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COASTAL-ENVIROWORKS JOINT VENTURE

QUALITY ASSURANCE PROJECT PLAN (QAPP)

(REVISION 1)

Washington County Lead District - Potosi, Old Mines and Richwood Sites

April 20, 2016

US EPA, Region VII

COASTAL-ENVIROWORKS JOINT VENTURE

HUB ZONE JV

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6.0 DIESEL CHEMICAL PARTICULATE EMISSIONS
[redacted]

C-E JV STANDARD OPERATING PROCEDURES
SOP- FSP001 Dust Control and Air Sampling
SOP- FSP003 Utilization of an XRF for Field Screening of Heavy Metals
SOP- FSP006 Identification, Documentation, and Tracking Of Samples
SOP- FSP007 Analytical Data Submission Packages
SOP- FSP008 Sample Container Selection, Preservation and Holding Times
SOP- FSP009 Chain Of Custody

Enclosure A
Remedial Action Plan (RAP)

Enclosure B
Project Forms:

- Property Pre-excavation Inspection Checklist
- Pre-excavation Agreement Form
- Property Owner Issues Form
- Post Excavation Settlement Agreement Form
- Property Owner Satisfaction Survey Form
- Final Property Closeout Form

Enclosure C
Project Reports:

- Daily Report
- Bi-Monthly Report

1.0 PROJECT MANAGEMENT

1.1 DISTRIBUTION LIST

Coastal-Enviroworks Joint Venture (C-E JV) has prepared this Quality Assurance Project Plan (QAPP) to specifically address sampling in support of remediation of lead impacted soil sites of the Washington County Lead Site.

This QAPP has been distributed to the following:

Individual	Agency	Title
		COR, ACOR
		Remedial Project Manager
		Alternate COR
Rick Silva		Coastal-Enviroworks Corporate Quality Assurance
[redacted]		Project Manager
[redacted]		Project Superintendent
[redacted]		QA Manager
[redacted]		Lead Site Coordinator

1.2 PROJECT / TASK ORGANIZATION

[redacted], will serve as the Project Manager (PM) for the activities described in the Project Management Plan (PMP) and the Quality Assurance Project Plan QAPP. He will be responsible for overall coordination of site activities, ensuring implementation of the PMP, QAPP, and providing updates to the USEPA concerning status of the project.

[redacted], will serve as the Quality Assurance Manager (QAM) who is responsible for managing and accomplishing the overall assurance and quality control for this project; which include: a) All Sampling Activities, b) Problem Resolution, c) Quality Control on all Site Coordination Activities, d) Quality Control on all Field Activities, and e) Quality Control on all Procurement activities.

[redacted], will serve as the Site Superintendent (SS) who is the on-site point person overseeing all project work and is required to be on-site throughout the project while work is occurring. The SS will schedule and execute all phases of the field activities for this project which include: a) Remedial Activities, b) Backfill Activities, c) Restoration Activities, and d) Warranty Activities.

[redacted], will serve as a the Lead Site Coordinator (LSC) and Foreman who is the on-site employee responsible for managing and directing work crews and is required to be on-site throughout the project while work is occurring; in addition, he will be responsible for the

coordination between the Property Owners (PO) and the field activities, which will include: a) Property Pre-excavation Inspections, b) Property Post-Excavation Inspections, c) Property File Folder Generation and Submission, d) Final Closeout Inspections, and e) Final As-built Generation and Submission.

[redacted], will serve as a Foreman who is the on-site employee responsible for managing and directing work crews and is required to be on-site throughout the project while work is occurring

This QAPP will serve as a guide for the sampling activities at the numerous properties in the Washington County Lead Sites located in Potosi, Old Mines and the Richwood Sites. These sites have been identified by the U.S. EPA as having lead impacted soils. C-E JV associates will perform the sampling activities and prepare the reports outlining the results of the confirmatory samples.

The following C-E JV and USEPA personnel are assigned the project functions and responsibilities outlined below:

The C-E JV team will be responsible for calibration of sampling equipment, sample collection, field documentation, and submittals of samples to an approved [redacted], and preparation of summary reports.

1.3 DELIVERABLES

This project has a number of schedules that have been identified by the EPA and must be adhered to. To facilitate a quick reference point, we have created a chart known as "Significant Project Schedules". This chart also contains the project deliverables that must be submitted to the EPA for review and approval. This deliverables schedule chart is in compliance with the Performance Work Statement provided by the EPA. The deliverables schedule and significant project schedules are as follows:

Significant Project Schedules		
Schedules	**Start**	**End**
Fieldwork Time	07:00 AM	06:00 PM
Fieldwork Days	Monday	Saturday
Excavation Season	March 1st	December 15th
Backfill Deadline	Start of Excavation	21 days after excavation starts
Lawn Inspection	End of Seeding	30 Days after seeding

Position	Employees	Duties
Project Manager (PM)	[redacted]	Responsible for overall coordination of fieldwork, implementation of the Quality Assurance Project Plan (QAPP), Field Sampling Plan (FSP), Project Management Plan (PMP), Storm Water Pollution Prevention Plan (SWPPP), and coordination with the USEPA.
Quality Assurance Manager (QAM)	[redacted]	Implements sampling and QC operations according to the FSP & QAPP, reviews sampling and QC data, and final reports.
Site Superintendent (SS)	[redacted]	Responsible for the scheduling and execution of the day to day site activities.
Lead Site Coordinator & Foreman	[redacted]	Responsible for coordination between the Property Owner and field activities. Responsible for all property data and Property File generation and completion. Responsible for managing and directing work crews and is required to be on-site throughout the project while work is occurring.
Foreman	[redacted]	Responsible for managing and directing work crews and is required to be on-site throughout the project while work is occurring.
Contracting Officer -- USEPA		USEPA's contracting officer for this contract. Provides contractual direction to the project.
Remedial Project Manager -- USEPA		USEPA's remedial project manager providing day-to-day oversight of the field work.

Significant Project Schedules		
Schedules	**Start**	**End**
Lawn Maintenance Period	End of Seeding	120 Days after seeding
Deliverables Schedule		
Plan	Submittal Date	
Project Management Plan (PMP)	15 Days after receipt of EPA comments on draft	
PMP Updates	10 Days after date of change	
Health & Safety Plan (HASP)	15 Days after receipt of EPA comments on draft	
Quality Management Plan (QMP)	15 Days after receipt of EPA comments on draft	
Quality Assurance Project Plan (QAPP)	15 Days after receipt of EPA comments on draft	
Storm Water Pollution Plan (SWPP)	15 Days after receipt of EPA comments on draft	
SWPP Updates	10 Days after EPA notification of needed update	
Daily Reports	Due at the start of each workday	
Bi-Monthly Report	Submitted electronically to all CORs on the 1st and 3rd Monday of every month, with hard copies to the EPA at the Bi-monthly Project Meetings	
Bi-Monthly Meetings	1st and 3rd Tuesday morning of every month	
Bi-Monthly Property Folders	Bi-Monthly meetings, after Final Property Close-out	
Draft Final Report	30 Days after completion of fieldwork	
Final Report	20 Days after receipt of EPA comments on draft	
Incentive Justification	45 Days after completion of fieldwork	

1.4 PROBLEM DEFINITION / BACKGROUND

The selected remedy consists of excavation and relocation of lead-contaminated materials (mine waste, soil, gravel, crushed rock, vegetation, root balls, deteriorated landscaping, etc.) from properties within the site and restoration of said properties. All actions shall be conducted consistent with the Environmental Protection Agency Region 7 Record of Decision (ROD) issued on September 29, 2011 (EPA, 2011), relevant EPA policies (including, but not limited to, the EPA Office of Solid Waste and Emergency Response (OSWER] 9285.7-50, Superfund Lead-Contaminated Residential Sites Handbook, August 2003 [Handbook]), and this PWS. Definitions of key terms used in the PWS are included in Enclosure B.

The Remedial Action is being conducted pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and National Contingency Plan (NCP) requirements. C-E JV shall furnish all necessary services in order to meet the performance standards and successfully accomplish the requirements of this PWS, including labor, materials, equipment, site management, office support, and incidental items.

When conducting the work defined by this PWS, C-E JV shall communicate to the property owner if necessary, the following general principles:

1. The goal of the remedial action is to remove lead-contaminated material that poses a risk to human health, not to enhance or improve property;

2. Decisions made on property-specific items (e.g., tree/stump removal or dig around it, etc.) are based on the best interest of the EPA and the health of the community.

The EPA signed a ROD on September 29, 2011, selecting a response action at the Site to address human health risks by the remediation of lead-contaminated residential property soil. Tasks described in this PWS are consistent with the ROD and consistent with the National Contingency Plan (NCP).

The properties listed in Enclosure A are properties known to require remediation. Note that the EPA reserves the right to add properties, to remove properties from, and/or re-prioritize the property list for any reason. Additionally, access has not been obtained for all the properties listed, and the properties will generally be assigned to C-E JV in batches of 50 starting with the Richwoods Site and followed by properties in Old Mines and Potosi. There are additional properties not listed that have not been sampled and are anticipated to be eligible for remediation upon future sampling. These additional properties may be assigned to C-E JV at a future date. Areas to be remediated will generally be less than one acre per property as described in the Handbook. The maximum depth of excavation is 12 inches, except in gardens where excavation will continue in intervals until soils are less than the remedial action objective of 400 parts per million (ppm) or less or until a maximum depth of 24 inches is reached. Note that all properties vary in size, shape, obstacles present and volume of contaminated material to be removed and the EPA places no guarantee on these variables.

1.5 PERFORMANCE OBJECTIVE STATEMENT

There are multiple objectives of the activities outlined in Performance Work Statement supplied by the EPA; more specifically, these objectives are as follows:

(1) The main objective of this contract is to reduce the human health risk of exposure to lead by removing lead- contaminated material from properties provided by the EPA. This includes excavating lead-contaminated soil, gravel, etc., to a depth up to 12 inches below ground surface (bgs) and up to 24 inches in garden areas in 12- inch increments.
(2) If the residual concentration of lead is above 1,200 mg/kg at 12 inches bgs or 24 inches in gardens, an approved warning barrier will be placed in the excavation prior to backfilling. (The EPA or ETS shall perform sampling and analytical procedures to make these excavation decisions following the EPA and Site QAPP, related guidance, and relevant SOPs.). The main contaminant of concern (COC) is total lead.
(3) The property will then be restored with clean fill to pre-excavation conditions. Satisfactory completion of these tasks will result in achieving individual property closeouts with the landowners and the EPA.
(4) Determine backfill materials brought in from borough sources meet EPA specifications. Specifically soils must;
    a. Contain < 150 ppm lead

b. Contain < 22 ppm arsenic
c. Contain < 25 cadmium
d. Contain no contaminants that pose risk to human health the environment
e. Sufficient quality to grow grass and sustain vegetable gardens
f. Contain insignificant amounts of debris

1.6 PERFORMANCE STANDARDS

The performance standards for this project have been identified in three distinct phases:
(1) Pre- Excavation Activities;
(2) Excavation Activities; and
(3) Post-Excavation Activities.

Each of these phases has distinct requirements that are described in the following subsections.

1.6.1 Quality Assurance Surveillance

In order to make this Quality Assurance Project Plan effective, Quality Assurance Surveillance for the following tasks have been incorporated and are as follows:

1.6.1.1 Pre Excavation Activities

Prior to beginning any excavation, C-E JV shall perform the following pre-excavation activities.

Task 1 - Plans
Prior to beginning Site work, C-E JV shall complete and obtain EPA approval of the following plans:

a) Project Management Plan (PMP), within 15 days after receipt of EPA comments on Draft,
b) Quality Management Plan (QMP), within 15 days after receipt of EPA comments on Draft,
c) Quality Assurance Project Plan (QAPP), within 15 days after receipt of EPA comments on Draft,
d) Health and Safety Plan (HASP) and, within 15 days after receipt of EPA comments on Draft,
e) Storm Water Pollution Prevention Plan (SWPPP), within 15 days after receipt of EPA comments on Draft.

Task 2 – Local Office
C-E JV shall maintain a work space (local office) on or near the Site (within Washington County and within 5 miles of Potosi, Missouri) for the duration of the contract, beginning at the onset of pre-excavation activities.

The work space shall include a reception area, high-speed internet access, have sufficient parking, be publicly accessible, have space for planning and meeting with local citizens and EPA personnel separate from the work area, shall have bathroom facilities that are in compliance with local and state regulations, and an environmentally controlled area to enable sample preparation and analysis.

Task 3 – Properties, Site Sketches, and Access Agreements

The EPA will provide CDs including site sketches which provide graphical depiction of the residential properties, analytical data, a footprint of permanent structures, and the remedial area. These residential properties are subject to remediation activities depicted in The PWS of this project.

Not all sketches are available at this time and not all sketches are drawn to scale. As a result, some sketches may require updating if the pre-excavation site walk reveals changes to the property. If a site sketch does not accurately identify the property or the contaminated portions, C-E JV shall immediately notify the COR to have the sketch corrected.

Prior to beginning excavations at each property, the EPA may have obtained a signed access agreement for the property. In the event that an access agreement has not been signed, it is C-E JV responsibility to attempt to acquire a signed access agreement.

If C-E JV is unsuccessful in obtaining a signed access agreement, the EPA will provide another property as a replacement. C-E JV must document all attempts such as: mailing, calling, and an in-person visits. In cases where a legal property purchase contract is in place, C-E JV shall notify the EPA, and the EPA will obtain access from both the current owner and the prospective buyer.

C-E JV shall document in writing any/all agreements made with property owners. The agreements shall be included in the property file folder and described in the Bi-monthly Reports. The agreement must be signed by both the property owner and a C-E JV representative and clearly state all agreements reached. C-E JV shall fulfill these agreements.

If a property owner insists that areas possessing contamination not be remediated (e.g., flower beds, landscaping, etc.) C-E JV shall:

(1) Notify the COR, unless present, of the proposed change;
(2) Illustrate such areas on a second site sketch;
(3) Include the signed agreement form with an explanation why such area was not remediated, and
(4) Place the documentation in the corresponding property file folder.

C-E JV shall provide the EPA a copy of all site sketches in the property file folder; occasionally, the EPA may enter into agreements with property owners regarding the property

remediation. If such a written agreement exists, it will be provided to C-E JV prior to beginning the excavation at the relevant property.

Task 4 – Drip Zone Sample Collection

Once access is obtained but prior to the pre-excavation site walk, the EPA shall collect a drip zone sample if drip zone information is not present.

The composite sample consists of four aliquots of surface soil (0-1 inch bgs) collected from 6 to 30 inches from the exterior walls of the house or other painted building in each sample area that is not scheduled to be excavated.

The EPA shall enter the appropriate data generated from sample analysis into the EPA-provided database. If the EPA-sampled drip zones exceed a lead concentration of 400 ppm, then the drip zones around the entire structure will be excavated and restored at any home that qualifies for soil remediation.

Drip zone soils within any quadrant that qualify for excavation will also be excavated as part of the quadrant excavation, but the entire drip zone around the home will only be excavated if it also exceeds a lead concentration of 400 ppm.

Task 5 – Pre-Excavation Site Walk

C-E JV shall schedule the pre-excavation site walks at properties prior to initiating excavation. This will involve the following activities:

- Coordinating with the schedules of EPA personnel, property owners and contract personnel
- Establishing a meeting time at the property to conduct the pre-excavation site walk
- Scheduling site walks one to two weeks prior to construction activities at each property
- Keeping a list of scheduled pre-excavation site walks and notifying the EPA at least two working days in advance of the schedule, and scheduling pre-excavation site walks Tuesdays through Thursdays.

C-E JV shall ensure that site walks are not scheduled too far in advance of the estimated date of mobilization to the property so that information generated during the site walk such as: excavation area delineation, Missouri One Call System (Dig-Rite) requirements, etc. are not lost or outdated.

In the event that a site walk cannot be scheduled Tuesday through Thursday, the COR must be notified and will provide additional days of availability.

The purpose of the pre-excavation site walk is to discuss the proposed excavation activities and identify areas of concern. At this time, C-E JV shall discuss any alternate entrances/exits onto the property with the EPA and landowner. Should entrances/exits require access to adjacent

properties, C-E JV shall obtain approval from the COR and written access from every affected property owner, including city and county municipalities.

C-E JV shall take photographs and video, which display the date taken, of the pre-excavation state of the property and all locations from the street (alleys, crossing sidewalks, etc.) used to access the property. If there is ever disagreement as to the pre-excavation condition of the property and the photographic and/or video evidence is insufficient to make determination of fault, C-E JV shall be responsible to address the complaint and make necessary repairs at no cost to the EPA.

C-E JV shall maintain all photographic and video evidence on site and make it available to the EPA upon request. C-E JV shall ensure that video/photographic information can be viewed on site. C-E JV shall use the site sketch as a guide in determining which areas of the property shall be excavated. The EPA reserves the right to modify the area of excavation based on any new information from drip zone sampling, site walks, or other sources.

Generally, the property owner is responsible for removing personal items from the area to be remediated. C-E JV will explain to the property owner what items need to be moved from excavation/access zones during the pre-excavation site walk. In cases where personal items remain on the property that would interfere with the excavation, C-E JV shall temporarily relocate (with the property owners written permission) the personal items (e.g., stacked wood, swing sets, lawn items, items the landowner is unable to move, etc.) in order to complete the work unless otherwise informed by the EPA. As required for excavation and approved in writing by the landowner, C-E JV shall clear and dispose of, or relocate, limited amounts of bushes, shrubs, and small trees within the area of excavation. Permanent structures (houses, pools, patios, decks, sheds, etc.) shall not be removed.

Due to site conditions, sidewalks and driveways may require excavation; however, prior written approval from the COR and the property owner is required on a case-by-case basis. Removal of large trees or large tree stumps or concrete pads is generally not necessary. There is potential for lead contamination to be present under decks, porches, patios, and inside garages or outbuildings that C-E JV shall be required to excavate. C-E JV shall use the form provided in Enclosure D (or another form approved by the EPA) to document pre-excavation conditions at each residential yard.

C-E JV shall also prepare and maintain dated photographic/video documentation of all transportation routes planned for use by trucks and other heavy equipment C-E JV plans to use prior to work in a given area. If after remediation, accusations of damage are made by a property owner, the city, county, or state, and no photographic/video documentation exists, or the quality of information doesn't allow the relevant parties to make a determination of fault, C-E JV shall make the necessary repairs at no cost to the EPA.

The Contractor shall establish a formal written agreement with the Washington County Commission and all relevant municipalities/communities regarding truck traffic before

excavation begins. This agreement shall define primary haul routes to and from repositories and backfill source areas, identify road and bridge weight limits to help prevent road and bridge damage due to truck traffic, and include a detailed plan to reimburse the County and municipalities/communities for road repair due to truck traffic and/or to repair road damage with timelines for repair/reimbursement. C-E JV shall comply with all load limits on roads used and provide documentation to the COR and Counties/ municipalities of any situation that requires these limits to be exceeded. C-E JV shall also minimize, to a practical extent, truck roadside idling while waiting to be loaded and slow/no speed steering.

Task 6 – Identify Utilities and Septic Tanks

C-E JV shall be responsible for contacting DIG-RITE and any local utility provider not included in the DIG_RITE call system to locate and mark all utilities prior to beginning excavation activities. In any event C-E JV causes damage to or compromises the structural integrity of any utility (including unknown or unexpected utilities) C-E JV shall repair or replace such utilities to the satisfaction of and at no cost to property owner, utility company, and (where applicable) the EPA. All repairs or replacement of damaged utilities must meet all current local, county and/or state ordinances and codes.

C-E JV shall make best efforts to interview property owners/utility workers and locate utilities that are not located by the "1-800-DIG-RITE" utility line locator system for Missouri. This may include interviewing homeowners and a thorough site inspection, including but not limited to, gas lines, electric lines, irrigation systems, on-site sewage systems and subsurface drainage systems that are part of the property and installed by the property owner. C-E JV shall contact the EPA where standard excavation could cause harm such as around septic tanks or near utilities (such as fiber optic lines, gas mains, etc.). In such cases, limited or no excavation may be authorized by the EPA.

Areas not excavated due to utilities or where contamination is left in place shall be documented by C-E JV on the As Built Site Sketch, photographed and kept in the site file with an "Areas Not Addressed Summary" describing portions of the property and circumstances where soils exceeding cleanup criteria were not remediated. C-E JV shall replace or repair, according to local, county, and state regulations, any on-site sewage systems damaged during these activities.

Modification or major repairs to on-site sewage systems shall be conducted in accordance with Missouri On-Site Wastewater Treatment Regulations:
http://hcalth.mo.gov/living/cnvironmcnt/onsite/lawsrcgs.php.
Information specific for Washington County can be obtained through the County Health Department: http://www.washingtoncountyhealthdepartment.org/

Negative Incentive #1; *Each time a marked utility line is damaged, a $1,000.00negative incentive will be assessed against C-E JV. These negative incentives will be deducted from our bill.*

1.6.1.2 Excavation Activities

While performing Excavation Activities, C-E JV shall perform the following:

Task 1 – Recordkeeping

C-E JV shall create the following records:

(a) *A Daily Report*- written record of the work progress for each day work is performed at the Site. Generally, C-E JV shall meet with the EPA each work day to review the work completed and the work projected for the day.

(b) *Bi-Monthly Report*- On the first and third Mondays of every month, C-E JV shall electronically submit a Bi-Monthly Report of all activities of the previous work period and provide detailed plans for the next work period to the EPA PM and COR. Bi-Monthly Reports shall be in Microsoft Word format.

(c) *Property Folders*- C-E JV shall keep a record of each property that is completed which includes but is not limited to: access agreements; records of correspondence ;pre- and post-excavation site sketches and photo/video (each property's photos and videos will be recorded on an individual property-specific digital video disk (DVD), with no additional data being collected or stored on that DVD); the estimated tons/cubic yards, number of truckloads and type of material removed from the property; final excavation area(s) locations and measurements; the tons/cubic yards and the number of truckloads of clean soil/gravel backfilled at the property; the dates work was performed at the property (site walk, excavation start and completion, backfill start and completion, final grade achieved, seeding, and final restoration and closeout); and sample results including drip zone and confirmation sampling results. C-E JV shall input and maintain this data in an EPA-provided database. C-E JV shall have a copy of Microsoft Word, Microsoft Excel, Microsoft Access, Adobe Reader, and a computer with high speed internet access at the local field office for this task. C-E JV shall be responsible for obtaining data, maintaining records, and preparing all reports and submissions required to satisfy the PWS and other regulatory requirements.

(d) *Permits and Licenses*- C-E JV shall be responsible for preparing, obtaining, and maintaining all required permits and licenses for work involved in this project prior to starting excavation. With respect to permits, licenses, or any fulfillment of their substantive requirements, C-E JV shall notify the appropriate state and local agencies as to the nature and timing of activities that will occur.

(e) *Property Owner Complaints*- C-E JV shall be responsible for documenting all correspondence with property owners, including those related to homeowner complaints. C-E JV shall use a standard form to track the complaints. C-E JV shall handle each complaint individually and submit a compilation of the complaints that occurred within the reporting period with each Bi- Monthly Report.

(f) *Office Site Documentation*- C-E JV shall maintain all site documents in electronic format and shall maintain a hard copy and a media disk of all site-related documents in C-E JV's site office. Upon request by the EPA, C-E JV shall provide the EPA with hard copies

and/or electronic copies of any site document.

(g) *Photographic Documentation*- C-E JV shall provide copies of the pre- and post-excavation photographs taken for each property in the Property Folder Submissions and compiled at the end of each contract year. Photographic copies shall be provided electronically in Joint Photographic Experts Group (JPEG) format on the property DVD. C-E JV shall also provide copies of photos and video (digital video clips will be provided in Moving Picture Experts Group (MPEG) or Windows Media Video (WMV) format on the property DVD) taken of private, city, and county roads at the end of each contract year in electronic format. (Note: other video/photo formats may be accepted with prior written approval from the COR.)

C-E JV shall provide all electronic and hard copy files to the EPA at the end of work at each property and prior to the end of the contract.

Task 2 – Excavation of Properties

The objective of the excavation work is to remove lead-contaminated material greater than or equal to 400 mg/kg in areas delineated by the EPA and consistent with the ROD. For this action, excavation will be performed only to address lead-contaminated materials. The area of a residential property to be excavated should not exceed one acre unless authorized by the EPA. In general, excavated areas will be located within approximately 100 feet of an occupied or vacant dwelling as represented on site sketches provided by the EPA. Occasionally, the EPA may require additional excavation outside of the normal parameters of a site. This may include play areas or gardens outside of 100 feet from the home. C-E JV shall report any potentially contaminated soil (substances other than heavy metals from mining activities) to the EPA prior to excavation.

If during the excavation, C-E JV identifies an old fuel tank or soil that has been contaminated by any other substance (e.g., fuel oil, solvents, asbestos tiles, etc.), C-E JV shall stop excavation and notify the EPA immediately. If during excavation, C-E JV discovers any substantial anthropogenic materials C-E JV representative should document site conditions and notify the EPA immediately.

Generally, C-E JV shall not excavate on a cap or areas with dense vegetation (woods), unless authorized by the EPA. Additionally, C-E JV generally shall not be required to remove past boundaries, such as the end of a property, into a pasture, or within a buffer zone or riparian corridor of a creek/river.

Children's play areas, such as swing sets and sand boxes shall be C-E JV's first priority at any given property unless otherwise approved by the EPA.

C-E JV will confine its activities to the property locations designated as requiring excavation, the soil repositories as determined by the EPA (the Indian Creek Mine Site Soil Repository),

backfill source areas as determined by C-E JV, and all transportation routes approved by the EPA.

In areas designated for soil/gravel excavation, C-E JV shall excavate a 12-inch excavation lift. C-E JV shall notify the EPA upon starting an excavation and again when C-E JV is getting close to finishing a 12-inch lift. At the base of the 12-inch lift, the EPA or ETS shall measure the lead concentration by taking XRF soil samples to verify that the cleanup criteria are met. Samples will often take several hours and possibly up to a day for analysis, particularly in wet conditions. C-E JV should plan excavations with expected analysis delays for a 24-hour period after the sample is collected. If samples indicate that lead concentrations above 1,200 ppm exist at the base of excavation, a pre-approved visual barrier shall be placed at the bottom of the excavated area.

In garden areas, if the in-situ soil samples or composite sample described above do not meet the cleanup goal after excavation of the first 12 inch lift, an additional 12-inch lift will be excavated. After the second 12-inch lift , the EPA or ETS shall measure the lead concentration by taking soil samples to verify that the cleanup criteria is met or if C-E JV shall place a pre-approved visual warning barrier.

If the 12-inch bgs composite soil sample indicates an average lead level of less than 1,200 mg/kg, the EPA or ETS shall notify C-E JV to begin backfilling with clean soil. After the final 12-inch excavation (or 24-inches bgs in gardens), if the composite soil sample indicates an average lead level greater than 1,200 mg/kg, C-E JV shall place an approved warning barrier (approved in advance by the EPA) at the base of the excavation. The approved visual warning barrier shall be durable, wide- meshed, and should not affect soil hydrology or permeability. Prior to backfilling, C-E JV shall document the location and dimensions of any contaminated material left in place and record the location and dimensions of the barrier placed at depth on the post-excavation site sketch.

Within five days of meeting the cleanup criteria or placing a barrier at depth at a property, the EPA or ETS shall enter the final excavation base data into the EPA-provided database. This data shall also be provided to C-E JV. C-E JV shall place sampling data on a post-excavation site sketch within two days of receiving the results.

Excavations are required to be of fairly uniform depth across the surface area of a property. C-E JV shall not mechanically spread contaminated material onto clean areas and will take all necessary precautions to prevent the spread of contaminated materials (plastic barrier, erosion control measures, etc.). If cross contamination or contamination spreading is identified by the EPA, the contactor shall remediate the areas affected at no cost to the EPA.

C-E JV shall excavate soil/gravel without damage to houses, sidewalks, curbs, driveways, utilities, and other items at each property. C-E JV shall exercise caution when excavating adjacent to permanent structures (houses, patios, pools, decks, walkways, retaining walls, etc.). Excavation of soil beneath permanent structures shall not be performed in cases where these areas are inaccessible. If a deck extends away from a building and is located in a designated, lead-

contaminated area and the area underneath the deck is accessible, the material under the deck shall be excavated.

Damage to sidewalks, structures, possessions, landscaping, etc., and subsequent repairs shall be thoroughly documented as to the cause, effect and resolution by C-E JV; In addition, C-E JV shall make realistic efforts to resolve property owner concerns about property damage to the property owner's satisfaction. Please note: the EPA has no financial liability regarding property damage under this contract.

Per the Site Specific HASP, C-E JV shall establish a "work zone" with highly visible caution tape or impassible construction fence (or other barrier). In non-working areas, C-E JV shall ensure the safety of the public and residents from hazards such as slip, trip and fall hazards at all times while C-E JV is active and present at each site. C-E JV shall ensure safe access for all residents to and from their houses throughout the remedial process. C-E JV shall be held responsible for any contaminated material leaving the work zone of each respective site.

C-E JV shall perform excavation around trees, bushes and shrubs to be left in-place in a manner that leaves the root/bulbs intact and avoids damage to the roots. If C-E JV modifies the property (e.g., dismantles the fence), damages the property (e.g., leaves ruts in the driveway, hits trees or other objects with excavator, etc.), C-E JV shall restore the area to its prior state or reach a settlement with the homeowner at no cost to the EPA. C-E JV, in the event of a settlement, shall use a settlement form which will be provided by C-E JV.

C-E JV shall avoid swinging machinery buckets over property lines and over uncontaminated areas (outside the work zone). If no options exist, C-E JV shall obtain written access from any affected property owner(s) prior to the work, expand the work zone to include the additional area and protect the uncontaminated property (plastic sheeting or other barrier).

A monetary disincentive, will be assessed to C-E JV for each incidence of a known or marked buried or overhead utility line being severed or damaged due to Contractor actions at properties being addressed under this contract. If unexpected utilities are encountered during excavation. C-E JV shall thoroughly document each instance and include the incident in the Bi- Monthly Report. If C-E JV damages unexpected utilities, C-E JV shall be responsible for repair and replacement of the lost service.

C-E JV shall be available to respond to time-critical issues at properties in which the actions of C-E JV have caused issues, including but not limited to, flooding inside a home, clogged sewage system, access issues due to equipment blocking ingress/egress pathways, etc. During the course of the contract, C-E JV shall respond to such issues as they arise including holidays, nights, weekends, etc.

Garden areas – In general, C-E JV shall excavate soil in vegetable garden areas in 12-inch lifts until the average lead concentration is below 400 mg/kg or the base of excavation is 24-inches bgs, whichever comes first. If the composite soil sample (collected in the manner

previously described) from 24 inches bgs contains an average lead concentration of 1,200 mg/kg or greater, C-E JV shall cease excavation and place an approved visual warning barrier in the base of the garden excavation. Prior to backfilling, C-E JV shall document the location and dimensions of any contaminated material left in place and record the location and dimensions of the barrier placed at depth on the post-excavation site sketch. Requests by property owners to move garden areas shall be forwarded to the EPA.

Driveways and garage interiors -C-E JV shall excavate gravel driveways in the same manner as soil. On occasion, garages may have contaminated gravel or dirt floors that require hand excavation and placement of gravel. Heavy machinery may be used in garage interiors if approved by the EPA and the property owner in advance. If after approval C-E JV chooses to use machinery in these areas, C-E JV assumes all responsibility for damage caused by C-E JV's actions. Gravel specifications for the inside of garages are the same as driveway specifications (see Task 10). Upon consultation and approval by the EPA and property owner, C-E JV may remove asphalt/concrete driveways which have deteriorated beyond repair or that have been damaged by the remedial actions and replace the driveway with gravel. ***Please note: the EPA does not have authority to improve individual's property. Itis critical that C-E JV communicate this to the property owner during the pre-excavation site walk.***

Maintained paved driveways are considered impermeable and encapsulating of any mine waste they may cover. The EPA does not intend to replace paved driveways. Should C-E JV damage repairable asphalt or concrete driveways, C-E JV shall be responsible for replacement of the driveway with non-lead bearing material at no cost to the EPA.

Drip Zones – A drip zone is an area around the painted (or previously painted) exterior walls of a house or structure that receives the majority of the rain runoff from the house or structure. Drip zones vary in size from structure to structure but generally should extend 30 inches beyond the foundation of the residence. Drip zones with contamination greater than 400 mg/kg at properties listed shall require excavation in the same manner as all other areas. C-E JV shall excavate the drip zones by hand to avoid damage to the house/structure by heavy equipment. Should C-E JV choose to use machinery around drip zone areas, C-E JV assumes all responsibility for damage caused by C-E JV's actions.

The depth of drip zone excavations shall be limited to a maximum of 12-inches bgs so that excavation does not jeopardize the structural integrity of the house/structure. This determination will be made in the field on a case-by-case basis by the EPA based on each situation and the analytical data presented. The technique of tapering or angling away from the foundation after excavating several inches bgs is an acceptable practice around sensitive or unstable structures. If the level of contamination in the drip zone remains above 1,200 mg/kg at 12-inches bgs, placement of an approved visual warning barrier shall be required. C-E JV shall document the location and dimensions of any contaminated material left in place and record the location and dimensions of the barrier placed at depth on the post-excavation site sketch prior to backfilling.

Potential for naturally occurring lead - Naturally occurring lead ores could be found at the bedrock interface and in undisturbed clay soil near the surface of some properties. Another indicator of the presence of naturally occurring lead ores could be a high density of galena crystals in soil or unconsolidated rock in undisturbed soil. When these conditions are encountered, C-E JV shall contact the EPA immediately and cease excavating.

Task 3 - Transportation and Disposal

C-E JV shall use trucks covered with tarps so that no contaminated material blows out of the truck during transport. C-E JV shall fill trucks to capacity (or to within acceptable limits for the route selected) with contaminated material prior to hauling to the Soil Repository. Trucks hauling contaminated material shall proceed directly to the Soil Repository to off-load on the established routes and should not deviate from these routes. Activities prohibited with trucks loaded while hauling contaminated material include, but are not limited to, stopping for lunch, running errands or other non-emergency activities

This contract is a fixed unit price contract that will be based on a price per short ton of lead-contaminated soil removed from each property. Lead-contaminated soil weight for payment will be measured by contractor-provided scales. C-E JV shall use scales to weigh material going to the repository. The exact location of the scales shall be approved by the EPA Project Officer in writing. *Please note: C-E JV may use any certified scale that is in operation at or near the site*. C-E JV may use the scale*(s) provided there is an agreement in place between C-E JV and the scale owner(s).* The scales shall be installed and maintained per Missouri State Regulations. Scales should be National Type Evaluation Program (NTEP) approved and legal for trade. The registration and specification of the scales shall be provided to the EPA Project Officer at least two weeks in advance of the scales' installation (if applicable). The scales shall be electronic scales with a ticket printer and electronic indicator (data logger) able to electronically log transactions. The electronic logs and tickets should be generated by the scales independently and not from C-E JV manually entering the weights. Every ticket must have a time and date stamp on it from the printer. The ticket must also include the truck number and property ID where the soil originated. These items must be included from the ticket printer and not handwritten. The scales shall be able to simultaneously weigh all axles on a vehicle. C-E JV shall be responsible for having the scales certified once per year and providing written documentation to the EPA Project Officer within one week of the certification inspection. If the scales appear to be out of calibration, C-E JV shall have the scales calibrated. C-E JV shall operate the scales and provide all power necessary to run the scales. At the conclusion of the project, C-E JV shall remove the scales and return the area to its previous state, unless otherwise approved by the EPA in writing.

For measurement and payment purposes, C-E JV shall weigh each truck before going into the repository and have a corresponding ticket printed. C-E JV shall then unload the lead-contaminated soil/gravel at the repository, ensuring that no material sticks to the truck bed. C-E JV shall then weigh each empty truck leaving the repository and have a corresponding ticket

printed. No back credit will be given for material sticking to the truck bed. C-E JV shall provide on the weigh ticket: a code, or direct address on each ticket to determine volumes of material being removed from each property. If a code is used, C-E JV shall provide a key to the EPA. C-E JV shall certify tickets by signature or other approved scale records and submit them to the on-site EPA Representative with the activity reports. These signed tickets shall also be submitted to the EPA with each invoice. C-E JV shall submit to the EPA for payment only tickets from work- related trucks. C-E JV shall ensure that only site remediation-generated material , such as lead- contaminated soil/gravel, broken asphalt from driveways requiring remediation, or chat, are weighed in trucks. A log of visitors to the repository and of trucks bypassing the scales shall be maintained at each scale house.

C-E JV and any sub-contractor's personnel, including all truck drivers, shall drive responsibly. This includes, but is not limited to, obeying all traffic and transportation laws, yielding to pedestrians, driving in a manner such that the trucks do not lose contaminated material and driving trucks within the acceptable weight restrictions for both the trucks and roads.

C-E JV shall be responsible for hauling and off-loading excavated contaminated soil at the St. Joe Minerals - Indian Creek Mine (Indian Creek or Soil Repository) facility near Ebo, Missouri, located in Washington County. The EPA is authorized to treat, store and dispose of remediation waste at the Soil Repository through a Remedial Action Plan (RAP) with the current facility owner, the Doe Run Company (US EPA 2007a). It is C-E JV's responsibility to comply with the terms of the RAP while operating at the facility. Physical access to the Repositories shall be maintained by C-E JV. At a minimum, this shall consist of maintaining a gate and fence that totally restricts unauthorized and/or off-duty access at the entrance to the Soil Repository, as well as maintenance on the gravel road within the repository and at the entrances/exits.

C-E JV shall place contaminated soil on the Soil Repository in a manner consistent with the RAP (Enclosure A). Additionally, C-E JV shall ensure that no contaminated soil or tailings shall erode or be tracked off the Soil Repository during the contract period. A truck washing station will be required at the Soil Repository to allow continued operation during non-ideal conditions. Trucks shall not be allowed to operate if evidence of cross contamination exists.

Only disposal of contaminated soil/gravel, as described in this PWS and supporting documents, shall be disposed of at the Soil Repository. C-E JV shall not dispose of any other solid or hazardous waste/substance at the Soil Repository. C-E JV shall not allow any of his/her subcontractors or vendors to dispose of any other solid or hazardous waste/substance at the Soil Repository.

C-E JV shall commit trucks and equipment to either the contaminated part of the operation (i.e., transport and disposal of contaminated soil/gravel) or the backfill part of the operation (i.e., hauling clean backfill, topsoil, and gravel to residential properties) and ensure no cross-contamination occurs. In select cases and only when the on-site EPA Representative provides prior approval, C-E JV may switch a tuck or equipment from handling contaminated material to handling clean material. C-E JV shall decontaminate the trucks by a wet wash at the

designated Soil Repository so no visual evidence of material is present and ensure that no contamination leaves the pile. C-E JV will document the decontamination procedures used and photograph the truck or equipment before and after decontamination. C-E JV shall wet wash and decontaminate all other equipment when switching from contaminated soil/gravel work to clean work. Equipment transferred between contaminated sites can be decontaminated by dry wash (brushing, scrubbing) prior to being removed from the Site by C-E JV, if site conditions allow. C-E JV shall be held responsible for tracking material out of the established work zone due to improper decontamination of equipment. C-E JV is responsible for managing any waste generated by the decontamination in a manner consistent with local, state, and federal regulations as well as the site-specific HASP.

C-E JV shall use and maintain the designated entrance/exit roads at the Soil Repository. This may include periodic upgrading, such as improving road stability with rock. C-E JV shall be responsible for maintaining the sections of road specified and submitting a signed pre-excavation transportation agreement with Washington County and/or the local municipalities. The roads specified in the pre-excavation agreement must be repaired to a condition similar to the road's condition prior to commencement of this contract and as documented by Contractor photos/video taken prior to initiation of work.

The pre-excavation transportation agreements must be signed by the respective county commissioners, city/community administrators, and C-E JV. The agreement must be submitted to the EPA before excavation begins. Photographic evidence and any other documents generated during this activity shall also be provided to the EPA within one week of the collection of such documentation.

Evaluation of road damage from pre-project to post-project asphalt road surface conditions should be based on the *PASER, Asphalt Roads Manual* (WTIC, 2002). For more information, please visit: http://epdfiles.engr.wisc.edu/pdf_web_files/tic/manuals/Asphalt-PASER_02.pdf

C-E JV shall not exacerbate contamination at residential properties, on roadways, or at the Soil Repository. For example, when wet site conditions exist, C-E JV shall prevent mud from being tracked off residential properties and onto roads. Typically, work stoppage is the measure that has been implemented to address these conditions. NOTE: dry decontamination of equipment is not possible in wet and muddy conditions. The EPA has the authority to stop truck traffic at the worksite or Soil Repository due to mud tracking onto any roads. C-E JV shall eliminate any mud, soil, or mine waste tracking onto roads prior to resuming work.

C-E JV shall immediately address any spillage of soil by physically removing and properly disposing of such spillage associated with the use of trucks. Water or other rinsing agents shall not be used to aid in the removal of spilled material. Areas where spilled material is removed will be swept clean prior to departure. C-E JV shall ensure that roadways, alleys, and other public access areas are not "tracked" with soil or mine waste from the excavation or Soil Repository areas. C-E JV shall cover all trucks hauling soil during all transport time on roadways. C-E JV shall manage excavations such that trucks can load on undisturbed ground.

Trucks hauling clean backfill shall operate in clean areas only and shall not back into lead-contaminated material; otherwise, thorough decontamination will be required.

Negative Incentive #2; *The EPA has established a negative incentive in the amount of $5,000.00 for failure to comply with the conditions depicted in this section, and for failure to comply with the conditions depicted in the RAP at the repository.*

Task 4 – Backfill Quality and Grading

C-E JV shall be responsible for locating and sampling suitable backfill sources. Under the EPA advice C-E JV will consult the Missouri Inventory of Mining Occurrences and Prospects Database which can be found at the Missouri Spatial Data Information Service (http://msdis.missouri .edu0 to help guide in the selection of a backfill source. C-E JV shall provide the EPA access to all potential and accepted backfill sources.

C-E JV shall follow storm water protection regulations with regard to the backfill sources. Backfill sources and sampling methods are included in the QAPP for approval by the EPA prior to using the backfill.

Site sketches of the backfill source area with GPS reference points are required. Physical markers and GPS located points detailing sample areas at the backfill source area are also a requirement.

All excavations shall be backfilled with non-contaminated soil, topsoil, and gravel that exhibit at least the following characteristics:

1. Contains less than 100 mg/kg average lead;
2. Contains less than 22 mg/kg average arsenic;
3. Contains less than 25 mg/kg average cadmium;
4. Contains less than 1,800 mg/kg average manganese;
5. Contains no other contaminants at concentrations that pose a risk to human health and the environment (i.e., below residential soil screening levels found at the following web address: http://www .epa .gov/region9 /superfond/prg,'.);
6. Topsoil shall be demonstrated to be of sufficient quality to produce heavy growths of grass and sustain vegetable gardens as verified by appropriate soil nutrient testing. (For more information see http://soilplantlab .missouri .edu/ and ASTM D5268 - 07 Standard Specification for Topsoil Used for Landscaping Purposes.) Depending on the backfill source chosen by C-E JV and the results of the nutrient testing, C-E JV shall fertilize the topsoil upon placing it at a residential property according to the recommendations of the nutrient test. Nutrient testing results and fertilizer/lime recommendations must be submitted to the EPA and approved prior to use,
7. Contains insignificant amounts of debris (tree roots, rocks, grass, etc.).

The EPA will not accept backfill or topsoil that does not meet these requirements. The EPA will not accept or pay for work accomplished using backfill or topsoil that does not meet these requirements. C-E JV shall not use subsoil (even with compost or other amendments added) as topsoil.

A minimum of four inches of topsoil is required for all areas excavated. A monetary disincentive will be applied to properties out of compliance with the backfill requirements in addition to C-E JV re-excavating and replacing the backfill at no cost to the EPA.

C-E JV shall ensure all equipment used to haul clean material is free of contaminated material. The EPA shall have access and authority at any time to inspect or sample trucks used for hauling clean backfill (soil, gravel, etc.) for lead contamination while the truck is performing the transport of clean backfill under this task.

C-E JV shall ensure adequate compaction of soil for use during this task without unacceptable future settlement. C-E JV shall not place backfill in excavations containing snow, ice, or standing water. C-E JV shall accomplish placement of backfill in a manner that will provide positive drainage away from all buildings. C-E JV shall not be responsible for correcting significant pre-existing drainage problems through extensive grading and backfilling. However, it is C-E JV's responsibility to sufficiently document pre-existing conditions; failure to do so could result in C-E JV being responsible for correcting drainage problems.

Prior to re-vegetating or placing gravel, the surface of the backfill shall be visually inspected by the EPA on-site representative and C-E JV for gradation control. The final grade of soil should be brought to that of existing terrain or previously existing grade unless otherwise approved by the EPA and property owner. For tracking purposes C-E JV shall either weigh backfilled trucks in the same manner as excavated material or record cubic yards of material by the truckload. Once the backfilled property is properly graded based on the inspection, C-E JV shall proceed with re-vegetation or gravel placement.

Replacement gravel for driveways, garage floors, walkways, parking areas and other previously graveled areas shall consist of two types of crushed limestone:
For the sub-grade, C-E JV shall use 1.5-inch minus limestone rock derived from non-lead bearing geological units.

For top layer, C-E JV shall place a minimum of 1.5-inch top layer of 1.5-inch clean limestone rock derived from a non-lead bearing geological unit on all areas that receive gravel. C-E JV shall compact the gravel so that it does not rut from automobile traffic or heavy rain events. C-E JV shall be responsible for maintaining the gravel driveway for a period of 120 days after backfill and compacting at each respective property. The final grade of gravel should be brought to that of existing terrain or previously existing grade unless otherwise approved by the EPA and property owner.

C-E JV shall periodically demonstrate that the soil source and gravel contains less than 100 mg/kg lead. Samples shall be collected for every 2,500 cubic yards as depicted in this QAPP.

C-E JV shall be fully responsible for removal and replacement of any backfill material placed that is not in compliance with the backfill requirements listed above at no cost to the EPA.

With the exception of asphalt, the overall guiding principle for backfill is "like for like". In instances where the homeowner would prefer another material – for example, gravel in place of soil C-E JV may choose, at no cost to the EPA, to make such replacements, but must follow the guidelines for agreements made with property owners.

C-E JV shall be responsible for maintaining yards that have been backfilled and are awaiting seeding, including but not limited to, implementing best management practices (BMPs) to control erosion, weed control, etc.

Temporary walkways to enable access from driveways to home entrances shall be provided while yards are excavated and awaiting backfill and/or lawn establishment. Sidewalks shall be kept free of dirt, mud and debris during the excavation and until/while lawns are being re-established.

C-E JV shall promptly repair and, if necessary, upgrade any breached or non-working erosion control measure. C-E JV shall remove all BMPs such as silt fence and straw bales after lawns have been established, as approved by the EPA.

C-E JV shall restore a property to final grade within 21 days after starting the excavation. A monetary disincentive will be applied if the property is not restored to final grade within 21 days of the start of the property excavation.

Negative Incentive #3; *The EPA has established a negative incentive in the amount of $5,000.00 for failure to backfill properties within 21 days of property entry; in addition, the EPA will access a $5,000.00 negative incentive for each property where backfill, when tested, does not meet the backfill quality criteria depicted above.*

Task 5 – Dust Suppression

As applicable, C-E JV shall employ dust suppression during soil excavation, soil staging operations at residential properties and the Soil Repository, along repository entrances/exits, and during backfilling and grading activities. Dust suppression shall meet all state, county or local regulations.

Water for dust suppression shall be obtained from the local water utility company unless otherwise approved by the EPA. C-E JV shall also ensure that dust is not a nuisance or

problem when work is not occurring. C-E JV may apply alternative dust suppression activities, such as sealing gravel roads, upon approval by the county (if needed) and the EPA.

C-E JV shall not allow visible dust emissions from contaminated residential work areas. In cases of excessive dust, as determined by the EPA, the EPA has the authority to stop activity at the worksite or Soil Repository until dust suppression measures are appropriately implemented.

Task 6 – Landscaping

C-E JV shall ensure quality landscaping for each backfilled property and shall provide materials, equipment, and labor necessary such that restoration activities result in final ground surfaces that are smooth and allow for adequate drainage, and lawns that are adequately revegetated.

Sod placement shall be implemented in properties remediated for up to one-quarter acre with the permission of the landowner. The EPA may authorize placement of more than 1/4 acre of sod under the following conditions:

- Locations with a high risk of erosion;
- In areas where evidence of pre-existing sod is present;
- In areas with pre-existing zoysia grass

Note: CO/COR approval is required prior to placement of more than 1/4 acre of sod at a property.

In properties requiring greater than one-quarter acre of revegetation, hydro-seeding shall be performed in the remaining area by C-E JV in backfilled and disturbed areas. Hydro-seeding shall generally follow current business standards and practices. All materials and seed utilized shall be from a certified source. C-E JV shall hydro-seed based on the following minimum standards per acre unless another standard is allowed in advance by the EPA:

Item	Rate/Acre
K31 Fescue	436 1bs
Annual Rye	44 lbs.
Hydro seeding Mulch	4000 lbs.

Fertilizer/lime shall be applied based on the backfill nutrient tests and the N-P-K ratio recommended for the specified seed mix. C-E JV shall provide lawn care guidance to each

landowner. Some suggestions are located on the University of Missouri-Extension Website, located at http://extension.missouri .edu/main/DisplayCategory .aspx?C=64.

C-E JV shall determine appropriate seeding and sod windows to meet growth requirements for property closeout.
C-E JV will follow recommendations found at http://extension.missouri.edu/main/DisplayCatcgory .aspx?C=64, but ultimately C-E JV is responsible for determining when seeding and/or sodding is appropriate. C-E JV shall employ BMPs at residential properties to prevent erosion and maintain the backfill and seed. C-E JV shall replace and re-grade any lost backfill due to erosion prior to or during the re-vegetation period.

Alternate ground cover and seed mixes may be used in order to stabilize steep slopes where grass sod/ hydro-seeding is impractical in establishing vegetation. Alternate ground cover and seed mixes will not be permitted unless approved in writing by the EPA and the property owner. If alternate ground cover is used, C-E JV shall also use approved erosion control measures.

C-E JV shall be responsible for maintaining the revegetated lawns for a period of 120 days after sodding/hydro-seeding at each respective property. C-E JV will write an agreement with each property owner detailing the care and maintenance requirements and expectations during the pre-excavation site walk. C-E JV will refer to the following site: http://cxtcnsion .missouri.edu/p/G6700 for more information on lawn establishment and care/maintenance.

At a maximum of 30 days after sodding/hydro-seeding, C-E JV shall inspect yards to observe and photo document the conditions of the revegetated areas at each respective property. The EPA will determine when the property is adequately revegetated based on a satisfactory cover of living grass and in which gaps larger than 9 square inches (3 inches by 3 inches) do not occur. C-E JV shall revegetate yards where the EPA determines that revegetating is required.

Where zoysia grass has been removed for remedial activities, C-E JV shall replace the zoysia grass and be responsible for maintaining it for 120 days. C-S JV may elect to establish zoysia in the backfilled yard under a separate timeline. It is C-E JV's responsibility to determine the most effective times to seed/sod properties to meet property closeout requirements. A reference on planting and maintaining zoysia grass is included on the University of Missouri-Extension website at: http://extcnsion .missomi.edu/publications/DisplayPub.aspx?P=G6706.

Unless otherwise indicated by the landowner and approved by the on-site EPA Representative with a written agreement signed by the C-E JV, landowner, and the EPA, C-E JV shall restore residential properties to pre-excavation conditions including landscaping. As stated previously, the guiding principle for replacement is "like for like". Therefore, in some instances, C-E JV shall replace or restore mulch, decorative rock, etc.,

at residential properties unless otherwise approved by the EPA and property owner in writing. If any approved pre-excavation agreement exists, C-E JV shall restore areas according to the pre-excavation agreement. All pre-excavation agreements must be obtained in writing and contain property owner signatures. Pre-excavation agreements must be included with the property file and available to the EPA upon request.

Task 7 – Replacement or Removal of Damaged Goods

C-E JV shall not be required to replace items removed at the discretion of the property owner. Upon completion of the excavation, backfilling, and restoration, C-E JV shall be responsible for returning the property to pre-excavation conditions (e.g., re-installing fences, gates, swing sets, etc.) except for items removed by the property owner. If the items are not salvageable after remediation (e.g., broken fence posts, fences, etc.), C-E JV shall purchase comparable items acceptable to the property owner and reinstall these items. After completing restoration efforts, C-E JV shall notify the EPA within one day. C-E JV shall repair all Contractor-caused property damage and seed appropriate restored areas before remedial activities are considered complete and close-out activities can be performed.

1.6.1.3 Post Excavation Activities

These activities will commence once all excavation activities have been completed and the include the following tasks:

Task 1 – Final Property Closeout Inspection

C-E JV shall schedule and perform a final property closeout inspection with the property owner and the EPA to discuss completed tasks and, in general, assess all restoration actions within 10 working days of meeting the closeout criteria described below. Following the post-excavation property site walk, C-E JV shall attempt to obtain the property owner's signature and date on the Final Property Closeout Form that acknowledges that all restoration work was completed appropriately and in accordance with this PWS. On occasion, C-E JV may be required to show the property owner the dated pre-excavation video and/or photographs to resolve any issues. During the final inspection, C-E JV shall conduct the following activities:

1. Inspect the completed remedial effort and ensure that it meets the Final Property Closeout form criteria.
2. Take sufficient dated photographic and video evidence of the completed property and the access location from the street to the property for a thorough comparison with the pre-excavation photographic/video evidence.
3. Obtain the landowner's signature on the Final Property Closeout Form where the landowner acknowledges that all restoration activities were adequately complete and no damage was evident.
4. Obtain the EPA's approval of C-E JV's property closeout request and signature on the Final Property Closeout Form after verification that performance standards

have been met.

If the EPA determines that property conditions warrant additional work to be performed, the property closeout request will not be approved until C-E JV has performed the work, at which point the EPA, after conducting another inspection and finding all performance standards are met, will approve the property closeout request by signing the Final Property Closeout Form. C-E JV shall attach the pre-excavation and post-excavation site sketches to the signed Final Property Closeout Form and submit the original and one copy of the signed form to the EPA. C-E JV shall keep a copy of all signed Final Property Closeout Forms and other property documents on site during the contract period.

Once Final Property Closeout is achieved, C-E JV shall take dated videos and photographs of the condition of the private, city, and county roads used by C-E JV during remedial and backfilling activities at the property. If there are several properties within an area where C-E JV performs remedial activities more or less concurrently, C-E JV may wait to document the road conditions until the final property in the area is completed or before the winter season, whichever occurs first.

Records of the haul roads shall not be placed in individual property folders, but shall be maintained as separate documents. An Excel spreadsheet shall be maintained to correlate the video documentation to specific roads. If, after the remediation, the post-excavation photographic and/or video evidence of the roads is insufficient to make a determination of fault should accusations be made by the property owner, city/municipality or county, C-E JV shall repair the roads per the pre-excavation agreement with the county and city/municipalities at C-E JV's cost. Rating comparisons per the evaluation criteria using the *PASER, Asphalt Roads Manual* (WTIC, 2002) should be assigned where any damage is documented to have occurred or is alleged.

Task 2 – Property Owner Satisfaction Survey

Property owner satisfaction is a key objective; therefore, the EPA will request that property owners complete a short Property Owner Satisfaction Survey. This survey captures the level of property-owner satisfaction achieved after all remedial actions are completed. The survey shall be provided to property owners by C-E JV during the closeout site walk or may be left with the homeowner along with a stamped envelope addressed to the EPA Region 7 Office. The homeowner may complete the survey during the closeout site walk if the EPA is present or they can mail it in at their convenience. The survey results will be compiled at the end of each contract year and will be used, along with the EPA COR's Contractor Performance Evaluation, to determine the eligibility for incentive payment. The EPA COR's Contractor Performance Evaluation will consider the timeliness of punch list resolution, business relations, complaint resolution, and the overall quality of work including random phone calls (complaints) received by the Public Information Centers and the Regional Office. The EPA will evaluate C-E JV's performance based on the performance standards listed in the QAPP.

Incentive #1; *C-E JV will receive and retain a copy of the completed and returned surveys/performance evaluations. Property Owner Satisfaction Survey forms for at least 75% of all properties closed-out during the contract period must be received by the EPA in order for the EPA to initiate evaluation to award a financial incentive and for C-E JV to be eligible for any financial incentive that could be awarded. The EPA may contact property owners who fail to submit surveys for an explanation of why the survey was not submitted.*

Task 3 – Property Folder Submission

C-E JV shall submit property folders within ten business days of property closeout. Applicable documentation for each closed-out routine and non-routine property assignment shall be submitted in a property file.

At a minimum, each property file shall contain the following in this order:

1. Transmittal Checklist identifying each document in each individual property file signed and dated by C-E JV's representative. This form shall include a signature block with space for the date of review by the COR or an EPA representative.
2. Brief Executive Summary -Two to three paragraphs describing the general work completed, problems/issues encountered during the excavation, backfill or the final property close-out inspection including property owner concerns, unique findings that the EPA should be aware of, and any other relevant information concerning the particular property.
3. Signed Access Agreements for the property being remediated including any access agreements obtained (required) for crossing onto adjacent properties.
4. Site Sketch (pre-excavation drawing of the property) provided by the EPA pursuant to contract specifications.
5. Property Pre-Excavation Inspection Checklist signed by the property owner and C-E JV's representative responsible for pre-excavation site walks
6. Pre-Excavation Photographs and Video including photographs in Joint Photographic Experts Group (JPEG) format and digital video clips in Moving Picture Experts Group (MPEG) or Windows Media Video (WMV) format on a Digital Video Disk (DVD). (Note: other video/photo formats may be accepted with prior written approval from the COR.)
7. Utility Clearances including any documentation verifying all attempts to locate utilities.
8. Post-Excavation Photographs and Video taken immediately after excavation activities are complete in JPEG format and digital video clips in MPEG or WMV format on a DVD.
9. As-Built Site Sketch (Post Excavation Site Sketch) which provides all information on the original property site sketch provided by the EPA (with the exception of the original sampling results) and includes: a legend, Contractor identification, date,

final confirmation lead levels, results of any additional characterization sampling performed, and areas exceeding cleanup criteria not remediated.

10. Sampling and Confirmation Data of all sampling data collected from the property including in- situ XRF readings and confirmation/verification sampling data/results. (This form will be provided for insertion by the EPA and/or the ETS.)
11. Property Totals Report which will include a table with the number of tons/cubic yards of contaminated material removed from the property, the number of tons/cubic yards of each type (gravel, soil, etc.) of excavated material at the property, and the amount of each type of backfill material (in cubic yards) used at each property.
12. Final Photographs and Video of the property taken after seeding to verify that the grass is growing, healthy, and adequately covers the ground as per closeout requirements , in JPEG format and digital video clips in MPEG or WMV format on a DVD.
13. Final Property Closeout Form (Enclosure I) signed by the property owner.

Other documents that will be included in the individual property file, as needed or obtained, include but are not limited to:

a. Pre-Excavation Agreement Forms describing any agreements regarding excavation and restoration at the property made during the Pre-Excavation Site Walk between the property owner and the Contractor. This form will be signed by both the Contractor's representative and the property owner. This form will accompany the Property Home Inspection Checklist above.
b. Areas Not Addressed Summary describing portions of the property and circumstances where soils exceeding cleanup criteria were not remediated. This summary should accompany the As- Built Site Sketch described in item 9 above.
c. Property Owner Issues Forms signed by the Contractor's representative(s) who handled the issue(s).
d. Property Owner Repair Acceptance documents signed by both the Contractor's representative and the property owner showing follow-up actions regarding repairs to damages made (e.g., concrete sidewalks, etc.) and/or replacement of items removed (e.g., shrubs and plants) is acceptable to the property owner. This document will accompany the Property Owner Complaint Forms above.
e. Property Owner Satisfaction Form.
f. Property Owner Settlement Form.

Negative Incentive #4; *For each contract period, when 5% or more property folders are not completed and submitted to the EPA COR within 10 business days of the property close-out, C-E JV will receive a negative incentive equal to $7,500.00.*

Task 4 – Bi-Monthly Reports and Property Folder Submission

C-E JV shall submit Bi-Monthly Reports electronically to the PM and the EPA COR. This report will also be provided as a hard copy during the Bi-Monthly Meeting with the EPA

COR.

C-E JV shall at a minimum include in these Bi-Monthly Reports the following:

a. cumulative numbers of properties excavated,
b. cumulative numbers of properties backfilled,
c. cumulative number of properties restored,
d. cumulative number of properties signed off by the property owner,
e. cumulative number of properties closed out (after successful Final Inspection by the EPA COR)
f. number of truckloads/cubic yards of contaminated materials removed from each property that period,
g. estimated cubic yard of each type (gravel, soil, etc.) of excavated materials removed from each property that period,
h. estimated amount of each type of backfill material used at each property,
i. estimated amount of contaminated soil and gravel taken to the repository,
j. documentation regarding problems encountered and resolved; such as: media, property owner, contacts, complaints, unique findings which the EPA should be aware of, and any other relevant information,
k. identified haul routes during that periods
l. number of employees in each category; such as: operators, truck drivers, laborers, foreman, etc.
m. two weeks operations look ahead schedules,

These Bi-Monthly Reports shall be submitted to the EPA PM and COR before noon on the 1st and 3rd Monday of every month; starting from the EPA' approval of the PMP.

Task 5 – Final Report

C-E JW shall submit a Draft Final Report each contract year within 30 days after completion of field activities. The report shall describe all work completed under this contract to date as well as any issues of which the EPA should be aware. The report shall address all aspects of the work conducted and shall include a table or spreadsheet that shows the properties where work has been completed, the EPA ID number for each property and the dates of tasks started and completed. The Draft Final Report shall also include property files for all properties not previously submitted. The Final Report, with attachments, shall be submitted to the EPA within 20 days after receipt of the EPA's comments on the Draft Final Report.

1.7 QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT DATA

The quality objective of the project data is to ensure that all data documented in this project is accurate and valid. This data will be collected from all the removal areas sampled at each property within the Washington County Lead Site. Detected Total Lead concentrations will be compared to the action levels described in **Section 1.5** to determine if the areas containing lead impacted soil

have been effectively removed. The data quality indicators to be measured are identified below.

The goals for analytical precision and accuracy are described in **Section 2.4** and will be applicable to this project. Representativeness will be addressed by collecting samples consistent to this document. Collecting, analyzing, and reporting the data consistent to this document will address comparability. A completeness goal of 90 percent per each site location is required for this project. There is not a specific sample that is necessary for decision-making. If less than 90 percent data completeness is obtained for any site location, the EPA will decide if the valid data obtained compared to the amount expected is sufficient for its intended purpose. If not, additional sampling will be required. Valid data is required to make a decision regarding further action at these sites.

1.8 SPECIAL TRAINING REQUIREMENTS / CERTIFICATIONS

The only formal training required of site personnel will be the completion of a 40-hour Hazardous Waste Operations and Emergency Response [HAZWOPER]) course and an annual refreshers of the same. Familiarization with sampling equipment and procedures will also be necessary for C-E JV sampling team. The XRF Operator shall have necessary training from the respective XRF manufacturer on the proper use of the equipment.

1.9 DOCUMENTATION AND RECORDS

C-E JV Site Coordination personnel will maintain a field logbook to record all pertinent activities associated with the sampling events at each site location. Information to be recorded in field logbooks and documented in property reports include, but is not limited to: date & time, property location, XRF number, sample location, sample number, the name of the site coordinator performing the sampling, observable/special site conditions affecting the sampling, personnel and the tasks they performed. All final documents associated with this activity (e.g., final QAPP, Analytical Data) shall be filed and maintained at the project site by C-E JV. Sample documentation will follow SOP-FSP-006 - Identification, Documentation and Tracking of Samples. Information pertaining to samples (i.e. sample dates, times, matrix, location) collected during this project will be recorded on C-E JV field sheets and filed in the corresponding property folder.

Analytical information will be handled according to SOP-FSP-007 - Analytical Data Submission Packages.

Current Project Documents & SOP's

The QC Manager will be responsible for ensuring that the most current approved version of the QAPP is available at the job-site, that any and all addendums are sent to the persons listed in section 1.1, and that superseded documents are destroyed (except archived copies).

Record & Document Retention

Project records and documents copies will be kept for 3 years after the project close-out. Original records and documents will be turn over to the USEPA during the contract with each final property report.

2.0 SAMPLE MEASUREMENT / DATA ACQUISITION

2.1 SAMPLING PROCESS DESIGN

The primary type of sampling activities for this project is for a) drip zone soil samples and post excavation sample by the EPA, and b) verification of clean backfill materials. It is also possible that C-E JV will need to perform additional site characterization (pre-excavation) sampling for areas not covered by the original sampling program such as public easements, alleyways, or hard-surfaces that have been removed since the original sampling.

2.1.1 *Drip Zone Samples and Post Excavation Samples by the EPA*

The EPA shall collect drip zone sample if drip zone sample information is not present. These composite sample consists of four aliquots of surface soil (0-1 inch bgs) collected from 6 to 30 inches from the exterior walls of the house or other painted building in each sample area that is not scheduled to be excavated. The EPA shall enter the appropriate data generated from sample analysis into the EPA-provided database. If EPA-sampled drip zones exceed a lead concentration of 400 ppm, then the drip zones around the entire structure will be excavated and restored at any home that qualifies for soil remediation. Drip zone soils within any quadrant that qualify for excavation will also be excavated as part of the quadrant excavation, but the entire drip zone around the home will only be excavated if it also exceeds a lead concentration of 400 ppm.

C-E J shall notify the EPA upon starting an excavation and again when the excavation is getting close to its 12-inch lift. *At the base of the 12-inch lift, the EPA or ETS shall measure the lead concentration by taking XRF soil samples to verify that the cleanup criteria are met*. Samples will often take several hours and possibly up to a day for analysis, particularly in wet conditions. C-E JV should plan excavations with expected analysis delays for a 24-hour period after the sample is collected. If samples indicate that lead concentrations above 1,200 ppm exist at the base of excavation, a pre-approved visual barrier shall be placed at the bottom of the excavated area.

In garden areas, if the in-situ soil samples or composite sample described above do not meet the cleanup goal after excavation of the first 12 inch lift, an additional 12-inch lift will be excavated. *After the second 12-inch lift , the EPA or ETS shall measure the lead concentration by taking soil samples to verify that the cleanup criteria is met* or if the C-E JV shall place a pre-approved visual warning barrier.

If the 12-inch bgs composite soil sample indicates an average lead level of less than 1,200 mg/kg, the EPA or ETS shall notify the C-E JV to begin backfilling with clean soil. After the final 12-inch excavation (or 24-inches bgs in gardens), if the composite soil sample indicates an average lead level of greater than 1,200 mg/kg, C-E JV shall place an EPA pre-approved warning barrier at the base of the excavation. The approved visual

warning barrier shall be durable, widemeshed and should not affect soil hydrology or permeability. Prior to backfilling, C-E JV shall document the location and dimensions of any contaminated material left in place and record the location and dimensions of the barrier placed at depth on the post-excavation site sketch.

Within five days of meeting the cleanup criteria or placing a barrier at the bottom of the excavation, the EPA or ETS shall enter the final excavation data into the EPA-provided database. This data shall also be provided to C-E JV, who shall place sampling data on a post-excavation site sketch within two days of receiving the results.

2.1.2 *Clean Backfill Material Sampling*

Replacement soils and gravels are sampled at a frequency of one grab sample for every 2,000 cubic yards of material. The samples are taken from truck-loads, stockpiles, or already placed materials. These samples are analyzed for metals, pesticides, polychlorinated biphenyls (PCBs), semi-volatile organics, and volatile organics.

C-E JV consult the Missouri Inventory of Mining Occurrences and Prospects Database to help guide in the selection of a backfill source.

C-E JV shall provide the EPA access to all potential and accepted backfill sources. Site sketches of the backfill source area with GPS reference points will be submitted to the EPA for approval; in addition, physical markers and GPS located points detailing sample areas at the backfill source site will also be submitted to the EPA.

All excavations shall be backfilled with non-contaminated soil, topsoil, and gravel that exhibit at least the following characteristics:

1. Contains less than 100 mg/kg average lead;
2. Contains less than 22 mg/kg average arsenic;
3. Contains less than 25 mg/kg average cadmium;
4. Contains less than 1,800 mg/kg average manganese;
5. Contains no other contaminants at concentrations that pose a risk to human health and the environment (i.e., below residential soil screening levels found at the following web address: http://www .epa .gov/region9 /superfond/prg,'.);
6. Topsoil shall be demonstrated to be of sufficient quality to produce heavy growths of grass and sustain vegetable gardens as verified by appropriate soil nutrient testing. (For more information see http://soilplantlab .missouri .edu/ and ASTM D5268 - 07 Standard Specification for Topsoil Used for Landscaping Purposes.) Depending on the backfill source chosen by C-E JV and the results of the nutrient testing, C-E JV shall fertilize the topsoil upon placing it at a residential property according to the recommendations of the nutrient test. Nutrient testing results and fertilizer/lime recommendations must be submitted to the EPA and approved prior to use;
7. Contains insignificant amounts of debris (tree roots, rocks, grass, etc.).

2.2 SAMPLING METHODS REQUIREMENTS

Sampling of soil will follow SOP FSP-002 – Soil Sampling with a Hand Trowel. For each removal site, one composite sample will be collected from five aliquots of equal mass in each respective quadrant where removal was performed. A drip line composite sample will also be collected from four aliquots of equal mass.

All disposable sampling equipment will be double bagged and placed in a controlled dumpster for ultimate disposal in a municipal landfill.

The QC Manager is responsible for any corrective action or resolution of sampling issues that occur in the field.

2.3 SAMPLE HANDLING AND CUSTODY REQUIREMENTS

All samples will be packaged and preserved according to SOP-FSP-008 - Sample Container Selection, Preservation and Holding Times. Documentation will follow SOP-FSP-009 - Field Chain of Custody for Environmental Samples.

2.4 QUALITY CONTROL ELEMENTS

Quality Control Testing				
Media	**Parameters**	**Sample Splits**	**Sample Duplicates**	**Sample Spikes**
Backfill Soils	Totals Lead, Arsenic, Cadmium, VOC's, Semi-VOC's, Pesticides, Herbicides, and PCBs		10% of samples	5% of splits

[redacted]

Calculating the Relative Percent Difference (RPD)

Given a pair of numbers $\{p, d\}$ calculate the RPD in two steps:

1) $x = (p + d)/2$

2) $\text{RPD} = ((p - d)/x) * 100$

2.5 INSTRUMENT / EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE REQUIREMENTS

For the analytical instrumentation, the testing, inspection, and maintenance will be performed in accordance with the identified laboratory SOPs and manufacturer's recommendations.

Laboratory SOP's will be added, by addendum, as specific laboratories are identified for work under this contract or if they modify their SOP's.

2.6 INSTRUMENT CALIBRATION AND FREQUENCY

Laboratory analytical instrumentation calibration will be in accordance with the above referenced SOPs, the laboratories QA procedures, and manufacturer's recommendations.

Laboratory SOP's will be added, by addendum, as specific laboratories are identified for work under this contract or if they modify their SOP's.

2.7 INSPECTION/ACCEPTANCE REQUIREMENTS FOR SUPPLIES AND CONSUMABLES

No special requirements are needed.

2.8 DATA ACQUISITION REQUIREMENTS

No data will be used from other sources.

2.9 DATA MANAGEMENT

All laboratory data acquired by the selected laboratory will be managed in accordance with their respective SOPs regarding Document Control.

Laboratory SOP's will be added, by addendum, as specific laboratories are identified for work under this contract or if they modify their SOP's.

3.0 ASSESSMENT / OVERSIGHT

3.1 ASSESSMENT AND RESPONSE ACTION

[redacted]

Laboratory SOP's will be added, by addendum, as specific laboratories are identified for work under this contract or if they modify their SOP's.

3.2 REPORTS TO MANAGEMENT

[redacted]

Copies of the finalized site reports shall be transmitted to the following personnel:

Individual	Agency	Title
	US EPA, Region VII	OSC / Remedial Project Manager
	US EPA, Region VII	Superfund Quality Assurance Coordinator

3.3 LOCAL OFFICE

C-E JV will secure and maintain a local office and a local staging area located within the Washington County Lead District Site footprint and within 5 miles of Potosi, MO during the duration of the contract, beginning at the onset of pre-excavation activities. The work space shall include space for

planning and meeting with local citizens and EPA personnel, separate from C-E JV's work area. In addition, it shall also have bathroom facilities that are in compliance with local and state regulations, and an environmentally controlled area to enable sample preparation and analysis.

4.0 DATA VALIDATION AND USABILITY

4.1 PROPERTY SKETCHES

The EPA will provide CDs which include property site sketches. These site sketches provide a general description of the property, graphical representation of the property, analytical data, and the remedial area. This sketches are one of the most important elements of the project; therefore, they must be:

[redacted]

6. Submitted for the EPA review and approval in Final Property Folders.

Not all sketches are available at this time and not all sketches are drawn to scale. As a result, some sketches may require updating if the pre-excavation site walk reveals changes to the property. If a site sketch does not accurately identify the property or the contaminated portions, C-E JV shall immediately notify the COR to have the sketch corrected.

4.2 ACCESS AGREEMENTS

It is C-E JV's to ensure that all access agreements provided by the EPA are correct and that they contain the rightful property owner signature. If there is any discrepancy between the Access Agreement provided by the EPA and the Property Owner, The Lead Site Coordinator will notify the EPA. If it is determined that the Access Agreement had a wrong signature, a new Access Agreement will be produced and signatures from the rightful owner will be collected.

Prior to beginning excavations at each property, the EPA may have obtained a signed access agreement for the property. In the event that an access agreement has not been signed, it is C-E JV responsibility to attempt to acquire a signed access agreement.

C-E JV shall document in writing any/all agreements made with property owners. The agreements shall be included in the property file folder and described in the Bi-monthly Reports. The agreement must be signed by both the property owner and a C-E JV representative and clearly state all agreements reached. C-E JV shall fulfill these agreements.

If a property owner insists that areas possessing contamination not be remediated (e.g., flower beds, landscaping, etc.) C-E JV shall:

(1) Notify the COR, unless present, of the proposed change;
(2) Illustrate such areas on a second site sketch;
(3) Include the signed agreement form with an explanation why such area was not remediated, and
(4) Place the documentation in the corresponding property file folder.

4.3 DATA REVIEW, VALIDATION, AND VERIFICATION REQUIREMENTS

Analytical Data Review

A qualified laboratory analyst will perform data review, validation, and verification, along with the laboratory's section manager, for all data generated by the laboratory. The laboratory personnel will perform this work in accordance their established QA procedures.

Project Data Review

[redacted]

4.4 VALIDATION AND VERYFICATION METHODS

The analytical data will be validated in accordance with the laboratory's SOPS. Laboratory personnel will perform QC spot checks.

Laboratory SOP's will be added, by addendum, as specific laboratories are identified for work under this contract or if they modify their SOP's.

[redacted]

Complete documentation of the corrective action steps taken and the results of the re-sampling will be maintained in the property files. Property files were re-sampling has occurred will be flagged so reviewers of the final report are aware of the actions taken. Any corrective actions taken will be reviewed with the original sampling personnel and if appropriate an addendum to the QAPP and FSP will be issued to address the cause of the anomaly.

The USEPA will be given an opportunity to provide final review and approval of property data before it is entered as valid data into each property's final report.

4.5 RECONCILLIATION WITH USER REQUIREMENTS

If data quality indicators do not meet the project's requirements as outlined in this QAPP, the data may be discarded, and re-sampling and/or re-analysis may occur (as deemed by the USEPA' Project Manager).

4.6 INCENTIVES

The EPA has incorporated incentives to promote various objectives throughout this project; while, maintaining high expectations. These incentives are as follows:

(a) Positive Incentives
(b) Negative Incentives

It is C-E JV goal to meet all the positive incentives, without reaching negative incentives. C-E JV has created a Chart that contains all incentives, the performance standard, the allowable deviation, the surveillance method, and the amount of incentive/ disincentive. These chart will be known as: "Incentive Chart" and it's as follows:

Incentive Chart				
Task	**Performance Standard**	**Allowable Deviation**	**Surveillance Method**	**+Incentive/-Disincentive**
Identify Utilities and Septic Systems	All utilities and septic systems shall be marked before excavation activities begin and should be avoided during excavation	No deviation is allowed	On-site surveillance by EPA COR or designee	Each time a marked utility is damaged, $1,000.00 will be deducted from our invoice
Transportation and Disposal	Ensuring no cross-contamination and in compliance with the terms and conditions of the RAP	No deviation is allowed	On-site surveillance by the EPA COR	$5,000.00 will be deducted from our bill for failure to comply with the PWS and the RAP
Incentive Chart				
Backfill quality and grading	Work is not performed as defined in the PWS.	No deviation allowed. Except for "act of God"	On-site surveillance by the EPA COR	$5,000.00 will be deducted from our bill each time a property is not backfilled in 21 days of property entry, and for each property

				where backfill, when tested, does not meet backfill quality criteria.
Property Folder Submission	Property Folder not submitted and delivered in accordance with the PWS	No deviation allowed.	EPA review and analysis of Property Owner Satisfaction received	$7,500.00 For each contract period, when 5% or more property folders are not completed and submitted to the EPA COR within the specification listed in the PWS
Bi-monthly reports and Property Folder Submission	Submitted and delivered in accordance with the PWS	No deviation allowed for bi-monthly report. 5% deviation for Property Folder Submission	EPA COR review and approval of record/ documentation	$7,500.00 For each contract period, when 5% or more property folders are not completed and submitted to the EPA COR within the specification listed in the PWS
Property Owner Satisfaction Survey	According to the PWS	No deviation allowed.	EPA COR review and analysis of Property Owner Satisfaction Surveys received	At least 75% of PO Satisfaction Surveys are received by the EPA, and 90% or more reflect a rating of "outstanding". $5,000.00 incentive may be invoiced with COR approval
Commitment to Local Community	According to the PWS	No deviation allowed.	EPA COR review of documentation supporting hiring and purchases made in performance of the contract	By hiring and buying goods and services within the "local" impacted community. When "local" expenditure is more than 50% of the contract period. $10,000.00 incentive may be invoiced with COR approval
Diesel Chemical and Particulate Emission	According to the PWS	No deviation allowed	EPA on-site surveillance and review of reports.	Reduction of emissions using alternate fuels and other fuel saving BMP. If 2 or more BMP are utilized. $5,000.00 incentive may be invoiced with COR approval.

[redacted]

[redacted]

6.0 DIESEL CHEMICAL PARTICULATE EMISSIONS

Reducing the project's carbon foot-print is an EPA goal in this project. C-E JV shares the EPA's mission to lessen its environmental impact at all of its projects. [redacted]