

ACCIDENT PREVENTION PLAN - ADDENDUM 1

**NEGATIVE EXPOSURE ASSESSMENT PLAN &
ACTIVITY HAZARD ANALYSIS FOR DRILLING AND BLASTING**

**Callahan Mine Superfund – OU1
Brooksville, Maine**

Prepared for:

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1.0 Accident Prevention Plan Addendum Summary

This Plan serves as an addendum to the previously approved Accident Prevention Plan (APP) for this contract. All Health and Safety and QA/QC procedures established in the previously approved APP will apply to this addendum. This APP Addendum is serving to update the APP for scope of work activities in 2012 at the Callahan Mine Project in Brooksville, ME. These activities include remediation of PCB impacted soils and drilling and blasting activities within the Callahan Mine property.

2.0 Activity Hazard Analysis Addendum

An Activity Hazard Analysis (AHA) has been prepared for drilling and blasting activities that are scheduled to occur within the Mine Operations Area of the Callahan Mine in 2012. The AHA for Rock Drilling and Blasting is included in **Appendix A** of this document.

3.0 Negative Exposure Analysis

Prior to intrusive PCB activities, Charter will conduct personal monitoring for PCB's to establish background exposure levels. During initial intrusive PCB activities Charter will maintain a Personal Protective Equipment level of C including half-face respirators. During these activities Charter will conduct personal monitoring for polychlorinated biphenyl (PCB's) materials to evaluate exposure. The purpose of the personal monitoring is to assess the level of possible PCB exposure to workers during remediation activities and evaluate appropriate PPE requirements.

Personal worker samples will be collected utilizing the NIOSH 5503 method. A copy of this method can be found in **Appendix B** of this APP Addendum. Air-sampling cassettes with sampling pumps to draw air onto the filter media will be used to collect air samples. The sampling pumps used will be low-flow battery operated personal pumps. The filter media consists of 13-mm glass fiber and Florisil tube. Once the samples are collected the filter media is sealed and will be sent to an accredited laboratory for analysis by Gas Chromatographic/Electron Capture Detection (GC/EDC).

Samples from this project will be sent to EMSL Analytical, Inc. in Westmont, New Jersey. EMSL Analytical, Inc. is an AIHA accredited laboratory. EMSL's certificate number is 100194.

3.1 Personal Air Sampling for Polychlorinated Biphenyls.

Personal worker samples will be placed directly on workers in their breathing zones, generally referred to as the upper hemisphere of the body, who are working in PCB remediation zones on the day of the PCB sampling. The samples will be collected over the course of a normal work day at the necessary volume of air for analysis as specified in the NIOSH Method 5503.

3.2 Data Interpretation

The objective in conducting this air monitoring program is to assess the levels of possible exposure to workers in direct contact with the PCB contaminated materials during abatement. If air monitoring results show that engineering controls are controlling exposure and PPE requirements can be down-graded then respirators will not be required within the exclusion zones. If site conditions change from when the personal air samples were collected then additional personal air monitoring will continue to prove engineering controls are still adequate to control exposure. If personal air samples identify a detectable level of PCBs then the PPE level will be evaluated and adjusted based on these results.

Analytical results from personal air monitoring will be maintained at the Project trailer and will be available for review.



APPENDIX A

AHA – Rock Drilling & Blasting





Mobilization & Site Preparation		
Principal Steps	Potential Safety / Health Hazards	Recommended Controls
<i>Identify the principal steps involved and the sequence of work activities.</i>	<i>Analyze each principle step for potential hazards.</i>	<i>Develop specific controls for each potential hazard.</i>
<ul style="list-style-type: none"> ▪ Transport personnel, equipment, materials and supplies to the worksite. ▪ Set –up laydown area, install temporary fencing around the laydown areas, identify overhead and underground utilities, install temporary electrical service, identify parking and material storage areas, mobilize dust control equipment and materials, set up support facilities for office, storage and worker hygiene. ▪ Strip and stockpile loam in laydown area ▪ Place geotextile fabric and crushed stone 	<p>Chemical/Toxicological Hazards:</p> <ul style="list-style-type: none"> ▪ Diesel Fuel ▪ Lubricating oils <p>Biological Hazards:</p> <ul style="list-style-type: none"> ▪ N/A <p>Physical Hazards:</p> <ul style="list-style-type: none"> ▪ Dust ▪ Fire ▪ Energized Utilities ▪ Moving Vehicles 	<ul style="list-style-type: none"> ▪ Level D PPE with reflective vests ▪ Employee Wash Stations ▪ Emergency First Aid Kits/Eyewash bottles ▪ Dry Chemical ABC Fire Extinguishers will be available in work areas ▪ Post Emergency Phone Numbers ▪ Post Route and Directions to Blue Hill Memorial Hospital
Equipment Expected To Be Used	Inspection Requirements	Training Requirements
<i>List equipment to be used in the work activity.</i>	<i>List inspection requirements for the work activity.</i>	<i>List training requirements including hazard communication.</i>
<ul style="list-style-type: none"> ▪ Pickup Trucks ▪ Loader Backhoe ▪ Hand and Power Tools ▪ Storage Containers 	<p>Site Inspection:</p> <ul style="list-style-type: none"> ▪ Daily inspection by Site Safety & Health Officer. Ensure existing utilities are deenergized/shut off prior to adjacent intrusive activities. Notify/Coordinate with DIGSAFE <p>Motor Vehicles:</p> <ul style="list-style-type: none"> ▪ Before initial use, inspect and ensure safe operating condition of vehicles. <p>Equipment:</p> <ul style="list-style-type: none"> ▪ Ensure equipment is tested and inspected by a qualified person/operator before being placed into use. ▪ Conduct equipment inspections daily. 	<p>Site-Specific:</p> <ul style="list-style-type: none"> ▪ Initial Accident Prevention/Site Safety and Health Plan review. Site-specific review of plans as applicable (i.e. EPP, SWPPP, etc...). ▪ Review Emergency Notification procedures with personnel ▪ Hazard Communication Review <p>Supervisory Personnel</p> <ul style="list-style-type: none"> ▪ SSO – OSHA 30 HR Construction Outreach ▪ Hazwoper Supervisor Training ▪ First Aid/CPR/AED Training <p>Field Personnel</p> <ul style="list-style-type: none"> ▪ OSHA 10 HR Construction Outreach ▪ Hazwoper Training <p>Equipment General:</p> <ul style="list-style-type: none"> ▪ Employees shall be qualified and trained to operate or service mechanical equipment. ▪ Daily tailgate meeting with applicable jobsite safety topics.



Survey Residential Properties		
Principal Steps	Potential Safety / Health Hazards	Recommended Controls
<i>Identify the principal steps involved and the sequence of work activities.</i>	<i>Analyze each principle step for potential hazards.</i>	<i>Develop specific controls for each potential hazard.</i>
<ul style="list-style-type: none"> ▪ Perform video survey of residential properties and access roads to document existing conditions. ▪ Layout limits of properties by third – party land surveyor 	<p>Chemical/Toxicological Hazards:</p> <ul style="list-style-type: none"> ▪ N/A <p>Biological Hazards:</p> <ul style="list-style-type: none"> ▪ Insects(Ticks) <p>Physical Hazards:</p> <ul style="list-style-type: none"> ▪ Moving Vehicles 	<ul style="list-style-type: none"> ▪ Level D PPE with reflective vests ▪ Employee Wash Station ▪ Emergency First Aid Kit/Eye Wash Bottles ▪ Dry Chemical ABC Fire Extinguishers will be available in work areas ▪ Use insect repellent
Equipment Expected To Be Used	Inspection Requirements	Training Requirements
<i>List equipment to be used in the work activity.</i>	<i>List inspection requirements for the work activity.</i>	<i>List training requirements including hazard communication.</i>
<ul style="list-style-type: none"> ▪ Pickup Trucks ▪ Hand and Power Tools 	<p>Site Inspection:</p> <ul style="list-style-type: none"> ▪ Daily inspection by Site Safety & Health Officer. <p>Motor Vehicles:</p> <ul style="list-style-type: none"> ▪ Before initial use, inspect and ensure safe operating condition of vehicles. <p>Equipment:</p> <ul style="list-style-type: none"> ▪ Ensure equipment is tested and inspected by a qualified person/operator before being placed into use. ▪ Conduct equipment inspections daily. 	<p>Site-Specific:</p> <ul style="list-style-type: none"> ▪ Accident Prevention/Site Safety and Health Plan review. Site-specific review of plans as applicable. ▪ Review Tick safety. ▪ Daily tailgate meeting with applicable jobsite safety topics. <p>Supervisory Personnel</p> <ul style="list-style-type: none"> ▪ SSO – OSHA 30 HR Construction Outreach ▪ Hazwoper Supervisor Training ▪ First Aid/CPR/AED Training <p>Field Personnel</p> <ul style="list-style-type: none"> ▪ OSHA 10 HR Construction Outreach ▪ Hazwoper Training <p>Equipment General:</p> <ul style="list-style-type: none"> ▪ Employees shall be qualified and trained to operate or service mechanical equipment. ▪ Daily tailgate meeting with applicable jobsite safety topics.



Furnish & Install Erosion Control Measures		
Principal Steps	Potential Safety / Health Hazards	Recommended Controls
<i>Identify the principal steps involved and the sequence of work activities.</i>	<i>Analyze each principle step for potential hazards.</i>	<i>Develop specific controls for each potential hazard.</i>
<ul style="list-style-type: none"> ▪ Transport erosion control supplies(Silt Fence) to project laydown area. ▪ Install silt fence on down gradient side of residential properties and Mine Operations Area as detailed in the EPP & SWPPP. 	<p>Chemical/Toxicological Hazards:</p> <ul style="list-style-type: none"> ▪ Diesel Fuel ▪ Lubricating Oils ▪ Heavy Metals ▪ PCB's <p>Biological Hazards:</p> <ul style="list-style-type: none"> ▪ N/A <p>Physical Hazards:</p> <ul style="list-style-type: none"> ▪ Lifting, Slips, Trips & Falls ▪ Fire ▪ Moving Vehicles 	<ul style="list-style-type: none"> ▪ Level D PPE with reflective vests. ▪ Emergency first aid kit/eyewash bottles. ▪ Use appropriate decontamination procedures. ▪ Employee Decontamination Stations ▪ Practice good housekeeping to prevent debris accumulation. ▪ Set up Spill Kits ▪ Dry Chemical ABC Fire Extinguishers will be available in work areas ▪ Perform Personal Air Monitoring
Equipment Expected To Be Used	Inspection Requirements	Training Requirements
<i>List equipment to be used in the work activity.</i>	<i>List inspection requirements for the work activity.</i>	<i>List training requirements including hazard communication.</i>
<ul style="list-style-type: none"> ▪ Storage Containers ▪ Hand Tools ▪ Pickup Trucks ▪ Backhoe Loader ▪ Air Monitoring Equipment 	<p>Site Inspection:</p> <ul style="list-style-type: none"> ▪ Daily inspection by Site Safety & Health Officer. <p>Equipment:</p> <ul style="list-style-type: none"> ▪ Ensure equipment is tested and inspected by a qualified person/operator before being placed into use. ▪ Conduct equipment inspections daily. ▪ Calibrate Air Monitoring Equipment as required by manufacturer 	<p>Site-Specific:</p> <ul style="list-style-type: none"> ▪ Accident Prevention/Site Safety and Health Plan review. Site-specific review of plans as applicable (i.e. EPP, SWPPP, Air Monitoring etc...). ▪ Daily tailgate meeting with applicable jobsite safety topics. ▪ Review equipment fueling procedures <p>Supervisory Personnel</p> <ul style="list-style-type: none"> ▪ SSO – OSHA 30 HR Construction Outreach ▪ Hazwoper Supervisor Training ▪ First Aid/CPR/AED Training <p>Field Personnel</p> <ul style="list-style-type: none"> ▪ OSHA 10 HR Construction Outreach ▪ Hazwoper Training <p>Equipment General:</p> <ul style="list-style-type: none"> ▪ Employees shall be qualified and trained to operate or service mechanical equipment.



Perform Vegetation Clearing		
Principal Steps	Potential Safety / Health Hazards	Recommended Controls
<i>Identify the principal steps involved and the sequence of work activities.</i>	<i>Analyze each principle step for potential hazards.</i>	<i>Develop specific controls for each potential hazard.</i>
<ul style="list-style-type: none"> Clear and remove vegetation within limits of residential properties. 	<p>Chemical/Toxicological Hazards:</p> <ul style="list-style-type: none"> Diesel Fuel Lubricating oils Heavy Metals <p>Biological Hazards:</p> <ul style="list-style-type: none"> N/A <p>Physical Hazards:</p> <ul style="list-style-type: none"> Lifting, Slips, Trips & Falls Dust Fire Moving Vehicles/Heavy Equipment 	<ul style="list-style-type: none"> Level D PPE with reflective vests. Emergency first aid kit/eyewash bottles. Employee Decontamination Stations Establish Safety Zones around clearing equipment. Use appropriate decontamination procedures. Practice good housekeeping to prevent debris accumulation. Perform Personal Air Monitoring Dry Chemical ABC Fire Extinguishers will be available in work areas Setup Spill Kits
Equipment Expected To Be Used	Inspection Requirements	Training Requirements
<i>List equipment to be used in the work activity.</i>	<i>List inspection requirements for the work activity.</i>	<i>List training requirements including hazard communication.</i>
<ul style="list-style-type: none"> Storage Containers Hand and Power Tools Tracked Hydraulic Clearing Equipment Pickup trucks Dump Trailers Air Monitoring Equipment 	<p>Site Inspection:</p> <ul style="list-style-type: none"> Daily inspection by Site Safety & Health Officer. <p>Hand and Power Tools:</p> <ul style="list-style-type: none"> Before initial use, inspect and ensure safe operating condition of tools and cords. <p>Equipment:</p> <ul style="list-style-type: none"> Ensure equipment is tested and inspected by a qualified person/operator before being placed into use. Conduct equipment inspections daily. Calibrate Air Monitoring Equipment as required by manufacturer 	<p>Site-Specific:</p> <ul style="list-style-type: none"> Accident Prevention/Site Safety and Health Plan review. Site-specific review of plans as applicable. Review equipment fueling procedures. Daily tailgate meeting with applicable jobsite safety topics. <p>Supervisory Personnel</p> <ul style="list-style-type: none"> SSO – OSHA 30 HR Construction Outreach Hazwoper Supervisor Training First Aid/CPR/AED Training <p>Field Personnel</p> <ul style="list-style-type: none"> OSHA 10 HR Construction Outreach Hazwoper Training <p>Equipment General:</p> <ul style="list-style-type: none"> Employees shall be qualified and trained to operate or service mechanical equipment.



Soil Removal from Residential Properties		
Principal Steps	Potential Safety / Health Hazards	Recommended Controls
<i>Identify the principal steps involved and the sequence of work activities.</i>	<i>Analyze each principle step for potential hazards.</i>	<i>Develop specific controls for each potential hazard.</i>
<ul style="list-style-type: none"> ▪ Establish work zones. ▪ Locate Utilities ▪ Set up Dust suppression ▪ Excavate soil to perscribed depths ▪ Perform Confirmation soil sampling ▪ Load excavated soil onto off – road dump trucks ▪ Transport soil to the Tailings Impoundment Area. ▪ Place and Grade soils at Tailings Impoundment Area to control stromwater 	<p>Chemical/Toxicological Hazards:</p> <ul style="list-style-type: none"> ▪ Heavy Metals ▪ Diesel Fuel ▪ Lubricating oils <p>Biological Hazards:</p> <ul style="list-style-type: none"> ▪ N/A <p>Physical Hazards:</p> <ul style="list-style-type: none"> ▪ Lifting, Slips, Trips & Falls ▪ Dust ▪ Electrical Shock ▪ Fire ▪ Excavation/Trench Safety – Cave – In's ▪ Moving Vehicles/heavy Equipment 	<ul style="list-style-type: none"> ▪ Level C/D PPE with reflective vest. ▪ Use appropriate decontamination procedures. ▪ Use appropriate dust suppression methods. ▪ Set up Spill Kits. ▪ First Aid Kit/Eye Wash bottles ▪ Employee Decontamination Stations ▪ Practice good houskeeping to prevent debris accumulation. ▪ Protect/Slope Excavations ▪ Dry Chemical ABC Fire Extinguishers will be available in work areas ▪ Perform Personal and Perimeter Air Monitoring
Equipment Expected To Be Used	Inspection Requirements	Training Requirements
<i>List equipment to be used in the work activity.</i>	<i>List inspection requirements for the work activity.</i>	<i>List training requirements including hazard communication.</i>
<ul style="list-style-type: none"> ▪ Air Monitoring Equipment and Instrumentation ▪ Roll – off Truck w/ Containers ▪ Hand and Power Tools ▪ Hydraulic Excavator ▪ Off – Road Dump Truck ▪ Dozer ▪ Storage Container(s) ▪ Wheeled Loader 	<p>Site Inspection:</p> <ul style="list-style-type: none"> ▪ Daily inspection by Site Safety & Health Officer <p>Hand and Power Tools:</p> <ul style="list-style-type: none"> ▪ Before initial use, inspect and ensure safe operating condition of tools and cords. <p>Equipment:</p> <ul style="list-style-type: none"> ▪ Ensure equipment is tested and inspected by a qualified person/operator before being placed into use. ▪ Conduct inspections and tests in accordance with manufacturer's instructions. ▪ Conduct equipment inspections daily. ▪ Calibrate Air Monitoring Instruments per manufacturer's requirements 	<p>Site-Specific:</p> <ul style="list-style-type: none"> ▪ Accident Prevention/Site Safety and Health Plan review. Site-specific review of plans as applicable. ▪ Daily tailgate meetings with applicable jobsite safety topics(Excavation/Trench safety). ▪ Hazard Communication Program review. <p>Supervisory Personnel:</p> <ul style="list-style-type: none"> ▪ SSO – OSHA 30 HR Construction Outreach ▪ Hazwoper Supervisor Training ▪ First Aid/CPR/AED Training <p>Field Personnel</p> <ul style="list-style-type: none"> ▪ OSHA 10 HR Construction Outreach ▪ Hazwoper Training <p>Equipment General:</p> <ul style="list-style-type: none"> ▪ Employees shall be qualified and trained to operate or service mechanical equipment.



Backfill, Grade and Site Restoration at Residential Properties		
Principal Steps	Potential Safety / Health Hazards	Recommended Controls
<i>Identify the principal steps involved and the sequence of work activities.</i>	<i>Analyze each principle step for potential hazards.</i>	<i>Develop specific controls for each potential hazard.</i>
<ul style="list-style-type: none"> ▪ Establish work zones. ▪ Place Backfill to prescribed elevations ▪ Grade soil to match original contours ▪ Place Loam and Seed ▪ Install Vegetation to match original conditions ▪ Rebuild excavated portion of Old Mine Road 	<p>Chemical/Toxicological Hazards:</p> <ul style="list-style-type: none"> ▪ Diesel Fuel ▪ Lubricating oils <p>Biological Hazards:</p> <ul style="list-style-type: none"> ▪ N/A <p>Physical Hazards:</p> <ul style="list-style-type: none"> ▪ Lifting, Slips, Trips & Falls ▪ Electrical Shock ▪ Fire ▪ Moving Vehicles/Heavy Equipment 	<ul style="list-style-type: none"> ▪ Level D PPE with reflective vests. ▪ First Aid Kit/Eye wash bottles ▪ Employee Decontamination Stations ▪ Use appropriate decontamination procedures. ▪ Practice good housekeeping to prevent debris accumulation. ▪ Perform Personal and Perimeter Air Monitoring ▪ Set up Spill Kits ▪ Dry Chemical ABC Fire Extinguishers will be available in work areas
Equipment Expected To Be Used	Inspection Requirements	Training Requirements
<i>List equipment to be used in the work activity.</i>	<i>List inspection requirements for the work activity.</i>	<i>List training requirements including hazard communication.</i>
<ul style="list-style-type: none"> ▪ Air Monitoring Equipment and Instrumentation ▪ Hand and Power Tools ▪ Storage Containers ▪ Hydraulic Excavator ▪ Compactor ▪ Wheeled Loader 	<p>Site Inspection:</p> <ul style="list-style-type: none"> ▪ Daily inspection by Site Safety & Health Officer <p>Equipment:</p> <ul style="list-style-type: none"> ▪ Ensure equipment is tested and inspected by a qualified person/operator before being placed into use. ▪ Conduct inspections and tests in accordance with manufacturer's instructions. ▪ Conduct equipment inspections daily. ▪ Calibrate Air Monitoring Instruments per manufacturer's requirements 	<p>Site-Specific:</p> <ul style="list-style-type: none"> ▪ Accident Prevention/Site Safety and Health Plan review. Site-specific review of plans as applicable. ▪ Daily tailgate meetings with applicable jobsite safety topics. ▪ Hazard Communication Program review. <p>Supervisory Personnel:</p> <ul style="list-style-type: none"> ▪ SSO – OSHA 30 HR Construction Outreach ▪ Hazwoper Supervisor Training ▪ First Aid/CPR/AED Training <p>Field Personnel</p> <ul style="list-style-type: none"> ▪ OSHA 10 HR Construction Outreach ▪ Hazwoper Training <p>Equipment General:</p> <ul style="list-style-type: none"> ▪ Employees shall be qualified and trained to operate or service mechanical equipment.



Soil Removal at Mine Operations Area		
Principal Steps	Potential Safety / Health Hazards	Recommended Controls
<i>Identify the principal steps involved and the sequence of work activities.</i>	<i>Analyze each principle step for potential hazards.</i>	<i>Develop specific controls for each potential hazard.</i>
<ul style="list-style-type: none"> ▪ Establish work zones. ▪ Set up Dust Suppression ▪ Excavate PCB contaminated soil to prescribed depths ▪ Excavate Petroleum Hydrocarbon soil to prescribed depths ▪ Perform Confirmation soil sampling ▪ Load dump trailers with excavated soil for off – site disposal ▪ Grade excavated areas to blend with excavation limits to storm water control 	<p>Chemical/Toxicological Hazards:</p> <ul style="list-style-type: none"> ▪ Diesel Fuel ▪ Lubricating oils ▪ PCBs ▪ Petroleum Hydrocarbons <p>Biological Hazards:</p> <ul style="list-style-type: none"> ▪ N/A <p>Physical Hazards:</p> <ul style="list-style-type: none"> ▪ Dust ▪ Fire ▪ Moving Vehicles/Heavy Equipment 	<ul style="list-style-type: none"> ▪ Level C/D PPE reflective vests. ▪ Use appropriate decontamination procedures. ▪ First Aid Kit/Eye wash bottles ▪ Practice good housekeeping to prevent debris accumulation. ▪ Perform Personal and Perimeter Air Monitoring ▪ Employee Decontamination Stations ▪ Set up Spill Kits ▪ Dry Chemical ABC Fire Extinguishers will be available in work areas
Equipment Expected To Be Used	Inspection Requirements	Training Requirements
<i>List equipment to be used in the work activity.</i>	<i>List inspection requirements for the work activity.</i>	<i>List training requirements including hazard communication.</i>
<ul style="list-style-type: none"> ▪ Dozer ▪ Hand and Power Tools ▪ Wheeled Loader ▪ Hydraulic Excavator ▪ Dump Trailers ▪ Air Monitoring Equipment and Instrumentation 	<p>Site Inspection:</p> <ul style="list-style-type: none"> ▪ Daily inspection by Site Safety & Health Officer <p>Equipment:</p> <ul style="list-style-type: none"> ▪ Ensure equipment is tested and inspected by a qualified person/operator before being placed into use. ▪ Conduct inspections and tests in accordance with manufacturer's instructions. ▪ Conduct equipment inspections daily. ▪ Calibrate Air Monitoring Instruments per manufacturer's requirements 	<p>Site-Specific:</p> <ul style="list-style-type: none"> ▪ Accident Prevention/Site Safety and Health Plan review. Site-specific review of plans as applicable. ▪ Daily tailgate meetings with applicable jobsite safety topics ▪ Hazard Communication Program review. <p>Supervisory Personnel:</p> <ul style="list-style-type: none"> ▪ SSO – OSHA 30 HR Construction Outreach ▪ Hazwoper Supervisor Training ▪ First Aid/CPR/AED Training <p>Field Personnel</p> <ul style="list-style-type: none"> ▪ OSHA 10 HR Construction Outreach ▪ Hazwoper Training <p>Equipment General:</p> <ul style="list-style-type: none"> ▪ Employees shall be qualified and trained to operate or service mechanical equipment.



Contractor Accident Prevention Plan - Activity Hazard Analysis

Perform Grading at Ore Pad Area		
Principal Steps	Potential Safety / Health Hazards	Recommended Controls
<i>Identify the principal steps involved and the sequence of work activities.</i>	<i>Analyze each principle step for potential hazards.</i>	<i>Develop specific controls for each potential hazard.</i>
<ul style="list-style-type: none"> ▪ Establish work zones. ▪ Set up Dust Suppression ▪ Grade area to prevent heavy metal contaminated stormwater discharge into Dyer Cove 	Chemical/Toxicological Hazards: <ul style="list-style-type: none"> ▪ Diesel Fuel ▪ Lubricating oils ▪ PCBs ▪ Petroleum Hydrocarbons Biological Hazards: <ul style="list-style-type: none"> ▪ N/A Physical Hazards: <ul style="list-style-type: none"> ▪ Dust ▪ Fire ▪ Moving Vehicles/Heavy Equipment 	<ul style="list-style-type: none"> ▪ Level C/D PPE reflective vests. ▪ Use appropriate decontamination procedures. ▪ First Aid Kit/Eye wash bottles ▪ Practice good housekeeping to prevent debris accumulation. ▪ Perform Personal and Perimeter Air Monitoring ▪ Employee Decontamination Stations ▪ Set up Spill Kits ▪ Dry Chemical ABC Fire Extinguishers will be available in work areas
Equipment Expected To Be Used	Inspection Requirements	Training Requirements
<i>List equipment to be used in the work activity.</i>	<i>List inspection requirements for the work activity.</i>	<i>List training requirements including hazard communication.</i>
<ul style="list-style-type: none"> ▪ Dozer ▪ Hand and Power Tools ▪ Wheeled Loader ▪ Hydraulic Excavator ▪ Dump Trailers ▪ Air Monitoring Equipment and Instrumentation 	Site Inspection: <ul style="list-style-type: none"> ▪ Daily inspection by Site Safety & Health Officer Equipment: <ul style="list-style-type: none"> ▪ Ensure equipment is tested and inspected by a qualified person/operator before being placed into use. ▪ Conduct inspections and tests in accordance with manufacturer's instructions. ▪ Conduct equipment inspections daily. ▪ Calibrate Air Monitoring Instruments per manufacturer's requirements 	Site-Specific: <ul style="list-style-type: none"> ▪ Accident Prevention/Site Safety and Health Plan review. Site-specific review of plans as applicable. ▪ Daily tailgate meetings with applicable jobsite safety topics ▪ Hazard Communication Program review. Supervisory Personnel: <ul style="list-style-type: none"> ▪ SSO – OSHA 30 HR Construction Outreach ▪ Hazwoper Supervisor Training ▪ First Aid/CPR/AED Training Field Personnel <ul style="list-style-type: none"> ▪ OSHA 10 HR Construction Outreach ▪ Hazwoper Training Equipment General: <ul style="list-style-type: none"> ▪ Employees shall be qualified and trained to operate or service mechanical equipment.



Contractor Accident Prevention Plan - Activity Hazard Analysis

Install Boat Ramp at Goose Pond Estuary		
Principal Steps	Potential Safety / Health Hazards	Recommended Controls
<i>Identify the principal steps involved and the sequence of work activities.</i>	<i>Analyze each principle step for potential hazards.</i>	<i>Develop specific controls for each potential hazard.</i>
<ul style="list-style-type: none"> ▪ Establish work zones. ▪ Identify Utilities ▪ Excavate area to install footings 	<p>Chemical/Toxicological Hazards:</p> <ul style="list-style-type: none"> ▪ Diesel Fuel ▪ Lubricating oils <p>Biological Hazards:</p> <ul style="list-style-type: none"> ▪ N/A <p>Physical Hazards:</p> <ul style="list-style-type: none"> ▪ Dust ▪ Drowning ▪ Fire ▪ Electrical Shock ▪ Moving Vehicles/Heavy Equipment 	<ul style="list-style-type: none"> ▪ Level D PPE reflective vests. ▪ Use appropriate decontamination procedures. ▪ First Aid Kit/Eye wash bottles ▪ Practice good housekeeping to prevent debris accumulation. ▪ Perform Personal and Perimeter Air Monitoring ▪ Employee Decontamination Stations ▪ Set up Spill Kits ▪ Dry Chemical ABC Fire Extinguishers will be available in work areas ▪ Personnel working within 4' of water wear PFD's ▪ Rescue skiff available for immediate use ▪ Life Rings with line
Equipment Expected To Be Used	Inspection Requirements	Training Requirements
<i>List equipment to be used in the work activity.</i>	<i>List inspection requirements for the work activity.</i>	<i>List training requirements including hazard communication.</i>
<ul style="list-style-type: none"> ▪ Dozer ▪ Hand and Power Tools ▪ Wheeled Loader ▪ Hydraulic Excavator ▪ Dump Trailers ▪ Air Monitoring Equipment and Instrumentation 	<p>Site Inspection:</p> <ul style="list-style-type: none"> ▪ Daily inspection by Site Safety & Health Officer <p>Equipment:</p> <ul style="list-style-type: none"> ▪ Ensure equipment is tested and inspected by a qualified person/operator before being placed into use. ▪ Conduct inspections and tests in accordance with manufacturer's instructions. ▪ Conduct equipment inspections daily. ▪ Calibrate Air Monitoring Instruments per manufacturer's requirements 	<p>Site-Specific:</p> <ul style="list-style-type: none"> ▪ Accident Prevention/Site Safety and Health Plan review. Site-specific review of plans as applicable.(ie. water safety) ▪ Daily tailgate meetings with applicable jobsite safety topics ▪ Hazard Communication Program review. <p>Supervisory Personnel:</p> <ul style="list-style-type: none"> ▪ SSO – OSHA 30 HR Construction Outreach ▪ Hazwoper Supervisor Training ▪ First Aid/CPR/AED Training <p>Field Personnel</p> <ul style="list-style-type: none"> ▪ OSHA 10 HR Construction Outreach ▪ Hazwoper Training <p>Equipment General:</p> <ul style="list-style-type: none"> ▪ Employees shall be qualified and trained to operate or service mechanical equipment.



Rock Drilling & Blasting		
Principal Steps	Potential Safety / Health Hazards	Recommended Controls
<i>Identify the principal steps involved and the sequence of work activities.</i>	<i>Analyze each principle step for potential hazards.</i>	<i>Develop specific controls for each potential hazard.</i>
<ul style="list-style-type: none"> ▪ Mobilize Rock Drill Rig, Blast Mats ▪ Drill Blast Holes ▪ Install Charges in Holes ▪ Place Blast Mats over Charges ▪ Blast 150' x 10' Corridor of Rock ▪ Excavate Blasted Rock ▪ Load Blasted Rock for Placement ▪ Decontaminate equipment 	<p>Chemical/Toxicological Hazards:</p> <ul style="list-style-type: none"> ▪ Diesel Fuel ▪ Lubricating oils <p>Biological Hazards:</p> <ul style="list-style-type: none"> ▪ N/A <p>Physical Hazards:</p> <ul style="list-style-type: none"> ▪ Dust ▪ Fire/Explosives ▪ Moving Vehicles/Heavy Equipment ▪ Noise ▪ Pinch-Points 	<ul style="list-style-type: none"> ▪ Modified Level D PPE reflective vests. ▪ Use appropriate decontamination procedures. ▪ First Aid Kit/Eye wash bottles ▪ Licensed Explosives Personnel handling Charges/Maintain Charge Inventory ▪ Employee Decontamination Stations ▪ Dry Chemical ABC Fire Extinguishers will be available in work areas ▪ Maintain Spill Kits ▪ Use Hearing Protection around drills ▪ Keep Hands and Feet away from moving parts ▪ Keep Charter personnel clear of falling debris
Equipment Expected To Be Used	Inspection Requirements	Training Requirements
<i>List equipment to be used in the work activity.</i>	<i>List inspection requirements for the work activity.</i>	<i>List training requirements including hazard communication.</i>
<ul style="list-style-type: none"> ▪ Rock Drill Rig ▪ Hand and Power Tools ▪ Wheeled Loader ▪ Hydraulic Excavator ▪ Blast mats ▪ Rock truck ▪ Decontamination pad ▪ Pressure Washer ▪ Air Monitoring Equipment and Instrumentation 	<p>Site Inspection:</p> <ul style="list-style-type: none"> ▪ Daily inspection by Site Safety & Health Officer ▪ Blaster must maintain inventory of charges used and in magazine <p>Equipment:</p> <ul style="list-style-type: none"> ▪ Ensure equipment is tested and inspected by a qualified person/operator before being placed into use. ▪ Conduct inspections and tests in accordance with manufacturer's instructions. ▪ Conduct equipment inspections daily. ▪ Calibrate Air Monitoring Instruments per manufacturer's requirements 	<p>Site-Specific:</p> <ul style="list-style-type: none"> ▪ Accident Prevention/Site Safety and Health Plan review. Site-specific review of plans as applicable. ▪ Daily tailgate meetings with applicable jobsite safety topics (Blasting safety) <p>Supervisory Personnel:</p> <ul style="list-style-type: none"> ▪ SSO – OSHA 30 HR Construction Outreach ▪ Hazwoper Supervisor Training ▪ First Aid/CPR/AED Training <p>Field Personnel</p> <ul style="list-style-type: none"> ▪ OSHA 10 HR Construction Outreach ▪ Hazwoper Training <p>Equipment General:</p> <ul style="list-style-type: none"> ▪ Employees shall be qualified and trained to operate or service mechanical equipment.



Demobilization		
Principal Steps	Potential Safety / Health Hazards	Recommended Controls
<i>Identify the principal steps involved and the sequence of work activities.</i>	<i>Analyze each principle step for potential hazards.</i>	<i>Develop specific controls for each potential hazard.</i>
<ul style="list-style-type: none"> ▪ Remove laydown area and construction trailers ▪ Restore laydown area to original condition ▪ Grade area to control stormwater ▪ Remove all tools and equipment ▪ Remove all trash and debris 	<p>Chemical/Toxicological Hazards:</p> <ul style="list-style-type: none"> ▪ Diesel Fuel ▪ Lubricating oils <p>Biological Hazards:</p> <ul style="list-style-type: none"> ▪ N/A <p>Physical Hazards:</p> <ul style="list-style-type: none"> ▪ Dust ▪ Fire ▪ Moving Vehicles/Heavy Equipment 	<ul style="list-style-type: none"> ▪ Level D PPE reflective vests. ▪ Use appropriate decontamination procedures. ▪ First Aid Kit/Eye wash bottles ▪ Practice good housekeeping to prevent debris accumulation. ▪ Employee Decontamination Stations ▪ Set up Spill Kits ▪ Dry Chemical ABC Fire Extinguishers will be available in work areas
Equipment Expected To Be Used	Inspection Requirements	Training Requirements
<i>List equipment to be used in the work activity.</i>	<i>List inspection requirements for the work activity.</i>	<i>List training requirements including hazard communication.</i>
<ul style="list-style-type: none"> ▪ Dozer ▪ Hand and Power Tools ▪ Wheeled Loader ▪ Hydraulic Excavator ▪ Dump Trailers ▪ Air Monitoring Equipment and Instrumentation 	<p>Site Inspection:</p> <ul style="list-style-type: none"> ▪ Daily inspection by Site Safety & Health Officer <p>Equipment:</p> <ul style="list-style-type: none"> ▪ Ensure equipment is tested and inspected by a qualified person/operator before being placed into use. ▪ Conduct inspections and tests in accordance with manufacturer's instructions. ▪ Conduct equipment inspections daily. ▪ Calibrate Air Monitoring Instruments per manufacturer's requirements 	<p>Site-Specific:</p> <ul style="list-style-type: none"> ▪ Accident Prevention/Site Safety and Health Plan review. Site-specific review of plans as applicable. ▪ Daily tailgate meetings with applicable jobsite safety topics <p>Supervisory Personnel:</p> <ul style="list-style-type: none"> ▪ SSO – OSHA 30 HR Construction Outreach ▪ Hazwoper Supervisor Training ▪ First Aid/CPR/AED Training <p>Field Personnel</p> <ul style="list-style-type: none"> ▪ OSHA 10 HR Construction Outreach ▪ Hazwoper Training <p>Equipment General:</p> <ul style="list-style-type: none"> ▪ Employees shall be qualified and trained to operate or service mechanical equipment.

APPENDIX B

NIOSH 5503 Method



POLYCHLOROBIPHENYLS

5503

mixture: C₁₂H_{10-x}Cl_x
[where x = 1 to 10]

MW: ca. 258 (42% Cl ; C₁₂H₇Cl₅);
ca. 326 (54% Cl ; C₁₂H₅Cl₇)

CAS: Table 1

RTECS: Table 1

METHOD: 5503, Issue 2

EVALUATION: PARTIAL

Issue 1: 15 February 1984

Revision #1: 15 August 1987

Issue 2: 15 August 1994

OSHA : 1 mg/m³ (42% Cl);
0.5 mg/m³ (54% Cl)
NIOSH: 0.001 mg/m³/10 h (carcinogen)
ACGIH: 1 mg/m³ (42% Cl) (skin)
0.5 mg/m³ (54% Cl) (skin)

PROPERTIES: 42% Cl: BP 325 to 366 °C; MP -19 °C;
d 1.38 g/mL @ 25 °C;
VP 0.01 Pa (8 x 10⁻⁵ mm Hg;
1 mg/m³) @ 20 °C
54% Cl: BP 365 to 390 °C; MP 10 °C;
d 1.54 g/mL @ 25 °C; VP
0.0004 Pa (3 x 10⁻⁶ mm Hg;
0.05 mg/m³) @ 20 °C

SYNONYMS: PCB; 1,1'-biphenyl chloro; chlorodiphenyl, 42% Cl (Aroclor 1242); and 54% Cl (Aroclor 1254)

SAMPLING		MEASUREMENT	
SAMPLER:	FILTER + SOLID SORBENT (13-mm glass fiber + Florisil, 100 mg/50 mg)	TECHNIQUE:	GAS CHROMATOGRAPHY, ECD (⁶³ Ni)
FLOW RATE:	0.05 to 0.2 L/min or less	ANALYTE:	polychlorobiphenyls
VOL-MIN:	1 L @ 0.5 mg/m ³	DESORPTION:	filter + front section, 5 mL hexane; back section, 2 mL hexane
-MAX:	50 L	INJECTION	
SHIPMENT:	transfer filters to glass vials after sampling	VOLUME:	4-µL with 1-µL backflush
SAMPLE		TEMPERATURE-INJECTION:	250 to 300 °C
STABILITY:	unknown for filters; 2 months for Florisil tubes [1]	-DETECTOR:	300 to 325 °C
BLANKS:	2 to 10 field blanks per set	-COLUMN:	180 °C
ACCURACY		CARRIER GAS:	N ₂ , 40 mL/min
RANGE STUDIED:	not studied	COLUMN:	glass, 1.8 m x 2-mm ID, 1.5% OV-17/1.95% QF-1 on 80/100 mesh Chromosorb WHP
BIAS:	none identified	CALIBRATION:	standard PCB mixture in hexane
OVERALL PRECISION (Ŝ_r):	not evaluated	RANGE:	0.4 to 4 µg per sample [2]
ACCURACY:	not determined	ESTIMATED LOD:	0.03 µg per sample [2]
		PRECISION (Ŝ_r):	0.044 [1]

APPLICABILITY: The working range is 0.01 to 10 mg/m³ for a 40-L air sample [1]. With modifications, surface wipe samples may be analyzed [3,4].

INTERFERENCES: Chlorinated pesticides, such as DDT and DDE, may interfere with quantification of PCB. Sulfur-containing compounds in petroleum products also interfere [5].

OTHER METHODS: This method revises methods S120 [6] and P&CAM 244 [1]. Methods S121 [7] and P&CAM 253 [8] for PCB have not been revised.

REAGENTS:

1. Hexane, pesticide quality.
2. Florisil, 30/48 mesh sieved from 30/60 mesh. After sieving, dry at 105 °C for 45 min. Mix the cooled Florisil with 3% (w/w) distilled water.
3. Nitrogen, purified.
4. Stock standard solution of the PCB in methanol or isooctane (commercially available).*

* See SPECIAL PRECAUTIONS.

EQUIPMENT:

1. Sampler: 13-mm glass fiber filter without binders in a Swinnex cassette (Cat. No. SX 0001300, Millipore Corp.) followed by a glass tube, 7 cm long, 6-mm OD, 4-mm ID containing two sections of 30/48 mesh deactivated Florisil. The front section is preceded by glass wool and contains 100 mg and the backup section contains 50 mg; urethane foam between sections and behind the backup section. (SKC 226-39, Supelco ORBO-60, or equivalent) Join the cassette and Florisil tube with PVC tubing, 3/8" L x 9/32" OD x 5/32" ID, on the outlet of the cassette and with another piece of PVC tubing, 3/4" L x 5/16" OD x 3/16" ID, complete the union.
2. Personal sampling pump, 0.05 to 0.2 L/min, with flexible connecting tubing.
3. Tweezers.
4. Vials, glass, 4- and 7-mL, with aluminum or PTFE-lined caps
5. Gas chromatograph, electron capture detection (⁶³Ni), integrator and column (page 5503-1).
6. Volumetric flasks, 10-mL and other convenient sizes for preparing standards.
7. Syringe, 10- μ L.

SPECIAL PRECAUTIONS: Avoid prolonged or repeated contact of skin with PCB and prolonged or repeated breathing of the vapor [9-11].

SAMPLING:

1. Calibrate each personal sampling pump with a representative sampler in line.
2. Break the ends of the Florisil tube immediately before sampling. Connect Florisil tube to Swinnex cassette and attach sampler to personal sampling pump with flexible tubing.
3. Sample at an accurately known flow rate between 0.05 and 0.2 L/min for a total sample size of 1 to 50 L.
NOTE: At low PCB concentrations, the sampler was found to be efficient when operated at flow rates up to 1 L/min, for 24 hours [4]. Under these conditions, the limit of detection was 0.02 μ g/m³.
4. Transfer the glass fiber filters to 7-mL vials. Cap the Florisil tubes with plastic (not rubber) caps and pack securely for shipment.

SAMPLE PREPARATION:

5. Place the glass wool and 100-mg Florisil bed in the same 7-mL vial in which the filter was stored. Add 5.0 mL hexane.
6. In a 4-mL vial, place the 50-mg Florisil bed including the two urethane plugs. Add 2.0 mL hexane.
7. Allow to stand 20 min with occasional agitation.

CALIBRATION AND QUALITY CONTROL:

8. Calibrate daily with at least six working standards over the range 10 to 500 ng/mL PCB.
 - a. Add known amounts of stock standard solution to hexane in 10-mL volumetric flasks and dilute to the mark.
 - b. Analyze together with samples and blanks (steps 11 and 12).
 - c. Prepare calibration graph (sum of areas of selected peaks vs. ng PCB per sample).
9. Determine desorption efficiency (DE) at least once for each lot of glass fiber filters and Florisil used for sampling in the calibration range (step 8). Prepare three tubes at each of five levels plus three media blanks.
 - a. Remove and discard back sorbent section of a media blank Florisil tube.
 - b. Inject known amounts of stock standard solution directly onto front sorbent section and onto a media blank filter with a microliter syringe.
 - c. Cap the tube. Allow to stand overnight.
 - d. Desorb (steps 5 through 7) and analyze together with working standards (steps 11 and 12).
 - e. Prepare a graph of DE vs. μg PCB recovered.
10. Analyze three quality control blind spikes and three analyst spikes to ensure that the calibration graph and DE graph are in control.

MEASUREMENT:

11. Set gas chromatograph according to manufacturer's recommendations and to conditions given on page 5503-1. Inject sample aliquot manually using solvent flush technique or with autosampler.

NOTE 1: Where individual identification of PCB is needed, a procedure using a capillary column may be used [12].

NOTE 2: If peak area is above the linear range of the working standards, dilute with hexane, reanalyze and apply the appropriate dilution factor in calculations.
12. Sum the areas for five or more selected peaks.

CALCULATIONS:

13. Determine the mass, μg (corrected for DE) of PCB found on the glass fiber filter (W) and in the Florisil front (W_f) and back (W_b) sorbent sections, and in the average media blank filter (B) and front (B_f) and back (B_b) sorbent sections.

NOTE: If $W_b > W_f/10$, report breakthrough and possible sample loss.
14. Calculate concentration, C , of PCB in the air volume sampled, V (L):

$$C = \frac{(W + W_f + W_b - B - B_f - B_b)}{V}, \text{ mg/m}^3.$$

EVALUATION OF METHOD:

This method uses 13-mm glass fiber filters which have not been evaluated for collecting PCB. In Method S120, however, Aroclor 1242 was completely recovered from 37-mm glass fiber filters using 15 mL isooctane [8,13,14]. With 5 mL of hexane, Aroclor 1016 was also completely recovered from 100-mg Florisil beds after one-day storage [1]. Thus, with no adsorption effect likely on glass fiber filters for PCB, 5 mL hexane should be adequate to completely extract PCB from combined filters and front sorbent sections. Sample stability on glass fiber filters has not been investigated. Breakthrough volume was >48 L for the Florisil tube at 75% RH in an atmosphere containing 10 mg/m^3 Aroclor 1016 [1].

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METHOD REVISED BY:

James E. Arnold, NIOSH/DPSE; S120 originally validated under NIOSH Contract 210-76-0123.

Table 1. General Information.

<u>Compound</u>	<u>CAS</u>	<u>RTECS</u>
Polychlorinated Biphenyls	1336-36-3	TQ1350000
Chlorobiphenyl	27323-18-8	DV2063000
Aroclor 1016 (41% Cl)	12674-11-2	TQ1351000
Aroclor 1242 (42% Cl)	53469-21-9	TQ1356000
Aroclor 1254 (54% Cl)	11097-69-1	TQ1360000

Table 2. Composition of some Aroclors [15].

<u>Major Components</u>	<u>Aroclor 1016</u>	<u>Aroclor 1242</u>	<u>Aroclor 1254</u>
Biphenyl	0.1%	<0.1%	<0.1%
Monochlorobiphenyls	1	1	<0.1
Dichlorobiphenyls	20	16	0.5
Trichlorobiphenyls	57	49	1
Tetrachlorobiphenyls	21	25	21
Pentachlorobiphenyls	1	8	48
Hexachlorobiphenyls	<0.1	1	23
Heptachlorobiphenyls	none detected	<0.1	6
Octachlorobiphenyls	none detected	none detected	none detected