

**ATTACHMENT 3  
ACTIVITY HAZARD ANALYSES**

**JOB SAFETY ANALYSIS FOR SITE SETUP**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Placement/Unloading of Equipment and Materials	Heavy lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques (flex at the knees and use legs when lifting).</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Obey sensible lifting limits (60 pounds individual lifting maximum).</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Use mechanical lifting equipment to move large, awkward loads.</li> </ul>	Level D	
	Falling objects	<ul style="list-style-type: none"> <li>Wear a hardhat, stay alert and clear of materials suspended overhead; wear steel-toed boots.</li> </ul>	Level D	
	Fire	<ul style="list-style-type: none"> <li>Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>	Level D	
	High Winds	<ul style="list-style-type: none"> <li>Mobile/portable facilities shall be anchored to withstand high winds.</li> </ul>	Level D	
Installation of Office and Support Structures	Contact with Utilities, Installation of Electrical Power	<ul style="list-style-type: none"> <li>Above and underground utilities shall be located. A qualified person shall install required utilities in compliance with National, State and Local codes.</li> </ul>	Level D	
	Slip, Trip, Falls	<ul style="list-style-type: none"> <li>Determine best access route before transporting equipment.</li> </ul>	Level D	
	Cut Hazards	<ul style="list-style-type: none"> <li>Wear adequate hand protection.</li> </ul>	Leather Gloves	
	Fire	<ul style="list-style-type: none"> <li>ABC fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>	Level D	
	Contact with Moving Equipment/Vehicles	<ul style="list-style-type: none"> <li>Work area will be barricaded/demarked</li> </ul>	Level D	

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<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Installation of Office and Support Structures	Hazard Communication	<ul style="list-style-type: none"> <li>Label all containers as to contents (fuel can, oil can, diesel fuel, etc.)</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Obtain MSDS for materials brought to the site prior to use.</li> </ul>	Level D	
	Strains and Sprains	<ul style="list-style-type: none"> <li>Use of proper tool for the job being performed.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Avoid twisting/turning while pulling on tools, materials, etc.</li> </ul>	Level D	
	Unattended Worker	<ul style="list-style-type: none"> <li>"Buddy System" visual contact will be maintained between all personnel site activities.</li> </ul>	Level D	
	Level/Blocking Trailer, Driving Stakes (Stabilization), Anchoring	<ul style="list-style-type: none"> <li>Use caution when jacking and placing blocks or cribbing. If ground is soft, add stone to secure footing.</li> </ul>	Level D	
	Setting Steps in Place	<ul style="list-style-type: none"> <li>Steps must be OSHA approved (with proper handrails, midrail, steps, with a platform in front of door; refer to USACE (Section 21.E02,05,07,08)</li> </ul>	Level D	
	Electrical	<ul style="list-style-type: none"> <li>Lighting for work and means of egress; electrical hookup to trailers to be made by qualified electricians. GFCI's required on all circuits.</li> </ul>	Level D	
	Clearing Hazards	<ul style="list-style-type: none"> <li>If clearing is necessary, tree cutting will comply with chainsaw safety standards.</li> </ul>	Level D	
	Ventilation	<ul style="list-style-type: none"> <li>Trailer ventilation shall not bring in exhaust from vehicles, etc.</li> </ul>	Level D	
Hand Tools	<ul style="list-style-type: none"> <li>Pre-post maintenance</li> </ul>	Level D		
	<ul style="list-style-type: none"> <li>Visual inspection prior to use</li> </ul>	Level D		
Heavy Equipment	<ul style="list-style-type: none"> <li>Pre-post maintenance, inspection form completed prior to use daily</li> </ul>	Level D		

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Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Vendor Trucks		<ul style="list-style-type: none"> <li>• Visual inspection prior to use.</li> </ul>	Level D	
Training Requirements		<ul style="list-style-type: none"> <li>• Tailgate safety meeting, site specific orientation, hazard communication.</li> </ul>	Level D	
<b>EQUIPMENT TO BE USED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>	
Chainsaw Machette Heavy equipment PPE		Pre-post maintenance Visual prior to use CESPDP Form 150 R	Tailgate safety meeting Site-specific orientation Hazardous waste operations Hazard communication Chainsaw operations	

**JOB SAFETY ANALYSIS FOR SITE RESTORATION**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Site Restoration	Areas on or Adjacent to Contaminated Material	<ul style="list-style-type: none"> <li>Implement appropriate level of protection.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>A lockout/tagout procedure shall be used for equipment found to be faulty of undergoing maintenance.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Bulldozer and scraper blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All self-propelled construction equipment shall be equipped with a back-up alarm.</li> </ul>	Level D	
	Fire	<ul style="list-style-type: none"> <li>Each bulldozer, backhoe, or other similar equipment will be equipped with at least one dry chemical fire extinguisher having a minimum UL rating of 1A5BC.</li> </ul>	Level D	
	Open excavations	<ul style="list-style-type: none"> <li>IT Policy and Procedure HS307 "Excavation and Trenching" will be adhered to at all times.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Excavations will be backfilled as soon as possible.</li> </ul>	Level D	
	Dump truck operations	<ul style="list-style-type: none"> <li>Dump truck bodies shall be fully lowered or blocked when maintenance is being performed or when not in use.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>A signal person will be used when the point of operation is not in full view of the vehicle, machine or equipment operator; vehicles are backed more than 100 ft; terrain is hazardous; or two or more vehicles are backing in the same area.</li> </ul>	Level D	

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<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Site Restoration	Contact with moving equipment	<ul style="list-style-type: none"> <li>Ground personnel shall wear reflective vests.</li> </ul>	Level D	
	Noise	<ul style="list-style-type: none"> <li>Noise levels above 85 dBA mandate the use of hearing protection</li> </ul>	Ear plugs + Level D	
Final Grading	Noise hazards	<ul style="list-style-type: none"> <li>Administer hearing protection.</li> </ul>	Earplugs + Level D	
	Heavy equipment, travel	<ul style="list-style-type: none"> <li>Use qualified operators.</li> </ul>	Level D	
	Mechanical moving parts, pinch, paint, etc.	<ul style="list-style-type: none"> <li>Have all grounding in place.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Use lockout/tagout for maintenance.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Assure all emergency stop switches are working.</li> </ul>	Level D	
<b>EQUIPMENT TO BE USED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>	
Hand tools PPE Sampling equipment		Pre-postmaintenance Visual prior to use	Tailgate Safety Meeting Site specific orientation Hazardous waste operations Hazard communication	

**JOB SAFETY ANALYSIS FOR WELL DRILLING/INSTALLATION/MONITORING  
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<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Drill Rig Operations	Jacks/Outriggers	<ul style="list-style-type: none"> <li>Outrigger will be extended per the manufacturer's specifications.</li> </ul>	Level D	
	Hoists	<ul style="list-style-type: none"> <li>Hoists will be used only for their designed intent and will not be loaded beyond their rated capacity. Steps will be taken to prevent two-blocking of hoists.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Dress rods will be neither run nor rotated through rod slipping devices. No more than one foot of drill rod column will be hoisted above the top of the drill mast. Drill rod tool joints will not be made up, tightened, or loosened while the rod column is supported by a rod slipping device.</li> </ul>	Level D	
	Whip lines & cables	<ul style="list-style-type: none"> <li>Stand clear when under tension</li> </ul>	Level D	
	Fire	<ul style="list-style-type: none"> <li>Have fire extinguishers inspected and readily available.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Real time air monitoring will take place for LEL/O2</li> </ul>	Level D	4 GAS
	Noise	<ul style="list-style-type: none"> <li>Hearing protection is mandatory and above 85dbA.</li> </ul>	Earplugs + Level D	
	Contact with rotating or reciprocating machine parts	<ul style="list-style-type: none"> <li>Machine guards, use long-handled shovels to remove auger cuttings.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Safe lockout procedures for maintenance work.</li> </ul>	Level D	
	Heavy lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques. Lifts greater than 60lbs. Require assistance or mechanical equipment size-up the lift. Recommend wearing a back support if possible.</li> </ul>	Level D	
Slip, trip and fall hazards	<ul style="list-style-type: none"> <li>Good housekeeping, keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip and fall hazards. Assure no holes in walkways exist that are greater than 12" x 12".</li> </ul>	Level D		

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<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Drill Rig Operations	Contact with potentially contaminated materials and poison oak	<ul style="list-style-type: none"> <li>Real time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized. Modified "D" will be the lowest level of protection due to the high potential for skin contact.</li> </ul>	Level D	PID 4 GAS
	Auger binding or breaking	<ul style="list-style-type: none"> <li>Auger guides will be used on hard services.</li> </ul>	Level D	
	Contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>Utilize appropriate PPE.</li> </ul>	Modified Level D	
	Special conditions	<ul style="list-style-type: none"> <li>Climbing booms, or any hazardous operations out of the normal use of drill will not be conducted without approval of SSHO.</li> </ul>	Level D	
	Fall hazards	<ul style="list-style-type: none"> <li>Use safety full-body harness, shock absorbing lanyard with double locking hooks, an lifeline when working above 6 feet.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Open bore holes will be capped and flagged. Open excavations will be barricaded.</li> </ul>	Level D	
<b>EQUIPMENT TO BE USED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>	
Hand tools PPE Heavy equipment Drilling rig Service truck		Pre-postmaintenance Visual prior to use	Tailgate Safety Meeting Site specific orientation Hazardous waste operations Hazard communication	

**JOB SAFETY ANALYSIS FOR STORAGE AND HANDLING**  
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<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Preparation of ground for siting of Chemical Storage Facility	Heavy equipment operations	<ul style="list-style-type: none"> <li>Inspect all heavy equipment before use.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Only trained and certified operators may utilize equipment (see OSHA regulations).</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All ground personnel will be prohibited from working in areas while heavy equipment is in use.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All heavy equipment must be equipped with roll-over protection systems (ROPS) and backup alarms.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Seat belts will be worn while operating equipment.</li> </ul>	Level D	
	Noise	<ul style="list-style-type: none"> <li>Noise protection shall be worn when working with heavy equipment.</li> </ul>	Earplugs + Level D	
Chemical Storage Facility Layout	Inhalation hazards	<ul style="list-style-type: none"> <li>Storage facility should be well-ventilated, and in an outdoor location away from all heat sources.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Secondary containment should be provided for each class of chemical.</li> </ul>	Level D	
	Fire	<ul style="list-style-type: none"> <li>Two fire extinguishers utilizing water as the extinguishing media should be installed in and around the storage facility</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Store chemicals in a controlled, outdoor location to minimize fire hazards.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Mark storage cells for classes of allowable chemicals</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Ensure chemicals stored in areas are compatible. Provide berms or other barriers to prevent spilled materials from migrating to cells of non-compatible chemicals.</li> </ul>	Level D	
	Trespassing and Theft	<ul style="list-style-type: none"> <li>Secure the facility (lock doors and fence the surrounding area) and provide lighting.</li> </ul>	Level D	

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<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Transfer chemicals from shipping to storage facility	Heavy Lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques (flex at the knees and use legs when lifting).</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Obey sensible lifting limits (60 pounds individual lifting maximum).</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Use mechanical lifting equipment to move large, awkward loads.</li> </ul>	Level D	
	Slips, trips and falls	<ul style="list-style-type: none"> <li>Clear walkways of equipment, vegetation, and excavated material.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Maintain good housekeeping.</li> </ul>	Level D	
	Heavy equipment operations	<ul style="list-style-type: none"> <li>Inspect all heavy equipment before use.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Only trained, experienced operators may operate equipment.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All ground personnel will be prohibited from working in areas while heavy equipment is in use.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All heavy equipment must be equipped with roll-over protection systems (ROPS) and backup alarms.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Seat belts will be worn while operating equipment.</li> </ul>	Level D	
	Noise	<ul style="list-style-type: none"> <li>Noise protection shall be worn when working with heavy equipment.</li> </ul>	Earplugs + Level D	
	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> <li>Work area will be barricaded/demarcated.</li> </ul>	Level D	
	Fire	<ul style="list-style-type: none"> <li>A/B/C Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition for use with equipment fires.</li> </ul>	Level D	

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<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Transfer chemicals from shipping to storage facility	Fire	<ul style="list-style-type: none"> <li>Fires involving the storage chemicals should be extinguished with water.</li> </ul>	Level D	
Movement of chemicals to Remedial Unit from chemical storage area	Chemical exposure/chemical splash	<ul style="list-style-type: none"> <li>Train workers on the hazards associated with site chemicals. Applicable MSDS sheets will be reviewed by all employees working with chemicals.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>PPE – Safety glasses, face shield, chemical resistant clothing, hard-toed shoes with rubber covers, and rubber gloves.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Chemical containers must be secured and sealed prior to movement.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Move materials slowly to prevent splashing.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Label tanks to identify the chemical contents, and the associated hazards.</li> </ul>	Modified Level D	
	Fire	<ul style="list-style-type: none"> <li>Ensure that tanks are clear of other chemicals and debris prior to movement.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Cover tanks after filling to prevent contamination due to the elements.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Spill containment measures shall be readily available to contain spill and prevent chemical mixing and/or migration off-site.</li> </ul>	Level D	
	Skin, eye and respiratory irritation	<ul style="list-style-type: none"> <li>PPE – Safety glasses, chemical resistant clothing, hard-toed shoes, and rubber gloves.</li> </ul>	Modified Level D	

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<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Movement of chemicals to Remedial Unit from chemical storage area	Skin, eye and respiratory irritation	<ul style="list-style-type: none"> <li>Move materials slowly to minimize the potential for airborne distribution.</li> </ul>	Modified Level D	
	Heavy lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques (flex at the knees and use legs when lifting).</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Obey sensible lifting limits (60 pounds individual lifting maximum).</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Use mechanical lifting equipment to move large, awkward loads.</li> </ul>	Level D	
	Slips, trips and falls	<ul style="list-style-type: none"> <li>Clear walkways of equipment, vegetation, and excavated material.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Maintain good housekeeping.</li> </ul>	Level D	
	Pinch-points/Cut Hazards	<ul style="list-style-type: none"> <li>Keep hands, fingers, and feet clear of moving/suspended materials and equipment.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Wear adequate hand protection.</li> </ul>	Level D	
	Heavy equipment operations	<ul style="list-style-type: none"> <li>Inspect all heavy equipment before use.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Only trained, experienced operators may operate equipment.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All ground personnel will be prohibited from working in areas while heavy equipment is in use.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All heavy equipment must be equipped with roll-over protection systems (ROPS) and backup alarms.</li> </ul>	Level D	
	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> <li>Seat belts will be worn while operating equipment.</li> </ul>	Level D	
<ul style="list-style-type: none"> <li>Work area will be barricaded/demarcated.</li> </ul>		Level D		

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<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Movement of chemicals to Remedial Unit from chemical storage area	Hot/Cold Stress	<ul style="list-style-type: none"> <li>Train workers to recognize symptoms of hot and cold stress. Implement IT Procedures HS400 and HS401 as appropriate. Instruct workers using impermeable clothing to have extra dry clothes to change into.</li> </ul>	Level D	
	Rotating equipment hazards	<ul style="list-style-type: none"> <li>No loose articles of clothing will be worn when operating mixer.</li> </ul>	Level D	
<b>EQUIPMENT TO BE USED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>	
Forklift		Pre- and post-maintenance	Hazard communication	
Drum Dolly		Visual inspection prior to use	Industrial Truck use	
PPE		CESPD Form 150R	Tailgate Safety Meeting	
			Site specific orientation	

**JOB SAFETY ANALYSIS FOR WASTE MANAGEMENT**  
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<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Containerizing of Waste	Chemical exposure	• Transfer chemicals in well-ventilated area.	Modified Level D	
		• Use appropriate PPE for chemical hazards. Refer to specific MSDS.	Modified Level D	
		• Ensure proper/ compatible containers are used for chemicals.	Modified Level D	
	Improper or missing labels	• Visually inspect all chemical storage containers for proper labeling.	Level D	
		• Prepare and attach completed labels at start of accumulation of waste into container.	Level D	
		• Ensure hazards classification profile is generated for each waste stream.	Level D	
	Contact between incompatible chemicals	• Ensure compatibility with other chemical components, if combination of waste streams is required. Consult the MSDS.	Level D	
Noise	• Noise protection shall be worn when working with heavy equipment.	Earplugs +Level D		
Transfer waste from point of generation to storage facility	Heavy Lifting	• Use proper lifting techniques (flex at the knees and use legs when lifting).	Level D	
		• Obey sensible lifting limits (60 pounds individual lifting maximum).	Level D	
		• Use mechanical lifting equipment to move large, awkward loads.	Level D	
	Slips, trips and falls	• Clear walkways of equipment, vegetation, and excavated material.	Level D	
		• Maintain good housekeeping.	Level D	

**JOB SAFETY ANALYSIS FOR WASTE MANAGEMENT**  
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<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Transfer waste from point of generation to storage facility	Heavy equipment operations	• Inspect all heavy equipment before use.	Level D	
		• Only trained, experienced operators may operate equipment.	Level D	
		• All ground personnel will be prohibited from working in areas while heavy equipment is in use.	Level D	
		• All heavy equipment must be equipped with roll-over protection systems (ROPS) and backup alarms.	Level D	
		• Seat belts will be worn while operating equipment.	Level D	
	• Noise protection shall be worn when working with heavy equipment.	Level D		
	Noise	• Noise protection shall be worn when working with heavy equipment.	Earplugs + Level D	
Contact with moving equipment/vehicles	• Work area will be barricaded/demarcated.	Level D		
Fire	• Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. Fires involving the storage chemicals should be extinguished with water.	Level D		
Segregation of wastes	Fire/Chemical exposure	• Refer to map layout of Hazardous Waste Storage Area.	Modified Level D	
	Contact between incompatible chemicals	• Segregate chemicals in accordance with hazards described in the MSDS.	Modified Level D	
	Improper or missing labels	• Visually inspect all chemical storage containers for proper labeling.	Level D	

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<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Transfer of waste to shipping vessel	Chemical exposure	<ul style="list-style-type: none"> <li>Train workers on the hazards associated with site chemicals. Applicable MSDS sheets will be review by all employees working with chemicals.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Transfer materials slowly to prevent splashing.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>PPE – Safety glasses, face shield, chemical resistant clothing, hard-toed shoes with rubber covers, and rubber gloves.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Label tanks to identify the chemical contents, and the associated hazards.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Containment/clean-up material will be made readily available in event of spill</li> </ul>	Modified Level D	
	Fire	<ul style="list-style-type: none"> <li>Ensure that containers are clear of other chemicals and/or debris prior to transferring chemicals.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Cover containers after filling to prevent contamination due to the elements.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Fire extinguishers (water media) shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Spill containment measures shall be readily available to contain spill and prevent chemical mixing and/or migration off-site.</li> </ul>	Level D	
	Skin, eye and respiratory irritation	<ul style="list-style-type: none"> <li>Transfer materials slowly to minimize airborne distribution.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>PPE – Safety glasses, chemical resistant clothing, hard-toed shoes, and rubber gloves.</li> </ul>	Modified Level D	
	Heavy lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques (flex at the knees and use legs when lifting).</li> </ul>	Level D	



**JOB SAFETY ANALYSIS FOR WASTE MANAGEMENT**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Transfer of waste to shipping vessel	Incompatible chemicals	<ul style="list-style-type: none"> <li>Fire extinguishers (water media) shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Spill containment measures shall be readily available to contain spill and prevent chemical mixing and/or migration off-site.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Ensure compatibility with other chemical components, if combination of waste streams is required. Consult the MSDS and technical staff.</li> </ul>	Modified Level D	
<b>EQUIPMENT TO BE USED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>	
Forklift Drum Dolly PPE		Pre- and post-maintenance Visual inspection prior to use CESPD Form 150R	Hazard Communication Tailgate Safety Meeting Site specific orientation	

**JOB SAFETY ANALYSIS FOR SOIL/WATER SAMPLING**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Staging Equipment	Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>Maintain good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip, and fall hazards.</li> </ul>	Level D	
	Heavy lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.</li> </ul>	Level D	
	Falling objects	<ul style="list-style-type: none"> <li>Stay alert and clear of materials suspended overhead. Use steel-toed boots and hard hat.</li> </ul>	Level D	
	Flying debris, dirt, dust, etc.	<ul style="list-style-type: none"> <li>Use safety glasses/goggles. Ensure that eye wash is in good working order.</li> </ul>	Level D	
	Pinch points	<ul style="list-style-type: none"> <li>Keep hands, fingers, and feet clear of moving/suspended materials and equipment.</li> </ul>	Level D	
	Fire	<ul style="list-style-type: none"> <li>Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>	Level D	
	Fire/chemical exposure	<ul style="list-style-type: none"> <li>All solvents will be transported in UL/FM-approved containers and sources of ignition will be prohibited.</li> <li>Initial real time air monitoring will take place.</li> </ul>	Modified Level D	
			Level D	PID 4 GAS
	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> <li>Work area will be barricaded/demarcated.</li> </ul>	Level D	
	Work in excavations	<ul style="list-style-type: none"> <li>IT Policy and Procedure HS 307, "Excavation and Trenching," will be adhered to at all times.</li> </ul>	Modified Level D	
	Hazard communication	<ul style="list-style-type: none"> <li>Label all containers as to contents and dispose of property.</li> </ul>	Level D	
	Noise	<ul style="list-style-type: none"> <li>Sound levels above 85 dBA mandates hearing protection.</li> </ul>	Earplugs + Level D	

**JOB SAFETY ANALYSIS FOR SOIL/WATER SAMPLING**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Sample collection	Working at elevated heights/falls	<ul style="list-style-type: none"> <li>Ladders will be secured by top, bottom, and intermediate fastenings, as required.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Personnel working at heights of 6 feet or more must be secured with fall protection (safety belt/lanyard).</li> </ul>	Level D	
	Electrical shock	<ul style="list-style-type: none"> <li>All electrical circuits will be de-energized and locked out.</li> </ul>	Level D	
	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.</li> </ul>	Modified Level D	PID 4 GAS
		<ul style="list-style-type: none"> <li>Initial real-time air monitoring will take place before and during sampling activities.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.</li> </ul>	Modified Level D	
	Cut hazards	<ul style="list-style-type: none"> <li>Wear adequate hand protection.</li> </ul>	Level D	
	Hazard communication	<ul style="list-style-type: none"> <li>Label all containers as to contents.</li> </ul>	Level D	
	Strains/sprains	<ul style="list-style-type: none"> <li>Avoid twisting/turning while pulling on tools, grates, manway covers, etc.</li> </ul>	Level D	
	Spills/residual materials	<ul style="list-style-type: none"> <li>Absorbent material and containers will be kept where leaks or spills may occur.</li> </ul>	Modified Level D	
	Lighting	<ul style="list-style-type: none"> <li>Adequate lighting will be provided to insure a safe working environment.</li> </ul>	Level D	
	Unattended worker	<ul style="list-style-type: none"> <li>"Buddy System" - visual contact will be maintained with the sampling technician during sampling activities.</li> </ul>	Level D	



**JOB SAFETY ANALYSIS FOR SPILL/EMERGENCY RESPONSE**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Preparation of dry chemicals	Chemical burns from exposure to chemical oxidizers and acids.	<ul style="list-style-type: none"> <li>Train workers on the hazards associated with site chemicals. Applicable MSDS sheets will be review by all employees working with chemicals.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Transfer materials slowly to prevent splashing/dust.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>PPE – Safety glasses, face shield, chemical resistant clothing, hard-toed shoes with rubber covers, and rubber gloves.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Label containers to identify the chemical contents, and the associated hazards.</li> </ul>	Modified Level D	
	Fire/explosion	<ul style="list-style-type: none"> <li>Ensure that containers are clear of other chemicals and/or debris prior to transferring chemicals.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Cover containers after filling to prevent contamination due to the elements.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Fire extinguishers (water media) shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>	Level D	
	Spills/Leaks	<ul style="list-style-type: none"> <li>Spill containment measures shall be readily available to contain spill and prevent chemical mixing and/or migration off-site.</li> </ul>	Modified Level D	
	Heavy lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques (flex at the knees and use legs when lifting).</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Obey sensible lifting limits (60 pounds individual lifting maximum).</li> </ul>	Level D	
<ul style="list-style-type: none"> <li>Use mechanical lifting equipment to move large, awkward loads.</li> </ul>		Level D		

**JOB SAFETY ANALYSIS FOR SPILL/EMERGENCY RESPONSE**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Preparation of dry chemicals	Slips, trips and falls	<ul style="list-style-type: none"> <li>Clear walkways of equipment, vegetation, and excavated material.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Maintain good housekeeping.</li> </ul>	Level D	
	Pinch-points/Cut Hazards	<ul style="list-style-type: none"> <li>Keep hands, fingers, and feet clear of moving/suspended materials and equipment.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Wear adequate hand protection.</li> </ul>	Level D	
	Heavy equipment operations	<ul style="list-style-type: none"> <li>Inspect all heavy equipment before use.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Only trained, experienced operators may operate equipment.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All ground personnel will be prohibited from working in areas while heavy equipment is in use.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All heavy equipment must be equipped with roll-over protection systems (ROPS) and backup alarms.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Seat belts will be worn while operating equipment.</li> </ul>	Level D	
	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> <li>Work area will be barricaded/demarcated.</li> </ul>	Level D	
Hot/Cold Stress	<ul style="list-style-type: none"> <li>Train workers to recognize symptoms of hot and cold stress. Implement IT Procedures HS400 and HS401 as appropriate. Instruct workers using impermeable clothing to have extra dry clothes to change into.</li> </ul>	Level D		
Dilution of chemicals	Chemical exposure	<ul style="list-style-type: none"> <li>Train workers on the hazards associated with site chemicals.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Applicable MSDS sheets will be review by all employees working with chemicals.</li> </ul>	Modified Level D	

**JOB SAFETY ANALYSIS FOR SPILL/EMERGENCY RESPONSE**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Dilution of chemicals	Chemical exposure	<ul style="list-style-type: none"> <li>Perform visual inspection of containers for contents and sign of contamination prior to use.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Add dilutant (water) to the container before chemicals.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Transfer materials slowly to prevent splashing.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>PPE – Safety glasses, face shield, chemical resistant clothing, steel-toed shoes with rubber covers, and rubber gloves.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Label tanks to identify the chemical contents, and the associated hazards.</li> </ul>	Modified Level D	
	Fire/explosion	<ul style="list-style-type: none"> <li>Dilute concentrated chemicals by adding to water, not by adding water to the concentrated chemical</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>In the event of a spill, berm off the area, and dilute the chemical with water.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Ensure that containers are clear of other chemicals, debris and/or water prior to transferring chemicals.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Cover containers after filling to prevent contamination due to the elements.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Fire extinguishers (water media) shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>	Level D	
	Spills/leaks	<ul style="list-style-type: none"> <li>Spill containment measures shall be readily available to contain spill and prevent chemical mixing and/or migration off-site.</li> </ul>	Modified Level D	

**JOB SAFETY ANALYSIS FOR SPILL/EMERGENCY RESPONSE**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Neutralization of oxidizer solutions (KMnO <sub>4</sub> )	Fire/Explosion	<ul style="list-style-type: none"> <li>Dilute all oxidizer solutions to 5% or less prior to chemical neutralization.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Always neutralize with dilute solutions (10%) of reducing agent (NaHSO<sub>3</sub>); NEVER add solid reducing agent directly to any oxidizer solution.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Train workers on the hazards associated with site chemicals. Applicable MSDS sheets will be review by all employees working with chemicals.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Transfer materials slowly to prevent splashing.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>PPE – Safety glasses, face shield, chemical resistant clothing, hard-toed shoes with rubber covers, and rubber gloves.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Label containers to identify the chemical contents, and the associated hazards.</li> </ul>	Modified Level D	
	Chemical exposure	<ul style="list-style-type: none"> <li>If possible, dilute concentrated chemicals by adding to water, not by adding water to the concentrated chemical. If not possible, use Extreme Care when diluting.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>In the event of a spill, berm off the area, and dilute the chemical with water.</li> </ul>	Modified Level D	
	Fire/Explosion	<ul style="list-style-type: none"> <li>Ensure that containers are clear of other chemicals and/or debris prior to transferring chemicals.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Cover tanks after filling to prevent contamination due to the elements.</li> </ul>	Level D	

**JOB SAFETY ANALYSIS FOR SPILL/EMERGENCY RESPONSE**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Neutralization of oxidizer solutions (KMnO <sub>4</sub> )	Fire/Explosion	<ul style="list-style-type: none"> <li>Fire extinguishers (water media) shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Spill containment measures shall be readily available to contain spill and prevent chemical mixing and/or migration off-site.</li> </ul>	Level D	
Neutralization of chemical solutions (NaHSO <sub>3</sub> )	Fire/Explosion	<ul style="list-style-type: none"> <li>Ensure that containers are clear of other chemicals and/or debris prior to transferring chemicals.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Cover tanks after filling to prevent contamination due to the elements.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Fire extinguishers (water media) shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Spill containment measures shall be readily available to contain spill and prevent chemical mixing and/or migration off-site.</li> </ul>	Level D	
	Chemical exposure	<ul style="list-style-type: none"> <li>Train workers on the hazards associated with site chemicals. Applicable MSDS sheets will be reviewed by all employees working with chemicals.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Dilute chemical solutions prior to performing neutralizing procedures.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Never add dry chemical reagent directly. Add the water slowly, to prevent splashing. Rapid addition could result in uncontrolled reactions, generating toxic fumes and potentially leading to fire, or explosion.</li> </ul>	Modified Level D	

**JOB SAFETY ANALYSIS FOR SPILL/EMERGENCY RESPONSE**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Neutralization of chemical solutions (NaHSO <sub>3</sub> )	Chemical exposure	• Neutralize acid solutions with sodium bisulfite.	Modified Level D	
		• Recover and containerize (NaHSO <sub>3</sub> ) solutions to the extent possible. Flush area with potable water.	Modified Level D	
		• PPE – Safety glasses, face shield, chemical resistant clothing, hard-toed shoes with rubber covers, and rubber gloves.	Modified Level D	
		• Label tanks to identify the chemical contents, and the associated hazards.	Modified Level D	
	Heavy lifting	• Use proper lifting techniques (flex at the knees and use legs when lifting).	Level D	
		• Obey sensible lifting limits (60 pounds individual lifting maximum).	Level D	
		• Use mechanical lifting equipment to move large, awkward loads.	Level D	
	Slips, trips and falls	• Clear walkways of equipment, vegetation, and excavated material.	Level D	
		• Maintain good housekeeping.	Level D	
	Pinch-points/Cut Hazards	• Keep hands, fingers, and feet clear of moving/suspended materials and equipment.	Level D	
		• Wear adequate hand protection.	Level D	

**JOB SAFETY ANALYSIS FOR SPILL/EMERGENCY RESPONSE**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
<b>EQUIPMENT TO BE USED</b>		<b>INSPECTION REQUIREMENTS</b>		<b>TRAINING REQUIREMENTS</b>
Absorbent materials PPE		Pre-postmaintenance Visual prior to use		Tailgate Safety Meeting Site-specific orientation Hazardous waste operations Hazard communication

**JOB SAFETY ANALYSIS FOR CLEARING/GRUBBING VEGETATION**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Clearing Brush and Debris	Slip, Trip and Falls	• Individuals must survey the terrain	Level D	
		• Look before stepping	Level D	
	Sharp Objects	• Individuals must be alert to sharp objects that may be lying under brush. Metal inserts may be used inside boots to make them puncture resistant.	Level D	
	Poisonous Plants, Snakes, and Insects	• Individuals must be aware of the potential for these hazards to be present. Precautionary measures to be taken will be addressed in daily tailgate safety meetings.	Level D	
	Use of Machetes	• Keep other personnel clear of swing area. Use extreme caution when using.	Level D	
	Falling Objects	• Hardhat, stay alert and clear of materials suspended overhead; steel-toed boots	Level D	
	Heavy Lifting	• Use proper lifting techniques	Level D	
		• Lifts of greater than 60 lbs. require assistance or mechanical equipment; size up the lift.	Level D	
	Pinch Points	• Keep hands, fingers and feet clear of moving/suspended materials and equipment	Level D	
	Flying Debris, Dirt, Dust, Etc.	• Safety glasses/eye wash.	Level D	
Faulty or Damaged Equipment	• Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.	Level D		

**JOB SAFETY ANALYSIS FOR CLEARING/GRUBBING VEGETATION**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Clearing Brush and Debris	Faulty or Damaged Equipment	<ul style="list-style-type: none"> <li>Preventive maintenance procedures recommended by the manufacturer shall be followed</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Lock-out/Tag-out procedures shall be used for equipment found to be faulty or undergoing maintenance.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Equipment shall be inspected before being placed into service ant at the beginning of each shift.</li> </ul>	Level D	
	Unqualified Operators	<ul style="list-style-type: none"> <li>Machinery and mechanized equipment shall be operated only by qualified personnel.</li> </ul>	Level D	
<b>EQUIPMENT TO BE USED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>	
Hand tools PPE Heavy Equipment		Pre-postmaintenance Visual prior to use CESPD Form 150 R	Tailgate Safety Meeting Site specific orientation Hazardous waste operations Hazard communication	

**JOB SAFETY ANALYSIS FOR CHEMICAL STORAGE FACILITY**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Preparation of ground for siting of Chemical Storage Facility	Heavy equipment operations	• Inspect all heavy equipment before use.	Level D	
		• Only trained and certified operators may utilize equipment (see OSHA regulations).	Level D	
		• All ground personnel will be prohibited from working in areas while heavy equipment is in use.	Level D	
		• All heavy equipment must be equipped with roll-over protection systems (ROPS) and backup alarms.	Level D	
		• Seat belts will be worn while operating equipment.	Level D	
	Noise	• Noise protection shall be worn when working with heavy equipment.	Earplugs +Level D	
Chemical Storage Facility Layout	Inhalation hazards	• Storage facility should be well-ventilated, and in an outdoor location away from all heat sources.	Modified Level D	
		• Secondary containment should be provided for each class of chemical.	Modified Level D	
	Fire	• Two fire extinguishers utilizing water as the extinguishing media should be installed in and around the storage facility	Level D	
		• Store chemicals in a controlled, outdoor location to minimize fire hazards.	Level D	
		• Mark storage cells for classes of allowable chemicals	Level D	
		• Ensure chemicals stored in areas are compatible. Provide berms or other barriers to prevent spilled materials from migrating to cells of non-compatible chemicals.	Level D	

**JOB SAFETY ANALYSIS FOR CHEMICAL STORAGE FACILITY**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Chemical Storage Facility Layout	Trespassing and Theft	<ul style="list-style-type: none"> <li>Secure the facility (lock doors and fence the surrounding area) and provide lighting.</li> </ul>	Level D	
Transfer chemicals from shipping to storage facility	Heavy Lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques (flex at the knees and use legs when lifting).</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Obey sensible lifting limits (60 pounds individual lifting maximum).</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Use mechanical lifting equipment to move large, awkward loads.</li> </ul>	Level D	
	Slips, trips and falls	<ul style="list-style-type: none"> <li>Clear walkways of equipment, vegetation, and excavated material.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Maintain good housekeeping.</li> </ul>	Level D	
	Heavy equipment operations	<ul style="list-style-type: none"> <li>Inspect all heavy equipment before use.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Only trained, experienced operators may operate equipment.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All ground personnel will be prohibited from working in areas while heavy equipment is in use.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All heavy equipment must be equipped with roll-over protection systems (ROPS) and backup alarms.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Seat belts will be worn while operating equipment.</li> </ul>	Level D	
Noise	<ul style="list-style-type: none"> <li>Noise protection shall be worn when working with heavy equipment.</li> </ul>	Earplugs +Level D		
Contact with moving equipment/vehicles	<ul style="list-style-type: none"> <li>Work area will be barricaded/demarcated.</li> </ul>	Level D		

**JOB SAFETY ANALYSIS FOR CHEMICAL STORAGE FACILITY**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Transfer chemicals from shipping to storage facility	Fire	<ul style="list-style-type: none"> <li>A/B/C Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition for use with equipment fires.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Fires involving the storage chemicals should be extinguished with water.</li> </ul>	Level D	
Segregation of chemicals	Fire/Chemical exposure	<ul style="list-style-type: none"> <li>The chemicals that will be stored on-site include potassium permanganate (KMnO4) and sodium bisulfite (NaHSO3),</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Two segregated chemical storage cells will be required to safely segregate these chemicals: KMnO4 NaHSO3 . Refer to map layout of Chemical Storage Facility.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Refer to OP for Emergency/Spill Response Procedures.</li> </ul>	Modified Level D	
	Contact between incompatible chemicals	<ul style="list-style-type: none"> <li>Segregate chemicals in accordance with hazards described in the MSDS.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Maintain barriers between cells</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Placard cells for proper storage</li> </ul>	Modified Level D	
	Improper or missing labels	<ul style="list-style-type: none"> <li>Visually inspect all chemical storage containers for proper labeling.</li> </ul>	Level D	
<b>EQUIPMENT TO BE USED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>	
Heavy Equipment		Pre-postmaintenance	Tailgate Safety Meeting	
PPE		Visual prior to use	Site specific orientation	
		CESPD Form 150 R	Hazardous waste operations	
			Hazard communication	

**JOB SAFETY ANALYSIS FOR TILLING CONTAMINATED SOILS**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Tilling of Contaminated Soils	Struck By/ Against Heavy Equipment	• Wear reflective warning vests worn when exposed to vehicular traffic	Level D	
		• Isolate equipment swing areas	Level D	
		• Make eye contact with operators before approaching equipment	Level D	
		• Understand and review hand signals	Level D	
	Slips, Trips, Falls	• Clear walkways, work areas of equipment, tools, vegetation, excavated material, and debris	Level D	
		• Mark, identify, or barricade other obstructions	Level D	
	Handling Heavy Objects	• Observe proper lifting techniques	Level D	
		• Obey sensible lifting limits (60 lb. maximum per person manual lifting)	Level D	
		• Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads	Level D	
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects	Leather gloves + Level D	
		• Maintain all hand and power tools in a safe condition	Level D	
		• Keep guards in place during use	Level D	
		• Close doors, windows on heavy equipment to prevent injuries from tree branches and other vegetation	Level D	
	Insect/ Snake Bites	• Review injury potential and types of snakes with workers	Level D	

**JOB SAFETY ANALYSIS FOR TILLING CONTAMINATED SOILS**  
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<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Tilling of Contaminated Soils	Insect/ Snake Bites	• Avoid insect nests areas, likely habitats of snakes outside work areas	Level D	
		• Emphasize The Buddy System where such injury potential exists	Level D	
		• Use insect repellent, wear PPE to protect against sting/bite injuries	Level D	
	Contact Dermatitis	• Wear PPE to avoid skin contact with contaminated soil, plants, or other skin irritants	Modified Level D	
		• Identify and review poisonous plants with workers	Modified Level D	
		• Apply protective cream/lotion to exposed skin to prevent poison ivy or similar reactions	Modified Level D	
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)	Ear plugs + Level D	
		• Assess noise level with sound level meter if possibility exists that level may exceed 85 dB A TWA	Level D	
	High/Low Ambient Temperature	• Monitor for Heat/Cold stress in accordance with IT Health and Safety Procedures # HS400, HS401	Level D	
		• Provide fluids to prevent worker dehydration	Level D	
		• Follow work/rest schedule in Section 3.3.1/3.3.2 of the HASP	Level D	
	Cuts, Lacerations, Punctures	• Wear cut resistant work gloves when the possibility of cuts, lacerations, punctures or other injury may be caused by sharp edges or protruding objects	Level D	
• Keep guards in place during use		Level D		
• Maintain all hand and power tools in a safe condition		Level D		

**JOB SAFETY ANALYSIS FOR TILLING CONTAMINATED SOILS**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Soil Sampling	Sharp Objects	<ul style="list-style-type: none"> <li>Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects</li> </ul>	Leather Gloves + Level D	
		<ul style="list-style-type: none"> <li>Maintain all hand and power tools in a safe condition</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Keep guards in place during use</li> </ul>	Level D	
	Handling Heavy Objects	<ul style="list-style-type: none"> <li>Observe proper lifting techniques</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Obey sensible lifting limits (60 lb. maximum per person manual lifting)</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads</li> </ul>	Level D	
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Clear walkways, work areas of equipment, tools, vegetation, excavated material, and debris</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Mark, identify, or barricade other obstructions</li> </ul>	Level D	
	Inhalation and Contact with Hazardous Substances	<ul style="list-style-type: none"> <li>Provide workers proper skin, eye and respiratory protection based on the exposure hazards present</li> </ul>	Modified Level D	PID 4 GAS
		<ul style="list-style-type: none"> <li>Review hazardous properties of site contaminants with workers before operations begin</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Monitor breathing zone air to determine levels of contaminants</li> </ul>	Modified Level D	
	High/Low Ambient Temperature	<ul style="list-style-type: none"> <li>Monitor for Heat/Cold stress in accordance with IT Health and Safety Procedures # HS400, HS401</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Provide fluids to prevent worker dehydration</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Follow work/rest schedule in Section 3.3.1/3.3.2 of the HASP</li> </ul>	Level D	

**JOB SAFETY ANALYSIS FOR TILLING CONTAMINATED SOILS**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
<b>EQUIPMENT TO BE USED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>	
Heavy Equipment		Pre-postmaintenance	Tailgate Safety Meeting	
		Visual prior to use	Site specific orientation	
PPE		CESPD Form 150 R	Hazardous waste operations	
			Hazard communication	

**JOB SAFETY ANALYSIS FOR CLEARING/GRUBBING VEGETATION**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Clearing Brush and Debris	Slip, Trip and Falls	• Individuals must survey the terrain	Level D	-
		• Look before stepping	Level D	-
	Sharp Objects	• Individuals must be alert to sharp objects that may be lying under brush. Metal inserts may be used inside boots to make them puncture resistant.	Level D	-
	Poisonous Plants, Snakes, and Insects	• Individuals must be aware of the potential for these hazards to be present. Precautionary measures to be taken will be addressed in daily tailgate safety meetings.	Level D	-
	Use of Machetes	• Keep other personnel clear of swing area. Use extreme caution when using.	Level D	-
	Falling Objects	• Hardhat, stay alert and clear of materials suspended overhead; steel-toed boots	Level D	-
	Heavy Lifting	• Use proper lifting techniques	Level D	-
		• Lifts of greater than 60 lbs. require assistance or mechanical equipment; size up the lift.	Level D	-
	Pinch Points	• Keep hands, fingers and feet clear of moving/suspended materials and equipment	Level D	-
	Flying Debris, Dirt, Dust, Etc.	• Safety glasses/eye wash.	Level D	-
Faulty or Damaged Equipment	• Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.	Level D	-	

**JOB SAFETY ANALYSIS FOR CLEARING/GRUBBING VEGETATION**

**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Clearing Brush and Debris	Faulty or Damaged Equipment	<ul style="list-style-type: none"> <li>Equipment shall be inspected before being placed into service ant at the beginning of each shift.</li> </ul>	Level D	-
		<ul style="list-style-type: none"> <li>Preventive maintenance procedures recommended by the manufacturer shall be followed</li> </ul>	Level D	-
		<ul style="list-style-type: none"> <li>Lock-out/Tag-out procedures shall be used for equipment found to be faulty or undergoing maintenance</li> </ul>	Level D	-
	Unqualified Operators	<ul style="list-style-type: none"> <li>Machinery and mechanized equipment shall be operated only by qualified personnel.</li> </ul>	Level D	-
<b>EQUIPMENT TO BE USED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>	
Heavy Equipment		Pre-postmaintenance	Tailgate Safety Meeting	
PPE		Visual prior to use	Site specific orientation	
Hand Tools		CESPD Form 150 R	Hazardous waste operations	
Machete			Hazard communication	

**JOB SAFETY ANALYSIS FOR HEAVY EQUIPMENT OPERATIONS**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
	Out of Control Equipment	<ul style="list-style-type: none"> <li>Getting off or on any equipment while it is in motion is prohibited</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Machinery or equipment requiring an operator shall not be permitted to run unattended.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operation speeds or lads be exceeded.</li> </ul>	Level D	
	Noise	<ul style="list-style-type: none"> <li>Sound levels above 85 dBA mandates hearing protection</li> </ul>	Earplugs + Level D	
	Activation During Repairs	<ul style="list-style-type: none"> <li>All machinery or equipment will be shut down and positive mean taken to prevent its operation while repairs or manual lubrications are being done.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All repairs on machinery or equipment will be made at a location that provides protection from traffic for repairpersons.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Bulldozer and scraper blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use.</li> </ul>	Level D	
	Faulty or Damaged Equipment	<ul style="list-style-type: none"> <li>Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.</li> </ul>	Level D	
	Movement of Equipment	<ul style="list-style-type: none"> <li>All self-propelled construction equipment shall be equipped with a backup alarm.</li> </ul>	Level D	

**JOB SAFETY ANALYSIS FOR HEAVY EQUIPMENT OPERATIONS**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
	Fire	<ul style="list-style-type: none"> <li>Each bulldozer, backhoe, or other similar equipment will be equipped with at least one dry chemical fire extinguisher having a minimum UL rating of IA5BC</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Keep areas of equipment free from accumulation of oil, fuel or other material.</li> </ul>	Level D	
	Contact with Potentially Contaminated Materials	<ul style="list-style-type: none"> <li>Real-time air monitoring will take place. If necessary, proper protective clothing and equipment will be utilized.</li> </ul>	Modified Level D	
	Uneven Terrain and Poor Ground Support	<ul style="list-style-type: none"> <li>Inspections or determinations of road conditions and structures shall be made in advance to assure that clearances and load capacities are safe for the passage or placing of any machinery or equipment.</li> </ul>	Level D	
<b>EQUIPMENT TO BE USED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>	
Chainsaw Machette Heavy equipment PPE		Pre-post maintenance Visual prior to use CESPD Form 150 R	Tailgate safety meeting Site-specific orientation Hazardous waste operations Hazard communication Chainsaw operations	

**JOB SAFETY ANALYSIS FOR DECONTAMINATION OF EQUIPMENT**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Job setup for decontamination of equipment	Heavy lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift. Recommend wearing a back support if possible</li> </ul>	Level D	
	Slips, trips, and fall hazards	<ul style="list-style-type: none"> <li>Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip, and fall hazards.</li> </ul>	Level D	
	Cut hazards	<ul style="list-style-type: none"> <li>Wear adequate hand protection</li> </ul>	Leather Gloves + Level D	
	Lighting	<ul style="list-style-type: none"> <li>Adequate lighting will be provided to ensure a safe working environment.</li> </ul>	Level D	
	Strains/sprains	<ul style="list-style-type: none"> <li>When pulling of lifting, do not turn or twist your back.</li> </ul>	Level D	
	Contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>Appropriate PPE protection will be required.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Real-time air monitoring will take place during decontamination activities.</li> </ul>	Modified Level D	PID 4 GAS
		<ul style="list-style-type: none"> <li>Keep airborne particulates to a minimum.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Practice good housekeeping, avoid spreading potentially contaminated materials.</li> </ul>	Modified Level D	
	Strains/Sprains	<ul style="list-style-type: none"> <li>When pulling or lifting, do not turn or twist your back. Use the proper tool for the task being performed.</li> </ul>	Level D	
	Fueling	<ul style="list-style-type: none"> <li>Only UL/FM approved safety cans shall be used to store fuel.</li> </ul>	Level D	
<ul style="list-style-type: none"> <li>Do not refuel equipment while it is operating.</li> </ul>		Level D		
<ul style="list-style-type: none"> <li>Fire extinguishers rated at A/B/C shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>		Level D		

**JOB SAFETY ANALYSIS FOR DECONTAMINATION OF EQUIPMENT**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Job setup for decontamination of equipment	Faulty or damaged equipment	<ul style="list-style-type: none"> <li>Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Equipment shall be inspected before being placed into service and at the beginning of each shift.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Preventive maintenance procedures recommended by the manufacturer shall be followed.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>A lockout-tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.</li> </ul>	Level D	
Pressure washing equipment	High pressure	<ul style="list-style-type: none"> <li>IT Policy and Procedure HS303 "Pressured water cleaning and cutting equipment" shall be adhered to at all times.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>The operator shall be thoroughly instructed in handling and operating the gun, nozzle and controls prior to operating the unit.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>The operator shall wear metatarsal covers (guards) at all times.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>At no time shall the pressure washer be used to wash/decon personnel.</li> </ul>	Level D	
	Unqualified operators	<ul style="list-style-type: none"> <li>Machinery and mechanized equipment shall be operated only by designated personnel.</li> </ul>	Level D	
	Out of control equipment	<ul style="list-style-type: none"> <li>Machinery or equipment requiring an operator shall not be permitted to run unattended.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Machinery or equipment will not be operated in a manner that will endanger persons or property not will the safe operating speeds or loads be exceeded.</li> </ul>	Level D	

**JOB SAFETY ANALYSIS FOR DECONTAMINATION OF EQUIPMENT**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Pressure washing equipment	Noise	<ul style="list-style-type: none"> <li>Sounds levels above 85 dBA mandates hearing protection.</li> </ul>	Earplugs + Level D	
	Activation during repairs	<ul style="list-style-type: none"> <li>All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.</li> </ul>	Level D	
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment. <b>Stay alert at all times!</b>	Level D	
	Falling objects	<ul style="list-style-type: none"> <li>Hardhats, remove unsecured tools and materials before operating equipment.</li> <li>Stay alert and clear of materials suspended overhead.</li> </ul>	Level D	
			Level D	
	Flying debris	<ul style="list-style-type: none"> <li>Splash shield will be used.</li> </ul>	Level D	
	Contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>Appropriate PPE will be required.</li> </ul>	Modified Level D	
Hot work (hot water/stream cleaning)	<ul style="list-style-type: none"> <li>IT Policy and Procedure HS314 "Hot Work in Hazardous Locations" will be adhered to at all time during any operations involving hot work.</li> </ul>	Level D		
Stage-setup equipment for pumping liquids	Pinch points	<ul style="list-style-type: none"> <li>Keep hands, fingers, and feet clear of moving parts.</li> </ul>	Level D	
	Heavy lifting	<ul style="list-style-type: none"> <li>Any lifting over 60 lbs. Requires assistance or the use of a mechanical lifting device.</li> </ul>	Level D	
	Moving equipment	<ul style="list-style-type: none"> <li>Signal person will assist in positioning equipment.</li> </ul>	Level D	
	Contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>Real time air monitoring will take place. Appropriate PPE protection will be required.</li> </ul>	Modified Level D	PID 4 GAS

**JOB SAFETY ANALYSIS FOR DECONTAMINATION OF EQUIPMENT**  
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<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Pumping liquids	Faulty equipment	<ul style="list-style-type: none"> <li>Equipment will be inspected prior to being placed into service and at the beginning of each shift.</li> </ul>	Level D	
	Pressurized systems	<ul style="list-style-type: none"> <li>All discharge hoses and connections shall be routinely inspected.</li> </ul>	Level D	
	Noise	<ul style="list-style-type: none"> <li>Sound levels above 85 dBA mandates hearing protection.</li> </ul>	Earplugs +Level D	
	Fire	<ul style="list-style-type: none"> <li>A dry chemical fire extinguisher with a rating of A/B/C will be readily available.</li> </ul>	Level D	
	Refueling	<ul style="list-style-type: none"> <li>Proper bonding and grounding. Only UL/FM approved safety cans will be used.</li> </ul>	Level D	
	Heavy equipment operations	<ul style="list-style-type: none"> <li>Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Equipment shall be inspected before being placed into service and at the beginning of each shift.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Preventive maintenance procedures recommended by the manufacturer shall be followed.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>A lockout-tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Machinery and mechanized equipment shall be operated only by designated personnel.</li> </ul>	Level D	
<ul style="list-style-type: none"> <li>Getting on or off any equipment while it is in motion is prohibited.</li> </ul>	Level D			
<ul style="list-style-type: none"> <li>Machinery or equipment requiring an operator shall not be permitted to run unattended.</li> </ul>	Level D			

## JOB SAFETY ANALYSIS FOR DECONTAMINATION OF EQUIPMENT

**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Pumping liquids	Heavy equipment operations	<ul style="list-style-type: none"> <li>Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All machinery or equipment will be shutdown and positive means taken to prevent its operation while repairs or manual lubrications are being done.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All repairs on machinery or equipment will be made at a location, which provides protection from traffic for repair persons.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>All self-propelled construction equipment shall be equipped with a back-up alarm.</li> </ul>	Level D	
	Fire	<ul style="list-style-type: none"> <li>Each bulldozer, backhoe, or other similar equipment will be equipped with at least one dry chemical fire extinguisher having an A/B/C rating.</li> </ul>	Level D	
Loadout of equipment	Truck and equipment traffic	<ul style="list-style-type: none"> <li>Site personnel will wear orange safety vests to identify themselves to traffic.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Load out area will be properly demarcated. Ground personnel to make eye contact with equipment/vehicle operators prior to traffic zone entry. Ground personnel will avoid blind spots directly in front of and directly behind equipment/vehicles.</li> </ul>	Level D	
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip, and fall hazards. Look where you step, ensure safe footing when climbing on/off equipment etc.</li> </ul>	Level D	
	Pinch points	<ul style="list-style-type: none"> <li>Keep feet and hands clear of moving/suspended materials and equipment.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Beware of contact points. <b>Stay alert at all times!</b></li> </ul>	Level D	

**JOB SAFETY ANALYSIS FOR DECONTAMINATION OF EQUIPMENT**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Loadout of equipment	Strains/sprains	<ul style="list-style-type: none"> <li>Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment. Size up the lift. When pulling on materials, pull in a straight line. Do not twist and pull simultaneously.</li> </ul>	Level D	
	Ropes, slings, chains, and hooks	<ul style="list-style-type: none"> <li>The use of ropes, slings and chains shall be in accordance with the safe recommendations of their manufacturer.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Rigging equipment shall not be loaded in excess of its recommended safe working load.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>The use of open hooks is prohibited in rigging to lift any load where there is danger of relieving the tension on the hook due to the load or hook catching or fouling.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Hooks, shackles, rings, pad eyes, and other fittings that show excessive wear or that have been bent, twisted, or otherwise damaged shall be removed from service.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to insure that it is safe. Defective rigging equipment shall be removed from service.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Rigging equipment, when not in use, shall be removed from the immediate work area and properly stored so as not to present a hazard.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Taglines shall be used to control the loads being handled by hoisting equipment.</li> </ul>	Level D	
	Hoisting equipment	<ul style="list-style-type: none"> <li>All hoisting equipment shall be capable of passing a performance (operating) test prior to being placed into service.</li> </ul>	Level D	

**JOB SAFETY ANALYSIS FOR DECONTAMINATION OF EQUIPMENT**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Loadout of equipment	Hoisting equipment	<ul style="list-style-type: none"> <li>At no time shall the hoisting equipment be loaded in excess of the manufacturers rating except during performance tests.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>While hoisting equipment is in operation, the operator shall not perform any other work and he/she shall not leave his/her position at the controls until the load has been safely landed or returned to the ground.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>A standard signal system shall be used on all hoisting equipment.</li> </ul>	Level D	
	Heat	<ul style="list-style-type: none"> <li>Be aware of warning signs of these conditions.</li> </ul>	Level D	
	Insects, spiders, and snakes	<ul style="list-style-type: none"> <li>Inspect work area carefully and avoid placing hands and feet into concealed areas.</li> </ul>	Level D	
	Cut hazards	<ul style="list-style-type: none"> <li>Wear adequate hand protection.</li> </ul>	Level D	
	Falling objects	<ul style="list-style-type: none"> <li>Hardhat, stay alert and clear of materials suspended overhead, steel-toed boots.</li> </ul>	Level D	
<b>EQUIPMENT TO BE USED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>	
Hand tools PPE Heavy Equipment Pressure Washer		Pre-postmaintenance Visual prior to use CESPD Form 150 R	Tailgate Safety Meeting Site specific orientation Hazardous waste operations Hazard communication Pressure washer training	

**JOB SAFETY ANALYSIS FOR CHEMICAL MIXING/INJECTION**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Dilution of Chemicals within Process Tanks	Chemical Exposure	<ul style="list-style-type: none"> <li>Train workers on the hazards associated with site chemicals. Applicable MSDS sheets will be reviewed by all employees working with chemicals. Chemical mixing and injection equipment-specific training is required.</li> </ul>	Modified Level D	4-gas CGI and PID
		<ul style="list-style-type: none"> <li>Perform visual inspection of process tanks for contents and signs of contamination prior to use.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Transfer materials slowly to prevent splashing</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>PPE-safety glasses, face shields, chemical resistant clothing, steel-toed shoes with rubber covers, rubber gloves, and respirator as needed.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Add dilutant (water) to the process tanks before chemicals.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Label tanks to identify the chemical contents and the associated hazards.</li> </ul>	Modified Level D	
	Fire/Explosion	<ul style="list-style-type: none"> <li>Dilute concentrated chemicals by adding to water, not by adding water to the concentrated chemical.</li> </ul>	Level C	
		<ul style="list-style-type: none"> <li>Ensure that tanks are clear of other chemicals, debris and/or water prior to transferring chemicals</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Cover tanks after filling to prevent contamination due to the elements</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>	Level D	
	Spills/Leaks	<ul style="list-style-type: none"> <li>Spill containment measures shall be readily available to contain spills and prevent chemical mixing and/or migration off-site.</li> </ul>	Modified Level D	

**JOB SAFETY ANALYSIS FOR CHEMICAL MIXING/INJECTION**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Dilution of Concentrated Chemical Spills	Chemical Exposure due to Spillage or Leaks	<ul style="list-style-type: none"> <li>Train workers on the hazards associated with site chemicals. Applicable MSDS sheets will be reviewed by all employees working with chemicals. Chemical mixing and injection equipment-specific training is required.</li> </ul>	Modified Level D	
Transfer of Chemical Solutions Through Plumbing Connections	Chemical Exposure	<ul style="list-style-type: none"> <li>Train workers on the hazards associated with site chemicals. Applicable MSDS sheets will be reviewed by all employees working with chemicals. Chemical mixing and injection equipment-specific training is required.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Label piping to identify the chemical contents and the associated hazards, and label the flow directions.</li> </ul>	Modified Level D	
	Fire	<ul style="list-style-type: none"> <li>Ensure that pipes are clear of other chemicals and/or debris prior to transferring chemicals.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Fire extinguishers (water media) shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>	Level D	
	Chemical Spills or Leaks	<ul style="list-style-type: none"> <li>Spill containment measures shall be readily available to contain spills and prevent chemical mixing and/or migration off-site.</li> </ul>	Modified Level D	
	Heavy Lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques (flex at the knees and use legs when lifting)</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Obey sensible lifting limits (60 lbs individual lifting maximum)</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Use mechanical lifting equipment to move large, awkward loads.</li> </ul>	Level D	
	Slips, trips, falls	<ul style="list-style-type: none"> <li>Clear walkways of equipment, vegetation and excavated materials.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Maintain good housekeeping</li> </ul>	Level D	

**JOB SAFETY ANALYSIS FOR CHEMICAL MIXING/INJECTION**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
	Pinch Points and Cut Hazards	<ul style="list-style-type: none"> <li>Keep hands, fingers and feet clear of moving/suspended materials and equipment</li> </ul>	Level D	
Delivery of Chemical to Injector	Chemical Exposure	<ul style="list-style-type: none"> <li>Train workers on the hazards associated with site chemicals. Applicable MSDS sheets will be reviewed by all employees working with chemicals. Chemical mixing and injection equipment-specific training is required.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Ensure proper flow pathways. Open valves slowly.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Label piping to identify the chemical contents and the associated hazards, and label the flow directions.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Use lock-out/Tag-out procedures to modify plumbing.</li> </ul>	Modified Level D	
	Incompatible Chemicals	<ul style="list-style-type: none"> <li>Ensure that pipes are clear of other chemicals and/or debris prior to transferring chemicals.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Fire extinguishers (water media) shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>	Modified Level D	
		<ul style="list-style-type: none"> <li>Spill containment measures shall be readily available to contain spills and prevent chemical mixing and/or migration off-site.</li> </ul>	Modified Level D	
	Heavy Lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques (flex at the knees and use legs when lifting)</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Obey sensible lifting limits (60 lbs individual lifting maximum)</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Use mechanical lifting equipment to move large, awkward loads.</li> </ul>	Level D	

**JOB SAFETY ANALYSIS FOR CHEMICAL MIXING/INJECTION**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>	<b>Monitoring Devices</b>
Delivery of Chemical to Injector	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Clear walkways of equipment, vegetation and excavated materials.</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Maintain good housekeeping</li> </ul>	Level D	
	Pinch Points, Cut Hazards	<ul style="list-style-type: none"> <li>Keep hands, fingers and feet clear of moving/suspended materials and equipment</li> </ul>	Level D	
		<ul style="list-style-type: none"> <li>Wear adequate hand protection</li> </ul>	Level D	
Heat/Cold Stress	<ul style="list-style-type: none"> <li>Train workers to recognize symptoms of hot and cold stress. Implement IT Procedures HS400 and HS401, as appropriate. Instruct workers using impermeable clothing to have extra dry clothes to change into.</li> </ul>	Level D		
Delivery of Solid Permanganate to Soil	Chemical Exposure	<ul style="list-style-type: none"> <li>Avoid windy conditions. Monitor down-wind personnel. Till chemical into the soil immediately following application. Respirator required while weighing, handling and delivering the chemical</li> </ul>	Level C	
	Incompatible Chemicals	<ul style="list-style-type: none"> <li>Fire extinguishers (water media) shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>	Level C	
	Heavy Lifting	<ul style="list-style-type: none"> <li>Use proper lifting techniques (flex at the knees and use legs when lifting)</li> </ul>	Level C	
		<ul style="list-style-type: none"> <li>Obey sensible lifting limits (60 lbs individual lifting maximum)</li> </ul>	Level C	
		<ul style="list-style-type: none"> <li>Use mechanical lifting equipment to move large, awkward loads.</li> </ul>	Level C	
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Clear walkways of equipment, vegetation and excavated materials.</li> </ul>	Level C	
<ul style="list-style-type: none"> <li>Maintain good housekeeping</li> </ul>		Level C		

**JOB SAFETY ANALYSIS FOR CHEMICAL MIXING/INJECTION**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Delivery of Solid Permanganate to Soil	Pinch Points, Cut Hazards	• Keep hands, fingers and feet clear of moving/suspended materials and equipment	Level C	
		• Wear adequate hand protection	Level C	
Delivery of Permanganate Solution to Soil	Chemical Exposure	• <b>Measure quantity and dosage with caution. Respirator required while mixing the solid permanganate with water.</b>	Level C	
	Incompatible Chemicals	• Fire extinguishers (water media) shall be suitably placed, , distinctly marked, readily accessible, and maintained in a fully charged and operable condition.	Modified Level D	
	Heavy Lifting	• Use proper lifting techniques (flex at the knees and use legs when lifting)	Modified Level D	
	Slips, Trips, Falls	• Obey sensible lifting limits (60 lbs individual lifting maximum)	Modified Level D	
		• Use mechanical lifting equipment to move large, awkward loads.	Modified Level D	
		• Clear walkways of equipment, vegetation and excavated materials.	Modified Level D	
		• Maintain good housekeeping	Modified Level D	
	Pinch Points, Cut Hazards	• Keep hands, fingers and feet clear of moving/suspended materials and equipment	Modified Level D	
• Wear adequate hand protection		Modified Level D		
Inspection Requirements	Equipment	• Pre and post maintenance	Level D	
		• Visual Inspection prior to use	Level D	
		• CESPd Form 150R	Level D	

**JOB SAFETY ANALYSIS FOR CHEMICAL MIXING/INJECTION**  
**ALWAYS EXPECT THE UNEXPECTED! ANTICIPATE AND ADJUST!**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Training Requirements	Equipment	<ul style="list-style-type: none"> <li>• Hazard Communications</li> </ul>	Level D	

**ATTACHMENT 4  
MATERIAL SAFETY DATA SHEETS**

## SODIUM BISULFITE

MSDS Number: S3074 --- Effective Date: 11/17/99

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### 1. Product Identification

Synonyms: Sodium acid sulfite; Sulfurous acid, monosodium salt; Sodium hydrogen sulfite, solid

CAS No.: 7631-90-5

Molecular Weight: 104.06

Chemical Formula: A mixture of NaHSO<sub>3</sub> (sodium bisulfite) and Na<sub>2</sub>S<sub>2</sub>O<sub>5</sub> (sodium metabisulfite)

Product Codes: 3556, 3557

---

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sodium Bisulfite	7631-90-5	58 - 99%	Yes
Sodium Metabisulfite	7681-57-4	1 - 42%	Yes

---

### 3. Hazards Identification

#### Emergency Overview

WARNING! HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE ALLERGIC RESPIRATORY REACTION. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. REACTS WITH ACIDS AND WATER RELEASING TOXIC SULFUR DIOXIDE GAS.

J.T. Baker SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT

Storage Color Code: Orange (General Storage)

---

#### Potential Health Effects

##### Inhalation:

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. May cause allergic reaction in sensitive individuals.

##### Ingestion:

May cause gastric irritation by the liberation of sulfurous acid. An asthmatic reaction may occur after ingestion. Large doses may result in nausea, vomiting, diarrhea, abdominal pains, circulatory disturbance, and central nervous system depression. Estimated fatal dose is 10 gm.

##### Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain.

##### Eye Contact:

Causes irritation, redness, and pain. Contact may cause irreversible eye damage. Symptoms may include stinging, tearing, redness, swelling, corneal damage and blindness.

##### Chronic Exposure:

No information found.

##### Aggravation of Pre-existing Conditions:

Some individuals are said to be dangerously sensitive to minute amounts of sulfites in foods. Symptoms may include broncho constriction, shock, gastrointestinal disturbances, angio edema, flushing, and tingling sensations. Once allergy develops, future exposures can cause asthma attacks with shortness of breath, wheezing, and cough.

---

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get

medical attention.

**Skin Contact:**

Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

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**5. Fire Fighting Measures**

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Do not allow water runoff to enter sewers or waterways.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

**6. Accidental Release Measures**

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. Cautiously spray residue with plenty of water, providing ventilation to clear sulfur dioxide fumes generated from water contact. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

**7. Handling and Storage**

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Releases toxic sulfur dioxide gas when in contact with water, ice. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

**8. Exposure Controls/Personal Protection**

**Airborne Exposure Limits:**

-ACGIH Threshold Limit Value (TLV):

5 mg/m<sup>3</sup> (TWA) for sodium bisulfite & for sodium metabisulfite, A4 Not classifiable as a human carcinogen.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded, a half-face respirator with an acid gas cartridge may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece respirator with an acid gas cartridge may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

**9. Physical and Chemical Properties**

**Appearance:**

Coarse white granules.

**Odor:**

Slight odor of sulfur dioxide.

**Solubility:**

Very soluble in water, insoluble in alcohol.

**Specific Gravity:**

1.48  
 pH:  
 No information found.  
 % Volatiles by volume @ 21C (70F):  
 No information found.  
 Boiling Point:  
 Not applicable.  
 Melting Point:  
 150C (302F)  
 Vapor Density (Air=1):  
 No information found.  
 Vapor Pressure (mm Hg):  
 No information found.  
 Evaporation Rate (BuAc=1):  
 No information found.

---

10. Stability and Reactivity

Stability:  
 Strength diminishes somewhat with age. Gradually decomposes in air to sulfate, generating sulfurous acid gas. Contact with moisture (water, wet ice, etc.), will release toxic sulfur dioxide gas.  
 Hazardous Decomposition Products:  
 Burning may produce sulfur oxides.  
 Hazardous Polymerization:  
 Will not occur.  
 Incompatibilities:  
 Water, acids, alkalis, sodium nitrite, oxidizers, aluminum powder.  
 Conditions to Avoid:  
 Moisture, heat, flames, ignition sources and incompatibles.

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11. Toxicological Information

Sodium Metabisulfite [7681-57-4]: No LD50/LC50 information found relating to normal routes of occupational exposure. Investigated as a tumorigen, mutagen and reproductive effector. Sodium Bisulfite [7631-90-5]: Oral rat LD50: 2000 mg/kg. Investigated as a tumorigen and mutagen.

-----\Cancer Lists\-----

---NTP Carcinogen---

Ingredient	Known	Anticipated	IARC Category
Sodium Bisulfite (7631-90-5)	No	No	3
Sodium Metabisulfite (7681-57-4)	No	No	3

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12. Ecological Information

Environmental Fate:  
 No information found.  
 Environmental Toxicity:  
 No information found.

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13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

**APPENDIX D**  
**PROJECT QUALITY CONTROL PLAN**

**FINAL  
PROJECT QUALITY CONTROL PLAN  
CHEMICAL OXIDATION TREATABILITY STUDY  
INSTALLATION RESTORATION SITE 25  
ALAMEDA POINT  
ALAMEDA, CALIFORNIA**

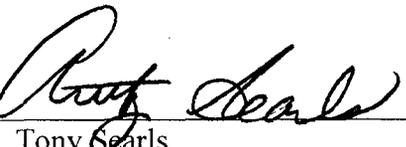
**Environmental Remedial Action  
Contract Number N62474-98-D-2076  
Contract Task Order 0076**

**Document Control Number 1859  
Revision 0**

**August 3, 2001**

Approved by:   
Stephen Massey  
IT Program Quality Control Manager

Date: 7 August 2001

Approved by:   
Tony Searls  
IT Project Manager

Date: August 7, 2001

## **Table of Contents**

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List of Attachments.....	i
Acronyms and Abbreviations.....	ii
1.0 Introduction.....	1-1
2.0 Quality Control Program Plan.....	2-1
3.0 Procedures.....	3-1
3.1 Standard Quality Procedures.....	3-1
3.2 Standard Operating Procedures.....	3-1

## **List of Attachments**

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- Attachment 1 Project QC Manager Letter of Designation
- Attachment 2 Alternate Project QC Manager Letter of Designation
- Attachment 3 Quality Control Organization Chart
- Attachment 4 Definable Features of Work Matrix
- Attachment 5 Testing Plan and Log
- Attachment 6 Submittal Register

## **Acronyms and Abbreviations**

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CQCM	Contractor Quality Control Manager
IT	IT Corporation
PQCP	Project Quality Control Plan
QC	quality control
QCPP	Quality Control Program Plan
SOP	Standard Operating Procedure
SQP	Standard Quality Procedure

## **1.0 Introduction**

---

This Project Quality Control Plan (PQCP) has been prepared to describe the quality control (QC) actions that IT Corporation (IT) will implement during the Chemical Oxidation Treatability Studies at IR Site 25.

This PQCP will be used in conjunction with the Draft Quality Control Program Plan (QCPP) that IT has prepared for work under Environmental Remedial Action Contract Number N62474-98-D-2076, and with IT Standard Quality Procedures (SQPs)/Standard Operating Procedures (SOPs), as applicable. Section 2.0 of this PQCP describes the portions of the QCPP that are applicable to this project and any site-specific modifications to the QCPP that are required. Section 3.0 of this PQCP lists the applicable IT SQPs and SOPs. Attachments 1 through 6 present the following supporting documentation for the site-specific QC activities that IT will perform throughout the execution of this project:

- Attachment 1, Project QC Manager Letter of Designation
- Attachment 2, Alternate Project QC Manager Letter of Designation
- Attachment 3, Quality Control Organization Chart
- Attachment 4, Definable Features of Work Matrix
- Attachment 5, Testing Plan and Log
- Attachment 6, Submittal Register

## 2.0 *Quality Control Program Plan*

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The following portions of the QCPP are applicable to the work conducted under this project, with modifications as noted:

- Management Policy Statement: applicable in its entirety
- Section 1.0—Introduction: applicable in its entirety
- Section 2.0—Organization and Responsibilities: applicable with the following modifications:
  - Add to Section 2.0: The QC organization will be as shown in Figure 1, “Quality Control Organization Chart,” presented in Attachment 3.
- Section 3.0—Quality Control Management: applicable in its entirety
- Section 4.0—Personnel Training and Qualifications: applicable in its entirety
- Section 5.0—Instructions, Procedures, and Drawings: applicable in its entirety
- Section 6.0—Document Control: applicable in its entirety
- Section 7.0—Procurement: applicable in its entirety
- Section 8.0—Chemical Data Quality: applicable in its entirety
- Section 9.0—Field Sampling: applicable as described in the Sampling and Analysis Plan
- Section 10.0—Laboratory Analysis: applicable as described in the Sampling and Analysis Plan
- Section 11.0—Report Preparation: applicable in its entirety
- Section 12.0—Review of Work Activities: applicable in its entirety
- Section 13.0—Inspections: applicable in its entirety
- Section 14.0—Calibration and Maintenance of Measuring and Test Equipment: applicable in its entirety
- Section 15.0—Test Control: applicable in its entirety
- Section 16.0—Nonconformance Control and Corrective Actions: applicable in its entirety
- Section 17.0—Change Control: not applicable. Refer to Draft Project Management Guidelines, dated May 16, 2001.

- Section 18.0—Audits and Surveillance: applicable with the following modification: Subsections 18.1 through 18.8 do not apply
- Section 19.0—Records Management: applicable in its entirety

## **3.0 Procedures**

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### **3.1 Standard Quality Procedures**

The following IT SQPs have been determined to be applicable to this project:

- SQP 1.1—Contractor Quality Control Program
- SQP 3.2—Indoctrination and Training
- SQP 4.1—Document Control
- SQP 4.2—Records Management
- SQP 5.1—Preparation, Revision, and Approval of Plans and Procedures
- SQP 6.1—Preparation, Review, and Approval of Procurement Documents
- SQP 7.1—Quality Inspections and Inspection Records
- SQP 7.2—Receipt Inspection
- SQP 8.2—Calibration and Maintenance of Measuring and Test Equipment
- SQP 10.1—Nonconformance Control
- SQP 10.2—Corrective Action
- SQP 10.3—Stop Work Order
- SQP 12.1—Quality Audits
- SQP 12.2—Management Assessment
- SQP 12.3—Quality Surveillances
- SQP 13.1—Coordination of Subcontracted Analytical Laboratories

### **3.2 Standard Operating Procedures**

The following IT SOPs have been determined to be applicable to this project:

- SOP 1.1—Chain of Custody
- SOP 2.1—Sample Handling, Packaging, and Shipping
- SOP 3.1—Surface and Shallow Subsurface Soil Sampling
- SOP 6.1—Sampling Equipment and Well Material Decontamination
- SOP 6.2—Drilling and Heavy Equipment Decontamination
- SOP 7.1—Surface and Subsurface Geophysics
- SOP 8.3—Bore Hole and Well Abandonment
- SOP 9.1—Groundwater Sampling
- SOP 10.2—Cone Penetration Testing and Hydropunch Groundwater Sampling
- SOP 17.1—Sample Labeling
- SOP 17.2—Sample Numbering
- SOP 18.1—Field QC Sampling
- SOP 19.1—On-Site Sample Storage
- SOP 23.1—Land Surveying

**ATTACHMENT 1**  
**PROJECT QC MANAGER LETTER OF DESIGNATION**

**CHEMICAL OXIDATION TREATABILITY STUDY  
CONTRACT TASK ORDER 0076**

**PROJECT QC MANAGER  
LETTER OF DESIGNATION**

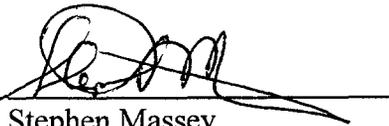
**AUGUST 3, 2001**

Mr. Charles Holman,

This letter will serve to assign you as IT Corporation's (IT) Site Project Quality Control (QC) Manager for the above captioned contract task order. In the case where you are not able to perform the Project QC Manager's duties, Mr. Eric Watabayashi will serve as your Alternate Project QC Manager. In the role of Project QC Manager, you have the responsibilities and authorities designated in Section 2.1.3 of the Draft Quality Control Program Plan (QCPP). Additionally, you are granted stop work authority and will exercise this authority consistent with the Draft QCPP, Section 16.4 and Standard Quality Procedures 10.3. You are granted the authority to approve IT-approved submittals that have been certified by qualified submittal reviewers, as identified in the QC Organization Chart for this contract task order, to ensure the quality of the work, and to direct the removal and/or replacement of nonconforming materials or work. In this capacity, you will report directly to me and will administer the established requirements of the contract task order Project QC Plan.

If you have any questions or require additional information, please contact me at (925) 288-2278.

Sincerely,  
IT CORPORATION



Stephen Massey  
Program QC Manager

**ATTACHMENT 2**  
**ALTERNATE PROJECT QC MANAGER LETTER OF DESIGNATION**

**CHEMICAL OXIDATION TREATABILITY STUDY  
CONTRACT TASK ORDER 0076**

**ALTERNATE PROJECT QC MANAGER  
LETTER OF DESIGNATION**

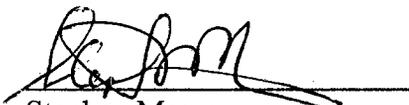
**AUGUST 3, 2001**

Mr. Eric Watabayshi,

This letter will serve to assign you as IT Corporation's (IT) Alternate Project Quality Control (QC) Manager for the above captioned contract task order. In the case where the designated Project QC Manager, Mr. Charles Holman, is unable to perform the Project QC Manager's duties, you will serve in that capacity. In this role, you will have the responsibilities and authorities designated in Section 2.1.3 of the Draft Quality Control Program Plan (QCPP). Additionally, you will have stop work authority and will exercise this authority consistent with the Draft QCPP, Section 16.4 and Standard Quality Procedures 10.3. You are granted the authority to approve IT-approved submittals that have been certified by qualified submittal reviewers, as identified on the QC Organization Chart for this contract task order, to ensure the quality of the work, and to direct the removal and/or replacement of nonconforming materials or work. You will be authorized to act as an alternate for 14 consecutive working days or 30 nonconsecutive working days at a maximum. You will report directly to me and will administer the established requirements of the contract task order Project QC Plan.

If you have any questions or require additional information, please contact me at (925) 288-2278.

Sincerely,  
IT CORPORATION

  
Stephen Massey  
Program QC Manager

**ATTACHMENT 3**  
**QUALITY CONTROL ORGANIZATION CHART**

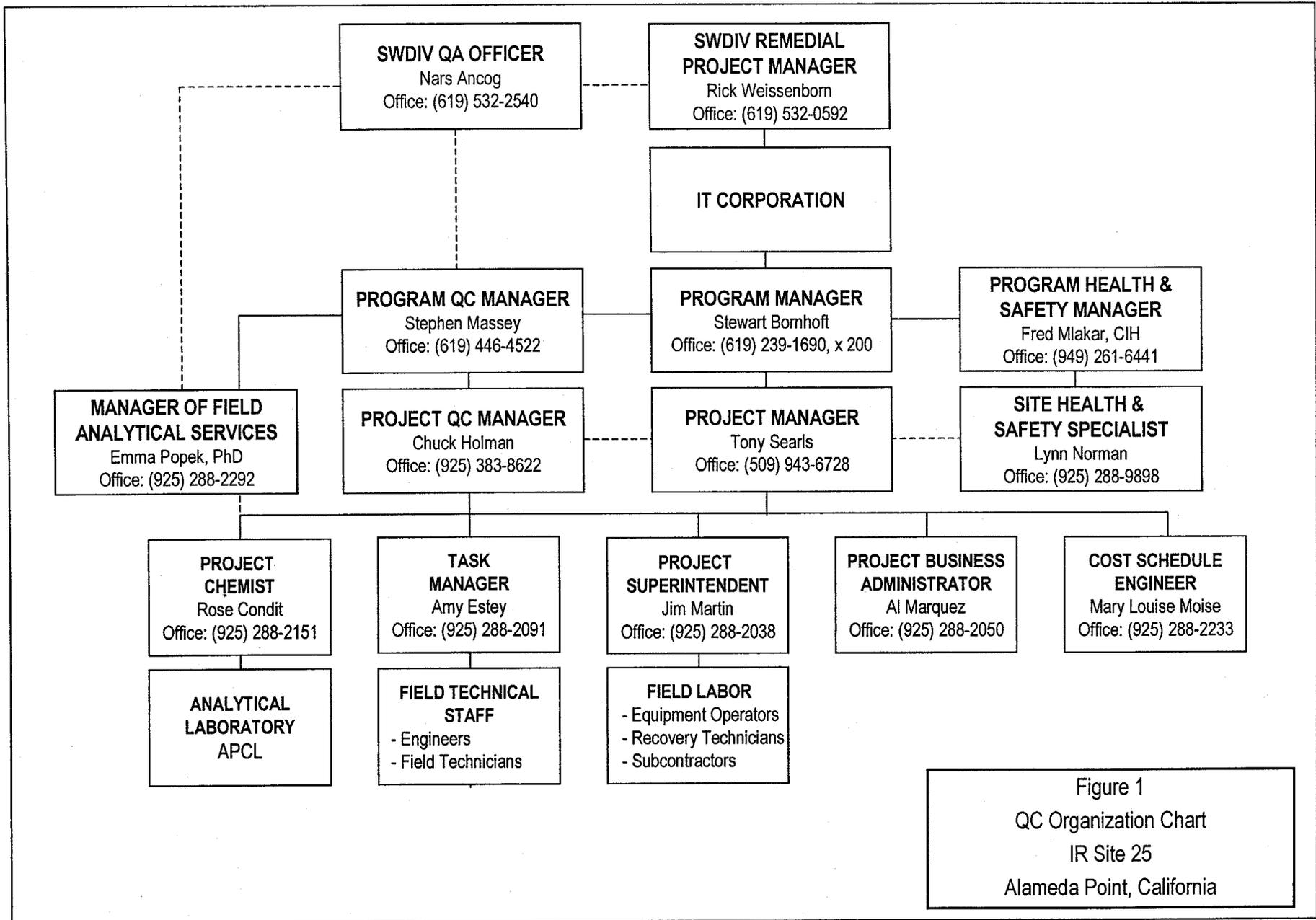


Figure 1  
 QC Organization Chart  
 IR Site 25  
 Alameda Point, California

**ATTACHMENT 4**  
**DEFINABLE FEATURES OF WORK MATRIX**

**PROJECT QUALITY CONTROL PLAN  
 CHEMICAL OXIDATION TREATABILITY STUDY  
 Alameda Point, Alameda CA.  
 Contract Task Order 0076**

**DEFINABLE FEATURES OF WORK MATRIX**

Specification Section	Paragraph No.	Feature of Work	Prep		Initial		Follow up	Remarks
			Req.	Date	Req.	Date	Req.	
Work Plan	3.2.2	UTILITY CLEARANCE	X		X		X	
Work Plan	3.2.3	SITE MOBILIZATION	X		X		X	
Work Plan	3.2.4	TEST CELL CONSTRUCTION	X		X		X	
Work Plan	3.2.5	INSTRUMENTATION	X		X		X	
Work Plan	3.5.2	OPERATIONAL MONITORING	X		X		X	
Work Plan	3.6	PERMANGANATE MIXING AND DELIVERY	X		X		X	
Work Plan	4.2	SITE RESTORATION			X		X	

**ATTACHMENT 5  
TESTING PLAN AND LOG**



**ATTACHMENT 6  
SUBMITTAL REGISTER**



**APPENDIX E**  
**ENVIRONMENTAL PROTECTION PLAN**

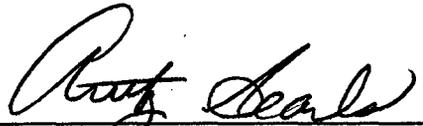
**FINAL  
ENVIRONMENTAL PROTECTION PLAN  
CHEMICAL OXIDATION TREATABILITY STUDY  
INSTALLATION RESTORATION SITE 25  
ALAMEDA POINT  
ALAMEDA, CALIFORNIA**

**Environmental Remedial Action  
Contract Number N62474-98-D-2076  
Contract Task Order 0076**

**Document Control Number 1859  
Revision 0**

**August 3, 2001**

Approved by: \_\_\_\_\_

  
Anthony Searls  
IT Project Manager

Date: August 7, 2001

## **Table of Contents**

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List of Attachments.....	i
Acronyms and Abbreviations.....	ii
1.0 Introduction.....	1-1
1.1 Conformance with Laws, Regulations, and Permits.....	1-1
1.2 Existing Conditions .....	1-1
2.0 Protection of Air Resources.....	2-1
2.1 Dust Control and Particulate Control.....	2-1
2.2 Burning .....	2-1
2.3 Noise Standards .....	2-1
3.0 Protection of Surface and Groundwater Resources .....	3-1
3.1 Spill Prevention and Response Measures .....	3-1
3.1.1 Spill Prevention.....	3-1
3.1.2 Spill Response.....	3-2
3.2 Stormwater Management.....	3-3
3.3 Protection of Water Fowl.....	3-3
4.0 Protection of Land Resources .....	4-1
4.1 Landscape Protection .....	4-1
4.2 Historical and Archeological Finds .....	4-1
5.0 Postconstruction Restoration and Cleanup .....	5-1
6.0 References .....	6-1

## **List of Attachments**

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Attachment 1 Existing Conditions Photograph Log

## **Acronyms and Abbreviations**

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ARARs	applicable, relevant, and appropriate requirements
CSO	Caretaker Site Office
EPP	Environmental Protection Plan
ft	foot/feet
HAZMAT	hazardous materials
IR	Installation Restoration
IT	IT Corporation
ROICC	Resident Officer In Charge of Construction
SHSP	Site Health and Safety Plan

## **1.0 Introduction**

---

This Environmental Protection Plan (EPP) presents IT Corporation's (IT) methods of protecting environmental resources during field work activities associated with the Chemical Oxidation Treatability Study at Installation Restoration (IR) Site 25 at Alameda Point, Alameda, California. The activities are to be done in accordance with the *Chemical Oxidation Treatability Study Work Plan* of which, this EPP is an appendix. The treatability study will take place in Estuary Park (Parcel 182) within IR Site 25. This park is approximately 100 feet (ft) from Oakland Inner Harbor on the northwest boundary and is adjacent to residential housing on the south and east.

For the purpose of this project, environmental protection is defined as maintaining the environment in its current state and restoring the appearance of disturbed sites after construction activities are completed. This EPP addresses protection of air, water, and land resources. It also addresses management of noise; visual aesthetics; natural, historical, and archeological resources; and liquid and solid wastes.

The EPP will be implemented so that work is performed in a manner that minimizes the pollution of air, water, and land resources and complies with federal, state, and local regulations.

### **1.1 Conformance with Laws, Regulations, and Permits**

Consistent with Navy exemptions as the Comprehensive Environmental Response, Compensation Liability Act lead agency for remediation activities at the site, all work will be conducted in compliance with the substantive requirements of federal, state, and local applicable, relevant, and appropriate requirements (ARARs).

### **1.2 Existing Conditions**

A photo log of existing conditions at Estuary Park (Parcel 182) is presented as Attachment 1 of this plan. The photographs in the attachment reflect the areas of the site in their pre-activity state that are assumed to be the most affected by the planned site activities.

## **2.0 Protection of Air Resources**

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Construction and remediation activities associated with this project will be conducted in a manner that minimizes the release of airborne particulates and chemical compounds within and outside the project boundary. Air emissions and dust and particulate control will be practiced according to the requirements described below.

### **2.1 Dust Control and Particulate Control**

Construction activities include removing sod; tilling soil; installing fencing; constructing treatability study cells; installing piezometers, soil moisture measurements and sampling using neutron probes and lysimeters; and sampling soil. The work procedures stated in the Work Plan are designed to control and minimize particulate emissions. Work will be performed in accordance with applicable California and Federal air pollution regulations. Control of fugitive dust will involve dust control measures such as covering or storing chemicals as required, watering down dry or barren areas and roadways.

### **2.2 Burning**

No hot-work permits are anticipated for this work. However, should the need arise, any work requiring an open flame or which poses a potential fire hazard will be coordinated with the Caretaker Site Office (CSO), the Project Health and Safety Officer, the Resident Officer in Charge of Construction (ROICC), and the applicable fire department(s) for Alameda Point and/or the City of Alameda.

### **2.3 Noise Standards**

IT personnel will comply with Occupational Safety and Health Administration and applicable state noise standards. Equipment operators, contractors, and other personnel will be required to wear appropriate hearing protection when necessary as detailed in the Site Health and Safety Plan (SHSP). Efforts will be made to locate operating equipment away from personnel working in the vicinity.

## **3.0 Protection of Surface and Groundwater Resources**

---

Construction activities associated with this project will be conducted in a manner that will significantly reduce the likelihood of the discharge of pollutants and will minimize the impact to water resources and soil outside the project boundaries. Project activities will be conducted in compliance with federal, state, and local ARARs regarding potential and actual contamination of surface water, groundwater, and soil.

Two 10-ft-by-10-ft bermed areas will be constructed. One area will store the solid (dry)  $\text{KMnO}_4$  and the  $\text{KMnO}_4$  solution and the other area will store the 20-percent sodium bisulfite solution. These areas and berms will be large enough to contain any potential spills. All mixing of the  $\text{KMnO}_4$  will take place within the appropriate bermed area and the solution will be applied to the cells in manageable quantities.

### **3.1 Spill Prevention and Response Measures**

Due to the presence of potentially contaminated liquids and solutions, spill prevention and response measures are necessary during the treatability study. This section describes the spill prevention and response measures to be taken during the study.

#### **3.1.1 Spill Prevention**

The types of materials handled during this project, which could potentially be spilled or released are potassium permanganate solution, sodium bisulfite solution, water purged from piezometers, and decontamination water.

When handling and transferring the above materials, the following spill prevention measures will be undertaken:

- Permanganate solution will be stored and mixed within bermed storage areas only.
- The containers used for storage within the bermed areas will be monitored regularly for leaks.
- Sodium bisulfite will be used to neutralize any excess  $\text{KMnO}_4$  solution.
- During mixing and injection activities, all equipment will be closely monitored for leakage.
- Equipment decontamination will occur in a lined and bermed area that is designated specifically for decontamination.

- Contaminated water from piezometer development and water sampling will be stored in drums or other regulation containers within lined, bermed areas.

### **3.1.2 Spill Response**

IT will maintain an inventory of the following equipment and materials for use in the event of a hazardous material spill or release:

- Absorbent pads
- Granular absorbent material (noncombustible)
- Polyethylene sheeting
- 55-gallon drums
- Shovels and assorted hand tools
- If a leak occurs that requires remediation, a 5-percent solution of sodium bisulfite will be used to neutralize the spill

In the event of a release or spill of hazardous material that may impact air, soil, or water (on site or off site), IT personnel will immediately notify the CSO representative and the facility Fire Department or Hazardous Materials (HAZMAT) unit. An assessment will be made of the magnitude and potential impact of the release. If it is safe to do so, site personnel will attempt to locate the source of the release, prevent further release, and contain the spilled materials as follows:

- The spill area will be approached cautiously. The material and associated hazards will be identified based on available information from witnesses to determine the proper personal protection levels, methods, and equipment necessary for the response.
- The source of the spill will be controlled by shutting off pumps, plugging or closing valves, righting containers or drums, or transferring contents of leaking tanks or drums and will be implemented immediately.
- If fuel is spilled, IT personnel will impose a 50-foot-radius rule, and all sources of ignition will be eliminated.
- If  $\text{KMnO}_4$  or  $\text{KMnO}_4$  solution is spilled, it must be neutralized using a 5-percent solution of sodium bisulfite. See specifics in the SHSP.
- If possible, spill containment will be made, initially, without entering the immediate release area.

- Spill containment and collection will be performed using absorbent materials and constructing temporary dikes
- Collected material will be properly characterized and disposed, if necessary.

Given the types and quantities of liquids handled during this field activity, it is not anticipated that site personnel will require outside help to manage any spill that may potentially occur. However, if IT personnel cannot safely and sufficiently respond to an environmental release, assistance from the facility or HAZMAT unit will be employed.

### **3.2 Stormwater Management**

The treatability study cells and storage areas are bermed for containment. During storm events and irrigation activities, the berms around the treatability study cells and the storage area cells will be monitored to ensure the containment is not compromised. No runoff is anticipated from the treated test cells.

As a precaution against runoff and sedimentation entering storm drains, IT personnel will place temporary seals (plastic and geotextile) over storm drain inlets that could be affected by drainage resulting from the runoff from the areas between the study cells. Where large volumes of runoff are expected, and the primary containment may not suffice, secondary containment may be provided in the form of hay bales and plastic sheeting.

### **3.3 Protection of Water Fowl**

All activities will take place to preclude ponding that may attract wildlife. The study cells will have covers and may be covered when unattended if free liquids have accumulated or as indicated by weather conditions.

## **4.0 Protection of Land Resources**

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Construction activities associated with this project will be conducted in a manner that minimizes the impact to land resources outside the project boundaries. Project activities will be coordinated with the CSO and the ROICC to minimize impact.

### **4.1 Landscape Protection**

IT personnel will coordinate with the CSO and the ROICC before construction activities at the sites to identify any land resources that require preservation within the work areas. If any are identified, IT personnel will mark the areas to be preserved and provide fencing, barriers, or other physical protection, as needed. IT personnel will make reasonable efforts to minimize damage of land resources within and outside the project work area.

### **4.2 Historical and Archeological Finds**

IT is not aware of any structure(s) and/or artifact(s) of historical importance within the work area. Items discovered during construction activities that could be of historical or archeological interest will be carefully preserved in an undisturbed state. The Site Superintendent will immediately report any findings to the CSO and the ROICC so that proper authorities can be notified.

## **5.0 Postconstruction Restoration and Cleanup**

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Cleanup, demobilization, and restoration will be performed as part of the treatability study activities. Cleanup activities will take place continually during the testing. Depending on the activities, personnel and equipment will be mobilized and demobilized, as needed. At the completion of the treatability study, all equipment and supplies will be demobilized and the testing area will be restored to match the previous condition and surrounding conditions. This restoration will be performed by IT after the construction phase is completed and accepted by the CSO and ROICC. Final site restoration and cleanup may include the following:

- Collecting and disposing of all contractor-generated contaminated material, debris, disposable personal protective equipment, and rubbish
- Removing support area facilities
- Removing temporary fences and signs installed under this contract
- Replacing sod and reconnecting site landscaping irrigation
- Restoring the facility to preconstruction conditions

With the completion of site restoration and cleanup, all field activities will be considered complete. Final site restoration and cleanup will be performed at the end of the treatability operation. IT will leave the project site in a suitably restored condition.

## 6.0 References

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IT Corporation, 2001, *Draft Chemical Oxidation Treatability Study Work Plan, Installation Restoration Site 25, Alameda Point, Alameda, California*, June.

**ATTACHMENT 1  
EXISTING CONDITIONS PHOTOGRAPH LOG**

## ***IR Site 25 Photographs***

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The treatability study cells will be created within Estuary Park (Parcel 182). This location is presently a grassy field with soccer goal structures. The photographs in this log document the condition of the area prior to the treatability study.



Photo No. 1: Looking north at Estuary Park (Parcel 182), future location of the treatability test and control cells.

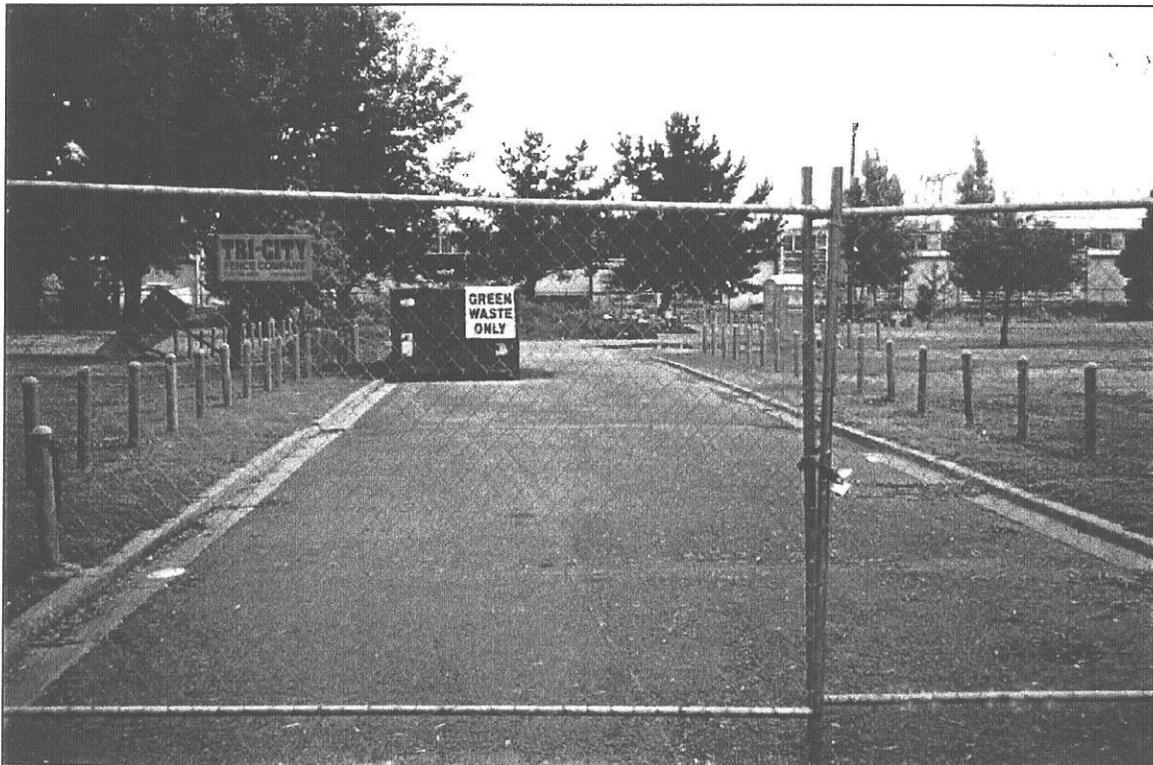


Photo No. 2: Looking north at asphalt parking area. This location will be just east of the treatability study cells.



Photo No. 3: Looking northeast at Estuary Park, future location of the treatability test and control cells.



Photo No. 4: Looking southeast at Estuary Park.



Photo No. 5: Looking east at northernmost section of Estuary Park.

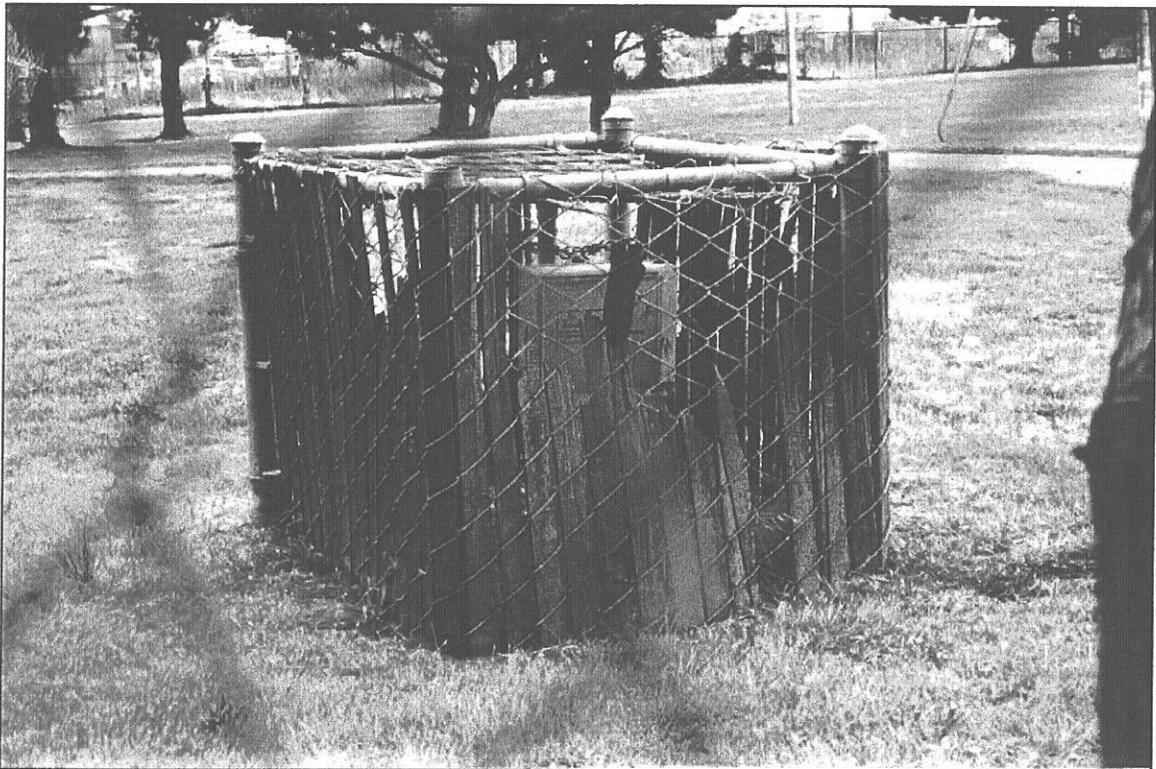


Photo No. 6: Secured area within Parcel 182 at western end of soccer field.

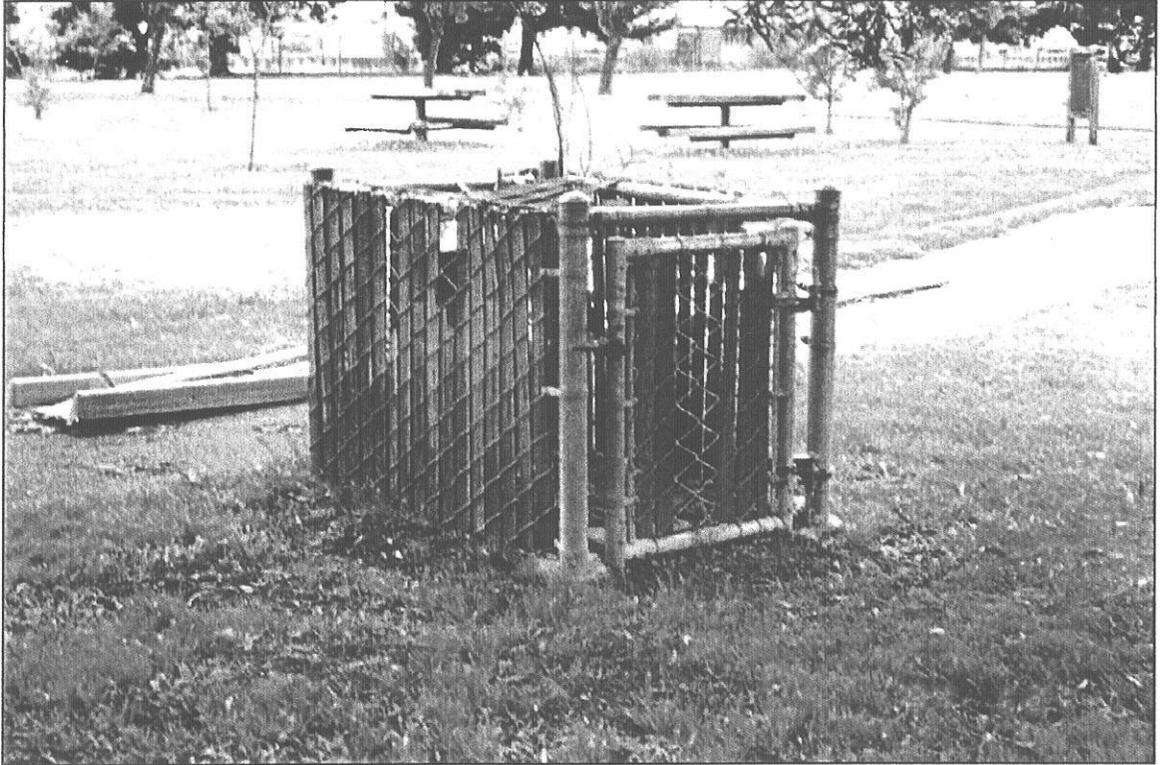


Photo No. 7: Secured area within Parcel 182 east of asphalt parking area.