DEWATERING OF EXCAVATED SOIL, STABILIZATION, & HANDLING PLAN

POLYCHROME WEST & EAST REMEDIATION PROJECT YONKERS, NY

April 2018

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1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this Dewatering of Excavated Soil, Stabilization and Handling Plan is to describe the techniques and procedures for handling the various materials Posillico will implement during the length of the Polychrome West & East Remediation Project. Excavation in units below the water table may require dewatering of stockpiled material, stabilization of soils, or special handling techniques to ensure liquids are controlled and moisture contents are at acceptable levels for disposal facility acceptance.

The anticipated materials include, but are not limited to, spoils encountered during the in-situ solidification (ISS) and excavation activities with the potential to contain non-hazardous contaminated material, concrete/masonry, metal, and all other contaminated debris. All construction activities will be performed in a manner which complies with Federal, State, and local DOT and disposal facility requirements and the Community Air Monitoring Plan (CAMP) prepared for the Site.

2.0 DEWATERING

2.1 DEWATERING CONTROL / STOCKPILE CONSTRUCTION

Posillico does not anticipate installing a dewatering system as most excavation units are specified to depths above the water table. Dewatering, if necessary, will be completed by the on-site dewatering contractor and in accordance with the soil reuse and dewatering plan submitted by AKRF (Submittal #3). Excavation below the water table is anticipated in excavation units E, F, H, & I on the Polychrome West property that will require control of potentially impacted liquids. Excavation in these areas will be performed to final depths in a wet condition, which may result in heavily saturated soils/liquids being removed. Additional care will be taken to ensure there is no loss of potentially impacted liquids outside of the excavation.

Prior to performing excavation in any unit, temporary stockpiles will be installed immediately adjacent to the excavation. Stockpiles will be built in a manner that allows material to be placed on polyethylene plastic sheeting and protected with typical erosion control measures. The stockpile will hold the dry, excavated material encountered above the water table and be bermed in a manner that allows the receipt/rendering of saturated soils encountered below the water table. Posillico anticipates due to the minimal amount of material to be excavated below the water table (1-2’ depths) that this procedure will properly control soils saturated with potentially impacted liquids.

As a contingency, stockpile areas for all excavations will be graded towards the adjacent/open excavation in the event that soil saturation levels become too high to

render with dry material. Prior to placing poly liners, Posillico will grade the area in a manner that allows potential loss of liquids from a stockpile area to decant back into the open excavation in which the material came from. All impacted material will be loaded-out from adjacent stockpiles prior to the import/placement of clean backfill into the excavation units. If any NAPL is observed in the stockpile area it will either be mixed with drier soils to immobilize liquids or skimmed with a vacuum truck as directed by AKRF and/or Avalon Bay.

Temporary stockpiles are not to be set-up within 20' from the water or graded in a manner that may cause the loss of soils or impacted liquids into the Hudson River. All stockpiled soils will be labeled as "contaminated soil" and secured/covered when not in use.

3.0 STABILIZATION

In the event the moisture content of excavation soils are too high for transport, stabilization may be required to rectify the high moisture content. As previously described, Posillico will mix drier soils with saturated material to control liquids and lower moisture content to meet allowable facility acceptance levels. However, it is possible that acceptable moisture levels are not met and additional rendering will be required.

Cement kiln dust is currently not an acceptable rendering material for all disposal facilities. If necessary, Posillico will utilize Calcium Chloride additive, or an approved alternate, to help lower moisture content at the direction of the disposal facility. All copies of the material cut-sheets and Safety Data Sheets (SDS) will be submitted to the Engineer and/or Owner for approval. A SDS for Calcium Chloride can be found in **Appendix A**.

4.0 MATERIAL HANDLING

Additional handling of liquids may be necessary if proper stockpile construction and/or rendering of saturated soils is not sufficient to control potentially impacted liquids. Localized dewatering is an option, but will require further analysis by all parties to ensure the associated discharge of liquids is in accordance with governing agencies and/or current permit approvals. To prevent schedule delays, Posillico will mobilize 2" & 4" pumps with associated hosing if directive & approval is given by AKRF & Avalon Bay to dewater excavations and/or stockpiles. Dewatering, if necessary, will be completed in accordance with the soil reuse and dewatering plan submitted by AKRF (Submittal #3).

Where encountering groundwater is not anticipated, Posillico may handle non-hazardous materials by direct loading of trucks during excavation. Potential sub-surface obstruction may not allow this and may require stockpiling as well. A

hydraulic excavator will be used to directly load material from either the excavation or stockpile into the trucks. Care will be taken to prevent spillage of material while loading. Odor and vapor suppressing foam will be readily available during all excavation activities and/or disturbance to stockpile areas. Further means & methods for all construction activities can be found in Posillico's **Material Handling & Disposal Plan.**

Trucks will proceed to the designated decontamination track pad area where the truck will be hosed down to remove any and all loose material prior to transport. Once cleaned, a final visual inspection will be done. After decontamination, the truck will receive a manifest indicating the generator, source material, and designated disposal/treatment facility. The truck will then proceed directly to the designated disposal/treatment facility. Posillico will be responsible for insuring no leakage onto the road way from portal-to-portal and that all trucks have secure, non-permeable covers. Further trucking information can be found in Posillico's **Truck Transportation Plan.**

Equipment used for excavation and loading of non-hazardous and/or hazardous contaminated soil will not be used for any other work until it has been decontaminated.

Certified weight tickets, bills of lading, and certificates of destruction will be provided to AKRF and/or Avalon Bay for all applicable materials.

All site personnel working in and around areas of non-hazardous contamination will have their 40 hour OSHA HAZWOPER training with annual 8 hour refresher training updates, medical surveillance, and will have read and signed the Site Health and Safety Plan (SHASP). Drivers of tri-axles, dump trailers, roll-off transport trucks, and all other drivers will not be permitted to exit their vehicles in areas of excavation.

APPENDIX A

2440 Dayton Xenia Rd, Suite D
Beavercreek, OH 45434
888-431-0218
www.mintekresources.com

Safety Data Sheet (SDS)

OSHA Hazard Communication Standard 29 CFR 1910.1200. Prepared to GHS Rev03.

Section 1. Identification

Product Name	Distributor	Telephone
Calciment®	Mintek Resources, Inc.	937-431-0218 Office
	PO Box 340187	937-431-1305 Fax
	Beavercreek, OH 45434	800-424-9300 CHEMTREC

Chemical Name
Calcium Oxide, Calcium Carbonate, Calcium Hydroxide

Uses
Soil Stabilization, De-Watering, Solidification, Fixation, Neutralization, Desulphurization, Agriculture, Cement

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture


GHS03 Exclamation Mark


GHS05 Corrosion

Signal word Danger

Hazard-determining components of labeling
Calcium Oxide, Calcium Carbonate, Calcium Hydroxide

Hazard Statements
H303 May be harmful if swallowed
H315 Causes skin irritation
H319 Causes serious eye irritation
H335 May cause respiratory irritation

Precautionary statements
P101 If medical advice is needed, have product container or label at hand

P102	Keep out of reach of children
P280	Wear protective gloves, clothing, eye protection
P281	Use personal protective equipment as required
P284	Wear respiratory protection

Section 3. Composition				
Component	**Formula**	**% Wt.**	**CAS No.**	**PEL**
Calcium Carbonate	$CaCO_3$	0-30	1317-65-3	10 mg/m^3
Calcium Oxide	CaO	20-80	1305-78-8	2 mg/m^3
Calcium Hydroxide	$Ca(OH)_2$	0-10	1305-62-0	5 mg/m^3
Calcium Magnesium Carbonate	$CaMg(CO_3)_2$	0-30	16389-88-1	10 mg/m^3
Crystalline Silica Quartz	SiO_2	0-10	14808-60-7	0.1 mg/m^3 respirable
Aluminum Oxide	Al_2O_3	0-15	1344-28-1	10 mg/m^3
Ferric Oxide	Fe_2O_3	0-5	1309-37-1	15 mg/m^3
Magnesium Oxide	MgO	0-60	1309-48-4	5 mg/m^3
Sulfur	SO_3	0-10	7704-34-9	10 mg/m^3

SECTION 4. First-Aid Measures

Effects:

Inhalation: **Acute:** Irritation, sore throat, cough, sneezing. **Chronic:** Persistent coughing and breathing problems. Long-term exposure to silica can cause a chronic lung disorder, silicosis.

Eyes: **Acute:** Severe irritation, intense tearing, burns. **Chronic:** Possible blindness when exposure is prolonged.

Skin: **Acute:** Removes natural skin oils, blotches, itching and superficial burns in case of sweating. **Chronic:** No known effects.

Ingestion: **Acute:** Sore throat, stomach aches, cramps, diarrhea, vomiting. **Chronic:** No known effects.

Treatments:

Inhalation: Move victim to fresh air. Seek medical attention if necessary. If breathing has stopped, give artificial respiration.

Eyes: Immediately flush eyes with large amounts of water for at least 15 minutes. Pull back the eyelid to make sure all the lime dust has been washed out. Seek medical attention immediately. Do not rub eyes.

Skin: Flush exposed area with large amounts of water. Seek medical attention immediately.

Ingestion: Give large quantities of water or fruit juice. Do not induce vomiting. Seek medical attention immediately. Never give anything by mouth if victim is rapidly losing consciousness or is unconscious or convulsing.

SECTION 5. Fire-Fighting Measures

Flash Point: Non-flammable

Autoignition Temperature: Non-flammable

Inflammability Limits: None, Non combustible solid, but will support combustion by liberation of oxygen

Explosion Risk: None by itself, but heat produced by reaction with strong acids can generate steam and pressure

Hazardous Combustion Products: Decomposes to produce calcium oxide (CaO), which can react with water to produce steam and pressure

Extinguishing Media: Use dry chemical fire extinguisher. Do not use water or halogenated compounds, except that large amounts of water may be used to deluge small quantities of lime kiln dust. Use appropriate extinguishing media for surrounding fire conditions.

Fire Fighting Instructions: Keep personnel away from and upwind of fire. Wear full fire-fighting turn-out gear (full Bunker gear), and respiratory protection (self-contained breathing apparatus.

SECTION 6. Accidental Release Measures

Individual and collective precautions: Avoid creating conditions which release dust – use mechanical vacuums to remove dust from work spaces.

Avoid inhalation of Dust: Wear respiratory protection – minimum NIOSH N-95 Dust Mask.

Cleaning methods (Leaks & Spills): Use personal protective equipment (eyes, skin and inhalation, see Section 8). Use dry methods (vacuuming, sweeping) to collect spilled materials. Avoid generating dust. For large spills, evacuate area downwind of clean-up area operations to minimize dust exposure. For small spills, store spilled materials in dry, sealed plastic or metal containers. Dust residue on surfaces may be washed with water.

Precautions for the protection of the environment: May not be released into surface waters without controls (increases pH).

Waste Disposal: Dispose according to federal, provincial/state and local environmental regulations.

SECTION 7. Handling and Storage

Handling: In open air or in ventilated places, avoid skin and eye contact, avoid creating airborne dust.

Storage: Store in dry places sheltered from humidity. Keep away from acids. Keep out of reach of children.

SECTION 8. Exposure Controls/Personal Protection

Exposure Limits:

Calcium Carbonate: 15 mg/m^3 (total dust), 5 mg/m^3 (respirable) (OSHA); 10 mg/m^3 (ACGIH, O. Reg. 833);
Calcium oxide: 5 mg/m^3 (OSHA); 2 mg/m^3 (ACGIH, O. Reg. 833);
Calcium Magnesium Carbonate: 10 mg/m^3 (ACGIH, OSHA)
Calcium Magnesium Oxide: 2 mg/m^3 (ACGIH, OSHA)
Magnesium Carbonate: 15 mg/m^3 (total dust), 5 mg/m^3 (respirable) (OSHA); 5 mg/m^3 (ACGIH, O. Reg. 833); 10 mg/m^3 (ACGIH, O. Reg. 833);
Calcium Hydroxide: mg/m^3 (total dust), 5 mg/m^3 (respirable) (OSHA); 5 mg/m^3 (ACGIH, O. Reg. 833)
Magnesium oxide: 15 mg/m^3 (OSHA); 10 mg/m^3 (ACGIH, O. Reg. 833)
Silica (crystalline quartz): 2.5 mg/m^3 (total dust), 0.8 mg/m^3 (respirable) (OSHA); 0.5 mg/m^3 (respirable – ACGIH); 0.1 mg/m^3 (O. Reg. 845)

Engineering Controls: Use ventilation and dust collection to control exposure to below applicable limits.

Respiratory Protection:	Wear NIOSH N-95 Dust Mask.
Eye Protection:	Eye protection (chemical goggles, safety glasses and/or face shield) should be worn where there is a risk of lime exposure. Contact lenses should not be work when working with lime products.
Hand Protection:	Use clean dry gloves.
Skin Protection:	Cover body with suitable clothes (long sleeves shirts and trousers). Use over the angle waterproof caustic resistant footwear.

SECTION 9. Physical and Chemical Properties

Appearance:	Solid, white/tan/gray powder
Odor:	Odorless
Odor Threshold:	NA
pH:	12.4 pH graduated solution at 25º C
Melting Point:	1410º C
Boiling Point:	1565º C
Flash Point:	NA
Evaporation Rate:	NA
Flammability:	NA
Upper/Lower Flammability	NA
Vapor Pressure (+tº)	Non volatile.
Vapor Density (air=ml):	Non volatile.
Relative Density:	720-1130 kg/ m^3
Solubility in Water:	0.100 – 1.125g/100g – reactive with water to product $Ca(OH)_2$ with large amounts of heat
Partition coefficient:	NA
Auto-Ignition Temperature:	NA
Decomposition Temperature:	580ºC
Viscosity:	NA

SECTION 10. Stability and Reactivity

Stability:	Stable products, not very soluble.
Decomposition temperature:	580ºC, forms calcium oxide (CaO) and water.
Reactivity:	Reacts with acids to form calcium salts while generating heat. Reacts with carbon dioxide in air to form calcium carbonate.
Conditions to avoid:	Vicinity of incompatible materials.
Incompatible materials:	Acids; reactive fluoridated, brominated or phosphorous compounds; aluminum (may form hydrogen gas), reactive powdered metals; organic acid anhydrides; nitro-organic compounds; interhalogenated compounds.
Hazardous decomposition products:	Calcium oxide (CaO).

SECTION 11. Toxicological Information

Toxicity:	LD_{50} oral (rat) for calcium hydroxide is 7340 mg/kg. This product is not listed by MSA, OSHA, or IARC as a carcinogen, but this product may contain crystalline silica, which has been classified by IARC as (Group 1) carcinogenic to humans when inhaled in the form of quartz or cristobalite. No reported Carcinogenicity, Reproductive Effects, Teratogenicity or Mutagenicity.
Exposure Limits:	Refer to Section 8.
Irritancy:	Can cause severe irritation of eyes, skin, respiratory tract and gastrointestinal tract.
Chronic Exposure:	Inhalation of silica can cause a chronic lung disorder, silicosis.

SECTION 12. Ecological Information

Alkaline substance that increases pH to 12.4 in a saturated water solution at 25ºC.
Calcium hydroxide gradually reacts with CO_2 in air to form calcium carbonate ($CaCO_3$).
Calcium carbonate is ecologically neutral.
Uncontrolled spillage in surface waters should be avoided since the increase pH could be detrimental to fish.
Harmful to aquatic life in high concentration.

SECTION 13. Disposal Considerations

Dispose according to federal, provincial/state and local environmental regulations.

SECTION 14. Transportation Information

Classification: TDG: Not listed for ground transportation
HMR: Not listed for ground transportation

TDG: Transportation of Dangerous Goods Regulation (Canada)
HMR: Hazardous Materials Regulation (USA)

SECTION 15. Regulatory Information

Symbol:

WHMIS Rating
D2A, E

NFPA RATING
HEALTH-3 SPECIFIC HAZARD – ALK FLASH POINTS-0 REACTIVITY-1

HMIS RATING
HEALTH-2 SPECIFIC HAZARD – ALK FLASH POINTS-0 REACTIVITY-1

SECTION 16. Other Information

Original Prepared: 05/13/13
Revision Date: 07/15/13
Revision #: 0

Calciment can be removed from vehicles using rags dampened with dilute vinegar. After applying dilute vinegar, vehicles (especially chrome surfaces) must be washed with water.

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