

Operations and Maintenance Document

March 31, 2021

Claremont Polychemical Groundwater Treatment Facility OU5 NYSDEC Inspection Hazard Response

<u>Screen</u>	<u>Remedy*</u>	<u>Reference Document</u>
Emergency Contacts	Posted in the lobby of the OU5 facility	OU5 Emergency contacts
Wire Splicing	Daily inspections and good engineering practices. It should be noted that various pieces of equipment require splicing of power and signal cords at the facility.	Form-02
Rodents and Insects	Daily and monthly inspections of all equipment throughout facility.	Form-02
Electrical receptacles	Daily Inspections, monthly comprehensive Site, and safety inspections	Form-02, & Form-22
GFI receptacles	Daily inspections, limited use (may require some wiring upgrades for GFCI in bathroom area).	Form-02, & Form-22
Frayed wiring	Daily inspections- confirmed no frayed wiring at the facility.	Form-02, & Form-22
Circuit Breaker safety	Daily inspections- confirmed there are no blank circuit breakers.	Form-02
Circuit labeling	Daily use	Onsite UP Panel
Building integrity	Daily inspections – confirmed no holes in structure.	Form-02
Cylinders	Generally, not in use. Facility has outdoor storage cage and racks for transport	
Damaged ladders	Checked prior to use, and part of monthly inspection.	Form-22
Ladder safety	HDR mandated Ladder safety training. Portable ladders labeled.	Form-22
Extension ladder safety	HDR mandated Ladder safety training. Portable ladders labeled	Form-22
Exit lighting	Monthly testing, semi-annual testing as part of fire code regulations.	Form-21, & Form-31
Eyewash Tests	Monthly inspections	Form-19
CO detectors	Not in use at facility.	
Fire Extinguishers	Monthly and annual inspections.	Form-21
Flammable Storage cabinet	Monthly inspection	Form-20
Gas cans	Monthly inspection	Form-20
First Aid Supplies	Replaced as used and part of monthly inspection.	Form-19
Damaged PPE	Always inspected prior to use.	
Confined Spaces	Spaces evaluated prior to work and/or entry.	Confined Space Entry Permit Confined Space Evaluation Form JHA Confined Space Entry
Back up alarms	Not in use at facility.	
Water leaks	Daily inspection, leaks repaired where possible.	Form-02
Asbestos	Plant tested in 2016 prior to work being performed in lab; confirmed not present.	

*Standard Operating Procedures and HDR Safe Practices require that all equipment is inspected prior to use.

Operations and Maintenance Document

Attachments (in order of reference in table above):

- 1) OU5 Emergency Contacts
- 2) Form-02 – Daily Site and Safety Inspection
- 3) Form-22 – Additional Site Safety Inspections
- 4) UP Panel Layout
- 5) Form-21 – Fire system Inspection
- 6) Form-31 – 90 Minute Power test
- 7) Form-19 – Safety System Inspection
- 8) Form-20 – Chemical System Inspection
- 9) Confined Space Entry Permit
- 10) Confined Space Evaluation Form
- 11) JHA Confined Space Entry

Emergency Contacts

Claremont Polychemical Groundwater Treatment Facility

Groundwater Treatment Facility – OU5	150 Winding Road, Old Bethpage, NY 11804	Plant – 516-777-7242 Plant Operator – 516-473-4954
Fire	Plainview Fire Department	516-938-9601, 911
Police	Nassau County Police – 8 th Precinct	516-573-6800, 911
Medical	NorthShore University Hospital 880 Old Country road, Plainview, NY	516-713-3000 1-800-336-6800
Hazardous Material	Haz-Mat Response – Nassau county	516-938-9601
Waste	Haz-Waste hotline	516-571-3315
Electric	PSEG-LI	631-755-6900
Chemical Spills	Plainview Fire Department	516-938-9601
General Emergency	Nassau County 911	911
Poison	Poison Control Center	1-800-336-6997

DAILY SITE and SAFETY INSPECTION

Operator:	Day:	Date:
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Check all GWTP areas, process systems, and equipment for general unsafe conditions. This is to include but is not limited to the observation of leaks, noise, odors and abnormal function.

Plant Influent - piping, elements, conditions

Air Stripper - pumps, piping, elements, Blower, Tower

Plant Discharge - pumps, piping, elements

Control Room - electric cabinets, motor controls, displays

Treatment Plant - lights, work areas, plant egress

Mezzanine - egress, equipment, general condition

Grounds - pavement, storage, dumpster, fencing, gate, signs

Additional Observations

Additional Site Safety Inspections

Operator:	Day:	Date:	Time:

Work Areas

Area	Condition
Hydrochloric Acid Vault	
Sodium Hydroxide Vault	
Mezzanine	
Plant Floor and Grating	
Plant	
Indoor Storage Areas	
Grounds	

Plant Egress

Door	Condition, Comments
Lobby	
Vestibule	
North Door	
East Door	

Stationary Ladders and elevated platforms

Area	Condition, Comments
Air Stripper Tower	
HCl Vault	
NaOH Vault	
Mezzanine	

Facility General Lighting

Area	Unit Condition
Plant Lights (6)	
Exterior Lights (12)	
HCl Vault (2)	
NaOH vault (2)	
Vestibule (1)	
Lobby/Control Room (7)	
Hallway (1)	
Toilet Room (3)	
Locker Room (1)	
Lab (8)	

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CPC 5 Form-22	January 24, 2018	N

UP Lighting Panel

1	Receptacle - Plant R-1, R-2, R-3	2	Receptacle - Plant R-5, R-6, R-7, R-8
3	Receptacle - Plant R-4	4	Receptacle - Plant R-14, R-15, R-17
5	Receptacle - Control Room R-20	6	receptacle - Plant R-9, R-11, R-12
7	Receptacle - Control Room R-25, R-26	8	
9	Receptacle - Locker/Toilet R-26, R-27	10	Lab Service Panel
11	GFI Recept. - Plant R-10, R0-13, R-16, R-17	12	
13	Methane Control Console	14	Lighting - EXL-3, -2, EEL-1, -2, -3
15	ASF Controls	16	Receptacle - AS Tower R-29
17	Hot Water Heater	18	PFF Controls
19	Receptacle - Process Control Console R-32	20	Exhaust Fan -HCL Vault EF-1
21	Receptacle- Process Control Console R-31	22	Exhaust Fan - Toilet TE
23	Receptacle - Control Rm. R-19	24	Spare
25	Lights - CR, Lobby, R-30, EL-8, EXL-3	26	Motorized Dampers (5?)
27	Lights - Lab/Toilet/Locker, EL-7	28	Lights - Mezzanine
29	Receptacle - Comm Pnl R-22	30	Level Monitor - Acid Storage
31		32	Exhaust Fans- Mezz EF-4 , Hall EF-5
33	AH-1 condenser	34	Exhaust fans - Plant Roof EF-2A, EF-2B
35		36	Process Control Console (Blue) , R-21
37		38	
39	Surge Protectors	40	AH-1 Controls
41		42	

LP Lighting Panel

1	Plant HP lights (1,4,6)and plant emergency lights		
3	Plant HP lights (2,3,5)		
5	Chemical Vault Lights	6	Outdoor Building Lights, light timer
		10	
		12	Fan Forced heater - FFH-1
		14	Fan Forced heater - FFH-2

The UP lighting panel is powered from 112 kVa Transformer on Mezzanine level. Transformer is powered through Main Control Consol.

Note: Devices in plant are intrinsically safe. Utility receptacles 1, 2, 3, 4, 11, 14 have been replaced with non-intrinsic units

Operations and Maintenance Document

Fire Suppression System Inspection

Operator:	Day:	Date:	Time:
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Portable Fire Extinguishers

Unit	ID No.	Tag Date	Type	Access	Sign Visible	Pin Secure	Mount Secure	Instruct. Legible	Press.	Visual	Pass/Fail
CR											
Lab											
Lobby											
E-Door											
Center											
N-Door											
S-Wall											
Mezz.											
Truck											

Exit Lights

ID	EXL-1 (up-25)	EXL-2 (up-14)	EXL-3 (up-14)
Location	Lobby	North Door	East door
Function			
Note			

Alarm Pull Boxes

Unit	Lab	Lobby	North Door	East door
Accessible				
Condition				
Note				

Emergency Exit Lights (UP-14)

ID	EEL-1	EEL-2	EEL-3	EXL-1	EXL-2	EXL-3
Location	ASF pumps	PFF pumps	So. End	Lobby	North Door	East Door
Test						
Note						

Emergency Lights

ID	Location	CB	Test	Comment
EL-1	Plant East Wall	LP-1		
EL-2	Plant NE Wall	LP-1		
EL-3	Plant NW Wall	LP-1		
EL-4	Plant South Wall	LP-1		
EL-5	Plant at NW office corner	LP-1		
EL-6	Plant at NN office corner	LP-1		
EL-7	Lab	UP-27		
EL-8	Lobby	UP-25		

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CPC 5 Form-21	November 21, 2019	Q

90 Minute Power Test (OU5)				
ID	Description	Circuit Breaker	Test date	Result
EL-Emergency Light				
EL-1	east wall in plant	LP-1		
EL-2	north wall east side in plant	LP-1		
EL-3	north wall west side in plant	LP-1		
EL-4	south wall in plant	LP-1		
EL-5	WNW side of office wall in plant	LP-1		
EL-6	NNW side of office wall in plant	LP-1		
EL-7	north wall in lab	UP-27		
EL-8	south wall in lobby	UP-25		
EEL-Emergency exit lights				
EEL-3	suspended light at ASF station	UP-14		
EEL-4	suspended light adjacent to PFF station	UP-14		
EEL-5	suspended light above sump 4	UP-14		
EXL-Exit lights				
EXL-1	East door exit	UP-14		
EXL-2	north door exit	UP-14		
EXL-3	lobby exit	UP-25		
Tester:				
Date:				
Note:	completed tests are saved to Plant items / E-light Power test in op files			
	physical copies in front file cabinet / project files			

Operations and Maintenance Document

Safety System Inspection

Operator:	Day:	Date:	Time:
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Eye Wash and Safety Showers

Unit	Ease of Access	Eye Wash Test	S Shower Test	Sign In Place	Observations	Acceptability EW SS
Lab						
Plant						
HCI Vault						

First Aid Kits

Medical Item	Lab	Shop	Truck
Ace Bandage			
Adhesive Tape			
Ammonia Inhalants			
Adsorbent Gauze			
Anti-biotic Ointment			
Anti Itch Cream			
Anti-Septic			
Aspirin			
Band Aides			
Bug Spray			
Burn Treatment			
Cold Pack			
CPR Kit			
Eye Pad/Patch			
Eye Wash			
Gloves			
Hand Sanitizer			
Scissors			
Sling			
Tweezers			
Wound Cleaning pads			

Flash Lights

Unit	Location	Condition

Document No.:	Date Issued:	Revision Level:
CPC 5 Form-19	January 24, 2018	M

Operations and Maintenance Document

Chemical System Inspection

Operator:	Day:	Date:	Time:
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Bulk Chemistry	Units – number and type	Condition	Observations
HCl Drums			

Waste	Units – number and type	Condition	Observations
Hazardous Waste			
Miscellaneous			

Misc. Chemistry	Container Condition	Observations
Paired Chemicals		
Cleaning Solutions		
Paints		
Oils		
Gasoline		
Misc. Maintenance		
Sample bottles w/ preservatives		

Storage Areas	Condition	Observations
Flammable Storage Cabinet 1		
Flammable Storage Cabinet 2		
Maintenance Cabinets		
Work bench		
Lab		
Outdoor storage		

Tank Systems	Leaks	Signs of Damage or Wear	Observations
Hydrochloric Acid			
Sodium Hydroxide			
Sodium Hypochlorite			

Document No.:	Date Issued:	Revision Level:
CPC 5 Form-20	June 25, 2019	P



CONFINED SPACE ENTRY PERMIT

Permit No.										
Good on this date only			From		AM PM		To		AM PM	
Entry Location		Purpose of Entry								
Workers Authorized to Enter		Entry Attendant			Entry Supervisor			Standby Rescue		
Pre-Entry Briefing Conducted by			(Name)			(Date/Time)				
Confined Space Preparation ("X" all Boxes)					YES	NO	Comments			
1	Is illumination adequate?									
2	Must electrical devices be intrinsically safe or explosion proof?									
3	Are non-sparking tools required?									
4	Are GFCI's in use?									
5	All power cords and tools visually inspected?									
6	Fire extinguisher available at entrance?						Type:			
7	Eyewash/safety shower available?									
8	Work area isolated with signs/barriers?									
9	All energy sources locked/tagged out?									
10	All input lines capped/blinded?									
11	Early warning system in place for non-isolated engulfment hazards?									
12	Vessel contents drained/flushed/neutralized/cleaned/purged?									
13	Vessel ventilation provided before entry?									
14	Attendant/Entrant communication defined (voice, radio, visual, etc.)						Type:			
15	Respiratory protection required?						Type:			
16	Chemical protective clothing required? (Tyvek, Saran, Acid)						Type:			
17	Gloves required? (material--nitrile, PVC, Acid)						Type:			
18	Is a sign posted near the entrance indicating this a PRCS?									
Atmospheric Testing^a		Acceptable Entry Conditions	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8
Oxygen (O ₂)		19.5-23.5%								
Flammability (%LEL)		0-10%								
Carbon Monoxide (CO)		0-25 ppm								
Hydrogen Sulfide ^b (H ₂ S)		0-5 ppm								
Time of Test										
Tester's Initials										
Atmospheric Testing Instrument						Date Calibrated				
^a Continuous monitoring/testing is required. Record additional monitoring results on a separate page and attach to this permit.										
^b Although the current TLV for H ₂ S is 1 ppm, HDR is using 5 ppm to avoid false alarms at low concentrations.										

Emergency Rescue and Emergency Services				YES	NO
1	Are non-entry rescue procedures in place?				
2	Confirm arrangements are in place for entry rescue and emergency services and indicate method to summons.				
Entry/Egress Requirements				YES	NO
1	Are ladders required for entry?				
2	Are vertical extractors/rescue devices required (req. if vertical descent > 5')?				
3	Is fall protection required (req. if vertical height > 6')?				
Other Potential Hazards		Yes	No	Control	
1	Noise				
2	Heat or Cold Stress				
3	Other (list hazard and control)				
Subcontractor Notified of				YES	NO
1	Permit Conditions				
2	Potential Hazards				
Entry Authorization					
I certify that I have ensured the above information is correct and required safety precautions are instituted. Entry into this space is classified as follows:					
☐	The space has been temporarily reclassified to non-permit required based on the following: - Non-atmospheric hazards have been eliminated or isolated without entry. - Actual or potential atmospheric hazards do not exist in this space. – Initial atmospheric readings meet acceptable entry conditions; and – Work to be performed will not affect atmospheres (no welding, pipe repair, etc.).				
☐	All hazards except potential atmospheric hazards have been eliminated or isolated without entry; ventilation and atmospheric monitoring is in place for alternate entry procedures . Atmospheric levels for safe entry are 50% (or less) of the flammable and toxic substance acceptable entry conditions specified on the front of this permit.				
☐	Full Permit Procedures, all precautions apply. Permit is only valid for the duration specified (never to exceed one workday or shift) and must be posted prominently at the space entrance during the entry.				
Print Name of Entry Supervisor _____				Date	Time
Signature of Entry Supervisor _____					
Entry Termination				Date	Time
Signature of Entry Supervisor _____					
Describe any unusual occurrences encountered during the entry here (attach additional pages if necessary). This space may also be used for recording additional atmospheric readings.					

Attach any Safety Data Sheet (SDS) used during the entry and any other relevant permits (e.g., hot work).

Distribution - Upon termination of the entry, this original shall be maintained in the project file and copies shall be immediately forwarded to the local Safety Coordinator and the HDR Director of SH&E.



CONFINED SPACE EVALUATION FORM

Evaluation Details
Date of Evaluation:
Space Location and Description:
Entry Purpose:
Entry Supervisor/Competent Person Performing Evaluation (Printed Name):
Entry Supervisor/Competent Person Signature:

Part 1 - Confined Space Identification	Yes	No
1. Is the space large enough and so configured that an employee could bodily enter?		
2. Does the space have limited or restricted means for entry or exit?		
3. Is the space not designed for continuous human occupancy?		
If the answer is yes to ALL of the above, it is a confined space. Proceed to Part 2.		
If the answer is no to ANY of the above, it is not a confined space. No further action needed.		

Part 2 - Permit-Required Confined Space Identification	Yes	No
1. Does the space contain or potentially contain a hazardous atmosphere?		
a. Does the space contain any chemicals or chemical residues?		
b. Does the space contain any flammable combustible substances?		
c. Does the space contain or potentially contain any decomposing organic matter?		
d. Does the space have any pipes which bring chemicals into it?		
e. Does the tank or vessel contain rusted interior surfaces?		
f. Is vision obscured by dust at 5 feet or less?		
g. Does the space have poor natural ventilation which could allow an atmospheric hazard?		
h. Are there any corrosives which could irritate the eyes in the space?		
i. Are cleaning solvents or paints going to be used in the space?		
j. Is welding, cutting, brazing, scraping, or sanding going to be performed in the space?		
k. Are residues going to be scraped off the interior surfaces of the vessel?		

2. Does the space have any materials that can potentially trap, engulf, or drown an entrant?		
3. Does the space have converging walls, sloped floors or tapered floor to smaller cross-sections which could trap or asphyxiate an entrant?		
4. Does the space restrict mobility to the extent it could trap an entrant?		
5. Does the space contain any mechanical equipment servicing the space?		
6. Does the space contain thermal hazards (e.g.; extreme hot or cold)		
7. Does the space contain excessive noise levels which could interfere with communication?		
8. Does the space present any slip, trip, or fall hazards?		
9. Are there any operations conducted near the space opening which could present a hazard?		
10. Are there any hazards from falling objects?		
11. Are there lines under pressure servicing the space?		
12. Is electrical equipment located in or required to be used in the space?		
13. Is there exposure to uninsulated primary electrical voltages?		
14. Are there any conditions which could prevent any entrants' self rescue from the space?		
15. Does the space present a hazard other than those noted above which would make it a permit-required space?		
If the answer is no to ALL of the above, it is a non-permit confined space. Proceed to Part 3. If the answer is yes to ANY of the above, it is a permit-required confined space. Proceed to Part 4.		

Part 3 – Non-Permit Confined Space Classification	
☐	The answer is no to all questions in Part 2. The space does not contain and could not reasonably be expected to contain or develop any hazards. The space can be entered following non-permit confined space entry procedures (Section 7 of HDR SH&E Pro #001, PRCS Program).

Part 4 – Permit-Required Confined Space Classification	
☐	Reclassification. If all hazards identified in Part 2 can be completely eliminated without entry, the space can be entered following PRCS temporary reclassification procedures (Section 8 of HDR SH&E Pro #001, PRCS Program).
☐	Alternate Entry. If the only hazard in the space is an atmospheric hazard that can be controlled with ventilation, the space can be entered following PRCS alternate entry procedures (Section 9 of HDR SH&E Pro #001, PRCS Program).
☐	Full Permit. If hazards cannot be eliminated without entering the space, full permit entry procedures must be followed (Section 10 of HDR SH&E Pro #001, PRCS Program).

JOB HAZARD ANALYSIS FORM INSTRUCTIONS

Completing the Form

- Break the task into steps.** List each step of the task in order of occurrence.
- Identify potential hazards.** Examine each step to identify actual and potential hazards (any real or potential condition that can cause injury, illness, or death of personnel or loss/damage to equipment).
- Determine specific actions/controls to address each hazard.** Determine what can be done to eliminate each hazard or minimize risk. Complete elimination should be the first consideration (for example, selecting an alternate product or equipment that is less hazardous). If the hazard cannot be eliminated, engineering controls (modifications to existing machinery, isolation of the hazard, etc.) and administrative controls (job rotation, hazard training, etc.) should be considered next. The use of PPE should be considered only after all other control measures have been exhausted.
- Assign a risk assessment code (RAC).** For each step, assign a RAC based on probability and severity to the risk that remains after controls have been applied (residual risk). Assign an overall RAC to the task as whole based on the highest step RAC.
- Summarize requirements.** List equipment (including PPE), training and competency requirements, and inspection requirements for the task.
- Sign the form.** Have all employees involved in the task review and sign the JHA to confirm understanding and concurrence with the job steps, hazards, and controls described in the JHA.

Assigning a Risk Assessment Code (RAC)

The following matrix is used to determine the probability and severity of each hazard identified so hazards can be prioritized. An RAC is assigned to each step based on the probability of the hazard causing harm and the severity of harm (worst credible consequence) that could result after fully implementing all controls.

E =Extremely High Risk H = High Risk M =Moderate Risk L =Low Risk		Probability (P)				
		Frequent (F)	Likely (L)	Occasional (O)	Seldom (S)	Unlikely (U)
Severity (S)	Catastrophic (C)	E	E	H	H	M
	Critical (Cr)	E	H	H	M	L
	Marginal (M)	H	M	M	L	L
	Negligible (N)	M	L	L	L	L
Probability Legend (likelihood to cause an incident)						
Frequent	Occurs very often, known to happen regularly					
Likely	Occurs several times, a common occurrence					
Occasional	Occurs sporadically, but is not uncommon					
Seldom	Remotely possible, could occur at some time					
Unlikely	Can assume will not occur, but not impossible					
Severity Legend (outcome/degree of an incident)						
Catastrophic	Death or permanent total disability; major property damage					
Critical	Permanent partial or temporary total disability; extensive damage to equipment or the environment					
Marginal	Lost workdays; minor damage to equipment or systems, property, or the environment					
Negligible	First aid or minor medical treatment; slight equipment or system damage, but fully functional or serviceable; little or no property or environmental damage					



JOB HAZARD ANALYSIS FORM - Confined Space Entry

Overall Risk Assessment Code (RAC) (Use highest code)						M	
Project Name:	Risk Assessment Code (RAC) Matrix						
Project Location:	E =Extremely High Risk H = High Risk M =Moderate Risk L =Low Risk	Probability (P)					
Project Number:		Frequent (F)	Likely (L)	Occasional (O)	Seldom (S)	Unlikely (U)	
Prepared by (Name/Title):							
Notes: (Field Notes, Review Comments, etc.):	Severity (S)	Catastrophic (C)	E	E	H	H	M
		Critical (Cr)	E	H	H	M	L
		Marginal (M)	H	M	M	L	L
		Negligible (N)	M	L	L	L	L
	RAC is developed after correctly identifying all hazards and fully implementing all controls. Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC – P "Probability" is the likelihood to cause an incident, near miss, or accident. – S "Severity" is the outcome if an incident, near miss, or accident did occur Step 2: Identify RAC for each "Hazard" and indicate overall highest RAC at the top of AHA						

Job Steps	Hazards	Controls	P	S	RAC
1. Arrival near the confined space entrance.	1.1 Unsafe Access towards the entrance.	1.1.1 Verify edge protection and warning signs are in place. 1.1.2 Verify access is unobstructed and non-slippery. 1.1.3 Verify access is fit for the area. 1.1.4 Verify access is inspected and tagged.	S	M	L
	1.2 Area not classified as confined space.	1.2.1 Do not enter the confined space and stop the work immediately.	U	Cr	L
	1.3 Falling materials.	1.3.1 Verify no one is working above. 1.3.2 Verify no materials are hanging above / unsecured.	U	M	L
2. Entering the confined space.	2.1 No permit to work secured for the confined space.	2.1.1 Do not enter the confined space and stop the work immediately. 2.1.2 Contractor and employees to be oriented on the permit to work system.	U	Cr	L
	2.2 Presence of asphyxiating fumes/gases or toxic substances.	2.2.1 Attend a pre-task briefing before entering a confined space. 2.2.2 Verify continuous gas monitoring is being conducted in the area with	S	Cr	M

2. Entering the confined space. (Cont...)	2.2 Presence of asphyxiating fumes/gases or toxic substances. (Cont...)	standby system. 2.2.3 Verify continuous supply of fresh air/operation of ventilating fans. 2.2.4 No hot work shall be performed without the appropriate permit to work. 2.2.5 Verify machine exhausts are diverted away from the confined space. 2.2.6 Verify adequate PPE is worn (filter mask).			
	2.3 Unsafe access (ladder).	2.3.1 See AHA 06 Use of Ladders	S	M	L
	2.4 Poor Illumination.	2.4.1 Verify contractor has completed illumination level monitoring of the area. 2.4.2 Verify provision of lighting system in the absence of natural light.	U	M	L
3. Inspection inside the confined space.	3.1 Exposure to dust.	3.1.1 Verify area had been pre-ventilated and is continuously ventilated. 3.1.2 Verify adequate PPE is worn (filter mask) 3.1.3 Limit grinding / de-shuttering operations during the inspection. 3.1.4 Verify ventilation system do not re-introduce dust in the area.	S	M	L
	3.2 Extreme Temperature.	3.2.1 Verify continuous operation of the ventilation system in the area with standby system. 3.2.2 Rehydrate before entering a confined space. 3.2.3 Attend a pre-task briefing before entering a confined space. 3.2.4 Verify contractor has carried out temperature monitoring. 3.2.5 Limit time of exposure at the confined space area.	S	M	L
	3.3 Water intrusion.	3.3.1 Verify dewatering system are on standby. 3.3.2 Verify contractor enforces lock-out / tag-out of existing water and sewer line system. 3.3.3 Verify opening of the confined space is adequately banded to prevent intrusion from the surface.	S	Cr	M

3. Inspection inside the confined space. (Cont...)		3.3.4 Cancel inspection in the event of rain.			
	3.4 Release of or presence of asphyxiating gases/fumes or toxic substances.	3.4.1 Attend a pre-task briefing before entering a confined space.	S	Cr	M
		3.4.2 Verify continuous gas monitoring is being conducted in the area.			
	3.4 Release of or presence of asphyxiating gases/fumes or toxic substances. (Cont...)	3.4.3 Verify continuous supply of fresh air/operation of ventilating system with standby system.			
		3.4.4 No hot work shall be performed without the appropriate permit to work.			
		3.4.5 Verify machine exhausts are diverted away from the confined space.			
		3.4.6 Verify adequate PPE is worn (filter mask).			
		3.4.7 Verify contractor enforces lock-out / tag-out of existing gas/oil/fuel lines.			
	3.5 Poor air circulation – Oxygen deficiency.	3.5.1 Verify contractor is doing continuous monitoring of the atmosphere.	S	Cr	M
		3.5.2 Verify continuous operation of the ventilation system with standby system.			
		3.5.3 Attend a pre-task briefing before entering a confined space.			
		3.5.4 No hot work shall be performed without the appropriate permit to work.			
		3.5.5 Verify machine exhausts are diverted away from the confined space.			
		3.5.6 Verify adequate PPE is worn (filter mask).			
		3.5.7 Verify only limited workers are allowed in the area.			
	3.6 Non-insulated live utilities (electrical / steam lines).	3.6.1 Verify all live utilities are properly marked / highlighted/ identified in the area.	S	Cr	M
		3.6.2 Follow all warning signs.			
		3.6.3 Stay away from live electrical utilities or steam lines.			
	3.7 Slippery surface.	3.7.1 Verify all walking surfaces are free from mud/oil/grease/algae.	S	M	L
		3.7.2 Verify proper footwear is worn and is free from mud/oil/grease.			
	3.8 Obstructed access.	3.8.1 Verify walkways are free from excess	S	M	L

3. Inspection inside the confined space. (Cont...)		materials/debris. 3.8.2 Verify that adequately illumination is provided on site.			
	3.9 Absence of emergency response team / emergency rescue equipment.	3.9.1 Verify rescue equipment is available and is fit for the operation. 3.9.2 Attend a pre-task briefing before entering a confined space and be familiar with the confined space emergency procedure.	U	Cr	L
	3.9 Absence of emergency response team / emergency rescue equipment. (Cont...)	3.9.3 Verify all emergency response team members are trained and competent.			
	3.10 High noise levels.	3.10.1 Verify contractor had conducted a noise level monitoring in the area. 3.10.2 Verify adequate PPE is worn (ear muffs/ear defenders/ear plugs).	U	M	L
	3.11 Impalement hazards.	3.11.1 Always look and scan ahead of your way. 3.11.2 Follow all warning signs in the area. 3.11.3 Verify that adequately illumination is provided on site. 3.11.4 All protruding materials shall be provided with end caps. 3.11.5 Verify all scrap wood is free from nails	S	M	L
	3.12 Lack of communication.	3.12.1 Verify constant communication with confined space supervisor/ watchman / emergency response team. 3.12.2 Verify confined space supervisor / watchman / emergency response team area aware of the inspection/activity inside the confined space. 3.12.3 Verify a permit to work had been secured and approved prior to entry. 3.12.4 Lone entry / lone working shall not be permitted	U	Cr	L
	3.13 Falling materials.	3.13.1 Verify adequate PPE is worn (hard hat). 3.13.2 Verify no unsecured materials are placed overhead	S	M	L
	3.14 Engulfment hazard.	3.14.1 Verify lock-out / tag-out or isolation of live services had been implemented 3.14.1 Verify adequate shoring of deep trenches	S	Cr	M

3. Inspection inside the confined space. (Cont...)	3.15 Failure of ventilation system.	3.15.1 Verify availability of back-up ventilation system 3.15.2 Verify ventilation system have updated maintenance record	S	Cr	M
	3.16 Fire / Explosion.	3.16.1 Verify continuous ventilation of the area to prevent build-up of flammable or explosive gases 3.16.2 No flammable materials are to be stored in the area 3.16.3 No hot work shall be performed without the appropriate permit to work. 3.16.4 Verify adequate fire fighting equipment is available in the area. 3.16.5 Verify oxygen level in the area does not exceed normal ranges. 3.16.6 Use only intrinsically safe tools inside the confined space.	S	Cr	M
	3.16 Fire / Explosion. (Cont...)				
	3.17 Getting trapped on smaller sections of the confined space.	3.17.1 Be familiar with the configuration of the area. 3.17.2 Verify barriers or guards are installed to prevent being trapped.	S	M	L
	3.18 Presence of poisonous animals (snakes) / harmful insects/ pests.	3.18.1 Verify contractor had done a preliminary sweep of the area for poisonous animals / harmful insects. 3.18.1 Have a basic knowledge on handling poisonous animals / harmful insects.	U	Cr	L
4. Climbing out of the confined space	4.1 Unsafe ladder access.	4.1.1 See AHA 06 Use of Ladders	S	M	L

Equipment Requirements	Training Requirements	Inspection Requirements
Personal Protective Equipment. Hard Hat, Safety Glasses, Class 2 Reflective Vest & Safety footwear, mask appropriate	SH&E Site Induction. Formal PRCS Training (Entrant/Attendant) Formal PRCS Training (Supervisor)	PPE should be inspected prior to use. Atmospheric gas monitoring Noise monitoring Illumination level monitoring Temperature level monitoring Ventilation System inspection Emergency Rescue Equipment Inspection Ladder Inspection All Employees are to report unsafe conditions as they are observed to their immediate supervisor.



		Effort should be made to communicate findings to contractor.
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My signature confirms I have reviewed this task and I understand and concur with the job steps, hazards, and controls described in this JHA.
(Signature is required of all field team members involved in the task).

Print Name	Signature	Date