.134(c)(1)(viii)
Training of employees in the proper use of respirators, including putting on and removing them, any limitations on their use, and their maintenance; and

1910.134(c)(1)(ix)
Procedures for regularly evaluating the effectiveness of the program.

1910.134(c)(2)
Where respirator use is not required:

1910.134(c)(2)(i)
An employer may provide respirators at the request of employees or permit employees to use their own respirators, if the employer determines that such respirator use will not in itself create a hazard. If the employer determines that any voluntary respirator use is permissible, the employer shall provide the respirator users with the information contained in Appendix D to this section ("Information for Employees Using Respirators When Not Required Under the Standard"); and

1910.134(c)(2)(ii)
In addition, the employer must establish and implement those elements of a written respiratory protection program necessary to ensure that any employee using a respirator voluntarily is medically able to use that respirator, and that the respirator is cleaned, stored, and maintained so that its use does not present a health hazard to the user. Exception: Employers are not required to include in a written respiratory protection program those employees whose only use of respirators involves the voluntary use of filtering facepieces (dust masks).

1910.134(c)(3)
The employer shall designate a program administrator who is qualified by appropriate training or experience that is commensurate with the complexity of the program to administer or oversee the respiratory protection program and conduct the required evaluations of program effectiveness.

1910.134(c)(4)
The employer shall provide respirators, training, and medical evaluations at no cost to the employee.

1910.134(d)
Selection of respirators. This paragraph requires the employer to evaluate respiratory hazard(s) in the workplace, identify relevant workplace and user factors, and base respirator selection on these factors. The paragraph also

specifies appropriately protective respirators for use in IDLH atmospheres, and limits the selection and use of air-purifying respirators.

1910.134(d)(1)
General requirements.

1910.134(d)(1)(i)
The employer shall select and provide an appropriate respirator based on the respiratory hazard(s) to which the worker is exposed and workplace and user factors that affect respirator performance and reliability.

1910.134(d)(1)(ii)
The employer shall select a NIOSH-certified respirator. The respirator shall be used in compliance with the conditions of its certification.

1910.134(d)(1)(iii)
The employer shall identify and evaluate the respiratory hazard(s) in the workplace; this evaluation shall include a reasonable estimate of employee exposures to respiratory hazard(s) and an identification of the contaminant's chemical state and physical form. Where the employer cannot identify or reasonably estimate the employee exposure, the employer shall consider the atmosphere to be IDLH.

1910.134(d)(1)(iv)
The employer shall select respirators from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.

1910.134(d)(2)
Respirators for IDLH atmospheres.

1910.134(d)(2)(i)
The employer shall provide the following respirators for employee use in IDLH atmospheres:

1910.134(d)(2)(i)(A)
A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or

1910.134(d)(2)(i)(B)
A combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

1910.134(d)(2)(ii)
Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

1910.134(d)(2)(iii)
All oxygen-deficient atmospheres shall be considered IDLH. Exception: If the employer demonstrates that, under all foreseeable conditions, the oxygen concentration can be maintained within the ranges specified in Table II of this section (i.e., for the altitudes set out in the table), then any atmosphere-supplying respirator may be used.

1910.134(d)(3)
Respirators for atmospheres that are not IDLH.

1910.134(d)(3)(i)

The employer shall provide a respirator that is adequate to protect the health of the employee and ensure compliance with all other OSHA statutory and regulatory requirements, under routine and reasonably foreseeable emergency situations.

1910.134(d)(3)(i)(A)

Assigned Protection Factors (APFs) Employers must use the assigned protection factors listed in Table 1 to select a respirator that meets or exceeds the required level of employee protection. When using a combination respirator (e.g., airline respirators with an air-purifying filter), employers must ensure that the assigned protection factor is appropriate to the mode of operation in which the respirator is being used.

Table 1. -- Assigned Protection Factors[5]

Type of respirator[1, 2]	Quarter mask	Half mask	Full facepiece	Helmet/ hood	Loose fitting facepiece
1. Air-Purifying Respirator	5	[3]10	50	.....	.....
2. Powered Air-Purifying Respirator (PAPR)	.....	50	1,000	[4]25/1,000	25
3. Supplied-Air Respirator (SAR) or Airline Respirator	.....	10	50	.....	.....
• Demand mode					
• Continuous flow mode	.....	50	1,000	[4]25/1,000	25
• Pressure-demand or other positive-pressure mode	.....	50	1,000	.....	.....
4. Self-Contained Breathing Apparatus (SCBA)	.....	10	50	50	.....
• Demand mode					
• Pressure-demand or other positive-pressure mode (e.g., open/closed circuit)	.....	.....	10,000	10,000	.....

Notes:

[1] Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.

[2] The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by this section (29 CFR 1910.134), including training, fit testing, maintenance, and use requirements.

[3] This APF category includes filtering facepieces, and half masks with elastomeric facepieces.

[4] The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.

[5] These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).

1910.134(d)(3)(i)(B)

Maximum Use Concentration (MUC)

1910.134(d)(3)(i)(B)(1)
The employer must select a respirator for employee use that maintains the employee's exposure to the hazardous substance, when measured outside the respirator, at or below the MUC.

1910.134(d)(3)(i)(B)(2)
Employers must not apply MUCs to conditions that are immediately dangerous to life or health (IDLH); instead, they must use respirators listed for IDLH conditions in paragraph (d)(2) of this standard.

1910.134(d)(3)(i)(B)(3)
When the calculated MUC exceeds the IDLH level for a hazardous substance, or the performance limits of the cartridge or canister, then employers must set the maximum MUC at that lower limit.

1910.134(d)(3)(ii)
The respirator selected shall be appropriate for the chemical state and physical form of the contaminant.

1910.134(d)(3)(iii)
For protection against gases and vapors, the employer shall provide:

1910.134(d)(3)(iii)(A)
An atmosphere-supplying respirator, or

1910.134(d)(3)(iii)(B)
An air-purifying respirator, provided that:

1910.134(d)(3)(iii)(B)(1)
The respirator is equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant; or

1910.134(d)(3)(iii)(B)(2)
If there is no ESLI appropriate for conditions in the employer's workplace, the employer implements a change schedule for canisters and cartridges that is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life. The employer shall describe in the respirator program the information and data relied upon and the basis for the canister and cartridge change schedule and the basis for reliance on the data.

1910.134(d)(3)(iv)
For protection against particulates, the employer shall provide:

1910.134(d)(3)(iv)(A)
An atmosphere-supplying respirator; or

TABLE II

Altitude (ft.)	Oxygen deficient Atmospheres (% 0_2) for which the employer may rely on atmosphere-supplying respirators
Less than 3,001	16.0-19.5
3,001-4,000	16.4-19.5
4,001-5,000	17.1-19.5
5,001-6,000	17.8-19.5
6,001-7,000	18.5-19.5
7,001-8,000[1]	19.3-19.5

[1] Above 8,000 feet the exception does not apply. Oxygen-enriched breathing air must be supplied above 14,000 feet.

1910.134(d)(3)(iv)(B)

An air-purifying respirator equipped with a filter certified by NIOSH under 30 CFR part 11 as a high efficiency particulate air (HEPA) filter, or an air-purifying respirator equipped with a filter certified for particulates by NIOSH under 42 CFR part 84; or

1910.134(d)(3)(iv)(C)

For contaminants consisting primarily of particles with mass median aerodynamic diameters (MMAD) of at least 2 micrometers, an air-purifying respirator equipped with any filter certified for particulates by NIOSH.

1910.134(e)

Medical evaluation. Using a respirator may place a physiological burden on employees that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status of the employee. Accordingly, this paragraph specifies the minimum requirements for medical evaluation that employers must implement to determine the employee's ability to use a respirator.

1910.134(e)(1)

General. The employer shall provide a medical evaluation to determine the employee's ability to use a respirator, before the employee is fit tested or required to use the respirator in the workplace. The employer may discontinue an employee's medical evaluations when the employee is no longer required to use a respirator.

1910.134(e)(2)

Medical evaluation procedures.

1910.134(e)(2)(i)

The employer shall identify a physician or other licensed health care professional (PLHCP) to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire.

1910.134(e)(2)(ii)

The medical evaluation shall obtain the information requested by the questionnaire in Sections 1 and 2, Part A of Appendix C of this section.

1910.134(e)(3)

Follow-up medical examination.

1910.134(e)(3)(i)

The employer shall ensure that a follow-up medical examination is provided for an employee who gives a positive response to any question among questions 1 through 8 in Section 2, Part A of Appendix C or whose initial medical examination demonstrates the need for a follow-up medical examination.

1910.134(e)(3)(ii)

The follow-up medical examination shall include any medical tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make a final determination.

1910.134(e)(4)

Administration of the medical questionnaire and examinations.

1910.134(e)(4)(i)
The medical questionnaire and examinations shall be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee. The medical questionnaire shall be administered in a manner that ensures that the employee understands its content.

1910.134(e)(4)(ii)
The employer shall provide the employee with an opportunity to discuss the questionnaire and examination results with the PLHCP.

1910.134(e)(5)
Supplemental information for the PLHCP.

1910.134(e)(5)(i)
The following information must be provided to the PLHCP before the PLHCP makes a recommendation concerning an employee's ability to use a respirator:

1910.134(e)(5)(i)(A)
(A) The type and weight of the respirator to be used by the employee;

1910.134(e)(5)(i)(B)
The duration and frequency of respirator use (including use for rescue and escape);

1910.134(e)(5)(i)(C)
The expected physical work effort;

1910.134(e)(5)(i)(D)
Additional protective clothing and equipment to be worn; and

1910.134(e)(5)(i)(E)
Temperature and humidity extremes that may be encountered.

1910.134(e)(5)(ii)
Any supplemental information provided previously to the PLHCP regarding an employee need not be provided for a subsequent medical evaluation if the information and the PLHCP remain the same.

1910.134(e)(5)(iii)
The employer shall provide the PLHCP with a copy of the written respiratory protection program and a copy of this section. Note to Paragraph (e)(5)(iii): When the employer replaces a PLHCP, the employer must ensure that the new PLHCP obtains this information, either by providing the documents directly to the PLHCP or having the documents transferred from the former PLHCP to the new PLHCP. However, OSHA does not expect employers to have employees medically reevaluated solely because a new PLHCP has been selected.

1910.134(e)(6)
Medical determination. In determining the employee's ability to use a respirator, the employer shall:

1910.134(e)(6)(i)
Obtain a written recommendation regarding the employee's ability to use the respirator from the PLHCP. The recommendation shall provide only the following information:

1910.134(e)(6)(i)(A)
Any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator;

1910.134(e)(6)(i)(B)
The need, if any, for follow-up medical evaluations; and

1910.134(e)(6)(i)(C)
A statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.

1910.134(e)(6)(ii)
If the respirator is a negative pressure respirator and the PLHCP finds a medical condition that may place the employee's health at increased risk if the respirator is used, the employer shall provide a PAPR if the PLHCP's medical evaluation finds that the employee can use such a respirator; if a subsequent medical evaluation finds that the employee is medically able to use a negative pressure respirator, then the employer is no longer required to provide a PAPR.

1910.134(e)(7)
Additional medical evaluations. At a minimum, the employer shall provide additional medical evaluations that comply with the requirements of this section if:

1910.134(e)(7)(i)
An employee reports medical signs or symptoms that are related to ability to use a respirator;

1910.134(e)(7)(ii)
A PLHCP, supervisor, or the respirator program administrator informs the employer that an employee needs to be reevaluated;

1910.134(e)(7)(iii)
Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation; or

1910.134(e)(7)(iv)
A change occurs 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.

1910.134(f)
Fit testing. This paragraph requires that, before an employee may be required to use any respirator with a negative or positive pressure tight-fitting facepiece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used. This paragraph specifies the kinds of fit tests allowed, the procedures for conducting them, and how the results of the fit tests must be used.

1910.134(f)(1)
The employer shall ensure that employees using a tight-fitting facepiece respirator pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT) as stated in this paragraph.

1910.134(f)(2)
The employer shall ensure that an employee using a tight-fitting facepiece respirator is fit tested prior to initial use of the respirator, whenever a different respirator facepiece (size, style, model or make) is used, and at least annually thereafter.

1910.134(f)(3)
The employer shall conduct an additional fit test whenever the employee reports, or the employer, PLHCP, supervisor, or program administrator makes visual observations of, changes in the employee's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.

1910.134(f)(4)
If after passing a QLFT or QNFT, the employee subsequently notifies the employer, program administrator, supervisor, or PLHCP that the fit of the respirator is unacceptable, the employee shall be given a reasonable opportunity to select a different respirator facepiece and to be retested.

1910.134(f)(5)
The fit test shall be administered using an OSHA-accepted QLFT or QNFT protocol. The OSHA-accepted QLFT and QNFT protocols and procedures are contained in Appendix A of this section.

1910.134(f)(6)
QLFT may only be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less.

1910.134(f)(7)
If the fit factor, as determined through an OSHA-accepted QNFT protocol, is equal to or greater than 100 for tight-fitting half facepieces, or equal to or greater than 500 for tight-fitting full facepieces, the QNFT has been passed with that respirator.

1910.134(f)(8)
Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators shall be accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive pressure) that is used for respiratory protection.

1910.134(f)(8)(i)
Qualitative fit testing of these respirators shall be accomplished by temporarily converting the respirator user's actual facepiece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure air-purifying respirator facepiece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator facepiece.

1910.134(f)(8)(ii)
Quantitative fit testing of these respirators shall be accomplished by modifying the facepiece to allow sampling inside the facepiece in the breathing zone of the user, midway between the nose and mouth. This requirement shall be accomplished by installing a permanent sampling probe onto a surrogate facepiece, or by using a sampling adapter designed to temporarily provide a means of sampling air from inside the facepiece.

1910.134(f)(8)(iii)
Any modifications to the respirator facepiece for fit testing shall be completely removed, and the facepiece restored to NIOSH-approved configuration, before that facepiece can be used in the workplace.

1910.134(g)
Use of respirators. This paragraph requires employers to establish and implement procedures for the proper use of respirators. These requirements include prohibiting conditions that may result in facepiece seal leakage, preventing employees from removing respirators in hazardous environments, taking actions to ensure continued effective respirator operation throughout the work shift, and establishing procedures for the use of respirators in IDLH atmospheres or in interior structural firefighting situations.

1910.134(g)(1)
Facepiece seal protection.

1910.134(g)(1)(i)
The employer shall not permit respirators with tight-fitting facepieces to be worn by employees who have:

1910.134(g)(1)(i)(A)
Facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function; or

1910.134(g)(1)(i)(B)
Any condition that interferes with the face-to-facepiece seal or valve function.

1910.134(g)(1)(ii)
If an employee wears corrective glasses or goggles or other personal protective equipment, the employer shall ensure that such equipment is worn in a manner that does not interfere with the seal of the facepiece to the face of the user.

1910.134(g)(1)(iii)
For all tight-fitting respirators, the employer shall ensure that employees perform a user seal check each time they put on the respirator using the procedures in Appendix B-1 or procedures recommended by the respirator manufacturer that the employer demonstrates are as effective as those in Appendix B-1 of this section.

1910.134(g)(2)
Continuing respirator effectiveness.

1910.134(g)(2)(i)
Appropriate surveillance shall be maintained of work area conditions and degree of employee exposure or stress. When there is a change in work area conditions or degree of employee exposure or stress that may affect respirator effectiveness, the employer shall reevaluate the continued effectiveness of the respirator.

1910.134(g)(2)(ii)
The employer shall ensure that employees leave the respirator use area:

1910.134(g)(2)(ii)(A)
To wash their faces and respirator facepieces as necessary to prevent eye or skin irritation associated with respirator use; or

1910.134(g)(2)(ii)(B)
If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece; or

1910.134(g)(2)(ii)(C)
To replace the respirator or the filter, cartridge, or canister elements.

1910.134(g)(2)(iii)
If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece, the employer must replace or repair the respirator before allowing the employee to return to the work area.

1910.134(g)(3)
Procedures for IDLH atmospheres. For all IDLH atmospheres, the employer shall ensure that:

1910.134(g)(3)(i)
One employee or, when needed, more than one employee is located outside the IDLH atmosphere;

1910.134(g)(3)(ii)
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;

1910.134(g)(3)(iii)
The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue;

1910.134(g)(3)(iv)
The employer or designee is notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue;

1910.134(g)(3)(v)
The employer or designee authorized to do so by the employer, once notified, provides necessary assistance appropriate to the situation;

1910.134(g)(3)(vi)
Employee(s) located outside the IDLH atmospheres are equipped with:

1910.134(g)(3)(vi)(A)
Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either

1910.134(g)(3)(vi)(B)
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; or

1910.134(g)(3)(vi)(C)
Equivalent means for rescue where retrieval equipment is not required under paragraph (g)(3)(vi)(B).

1910.134(g)(4)
Procedures for interior structural firefighting. In addition to the requirements set forth under paragraph (g)(3), in interior structural fires, the employer shall ensure that:

1910.134(g)(4)(i)
At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times;

1910.134(g)(4)(ii)
At least two employees are located outside the IDLH atmosphere; and

1910.134(g)(4)(iii)
All employees engaged in interior structural firefighting use SCBAs. Note 1 to paragraph (g): One of the two individuals located outside the IDLH atmosphere may be assigned to an additional role, such as incident commander in charge of the emergency or safety officer, so long as this individual is able to perform assistance or rescue activities without jeopardizing the safety or health of any firefighter working at the incident. Note 2 to paragraph (g): Nothing in this section is meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled.

1910.134(h)
Maintenance and care of respirators. This paragraph requires the employer to provide for the cleaning and disinfecting, storage, inspection, and repair of respirators used by employees.

1910.134(h)(1)
Cleaning and disinfecting. The employer shall provide each respirator user with a respirator that is clean, sanitary, and in good working order. The employer shall ensure that respirators are cleaned and disinfected using the procedures in Appendix B-2 of this section, or procedures recommended by the respirator manufacturer, provided

that such procedures are of equivalent effectiveness. The respirators shall be cleaned and disinfected at the following intervals:

1910.134(h)(1)(i)
Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition;

1910.134(h)(1)(ii)
Respirators issued to more than one employee shall be cleaned and disinfected before being worn by different individuals;

1910.134(h)(1)(iii)
Respirators maintained for emergency use shall be cleaned and disinfected after each use; and

1910.134(h)(1)(iv)
Respirators used in fit testing and training shall be cleaned and disinfected after each use.

1910.134(h)(2)
Storage. The employer shall ensure that respirators are stored as follows:

1910.134(h)(2)(i)
All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the facepiece and exhalation valve.

1910.134(h)(2)(ii)
In addition to the requirements of paragraph (h)(2)(i) of this section, emergency respirators shall be:

1910.134(h)(2)(ii)(A)
Kept accessible to the work area;

1910.134(h)(2)(ii)(B)
Stored in compartments or in covers that are clearly marked as containing emergency respirators; and

1910.134(h)(2)(ii)(C)
Stored in accordance with any applicable manufacturer instructions.

1910.134(h)(3)
Inspection.

1910.134(h)(3)(i)
The employer shall ensure that respirators are inspected as follows:

1910.134(h)(3)(i)(A)
All respirators used in routine situations shall be inspected before each use and during cleaning;

1910.134(h)(3)(i)(B)
All respirators maintained for use in emergency situations shall be inspected at least monthly and in accordance with the manufacturer's recommendations, and shall be checked for proper function before and after each use; and

1910.134(h)(3)(i)(C)
Emergency escape-only respirators shall be inspected before being carried into the workplace for use.

1910.134(h)(3)(ii)
The employer shall ensure that respirator inspections include the following:

1910.134(h)(3)(ii)(A)
A check of respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the facepiece, head straps, valves, connecting tube, and cartridges, canisters or filters; and

1910.134(h)(3)(ii)(B)
A check of elastomeric parts for pliability and signs of deterioration.

1910.134(h)(3)(iii)
In addition to the requirements of paragraphs (h)(3)(i) and (ii) of this section, self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be maintained in a fully charged state and shall be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. The employer shall determine that the regulator and warning devices function properly.

1910.134(h)(3)(iv)
For respirators maintained for emergency use, the employer shall:

1910.134(h)(3)(iv)(A)
Certify the respirator by documenting the date the inspection was performed, the name (or signature) of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator; and

1910.134(h)(3)(iv)(B)
Provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.

1910.134(h)(4)
Repairs. The employer shall ensure that respirators that fail an inspection or are otherwise found to be defective are removed from service, and are discarded or repaired or adjusted in accordance with the following procedures:

1910.134(h)(4)(i)
Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and shall use only the respirator manufacturer's NIOSH-approved parts designed for the respirator;

1910.134(h)(4)(ii)
Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed; and

1910.134(h)(4)(iii)
Reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

1910.134(i)
Breathing air quality and use. This paragraph requires the employer to provide employees using atmosphere-supplying respirators (supplied-air and SCBA) with breathing gases of high purity.

1910.134(i)(1)
The employer shall ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration accords with the following specifications:

1910.134(i)(1)(i)
Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and

1910.134(i)(1)(ii)
Compressed breathing air shall meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include: 1910.134(o) Appendices. Compliance with Appendix A, Appendix B-1, Appendix B-2, Appendix C, and Appendix D to this section are mandatory.[63 FR 1152, Jan. 8, 1998; 63 FR 20098, April 23, 1998; 71 FR 16672, April 3, 2006; 71 FR 50187, August 24, 2006; 73 FR 75584, Dec. 12, 2008; 76 FR 33606, June 8, 2011]

1910.134(i)(1)(ii)(A)
Oxygen content (v/v) of 19.5-23.5%;

1910.134(i)(1)(ii)(B)
Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;

1910.134(i)(1)(ii)(C)
Carbon monoxide (CO) content of 10 ppm or less;

1910.134(i)(1)(ii)(D)
Carbon dioxide content of 1,000 ppm or less; and

1910.134(i)(1)(ii)(E)
Lack of noticeable odor.

1910.134(i)(2)
The employer shall ensure that compressed oxygen is not used in atmosphere-supplying respirators that have previously used compressed air.

1910.134(i)(3)
The employer shall ensure that oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution.

1910.134(i)(4)
The employer shall ensure that cylinders used to supply breathing air to respirators meet the following requirements:

1910.134(i)(4)(i)
Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part 180);

1910.134(i)(4)(ii)
Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air; and

1910.134(i)(4)(iii)
The moisture content in the cylinder does not exceed a dew point of -50 deg.F (-45.6 deg.C) at 1 atmosphere pressure.

1910.134(i)(5)
The employer shall ensure that compressors used to supply breathing air to respirators are constructed and situated so as to:

1910.134(i)(5)(i)
Prevent entry of contaminated air into the air-supply system;

1910.134(i)(5)(ii)
Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F (5.56 deg.C) below the ambient temperature;

1910.134(i)(5)(iii)
Have suitable in-line air-purifying sorbent beds and filters to further ensure breathing air quality. Sorbent beds and filters shall be maintained and replaced or refurbished periodically following the manufacturer's instructions.

1910.134(i)(5)(iv)
Have a tag containing the most recent change date and the signature of the person authorized by the employer to perform the change. The tag shall be maintained at the compressor.

1910.134(i)(6)
For compressors that are not oil-lubricated, the employer shall ensure that carbon monoxide levels in the breathing air do not exceed 10 ppm.

1910.134(i)(7)
For oil-lubricated compressors, the employer shall use a high-temperature or carbon monoxide alarm, or both, to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply shall be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm.

1910.134(i)(8)
The employer shall ensure that breathing air couplings are incompatible with outlets for nonrespirable worksite air or other gas systems. No asphyxiating substance shall be introduced into breathing air lines.

1910.134(i)(9)
The employer shall use only the respirator manufacturer's NIOSH-approved breathing-gas containers,marked and maintained in accordance with the Quality Assurance provisions of the NIOSH approval for the SCBA as issued in accordance with the NIOSH respirator-certification standard at 42 CFR part 84.

1910.134(j)
Identification of filters, cartridges, and canisters. The employer shall ensure that all filters, cartridges and canisters used in the workplace are labeled and color coded with the NIOSH approval label and that the label is not removed and remains legible.

1910.134(k)
Training and information. This paragraph requires the employer to provide effective training to employees who are required to use respirators. The training must be comprehensive, understandable, and recur annually, and more often if necessary. This paragraph also requires the employer to provide the basic information on respirators in Appendix D of this section to employees who wear respirators when not required by this section or by the employer to do so.

1910.134(k)(1)
The employer shall ensure that each employee can demonstrate knowledge of at least the following:

1910.134(k)(1)(i)
Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator;

1910.134(k)(1)(ii)
What the limitations and capabilities of the respirator are;

1910.134(k)(1)(iii)
How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;

1910.134(k)(1)(iv)
How to inspect, put on and remove, use, and check the seals of the respirator;

1910.134(k)(1)(v)
What the procedures are for maintenance and storage of the respirator;

1910.134(k)(1)(vi)
How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and

1910.134(k)(1)(vii)
The general requirements of this section.

1910.134(k)(2)
The training shall be conducted in a manner that is understandable to the employee.

1910.134(k)(3)
The employer shall provide the training prior to requiring the employee to use a respirator in the workplace.

1910.134(k)(4)
An employer who is able to demonstrate that a new employee has received training within the last 12 months that addresses the elements specified in paragraph (k)(1)(i) through (vii) is not required to repeat such training provided that, as required by paragraph (k)(1), the employee can demonstrate knowledge of those element(s). Previous training not repeated initially by the employer must be provided no later than 12 months from the date of the previous training.

1910.134(k)(5)
Retraining shall be administered annually, and when the following situations occur:

1910.134(k)(5)(i)
Changes in the workplace or the type of respirator render previous training obsolete;

1910.134(k)(5)(ii)
Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill; or

1910.134(k)(5)(iii)
Any other situation arises in which retraining appears necessary to ensure safe respirator use.

1910.134(k)(6)
The basic advisory information on respirators, as presented in Appendix D of this section, shall be provided by the employer in any written or oral format, to employees who wear respirators when such use is not required by this section or by the employer.

1910.134(l)
Program evaluation. This section requires the employer to conduct evaluations of the workplace to ensure that the written respiratory protection program is being properly implemented, and to consult employees to ensure that they are using the respirators properly.

1910.134(l)(1)
The employer shall conduct evaluations of the workplace as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective.

1910.134(l)(2)
The employer shall regularly consult employees required to use respirators to assess the employees' views on program effectiveness and to identify any problems. Any problems that are identified during this assessment shall be corrected. Factors to be assessed include, but are not limited to:

1910.134(l)(2)(i)
Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);

1910.134(l)(2)(ii)
Appropriate respirator selection for the hazards to which the employee is exposed;

1910.134(l)(2)(iii)
Proper respirator use under the workplace conditions the employee encounters; and

1910.134(l)(2)(iv)
Proper respirator maintenance.

1910.134(m)
Recordkeeping. This section requires the employer to establish and retain written information regarding medical evaluations, fit testing, and the respirator program. This information will facilitate employee involvement in the respirator program, assist the employer in auditing the adequacy of the program, and provide a record for compliance determinations by OSHA.

1910.134(m)(1)
Medical evaluation. Records of medical evaluations required by this section must be retained and made available in accordance with 29 CFR 1910.1020.

1910.134(m)(2)
Fit testing.

1910.134(m)(2)(i)
The employer shall establish a record of the qualitative and quantitative fit tests administered to an employee including:

1910.134(m)(2)(i)(A)
The name or identification of the employee tested;

1910.134(m)(2)(i)(B)
Type of fit test performed;

1910.134(m)(2)(i)(C)
Specific make, model, style, and size of respirator tested;

1910.134(m)(2)(i)(D)
Date of test; and

1910.134(m)(2)(i)(E)
The pass/fail results for QLFTs or the fit factor and strip chart recording or other recording of the test results for QNFTs.

1910.134(m)(2)(ii)
Fit test records shall be retained for respirator users until the next fit test is administered.

1910.134(m)(3)
A written copy of the current respirator program shall be retained by the employer.

1910.134(m)(4)
Written materials required to be retained under this paragraph shall be made available upon request to affected employees and to the Assistant Secretary or designee for examination and copying.

1910.134(n)
Effective date. Paragraphs (d)(3)(i)(A) and (d)(3)(i)(B) of this section become effective November 22, 2006.

Appendix A to § 1910.134: Fit Testing Procedures (Mandatory)

Part I. OSHA-Accepted Fit Test Protocols

A. Fit Testing Procedures -- General Requirements

The employer shall conduct fit testing using the following procedures. The requirements in this appendix apply to all OSHA-accepted fit test methods, both QLFT and QNFT.

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
    (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;
(f) Self-observation in mirror to evaluate fit and respirator position.

8. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks described in Appendix B-1 of this section or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in Appendix B-1. 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, she or he 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 her or his 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.

    (a) Employers must perform the following test exercises for all fit testing methods prescribed in this appendix, except for the CNP quantitative fit testing protocol and the CNP REDON quantitative fit testing protocol. For these two protocols, employers must ensure that the test subjects (***i.e.***, employees) perform the exercise procedure specified in Part I.C.4(b) of this appendix for the CNP quantitative fit testing protocol, or the exercise procedure described in Part I.C.5(b) of this appendix for the CNP REDON quantitative fit-testing protocol. For the remaining fit testing methods, employers must ensure that employees perform the test exercises in the appropriate test environment in the following manner:

        (1) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.

(2) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.

(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. The head shall be held at each extreme momentarily so the subject can inhale at each side.

(4) Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).

(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.

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.

(6) Grimace. The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT)

(7) 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.

(8) Normal breathing. Same as exercise (1).

(b) 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.

B. Qualitative Fit Test (QLFT) Protocols

1. General

   (a) The employer shall ensure that persons administering QLFT are able to prepare test solutions, calibrate equipment and 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. Isoamyl Acetate Protocol

   Note: This protocol is not appropriate to use for the fit testing of particulate respirators. If used to fit test particulate respirators, the respirator must be equipped with an organic vapor filter.

   (a) Odor Threshold Screening - Odor threshold screening, performed without wearing a respirator, is intended to determine if the individual tested can detect the odor of isoamyl acetate at low levels.

      (1) Three 1 liter glass jars with metal lids are required.

      (2) Odor-free water (e.g., distilled or spring water) at approximately 25 deg. C (77 deg. F) shall be used for the solutions.

      (3) The isoamyl acetate (IAA) (also known at isopentyl acetate) stock solution is prepared by adding 1 ml of pure IAA to 800 ml of odor-free water in a 1 liter jar, closing the lid and shaking for 30 seconds. A new solution shall be prepared at least weekly.

      (4) The screening test shall be conducted in a room separate from the room used for actual fit testing. The two rooms shall be well-ventilated to prevent the odor of IAA from becoming evident in the general room air where testing takes place.

      (5) The odor test solution is prepared in a second jar by placing 0.4 ml of the stock solution into 500 ml of odor-free water using a clean dropper or pipette. The solution shall be shaken for 30 seconds and allowed to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution shall be used for only one day.

      (6) A test blank shall be prepared in a third jar by adding 500 cc of odor-free water.

      (7) The odor test and test blank jar lids shall be labeled (e.g., 1 and 2) for jar identification. Labels shall be placed on the lids so that they can be peeled off periodically and switched to maintain the integrity of the test.

(8) The following instruction shall be typed on a card and placed on the table in front of the two test jars (i.e., 1 and 2): "The purpose of this test is to determine if you can smell banana oil at a low concentration. The two bottles in front of you contain water. One of these bottles also contains a small amount of banana oil. Be sure the covers are on tight, then shake each bottle for two seconds. Unscrew the lid of each bottle, one at a time, and sniff at the mouth of the bottle. Indicate to the test conductor which bottle contains banana oil."

(9) The mixtures used in the IAA odor detection test shall be prepared in an area separate from where the test is performed, in order to prevent olfactory fatigue in the subject.

(10) If the test subject is unable to correctly identify the jar containing the odor test solution, the IAA qualitative fit test shall not be performed.

(11) If the test subject correctly identifies the jar containing the odor test solution, the test subject may proceed to respirator selection and fit testing.

(b) Isoamyl Acetate Fit Test

(1) The fit test chamber shall be a clear 55-gallon drum liner suspended inverted over a 2-foot diameter frame so that the top of the chamber is about 6 inches above the test subject's head. If no drum liner is available, a similar chamber shall be constructed using plastic sheeting. The inside top center of the chamber shall have a small hook attached.

(2) Each respirator used for the fitting and fit testing shall be equipped with organic vapor cartridges or offer protection against organic vapors.

(3) After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room. This room shall be separate from the room used for odor threshold screening and respirator selection, and shall be well-ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.

(4) A copy of the test exercises and any prepared text from which the subject is to read shall be taped to the inside of the test chamber.

(5) Upon entering the test chamber, the test subject shall be given a 6-inch by 5-inch piece of paper towel, or other porous, absorbent, single-ply material, folded in half and wetted with 0.75 ml of pure IAA. The test subject shall hang the wet towel on the hook at the top of the chamber. An IAA test swab or ampule may be substituted for the IAA wetted paper towel provided it has been demonstrated that the alternative IAA source will generate an IAA test atmosphere with a concentration equivalent to that generated by the paper towel method.

(6) Allow two minutes for the IAA test concentration to stabilize before starting the fit test exercises. This would be an appropriate time to talk with the test subject; to explain the fit test, the importance of his/her cooperation, and the purpose for the test exercises; or to demonstrate some of the exercises.

(7) If at any time during the test, the subject detects the banana-like odor of IAA, the test is failed. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.

(8) If the test is failed, the subject shall return to the selection room and remove the respirator. The test subject shall repeat the odor sensitivity test, select and put on another respirator, return to the test area and again begin the fit test procedure described in (b) (1) through (7) above. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the subject shall wait at least 5 minutes before retesting. Odor sensitivity will usually have returned by this time.

(9) If the subject passes the test, the efficiency of the test procedure shall be demonstrated by having the subject break the respirator face seal and take a breath before exiting the chamber.

(10) When the test subject leaves the chamber, the subject shall remove the saturated towel and return it to the person conducting the test, so that there is no significant IAA concentration buildup in the chamber during subsequent tests. The used towels shall be kept in a self-sealing plastic bag to keep the test area from being contaminated.

3. Saccharin Solution Aerosol Protocol

The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Taste threshold screening. The saccharin taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of saccharin.

(1) During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movements of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.

(2) The test enclosure shall have a 3/4-inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(3) The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his/her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a sweet taste.

(4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. The nozzle is directed away from the nose and mouth of the person. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(5) The threshold check solution is prepared by dissolving 0.83 gram of sodium saccharin USP in 100 ml of warm water. It can be prepared by putting 1 ml of the fit test solution (see (b)(5) below) in 100 ml of distilled water.

(6) To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully expand.

(7) Ten squeezes are repeated rapidly and then the test subject is asked whether the saccharin can be tasted. If the test subject reports tasting the sweet taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

(8) If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

(9) If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

(10) The test conductor will take note of the number of squeezes required to solicit a taste response.

(11) If the saccharin is not tasted after 30 squeezes (step 10), the test subject is unable to taste saccharin and may not perform the saccharin fit test.

Note to paragraph 3. (a): If the test subject eats or drinks something sweet before the screening test, he/she may be unable to taste the weak saccharin solution.

(12) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(13) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

(14) The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least each morning and afternoon or at least every four hours.

(b) Saccharin solution aerosol fit test procedure.

(1) The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

(2) The fit test uses the same enclosure described in 3. (a) above.

(3) The test subject shall don the enclosure while wearing the respirator selected in section I. A. of this appendix. The respirator shall be properly adjusted and equipped with a particulate filter(s).

(4) A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(5) The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 ml of warm water.

(6) As before, the test subject shall breathe through the slightly open mouth with tongue extended, and report if he/she tastes the sweet taste of saccharin.

(7) The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of saccharin fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test. A minimum of 10 squeezes is required.

(8) After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.

(9) Every 30 seconds the aerosol concentration shall be replenished using one half the original number of squeezes used initially (e.g., 5, 10 or 15).

(10) The test subject shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected. If the test subject does not report tasting the saccharin, the test is passed.

(11) If the taste of saccharin is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

(12) Since the nebulizer has a tendency to clog during use, the test operator must make periodic checks of the nebulizer to ensure that it is not clogged. If clogging is found at the end of the test session, the test is invalid.

4. Bitrex™ (Denatonium Benzoate) Solution Aerosol Qualitative Fit Test Protocol

The Bitrex™ (Denatonium benzoate) solution aerosol QLFT protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex is routinely used as a taste aversion agent in household liquids which children should not be drinking and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Taste Threshold Screening. The Bitrex taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of Bitrex.

(1) During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches (30.5 cm) in diameter by 14 inches (35.6 cm) tall. The front portion of the enclosure shall be clear from the respirator and allow free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.

(2) The test enclosure shall have a \3/4\ inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(3) The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his or her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a bitter taste.

(4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the Threshold Check Solution into the enclosure. This Nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(5) The Threshold Check Solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5% salt (NaCl) solution in distilled water.

(6) To produce the aerosol, the nebulizer bulb is firmly squeezed so that the bulb collapses completely, and is then released and allowed to fully expand.

(7) An initial ten squeezes are repeated rapidly and then the test subject is asked whether the Bitrex can be tasted. If the test subject reports tasting the bitter taste during the ten squeezes, the screening test is completed. The taste

threshold is noted as ten regardless of the number of squeezes actually completed.

(8) If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

(9) If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

(10) The test conductor will take note of the number of squeezes required to solicit a taste response.

(11) If the Bitrex is not tasted after 30 squeezes (step 10), the test subject is unable to taste Bitrex and may not perform the Bitrex fit test.

(12) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(13) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

(14) The nebulizer shall be thoroughly rinsed in water, shaken to dry, and refilled at least each morning and afternoon or at least every four hours.

(b) Bitrex Solution Aerosol Fit Test Procedure.

(1) The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

(2) The fit test uses the same enclosure as that described in 4. (a) above.

(3) The test subject shall don the enclosure while wearing the respirator selected according to section I. A. of this appendix. The respirator shall be properly adjusted and equipped with any type particulate filter(s).

(4) A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(5) The fit test solution is prepared by adding 337.5 mg of Bitrex to 200 ml of a 5% salt (NaCl) solution in warm water.

(6) As before, the test subject shall breathe through his or her slightly open mouth with tongue extended, and be instructed to report if he/she tastes the bitter taste of Bitrex.

(7) The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of the fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test.

(8) After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.

(9) Every 30 seconds the aerosol concentration shall be replenished using one half the number of squeezes used initially (e.g., 5, 10 or 15).

(10) The test subject shall indicate to the test conductor if at any time during the fit test the taste of Bitrex is detected. If the test subject does not report tasting the Bitrex, the test is passed.

(11) If the taste of Bitrex is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

5. 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 can be irritating to the eyes, lungs, and nasal passages. The test conductor shall 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 build-up of irritant smoke in the general atmosphere.

(b) Sensitivity Screening Check. The person to be tested must demonstrate his or 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 faceseal 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 six 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 section I.A. 14. of this appendix 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 non-hazardous 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 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. Generated Aerosol Quantitative Fit Testing Protocol

(a) Apparatus.

(1) Instrumentation. Aerosol generation, dilution, and measurement systems using particulates (corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS] or sodium chloride) as test aerosols shall be used for quantitative fit testing.

(2) Test chamber. The test chamber shall be large enough to permit all test subjects to perform freely all required exercises without disturbing the test agent concentration or the measurement apparatus. The test chamber shall be equipped and constructed so that the test agent is effectively isolated from the ambient air, yet uniform in concentration throughout the chamber.

(3) When testing air-purifying respirators, the normal filter or cartridge element shall be replaced with a high efficiency particulate air (HEPA) or P100 series filter supplied by the same manufacturer.

(4) The sampling instrument shall be selected so that a computer record or strip chart record may be made of the test showing the rise and fall of the test agent concentration with each inspiration and expiration at fit factors of at least 2,000. Integrators or computers that integrate the amount of test agent penetration leakage into the respirator for each exercise may be used provided a record of the readings is made.

(5) The combination of substitute air-purifying elements, test agent and test agent concentration shall be such that the test subject is not exposed in excess of an established exposure limit for the test agent at any time during the testing process, based upon the length of the exposure and the exposure limit duration.

(6) The sampling port on the test specimen respirator shall be placed and constructed so that no leakage occurs around the port (e.g., where the respirator is probed), a free air flow is allowed into the sampling line at all times, and there is no interference with the fit or performance of the respirator. The in-mask sampling device (probe) shall be designed and used so that the air sample is drawn from the breathing zone of the test subject, midway between the nose and mouth and with the probe extending into the facepiece cavity at least 1/4 inch.

(7) The test setup shall permit the person administering the test to observe the test subject inside the chamber during the test.

(8) The equipment generating the test atmosphere shall maintain the concentration of test agent constant to within a 10 percent variation for the duration of the test.

(9) The time lag (interval between an event and the recording of the event on the strip chart or computer or integrator) shall be kept to a minimum. There shall be a clear association between the occurrence of an event and its being recorded.

(10) The sampling line tubing for the test chamber atmosphere and for the respirator sampling port shall be of equal diameter and of the same material. The length of the two lines shall be equal.

(11) The exhaust flow from the test chamber shall pass through an appropriate filter (i.e., high efficiency particulate filter) before release.

(12) When sodium chloride aerosol is used, the relative humidity inside the test chamber shall not exceed 50 percent.

(13) The limitations of instrument detection shall be taken into account when determining the fit factor.

(14) Test respirators shall be maintained in proper working order and be inspected regularly for deficiencies such as cracks or missing valves and gaskets.

(b) Procedural Requirements.

(1) When performing the initial user seal check using a positive or negative pressure check, the sampling line shall be crimped closed in order to avoid air pressure leakage during either of these pressure checks.

(2) The use of an abbreviated screening QLFT test is optional. Such a test may be utilized in order to quickly identify poor fitting respirators that passed the positive and/or negative pressure test and reduce the amount of QNFT time. The use of the CNC QNFT instrument in the count mode is another optional method to obtain a quick estimate of fit and eliminate poor fitting respirators before going on to perform a full QNFT.

(3) A reasonably stable test agent concentration shall be measured in the test chamber prior to testing. For canopy or shower curtain types of test units, the determination of the test agent's stability may be established after the test subject has entered the test environment.

(4) Immediately after the subject enters the test chamber, the test agent concentration inside the respirator shall be measured to ensure that the peak penetration does not exceed 5 percent for a half mask or 1 percent for a full facepiece respirator.

(5) A stable test agent concentration shall be obtained prior to the actual start of testing.

(6) Respirator restraining straps shall not be over-tightened for testing. The straps shall be adjusted by the wearer without assistance from other persons to give a reasonably comfortable fit typical of normal use. The respirator shall not be adjusted once the fit test exercises begin.

(7) The test shall be terminated whenever any single peak penetration exceeds 5 percent for half masks and 1 percent for full facepiece respirators. The test subject shall be refitted and retested.

(8) Calculation of fit factors.

(i) The fit factor shall be determined for the quantitative fit test by taking the ratio of the average chamber concentration to the concentration measured inside the respirator for each test exercise except the grimace exercise.

(ii) The average test chamber concentration shall be calculated as the arithmetic average of the concentration measured before and after each test (i.e., 7 exercises) or the arithmetic average of the concentration measured before and

after each exercise or the true average measured continuously during the respirator sample.

(iii) The concentration of the challenge agent inside the respirator shall be determined by one of the following methods:

(A) Average peak penetration method means the method of determining test agent penetration into the respirator utilizing a strip chart recorder, integrator, or computer. The agent penetration is determined by an average of the peak heights on the graph or by computer integration, for each exercise except the grimace exercise. Integrators or computers that calculate the actual test agent penetration into the respirator for each exercise will also be considered to meet the requirements of the average peak penetration method.

(B) Maximum peak penetration method means the method of determining test agent penetration in the respirator as determined by strip chart recordings of the test. The highest peak penetration for a given exercise is taken to be representative of average penetration into the respirator for that exercise.

(C) Integration by calculation of the area under the individual peak for each exercise except the grimace exercise. This includes computerized integration.

(D) The calculation of the overall fit factor using individual exercise fit factors involves first converting the exercise fit factors to penetration values, determining the average, and then converting that result back to a fit factor. This procedure is described in the following equation:

$$\text{Overall Fit Factor} = \frac{\text{Number of exercises}}{1/ff_1 + 1/ff_2 + 1/ff_3 + 1/ff_4 + 1/ff_5 + 1/ff_6 + 1/ff_7 + 1/ff_8}$$

Where ff_1, ff_2, ff_3, etc. are the fit factors for exercises 1, 2, 3, etc.

(9) The test subject shall not be permitted to wear a half mask or quarter facepiece respirator unless a minimum fit factor of 100 is obtained, or a full facepiece respirator unless a minimum fit factor of 500 is obtained.

(10) Filters used for quantitative fit testing shall be replaced whenever increased breathing resistance is encountered, or when the test agent has altered the integrity of the filter media.

3. Ambient aerosol condensation nuclei counter (CNC) quantitative fit testing protocol.

The ambient aerosol condensation nuclei counter (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 the conduct of 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; 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 section I. A. 14. of this appendix.

(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.

(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 Appendix.

(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.

4. 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 Occupational Health Dynamics of Birmingham, Alabama 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 or 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 the conduct of 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 employer must train the test subject to hold his or her breath for at least 10 seconds.

(6) The test subject must don the test respirator without any assistance from the test administrator who is conducting the CNP fit test. The respirator must not be adjusted once the fit-test exercises begin. Any adjustment voids the test, and the test subject must repeat the fit test.

(7) The QNFT protocol shall be followed according to section I. C. 1. of this appendix 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 or 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 or her head straight ahead and hold his or her breath for 10 seconds during test measurement.

(3) Turning head side to side. Standing in place, the subject shall slowly turn his or 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 or her breath for 10 seconds during test measurement. Next, the subject needs to hold head full right and hold his or her breath for 10 seconds during test measurement.

(4) Moving head up and down. Standing in place, the subject shall slowly move his or 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 or her head full up and hold his or her

breath for 10 seconds during test measurement. Next, the subject shall hold his or her head full down and hold his or 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 or her head straight ahead and hold his or 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 or she were to touch his or 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 or her head straight ahead and hold his or 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 or her head straight ahead and hold his or 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.

(c) CNP Test Instrument.

(1) The test instrument must have an effective audio-warning device, or a visual-warning device in the form of a screen tracing, that indicates when the test subject fails to hold his or her breath during the test. The test must be terminated and restarted from the beginning when the test subject fails to hold his or her breath during the test. The test subject then 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.

5. Controlled negative pressure (CNP) REDON quantitative fit testing protocol.

(a) When administering this protocol to test subjects, employers must comply with the requirements specified in paragraphs (a) and (c) of Part I.C.4 of this appendix ("Controlled negative pressure (CNP) quantitative fit testing protocol"), as well as use

the test exercises described below in paragraph (b) of this protocol instead of the test exercises specified in paragraph (b) of Part I.C.4 of this appendix.

(b) Employers must ensure that each test subject being fit tested using this protocol follows the exercise and measurement procedures, including the order of administration, described below in Table A-1 of this appendix.

Table A-1. -- CNP REDON Quantitative Fit Testing Protocol

Exercises[1]	Exercise procedure	Measurement procedure
Facing Forward	Stand and breathe normally, without talking, for 30 seconds.	Face forward, while holding breath for 10 seconds.
Bending Over	Bend at the waist, as if going to touch his or her toes, for 30 seconds.	Face parallel to the floor, while holding breath for 10 seconds
Head Shaking	For about three seconds, shake head back and forth vigorously several times while shouting.	Face forward, while holding breath for 10 seconds.
REDON 1	Remove the respirator mask, loosen all facepiece straps, and then redon the respirator mask.	Face forward, while holding breath for 10 seconds.
REDON 2	Remove the respirator mask, loosen all facepiece straps, and then redon the respirator mask again.	Face forward, while holding breath for 10 seconds.

[1] Exercises are listed in the order in which they are to be administered.

(c) After completing the test exercises, the test administrator must question each test subject regarding the comfort of the respirator. When a test subject states that the respirator is unacceptable, the employer must ensure that the test administrator repeats the protocol using another respirator model.

(d) Employers must determine the overall fit factor for each test subject by calculating the harmonic mean of the fit testing exercises as follows:

$$\text{Overall Fit Factor} = \frac{N}{\left[1/FF_1 + 1/FF_2 + \ldots\ 1/FF_N\right]}$$

Where:
N = The number of exercises;
FF1 = The fit factor for the first exercise;
FF2 = The fit factor for the second exercise; and
FFN = The fit factor for the nth exercise.

Part II. New Fit Test Protocols

A. Any person may submit to OSHA an application for approval of a new fit test protocol. If the application meets the following criteria, OSHA will initiate a rulemaking proceeding under section 6(b)(7) of the OSH Act to determine whether to list the new protocol as an approved protocol in this Appendix A.

B. The application must include a detailed description of the proposed new fit test protocol. This application must be supported by either:

1. A test report prepared by an independent government research laboratory (e.g., Lawrence Livermore National Laboratory, Los Alamos National Laboratory, the National Institute for Standards and Technology) stating that the laboratory has tested the protocol and had found it to be accurate and reliable; or

2. An article that has been published in a peer-reviewed industrial hygiene journal describing the protocol and explaining how test data support the protocol's accuracy and reliability.

C. If OSHA determines that additional information is required before the Agency commences a rulemaking proceeding under this section, OSHA will so notify the applicant and afford the applicant the opportunity to submit the supplemental information. Initiation of a rulemaking proceeding will be deferred until OSHA has received and evaluated the supplemental information. [63 FR 20098, April 23, 1998; 69 FR 46993, August 4, 2004]

Appendix B-1 to § 1910.134: User Seal Check Procedures (Mandatory)

The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. Either the positive and negative pressure checks listed in this appendix, or the respirator manufacturer's recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

I. Facepiece Positive and/or Negative Pressure Checks

A. *Positive pressure check.* Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

B. *Negative pressure check.* Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

II. Manufacturer's Recommended User Seal Check Procedures

The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective. [63 FR 1152, Jan. 8, 1998]

Appendix B-2 to § 1910.134: Respirator Cleaning Procedures (Mandatory)

These procedures are provided for employer use when cleaning respirators. They are general in nature, and the employer as an alternative may use the cleaning recommendations provided by the manufacturer of the respirators used by their employees, provided such procedures are as effective as those listed here in Appendix B- 2. Equivalent effectiveness simply means that the procedures used must accomplish the objectives set forth in Appendix B-2, i.e., must ensure that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user.

I. Procedures for Cleaning Respirators

A. Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure- demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.

B. Wash components in warm (43 deg. C [110 deg. F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.

C. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain.

D. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:

1. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or,

2. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43 deg. C (110 deg. F); or,

3. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.

E. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

F. Components should be hand-dried with a clean lint-free cloth or air-dried.

G. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.

H. Test the respirator to ensure that all components work properly.
[63 FR 1152, Jan. 8, 1998]

App C to § 1910.134: OSHA Respirator Medical Evaluation Questionnaire (Mandatory)

To the employer: Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee: Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory)
The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date: _____

2. Your name: _____

3. Your age (to nearest year): _____

4. Sex (circle one): Male/Female

5. Your height: _____ ft. _____ in.

6. Your weight: _____ lbs.

7. Your job title: _____

8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code): _____

9. The best time to phone you at this number: _____

10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No

11. Check the type of respirator you will use (you can check more than one category):
a. _____ N, R, or P disposable respirator (filter-mask, non-cartridge type only).
b. _____ Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).

12. Have you worn a respirator (circle one): Yes/No

If "yes," what type(s): _____
_____

Part A. Section 2. (Mandatory)
Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you *currently* smoke tobacco, or have you smoked tobacco in the last month: Yes/No

2. Have you *ever had* any of the following conditions?

a. Seizures: Yes/No

b. Diabetes (sugar disease): Yes/No

c. Allergic reactions that interfere with your breathing: Yes/No

d. Claustrophobia (fear of closed-in places): Yes/No

e. Trouble smelling odors: Yes/No

3. Have you *ever had* any of the following pulmonary or lung problems?

a. Asbestosis: Yes/No

b. Asthma: Yes/No

c. Chronic bronchitis: Yes/No

d. Emphysema: Yes/No

e. Pneumonia: Yes/No

f. Tuberculosis: Yes/No

g. Silicosis: Yes/No

h. Pneumothorax (collapsed lung): Yes/No

i. Lung cancer: Yes/No

j. Broken ribs: Yes/No

k. Any chest injuries or surgeries: Yes/No

l. Any other lung problem that you've been told about: Yes/No

4. Do you *currently* have any of the following symptoms of pulmonary or lung illness?

a. Shortness of breath: Yes/No

b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes/No

c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes/No

d. Have to stop for breath when walking at your own pace on level ground: Yes/No

e. Shortness of breath when washing or dressing yourself: Yes/No

f. Shortness of breath that interferes with your job: Yes/No

g. Coughing that produces phlegm (thick sputum): Yes/No

h. Coughing that wakes you early in the morning: Yes/No

i. Coughing that occurs mostly when you are lying down: Yes/No

j. Coughing up blood in the last month: Yes/No

k. Wheezing: Yes/No

l. Wheezing that interferes with your job: Yes/No

m. Chest pain when you breathe deeply: Yes/No

n. Any other symptoms that you think may be related to lung problems: Yes/No

5. Have you *ever had* any of the following cardiovascular or heart problems?

a. Heart attack: Yes/No

b. Stroke: Yes/No

c. Angina: Yes/No

d. Heart failure: Yes/No

e. Swelling in your legs or feet (not caused by walking): Yes/No

f. Heart arrhythmia (heart beating irregularly): Yes/No

g. High blood pressure: Yes/No

h. Any other heart problem that you've been told about: Yes/No

6. Have you *ever had* any of the following cardiovascular or heart symptoms?

a. Frequent pain or tightness in your chest: Yes/No

b. Pain or tightness in your chest during physical activity: Yes/No

c. Pain or tightness in your chest that interferes with your job: Yes/No

d. In the past two years, have you noticed your heart skipping or missing a beat: Yes/No

e. Heartburn or indigestion that is not related to eating: Yes/No

d. Any other symptoms that you think may be related to heart or circulation problems: Yes/No

7. Do you *currently* take medication for any of the following problems?

a. Breathing or lung problems: Yes/No

b. Heart trouble: Yes/No

c. Blood pressure: Yes/No

d. Seizures: Yes/No

8. If you've used a respirator, have you *ever had* any of the following problems? (If you've never used a respirator, check the following space and go to question 9:)

a. Eye irritation: Yes/No

b. Skin allergies or rashes: Yes/No

c. Anxiety: Yes/No

d. General weakness or fatigue: Yes/No

e. Any other problem that interferes with your use of a respirator: Yes/No

9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes/No

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you *ever lost* vision in either eye (temporarily or permanently): Yes/No

11. Do you *currently* have any of the following vision problems?

a. Wear contact lenses: Yes/No

b. Wear glasses: Yes/No

c. Color blind: Yes/No

d. Any other eye or vision problem: Yes/No

12. Have you *ever had* an injury to your ears, including a broken ear drum: Yes/No

13. Do you *currently* have any of the following hearing problems?

a. Difficulty hearing: Yes/No

b. Wear a hearing aid: Yes/No

c. Any other hearing or ear problem: Yes/No

14. Have you *ever had* a back injury: Yes/No

15. Do you *currently* have any of the following musculoskeletal problems?

a. Weakness in any of your arms, hands, legs, or feet: Yes/No

b. Back pain: Yes/No

c. Difficulty fully moving your arms and legs: Yes/No

d. Pain or stiffness when you lean forward or backward at the waist: Yes/No

e. Difficulty fully moving your head up or down: Yes/No

f. Difficulty fully moving your head side to side: Yes/No

g. Difficulty bending at your knees: Yes/No

h. Difficulty squatting to the ground: Yes/No

i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: Yes/No

j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/No

Part B.

Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has

lower than normal amounts of oxygen: Yes/No

If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: Yes/No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: Yes/No

If "yes," name the chemicals if you know them: _____
_____
_____

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:

a. Asbestos: Yes/No

b. Silica (*e.g.*, in sandblasting): Yes/No

c. Tungsten/cobalt (e.g., grinding or welding this material): Yes/No

d. Beryllium: Yes/No

e. Aluminum: Yes/No

f. Coal (for example, mining): Yes/No

g. Iron: Yes/No

h. Tin: Yes/No

i. Dusty environments: Yes/No

j. Any other hazardous exposures: Yes/No

If "yes," describe these exposures: _____
_____
_____

4. List any second jobs or side businesses you have: _____
_____

5. List your previous occupations: _____
_____

6. List your current and previous hobbies: _____
_____

7. Have you been in the military services? Yes/No

If "yes," were you exposed to biological or chemical agents (either in training or combat): Yes/No

8. Have you ever worked on a HAZMAT team? Yes/No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes/No

If "yes," name the medications if you know them:_____

10. Will you be using any of the following items with your respirator(s)?

a. HEPA Filters: Yes/No

b. Canisters (for example, gas masks): Yes/No

c. Cartridges: Yes/No

11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:

a. Escape only (no rescue): Yes/No

b. Emergency rescue only: Yes/No

c. Less than 5 hours *per week:* Yes/No

d. Less than 2 hours *per day:* Yes/No

e. 2 to 4 hours per day: Yes/No

f. Over 4 hours per day: Yes/No

12. During the period you are using the respirator(s), is your work effort:

a. *Light* (less than 200 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: _____hrs._____mins.

Examples of a light work effort are *sitting* while writing, typing, drafting, or performing light assembly work; or *standing* while operating a drill press (1-3 lbs.) or controlling machines.

b. *Moderate* (200 to 350 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: _____hrs._____mins.

Examples of moderate work effort are *sitting* while nailing or filing; *driving* a truck or bus in urban traffic; *standing* while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; *walking* on a level surface about 2 mph or down a 5-degree grade about 3 mph; or *pushing* a wheelbarrow with a heavy load (about 100 lbs.) on a level surface. c. *Heavy* (above 350 kcal per hour): Yes/No

If "yes," how long does this period last during the average shift: _____hrs._____mins.

Examples of heavy work are *lifting* a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; *shoveling; standing* while bricklaying or chipping castings; *walking* up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: Yes/No

If "yes," describe this protective clothing and/or equipment:_____
_____

14. Will you be working under hot conditions (temperature exceeding 77 deg. F): Yes/No

15. Will you be working under humid conditions: Yes/No

16. Describe the work you'll be doing while you're using your respirator(s): _____
_____
_____

17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases): _____
_____
_____

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):

Name of the first toxic substance:_____
Estimated maximum exposure level per shift: _____
Duration of exposure per shift: _____
Name of the second toxic substance: _____
Estimated maximum exposure level per shift: _____
Duration of exposure per shift: _____
Name of the third toxic substance: _____
Estimated maximum exposure level per shift: _____

Duration of exposure per shift: _____
The name of any other toxic substances that you'll be exposed to while using your respirator: ___
_____
_____
_____

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security): _____
_____

[63 FR 1152, Jan. 8, 1998; 63 FR 20098, April 23, 1998; 76 FR 33607, June 8, 2011; 77 FR 46949, Aug. 7, 2012]

Appendix D to § 1910.134 (Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.

2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.

4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.
[63 FR 1152, Jan. 8, 1998; 63 FR 20098, April 23, 1998]

Section III

Air Sampling Report (TO-15)

Memo

Stantec

To:	Craig Almanza Bridgeton Landfill, LLC	From:	Deborah L. Gray Columbus, OH
File:	Bridgeton Landfill, LLC	Date:	April 9, 2013

Reference: 182608005

At the request of Bridgeton Landfill, LLC Stantec Consulting Services, Inc. (Stantec) mobilized to Bridgeton Landfill in Bridgeton, Missouri, to collect samples of the vapor in the headspace of the leachate treatment tanks to determine the concentrations of volatile organic compounds (VOCs) present following mixing and aeration of the waste. It is Stantec's understanding that the purpose of sampling the vapor is to assess potential exposures to employees of the Metropolitan Sewer District (MSD) during transfer of the treated liquids from the landfill to the MSD lift-station on Old St. Charles Rock Road. The MSD has expressed concern that employees working around the liquid wastes from the landfill may be exposed to airborne contaminants, including VOCs (particularly benzene) at levels of concern in the air of the lift-station structure, and potentially as the wastes enter the mixing tanks at the municipal wastewater treatment plant (approximately 1.5 to 2.0 miles from the landfill).

In order to render the liquid waste (combined leachate and landfill gas condensate) acceptable for discharge through the MSD, Bridgeton will treat the waste by mixing and aerating to reduce the concentrations of VOCs. On Thursday April 4, leachate and landfill gas condensate were transferred into frac tanks for treatment. There are currently two treatment units on-site, each consisting of four frac tanks and an air-sparging system. However, only one unit was operating on April 4/5. Once the tanks were filled above the level of the aeration equipment, approximately 1/3rd, the waste was stirred to release volatiles which were then captured and sparged through charcoal filter units before release to ambient air. After treatment, samples of the liquid waste were collected to confirm that it met the requirements set forth in the leachate treatment Standard Operating Procedure and to provide a baseline analysis for resumption of discharge to the MSD. It was the intent of the facility to sample the vapors in the headspace of the treatment tanks at the same time that the liquid samples were collected in order to have correlating liquid and vapor data for purpose of MSD's review.

It is anticipated that the concentrations of VOCs present in the vapors confined above the liquid in the frac tanks would represent the "worst case" with regard to what MSD employees could be exposed to either in the air inside the lift station or subsequently when the waste enters the municipal treatment plant. This was consistent with the purpose of providing a conservative estimate from which to evaluate risk and appropriate risk abatement options.

The vapor sampling will be restricted to VOCs because this analytical group includes compounds that are of greatest potential health concern to those employees of the MSD who may inhale vapors while transferring the waste. The individual compounds that were detected in the highest concentrations in landfill gas during the August 2012 sampling event were VOCs. Although other types of constituents such as reduced sulfur compounds and carboxylic acids were found in the landfill gas in August 2102, these constituents are primarily related to odor as opposed to being a health concern for the conditions under which MSD employees may be exposed to vapors associated with disposal of the liquid waste.

Stantec utilized the following sampling protocol.

Analytical Method: EPA TO-15 plus Tentatively Identified Compounds (TICs)

Collection Method: Vapor or ambient air will be drawn into prepared 6-liter Summa© Canisters fitted with 15-minute regulators.

Vapor Samples from the Headspace of the Treatment Tanks: In order to minimize dilution with ambient air, the canister was placed on the top of the treatment tank and a piece of Tygon© tubing attached to the sample inlet inserted under the metal cover on the access port of the tank so that it extended into the headspace, but did not contact the liquid. To avoid crushing the tubing, the lid was propped open with a small piece of wood and clean toweling was tucked into the opening to prevent influx of outside air or escape of the vapors. The vapor samples were collected over a 15-minute period.

On April 5, 2013 a total of ***eight (8) vapor samples*** were collected from the headspace of the four frac tanks that were connected to the operating sparge system after treatment. One vapor sample was collected from each of the four tanks with the air filtration unit operating. The air filtration unit was then turned off allowing vapors to accumulate inside the headspace of the tanks for approximately one hour. A second vapor sample was then collected from each of the four frac tanks to represent "worst case" conditions with regard to vapor concentrations.

Outside Air Samples: In addition to the treatment tank vapor samples, ***two (2) 15-minute samples of outside air*** were collected in the vicinity of the treatment tanks during the same time period for comparison.

Chains of Custody and Shipping: Chain of custody documentation was completed by Stantec personnel and packaged with the filled Summa© Canisters; and shipped via FedEx to ALS Laboratories for arrival on Monday morning (April 8). The laboratory was requested to analyze the samples within 4-days of receipt with results available by Friday April 12.

ALS has indicated that there is a 25% surcharge for 5-day turn-around. This translates to $237.50 per sample.

Stantec

April 9, 2013
Craig Almanza
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Reference: 182608005

Communication of Results: The laboratory analytical results will be communicated to Bridgeton Landfill, LLC as soon as the reports are received and reviewed by Stantec's toxicologist.

Stantec Consulting Services, Inc.

Deborah L. Gray, Ph.D., DABT
National Director, Risk Assessment & Toxicology Practice
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One Team. Infinite Solutions.

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Table 1: Sample Locations and Parameters – Summa Canisters – Bridgeton Landfill Leachate Processing (Sparge) Tanks

SUMMA Canister ID	Location/Description [1, 2, 3, 4]	Analog Gauge ID	COA ID [5]	Start Time [6]	Stop Time	Sample Duration (min)	PreSample Pressure (PSI) [7]	PostSample Pressure (PSI) [7]	Amount of time tank lid was closed prior to sampling (hr:min) [8, 9]	Amount of time carbon filtration unit was off prior to sampling (hr:min) [9, 10]
02705	SPG1-1, carbon filtration system ON	AVG01893	OA00940	0908	0923	15	28.6	0.0	0:13	NA
01545	SPG1-2, carbon filtration system ON	AVG02327	OA01035	0928	0945	17	27.8	2.5	0:26	NA
03275	SPG1-3, carbon filtration system ON	AVG02181	OA00994	1013	1029	16	24.8	1.8	1:09	NA
02229	SPG1-4, carbon filtration system ON	AVG02354	OA00959	1032	1047	15	27.4	0.0	1:26	NA
02836	SPG1-1, carbon filtration system OFF	AVG01821	OA01015	1101	1117	16	28.6	6.2	0:41	0:09
02733	SPG1-2, carbon filtration system OFF	AVG02682	OA00989	1120	1135	15	29.6	6.0	2:18	0:28
01270	SPG1-3, carbon filtration system OFF	AVG02124	OA01048	1138	1153	15	28.8	1.7	2:34	0:46
00404	SPG1-4, carbon filtration system OFF	AVG02550	OA00969	1155	1211	16	27.4	3.0	2:49	1:03
01373	Ambient – upwind	AVG01905	OA00957	0950	1006	16	27.5	5.8	NA	NA
01233	Ambient - downwind	AVG02438	OA00936	1035	1052	17	26.0	0.0	NA	NA

Notes:

1 SPG#-# refers to leachate sparge systems; the first # refers to the system on site (at the time of sampling there were 3 separate systems); the second number refers to the tank identification (each sparge system has four separate tanks)

2 All samples obtained from SPG1; this was the only system on line that had leachate present that was previously sparged, thereby simulating that which would be discharged to MSD

3 For SPG1, the four tanks were filled with leachate on 04/04/2013 starting at 1330 and ending at 2250

4 For SPG1, the sparge system was turned on 04/04/2013 at 1830, and turned off on 04/05/2013 at approximately 0900; thus it operated for approximately 14.5 hours (Source: Feezor Engineering)

5 COA = Critical Orifice Assembly

6 All samples obtained on April 5, 2013; weather was clear and sunny with light breeze from northeast, approximate temperature 65°F

7 PSI = pounds per square inch

8 To minimize air movement and approximate worst-case conditions, the lids to SPG1 tanks were closed for sampling at the following times: SPG1-1 at 0855 (and again at 1020); SPG1-2 at 0902; SPG1-3 at 0904; SPG1-4 at 0906

9 NA = not applicable

10 To minimize air movement and approximate worst-case conditions for the second round of samples from the four SPG1 tanks, the carbon air filtration unit was shut down at 1052

Stantec
Project Number 182608005

Table 2: Sample Results - Summa Canisters – Bridgeton Landfill Leachate Processing (Sparge) Tanks

Analyte	CAS #	Concentrations in µg/m³										
		Occupational Standard*	SPG-1 On (Summa 02705)	SPG-2 On (Summa 01545)	SPG-3 On (Summa 03275)	SPG-4 On (Summa 02229)	SPG-1 Off (Summa 02836)	SPG-2 Off (Summa 02733)	SPG-3 Off (Summa 01270)	SPG-4 Off (Summa 00404)	Ambient Upwind (Summa 01373)	Ambient Downwind (Summa 01233)
Propene	115-07-1	861,000	490	300	720	330	3,100	760	2,400	2,400	<0.65	3.0
DCDFM	75-71-8	42,100	<43	<48	<83	<53	<190	<390	<230	<470	2.2	2.1
Chloromethane	74-87-3	207,000	<43	<48	<83	<53	<190	<390	<230	<470	0.71	<0.67
Ethanol	64-17-5	1,880,000	31,000	25,000	40,000	26,000	91,000	92,000	110,000	110,000	<6.5	36
Acetone	67-64-1	590,000	23,000	19,000	32,000	19,000	110,000	90,000	120,000	130,000	11	37
TCFM	75-69-4	5,620,000	<43	<48	<83	<53	<190	<390	<230	<470	1.3	1.5
2-Propanol	67-63-0	980,000	4,700	4,200	6,500	4,200	14,000	18,000	19,000	22,000	<6.5	<6.7
Methylene chloride	75-09-2	174,000	<43	<48	<83	<53	<190	<390	<230	<470	0.82	<0.67
2-Butanone (MEK)	78-93-3	590,000	8,800	8,200	14,000	8,100	49,000	42,000	61,000	68,000	<6.5	9.5
Ethyl acetate	141-78-6	1,440,000	330	320	640	330	2,400	1,900	3,000	3,800	<1.3	<1.3
Tetrahydrofuran	109-99-9	147,000	4,300	3,900	7,000	3,900	25,000	20,000	28,000	35,000	<0.65	4.1
Benzene	71-43-2	1,600	<43	<48	<83	<53	<190	<390	<230	<470	<0.65	6.8
1,4-Dioxane	123-91-1	3,600	350	280	470	300	1,000	1,100	1,300	1,400	<0.65	<0.67
4M2P	108-10-1	205,000	150	130	270	140	850	730	1,200	1,500	,<0.65	<0.67
Toluene	108-88-3	75,400	<43	<48	<83	<53	<190	<390	<230	<470	0.73	<0.67
2-Hexanone	591-78-6	4,000	130	130	230	130	730	640	970	1,200	<0.65	<0.67
n-Butyl acetate	123-86-4	710,000	180	180	390	200	1,000	920	1,900	2,400	<0.65	<0.67
124TMB	95-63-6	125,000	<43	<48	<83	<53	<190	<390	280	<470	<0.65	<0.67
14DCB	106-46-7	450,000	<43	<48	<83	<53	<190	<390	370	570	<0.65	<0.67
d-Limonene	5989-27-5	167,000	83	86	110	72	640	<390	660	990	<0.65	<0.67
Naphthalene	91-20-3	52,400	350	350	260	180	410	<390	780	1,100	<0.65	<0.67
Tentatively Identified Compounds												
Sulfur dioxide	7446-09-5		ND	ND	ND	ND	ND	ND	ND	ND	>440	ND
n-Butanal	123-72-8		ND	ND	ND	ND	4,400	4,000	ND	8,100	3.8	ND
n-Heptanal	85-86-9		ND	ND	1,300	ND	ND	ND	ND	ND	2.6	ND

Propane	74-98-6	1,800,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.3
Isobutane	13183-68-1		ND	ND	ND	ND	ND	ND	ND	ND	ND	3.1
Acetaldehyde	75-07-0	45,000	1,800	1,700	3,000	1,700	10,000	9,000	12,000	15,000	ND	2.8
Methyl acetate	79-09-4	610,000	4,400	4,100	7,800	4,200	28,000	23,000	33,000	41,000	ND	ND
n-Butane	106-97-8	1,900,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.6
1-Propanol	71-23-8	500,000	3,700	3,100	5,300	3,300	13,000	14,000	15,000	17,000	ND	ND
n-Pentane	109-66-0	350,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.7
Methyl acetate	79-20-9		ND	ND	ND	ND	ND	ND	ND	ND	ND	6.4
2-Pentanone	107-87-9	530,000	850	ND	1,400	770	4,900	4,100	5,800	7,300	ND	ND
2-Methylfuran	534-22-5		ND	ND	ND	ND	ND	ND	ND	ND	ND	5.3
1-Butanol	71-36-3	150,000	13,000	11,000	18,000	12,000	44,000	42,000	56,000	62,000	ND	4.3
2-Butanol	78-92-2	305,000	3,200	3,000	5,100	3,100	13,000	14,000	16,000	19,000	ND	ND
Cyclohexanone	108-93-0	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.1
Methyl propionate	554-12-1		1,000	1,000	2,200	1,100	8,000	6,800	ND	13,000	ND	ND
Methyl butyrate	623-42-7		1,600	1,600	3,500	1,800	11,000	9,500	17,000	22,000	ND	ND
Cyclopentanone	120-92-3		ND	ND	ND	ND	ND	2,600	ND	ND	ND	ND
Isobutanol	78-83-1		ND	ND	1,300	ND	3,800	ND	4,600	ND	ND	ND
2MCP	1120-72-5		2,200	2,000	3,100	1,900	9,200	8,000	11,000	13,000	ND	ND
1-Hexanol	111-27-3		930	840	1,500	890	3,200	3,100	4,700	ND	ND	ND
2ECP	4971-18-0		2,700	2,400	3,700	2,300	9,400	7,600	13,000	15,000	ND	ND
23D2C1-one	1121-05-7		1,000	850	ND	910	ND	ND	ND	ND	ND	ND
2M2CP-1-one			ND	ND	ND	760	ND	ND	ND	ND	ND	ND
2E1H	104-76-7		11,000	10,000	18,000	12,000	32,000	29,000	51,000	56,000	ND	ND
Butyl hexanoate	626-82-4		1,100	1,100	ND	ND	ND	ND	ND	ND	ND	ND
Methyl hexanoate	106-70-7		ND	ND	ND	ND	ND	ND	4,400	5,700	ND	ND
Butyl butyrate	109-21-7		ND	ND	ND	ND	ND	ND	5,100	6,300	ND	ND
2EHB			1,200	1,500	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	99-87-6		ND	ND	ND	ND	ND	ND	ND	6,700	ND	ND

DCDFM	Dichlorodifluoromethane (CFC 12)	124TMB	1,2,4-Trimethylbenzene	2ECP	2-Ethylcyclopentanone	2E1H	2-Ethyl-1-hexanol
TCFM	Trichlorofluoromethane	14DCB	1,4-Dichlorobenzene	23D2C1-one	2,3-Dimethyl-2-cyclopenten-1-one	2EHB	2-Ethylhexylbutyrate
4M2P	4-Methyl-2-pentanone	2MCP	2-Methylcyclopentanone	2M2CP-1-one	2-Methyl-2-cyclopentanone-1-one		

Respirator Training Videos

1. Voluntary Use of Respirators (5:38) - https://youtu.be/5i5xSrt3Mv8
2. Respirator Types (16:10) - https://youtu.be/wf64hI7WYJ8
3. Maintenance & Care of Respirators (10:14) - https://youtu.be/6rVpsnJv1Q0
4. Respirators in the Workplace : Air Purifying Respirators (5:32) - https://youtu.be/efNwHKAsHv8
5. 3M™ Half Facepiece Respirator 6000 Series (15:10) - https://youtu.be/yBg2B2BP9nA
6. 3M™ 60926 Multi-Gas Resp. Cartridge w/ P100 Filter (3:32) - https://youtu.be/ms5h_yqid7g
7. 3M™ 2097 P100 Respiratory Filter w/ Nuisance OV (3:18) - https://youtu.be/7FvCSgPqbjE
8. Medical Evaluations for Workers Who Use Respirators (9:39) - https://youtu.be/F4ksbeTPW9o

Respirator Training Exam

1. The primary function of a respirator is to protect workers against respiratory hazards that may come in the form of chemical, biological, and radiological agents

   A) True

   B) False

2. Engineering controls are sufficient to protect workers against respiratory hazards in the workplace

   A) True

   B) False

3. Engineering controls and respirators are the primary methods for protecting workers from respiratory hazards

   A) True

   B) False

4. Respirators DO NOT protect workers against

   A) Fog, mist, and smoke

   B) Oxygen deficient atmospheres

   C) Falls

   D) Harmful dusts

   E) Sprays, vapors, and gases

5. The two major classes of respirators are

   A) Air purifying and atmosphere purifying

   B) Atmosphere supplying and air decontaminating

   C) Air purifying and air decontaminating

   D) Atmosphere supplying and air purifying

6. Which of the following may compromise the effectiveness of the respirator's seal?

   A) Beards

   B) Mustaches

   C) Sideburns

   D) Oral surgery

   E) All of the above

7. Employees who wear eye glasses or contact lenses are not permitted to use a respirator.
   A) True
   B) False

8. It is the employer's responsibility to ensure that their employees are medically fit enough to use a respirator.
   A) True
   B) False

9. A user seal check should be performed
   A) Every time the respirator is worn
   B) Weekly
   C) Monthly
   D) Daily

10. What does the phrase "Assigned Protection Factor" refer to?
    A) The level of protection that a respirator or a class of respirator is expected to offer
    B) The level of protection that engineering controls/work practices offer against respiratory hazards
    C) The point at which a respirator stops offering any protection to the wearer
    D) The employee to whom a respirator is assigned

11. Which of the following air purifying respirators has an Assigned Protection Factor of 50?
    A) Half Mask/Dust Mask
    B) Full Facepiece
    C) A loose-fitting Powered Air-Purifying Air Respirator
    D) A hood-powered PAPR

12. Which of these symptoms suggests that your respirator may be ineffective?
    A) Shortness of breath
    B) Dizziness
    C) Coughing
    D) All of the above

13. What does the acronym ESLI stand for?
    A) Equilibrium Stability Level Indicator
    B) End-of-Service Life Indicator
    C) Energy Science Laboratories Incorporated
    D) Eat Slowly Live Infinitely

14. What does the acronym IDLH stand for?

    A) Instant Death Lurks Here

    B) Immediate Detection of Low Hazards

    C) Integrated and Differentiated Level of Hazards

    D) Immediately Dangerous to Life and Health

15. An employer is permitted to follow respirator cleaning recommendations provided by the manufacturer of the respirator and not necessarily the ones provided by OSHA, if (s)he wishes to do so.

    A) True

    B) False

    C) Only if the manufacturer's recommended procedure is as rigorous and effective as OSHA's.

16. Respirators should be inspected for wear and tear

    A) Daily

    B) Weekly

    C) Monthly

    D) Before and after each use

17. Quantitative fit testing involves introducing gas, vapor, or aerosol into an area surrounding the head of the respirator user

    A) True

    B) False

18. Even after having the fit testing done previously, respirator users need to redo their fit testing when they have

    A) Undergone a cosmetic surgery

    B) Lost or gained weight

    C) Put on makeup

    D) Both A and B

19. This image asks the reader to do something, what is it?

A) Wear your respirator
B) Wear a mask only if you're bald and have no facial hair
C) Eye protection is not necessary when using your respirator
D) Only half-mask respirators are required in this area

20. Which of the following is incorrect regarding half-mask respirators?

A) They are designed to cover nose, mouth, and chin
B) They include replaceable cartridges
C) They provide protection in case of oxygen deficiency
D) They basically provide protection from dust, mists, and vapors

Attachment 2

Certifications

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor
Carol S. Comer, Director

August 8, 2019

Jonathan E Wilkinson
7321 Providence Drive
Edwardsville, IL 62025

RE: **Missouri Asbestos Occupation Certification Card**

Enclosed is your certification card for Asbestos Inspector, as issued by the Asbestos Unit of the Missouri Department of Natural Resources' Air Pollution Control Program.

Missouri Certification Number: 7118050319MOIR18490
Course Training Date: May 03, 2019
Missouri Certification Approval Date: August 09, 2019
Missouri Certification Expiration Date: May 03, 2020

Note:

- All Missouri-certified asbestos personnel must comply with the following statutes and regulations:
  - Sections 643.225 to 643.225, RSMo;
  - 10 CSR 10-6.241 *Asbestos Projects-Registration, Abatement, Notification, Inspection, Demolition, and Performance Requirements; and*
  - 10 CSR 10-6.250 *Asbestos Projects-Certification, Accreditation and Business Exemption Requirements.*
- To keep your occupation certification up-to-date, you must complete an annual refresher course and submit a renewal application each year.
- In order to be eligible to renew your certification, you must successfully complete a refresher course with a Missouri-accredited training provider within 12 months of the expiration date of your current training certificate. If you exceed this grace period, you will be required to retake a Missouri-accredited initial course in order to be eligible for Missouri certification.

To obtain a copy of the certification renewal application, or review regulations and requirements, please visit our website at http://dnr.mo.gov/env/apcp/asbestos/index.htm.

If you have any questions please call the Air Pollution Control Program at 573-751-4817.

AIR POLLUTION CONTROL PROGRAM

Director of Air Pollution Control Program

CERTIFICATION NUMBER:

7118060719MOIR17479

THIS CERTIFIES

William J. Abernathy

HAS COMPLETED THE CERTIFICATION REQUIREMENTS FOR

Inspector

APPROVED: **06/17/2019**

EXPIRES: **06/17/2020**

TRAINING DATE: **06/07/2019**

Director of Air Pollution Control Program

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor
Carol S. Comer, Director

November 6, 2019

Arron A Weber
406 E Walnut
Chatham, IL 62629

RE: **Missouri Asbestos Occupation Certification Card**

Enclosed is your certification card for Asbestos Inspector, as issued by the Asbestos Unit of the Missouri Department of Natural Resources' Air Pollution Control Program.

Missouri Certification Number: 7118101819MOIR18135
Course Training Date: October 18, 2019
Missouri Certification Approval Date: November 07, 2019
Missouri Certification Expiration Date: November 07, 2020

Note:

- All Missouri-certified asbestos personnel must comply with the following statutes and regulations:
  - Sections 643.225 to 643.225, RSMo;
  - 10 CSR 10-6.241 *Asbestos Projects-Registration, Abatement, Notification, Inspection, Demolition, and Performance Requirements; and*
  - 10 CSR 10-6.250 *Asbestos Projects-Certification, Accreditation and Business Exemption Requirements.*
- To keep your occupation certification up-to-date, you must complete an annual refresher course and submit a renewal application each year.
- In order to be eligible to renew your certification, you must successfully complete a refresher course with a Missouri-accredited training provider within 12 months of the expiration date of your current training certificate. If you exceed this grace period, you will be required to retake a Missouri-accredited initial course in order to be eligible for Missouri certification.

To obtain a copy of the certification renewal application, or review regulations and requirements, please visit our website at http://dnr.mo.gov/env/apcp/asbestos/index.htm.

If you have any questions please call the Air Pollution Control Program at 573-751-4817.

AIR POLLUTION CONTROL PROGRAM

Director of Air Pollution Control Program

STC SAFETY TRAINING CENTER
safetytrainingcenter.org

2539 Vandalia Street, Collinsville, IL 62234 * Phone: 618-855-8764

Environmental and Occupational Safety & Health Training

Does hereby certify

Bradley Vits

406 East Walnut, Chatham, IL 62629

Has successfully completed and passed the course examination with at least 70% for re-accreditation under AHERA (Title II)

Asbestos Building Inspector Refresher

Class Date:	***09/06/2019***
Examination Date:	***09/06/2019***
STC Certificate Number:	***STC-20190906-002573ABIR***
Certification Expiration:	***09/06/2020***

David M. Mendoza – President/Training Director
Certified Environmental Specialist
OSHA Authorized Instructor

This training course is accredited by the Illinois Department of Public Health and the Missouri Department of Natural Resources

Attachment 3

Job Safety Analyses

Engineering for a Better World
FEEZOR ENGINEERING, INC.

Job Safety Analysis Form

Date:

Supervisor:

Task Description: Heavy equipment operations to clear brush, suppress dust, perform minor grading, and place aggregate, & observation of same

Location: West Lake Landfill OU-1 Area 2, Bridgeton, Missouri

Equip. to be used: Chipper/grinder/mulcher, skid steer, water truck, hand tools, excavator

Risk Assessment	1=Low/Rarely 2=Med/Daily 3=High/Hourly
How often is task conducted?	2
Probability of something going wrong?	2
How serious are the consequences?	3
If total is > 5, add'l mitigations?	Level D PPE + protective clothing

Sequence of Work	Potential Hazards	Mitigation Actions
Clear brush, fell trees, perform dust suppression as needed	Noise, falls, high-speed projectiles, limited visibility, steep slopes, moving equipment, radiological exposure	Use hearing protection & safety glasses, stay >15 ft from equipment, maintain dust suppression, don proper PPE
Perform any necessary grading in preparation of aggregate placement, perform dust suppression as needed	Noise, moving equipment, radiological exposure	Use hearing protection & safety glasses, stay >15 ft from equipment, maintain dust suppression
Spread and compact aggregate material to designed thickness over identified areas, perform dust suppression as needed	Noise, moving equipment, radiological exposure	Use hearing protection & safety glasses, stay >15 ft from equipment, maintain dust suppression
Decontaminate equipment at designated location	Slips, trips, and falls, muscle strain	Watch footing, use safety glasses, avoid spray, use proper lifting techniques and good ergonomics

List any additional information pertaining to the work: Cell phone use for emergencies only. Evac route and directions to hospital have been provided.

Work Conditions/Requirements			PPE Required (Inside Controlled Area)	Safety Items Required (Inside Controlled Area)
Wet surfaces?	Y	N	Hard hat	4-gas meter (1 per work area/group)
Steep slopes?	Y	N	Steel toed boots/shoes	TLD (1 per individual inside controlled area)
Elevated work?	Y	N	Safety glasses or goggles	Stationary air sampler (1 per work area/group)
Fire risk present?	Y	N	Gloves	Fire extinguisher (1 per vehicle/equipment)
Explosion risk?	Y	N	Hearing protection (depending on task)	1st aid kit (1 per vehicle/equipment)
Confined space?	Y	N	Reflective outerwear	Extra gloves, booties, & duct tape
Chemicals present?	Y	N	Protective clothing	VOC meter (1 per work area/group)
Lockout/tagout?	Y	N	Disposable booties or rubber boots	Drinking water (outside controlled area)
Safety watch req'd?	Y	N		

JSA Participant	Signature

Supervisor printed name & signature

SSO printed name & signature

Engineering for a Better World
FEEZOR ENGINEERING, INC.

Job Safety Analysis Form

Date:

Supervisor:

Task Description: Equipment operations to clear brush, suppress dust, mow weeds, spray vegetation with retardant/herbicide, and repair washouts

Location: West Lake Landfill OU-1 Areas 1 & 2, Bridgeton, Missouri

Equip. to be used: Skid steer w/ attachments, water truck, trimmers, clippers, sprayer

Risk Assessment	1=Low/Rarely 2=Med/Daily 3=High/Hourly
How often is task conducted?	1
Probability of something going wrong?	2
How serious are the consequences?	2
If total is > 5, add'l mitigations?	Level D PPE + gloves & boot covers

Sequence of Work	Potential Hazards	Mitigation Actions
Clear vegetation from NCC, perform dust suppression as needed	Noise, slips/trips/falls, uneven footing, thrown rocks, heat stress, insects/snakes, poisonous plants, radiological exposure	Use hearing protection & safety glasses, use dust suppression, don proper PPE, take breaks as necessary, frisk personnel/equip out of areas
Repair ruts and washouts of NCC on slopes/access roads, perform dust suppression as needed	Noise, moving equipment, steep slopes, heat/cold stress, radiological exposure	Use hearing protection, stay >15 ft from equipment when operating, use dust suppression, don't over-extend equipment, frisk personnel/equip out of areas
Decontaminate personnel/equipment in designated location (if necessitated by frisking results)	Slips, trips, and falls, muscle strain	Watch footing, use safety glasses, avoid spray, use proper lifting techniques and good ergonomics, contain rinsate
Spray weed/vegetation control chemical on emerging plants	Uneven surfaces, moving equipment, chemical exposure	Review chemical Safety Data Sheet(s) from manufacturer and follow recommended engineering controls, PPE, etc. Traverse spray areas slowly, avoid steep slopes, report spills, be aware of overspray/wind direction, frisk personnel/equip out of areas

List any additional information pertaining to the work: Make note of evacuation route and route to hospital. Limit cell phone use. Operate equipment properly on slopes.

Work Conditions/Requirements		
Wet surfaces?	Y	N
Steep slopes?	Y	N
Elevated work?	Y	N
Fire risk present?	Y	N
Explosion risk?	Y	N
Confined space?	Y	N
Chemicals present?	Y	N
Lockout/tagout?	Y	N
Safety watch req'd?	Y	N

PPE Required (Inside Controlled Area)	Safety Items Required (Inside Controlled Area)
Hard hat	4-gas meter (1 per work area/group)
Steel- or composite-toed boots	TLD (1 per individual inside controlled area)
Safety glasses or goggles	Fire extinguisher (1 per vehicle/equipment)
Gloves	1st aid kit (1 per vehicle/equipment)
Hearing protection if warranted	Extra gloves and boot covers
Reflective outerwear	Drinking water (outside controlled area)
Protective clothing	
Disposable boot covers or rubber boots	

JSA Participant	Signature

Supervisor printed name & signature

SSO printed name & signature

Engineering for a Better World
FEEZOR ENGINEERING, INC.

Job Safety Analysis Form

Date:

Supervisor:

Task Description: Soil sampling, flora sampling, & observation of same

Location: West Lake Landfill OU-1 Areas 1 & 2, Bridgeton, Missouri

Equipment to be used: Hand tools, sample containers, spray bottles, buckets, brush, etc.

Risk Assessment	1=Low/Rarely 2=Med/Daily 3=High/Hourly
How often is task conducted?	2
Probability of something going wrong?	1
How serious are the consequences?	3
If total is > 5, add'l mitigations?	Level D PPE + protective clothing

Sequence of Work	Potential Hazards	Mitigation Actions
Soil and/or flora sample collection/containerization	Slips, trips, and falls, muscle strain, cuts/abrasions, radiological exposure	Watch footing, use safety glasses, use proper lifting techniques (for coolers) & good ergonomics, wear gloves / kneepads, use appropriate respiratory protection
Decontamination of sampling tools (near each sampling location)	Cuts/abrasions, muscle strain, radiological exposure	Use proper lifting techniques (for buckets of water) & good ergonomics, wear cut-resistant gloves / kneepads, use appropriate respiratory protection

List any additional information pertaining to the work: Cell phone use for emergencies only. Evac route and directions to hospital have been provided.

Work Conditions/Requirements			PPE Required (Inside Controlled Area)	Safety Items Required (Inside Controlled Area)
Wet surfaces?	Y	N	Hard hat	4-gas meter (1 per work area/group)
Steep slopes?	Y	N	Steel toed boots/shoes	TLD (1 per individual inside controlled area)
Elevated work?	Y	N	Safety glasses or goggles	Stationary air sampler (1 inside controlled area)
Fire risk present?	Y	N	Cut-resistant gloves	Fire extinguisher (1 per vehicle/equipment)
Explosion risk?	Y	N	Reflective outerwear	1st aid kit (1 per vehicle/equipment)
Confined space?	Y	N	Protective clothing	Extra gloves, booties, & duct tape
Chemicals present?	Y	N	Disposable booties or rubber boots	
Lockout/tagout?	Y	N		Drinking water (outside controlled area)
Safety watch req'd?	Y	N		

JSA Participant	Signature

Supervisor printed name & signature

SSO printed name & signature

Engineering for a Better World
FEEZOR ENGINEERING, INC.

Job Safety Analysis Form

Date:

Supervisor:

Task Description: Cleaning tires and performing radiological free-release of each

Location: West Lake Landfill OU-1 Area 2, Bridgeton, Missouri

Equip. to be used: Hand tools, air sampling equip., fan, shop vac, sprayer, rad instruments

Risk Assessment	1=Low/Rarely 2=Med/Daily 3=High/Hourly
How often is task conducted?	2
Probability of something going wrong?	1
How serious are the consequences?	2
If total is > 5, add'l mitigations?	Level D PPE + gloves

Sequence of Work	Potential Hazards	Mitigation Actions
Clear debris from tires, perform light dust suppression	Slips/trips/falls, cuts/abrasions, heat stress, muscle strain, radiological exposure	Use safety glasses (splash protection as needed), suppress dust, double glove, watch footing, use proper lifting techniques & ergonomics, contain overspray, ground electrical equipment, take breaks as necessary, frisk personnel/equip out of area
Perform radiological free release survey of each tire	Muscle strain, heat stress, radiological exposure	Use proper lifting techniques & ergonomics, document/track samples and survey results by assigning tire reference numbers
Stockpile released tires in designated location for removal from area	Muscle strain, heat stress, radiological exposure	Use proper lifting techniques & ergonomics, maintain documentation/tracking of survey results

List any additional information pertaining to the work: Make note of evacuation route and route to hospital. Limit cell phone use. Unplug equipment when not in use. Any lifts greater than 50 lbs require 2 people or mechanical assistance.

Work Conditions/Requirements			PPE Required (Inside Controlled Area)	Safety Items Required (Inside Controlled Area)
Wet surfaces?	Y	N	Hard hat	TLD (1 per individual inside controlled area)
Steep slopes?	Y	N	Steel- or composite-toed boots	Fire extinguisher (1 per work area)
Elevated work?	Y	N	Safety glasses or goggles	1st aid kit (1 per work area)
Fire risk present?	Y	N	Gloves	Extra gloves and boot covers
Explosion risk?	Y	N	Reflective outerwear	Drinking water (outside controlled area)
Confined space?	Y	N	Disposable boot covers or rubber boots	
Chemicals present?	Y	N		
Lockout/tagout?	Y	N		
Safety watch req'd?	Y	N		

JSA Participant	Signature

Supervisor printed name & signature

SSO printed name & signature

Engineering for a Better World
FEEZOR
ENGINEERING, INC.

Job Safety Analysis

Date:	Supervisor:
Task Description:	Drilling, casing/element installation, hole grouting, crane work
Location/Work Area:	Bridgeton Landfill - North Quarry
Equipment/Materials:	Drilling rig, skid steers, crane, grout handling equip, pipe/rigging

Risk Assessment	1 = Low/Rarely	2 = Med/Daily	3 = High/Hourly
How often is task conducted?	1	(2)	3
Probability of something going wrong?	1	(2)	3
How serious are the consequences?	1	2	(3)
Additional mitigations (if total >5)	PPE, air monitoring, rad control, odor management		

Sequence of Work	Potential Hazards	Mitigations
Sonic drilling	Overhead materials, slips/trips/falls, limited visibility, noise, haz vapors, radionuclides	Use Level D/Mod D PPE, wear hearing protection, use ventilation/odor control, use appropriate respiratory protection, rinse downhole equipment upon extraction, perform wipe scans
TMP thermocouple assembly & installation	Overhead materials, slips/trips/falls, limited visibility, haz vapors	Use Level D PPE, use ventilation/odor control, use appropriate respiratory protection
TMP grouting activities	Overhead materials, slips/trips/falls, heavy lifting, skin irritation, dust	Use Level D PPE, use proper lifting techniques, cover arms, use appropriate respiratory protection, wear goggles during grouting activities

List any additional information pertaining to the work: Evac route & directions to hospital are provided in project Health & Safety Plan. Welding contractor, if utilized, is responsible for any JSA associated with welding activities.

Work Conditions/Requirements			PPE Req'd Inside All Work Areas	Other Items To Be Made Available
Wet surfaces?	Y	N	Hard hat	Gloves (req'd in rad areas (RA))
Steep slopes?	Y	N	Steel/composite-toed footwear	Hearing protection
Elevated work?	Y	N	Safety glasses	Protective clothing (req'd in RA)
Fire risk present?	Y	N	Goggles req'd for Grouting Activities	Rubber boots/covers (req'd in RA)
Explosion risk?	Y	N	Reflective outerwear	Eyewash solution
Confined space?	Y	N	Personal 4-gas meter	Fire extinguisher
Chemicals present?	Y	N	VOC monitor	1st aid kit
Lockout/tagout?	Y	N		
Safety watch req'd?	Y	N		

JSA Participant (print name)	Signature

Engineering for a Better World
FEEZOR ENGINEERING, INC.

Job Safety Analysis Form

Date:

Supervisor:

Task Description: Well abandonment activities & observation of same

Location: West Lake Landfill OU-1 Areas 1 & 2, Bridgeton, Missouri

Equipment to be used: Drill rig, support truck, grout pump, downhole camera, hand tools.

Risk Assessment	1=Low/Rarely 2=Med/Daily 3=High/Hourly
How often is task conducted?	1
Probability of something going wrong?	1
How serious are the consequences?	1
If total is > 5, add'l mitigations?	Level D PPE + protective clothing

Sequence of Work	Potential Hazards	Mitigation Actions
Remove surface completion from well	Slips, trips, and falls, muscle strain, cuts/abrasions, radiological exposure	Watch footing, use safety glasses, use proper lifting techniques & good ergonomics, wear gloves, use appropriate respiratory protection
Grout well casing using tremie pipe	Slips, trips, and falls, muscle strain, cuts/abrasions, heavy equipment hazards, bentonite and/or cement dust, radiological exposure	Watch footing and pinch points, use goggles while grouting, use proper lifting techniques & good ergonomics, wear gloves, use appropriate respiratory protection
Extract well casing from borehole	Slips, trips, and falls, muscle strain, cuts/abrasions, heavy equipment hazards, radiological exposure	Watch footing and pinch points, use safety glasses, use proper lifting techniques & good ergonomics, wear gloves, use appropriate respiratory protection
Complete borehole grouting/surface plug	Slips, trips, and falls, muscle strain, cuts/abrasions, heavy equipment hazards, bentonite and/or cement dust, radiological exposure	Watch footing and pinch points, use goggles while grouting, use proper lifting techniques & good ergonomics, wear gloves, use appropriate respiratory protection
Decontaminate equipment	Cuts/abrasions, muscle strain, radiological exposure	Use proper lifting techniques & good ergonomics, wear gloves, use appropriate respiratory protection

List any additional information pertaining to the work: Cell phone use for emergencies only. Evac route and directions to hospital have been provided.

Work Conditions/Requirements			PPE Required (Inside Controlled Area)	Safety Items Required (Inside Controlled Area)
Wet surfaces?	Y	N	Hard hat Steel toed boots/shoes Safety glasses Goggles req'd during Grouting Activities Cut-resistant gloves Reflective outerwear Protective clothing Disposable booties or rubber boots	4-gas meter (1 per work area/group) Stationary air sampler (1 inside controlled area) Fire extinguisher (1 per vehicle/equipment) 1st aid kit (1 per vehicle/equipment) Extra gloves, booties, & duct tape Drinking water (outside controlled area)
Steep slopes?	Y	N		
Elevated work?	Y	N		
Fire risk present?	Y	N		
Explosion risk?	Y	N		
Confined space?	Y	N		
Chemicals present?	Y	N		
Lockout/tagout?	Y	N		
Safety watch req'd?	Y	N		

JSA Participant	Signature

Supervisor printed name & signature

SSO printed name & signature

Feezor Engineering, Inc. West Lake Landfill OU-1 Design Investigation

Content Revision Date: 2/26/2020

Item #	Description / identity of relevant SH&E risk	Identity / citation of related legal compliance obligation	How does one gain access to the text of this legal compliance obligation?	Remarks
1	Radiation Safety Training	• LAC 33.XV §1499 Appendices A & B	• deq.louisiana.gov/assets/docs/Legal_Affairs/ERC/Radiation052017.pdf	4-hr classroom presentation provided by various companies. Renewed bi-annually.
2	General Safety Training	• US OSHA 29 CFR 1926.21	• www.osha.gov	1-hr classroom presentation provided by Bridgeton Landfill, LLC for all FEI employees working on-site. Renewed annually. Written materials available.
3	Portable Fire Extinguishers	• US OSHA 29 CFR 1910.157	• www.osha.gov	Self-paced web-based training provided by various companies. Renewed as needed for specific projects.
4	Respiratory Protection	• US OSHA 29 CFR 1910.134	• www.osha.gov	Self-paced written training module provided by FEI for employees. Voluntary program, renewed annually or as needed for individual employees for West Lake Landfill projects.
5	Hazard Communication	• US OSHA 29 CFR 1910.1200	• www.osha.gov	Self-paced web-based training provided by various companies. Renewed as needed.
6	Hazardous Waste Operations and Emergency Response	• US OSHA 29 CFR 1910.120	• www.osha.gov	40-hr initial classroom training + 8-hr annual web-based renewal provided by various companies.
7	Nuclear Gauge Safety Training	• 32 IL 330.220(b) • US DOT 49 CFR 172.704	• www.iema.illinois.gov • www.transportation.gov	Web-based training, provided by various companies approved by IEMA, for operation of FEI's nuclear density gauge (a Licensed Radioactive Device). Renewed annually.
8	Asbestos Awareness/Building Inspection	• 10 CSR 10-6.241 & 10-6.250	• www.dnr.mo.gov/env/apcp	24-hr initial classroom training + 4-hr annual classroom renewal provided by various companies approved by MDNR. Written materials available.

Feezor Engineering, Inc.
West Lake Landfill OU-1 Design Investigation
Risk Register

Activity	Hazard Identification	At Risk	Pre-Risk Mgt Evaluation Matrix			Pre-Risk Mgt Treatment	Risk Mgt & Control - Safety & Health		Risk Mgt & Control - Environmental			Responsible Person	Cost Contingency	Post-Risk Mgt Evaluation Matrix			Residual Risk Action
			Probability	Severity	Initial Risk		Eng/Admin Controls	PPE	Waste Mgt	Eng/Admin Controls	Site Condition Controls			Probability	Severity	Post-Risk	
Oversight during Borehole Locations Survey	Uneven footing (slips/trips/falls), radiological exposures, biological hazards, scratches/cuts, skin punctures	Area entrants	Seldom	Marginal	LOW	Accept	RWP, HASP, RSP, dosimetry, radiation safety training	Level D, hi-vis outerwear, protective clothing, boot covers	NA	OSHA requirements, training/education	Fire extinguishers & 1st aid in work vehicles, decon materials at main entry/exits	Site Health & Safety Supervisor	per Approved Budget	Seldom	Negligible	LOW	NA
Oversight during Overland Gamma Surveys	Uneven footing (slips/trips/falls), radiological exposures, biological hazards, scratches/cuts, skin punctures	Area entrants	Occasional	Marginal	MODERATE	Reduce	RWP, HASP, RSP, dosimetry, radiation safety training	Level D, hi-vis outerwear, protective clothing, boot covers	NA	OSHA requirements, training/education	Fire extinguishers & 1st aid in work vehicles, decon materials at main entry/exits	Site Health & Safety Supervisor	per Approved Budget	Occasional	Negligible	LOW	NA
Oversight during Access Construction	Noise, overhead debris, limited visibility, uneven footing (slips/trips/falls), heavy equipment contact injuries, radiological exposures, biological hazards, dust, scratches/cuts, skin punctures, equipment rollover	Area entrants	Occasional	Critical	HIGH	Reduce	JSA, RWP, HASP, RSP, dust suppression, dosimetry, radiation safety training	Level D, hearing protection, hi-vis outerwear, protective clothing, boot covers	Minimize, collect & stage as necessary	OSHA requirements, training/education, task checklist, instrument manuals, scope-of-work, material specifications	Fire extinguishers & 1st aid in work vehicles and heavy equipment, decon materials at main entry/exits	Site Health & Safety Supervisor	per Approved Budget	Occasional	Marginal	MODERATE	NA
Oversight / Field Support during Borehole Drilling Activities (Sampling, Gamma Logging, Abandonment, Equip Decon)	Noise, overhead equipment & materials, limited visibility, trip hazards, heavy equipment contact injuries, radiological exposures, biological hazards, dust, muscle strain	Area entrants	Occasional	Marginal	MODERATE	Reduce	JSA, RWP, HASP, RSP, dust suppression, dosimetry, radiation safety training	Level D, hearing protection, hi-vis outerwear, protective clothing, boot covers	Minimize, collect & stage as necessary	OSHA requirements, training/education, task checklist, instrument manuals, scope-of-work, material specifications, SOPs	Fire extinguishers & 1st aid in work vehicles and heavy equipment, decon materials at main entry/exits	Site Health & Safety Supervisor	per Approved Budget	Seldom	Marginal	LOW	NA
Assistance during Core Logging, Scanning, Sampling, & Storage	Radiological exposures	Area entrants	Seldom	Marginal	LOW	Accept	RWP, HASP, RSP, dosimetry, radiation safety training	Level D, hi-vis outerwear, protective clothing, boot covers	Minimize, collect & stage as necessary	OSHA requirements, training/education, instrument manuals, scope-of-work, SOPs	Water spray bottles for wetting core surfaces, decon materials for tools & instruments	Site Health & Safety Supervisor	per Approved Budget	Seldom	Marginal	LOW	NA

SEVERITY \ PROBABILITY	F	L	O	S	U
Ca	E	E	H	H	M
Cr	E	H	H	M	L
M	H	M	M	L	L
N	M	L	L	L	L

Severity Rankings

Catastrophic	Conditions are such that human error, design or procedural deficiencies, or component failure may commonly cause death, thereby requiring immediate cessation of the activity.
Critical	Conditions are such that human error, design or procedural deficiencies, or component failure may commonly cause severe injury or illness, thereby requiring immediate corrective action.
Marginal	Conditions may commonly cause minor injury or illness such that human error, design or procedural deficiencies, or component failure can be counteracted or controlled without severe injury or illness.
Negligible	Conditions are such that human error, design or procedural deficiencies, or component failure will result in no, or less than minor, illness or injury.

Probability Rankings

Frequent	Likely to occur often during the life of the activity
Likely	Will occur several times during the life of the activity
Occasional	Likely to occur some time during the life of the activity
Seldom	Unlikely but possible to occur during the life of the activity
Unlikely	So unlikely that it can be assumed an occurrence may not be experienced during the life of the activity

Feezor Engineering, Inc.
Employee Training Tracker

Employee	Most Recent Hazwoper Refresher	Next Refresher Due:	Most Recent TENORM training	TENORM Refresher Due:	Most Recent MO Asbestos Inspector	MO Asbestos Inspector Refresher Due:
Dan Feezor	06/17/19	06/16/20	02/21/19	02/20/21		
Brad Vits	01/09/20	01/08/21	02/21/19	02/20/21	09/06/19	09/04/20
Andrew Roberts	01/02/20	01/01/21	02/21/19	02/20/21		
Aaron Karlas	03/08/19	03/07/20				
Arron Weber	01/09/20	01/08/21	02/21/19	02/20/21	11/07/19	11/05/20
Michael Spurgeon	03/29/19	03/28/20	02/21/19	02/20/21		
Dane Hale	05/09/19	05/08/20	02/21/19	02/20/21		
Jonathan Wilkinson	04/12/19	04/11/20	02/21/19	02/20/21	08/03/19	08/01/20
Bill Abernathy	04/30/19	04/29/20	02/21/19	02/20/21	06/17/19	06/15/20
Andrew Wyatt	01/21/20	01/20/21	02/21/19	02/20/21		
Janet Feezor	04/24/19	04/23/20				

Appendix G – SSHEP Ameriphysics

Information Required in an SSHEP

Section	Title	Section	Title
1	Project Owner, Project Name, and Contractor's Safety, Health, and Environmental Policy Statement	11	Integration of SH&E Risk Mitigation Planning in 2-Week Look-ahead Submissions
2	Scope of Work Evaluation	12	Employee Participation and Consultation
3	Responsibility and Identification of Key Personnel	13	Emergency Action Plan
4	Overall Assessment of SH&E Hazards, Exposures, and Risks	14	Site-specific Medical Emergency Plan
5	Relevant SH&E Compliance Programs, Associated Compliance Information, and Personnel Responsibility Assignments	15	Incident Reporting, Investigation, and Corrective Action Processes
6	SH&E Compliance Training Matrix and Training / Education Processes	16	Work Site Inspection and Program Audit Processes
7	Site-specific Worker Orientation Program	17	Progressive Disciplinary Program
8	Identification of Competent / Qualified Personnel	18	Recordkeeping / Document Retention Processes
9	Hazard Identification, Notification, and Correction Process	19	Other (as defined by Contractor or Parsons)
10	Specific Hazard and Risk Control Measures (e.g., Activity Hazard Analyses, Operational Risk Management Processes)	20	Other (as defined by Contractor or Parsons)

Date: 2/7/2020 **Project/Location:** West Lake Landfill OU-! Design Investigation

Contractor Name: Ameriphysics, LLC **Parsons SH&E Representative:** Darrell Pruitt

The information provided here is based on a review of the contractor site-specific safety, health, and environmental plan (SSHEP). Areas identified as incomplete shall be revised based on the standards in the contract specifications and the project safety, health, and environmental plan (PSHEP). Contractors shall resubmit revised sections of the SSHEP to the project manager within 1 week of receiving this review documentation.

Section	Complete	Incomplete	Section	Complete	Incomplete
Statement of SH&E Policy	☒	☐	Specific Activity Hazard Analyses (AHAs) and Operational Risk Assessments	☒	☐
Scope of Work Evaluation	☒	☐	Adequate Hazard / Risk Controls	☒	☐
Key Line Personnel Identified	☒	☐	2-Week Look-ahead Planning	☒	☐
Overall Assessment of Hazards and Risks	☒	☐	Employee Participation and Consultation	☒	☐
Relevant SH&E Compliance Programs (Hazard Communication, PPE, HAZWOPER, Hazardous Energy Control, Fall Protection, Confined Space Entry, RCRA, etc.)	☒	☐	Emergency Action Plan	☒	☐
SH&E Compliance Program Responsibilities Assigned	☒	☐	Site-specific Medical Emergency Plan	☒	☐
Compliance Training and Education Programs	☒	☐	Incident Reporting, Investigation, and Corrective Action Processes	☒	☐
Site-specific Worker Orientation Program	☒	☐	Work Site Inspection and Program Audit Processes	☒	☐
Competent and Qualified Personnel Identified	☒	☐	Progressive Disciplinary Program	☒	☐
Hazard Identification, Notification, and Correction Process	☒	☐	Recordkeeping / Document Retention Processes	☒	☐

Additional Comments / Other SSHEP Sections or Information Required

Reviewed by:

Name	Title	

Ameriphysics, LLC

West Lake Landfill OU-1 Design Investigation

Contractor Site-specific Safety, Health, and Environmental Plan (SSHEP)

2/7/20

Table of Contents

Contractor's Safety, Health, and Environmental Policy Statement

This plan contains the minimum requirements for an effective contractor site-specific safety, health, and environmental Plan (SSHEP) by Ameriphysics, LLC (Ameriphysics) for the West Lake Landfill OU-1 Design Investigation. This SSHEP shall be implemented and maintained by Ameriphysics. This SSHEP applies to all persons of our company.

The leadership team is responsible for ensuring that all SH&E policies and procedures are clearly communicated and understood by all employees. Managers and supervisors are expected to enforce the rules fairly and uniformly.

All employees are responsible for using safe work practices, following all directives, policies and procedures, and assisting in maintaining a safe work environment.

Our system of ensuring that all workers comply with the rules and maintain a safe work environment includes the following.

- Informing workers of the provisions of this SSHEP
- Evaluating the SH&E performance of all workers
- Recognizing employees who consistently perform SH&E work practices very well
- Providing training to workers whose SH&E performance is deficient
- Disciplining workers for failure to comply with safe, healthful, and environmentally responsible work practices

Scope of Work Evaluation

Work to be performed by Ameriphysics during the West Lake Landfill OU-1 Design Investigation will include providing radiological oversight and support during the following tasks:

Task 1 – Provide assistance and associated field support for the survey contractor during staking of the proposed borehole locations within OU-1 Areas 1 & 2

Task 2 – Provide assistance and associated field support for the radiological services contractor during performance of overland gamma surveys at the proposed borehole locations within OU-1 Areas 1 & 2

Task 3 – Provide assistance and associated field support for the construction services contractor during construction of borehole access routes and drilling pads at locations within OU-1 Areas 1 & 2, within Bridgeton Landfill's North Quarry, and at any other Design Investigation (DI) drilling locations, as warranted

Task 4 – Oversee drilling/sampling activities and provide associated field support for the drilling contractor as needed

Task 5 – Record pertinent information obtained during drilling/sampling activities in a log book, including blow counts, weather conditions, dates/times of notable events or developments, notes on any problems encountered, etc.

Task 6 – Provide assistance and associated field support for the radiological services contractor during core sample collection/storage, preliminary core scanning activities, and downhole gamma logging activities

Task 7 – Provide assistance and associated field support for the drilling contractor during borehole abandonment activities

Task 8 – Provide assistance and associated field support for the radiological services contractor during decontamination activities as needed

Task 9 – Visually inspect and geologically log core samples, photo-document core samples, and collect laboratory samples from the cored material

Task 10 – Provide assistance to the radiological services contractor during performance of detailed radiological core scanning activities

Task 11 – Coordinate core handling/storage activities and the packaging/shipment of laboratory samples, including the completion of chains-of-custody and assisting the radiological services contractor in preparing radioactive shipments, if any

Responsibilities and Identification of Key Personnel

These personnel have authority and responsibility to implement this program.

Contractor:	Ameriphysics, LLC	
Address:	9111 Cross Park Drive, Knoxville, TN 37923	
Telephone	**Fax**	**Email**
800-563-7497	865-470-4179	info@ameriphysics.com
Company Executive responsible for project		**Contact No.**
Thomas W. Hansen, Jr.		Direct Line: (865)470-4175 Cell Phone: (865)228-1997 Email: tom@ameriphysics.com
Manager/Superintendent:		**Contact No.**
Thomas W. Hansen, Jr.		Direct Line: (865)470-4175 Cell Phone: (865)228-1997 Email: tom@ameriphysics.com
Safety Representative/Manager:		**Contact No.**
Paul Jones		Direct Line: (865)470-4097 Cell Phone: (865)591-8632 Email: pjones@ameriphysics.com
Key Foreperson or Forepersons:		**Contact No.**
Thomas W. Hansen, Jr.		Direct Line: (865)470-4175 Cell Phone: (865)228-1997 Email: tom@ameriphysics.com
Client Project Management Point of Contact:		**Contact No.**
Thomas W. Hansen, Jr.		Direct Line: (865)470-4175 Cell Phone: (865)228-1997 Email: tom@ameriphysics.com

All managers and supervisors are responsible for implementing and maintaining the SSHEP in their work areas and for answering worker questions about the SSHEP. Managers and supervisors shall make a copy of this SSHEP available to all workers.

Overall Assessment of SH&E Hazards, Exposures, and Risks

Task	Potential Hazards	Mitigation/Response Actions
Location survey assistance	- Traversing uneven terrain - Radiological exposure inside Areas 1/2 - Vehicular traffic at locations near roads	- Be alert to surroundings - Follow RWP and/or site PPE reqs - Hi-vis outerwear, traffic control equip
Overland survey assistance	- Traversing uneven terrain - Radiological exposure	- Be alert to surroundings - Follow RWP PPE requirements
Construction assistance	- Noise - Heavy equipment - Muscle strain - Radiological exposure inside Areas 1/2	- Use hearing protection - Stay >15 ft from equipment and be alert to operators' limited visibility - Use safe lifting technique/ergonomics - Follow RWP and/or site PPE requirements, utilize dust suppression
Drilling oversight	- Noise - Heavy equipment - Muscle strain - Rotating equipment/pinch points - Falling objects - Radiological exposure from excavated materials, open boreholes	- Use hearing protection - Stay >15 ft from equipment and be alert to operators' limited visibility - Use safe lifting technique/ergonomics - Watch moving parts, overhead activity - Follow RWP and/or site PPE requirements, utilize dust suppression
Field notes/documentation	- Inattentiveness/distraction - Radiological exposure inside Areas 1/2	- Stay alert to surroundings at all times - Follow RWP and/or site PPE reqs
Rad services assistance	- Muscle strain - Radiological exposure from excavated materials, open boreholes	- Use safe lifting technique/ergonomics - Follow RWP and/or site PPE requirements
Borehole abandonment	- Noise - Heavy equipment - Rotating equipment/pinch points - Falling objects - Radiological exposure inside Areas 1/2	- Use hearing protection - Stay >15 ft from equipment and be alert to operators' limited visibility - Watch moving parts, overhead activity - Follow RWP and/or site PPE reqs
Decontamination support	- Splashing liquids - Muscle strain - Slips, trips, falls	- Splash shields, spray control/avoidance - Use safe lifting technique/ergonomics - Watch footing, use slip-resistant equip
Core logging/sampling	- Muscle strain - Radiological exposure from cores	- Use safe lifting technique/ergonomics - Follow RWP PPE requirements - Dampen cores to shield alpha decay
Core scanning assistance	- Radiological exposure from cores	- Follow RWP PPE requirements
Core/sample management	- Muscle strain - Rad exposure from cores/samples	- Use safe lifting technique/ergonomics - Follow RWP PPE requirements

Activities shall be evaluated and activity hazards analyses (AHAs) or other effective risk management process shall be developed. AHAs and other risk management processes are described in Section 10 and included in this SSHEP.

SH&E Compliance Programs

Ameriphysics shall comply with relevant SH&E laws and regulations. Written compliance programs shall be implemented on our job sites and coordinated with other site contractors, our lower-tier subcontractors, and with Parsons, as appropriate. Our employees shall be aware of these programs, receive adequate training, and perform their work consistent with these compliance programs.

The following Health and Safety programs can be found in Ameriphysics Health and Safety Manual are maintained by their Health and Safety Manager:

- Hazard Evaluation/Control Program
- Hazard Communication Program
- PPE Hazard Assessment
- Confined Space Entry Program
- Respiratory Protection Program
- Hearing Conservation Program
- Lockout/Tagout Program
- Emergency Response Plan
- Chemical Hygiene Plan
- Exposure Control Plan
- Process Safety Management Program
- Emergency Action Plan
- Fire Prevention Plan
- Hazardous/Toxic Substance Control Program

Ameriphysics also abides by a Radiation Control program that is maintained by its Radiation Safety Officer.

SH&E Compliance Training Matrix and Training / Education Processes

All workers, including managers and supervisors, shall receive competent and relevant site-specific SH&E training. This training shall include site-specific SH&E compliance training and general site training on SH&E best practices. Our employees shall be properly prepared for conducting their work and shall comply with the relevant SH&E programs and general site-specific SH&E practices.

A written training matrix shall be established and maintained that identifies the workers (by name or by title/role), all of the SH&E-related training they must have, and the frequency for refresher (if needed).

Training shall be provided:

- When the SSHEP is established;
- To all new workers;
- To all workers with new job assignments for which training has not been previously provided;
- When new substances, processes, procedures, or equipment are introduced to the workplace and represent a new hazard, potential exposure, or risk;
- When the employer is made aware of a new or previously unrecognized hazard, exposure, or risk;
- To familiarize supervisors with the SH&E hazards, exposures, or risk to which workers under their immediate direction and control may be exposed; and
- To all workers for hazards, exposures, or risks specific to their job assignment and in compliance with related SH&E compliance programs.

Workplace safety and health practices for all work locations shall include, at a minimum:

- An explanation of the SSHEP, the Parsons Project Safety, Health, and Environmental Plan (PSHEP), the site's emergency action plan and fire prevention plan, and the measures to report unsafe conditions, work practices, injuries, and/or a recognized need for additional instruction;
- The general purpose, availability, use, limitations, and disposal of outerwear and personal protective equipment;
- Locations of sanitation, hand-washing, and drinking water facilities;
- Provisions for medical services and first aid, including emergency procedures;
- Response procedures for environmental spills or releases; and
- Specific instructions to workers on hazards unique to their job assignment to the extent such information is not covered in other training.

License/Certification	Employee
OSHA HAZWOPER 40-hr + 8-Hr Refresher	All onsite personnel
Radiation Safety Training	All onsite personnel
Bridgeton LF Annual H&S	All onsite personnel

Site-specific Worker Orientation Program

All new workers on our jobsite shall receive site-specific orientation training before conducting their work. This training shall consist of SH&E compliance training and general site SH&E practices related to their work.

Employees completing orientation shall acknowledge in writing completing and understanding the site-specific orientation subject matter. Employees who do not understand one or more subjects shall be retrained.

Site orientation training is provided by Matt Stewart - Environmental Manager, Bridgeton Landfill.

Identification of Competent / Qualified Persons

Contractor Competent Person Certification (United States)

Definition

A competent person is a formally-designated person having the ability to recognize existing and predictable hazards and has the authority to correct them.

Responsibility

The designated contractor competent person is responsible for recognizing and correcting SH&E risks/hazards. This person has the authority to stop work due to a perceived SH&E concern on the jobsite. This contractor manager and designated competent person are considered field contacts for Parsons projects.

This form shall be completed by each contractor manager and the contractor-designated competent person. ***Where a contractor is responsible for multiple crafts, it will be necessary to maintain additional designated competent persons and forms.*** Each contractor on a Parsons project shall submit this completed form to the Parsons project manager before beginning work on the project and must update it any time the designated competent person changes.

Acknowledgment

I, Thomas W. Hansen, Jr. representing, Ameriphysics, LLC

Contractor Manager (Printed) **Contractor Company Name (Printed)**

have assigned Thomas W. Hansen, Jr. to be the competent person in the areas indicated and

Contractor Competent Person (Printed)

I acknowledge that this individual has been thoroughly trained, is experienced in hazard recognition, and has the authority to stop work and correct hazards in the event of a potential hazardous or imminent danger situation.

_____

Contractor Manager (Signature) **Date**

I acknowledge that I have been thoroughly trained and have the experience to perform the duties as the competent person in the areas marked below, and I understand that I have the responsibility and authority to correct hazards and to stop work in the event of a potential hazardous or imminent danger situation.

_____ _____

Contractor Competent Person (Signature) **Date**

(Check the areas in which the designated competent person is permitted to execute the role of Contractor Competent Person.)

☒	Air Pollution and Emissions	☒	Environmental Assessments	☐	Mechanical Demolition
☐	Asbestos	☐	Excavations and Trenches	☐	Protected Ecological and Cultural Resources
☐	Bolting, Riveting, and Fitting	☐	Fall Protection	☐	Resource Conservation
☐	Buried Items	☐	First Aid and CPR	☒	Respiratory Protection
☐	Concrete, Forms, and Shoring	☐	Hearing Protection	☐	Rigging
☐	Cranes and Derricks	☐	Ladders	☐	Scaffolding
☐	Demolition	☐	Lead	☐	Tunnels and Shafts
☐	Drinking Water	☒	Management of Hazardous Materials and Hazardous Solid Wastes	☐	Underground Construction
☐	Electrical			☐	Wastewater
☒	Emergency Response to Spills and Releases	☐	Marine Work and Diving	☐	Welding and Cutting
		☐	Material and Personnel Hoists		
☒	Other – Radiation Protection				

Hazard Identification, Notification, and Correction Process

Each employee is the critical leader for preventing injuries, illnesses, and adverse environmental impacts, Achieving SH&E excellence requires a personal commitment. Therefore, each employee is authorized to stop work immediately if a safety, health, or environmental concern exists or if the work is not going according to plan. Once work is stopped, each employee is expected to communicate the work stoppage to the other affected stakeholders and further evaluate the condition and adjust the work plan to resolve the safety, health, or environmental concern before restarting the work.

Each employee shall understand that he or she has the **authority** and the **responsibility** to stop work at any time when he or she notices an unplanned or unexpected issue that he or she believes will adversely affect the project's safety, health, or environmental risk. This concept is consistent Parsons SH&E core value.

There is no circumstance where retribution may be directed toward an employee who conscientiously exercised his or her stop work authority.

When should work be stopped? Here are some examples.

- An unsafe act is observed.
- An unsafe condition is observed in the work area.
- An incident or near miss occurs in the work area.
- There is an emergency.
- Alarms sound.
- There is a change in the planned work conditions.
- There is a change in the planned personnel associated with the work.
- There is a change in the planned in scope of work.
- A change is needed in the work plan.
- One or more personnel associated with the work task appear to be confused or demonstrate that they do not understand one or more parts of the work plan.
- Someone believes that personnel, the environment, facilities, or equipment, is exposed to an unacceptable level of risk.

Unsafe, unhealthful, or environmentally damaging work conditions, practices, or procedures shall be corrected in a timely manner based on the severity of the risk posed.

Specific Hazard and Risk Control Measures

Activities shall be evaluated by workers and other subject matter experts to determine the appropriate hazard and risk controls that shall be implemented when performing the activity. In most cases, formal activity hazard analyses (AHAs) shall be communicated and used; however, some activities may require more sophisticated risk management schemes.

See **Attachment 1** for Job Safety Analyses previously developed for OU-1 site activities by Feezor Engineering, Inc. Ameriphysics will be providing radiological oversight for these activities, so the same hazards will be applicable.

Integration of SH&E Risk Mitigation Planning in 2-Week Look-ahead Submissions

The risk mitigation 2-week look ahead form, below, will be used to plan integrated risk mitigation strategies at weekly progress meetings.

SH&E Risk Mitigation 2-week Look-ahead Form

SH&E Plan for Week Ending:		**Contractor:**	
Project/ Location:		**Meeting Date:**	
Plan Prepared by:		**Dated:**	

Next Two Weeks' Scope of Work:

Identified SH&E Risks/Exposures/Hazards Issues:

Identify Tasks requiring environmental construction permitting (e.g., stormwater permit) or involving other environmental regulatory issues (e.g., generation of new, uncharacterized waste):

Tasks with environmental risk of significant spills or releases:

Control Measures:

Additional Activity Hazards Analysis Required:

Contractors and Subcontractors Mobilizing/Demobilizing:

Audits/Inspections Scheduled:

Competent Person Changes:

Planned Orientation/Training:

Recommendations/Comments/Concerns:

Note: This information shall be incorporated into the meeting minutes.

Employee Participation and Consultation

Open, two-way communication between the leadership team and line employees on SH&E issues is essential to an injury-free, productive, and environmentally sound workplace. The following system provides for the flow of SH&E information.

- Continually maintaining an environment where any worker can report SH&E concerns without any risk of retribution.
- A collaborative approach to resolving worker SH&E concerns, using worker knowledge and experience in developing appropriate risk control measures.
- New worker orientation, including specific orientation to SH&E policies and procedures
- Reviews of the SSHEP and the Parsons PSHEP
- Workplace SH&E training programs
- Regular SH&E meetings
- Posted or distributed SH&E information (awareness program)
- Procedures to anonymously inform SH&E management of workplace hazards, exposures, or risks
- An employee (or labor/management) SH&E committee that: 1) meets regularly and prepares written records, 2) reviews results of periodic scheduled inspections, 3) reviews incident investigations, 4) assesses work risk, 5) reviews reports of hazards, exposures, or adverse environmental conditions, and 6) makes suggestions to management to prevent future incidents.

Emergency Action Plan

Emergency Action planning and response actions for the site are described in West Lake Landfill's Emergency Response Plan and Site Management Pl, and in Bridgeton Landfill's Incident Management Plan**,** included in **Appendix H** of the HASP.

Any incident occurring on the site with be entered into IndustrySafe within four hours of occurrence, and the Parsons field team lead (FTL) and safety manager will be notified immediately.

Site-specific Medical Emergency Plan

Medical emergency planning and response actions for the site are described in West Lake Landfill's Emergency Response Plan and Site Management Pl, and in Bridgeton Landfill's Incident Management Plan**,** included in **Appendix H** of the HASP.

Incident Reporting, Investigation, and Corrective Action Processes

Incident reporting, investigation, and corrective action strategies for the site are described in West Lake Landfill's Emergency Response Plan and Site Management Pl, and in Bridgeton Landfill's Incident Management Plan**,** included in **Appendix H** of the HASP.

Work Site Inspection and Program Audit Process

Site SH&E inspections shall be performed by one or more knowledgeable employees prior to beginning work each day in areas where work will take place during the shift. Designated competent persons shall perform frequent inspections and assessments of the areas and activities under their oversight throughout the day. Deficiencies shall be corrected as soon as possible.

The superintendent or project manager shall perform documented weekly SH&E inspections of all work sites. Deficiencies shall be tracked to closure in a timely manner.

The following SH&E inspections shall be performed. Findings shall be tracked to timely closure.

Competent Person / Inspector	Area of Responsibility	Frequency
Radiation Control Supervisor or Designee	Radiation Safety	Daily

The following compliance programs shall be reviewed and audited. Findings shall be tracked to timely closure.

Reviewer / Auditor	Compliance Program	Frequency
Tim Pratt	Radiation Control Program	Annually
Paul Jones	Health & Safety Program	Annually

Progressive Disciplinary Program

Ameriphysics' disciplinary program is described in Section 8 of its Employee Policy Manual. Violation of the company's Code of Conduct may result in one of the following corrective actions:

- Termination of Employment
- Suspension
- Oral Warning
- Written Warning

Progressive discipline may not be followed if an employee's actions warrant immediate separation. All disciplinary action records will be maintained in the employee's personnel file. All disciplinary procedures or actions are within the sole discretion of management.

The following may be considered in arriving at a decision for corrective action:

- The seriousness of the violation
- The employee's past record
- The circumstances surrounding the violation

A partial list of violations includes:

- Alcohol and Drugs
- Harassment
- Theft, Fraud, or Embezzlement
- Conflict of Interest
- Falsifying Company Documents or Records
- Fighting or Abusive Behavior
- Insubordination
- Unauthorized use of Company Property or Equipment
- Telephone Use
- Violation of Laws, Company Policies, and Procedures
- Absence without Notice and Punctuality
- Personal Appearance and Hygiene
- Access to Building/Office
- Access to Company Premises and Property
- Confidentiality

Recordkeeping / Document Retention Processes

All records shall be maintained no less than 3 years beyond the end of the contracted work, unless a longer period of retention is required by a regulatory agency.

Ameriphysics SH&E document retention process will be done according to Ameriphysics Quality Manual. Document control is expected to contain the following:

- Electronic retention of licensing, certification, and training records of Ameriphysics field staff;
- Radiological records including surveys, instrumentation calibration, and daily source checks;
- Review and retention of Health & Safety plans and employee training records provided by OU-1 subcontractors where applicable.

Attachments

Attachment 1

Job Safety Analyses (JSAs)- See FEI SSHEP Attachment 1

Engineering for a Better World
FEEZOR ENGINEERING, INC.

Job Safety Analysis Form

Date:

Supervisor:

Task Description: Heavy equipment operations to clear brush, suppress dust, perform minor grading, and place aggregate, & observation of same

Location: West Lake Landfill OU-1 Area 2, Bridgeton, Missouri

Equip. to be used: Chipper/grinder/mulcher, skid steer, water truck, hand tools, excavator

Risk Assessment	1=Low/Rarely 2=Med/Daily 3=High/Hourly
How often is task conducted?	2
Probability of something going wrong?	2
How serious are the consequences?	3
If total is > 5, add'l mitigations?	Level D PPE + protective clothing

Sequence of Work	Potential Hazards	Mitigation Actions
Clear brush, fell trees, perform dust suppression as needed	Noise, falls, high-speed projectiles, limited visibility, steep slopes, moving equipment, radiological exposure	Use hearing protection & safety glasses, stay >15 ft from equipment, maintain dust suppression, don proper PPE
Perform any necessary grading in preparation of aggregate placement, perform dust suppression as needed	Noise, moving equipment, radiological exposure	Use hearing protection & safety glasses, stay >15 ft from equipment, maintain dust suppression
Spread and compact aggregate material to designed thickness over identified areas, perform dust suppression as needed	Noise, moving equipment, radiological exposure	Use hearing protection & safety glasses, stay >15 ft from equipment, maintain dust suppression
Decontaminate equipment at designated location	Slips, trips, and falls, muscle strain	Watch footing, use safety glasses, avoid spray, use proper lifting techniques and good ergonomics

List any additional information pertaining to the work: Cell phone use for emergencies only. Evac route and directions to hospital have been provided.

Work Conditions/Requirements			PPE Required (Inside Controlled Area)	Safety Items Required (Inside Controlled Area)
Wet surfaces?	Y	N	Hard hat	4-gas meter (1 per work area/group)
Steep slopes?	Y	N	Steel toed boots/shoes	TLD (1 per individual inside controlled area)
Elevated work?	Y	N	Safety glasses or goggles	Stationary air sampler (1 per work area/group)
Fire risk present?	Y	N	Gloves	Fire extinguisher (1 per vehicle/equipment)
Explosion risk?	Y	N	Hearing protection (depending on task)	1st aid kit (1 per vehicle/equipment)
Confined space?	Y	N	Reflective outerwear	Extra gloves, booties, & duct tape
Chemicals present?	Y	N	Protective clothing	VOC meter (1 per work area/group)
Lockout/tagout?	Y	N	Disposable booties or rubber boots	Drinking water (outside controlled area)
Safety watch req'd?	Y	N		

JSA Participant	Signature

Supervisor printed name & signature

SSO printed name & signature

Engineering for a Better World
FEEZOR ENGINEERING, INC.

Job Safety Analysis Form

Date:

Supervisor:

Task Description: Equipment operations to clear brush, suppress dust, mow weeds, spray vegetation with retardant/herbicide, and repair washouts

Location: West Lake Landfill OU-1 Areas 1 & 2, Bridgeton, Missouri

Equip. to be used: Skid steer w/ attachments, water truck, trimmers, clippers, sprayer

Risk Assessment	1=Low/Rarely 2=Med/Daily 3=High/Hourly
How often is task conducted?	1
Probability of something going wrong?	2
How serious are the consequences?	2
If total is > 5, add'l mitigations?	Level D PPE + gloves & boot covers

Sequence of Work	Potential Hazards	Mitigation Actions
Clear vegetation from NCC, perform dust suppression as needed	Noise, slips/trips/falls, uneven footing, thrown rocks, heat stress, insects/snakes, poisonous plants, radiological exposure	Use hearing protection & safety glasses, use dust suppression, don proper PPE, take breaks as necessary, frisk personnel/equip out of areas
Repair ruts and washouts of NCC on slopes/access roads, perform dust suppression as needed	Noise, moving equipment, steep slopes, heat/cold stress, radiological exposure	Use hearing protection, stay >15 ft from equipment when operating, use dust suppression, don't over-extend equipment, frisk personnel/equip out of areas
Decontaminate personnel/equipment in designated location (if necessitated by frisking results)	Slips, trips, and falls, muscle strain	Watch footing, use safety glasses, avoid spray, use proper lifting techniques and good ergonomics, contain rinsate
Spray weed/vegetation control chemical on emerging plants	Uneven surfaces, moving equipment, chemical exposure	Traverse spray area slowly, avoid steep slopes, don proper PPE, report spills, be aware of overspray/wind direction, frisk personnel/equip out of areas

List any additional information pertaining to the work: Make note of evacuation route and route to hospital. Limit cell phone use. Operate equipment properly on slopes.

Work Conditions/Requirements		
Wet surfaces?	Y	N
Steep slopes?	Y	N
Elevated work?	Y	N
Fire risk present?	Y	N
Explosion risk?	Y	N
Confined space?	Y	N
Chemicals present?	Y	N
Lockout/tagout?	Y	N
Safety watch req'd?	Y	N

PPE Required (Inside Controlled Area)	Safety Items Required (Inside Controlled Area)
Hard hat	4-gas meter (1 per work area/group)
Steel- or composite-toed boots	TLD (1 per individual inside controlled area)
Safety glasses or goggles	Fire extinguisher (1 per vehicle/equipment)
Gloves	1st aid kit (1 per vehicle/equipment)
Hearing protection if warranted	Extra gloves and boot covers
Reflective outerwear	Drinking water (outside controlled area)
Protective clothing	
Disposable boot covers or rubber boots	

JSA Participant	Signature

Supervisor printed name & signature

SSO printed name & signature

Engineering for a Better World
FEEZOR ENGINEERING, INC.

Job Safety Analysis Form

Date:

Supervisor:

Task Description: Soil sampling, flora sampling, & observation of same

Location: West Lake Landfill OU-1 Areas 1 & 2, Bridgeton, Missouri

Equipment to be used: Hand tools, sample containers, spray bottles, buckets, brush, etc.

Risk Assessment	1=Low/Rarely 2=Med/Daily 3=High/Hourly
How often is task conducted?	2
Probability of something going wrong?	1
How serious are the consequences?	3
If total is > 5, add'l mitigations?	Level D PPE + protective clothing

Sequence of Work	Potential Hazards	Mitigation Actions
Soil and/or flora sample collection/containerization	Slips, trips, and falls, muscle strain, cuts/abrasions, radiological exposure	Watch footing, use safety glasses, use proper lifting techniques (for coolers) & good ergonomics, wear gloves / kneepads, use appropriate respiratory protection
Decontamination of sampling tools (near each sampling location)	Cuts/abrasions, muscle strain, radiological exposure	Use proper lifting techniques (for buckets of water) & good ergonomics, wear gloves / kneepads, use appropriate respiratory protection

List any additional information pertaining to the work: Cell phone use for emergencies only. Evac route and directions to hospital have been provided.

Work Conditions/Requirements			PPE Required (Inside Controlled Area)	Safety Items Required (Inside Controlled Area)
Wet surfaces?	Y	N	Hard hat	4-gas meter (1 per work area/group)
Steep slopes?	Y	N	Steel toed boots/shoes	TLD (1 per individual inside controlled area)
Elevated work?	Y	N	Safety glasses or goggles	Stationary air sampler (1 inside controlled area)
Fire risk present?	Y	N	Gloves	Fire extinguisher (1 per vehicle/equipment)
Explosion risk?	Y	N	Reflective outerwear	1st aid kit (1 per vehicle/equipment)
Confined space?	Y	N	Protective clothing	Extra gloves, booties, & duct tape
Chemicals present?	Y	N	Disposable booties or rubber boots	
Lockout/tagout?	Y	N		Drinking water (outside controlled area)
Safety watch req'd?	Y	N		

JSA Participant	Signature

Supervisor printed name & signature

SSO printed name & signature

Engineering for a Better World
FEEZOR
ENGINEERING, INC.

Job Safety Analysis Form

Date:

Supervisor:

Task Description: Cleaning tires and performing radiological free-release of each

Location: West Lake Landfill OU-1 Area 2, Bridgeton, Missouri

Equip. to be used: Hand tools, air sampling equip., fan, shop vac, sprayer, rad instruments

Risk Assessment	1=Low/Rarely 2=Med/Daily 3=High/Hourly
How often is task conducted?	2
Probability of something going wrong?	1
How serious are the consequences?	2
If total is > 5, add'l mitigations?	Level D PPE + gloves

Sequence of Work	Potential Hazards	Mitigation Actions
Clear debris from tires, perform light dust suppression	Slips/trips/falls, cuts/abrasions, heat stress, muscle strain, radiological exposure	Use safety glasses (splash protection as needed), suppress dust, double glove, watch footing, use proper lifting techniques & ergonomics, contain overspray, ground electrical equipment, take breaks as necessary, frisk personnel/equip out of area
Perform radiological free release survey of each tire	Muscle strain, heat stress, radiological exposure	Use proper lifting techniques & ergonomics, document/track samples and survey results by assigning tire reference numbers
Stockpile released tires in designated location for removal from area	Muscle strain, heat stress, radiological exposure	Use proper lifting techniques & ergonomics, maintain documentation/tracking of survey results

List any additional information pertaining to the work: Make note of evacuation route and route to hospital. Limit cell phone use. Unplug equipment when not in use.

Work Conditions/Requirements			PPE Required (Inside Controlled Area)	Safety Items Required (Inside Controlled Area)
Wet surfaces?	Y	N	Hard hat	TLD (1 per individual inside controlled area)
Steep slopes?	Y	N	Steel- or composite-toed boots	Fire extinguisher (1 per work area)
Elevated work?	Y	N	Safety glasses or goggles	1st aid kit (1 per work area)
Fire risk present?	Y	N	Gloves	Extra gloves and boot covers
Explosion risk?	Y	N	Reflective outerwear	Drinking water (outside controlled area)
Confined space?	Y	N	Disposable boot covers or rubber boots	
Chemicals present?	Y	N		
Lockout/tagout?	Y	N		
Safety watch req'd?	Y	N		

JSA Participant	Signature

Supervisor printed name & signature

SSO printed name & signature

Engineering for a Better World
FEEZOR
ENGINEERING, INC.

Job Safety Analysis

Date:	Supervisor:
Task Description:	Drilling, casing/element installation, hole grouting, crane work
Location/Work Area:	Bridgeton Landfill - North Quarry
Equipment/Materials:	Drilling rig, skid steers, crane, grout handling equip, pipe/rigging

Risk Assessment	1 = Low/Rarely	2 = Med/Daily	3 = High/Hourly
How often is task conducted?	1	(2)	3
Probability of something going wrong?	1	(2)	3
How serious are the consequences?	1	2	(3)
Additional mitigations (if total >5)	PPE, air monitoring, rad control, odor management		

Sequence of Work	Potential Hazards	Mitigations
Sonic drilling	Overhead materials, slips/trips/falls, limited visibility, noise, haz vapors, radionuclides	Use Level D/Mod D PPE, wear hearing protection, use ventilation/odor control, use appropriate respiratory protection, rinse downhole equipment upon extraction, perform wipe scans
TMP thermocouple assembly & installation	Overhead materials, slips/trips/falls, limited visibility, haz vapors	Use Level D PPE, use ventilation/odor control, use appropriate respiratory protection
TMP grouting activities	Overhead materials, slips/trips/falls, heavy lifting, skin irritation, dust	Use Level D PPE, use proper lifting techniques, cover arms, use appropriate respiratory protection

List any additional information pertaining to the work: Evac route & directions to hospital are provided in project Health & Safety Plan. Welding contractor, if utilized, is responsible for any JSA associated with welding activities.

Work Conditions/Requirements			PPE Req'd Inside All Work Areas	Other Items To Be Made Available
Wet surfaces?	Y	N	Hard hat	Gloves (req'd in rad areas (RA))
Steep slopes?	Y	N	Steel/composite-toed footwear	Hearing protection
Elevated work?	Y	N	Safety glasses/goggles	Protective clothing (req'd in RA)
Fire risk present?	Y	N	Reflective outerwear	Rubber boots/covers (req'd in RA)
Explosion risk?	Y	N	Personal 4-gas meter	Eyewash solution
Confined space?	Y	N	VOC monitor	Fire extinguisher
Chemicals present?	Y	N		1st aid kit
Lockout/tagout?	Y	N		
Safety watch req'd?	Y	N		

JSA Participant (print name)	Signature

Engineering for a Better World
FEEZOR ENGINEERING, INC.

Job Safety Analysis Form

Date:

Supervisor:

Task Description: Well abandonment activities & observation of same

Location: West Lake Landfill OU-1 Areas 1 & 2, Bridgeton, Missouri

Equipment to be used: Drill rig, support truck, grout pump, downhole camera, hand tools.

Risk Assessment	1=Low/Rarely 2=Med/Daily 3=High/Hourly
How often is task conducted?	1
Probability of something going wrong?	1
How serious are the consequences?	1
If total is > 5, add'l mitigations?	Level D PPE + protective clothing

Sequence of Work	Potential Hazards	Mitigation Actions
Remove surface completion from well	Slips, trips, and falls, muscle strain, cuts/abrasions, radiological exposure	Watch footing, use safety glasses, use proper lifting techniques & good ergonomics, wear gloves, use appropriate respiratory protection
Grout well casing using tremie pipe	Slips, trips, and falls, muscle strain, cuts/abrasions, heavy equipment hazards, bentonite and/or cement dust, radiological exposure	Watch footing and pinch points, use safety glasses, use proper lifting techniques & good ergonomics, wear gloves, use appropriate respiratory protection
Extract well casing from borehole	Slips, trips, and falls, muscle strain, cuts/abrasions, heavy equipment hazards, radiological exposure	Watch footing and pinch points, use safety glasses, use proper lifting techniques & good ergonomics, wear gloves, use appropriate respiratory protection
Complete borehole grouting/surface plug	Slips, trips, and falls, muscle strain, cuts/abrasions, heavy equipment hazards, bentonite and/or cement dust, radiological exposure	Watch footing and pinch points, use safety glasses, use proper lifting techniques & good ergonomics, wear gloves, use appropriate respiratory protection
Decontaminate equipment	Cuts/abrasions, muscle strain, radiological exposure	Use proper lifting techniques & good ergonomics, wear gloves, use appropriate respiratory protection

List any additional information pertaining to the work: Cell phone use for emergencies only. Evac route and directions to hospital have been provided.

Work Conditions/Requirements			PPE Required (Inside Controlled Area)	Safety Items Required (Inside Controlled Area)
Wet surfaces?	Y	N	Hard hat	4-gas meter (1 per work area/group)
Steep slopes?	Y	N	Steel toed boots/shoes	
Elevated work?	Y	N	Safety glasses or goggles	Stationary air sampler (1 inside controlled area)
Fire risk present?	Y	N	Gloves	Fire extinguisher (1 per vehicle/equipment)
Explosion risk?	Y	N	Reflective outerwear	1st aid kit (1 per vehicle/equipment)
Confined space?	Y	N	Protective clothing	Extra gloves, booties, & duct tape
Chemicals present?	Y	N	Disposable booties or rubber boots	
Lockout/tagout?	Y	N		Drinking water (outside controlled area)
Safety watch req'd?	Y	N		

JSA Participant	Signature

Supervisor printed name & signature

SSO printed name & signature

Attachment 2

Legal Compliance Register

Ameriphysics West Lake Landfill OU-1 Design Investigation

Content Revision Date: 2/26/2020

Item #	Description / identity of relevant SH&E risk	Identity / citation of related legal compliance obligation	How does one gain access to the text of this legal compliance obligation?	Remarks
1	Radiation Safety Training	• US NRC 10 CFR 19.12	• https://www.nrc.gov/reading-rm/doc-collections/cfr/part019/part019-0012.html	Classroom presentation provided by Ameriphysics. Renewed annually.
2	General Safety Training	• US OSHA 29 CFR 1926.21	• www.osha.gov	1-hr classroom presentation provided by Bridgeton Landfill, LLC for all FEI employees working on-site. Renewed annually. Written materials available.
3	Portable Fire Extinguishers	• US OSHA 29 CFR 1910.157	• www.osha.gov	Self-paced web-based training provided by various companies. Renewed as needed for specific projects.
4	Respiratory Protection	• US OSHA 29 CFR 1910.134	• www.osha.gov	Self-paced written training module provided by FEI for employees. Voluntary program, renewed annually or as needed for individual employees for West Lake Landfill projects.
5	Hazard Communication	• US OSHA 29 CFR 1910.1200	• www.osha.gov	Self-paced web-based training provided by various companies. Renewed as needed.
6	Hazardous Waste Operations and Emergency Response	• US OSHA 29 CFR 1910.120	• www.osha.gov	40-hr initial classroom training + 8-hr annual web-based renewal provided by various companies.
7	Asbestos Awareness/Building Inspection	• 10 CSR 10-6.241 & 10-6.250	• www.dnr.mo.gov/env/apcp	24-hr initial classroom training + 4-hr annual classroom renewal provided by various companies approved by MDNR. Written materials available.

Attachment 3

Training Matrix

West Lake Landfill Project

Training Matrix

Revision Date: 2/5/2020

Employee Name / Employee Title / Employee Function	Required Compliance / Risk Control / Risk Management Training	Required Licenses / Designations of Authority / Competencies / Qualifications / Certifications	Frequency of Required Refresher Training / Assessment of Continuing Competency
Parsons and subcontractor field staff performing field work.	Site orientation / PSHEP review and sign-off (Parsons field staff) / SSHEP review and sign-off (Subcontractor field staff)	Sign PSHEP / SSHEP	Prior to working on site (or property (typical))
Parsons and subcontractor personnel performing field work	24 or 40-Hr Hazwoper Training	Obtain 24 or 40-hr Hazwoper training certificate	Minimum training for working on site
Parsons and subcontractor personnel performing field work	8-Hr Hazwoper Refresher Training	Obtain 8-hr Hazwoper refresher training certificate	Minimum training for working on site
One field staff per team	First Aid / CPR / AED	Designated provider of first aid / CPR	Every 2 years (with bloodborne pathogens training)
Parsons and subcontractor field staff performing field work	Emergency Action Plan	Can be included in PSHEP review or provided verbally during tailgate safety meeting.	On initial assignment; upon material changes to emergency action plan changes
Parsons field staff including project manager, construction manager, site construction representatives, samplers, property representative, and subcontractor field staff	Hazard Communication	PSHEP review and location of SDS	On initial assignment; when new chemicals are added to the work environment
Project field personnel including visitors	Minimum PPE: Hardhats, gloves, eye protection, safety boots, safety vests and hearing protection (where required) Additional PPE as required by task specific AHAs	PSHEP review	On initial assignment; upon changes to PPE use
Project field personnel who in one year may receive at least 100 mrem of radiation from West Lake Landfill.	Radiation Safety Training – administered by Ameriphysics	Completion and passing a written examination	On initial assignment and annual refresher.

Note: Training referenced above is limited to worker health and safety. It does not cover other subcontractor non-health and safety-related training requirements.

Appendix H – Supporting Plans

H.1 – Radiation Safety Plan (Current Applicable Version Submitted Under Separate Cover)
H.2 – West Lake Site Management Plan
H.3 – West Lake Emergency Response Plan (Current Applicable Version Submitted Under Separate Cover)

H.1 – Radiation Safety Plan (Current Applicable Version Submitted Under Separate Cover)

H.2 – West Lake Site Management Plan

SITE MANAGEMENT PLAN

WEST LAKE LANDFILL SUPERFUND SITE OPERABLE UNIT-1

Prepared For:
The United States Environmental Protection Agency Region VII

Prepared on Behalf of:
The West Lake Landfill OU-1 Respondents

Prepared By:

PARSONS
301 Plainfield Road, Suite 350
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In Association With:

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SEPTEMBER 2019

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LIST OF ACRONYMS

ACRONYM	Definition
ASAOC	Administrative Settlement Agreement and Order of Consent
BMP	Best Management Practices
CFR	Code of Federal Regulations
DIWP	Design Investigation Work Plan
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
FS	Feasibility Study
FSP	Field Sampling Plan
GERT	General Employee Radiation Training
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
MDNR	Missouri Department of Natural Resources
NCC	Non-Combustible Cover
O&M	Operation & Maintenance Plan
OU	Operable Unit
PPE	personal protective equipment
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RD	Remedial Design
RI	Remedial Investigation
RIM	Radiologically Impacted Material
ROD	Record of Decision
RSP	Radiation Safety Plan
RWP	Radiation Work Plan
SAP	Sampling and Analysis Plan
SMP	Site Management Plan
SOW	Statement of Work
SWMP	Site Wide Monitoring Plan
SWPPP	Stormwater Pollution Prevention Plan
TEDE	Total Effective Dose Equivalent
UAO	Unilateral Administration Order
VOC	Volatile Organic Compounds

1.0 INTRODUCTION

This Site Management Plan (SMP) has been prepared for Operable Unit-1 (OU-1) of the West Lake Landfill Superfund Site (the "site"). The plan describes security provisions and pollution prevention measures that will apply to OU-1 during the implementation of the Remedial Design (RD) / Remedial Action (RA) and monitoring actions that will apply to OU-1 during the RD.

This plan has been prepared in accordance with the requirements of the Remedial Design Statement of Work (SOW), Operable Unit-1, West Lake Landfill Superfund Site (EPA 2019b). Specifically, the plan is intended to fulfill the requirements of SOW Paragraph 5.7(c) ["Site Management Plan"]. This SMP is Deliverable 4 on the RD Schedule presented in SOW Paragraph 6.2.

This SMP will be revised as necessary during the RD/RA process to reflect changes in site conditions, RD/RA activities, the party(ies) conducting the RA, or required monitoring activities. Specifically, it is anticipated that major revisions to the SMP will likely be submitted concurrently with the following deliverables specified in the SOW:

- **Design Investigation Work Plan (DIWP) (SOW Deliverable #8):** The SMP will be updated to reflect the planned design investigation field activities described in the DIWP and its supporting deliverables, in particular the Field Sampling Plan (FSP) (SOW Deliverable #9) and Health and Safety Plan (HASP) (SOW Deliverable #11). The update will include a discussion of design investigation activities as they relate to site management.
- **Site Wide Monitoring Plan (SWMP) (SOW Deliverable #14):** The SMP will be updated to reflect the planned site monitoring field activities described in the SWMP. The update will include a more detailed discussion of site monitoring activities as they relate to site management.
- **Pre-Final (90%) Remedial Design (90% RD) (SOW Deliverable #21):** Per SOW Paragraph 3.8(b), the SMP will be updated to reflect the planned RA activities described in the 90% RD and its supporting deliverables, in particular the Operation & Maintenance Plan (O&M Plan) (SOW Deliverable #18). The update will include a discussion of RA activities as they relate to site management.
- **Draft Final (100%) Remedial Design (100% RD) (SOW Deliverable #22):** Per SOW Paragraph 3.9, the 100% RD will include final versions of all RD deliverables, including the SMP. The SMP will be updated at this point to reflect any EPA comments on the (90% RD).

The SMP is organized is organized as follows:

- Introduction: This section, which describes the purpose of the plan;
- Site Description: Describes the site location, layout, and history;
- Site Management Roles and Responsibilities: Describes the OU-1 site management roles and responsibilities;
- Site Access: Describes the infrastructure and procedures that will be used to control access to OU-1 during implementation of the RD/RA;
- Site Conditions Monitoring: Describes the procedures that will be used to monitor general site conditions in OU-1 during the implementation of the RD/RA;
- Environmental Monitoring: Describes the procedures that will be used to monitor applicable environmental media in OU-1 during the RD process;

- Pollution Control and Mitigation: Describes the procedures that will be used to control and mitigate environmental impacts to air and stormwater from OU-1 during the implementation of the RD/RA; and
- Secure Waste Management: Describes the procedures that will be used to manage, stage, and/or dispose of generated waste from OU-1 in a secure manner during the implementation of the RD/RA.

2.0 SITE DESCRIPTION

The West Lake Landfill Superfund Site is an approximately 200-acre inactive solid waste disposal facility, located at the physical address 13570 St. Charles Rock Road in the City of Bridgeton, St. Louis County, Missouri. The site is approximately 18 miles northwest of downtown St. Louis, Missouri, approximately one mile north of the intersection of Interstate 70 and Interstate 270, and approximately one-and-three-quarters (1.75) miles west-northwest of the St. Louis Lambert International Airport. The Missouri River is approximately one-and-a-half (1.5) miles to the west of the site. Industrial properties are located on and adjacent to the site, and commercial and residential properties are located near its perimeter. The site's location is illustrated on **Figure 1**.

The general layout of the site is illustrated on **Figure 2**. The site is divided into three Operable Units. OU-1 is the subject of this SMP and includes areas with radiologically impacted materials (RIM). OU-1 is comprised of the following areas:

- Radiological Area 1 (Area 1): This approximately 17.6-acre area is located in the eastern-to-northeastern portion of the site, immediately southwest of the site's main entrance from St. Charles Rock Road. Area 1 was associated with unregulated landfill operations conducted at the site prior to the commencement of state regulations in 1974. Radionuclides are present in and on the soils and waste materials that have become interspersed within the landfill matrix. The southwestern portion of Area 1 is overlain by 40 to 45 feet of more recent, non-RIM-containing waste materials (referred to as the "muffin top" or "mound"). These materials were placed above-grade between 2002 and 2004 in the North Quarry portion of the Bridgeton Landfill (see below). Due to the disposal of these more recent waste materials, some areas contaminated with RIM occur at depths of up to 85 feet in the southwestern portion of Area 1.
- Radiological Area 2 (Area 2): This approximately 41.8-acre area is located in the northwestern portion of the site. Area 2 was also associated with unregulated landfill operations conducted at the site prior to the commencement of state regulations in 1974. Radionuclides are present in and on soils and waste materials that have become interspersed within the landfill matrix.
- Buffer Zone: This approximately 1.8-acre strip of property is located immediately west-southwest of Area 2. The property was acquired by the landfill operator in 2001 after it was discovered that radiologically-impacted soils had eroded from Area 2 and onto the property.
- Lot 2A2 (Crossroads Properties, LLC): This approximately 3.6-acre privately-owned commercial property is located immediately west-northwest of the Buffer Zone and immediately southwest of the northern portion of Area 2. It has been determined that radiologically-impacted soils have also eroded from Area 2 and onto the Lot 2A2 property.

Note: While Lot 2A2 is part of OU-1, the OU-1 Respondents do not have ownership of, control of, or access to Lots 2A2. Accordingly, the Respondents cannot implement or enforce the provisions of this SMP on Lot 2A2. The owners of Lot 2A2 – Crossroads Properties, LLC – have been made aware of the potential for RIM on the property.

A Non-Combustible Cover (NCC) was installed over portions of OU-1 Area 1 and Area 2 (as well as the Buffer Zone) in 2016, with additional installation occurring in some steeply-sloped portions of Area 2 in 2018. The NCC installation was performed pursuant to the U.S. Environmental Protection Agency (EPA) December 9, 2015 Unilateral Administrative Order (UAO) (EPA 2015). The NCC was installed over those portions of OU-1 where RIM was present at or near the ground surface. The cover design consists of a graded 8-in.-thick limestone gravel layer overlaying a non-woven geotextile. The extent of the NCC in Area 1 and Area 2 (including the Buffer Zone) is illustrated on **Figures 3** and **4**, respectively.

OU-2 includes those areas where RIM has not been identified. It is comprised of the following areas: a Closed Demolition Landfill in the northeastern portion of the site; an Inactive Sanitary Landfill in the western portion of the site; and a Former Active Sanitary Landfill, also known as Bridgeton Landfill, in the eastern and southern portion of the site. As noted above, waste materials were placed above-grade in the North Quarry portion of Bridgeton Landfill, over the southwestern portion of what is now OU-1 Area 1. In accordance with the July 25, 2008 Record of Decision (ROD) for OU-2 (EPA 2008), EPA has deferred oversight of the Closed Demolition Landfill and Former Active Sanitary Landfill to the Missouri Department of Natural Resources (MDNR), while EPA remains the lead regulatory agency overseeing the Inactive Sanitary Landfill.

Sitewide groundwater is being investigated as a separate Operable Unit, OU-3. A Remedial Investigation (RI) and Feasibility Study (FS) for OU-3 will be implemented pursuant to a February 6, 2019 Administrative Settlement Agreement and Order on Consent (ASAOC) (EPA 2019a).

Also included within the boundaries of the site are several structures and facilities that are not part of the waste disposal areas, including a solid waste transfer station, a leachate pre-treatment plant, and an asphalt batch plant.

Note that the security provisions and pollution prevention measures described in this SMP are applicable only to OU-1 (excluding Lot 2A2).

3.0 SITE MANAGEMENT ROLES AND RESPONSIBILITIES

This section describes the OU-1 site management roles and responsibilities.

The individuals designated for each of the following site management roles – as well as their contact information – are specified on **Table 1**.

3.1 OU-1 PROJECT COORDINATOR

The OU-1 Project Coordinator has overall responsibility for the implementation of the OU-1 RD/RA. For the RD, this individual will interface between the EPA and the OU-1 Respondents: Cotter Corporation (N.S.L.), Bridgeton Landfill, LLC, and the Department of Energy. Because the Respondents are still negotiating the Consent Decree and participation in the RA with Emergency Response Plan (ERP), the SMP and designated personnel may change at the RA stage, depending on the party(ies) conducting the RA. The SMP will be revised with EPA's permission at the appropriate time to reflect any such changes.

3.2 SITE MANAGER

The OU-1 Site Manager has overall responsibility for site management at OU-1. This individual will report to the Project Coordinator and ensure that the procedures described in this SMP are followed. If the Site Manager is not available, one of the Alternates listed on **Table 1** may fulfill their responsibilities.

3.3 ENVIRONMENTAL MONITORING MANAGER

The OU-1 Environmental Monitoring Manager has responsibility for environmental monitoring of OU-1. This individual will report to the Site Manager and ensure that the environmental monitoring procedures described in this SMP are followed.

3.4 RADIATION SAFETY OFFICER

The OU-1 Radiation Safety Officer has responsibility for OU-1 radiation protection practices. This individual will report to the Site Manager and ensure that radiation protection practices described in this SMP and other approved plans are followed.

4.0 SITE ACCESS

This section describes the infrastructure and procedures that will be used to control access to OU-1 during implementation of the RD/RA.

The larger West Lake site – except for the borrow area – is enclosed by fencing, and access to the site is controlled by Bridgeton Landfill. Access to OU-1 Area 1, Area 2, and the Buffer Zone is also further controlled. These OU-1 areas are enclosed by chain-link fences that are approximately six feet in height and topped with three strands of barbed wire. Aluminum placards are posted on the fence approximately every 40 feet. These placards depict the standard radiation warning trefoil in magenta on a yellow background, with magenta lettering stating: "CAUTION. CONTROLLED AREA. AUTHORIZED ENTRY ONLY". A sample placard is presented in **Appendix A**.

4.1 AREA 1 ENTRANCES

The fence line for Area 1 is illustrated on **Figure 3**. The primary foot and vehicle entrance to Area 1 is a 20-ft gate on the southern side of the area's fence line. Signage on the primary entrance gate indicates that there is no entry without proper authorization. There are also three emergency exits at various locations: a 6-ft gate at the northwest corner; and two 20-ft gates on the north side, accessible from the larger West Lake site's main entrance and parking area. The primary entrance and emergency exits are kept closed and padlocked when not in use.

4.2 AREA 2 ENTRANCES

The fence line for Area 2 and the Buffer Zone is illustrated on **Figure 4**. The primary foot and vehicle entrance to Area 2 is a 20-ft gate on the southwestern side of the area's fence line. Signage on the primary entrance gate indicates that there is no entry without proper authorization. There are also five emergency exits at various locations: a 12.5-ft gate near the southwestern corner, accessible from Boenker Lane / Old St. Charles Rock Road; a 20-ft gate at the southwest end of the Buffer Zone, accessible from Boenker Lane / Old St. Charles Rock Road; a 3-ft gate near the northern corner; a 3-ft gate on the northern side, accessible from St. Charles Rock Road; and a 6-ft gate near the northeastern corner. The primary entrance and emergency exits are kept closed and padlocked when not in use.

4.3 ENTRY PROCEDURES

There are presently no ongoing waste disposal activities occurring within OU-1. Workers only enter OU-1 to perform routine inspection and maintenance activities (e.g., inspection of the NCC) or to perform activities that are part of the OU-1 RD/RA.

Signage on the primary entrance gates for Area 1 and Area 2 indicates that there is no entry without proper authorization. As noted above, the primary entrance and emergency exits for Area 1 and Area 2 are kept closed and padlocked when not in use. These padlock keys are maintained by the OU-1 Radiation Safety Officer. As noted in the OU-1 Emergency Response Plan, emergency key boxes containing a spare padlock key will be maintained near each emergency exit in OU-1 Area 1 and Area 2.

Only OU-1 workers, or site visitors accompanied by OU-1 workers, are allowed to access Areas 1 and 2 and the Buffer Zone. Site workers that enter OU-1 must complete 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training (including annual 8-hour refreshers) as specified in Title 29 of the Code of Federal Regulations (CFR) 1910.120. Site workers that enter OU-1 must also undergo General Employee Radiation Training (GERT) every two years. Contractors, regulators, consultants, stakeholders, and other visitors can enter OU-1 without completing HAZWOPER and GERT training if they are accompanied by a worker who has completed the training. Workers who need to enter OU-1 will contact the OU-1 Radiation Safety Officer prior to entry to coordinate any applicable training and Personal Protective Equipment (PPE).

Currently, entry into Areas 1 and 2 and the Buffer Zone is only allowed in accordance with a task-specific Radiation Work Permit (RWP), except for in emergency situations (see below). A RWP is prepared and enforced by the Radiation Safety Officer for each category of task that workers perform within the boundaries of OU-1. Each RWP specifies the PPE, dosimetry, exposure estimates, and other requirements and information related to the task. Currently, RWPs are prepared for each task in accordance with the procedures specified in the Radiation Safety Plan (RSP) prepared for the installation of the NCC (Auxier 2016). The basic requirements of an RWP for currently applicable OU-1 tasks are typically as follows:

- PPE consisting a Level D ensemble (work boots with steel toe and shank; high-visibility vest or shirt; hard hat; and safety glasses) plus taped rubber gloves and taped rubber booties.
- Use of whole body thermoluminescent dosimeters.
- Exposure limits corresponding to a maximum individual Total Effective Dose Equivalent (TEDE) of <50 mrem and a collective TEDE of <500 mrem.
- Hands, feet, tools, equipment, and vehicle tires to be frisked by the Radiation Safety Officer for alpha and beta contamination upon egress from OU-1. Decontamination may be required based on the results.
- After use, disposable PPE (e.g., gloves and booties) are collected by the Radiation Safety Officer. The PPE are collected into plastic bags which are tied shut. Bagged disposed PPE are stored in a designated area inside the OU-1 fence line near the applicable area's primary entrance.

Note: The RWP for a short-term, escorted site visit (e.g., by Respondent representatives, regulators, stakeholders, etc.) does not typically include dosimetry or PPE beyond the Level D ensemble (i.e., no gloves and booties), as such visits are constrained to the NCC surface and gravel roads.

RWPs which are currently in effect are posted at the primary entrances to OU-1 Area 1 and Area 2. OU-1 site workers must read and be familiar with the applicable RWP prior to commencing work within OU-1. Workers are not currently required to read or attest to reading the RSP in its entirety, but copies of the RSP are maintained at the trailers immediately outside the entrances to both Area 1 and Area 2.

During the RD phase of the project, worker access to OU-1 will be overseen by the Radiation Safety Officer. The Radiation Safety Officer will be responsible for maintaining a sign-in / sign-out log for OU-1 Area 1 and Area 2. The Radiation Safety Officer will maintain possession of this log while work is being performed inside OU-1; the log will otherwise be kept at the Radiation Safety Officer's off-site office. Prior to entry, each OU-1 site worker will record their name, affiliation, cell phone number, area (1 or 2) and the current date and time in the log. Upon exiting OU-1, each worker will record the current date and time.

Radiation safety procedures for RD field activities, including training, PPE, dosimetry, frisking, and decontamination procedures, will be further detailed in the RSP that will be included in the forthcoming HASP (SOW Deliverable # 11). It is anticipated that this RSP will supersede the existing 2016 RSP and RWP system.

4.4 EMERGENCY ACCESS

In the event of an emergency, entry into OU-1 may be allowed without the issuance of an RWP. In addition, first responders are expressly permitted to gain access to OU-1 using appropriate measures, such as cutting of gate locks.

5.0 SITE CONDITIONS MONITORING

This section describes the procedures that will be used to monitor general site conditions in OU-1 during the implementation of the RD/RA.

Site conditions within OU-1 are currently monitored through two programs: 1) daily inspection from designated visual observation stations; and 2) quarterly and post-rainfall inspection of the NCC installed over portions of Area 1 and Area 2.

It is anticipated that these programs will continue – with potential modifications – during the RD phase of the project. However, this section of the SMP will be revised as necessary during the RD/RA process to reflect changes in site conditions, RD/RA activities, and the party(ies) conducting the RA. Specifically, it is anticipated that major revisions to the site conditions monitoring procedures will likely be submitted concurrently with the following deliverables specified in the SOW:

- Design Investigation Work Plan (DIWP) (SOW Deliverable #8): The SMP will be updated to reflect the planned design investigation field activities described in the DIWP and its supporting deliverables, in particular the FSP (SOW Deliverable #9). The update will include a discussion of site conditions monitoring procedures as they related to design investigation activities.
- Pre-Final (90%) Remedial Design (90% RD) (SOW Deliverable #21): Per SOW Paragraph 3.8(b), the SMP will be updated to reflect the planned RA activities described in the 90% RD and its supporting deliverables, in particular the O&M Plan (SOW Deliverable #18). The update will include a discussion of site conditions monitoring procedures as they relate to RA activities.
- Draft Final (100%) Remedial Design (100% RD) (SOW Deliverable #22): Per SOW Paragraph 3.9, the 100% RD will include final versions of all RD deliverables, including the SMP. The SMP – including site conditions monitoring procedures – will be updated at this point to reflect any EPA comments on the (90% RD).

5.1 DAILY VISUAL INSPECTIONS

OU-1 Area 1 and Area 2 are visually inspected by designated personnel on a daily basis, including weekends and holidays. These inspections act as a routine check for anomalous or otherwise notable conditions within the boundaries OU-1. The inspections are performed as a part of the Bridgeton Landfill's daily Perimeter Inspection, as described in the landfill's Operation, Maintenance, and Monitoring Plan (CEC 2019). The Bridgeton Landfill Operations Manager oversees the implementation of these daily visual inspections, including training of on-site Field Technicians who perform the inspections.

Visual inspection of OU-1 Area 1 and Area 2 is performed from outside the fence lines enclosing these areas, at designated visual observation stations on local high ground. The locations of these stations for Area 1 and Area 2 are illustrated on **Figure 3** and **Figure 4,** respectively. The Area 1 visual observation station is located south of the area, on the northern portion of the Bridgeton Landfill North Quarry. The Area 2 visual observation station is located south of the area, on the northern portion of the Inactive Sanitary Landfill. A Perimeter Inspection Form is completed for each daily inspection and thereafter retained at the Bridgeton Landfill office. If the Field Technician performing the daily visual inspection observes any anomalous conditions in Area 1 or Area 2– such as evidence of an environmental release – they immediately notify the Operations Manager.

For reference, the daily visual inspection procedures from the OM&M Plan (CEC 2019) – including a sample daily Perimeter Inspection Form – are reproduced in **Appendix C**.

This section is subject to revision as necessary to address comments related to video surveillance that were provided in a May 30, 2019 EPA letter (EPA 2019c). It is anticipated that this section will be revised once the OU-1 video surveillance program that is currently under development is submitted and approved by the EPA.

5.2 NCC INSPECTIONS

Inspection of the NCC in Area 1, Area 2, and the Buffer Zone is performed on a quarterly basis and following major precipitation events (greater than 1 in. of rainfall over a 24-hour period). The Inspection and Maintenance Plan was originally presented in the NCC Installation Work Plan (EMSI 2017). In brief, the NCC inspection program examines the condition of the cover, drainage features, and access roads in OU-1. NCC inspections will continue until the RA for OU-1 has been implemented. Full details on the NCC inspection program are presented in **Appendix B.**

6.0 ENVIRONMENTAL MONITORING

This section describes the procedures that will be used to monitor applicable environmental media in OU-1 on a regular basis during the RD process. Additional environmental monitoring may be performed on an irregular basis during specific RD activities, such as the Design Investigation. These additional monitoring activities will be defined, executed, and reported within the framework of the RD activities and documents (e.g., the FSP) required in the SOW. These additional monitoring activities are not included in this SMP.

6.1 AIR

Air monitoring of OU-1 is currently performed in accordance with the Air Monitoring, Sampling, and QA/QC Plan (Auxier 2014). In brief, the currently approved program encompasses 13 air monitoring stations, each of which provides continuous data collection with varying collection/replacement intervals (depending on the constituent) for applicable samplers or media. Monitored constituents include: total alpha and beta activity; isotopic radium, thorium, and uranium; Radon-222 and radon daughters; gamma radiation levels; and volatile organic compounds (VOCs). Monitored constituents, monitoring locations, and monitoring frequencies are subject to revision as approved by EPA. The OU-1 Environmental Monitoring Manager has responsibility for ensuring that the site's air monitoring plan is followed. Full details on the sampling program can be found in this plan.

The SOW requirements for environmental monitoring programs are addressed in the air monitoring plan as follows:

- The objective of the current air monitoring program is to collect air monitoring data to 1) characterize the baseline air quality conditions for OU-1 prior to the implementation of the RA; 2) assess the potential for release of radioactive materials or chemical contaminants from the site; and 3) characterize trends, if any, in environmental radiation measurements. See Sections 1 and 2.1 of the air monitoring plan. [SOW 5.7(f)(1)]
- The current air monitoring program addresses the baseline sampling program in general terms in Section 4.1 of the air monitoring plan. Sampling locations are illustrated on Figure 4-3 of the air monitoring plan and a summary of samplers (include type, mode, collection frequency, and measured constituents) are listed on Table 4-1 of the air monitoring plan. Sampling procedures are addressed in Section 4.2 and Appendix A of the air monitoring plan. Laboratory analytical methods are listed on Table 4-3 of the air monitoring plan. [SOW 5.7(f)(2)]
- The current air monitoring program addresses air monitoring data verification and validation in Section 6.3 of the air monitoring plan. Airborne activity limits used to evaluate potential work and public exposure are addressed in Section 4.1.1. and listed on Table 4-2 of the air monitoring plan. [SOW 5.7(f)(3)]
- The current air monitoring program does not include verification sampling procedures. [SOW 5.7(f)(4)]
- The current air monitoring program addresses deliverables generated in connection with air monitoring in Section 6 of the air monitoring plan. Recordkeeping is addressed in Section 5.3 of the air monitoring plan. [SOW 5.7(f)(5)]

- Under current pre-RA conditions, the air monitoring program is primarily aimed at characterizing baseline air quality for OU-1. Once the RD has been further developed in forthcoming SOW deliverables, it is anticipated that concurrent revisions to the air program will include criteria and procedures for additional air monitoring and data collection actions, in the event that air monitoring results collected during the RA indicate a change in conditions (such as higher than expected concentrations of air monitoring constituents). [SOW 5.7(f)(6)]

The air monitoring plan is currently being revised in accordance with the EPA's August 15, 2019 letter. It is anticipated that the revised air monitoring program will be performed as a part of the OU-1 RD. This section of the SMP will be revised following final approval of the revised OU-1 air monitoring plan. The final approved OU-1 air monitoring plan for the RD phase and the associated Quality Assurance Project Plan (QAPP) will also be incorporated into this SMP as an appendix, once they are approved.

6.2 STORMWATER

Stormwater monitoring of OU-1 is currently performed in accordance with the Stormwater Monitoring Quality Assurance Project Plan (QAPP) (Feezor 2018; currently in draft form; latest EPA comments received 6/27/19). In brief, the stormwater monitoring program encompasses 12 stormwater sampling points, which are sampled on a monthly basis and whenever flow is present. Monitored constituents include field parameters; physical and chemical analytes, including select metals and organic compounds; and radiological constituents, including alpha and beta activity and individual radionuclides. The OU-1 Environmental Monitoring Manager has responsibility for ensuring that the stormwater monitoring procedures described in the Stormwater QAPP are followed. Full details on the sampling program can be found in this plan.

The SOW requirements for environmental monitoring programs are addressed in the stormwater monitoring plan and its associated QAPP as follows:

- The objective of the current stormwater monitoring program is to collect stormwater monitoring data to determine whether RIM is migrating from the OU-1 site in stormwater discharges. See Section A.6 of the stormwater monitoring plan. [SOW 5.7(f)(1)]
- Table 2 of the Stormwater Monitoring QAPP for the stormwater monitoring program list comparison analytes for stormwater. Table 2 also lists analytical methods. Analytical methods are also addressed in Section B.4 of the stormwater monitoring plan. Monitoring locations and inspections paths are illustrated on Figure 2 of the stormwater monitoring plan and sampling and inspection frequencies are addressed in Section A.6 of the stormwater monitoring plan. Sampling methods, handling, and custody are addressed in Sections B.2 and B.3 of the stormwater monitoring plan. [SOW 5.7(f)(2)]
- The current stormwater monitoring program addresses criteria for determining whether off-site migration of RIM has occurred in Section A.6 of the stormwater monitoring plan. Stormwater monitoring data verification and validation is addressed in Section C.3 of the stormwater monitoring plan. Reporting of data to EPA and MDNR is addressed in Section C.2 of the stormwater monitoring plan. Applicable non-enforceable benchmark values from the site's stormwater permit (which only apply to select outfalls) are listed on Table 2 of the stormwater monitoring plan. [SOW 5.7(f)(3)]
- The current stormwater monitoring program does not include verification sampling procedures. [SOW 5.7(f)(4)]
- The current stormwater monitoring program addresses reporting to EPA and MDNR in Section C.2 of the stormwater monitoring plan. Data management including documentation and recordkeeping is addressed in Section B.10 of the stormwater monitoring plan. [SOW 5.7(f)(5)]

- Under the current stormwater monitoring program, enhanced best management practices (BMPs) will be implemented in the event that stormwater monitoring results indicate a change in conditions (such as higher than expected concentrations of stormwater monitoring parameters). See Section A.6 and B.10 of the stormwater monitoring plan. [SOW 5.7(f)(6)]

The stormwater monitoring plan is currently being revised in accordance with the EPA's June 27, 2019 comment letter. This section of the SMP will be revised following final approval of the revised OU-1 stormwater monitoring plan. The final approved OU-1 stormwater monitoring plan, associated QAPP, and Stormwater Pollution Prevention Plan (SWPPP) will also be incorporated into this SMP as an appendix, once they are approved. The stormwater monitoring plan will also address stormwater inspection procedures to determine whether stormwater discharges are occurring in areas other than the designated Outfalls.

6.3 GROUNDWATER

Groundwater monitoring is currently being performed at the site as part of routine monitoring of the Bridgeton Landfill, and will also be performed as a part of OU-3. As indicated in Footnote 1 to SOW Paragraph 5.7(f)(1), a groundwater monitoring program will also be developed as a part of the RD and this program will be used to support evaluation of the OU-1 remedy's performance.

The SWMP (SOW Deliverable #14) will include a groundwater monitoring program that will satisfy the following SOW requirements:

- The objective of the groundwater monitoring program described in the SWMP will be to 1) establish a baseline for OU-1 groundwater condition prior the implementation of the RA; 2) obtain data regarding changes in OU-1 groundwater quality before, during, and after implementation of the RA; 3) obtain data to support the evaluation of the OU-1 remedy's performance, including the need for additional monitoring. [SOW 5.7(f)(1)]
- The groundwater monitoring program described in the SWMP will include a description of data collection parameters, including existing and proposed groundwater monitoring wells, schedule and frequency of groundwater monitoring, groundwater analytical parameters, and field/laboratory analytical methods. [SOW 5.7(f)(2)]
- The groundwater monitoring program described in the SWMP will include a description of how groundwater monitoring data will be analyzed, interpreted, and reported. [SOW 5.7(f)(3)]
- The groundwater monitoring program described in the SWMP will include a description of groundwater verification sampling procedures. [SOW 5.7(f)(4)]
- The groundwater monitoring program described in the SWMP will include a description of deliverables that will be generated in connection with groundwater monitoring, including sampling schedules, laboratory records, and monthly and annual reports (as applicable) to EPA and state agencies. [SOW 5.7(f)(5)]
- The groundwater monitoring program described in the SWMP will include a description of proposed additional groundwater monitoring and data collection actions, in the event that groundwater monitoring results indicate a change in conditions (such as higher than expected concentrations of groundwater constituents or migration of groundwater constituents). [SOW 5.7(f)(6)]

The proposed OU-1 groundwater monitoring program will be presented in the DIWP (SOW Deliverable #8) and the other associated scheduled deliverables required by the SOW (FSP [SOW Deliverable #9], QAPP [SOW Deliverable #10], HASP [SOW Deliverable #11], and Data Management Plan [SOW Deliverable #12].) When the proposed OU-1 groundwater monitoring program is approved, it will be consolidated in an appendix of the SMP and SWMP.

It is anticipated that the OU-1 groundwater monitoring program will be comprised of a subset of the wells and parameters used in the OU-3 investigation. It is expected that the field work for the OU-1 groundwater monitoring may be integrated with OU-3 field investigation activities to minimize replication of effort. Accordingly, this section of the SMP – as well as the forthcoming SWMP – may be revised following the submittal of the OU-3 Sampling and Analysis Plan (SAP) that is required by the Statement of Work in the OU-3 ASAOC (USEPA 2019a). If the coordination and integration of the OU-1 and OU-3 groundwater monitoring efforts is deemed feasible based on a review of the SAP, the SMP and SWMP will be revised accordingly.

6.4 AREA 2 SEEP EVALUATION

The seep that the EPA has previously observed in OU-1 Area 2 will be investigated and evaluated as a part of the OU-1 Design Investigation. Further details will be provided in the Design Investigation Work Plan (SOW Deliverable # 8).

7.0 POLLUTION CONTROL AND MITIGATION

This section describes the procedures that will be used to control and mitigate environmental impacts to air and stormwater from OU-1 during the implementation of the RD/RA.

It is anticipated that the procedures described below will continue – with potential modifications – during the RD phase of the project. This section of the SMP will be revised as necessary during the RD/RA process to reflect changes in site condition, RD/RA activities, and the party(ies) conducting the RA. Specifically, it is anticipated that major revisions to the site conditions monitoring procedures will likely be submitted concurrently with the following deliverables specified in the SOW:

- Design Investigation Work Plan (DIWP) (SOW Deliverable #8): The SMP will be updated to reflect the planned design investigation field activities described in the DIWP and its supporting deliverables, in particular the FSP (SOW Deliverable #9). The update will include a discussion of pollution control and mitigation procedures as they related to design investigation activities.
- Pre-Final (90%) Remedial Design (90% RD) (SOW Deliverable #21): Per SOW Paragraph 3.8(b), the SMP will be updated to reflect the planned RA activities described in the 90% RD and its supporting deliverables, in particular the O&M Plan (SOW Deliverable #18). The update will include a discussion of pollution control and mitigation procedures as they relate to RA activities.
- Draft Final (100%) Remedial Design (100% RD) (SOW Deliverable #22): Per SOW Paragraph 3.9, the 100% RD will include final versions of all RD deliverables, including the SMP. The SMP – including pollution control and mitigation procedures – will be updated at this point to reflect any EPA comments on the 90% RD.

7.1 AIR IMPACT CONTROL AND MITIGATION

Currently, the only significant potential source of air impacts from routine OU-1 inspection and maintenance activities is vegetation removal performed in those areas with NCC. As described in the NCC Inspection and Maintenance Plan originally presented in the NCC Installation Work Plan (EMSI 2017) and reproduced in **Appendix B**, removal of vegetation from the NCC area is performed semi-annually, if deemed necessary during quarterly NCC inspections. Per the plan, dust generation is to be minimized during vegetation removal. Dust control methods described in the plan include wetting of vegetation prior to mower advancement and wetting of removed woody vegetation prior to grinding and chipping.

It is anticipated that RD activities may potentially include vegetation clearing within the boundaries OU-1. In such an event, dust generation from clearing will be minimized using methods that will be presented in the DIWP (Deliverable 8 on the RD Schedule present in SOW Paragraph 6.2). It is anticipated that that these dust control methods will be similar to those described in the NCC Installation Work Plan (EMSI 2017).

The air monitoring program for OU-1 provides continual monitoring of potential radionuclides associated with OU-1. The program will continue during the performance of RD activities in part to demonstrate the effectiveness of air impact control and mitigation procedures. The approved air monitoring program will be incorporated as an appendix to this SMP and the SWMP and conducted under the May 6, 2019 amendment to the ASAOC.

Depending on the nature and scope of the OU-1 Design Investigation, additional air impact control and mitigation procedures may be necessary during the investigation field activities. It is anticipated that any such

procedures, if needed, will be further defined in the DIWP and executed and reported in the subsequent RD deliverables.

7.2 STORMWATER IMPACT CONTROL AND MITIGATION

The NCC was installed in 2016 and 2018 over those portions of OU-1 where RIM was present at or near the ground surface. Although the installation of the NCC was performed to remove vegetation and thereby prevent a surface fire from occurring in areas where RIM was exposed at the ground surface (per the UAO), it also serves to prevent erosion of surface soils via surface flow during storm events. Full details on the design, installation, inspection, and maintenance of the NCC are presented in the NCC Installation Work Plan (EMSI 2017). As noted above, the approved NCC inspection and maintenance program for the RD phase is presented in **Appendix B**.

The current stormwater program for OU-1 is described in the Stormwater QAPP (Feezor 2018; currently in draft form; latest EPA comments received 6/27/19). This program provides for monitoring of potential environmental impacts to stormwater from OU-1. The program will continue during the performance of RD activities, in part to demonstrate the effectiveness of stormwater impact control and mitigation procedures.

The stormwater monitoring plan is currently being revised in accordance with the EPA's June 27, 2019 comment letter. This section of the SMP will be revised following final approval of the revised OU-1 stormwater monitoring plan. The final approved OU-1 stormwater monitoring plan, associated QAPP, and SWPPP will also be incorporated into this SMP and the SWMP as an appendix, once they are approved.

Depending on the nature and scope of the OU-1 Design Investigation, additional stormwater impact control and mitigation procedures may be necessary during investigation field activities. It is anticipated that any such procedures, if needed, will be further defined in the DIWP and executed and reported in subsequent RD deliverables.

7.3 GROUNDWATER IMPACT CONTROL AND MITIGATION

Currently, the potential sources of groundwater impacts from routine OU-1 inspection and maintenance activities are not significant. As noted above, however, this section of the SMP will be revised as necessary during the RD/RA process to reflect changes in site conditions, RD/RA activities, and the party(ies) conducting RA. Specifically, it is anticipated that major revisions to the site conditions monitoring procedures will likely be submitted concurrently with deliverables specified in the SOW -- DIWP; FSP; QAPP; HASP; and Data Management Plan – and then incorporated into the SWMP.

8.0 SECURE WASTE MANAGEMENT

This section describes the procedures that will be used to manage, stage, and/or dispose of generated waste from OU-1 in a secure manner during the implementation of the RD/RA.

It is anticipated that the procedures described below will continue – with potential modifications – during the RD phase of the project. However, this section of the SMP will be revised as necessary during the RD/RA process to reflect changes in site conditions, RD/RA activities, and the party(ies) conducting RA. Specifically, it is anticipated that major revisions to the secure waste management procedures will likely be submitted concurrently with the following deliverables specified in the SOW:

- Design Investigation Work Plan (DIWP) (SOW Deliverable #8): The SMP will be updated to reflect the planned design investigation field activities described in the DIWP and its supporting deliverables, in particular the FSP (SOW Deliverable #9). The update will include any applicable revisions to the secure waste management procedures discussed below as they related to design investigation activities.
- Pre-Final (90%) Remedial Design (90% RD) (SOW Deliverable #21): Per SOW Paragraph 3.8(b), the SMP will be updated to reflect the planned RA activities described in the 90% RD and its supporting deliverables, in particular the O&M Plan) (SOW Deliverable #18). The update will include a discussion of secure waste management procedures as they relate to RA activities.
- Draft Final (100%) Remedial Design (100% RD) (SOW Deliverable #22): Per SOW Paragraph 3.9, the 100% RD will include final versions of all RD deliverables, including the SMP. The SMP – including secure waste management procedures – will be updated at this point to reflect any EPA comments on the (90% RD).

Currently, the only significant wastes that might be generated by routine OU-1 inspection and maintenance activities are the vegetation cuttings produced by vegetation removal performed in those areas with NCC. As described in the NCC Inspection and Maintenance Plan originally presented in the NCC Installation Work Plan (EMSI 2017) and reproduced in **Appendix B**, removal of vegetation from the NCC area is performed semi-annually, if deemed necessary during quarterly NCC inspections.

Clippings from any cutting or puling of grass and weeds, as well as any cleared vegetation (including tree trunks up to 12 in. in diameter) will be chipped and the chipped material will be placed in a designated area within OU-1 and covered with an 8-oz. geotextile and 8 in. of rock. Trees too large to chip properly will be cut with a chainsaw and felled on the immediate area of the property. Branches from trees will be removed, chipped, and handled as described above. Trunks will be cut into lengths no longer than 10 feet and will be safely and neatly stacked in a designated tree trunk storage area.

It is anticipated that two types of waste may be generated during the performance of RD activities within OU-1: vegetation cuttings; and investigation-derived waste (IDW) (e.g., drill cuttings). If the RD includes vegetation clearing as a part of its scope, the cuttings from this clearing will be managed in a secure manner, consistent with the methods described above.

If the RD includes activities that generate IDW (e.g., cuttings from rotary auger drilling), they will be managed in a secure manner. Cuttings from rotary auger drilling will be disposed of within the OU-1 area next to the drilling site. The cuttings will be leveled and covered with an 8-oz. geotextile and 8 in. of rock. This is the same method used in past OU-1 characterization activities (e.g., the Revised Work Plan for Additional Characterization of Extent of RIM in Areas 1 and 2, West Lake Landfill Operable Unit-1 [EMSI 2015]).

Depending on the nature and scope of the OU-1 Design Investigation, additional waste management procedures may be necessary during investigation field activities. It is anticipated that any such procedures, if needed, will be further elucidated in the DIWP (SOW Deliverable #8) and will be executed and reported in subsequent RD deliverables.

9.0 REFERENCES

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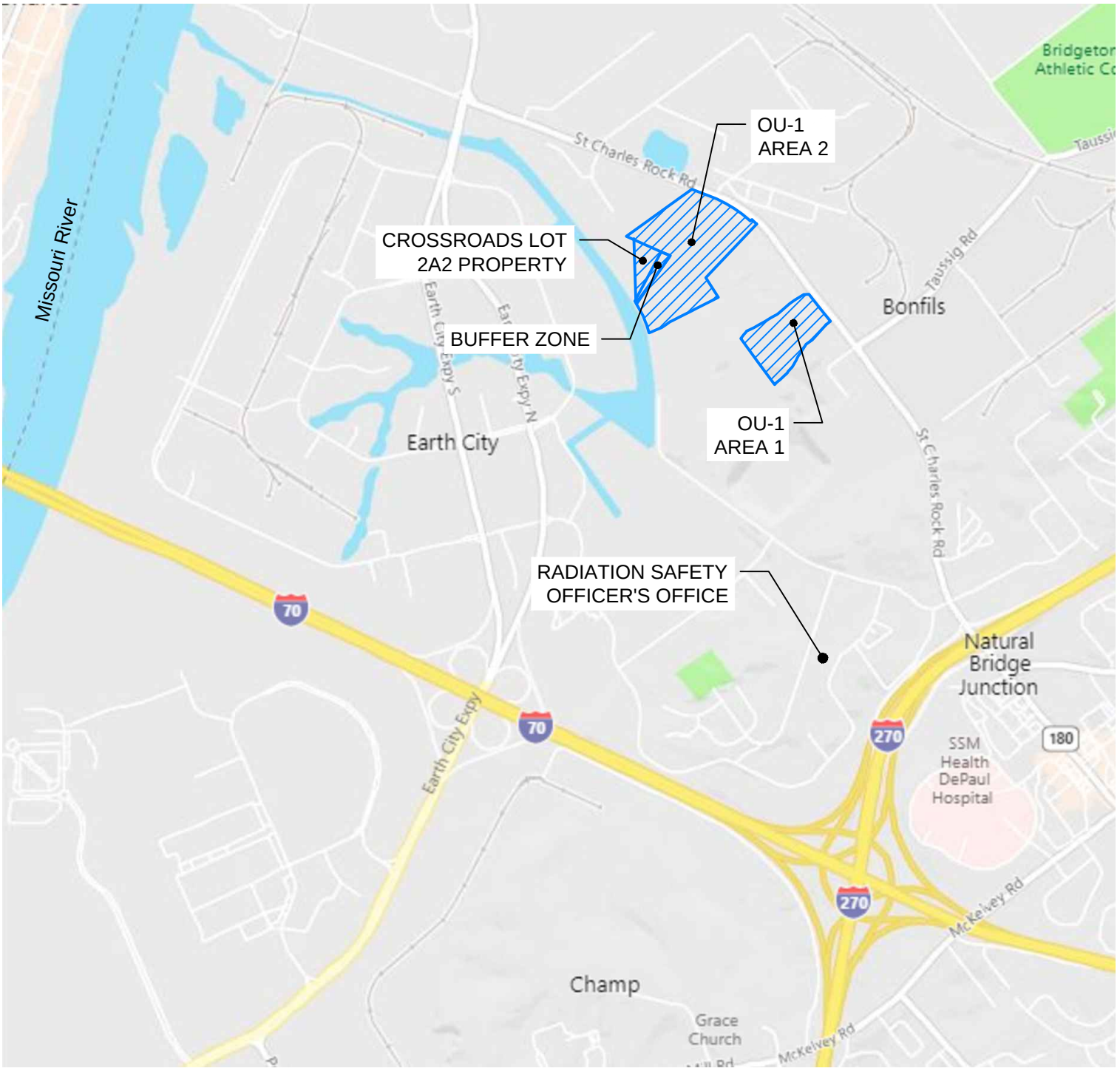
Table

Table 1 - Site Management Roles and Contact Information

SITE MANAGEMENT ROLE	DESIGNATED INDIVIDUAL	AFFILIATION	CONTACT INFORMATION
OU-1 Project Coordinator	Paul Rosasco	Engineering Management Support, Inc.	Cell: 303-808-7227
Site Manager	Daniel Feezor	Feezor Engineering, Inc.	Cell: 217-836-8842
Alternate Site Manager	Bill Abernathy	Feezor Engineering, Inc.	Cell: 314-502-1299
Environmental Monitoring Manager	Jon Wilkinson	Feezor Engineering, Inc.	Cell: 636-578-8635
Radiation Safety Officer	Bill Abernathy	Feezor Engineering, Inc.	Cell: 314-502-1299

Figures



0 2000 4000 Feet

NORTH

NOTE:

1.) BASED ON FIGURES ORIGINALLY PREPARED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC. AND PRESENTED IN THE MARCH 28, 2019 INCIDENT MANAGEMENT PLAN

PREPARED BY

Engineering for a Better World
FEEZOR ENGINEERING, INC.
3377 Hollenberg Dr, Bridgeton, MO 63044, Ph: 217-483-3118
Missouri State Certificate Of Authority #: E-200912211

PROJECT
WEST LAKE LANDFILL
SITE MANAGEMENT PLAN
BRIDGETON, MISSOURI 63044

MAY 2019

DESIGNED BY: IN

APPROVED BY: ---

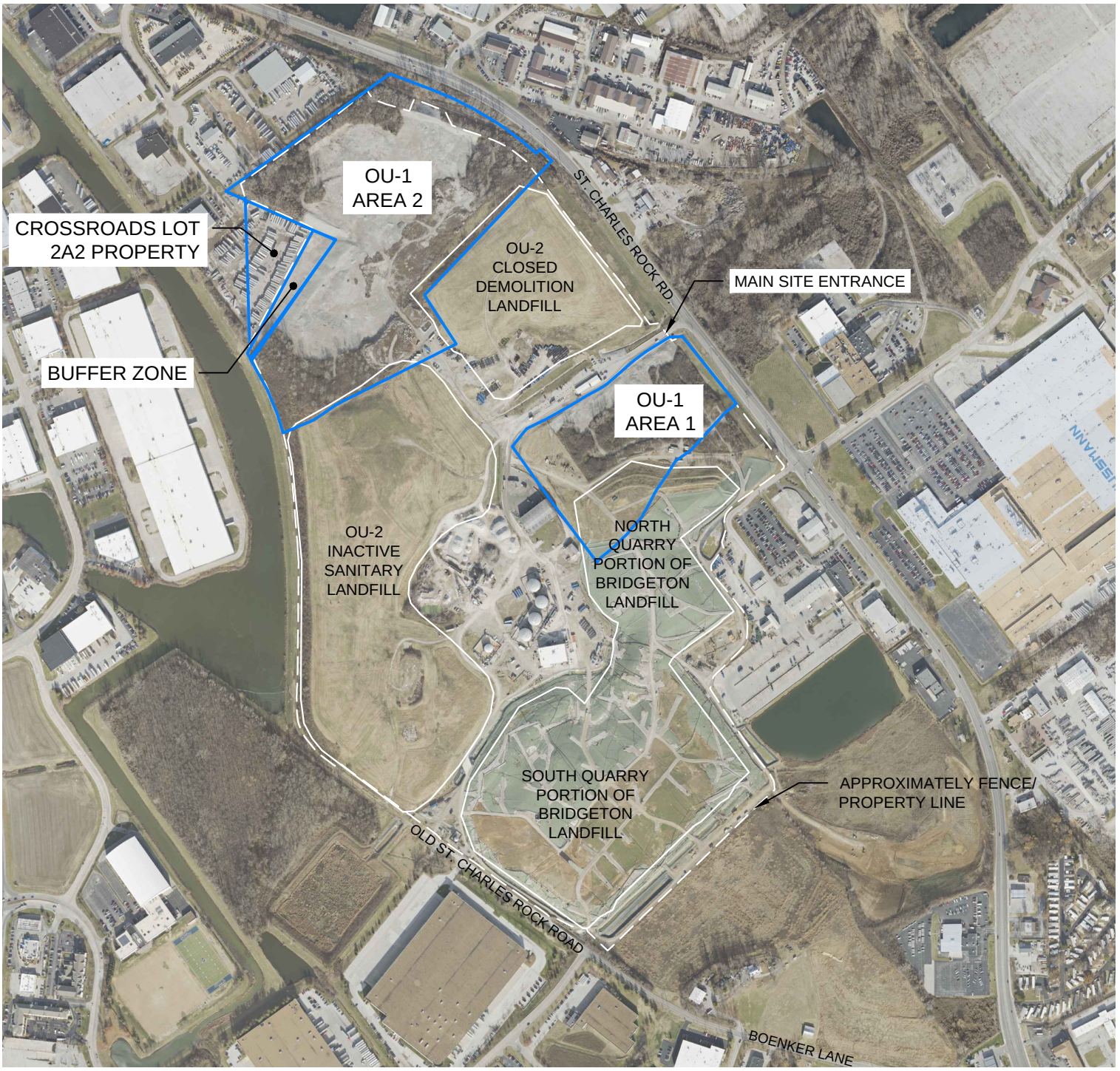
FIGURE 1

DRAWING TITLE

SITE LOCATION

PROJECT NUMBER: BT-191.6

FILE PATH: D:\Dropbox (Feezor Engineering)\Bridgeton\BT-191 (RDWP Design And Management)\BT-191.6 - 02600 - Site Management Plan\figures\BT-191.6-SMP Figures



NOTES:

1.) AERIAL IMAGERY PROVIDED BY COOPER AERIAL SURVEYS, INC. AND IS DATED DECEMBER 12, 2018
2.) BASED ON FIGURES ORIGINALLY PREPARED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC. AND PRESENTED IN THE MARCH 28, 2019 INCIDENT MANAGEMENT PLAN

PREPARED BY

Engineering for a Better World
FEEZOR ENGINEERING, INC.

3377 Hollenberg Dr, Bridgeton, MO 63044, Ph: 217-483-3118
Missouri State Certificate Of Authority #: E-200912211

PROJECT
WEST LAKE LANDFILL
SITE MANAGEMENT PLAN
BRIDGETON, MISSOURI 63044

MAY 2019
DESIGNED BY: IN
APPROVED BY: ---

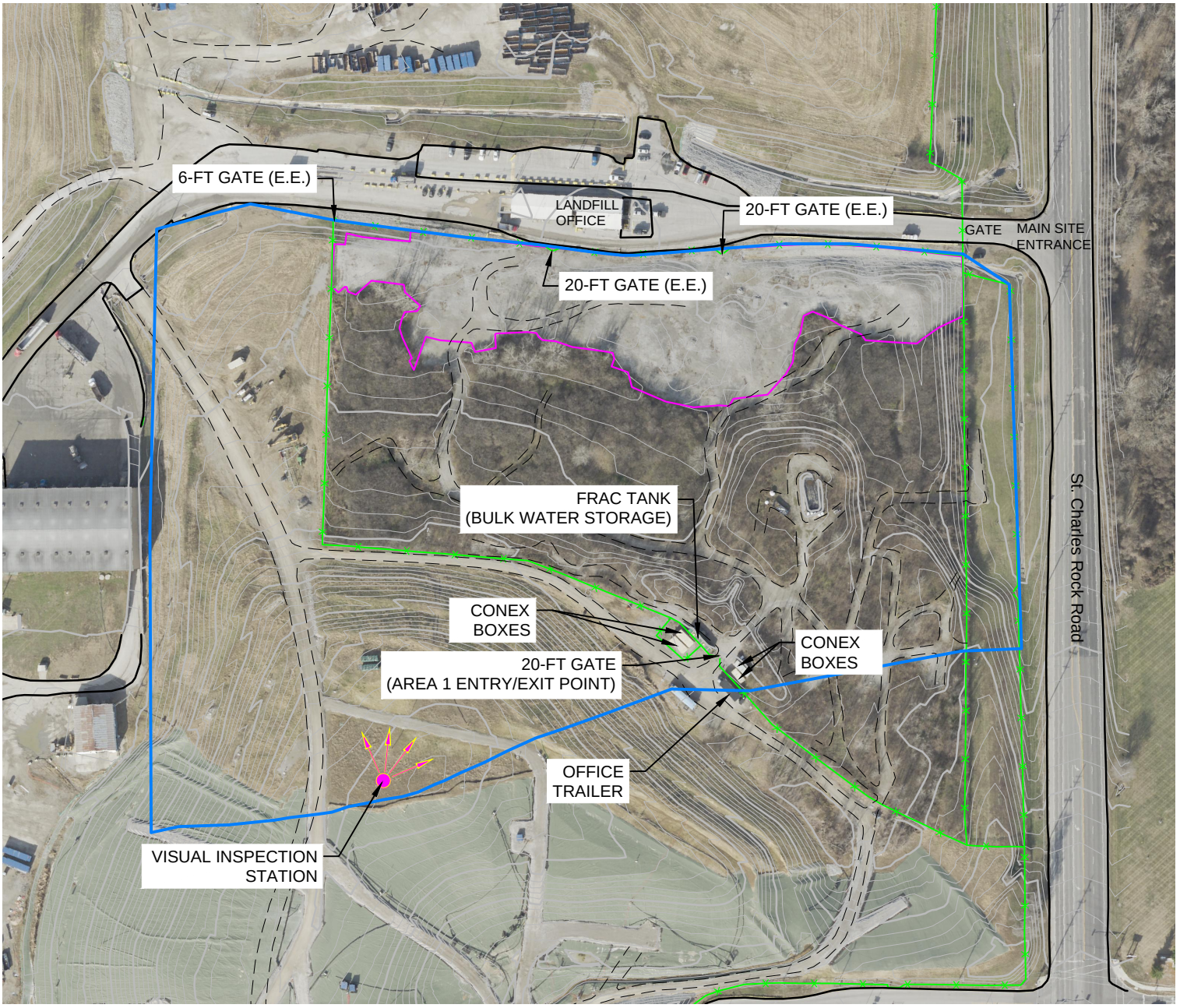
FIGURE 2

DRAWING TITLE

SITE LAYOUT

PROJECT NUMBER: BT-191.6

FILE PATH: D:\Dropbox (Feezor Engineering)\Bridgeton\BT-191 (RDWP Design And Management)\BT-191.6 - 02600 - Site Management Plan\figures\BT-191.6-SMP Figures



LEGEND

- BASE TOPOGRAPHY (2' CONTOUR)
- BASE TOPOGRAPHY (10' CONTOUR)
- LIMIT OF NON-COMBUSTIBLE COVER
- OU-1 AREA 1
- FENCE
- GRAVEL ROAD
- PAVED ROAD

0 150 300 Feet

NORTH

NOTES:

1) AERIAL TOPOGRAPHY AND IMAGERY PROVIDED BY COOPER AERIAL SURVEYS, INC. AND IS DATED DECEMBER 12, 2018
2) E.E. - EMERGENCY EXIT
3) BASED ON FIGURES ORIGINALLY PREPARED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC. AND PRESENTED IN THE MARCH 28, 2019 INCIDENT MANAGEMENT PLAN

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PROJECT
WEST LAKE LANDFILL
SITE MANAGEMENT PLAN
BRIDGETON, MISSOURI 63044

MAY 2019
DESIGNED BY: IN
APPROVED BY: ---

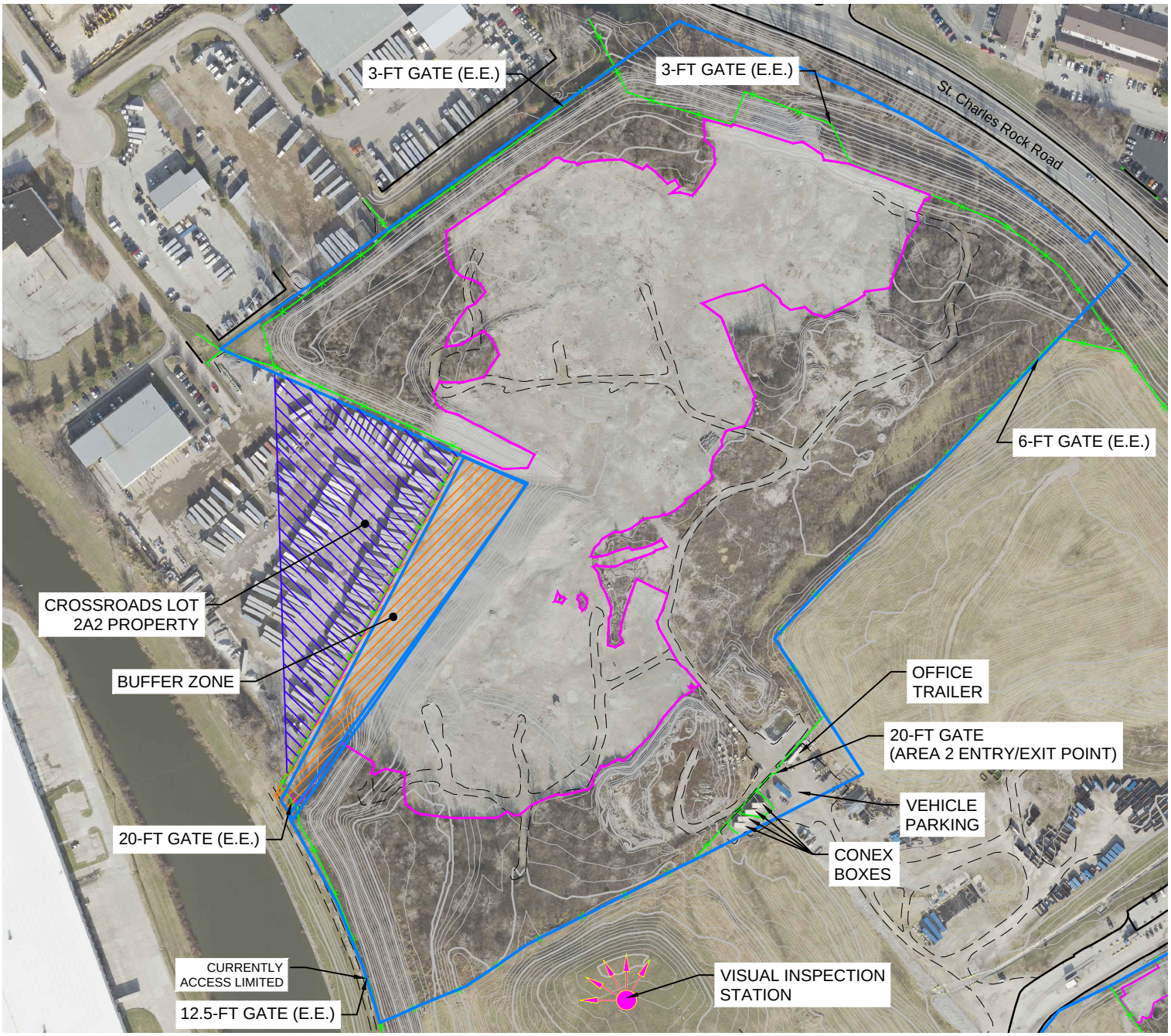
FIGURE 3

DRAWING TITLE

OU-1 AREA 1 FEATURES

PROJECT NUMBER: BT-191.6

FILE PATH: D:\Dropbox (Feezor Engineering)\Bridgeton\BT-191 (RDWP Design And Management)\BT-191.6 - 02600 - Site Management Plan\figures\BT-191.6-SMP Figures



LEGEND

- BASE TOPOGRAPHY (2' CONTOUR)
- BASE TOPOGRAPHY (10' CONTOUR)
- LIMIT OF NON-COMBUSTIBLE COVER
- OU-1 AREA 2
- FENCE
- GRAVEL ROAD
- PAVED ROAD
- BUFFER ZONE
- CROSSROADS LOT 2A2 PROPERTY

0 300 600 Feet

NORTH

NOTES:

1) AERIAL TOPOGRAPHY AND IMAGERY PROVIDED BY COOPER AERIAL SURVEYS, INC. AND IS DATED DECEMBER 12, 2018
2) E.E. - EMERGENCY EXIT
3) BASED ON FIGURES ORIGINALLY PREPARED BY CIVIL & ENVIRONMENTAL CONSULTANTS, INC. AND PRESENTED IN THE MARCH 28, 2019 INCIDENT MANAGEMENT PLAN

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PROJECT
WEST LAKE LANDFILL
SITE MANAGEMENT PLAN
BRIDGETON, MISSOURI 63044

MAY 2019
DESIGNED BY: IN
APPROVED BY: ---

FIGURE 4

DRAWING TITLE

OU-1 AREA 2 FEATURES

PROJECT NUMBER: BT-191.6

FILE PATH: D:\Dropbox (Feezor Engineering)\Bridgeton\BT-191 (RDWP Design And Management)\BT-191.6 - 02600 - Site Management Plan\figures\BT-191.6-SMP Figures

Appendix A - Sample OU-1 Fence Line Signage


CAUTION
CONTROLLED AREA
AUTHORIZED ENTRY
ONLY

Appendix B - NCC Inspection and Maintenance Plan

APPENDIX B

WEST LAKE LANDFILL OPERABLE UNIT 1 REMEDIAL DESIGN SITE MANAGEMENT PLAN NCC INSPECTION AND MAINTENANCE PLAN

This inspection and maintenance plan applies to the non-combustible cover (NCC) constructed over portions of Radiological Areas 1 and 2 at the West Lake Landfill Operable Unit (OU-1) located in Bridgeton, Missouri.

I. GENERAL INFORMATION:

Site Name:	West Lake Landfill – Operable Unit (OU-1)
Site Address:	13570 St. Charles Rock Road

II. LOCATION INFORMATION:

Site maps for Areas 1 and 2 are provided as Figures 3 and 8 in the Site Management Plan (SMP). The figures provide topographic contours and the approximate areas of the cover.

III. NON-COMBUSTIBLE COVER DESCRIPTION:

The anticipated cover design consists of the following:

- Non-woven geotextile (10-oz/sy) placed over the ground surface (after vegetation clearing);
- 8-inch (nominal) thickness of 4" minus rock (pit run/road base material) placed over the geotextile; and
- Upper surface of the rock layer to be graded to provide a relatively smooth surface.

IV. INSPECTION AND MAINTENANCE PLAN

Described in this section are the inspection, maintenance, and repair activities to be performed to maintain the integrity and effectiveness of the constructed cover.

Personnel performing inspection, maintenance and repair activities will follow the same health and safety procedures, work procedures and sampling procedures as used for the installation of the Non-Combustible Cover Project as follows:

- Health and Safety Plan for Non-Combustible Cover Installation at West Lake Landfill, Operable Unit 1, Bridgeton, St. Louis County, Missouri dated February 8, 2016
- Radiation Safety Plan for Installation of Non-Combustible Cap, West Lake Landfill's Operable Unit 1, 13570 St. Charles Rock Road, Bridgeton, Missouri, 63044, dated January 4, 2016
- Quality Management Plan dated December 2015
- Surface RIM Identification Sampling and Analysis Plan (SAP), West Lake Superfund Site Operable Unit 1 dated December 2015

Quarterly inspections will be performed on the constructed cover surface by a designee of the OU-1 Respondents until the final remedy for OU-1 has been implemented. After five (5) years, the quarterly inspections may be reduced if approved by EPA to annual inspections depending on the conditions and

maintenance requirements experienced (i.e., justified with reduced maintenance requirements). The inspections referred to above will also be performed following major precipitation events (with "major precipitation events" defined as greater than 1" of rainfall over a 24-hour period).

Inspection of the cover will be performed to identify areas of erosion, exposed geotextile, depressions, and growth of vegetation (brush, weeds, etc.). Maintenance and repair of the cover will be performed to maintain the thickness of the rock cover material placed on the landfill. The cover will be repaired in areas where rills, gullies, and crevices six (6) inches or deeper have been identified. Areas of cover which are identified as being highly susceptible to erosion will be repaired and/or otherwise protected with erosion control materials. In addition, any holes or depressions which have been created that may lead to surface water ponding will be repaired.

The repair of the cover will include adding rock material as necessary. If the geotextile of the cover is exposed and noted to be deteriorated, it will be replaced.

Removal of excessive amounts of unwanted vegetation (e.g., brush, weeds, trees and other woody growth) on the cover will be performed on a semi-annual basis as identified during the inspections. Removal work will consist of, at a minimum, back-dragging the cover surface. Mowing, clearing, and/or cutting may also be performed as necessary. The surface of the cover is not to be disturbed by any vegetation removal work and precautions are to be taken so that no dust is generated. Handling and management of cleared vegetation is further addressed below.

The surface water control drainage pathways will also be inspected in conjunction with the cover inspections. The frequency of the surface water system inspections may also be reduced if approved by EPA to annual after five (5) years, along with the cover inspections, depending on the conditions and maintenance requirements experienced. Any drainage pathways and/or diversion berms that have become eroded will be regraded, and areas that have developed build-up of sediment will be cleaned, to restore proper functioning.

Any major access roads will also be inspected during the cover inspections. The conditions of the road surface and any settlement will be noted. Repairs will be implemented as necessary.

A designee of the OU-1 Respondents will be responsible for performing site inspections and maintaining corresponding records. Record documentation of inspections will be maintained on-site, or at the Bridgeton Landfill, LLC offices, along with a record of any repair actions taken. The results of the inspections as documented on Tables 1A and 1B will be included in the OU-1 Remedial Design (RD) progress reports described in Paragraph 4.1 of the RD Statement of Work (SOW). A summary of the inspection activities follows:

ITEM	FREQUENCY	INSPECTION DESCRIPTION
Cover	Quarterly and following major precipitation events (i.e., > 1" rainfall over 24-hr period)	Erosion Exposed geotextile Settlement/depressions Vegetative growth
Surface Water Controls	Quarterly and following major precipitation events (i.e., > 1" rainfall over 24-hr period	Erosion of drainage pathways and berms Sediment build-up Blockage and settlement of drainage pathways Adequate surface drainage
Access Roads	Quarterly	Condition of road surface Settlement
Vegetation	Semiannually	Cutting or removal of any vegetation that may sprout in the NCC area

V. MANAGEMENT OF REMOVED VEGETATION

Clippings from any cutting or pulling of grass and weeds, as well as any cleared vegetation (including tree trunks up to 12" in diameter) will be chipped and the chipped material will be placed in a designated area. Trees too large to chip will be cut with a chain saw and felled in the immediate area and on the property. Branches from trees will be removed and chipped. Trunks will be cut into lengths no longer than 10 feet and will be safely and neatly stacked in the designated tree trunk storage area.

TABLE A1
MAINTENANCE PLAN - INSPECTION ACTIVITIES CHECKLIST
WEST LAKE LANDFILL - OPERABLE UNIT (OU-1)
NON-COMBUSTIBLE COVER AREAS

Name of Inspector: _____ Date: _____

Signature: _____ Weather: _____

Company: _____

ITEM	FREQUENCY	INSPECTION DESCRIPTION	STATUS		COMMENTS
			OK	ACTION REQ'D (3)	
Cover	Quarterly and following major precipitation events (1)	Erosion			
		Exposed geotextile			
		Settlement/depressions			
		Vegetative growth			
Surface Water Controls	Quarterly and following major precipitation events (1)	Erosion of drainage pathways and berms			
		Sediment build-up			
		Blockage and settlement of drainage pathways			
		Adequate surface drainage			
Access Roads	Quarterly	Condition of road surface			
		Settlement			
Vegetation Removal	Semi-annually (2)	Vegetation cutting or removal			

NOTES:

(1) Major precipitation events are defined as >1" rainfall over 24-hr period

(2) Removal of vegetation will be performed on a semi-annual basis as identified during the quarterly inspections

(3) If follow-up actions are required, see Table 1B for details

TABLE A2
MAINTENANCE PLAN - REPAIR CHECKLIST AND RECORD
WEST LAKE LANDFILL - OPERABLE UNIT (OU-1)
NON-COMBUSTIBLE COVER AREAS

Name of Inspector: _____ Date: _____

Signature: _____ Weather: _____

Company: _____

ITEM	REPAIR DESCRIPTION	STATUS		DATE REPAIRED	FURTHER DESCRIPTION / COMMENTS
		OK	ACTION REQ'D		
Repairs to Cover	Maintain thickness of cover				
	Repair where rills, gullies, and crevices (≥6") identified				
	Repair areas highly susceptible to erosion				
	Repair holes or depressions				
	Regrade to promote positive drainage				
	Add rock material as necessary				
	Cover exposed geotextile				
	Replace deteriorated geotextile				
	Other				
Repairs to Surface Water Controls	Regrade eroded drainage pathways and berms				
	Clean areas with sediment build-up				
	Remove blockages				
	Repair depressions and settlement				
	Maintain adequate surface drainage				
	Other				
Repairs to Access Roads	Repair as necessary				
	Other				
Removal of Vegetation	Cut or remove any excessive unwanted vegetation that may sprout in the NCC area (on a semi-annual basis)				
	Other				

Appendix C – Daily Visual Inspection Procedures

Bridgeton Landfill Inspection Procedures

Week-Day Quad Checks

1. Attend early AM kickoff meeting to receive assignments, have safety briefing, and discuss known issues and overnight events.

2. Perform quad check using current Forms.

3. All landfill system features must be observed with up-close on-foot inspection.

4. At a minimum, those features provided on the quad check illustrations and noted on Table 1 of the Plan must be observed and assessed at each observation point.

5. Document using the Forms; any minor repairs made during quad checks, any minor repairs to be made later that same day, and any major repairs that require planning.

6. Refer to field book and/or work orders to identify open issues and follow up on repairs.

7. Communicate with adjacent quad checkers to assure that territorial overlap is achieved.

8. If an issue is creating an odor release or environmental release, immediately make appropriate repairs and/or notify Operations Manager or his designee.

9. At conclusion of quad check, provide Operations Manager or his designee with Form and assure that all unresolved issues are noted.

10. Operations Manager or his designee is responsible for consolidating quad-check issues and assuring that repairs are made in accordance with Table 1.

11. File completed Form in Operating Record on site.

Daily/Weekend/Holiday Checks

1. Perform perimeter inspection, completing “Perimeter Inspection Form.”

2. If an issue is creating an odor release or environmental release, immediately make appropriate repairs and/or notify Operations Manager or his designee.

3. File completed Form in Operating Record on site.

Bridgeton Landfill Perimeter Visual Inspection Form

TECHNICIAN: _____

DATE: _____

CHECK POINT	*TIME*	*ODORS?*	*VISUAL INSPECTION*	*POINT "OK"*	*COMMENTS*
SOUTH QUARRY STORM WATER POINTS					
North Ditch					
North Ditch Outfall 1					
East Ditch 1					
East Ditch 2					
East Ditch 2 Pump					
South Ditch					
SW Outfall Gate 1					
SW Outfall Gate 2					
West Ditch 1					
West Ditch 2					
West Ditch 3					
West Ditch 4					
West Ditch 5					
SOUTH QUARRY FACE CHECKS					
North Face					
East Face					
South Face					
West Face1					
West Face 2					
Top Hill					
NORTH QUARRY STORM WATER POINTS					
North East Ditch					
North Ditch					
NORTH QUARRY FACE CHECKS					
North Face					
East Face					
West Face					
SITE SECURITY CHECKS					
GATE 1					
GATE 2					
GATE 3					
GATE 4					
GATE 5					
GATE 6					
GATE 7					
OU-1 CHECKS					
AREA 1					
AREA 2					

COMMENTS: _____

H.3 – West Lake Emergency Response Plan (Current Applicable Version Submitted Under Separate Cover)

Attachment 1 – Coronavirus Disease 2019 (COVID-19)

Attachment to West Lake Health & Safety Plan for:

PARSONS

OWN ZERO

Coronavirus Disease 2019 (COVID-19)

March 26, 2020 – Rev 0

The purpose of this amendment is to address the health and safety risks associated with the COVID-19 (coronavirus). This amendment is intended to provide the Parsons West Lake OU-1 RD team's personnel with guidance to mitigate the risks associated with the coronavirus. The ongoing situation will be continually monitored, and this amendment will be modified as needed to reflect the Federal, State and Local guidelines.

What is Coronavirus disease 2019?

Coronavirus disease 2019 (COVID-19) is a respiratory illness that can spread from person to person. The virus that causes COVID-19 is a novel coronavirus that was first identified during an investigation into an outbreak in Wuhan, China.

Can I get COVID-19?

Yes. COVID-19 is spreading from person to person in many parts of the world. Risk of infection from the virus that causes COVID-19 is higher for people who are close contacts of someone known to have COVID-19, for example healthcare workers, or household members. Other people at higher risk for infection are those who live in or have recently been in an area with ongoing spread of COVID-19.

How does COVID-19 spread?

The virus is thought to spread mainly between people who are in close contact with one another (within about 6 feet) through respiratory droplets produced when an infected person coughs or sneezes. It also may be possible that a person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes, but this is not thought to be the main way the virus spreads.

What are the symptoms of COVID-19?

Patients with COVID-19 have had mild to severe respiratory illness with symptoms of:

- fever
- cough
- other severe complications
- shortness of breath
- pneumonia in both lungs and

People can help protect themselves from respiratory illness with everyday preventive actions.

1. Frequently wash your hands with soap and water for at least 20 seconds and always before/after eating and arriving/departing the site.
2. If soap and running water are not available, use an alcohol-based hand rub that contains at least 60% alcohol. Have hand sanitizer available at common areas for employee use.
3. Report any unsanitary port o johns to your supervisor.
4. Avoid touching your eyes, nose, or mouth with unwashed hand.
5. Use respiratory etiquette, including covering coughs and sneezes. Wash hands or use hand sanitizer after each time you cough or sneeze.
6. Practice social distancing –stay 6' away from other people. Avoid handshakes.
7. Minimize contact with others by replacing face-to-face meetings with phone calls (DTSC PPU should be the primary point of contact with property owners and residents). Please contact your supervisor for additional information). Field staff should direct property owner or residents to DTSC.
8. Utilize disinfectants from the EPA list (https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2) by wiping down surfaces you touch prior to starting work and routinely throughout the day, including shared vehicles as appropriate.
9. Clean and disinfect all supplies (pens, clipboards, etc.), tablets, cellphones, reusable equipment (meters, pumps, etc.), and non-disposable PPE (hardhats, safety glasses, earmuffs) at the end of each day. Avoid using other employee's phones and personal work items, when possible.
10. Designate a responsible person(s) for cleaning all common areas within an office and equipment trailer. This includes tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, sinks, equipment, tools, etc.
11. Provide disposable disinfecting wipes for staff to use on commonly used surfaces (for example, keyboards, desks, equipment, work trailers, etc.), which can be wiped down by staff at their own workstations. Throw disinfecting wipes away after one use.
12. Increased use of disposable nitrile gloves.
13. Discourage workers from using other workers phones and personal work tools, when possible.
14. Post handwashing signs next to sink, when possible.

If you are sick, to keep from spreading respiratory illness to others, you should

- Stay home when you are sick.
- Cover your cough or sneeze with a tissue, then throw the tissue in the trash.
- Clean and disinfect frequently touched objects and surfaces.

Symptoms and other practices

In addition, the following table presents the symptoms of coronavirus and other practices to avoid contracting it.

When/If	Employee Action	Report to Manager?	Return to Work
You become symptomatic. *Symptoms can include fever, cough, or shortness of breath.*	Stay home	Yes	You may return to work when you are free of fever (100.4° F [37.8° C] or greater using an oral thermometer), signs of a fever, and any other symptoms for at least 24 hours, without the use of fever-reducing or other symptom-altering medicines (e.g. cough suppressants).
You have been in close proximity to someone who has contracted the virus.	Stay home	Yes	You may return to work after 14 days at home (quarantine), provided you are free of fever (100.4° F [37.8° C] or greater using an oral thermometer), signs of a fever, and any other symptoms related to the virus.
You have recently traveled, for any reason, to a Level 3 country(ies)* or via cruise ship.	Stay Home	Yes	You may return to work after 14 days at home (quarantine), provided you are free of fever (100.4° F [37.8° C] or greater using an oral thermometer), signs of a fever, and any other symptoms related to the virus.
You are in regular proximity to persons who have recently traveled to Level 3 country(ies)* or on cruise ships.	Use discretion and caution	No	Provided you are not symptomatic and the persons you are in proximity to have not contracted the virus, no restrictions at this time
You have traveled, for any reason, to a Level 1 or 2 country(ies)*.	Use discretion and caution	No	Provided you are not symptomatic, no restrictions at this time.

TAKE NOTE:

- Employees should consider contacting their doctor for advice if they exhibit some but not all COVID-19 symptoms and are concerned.
- When in doubt, please contact your immediate supervisor.
- Based on OSHA 2020Guidance on Preparing Workplaces for COVID-19 (https://www.osha.gov/Publications/OSHA3990.pdf), work under this scope of work is consider to be classified as lower exposure risk work.

Are there additional resources to learn more about COVID-19?

- Centers for Disease Control - Interim Guidance for Businesses and Employers (https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-business-response.html).
- For hygiene and hand washing best practices, Centers for Disease Control COVID—19 How to Protect Yourself. (https://www.cdc.gov/coronavirus/2019-ncov/prepare/prevention.html).

- World Health Organization Hand Rubbing poster (https://www.who.int/gpsc/5may/How_To_HandRub_Poster.pdf)
- EPA disinfectants (https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2)

Attachment 2 - Worker's Compensation Information

PARSONS

_____ _____ of Parsons
(Employee Name) (Occupation)

is authorized to go to _____ for the following service(s):
(Name of Medical Provider)

Treatment for a Work-Related Injury/Illness for Date of Injury: _____.

In the event the above medical provider determines this injury or condition NOT TO BE WORK RELATED, the employee and Parsons understand that this employee may then be referred by the above medical provider to his/her personal medical doctor.

Employer Information:	Parsons 100 West Walnut Street Pasadena, CA 91124
Workers' compensation carrier:	Insurance Information: WC Carrier: AIG (Except for the monopolistic states), underwritten by: for All other states/CA/MA/WI: New Hampshire Insurance Co.; For Florida – Illinois National Insurance Co. WC policies, effective 1/1/20 -1/1/21 All other states: WC012326658 California: WC012326657; Florida: WC012326659; MA/WI: WC 012326660
Adjusting Office and Telephone No.:	Call AIG for address as varies by state
	(877) 802-5246

Comments to Provider: Parsons attempts to provide any modified, alternate, light duty recommended.

_____

_____

_____ _____ _____
Authorized Employer Signature Print Name Date

661-904-0978 866-293-0114
Phone Number Fax Number

Disability slips and return-to-work notifications: Where jurisdictionally permitted, Immediately fax to Parsons *and* provide copy to employee at conclusion of every evaluation/treatment.

Attention Emergency Department: After acute care, please refer patient back to a _____ for follow-up treatment.
(Medical provider—to be completed by Parsons—where permitted by law.)

- Parsons uses WorkCare as our Corporate Medical Director and Occupational Health Consultant. Parsons is committed to the health and well-being of its employees. Work Care's role is to ensure that Parsons employees receive timely, appropriate, high-quality medical care and that necessary work restrictions are accommodated.
- WorkCare must be contacted when a Parsons employee comes to the clinic, prior to treatment in all non-emergency cases. WorkCare will make every effort to also call the clinic prior to the employee's arrival. If you have not been contacted by WorkCare, please call 1-888-449-7787 and identify what clinic you are from, the nature of your concern, and ask to speak to a WorkCare clinician.
- Please note that Parsons expects WorkCare to assist in the process of developing a course of treatment.
- Please also note that you may receive calls from both Parsons and WorkCare.
- A "Work Status Report" form is attached so that you can make recommendations regarding the injured employee's work capacity. The medical provider's role is to identify any activity restrictions that will allow the injured body part to heal. These activity restrictions should be adhered to 24/7. Parsons responsibility is to determine what work can be done safely with these activity restrictions. Parsons is committed to providing temporary modified duty (transitional work) for those employees who are unable to return to work on full duty. **WorkCare requests that Parsons employees return-to-work unless their injury is so severe that they are confined to bed rest with no activity permitted.**
- Parsons is also committed to reducing OSHA recordable injuries. We request that you keep these OSHA recordability guidelines in mind when treating Parsons employees. We are not in any way encouraging under treatment of employees but at the same time, over treatment should be avoided. For example, use of steri-strips instead of sutures is preferred if such treatment is proper for a given laceration. Use of over-the-counter (OTC) medications at OTC dosages is also preferred if deemed adequate for treatment. Provide prescription level medication to employees if it is required for proper medical treatment
- IMMEDIATELY upon conclusion of EVERY medical evaluation (initial and all follow-up evaluations), place phone call and/or email and/or fax to Donna Miller to provide diagnosis and return-to-work restrictions, as long as jurisdiction requirements permit such. Also, provide copy to injured worker.
- WorkCare is available 24/7, 365 days a year at: 1-888-449-7787
- Parsons Workers' Compensation Claims Manager
  Donna P. Miller
  Office Telephone No. and Cell No.: (661) 904-0978
  Fax No.: (866) 293-0114
  100 West Walnut Street
  Pasadena, CA 91124
  Email: donna.miller@parsons.com

PARSONS

Work Status Report Please Fax to Donna Miller (866) 293-0114 and Provide Copy to Employee

Employee Name:	Claim Number:
Diagnosis:	Date of Injury: _____/_____/_____ (mm / dd /yyyy)

RETURN TO WORK STATUS

- ☐ May return to regular work (Date): / /
- ☐ Released to full duty with intention given not to aggravate injury (Date): / /
- ☐ May return to modified work (Date): / /
- ☐ May not return to work until (Estimated Date): / /

Estimated Duration of Modified Work:

PHYSICAL LIMITATIONS: I certify the employee can perform duties within the capabilities defined as follows:

☐ **Without any restrictions.**

OTE: In terms of an 8-hour workday, Occas. (Occasionally) equals 1–33%; Freq. (Frequently) equals 34–66%; Contin. (Continuously) equals 67–100%

Capabilities	Never	Occas.	Freq.	Contin.	Lifting\Carrying	Never	Occas.	Freq.	Contin.
Bend	☐	☐	☐	☐	0–5 lbs.	☐	☐	☐	☐
Squat	☐	☐	☐	☐	6–10 lbs.	☐	☐	☐	☐
Crawl	☐	☐	☐	☐	11–20 lbs.	☐	☐	☐	☐
Reach above shoulders	☐	☐	☐	☐	21–25 lbs.	☐	☐	☐	☐
Kneel	☐	☐	☐	☐	26–50 lbs.	☐	☐	☐	☐
Stoop	☐	☐	☐	☐	51–100 lbs.	☐	☐	☐	☐
Climb stairs, steps and step stools	☐	☐	☐	☐	Repeated push/pull	☐	☐	☐	☐
Climb ladders	☐	☐	☐	☐	Repeated simple grasp	☐	☐	☐	☐
Walk on uneven ground	☐	☐	☐	☐	Repeated fine manipulation	☐	☐	☐	☐
Other (Specify): ☐		☐	☐	☐	Other (Specify):	☐	☐	☐	☐

Restrictions of Activities	None	Mild	Moderate	Total	Comments
Unprotected heights	☐	☐	☐	☐	
Be around moving machinery	☐	☐	☐	☐	
Exposure to changes in temperature and humidity	☐	☐	☐	☐	
Driving automotive equipment	☐	☐	☐	☐	
Exposure to dust, fumes, and gases	☐	☐	☐	☐	

In an 8-hour workday, Worker can: (CHECK full capacity for each activity)

Total at One Time (Hours)

Hours	0	1/2	1	2	3	4	5	6	7	8
Sit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Stand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Walk	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Total During Entire 8-Hour Day (Hours)

Hours	0	1/2	1	2	3	4	5	6	7	8
Sit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Stand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Walk	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

☐ Job duties were explained to me by (Name/Title): On (Date): / /

☐ I have received a written list of job tasks.

☐ I have **NOT** received a written list of job tasks, **BUT I AGREE THAT DUTIES MAY BE ASSIGNED AND/OR CHANGED, SO LONG AS THEY MATCH THE LIMITS DEFINED BY ME ABOVE.** ☐ No ☐ Yes

PROGNOSIS

Permanent Restrictions Likely? ☐ No ☐ Yes ☐ Unknown at this time

Medically Stationary? ☐ No ☐ Yes Date: / /

Physician Name (PRINT):	Telephone No.:
Signature:	Date: / /

The employee's Manager must complete an IndustrySafe incident report within (4) hours of his or her knowledge of the incident.

Promptly, i.e. the same day, notify your SH&E Director and Parsons' Workers' Compensation Claims Manager Donna Miller (donna.miller@parsons.com or 661 904 0978).

If the work-related incident is serious/life threatening or requires emergency response, first call 911 or local emergency medical services before contacting your SH&E Director, filing the IndustrySafe online incident report, or involving WorkCare.

For all other work-related injury(s) or illness(s), Parsons' employees shall promptly contact WorkCare, before seeking medical care, as this will provide the greatest opportunity for appropriate intervention.

*After consulting with WorkCare, if medical care is indicated or requested, Manager (preferred) or designated alternate shall accompany injured worker to the office/project's designated occupational medical clinic.

Workcare's Incident Intervention is available for all Parsons employees and agency employees - 24 hours per day, 7 days a week, and 365 days a year (24/7/365).

WorkCare: when dialing from North America: 888-449-7787

When dialing from outside of North America: 714.456.2104

Unless the injury or illness is life threatening, a medical emergency or after-hours at the occupational medical clinic, efforts should be made for the injured employee to be seen at the Occupational Medical Clinic listed above, and not at a hospital emergency room.

The procedures above are intended to enhance our incident reporting and investigation processes, assure quality care for injured employees, and ensure hazards are resolved to prevent recurrence.

*There may be an option for telemedicine virtual visit for some U.S. locations.
Refer to: Option of Telemedicine for Initial New Work-Related Matters U.S. only

The Process:

1. Employee is injured at work and reports injury to manager
2. Manager and employee call WorkCare, if manager and employee are unable to complete call to WorkCare together, manager directs the employee to call WorkCare – available 24/7 1.888.449.7787
3. Manager completes Industrysafe report
4. If WorkCare determines a clinic visit is appropriate and/or if employee requests a clinic visit, if employee does not wish to go to physical clinic location, telemedicine virtual clinic visit with Concentra is option in those states/jurisdictions that permit such*
5. WorkCare notifies Donna Miller/Candice Violante of request for telemedicine visit via WorkCare Incident Intervention email
6. Donna Miller/Candice Violante provides authorization to Concentra for Telemedicine visit (via Concentra portal)
7. For Telemedicine, employee must have:
    - Access to a quiet, private location. The employee will need this for privacy
    - A computer, smartphone, or mobile device with a with a webcam and microphone
        - Concentra Telemed requires video to work
    - An internet connection and active email address. If a Parsons email address is not available, then a personal email address may be used
        - They will need this to connect to their telemedicine visit
8. Employee registers for Concentra:
    - Connect to Concentra via Desktop/laptop
        - www.concentratelemed.com
    - Connect to Concentra via Tablet/smartphone
        - Go to Apple app store or Google Play app
        - Search for the Concentra Telemed app (free) and download the app
        - Open the app
        - Sign up or log in. You'll need to use your email address.

The Visit:

After the injured worker has signed into the system:

1. Select the option to start a visit with an available care coordinator. Depending on the availability, you may be added to a virtual "waiting room" while you wait for them to connect
2. The care coordinator will ask you some questions about your medical history and why you're visiting.
3. You'll be queued in a virtual waiting room to see a doctor. If you need to step away, remember to click the box that says TEXT ME so that you'll be reminded when the clinician is ready.
4. Time for your appointment! Talk to the clinician as much as you need.
5. When you're done, you'll check out with your care coordinator. They'll help you get scheduled for another visit if you need it.

Concentra Telemed uses advanced security software to protect your information and ensure your privacy, and your visit is not recorded.

Need help? Having technical issues? Call Concentra at 1.855.835.6337

*Serious injuries or injuries that need hands-on care, like stitches, will still need to be seen in-person by a clinician. Depending on the severity of an injury, the clinician may refer the employee for in-person medical care.

Concentra Telemedicine is available in: AK, AZ, CA, CO, CT, DE, FL, GA, HI, IL, IA, IN, KS, KY, LA, MA, ME, MD, MI, MN, MO, NE, NH, NJ, NM, NC, OH, OK, OR, PA, RI, SC, TN, TX, UT, VT, VA, WI