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1.0 Purpose

Soil generated during excavation or other earthmoving activities at the Marathon Petroleum Company - Galveston Bay Refinery (GBR) must be properly managed and characterized before reusing onsite or transporting offsite for disposal. Reuse of soil excavated onsite is considered a waste minimization effort, since reuse can considerably reduce the volume of waste transported offsite for disposal.

2.0 Scope

This Soil Management Plan (SMP) establishes the required actions for characterizing excavated soil, criteria for reusing or disposing soil, and managing excavated soil appropriately. Implementation of this SMP may significantly reduce the volume and the associated cost of non-hazardous excavated materials disposed of offsite. Efforts should be made to reuse soil whenever possible.

3.0 Procedure

3.1 Roles and Responsibilities

3.1.1 Environmental Department

3.1.1.1 The Environmental Department is responsible for ensuring that the SMP is available and understood by refinery employees and contractors, as appropriate to their job functions. The Environmental Department is responsible for helping with implementing the SMP when possible to support the goals of soil reuse and waste minimization, and for keeping the SMP up to date.

3.1.1.2 Refer to Section 3.2 of this SMP for further information.

3.1.2 Personnel Conducting Construction, Excavation or Soil Borings

3.1.2.1 Personnel conducting construction, excavation, or soil borings are responsible for reading and understanding this SMP, requesting assistance from the Environmental Department when appropriate and implementing the procedures in this SMP when possible to support the goals of soil reuse and waste minimization.

3.1.2.2 Refer to Section 3.2 of this SMP for further information.

3.1.3 Refinery Management (Areas, Operations, Maintenance, Environmental)

3.1.3.1 The Refinery Management Team are responsible for supporting use of the SMP, to further the goals of soil reuse and waste minimization.

3.2 Chemicals of Concern

3.2.1 The presence of chemicals of concern (COCs) in soil identified during previous investigations conducted at GBR is documented in the September 2016 Affected Property Assessment Report (APAR). As described in the May 2018 Response Action Plan (RAP), a plume management zone (PMZ) is proposed to be implemented at GBR under Texas Risk Reduction Program (TRRP) Remedy Standard B that will restrict land use to commercial/industrial and prevent the use of shallow groundwater beneath GBR. The proposed PMZ boundary is shown on Attachment 2D of the RAP (PMZ Summary Map) and is included as Appendix A to this SMP. This SMP assumes that the land use and groundwater use restrictions described in the May 2018 RAP will be implemented so that the applicable critical TRRP Tier 1 Protective Concentration Level (PCL) for soil within the PMZ at GBR is the direct-contact human health PCL ($^{Total}Soil_{Comb}$) for a 30-acre source and commercial/industrial land use. This SMP also assumes that within the PMZ any potential for COCs to leach to groundwater at concentrations greater than the critical

groundwater PCL (i.e., soil concentrations that exceed $^{GW}Soil_{Ing}$ PCLs) will be addressed by the PMZ or can be eliminated based on the lack of historical detections in groundwater in accordance with §350.75. Outside the boundary of the PMZ, the critical PCL for soil is the lowest of the $^{GW}Soil_{Ing}$ PCL, the $^{Total}Soil_{Comb}$ PCL, or the Texas-specific median background concentration (for select metals only).

3.2.2 The 2016 APAR indicates the following COCs are present in soil at concentrations in exceedance of the critical soil PCL at the time of the APAR (prior to implementation of the PMZ): benzene, ethylbenzene, ethylene dibromide, toluene, xylenes, benzo[a]anthracene, benzo[a]pyrene, dibenz[a,h]anthracene, 2,4-dimethylphenol, m & p cresol, naphthalene, antimony, arsenic, barium, lead, mercury, and vanadium. The TCEQ updates the TRRP Tier 1 PCLs on a routine basis (most recent update in April 2018) and the PCLs for some of these COCs have increased since the 2016 APAR. In addition, TRRP allows use of the Texas-specific median background concentration as the critical PCL for select metals. Based on a review of the maximum soil concentrations reported in the 2016 APAR and the current Tier 1 PCL or Texas-specific median background concentration, the following COCs are present in soil at GBR in exceedance of the critical PCL (lowest of the $^{GW}Soil_{Ing}$ PCL, the $^{Total}Soil_{Comb}$ PCL, or the Texas-specific median background concentration): benzene, ethylbenzene, ethylene dibromide, toluene, xylenes, benzo[a]pyrene, m & p cresol, naphthalene, antimony, arsenic, barium, lead, and mercury.

3.2.3 COCs may or may not be associated with discrete areas of generally dispersed contamination or Areas of Concern (AOCs), Solid Waste Management Units (SWMUs), and/or Hazardous Waste Management Units (HWMUs) – any of which might be located in defined areas (including tanks, container storage areas, roll-off staging areas, etc.) and might have been used historically or currently for management of solid or hazardous waste. A SWMU is any unit at a facility from which solid/hazardous constituents might migrate, irrespective of whether the unit was intended for the management of solid and/or hazardous wastes. A HWMU is a contiguous area of land on or in which hazardous waste is placed.

3.3 Health and Safety Considerations

3.3.1 In addition to this SMP, health and safety factors should be assessed, and appropriate actions should be implemented to ensure workers are protected from COCs present in soil during excavation and soil management activities. The anticipated pathway for worker exposure during excavation activities is the total combined inhalation, dermal contact, and unintentional ingestion pathway. Table 4A of the 2016 APAR provides the maximum detected concentration for each COC detected in soil at GBR and is included as Appendix B of this SMP as a reference for development of project-specific Health and Safety Plans and selection of appropriate protective measures (e.g., engineering controls, personal protective equipment [PPE], decontamination procedures, etc.) for any soil excavation or management activities.

3.4 Pre-excavation Requirements and Planning

Prior to any groundbreaking, certain activities must be completed to satisfy safety and training requirements, and to plan for managing excavated material. Specific pre-excavation and planning activities for the personnel conducting the excavation and the GBR Environmental Department are detailed below.

3.4.1 Personnel Conducting Construction, Excavation, or Soil Borings

3.4.1.1 Contact the Environmental Department at least five (5) working days prior to any excavation or drilling activities.

3.4.1.2 Notify One Call (Texas811).

3.4.1.3 Review Refinery drawings for utility locations.

3.4.1.4 Mark the areas where excavation or drilling activities will be conducted with stakes, pin flags, or spray paint (location marking should be coordinated with operations, maintenance and/or environmental departments as appropriate).

3.4.1.5 Estimate the volume of excavated material or drill cuttings to be generated. Typically, this is done by multiplying the proposed excavation dimensions (length x width x depth) and accounting for slope safety and swell factors. Refer to the soil excavation excel tool on the Environmental Department website to estimate volumes of soil from excavation activities with the following slope safety and swell factors http://ww7.mpcconnect.com/sites/ref-gbr-hess-org/docs/ENV%20Water%20%20Waste%20Documents/Forms/AllItems.aspx

3.4.1.5.1 Assume a 3:1 side slope for each side of the excavation that is not shored.

3.4.1.5.2 Assume a swell factor of 25% for excavated soil (e.g., an excavation measuring 100 cubic yards in volume will result in 125 cubic yards of material).

3.4.1.6 Determine a suitable staging location for the excavated material within the construction, excavation, or drilling work zone limits or within the HWMU, SWMU, or AOC. Excavated soil can be stockpiled within the work zone limits or placed in appropriate containers (drums, roll-offs, etc.) and transported to a waste accumulation area as described in Section 3.5 of this SMP.

3.4.1.6.1 If excavated soil is stockpiled, stormwater runoff berms must be provided per best management practices in the Stormwater Pollution Prevention Plan (SWPPP).

3.4.1.6.2 If soil is to be containerized, obtain the appropriate type and quantity of containers to hold excavated materials or soil cuttings.

3.4.1.6.3 If excavated soil/material is from a known SWMU/AOC – refer to the flow process chart included as Figure 1 for management options.

3.4.1.6.4 Coordinate with the Environmental Department for appropriate storage area procedures.

3.4.1.7 Environmental Department

3.4.1.7.1 Identify AOCs, SWMUs, and/or HWMUs that exist near the construction, excavation, or drilling area that have been historically used to manage waste.

3.4.1.7.2 Identify areas where excavated soil may have come in contact with a listed hazardous waste based on its source. Examples at GBR include the location of the former wastewater treatment plant sludge dryer and any active or former container storage areas located at the:

3.4.1.7.2.1 Atlantic Lane Storage Area;

3.4.1.7.2.2 Less than 90-Day Storage Area;

3.4.1.7.2.3 North Tank Farm Container Storage Pad;

3.4.1.7.2.4 North Tank Farm Exchanger/Cleaning Pad;

3.4.1.7.2.5 Old Warehouse Laydown Yard;

3.4.1.7.2.6 Plant A Container Storage Area;

3.4.1.7.2.7 Satellite accumulation areas within process areas;

3.4.1.7.2.8 South Tank Farm Road;

3.4.1.7.2.9 Storage area east of UDEX Unit;

3.4.1.7.2.10 West Tank Farm Exchanger Cleaning and Container Storage Area; and

3.4.1.7.2.11 West Tank Farm Area 3 Laydown Yard.

3.4.1.7.3 Identify hazards in and around the construction, excavation, or drilling area.

3.4.1.7.4 Obtain supplies and containers for excavated material sampling and characterization.

3.4.1.7.5 Ensure excavated material for reuse will be managed appropriately.

3.4.1.7.6 Ensure excavated material for disposal will be managed appropriately (e.g. containerized, labelled, characterized, tracked, and disposed offsite).

3.4.1.7.7 Notify and conduct applicable reporting to TCEQ, as necessary (e.g., release reporting, remediation reporting, STEERS, etc.).

3.5 Onsite Excavated Soil Handling and Management

Soil generated during excavation, construction, or other activities at GBR shall be handled and managed as described in this section. Two process flow charts are provided to illustrate proper management from excavation through disposal or reuse for soil originating from excavations during construction or other activities at GBR (Figures 1 and 2).

3.5.1 Handling of Excavated Soil

Excavated soil shall be (1) stockpiled in-place until characterization is completed and appropriate management/reuse is identified or (2) containerized in-place and moved to a waste accumulation area upon completion of excavation activities. The method of handling will depend on the origin of the excavated soil and visible observations, as follows:

3.5.1.1 Outside Boundaries of a HWMU, SWMU, or AOC

Soil excavated from areas outside the boundaries of a HWMU, AOC, or SMWU shall be stockpiled in-place.

3.5.1.2 Within Boundaries of a HWMU

Soil excavated from areas within the boundaries of a HWMU shall be placed in labeled containers (e.g., drums, roll-offs, etc.) approved by the Environmental Department and staged in-place until the container is full or excavation activities are complete.

3.5.1.3 Within Boundaries of a SWMU or AOC with Historical Listed Wasted

Soil excavated from areas within the boundaries of a SWMU or AOC that has potentially been associated with listed hazardous waste shall be placed in

labeled containers (e.g., drums, roll-offs, etc.) approved by the Environmental Department and staged in-place until the container is full or excavation activities are complete.

3.5.1.4 Within Boundaries of a SWMU or AOC without Historical Listed Wasted

3.5.1.4.1 Soil that contain visible waste excavated from areas within the boundaries of a SWMU or AOC shall be placed in labeled containers (e.g., drums, roll-offs, etc.) approved by the Environmental Department and staged in-place until the container is full or excavation activities are complete. Soil that do not contain visible waste shall be stockpiled in-place.

3.5.1.4.2 All soil stockpiles shall be managed to minimize run off by providing stormwater control berms per best management practices in the SWPPP. All containers holding excavated materials shall be moved to a waste accumulation area immediately upon filling to capacity or completion of excavation activities under the direction of the Environmental Department

3.5.1.4.3 The Environmental Department will track the onsite stockpiled and containerized volumes of soil. The soil tracking information should be documented by the Environmental Department using the field book and a spreadsheet or other electronic method, so the information is readily available.

3.5.2 Onsite Management of Excavated Soil

Excavated materials will be screened and managed according to the categories described in Table 1 and the process flow charts included as Figures 1 and 2. The flow charts provide a framework for implementing the soil reuse policy in this SMP. Figure 1 is only applicable to excavation activities to be conducted within a HWMU, SWMU, or AOC. If the excavation activities are not within the boundaries of a HWMU, SWMU, or AOC, then only Figure 2 will be applicable. The Environmental Department may, based on process knowledge or other information, require additional procedures as appropriate.

Tables 2 and 3 provide the critical PCLs and Resource Conservation and Recovery Act (RCRA) toxicity criteria for characteristically hazardous waste, respectively. These reference tables will be used per the directions in the process flow charts (Figures 1 and 2).

3.5.2.1 Soil Screening

As shown within the flow chart included as Figure 1, excavated material originating from within the boundaries of a HWMU will be managed as hazardous waste for offsite disposal; no additional screening will be conducted. Excavated material originating from within the boundaries of a SWMU or AOC shall be visually inspected for the presence of waste to determine the next appropriate screening actions in accordance with the flow chart in Figure 1.

Excavated material originating from areas outside the boundaries of a SMWU, or AOC shall be inspected for visual indications of staining and olfactory indications of hydrocarbon odors. As described in the flow chart in Figure 2, representative soil samples will be collected for laboratory analysis to screen for total petroleum hydrocarbons (TPH) and COCs that were previously identified at GBR above current critical soil PCLs.

3.5.2.1.1 Sample Collection Procedures for Laboratory Analysis

3.5.2.1.1.1 When required per the flow charts included as Figures 1 and 2, the Environmental Department will collect samples for laboratory analysis for waste characterization and/or non-waste determination purposes. The Environmental Department will collect these samples in conjunction with the sampling required for the National Emission Standards for Hazardous Air Pollutants (NESHAP) from site remediation, also known as Site Remediation Maximum Achievable Control Technology (SR-MACT) compliance, which includes collection of four discrete, grab samples per 50 cubic yards of excavated soil (i.e., four grab samples per each 50 cubic yard roll-off box; or 2 samples per each 20-25 cubic yard roll-off box or dump truck). Additional soil sample volume will be collected at each of the four discrete SR-MACT sample locations to be composited into one sample for waste characterization/determination purposes (i.e., one 4-point composite sample per 50 cubic yards of soil). One additional discrete grab soil sample will be collected for laboratory analysis of volatile organic compounds (VOCs) by Method 5035A for waste characterization/determination purposes from one of the four sample locations. The following procedure will be used to collect each waste characterization/determination sample:

3.5.2.1.1.2 Select and mark (with flags or stakes) the appropriate sample locations in each soil pile or container to be characterized. Label the flags or stakes with an identifier for each location that corresponds to the composite or grab sample name.

3.5.2.1.1.3 Composite Sampling

- Use dedicated/disposable sampling equipment or decontaminate all equipment used to collect and homogenize the composite soil sample (to prevent cross-contamination from previous samples).
- Using a trowel or other appropriate tool, collect soil from each sample location and place soil into a stainless-steel bowl or other container.
- Thoroughly mix the composite sample to ensure homogeneity.
- Place the homogenized composite sample into appropriate laboratory containers and label the container with a minimum of the sample name, collection date and time, and

project name or area.

3.5.2.1.1.4 Discrete Grab Sampling (VOC Analysis Only):

- The VOC discrete grab soil sample will be collected from one of the four SR-MACT/composite sample locations with greatest indication of petroleum impacts (based on visual and olfactory observations).
- Collect one discrete grab soil sample for VOC analysis using “Terra CoreTM”, “EnCoreTM” or “Easy DrawTM” samplers. The sample should be collected directly from within the soil pile or container at a point that had not been exposed to the air.

3.5.2.1.1.5 Take photographs of the soil pile or container that was sampled and each composite/discrete sample location for documentation purposes.

3.5.2.1.1.6 Decontaminate all equipment used, dispose of any consumable items used during sample collection, and perform general housekeeping tasks.

3.5.2.1.1.7 Complete chain of custody documentation for all sample containers, including the required analyses for each sample collected. Analytes will be specified as follows:

- For soil originating from a SWMU or AOC that does not contain visible waste and was never potentially associated with listed hazardous waste, specify the analytes for Table 2 parameters on the chain-of custody. Additionally, indicate on the chain-of-custody to “HOLD” samples collected for Table 3 analysis by TCLP pending results of Table 2 analysis.
- For soil that could potentially be reused on-site (as shown on Figures 1 and 2), specify the analytes included in Table 2.

3.5.2.1.1.8 Prepare sample containers for shipment to the analytical laboratory.

3.5.2.2 Soil Pile Areas Management

The forthcoming soil pile areas at GBR will be located within a secure area of the refinery. One soil pile area will contain soil that can be used anywhere onsite as described in Figure 2 (i.e., soil with all COC concentrations below $^{GW}Soil_{Ing}$ PCLs, listed in Table 2). A second soil pile area will contain soil that can be used anywhere onsite within the PMZ as described in Figure 2 (i.e., soil with all COC concentrations below $^{Tot}Soil_{Comb}$ PCLs, listed in Table 2). Proper management of each soil pile area is crucial to ensure that the areas do not inadvertently receive a waste, which may result in designation as a SWMU. Further, proper management will prevent any perceived threat to

groundwater quality. The soil pile area shall be managed according to the following requirements:

3.5.2.2.1 The soil pile area will always be secure. The Environmental Department shall control access to the area.

3.5.2.2.2 Excavated material shall not be moved to either soil pile area unless a "soil reuse determination" has been made.

3.5.2.2.3 Approval from the Environmental Department is required when adding or removing material from either soil pile area. Provide the Environmental Department with the volume of the material added or removed and the location at which the material was placed within a soil pile area.

3.5.2.2.4 Soil piles will be provided with silt fence or other means to prevent run-off in accordance with the SWPPP.

3.5.2.2.5 All waste materials are prohibited within the limits of the soil pile area.

3.6 Offsite Management of Excavated Soil

3.6.1 Soil determined to require offsite disposal or recycling, as described in the flow charts included as Figures 1 and 2, shall be removed from the site and transported to an appropriate landfill or facility in accordance with GBR Waste Management Procedures. Transportation of excavated soil to an offsite disposal or facility must also be conducted in accordance with all United States Department of (US DOT) regulations. The receiving landfill or facility should be permitted to receive waste consistent with the waste determination (as described above and the flow charts in Figures 1 and 2).

3.6.2 Sampling, characterization, and profiling of the soil for offsite disposal at a landfill or reuse through an offsite recycling facility is the responsibility of the Environmental Department. Prior to offsite management of soil, the Environmental Department shall prepare waste manifests or bills of lading for the appropriate landfill or recycling facility. Waste profiles for certain hazardous and non-hazardous waste soil from GBR have been established with offsite landfills/recycling facilities. Waste soil may be disposed of based on generator knowledge that the soil conform to an established waste profile.

3.6.3 Daily tracking of the transport vehicles and shipping paperwork shall be completed by the Environmental Department. The tracking information must include the following for each shipment: manifest/document number; shipment date; transporter name, address, and phone number; waste type; waste code, if applicable; volume; profile approval number; and, the designated disposal or recycling facility name, address, and phone number. The tracking information should be documented by the Environmental Department using a field book, a spreadsheet, or other electronic method so that the information is readily available.

3.6.4 Soil characterized as hazardous must be removed from the site and transported to a permitted facility within 90 days of generation (i.e., within 90 days of generating the waste material). A one-time 30-day extension may be requested from the TCEQ (by submitting Form TCEQ-0319), but efforts shall be made to meet the 90-day requirements as possible to avoid triggering the requirement of a RCRA permit.

3.6.5 Excavated Soil Management documentation

Documentation summarizing the excavation, reuse, and/or disposal activities will be maintained by the Environmental Department. The documentation shall contain, at a minimum, the information listed below:

3.6.5.1 Volumes of soil relocated onsite for reuse and locations of origin and final

placement.

3.6.5.2 Photographs.

3.6.5.3 Laboratory analytical results with sample identifications.

3.6.5.4 Any proposed corrections and/or revisions to the SMP.

3.6.5.5 Disposal/reuse manifests or other shipping papers.

3.7 Competencies and Training

3.7.1 Environmental Sampling

3.7.1.1 MPC staff who are designated to collect soil samples should be appropriately trained in sampling methodology, including use of self-contained VOC samplers and chain-of-custody procedures and paperwork.

3.8 Assurance

3.8.1 Prior to commencing any excavation or groundbreaking activities, the appropriate personnel (contractors, Project manager, and environmental personnel) should read and understand the procedures and requirements outlined in this SMP

4.0 Acronyms

4.1 AOC – Area of Concern

4.2 APAR – Affected Property Assessment Report

4.3 CFR – Code of Federal Regulations

4.4 COC – Chemical of Concern

4.5 GBR – Galveston Bay Refinery

4.6 $^{GW}Soil_{Ing}$ – Soil PCL for constituents leaching to groundwater and ingestion pathway

4.7 HWMU – Hazardous Waste Management Unit

4.8 HW – Hazardous Waste

4.9 mg/kg – Milligrams per Kilogram

4.10 mg/L – Milligrams per Liter

4.11 PCL – Protective Concentration Level

4.12 PMZ – Plume Management Zone

4.13 PPE – Personal Protective Equipment

4.14 RCRA – Resource Conservation and Recovery Act

4.15 SMP – Soil Management Plan

4.16 SW – Solid Waste

4.17 SWMU – Solid Waste Management Unit

4.18 SWPPP – Stormwater Pollution Prevention Plan

4.19 TCEQ – Texas Commission on Environmental Quality

4.20 TCLP – Toxicity Characteristic Leaching Procedure

4.21 $^{Total}Soil_{Comb}$ – Soil PCL for the total combined inhalation, dermal contact, and ingestion exposure pathways

4.22 TPH – Total Petroleum Hydrocarbons

4.23 USEPA – United States Environmental Protection Agency

4.24 VOC – Volatile organic compound

5.0 References

None

6.0 Attachments

6.1 Attachment A – List of Figures

6.1.1 Figure 1 – Process Flow Chart 1 for Excavated Soil Originating from HWMU, SWMU, or AOC

6.1.2 Figure 2 – Process Flow Chart 2 for Excavated Soil (Not Originating from HWMU, SWMU, or AOC)

6.2 Attachment B – List of Tables

6.2.1 Table 1 – Excavated Materials Categories and Management

6.2.2 Table 2 – Laboratory Analysis and TRRP Critical PCLs for Soil Reuse Screening

6.2.3 Table 3 – 40 CFR 261 Subpart C Hazardous Waste Characterization Parameters

6.3 Attachment C – PMZ Summary Plume Map http://ww7.mpcconnect.com/sites/ref-gbr-hess-org/docs/ENV%20Water%20%20Waste%20Documents/Forms/AllItems.aspx

6.4 Attachment D – Table 4A of the 2016 APAR

7.0 Revision History

Revision Number	Description of Change	Written by	Approved by	Revision Date	Effective Date
0	Original Issue. New integrated site procedure replaces GBR-HESS-ENV-29 under MOC 93391.	R. L. Harris	E. R. Kaysen	7/26/2021	8/20/2021

Attachment A – List of Figures

Figure 1. Process Flow Chart 1 for Excavated Materials Originating from HWMU, SWMU, or AOC

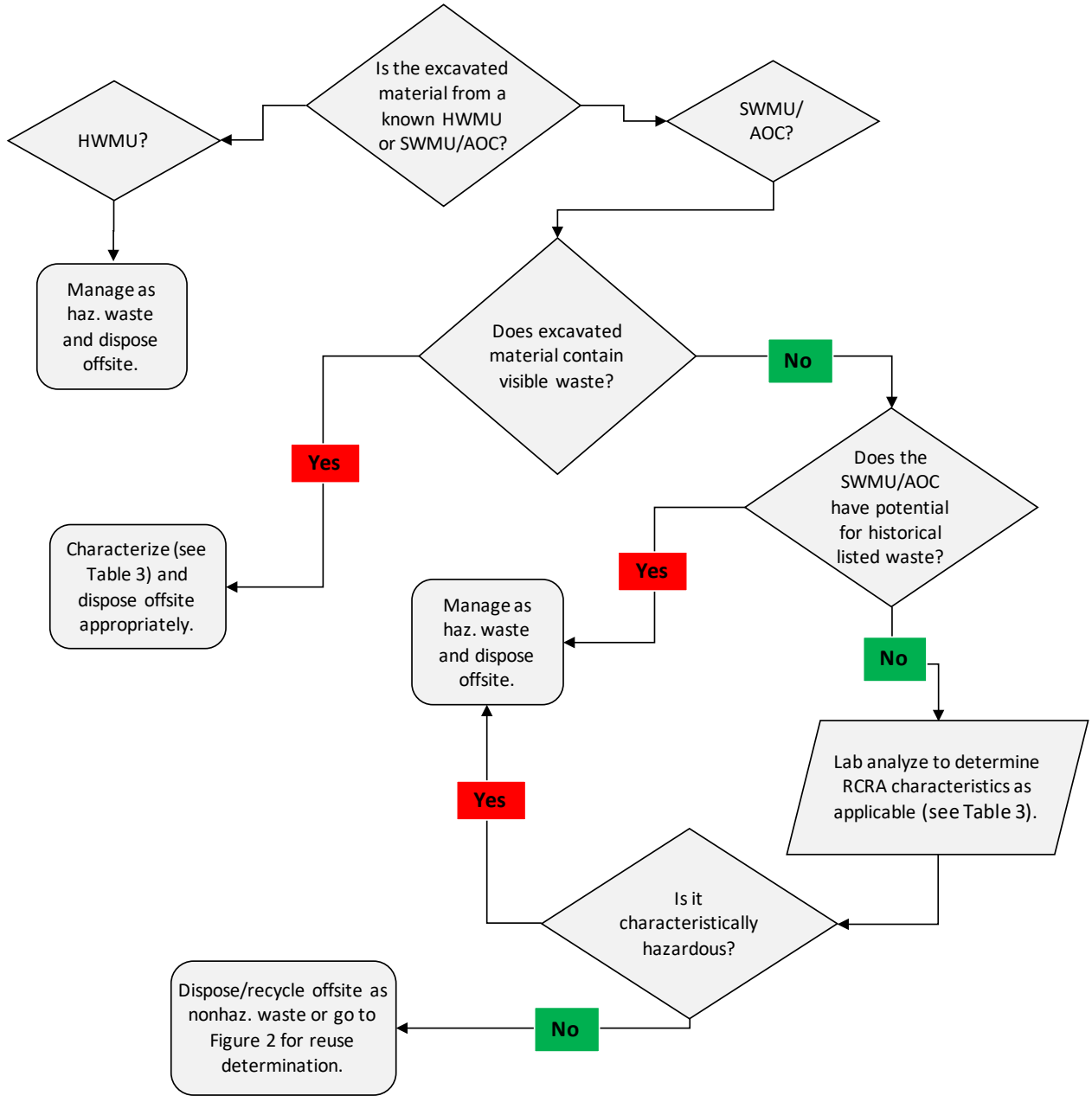
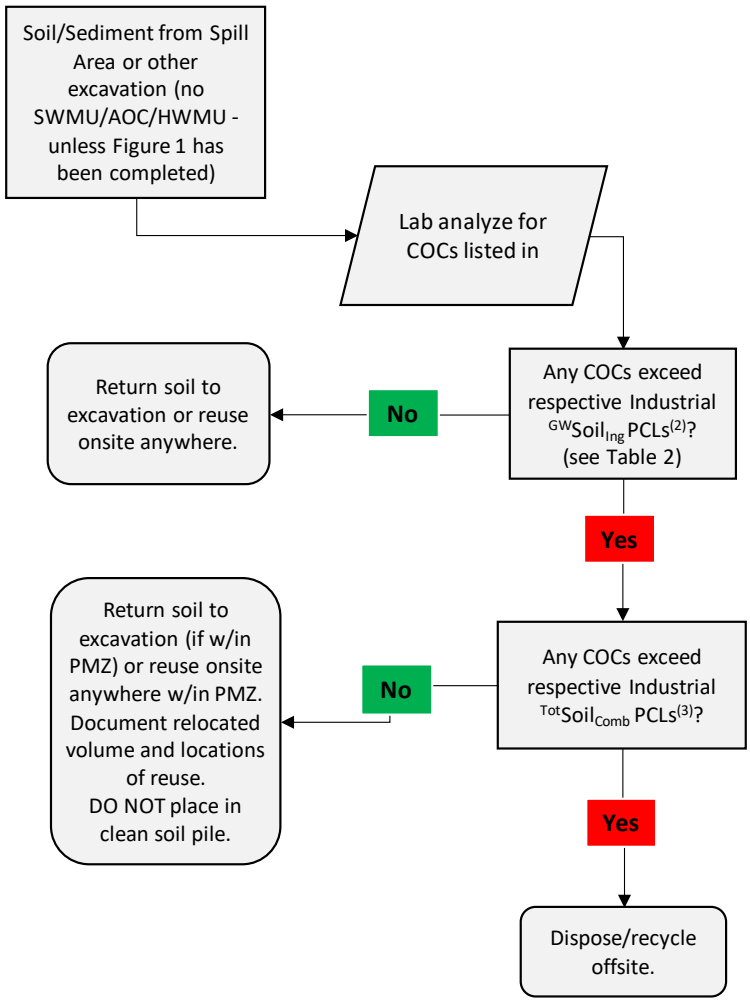


Figure 2. Process Flow Chart 2 for Excavated Materials (Not Originating from HWMU, SWMU, or AOC)



Notes:

(1) These procedures should only be used after any spilled material or gross contamination is removed.

(2) Commercial/Industrial Protective Concentrationl Levels (PCLs) for the soil-to-groundwater ingestion exposure pathway and a 30-acre source area. See Table 2 of this Soil Management Plan.

(3) Commercial/Industrial PCLs for the total combined inhalation, dermal contact, and ingestion exposure pathways and a 30-acre source area. See Table 2 of this Soil Management Plan.

PMZ = Plume Management Zone (see Appendix A of this Soil Management Plan for extent of PMZ boundary).

Attachment B – List of Tables

Table 1. Excavated Materials Categories and Management[1]

Source	Name	Description	Screening	Management
Figure 1 (Process Flow Chart 1)				
HWMU	HW, HW residue or constituents	Designate as HW	None	Manage as HW and dispose off-site
SWMU/AOC	Visible waste material	Designate as SW	Characterize as SW or HW	Manage as HW/non-haz SW and dispose off-site
	Potential for listed waste	Designate as HW	None	Manage as HW and dispose off-site
	Not listed and no visible waste material	Determine potential waste codes based on historical use of area	Analyze for appropriate COCs based on identified potential waste codes.	Manage as HW or non-HW based on analytical and dispose offsite OR go to Flow Chart 2.
Figure 2 (Process Flow Chart 2)				
Areas outside of HWMU or SWMU/AOC	Excavated Soil	Soil generated from construction, drilling, or excavation activities	Screen for COCs listed in Table 2. See Flow Chart 2 for direction on comparing analytical results to applicable PCLs.	See Flow Chart 2 to determine appropriate management. Soil will be returned to excavation, reused onsite, or sent off site for disposal/recycling dependent on the analytical concentrations relative to PCLs listed in Table 2. Environmental Department will be involved with management.
	Hydro-excavated soil	Soil generated from drilling or other activities that use hydro-excavation equipment	None until dried.	Environmental Department will advise on management. Hydro-excavated soil will either be sent offsite for disposal/recycling or transported to onsite staging area (e.g., bermed, poly-lined area to prevent infiltration of residual water to subsurface) for drying. When dry, soil will be managed according to excavated soil category above.

Notes:

1. This table is to be used in conjunction with the process flow charts provided as Figures 1 and 2 of this SMP.
2. HW = hazardous waste
3. Non-HW = non-hazardous waste
4. SW = solid waste

Table 2. Laboratory Analysis and TRRP Critical PCLs for Soil Reuse Screening

Parameter (Total)	$^{GW}Soil_{Ing}$ [1] PCL (mg/kg)	$^{Tot}Soil_{Comb}$ [2] PCL (mg/kg)
Volatile Organic Compounds (Method 5035), Discrete Grab Samples		
Benzene	0.013	130
Ethylbenzene	3.8	17000
Ethylene dibromide	0.0001	2.1
Toluene	4.1	29000
m,p-Xylene	53	6700
o-Xylene	35	48000
TPH (Method TX1005), 4-Point Composite Samples		
TPH, C6-C12	97	2100
TPH, >C12-C28	300	7800
TPH, >C12-C35	300	7800
TPH, >C28-C35	300	7800
Semi-Volatile Organic Compounds (Method 8270, 4-Point Composite Samples		
Benzo-a-pyrene	3.8	17
m- & p- Cresol	0.94	3400
Naphthalene	47	190
Metals (Method 6010/6020 or 7470), 4-Point Composite Samples		
Antimony	2.7	310
Arsenic	5.9 [3]	200
Barium	300 [3]	120000
Lead	15 [3]	1600
Mercury	1	11

Notes:

1. Commercial/Industrial PCLs for the soil-to-groundwater ingestion exposure pathway and a 30-acre source area, last updated by TCEQ in April 2018.
2. Commercial/Industrial PCLs for the total combined inhalation, dermal contact, and ingestion exposure pathways and a 30-acre source area, last updated by TCEQ in April 2018.
3. Texas-specific median background concentration, 30 TAC §350.51(m).

Table 3. 40 CFR 261 Subpart C Hazardous Waste Characterization Screening Criteria

Waste Code	Parameter (TCLP)	Regulatory Level[1] (mg/L)
D004	Toxicity – Arsenic	5.0
D005	Toxicity – Barium	100.0
D006	Toxicity – Cadmium	1.0
D007	Toxicity – Chromium	5.0
D008	Toxicity – Lead	5.0
D009	Toxicity – Mercury	0.2
D010	Toxicity – Selenium	1.0
D011	Toxicity – Silver	5.0
D029	Toxicity – 1,1-Dichloroethene	0.7
D028	Toxicity – 1,2-Dichloroethane	0.5
D027	Toxicity – 1,4-Dichlorobenzene	7.5
D035	Toxicity – 2-Butanone (MEK)	200.0
D018	Toxicity – Benzene	0.5
D019	Toxicity – Carbon Tetrachloride	0.5
D021	Toxicity – Chlorobenzene	100.0
D022	Toxicity – Chloroform	6.0
D039	Toxicity – Tetrachloroethene	0.7
D040	Toxicity – Trichloroethene	0.5
D043	Toxicity – Vinyl Chloride	0.2
D041	Toxicity – 2,4,5-Trichlorophenol	400.0
D042	Toxicity – 2,4,6-Trichlorophenol	2.0
D030	Toxicity – 2,4-Dinitrotoluene	0.13
D026	Toxicity – Cresols, total	200.0
D032	Toxicity – Hexachlorobenzene	0.13
D033	Toxicity – Hexachlorobutadiene	0.5
D036	Toxicity – Nitrobenzene	2.0
D037	Toxicity – Pentachlorophenol	100.0
D038	Toxicity – Pyridine	5.0

Notes:

1. If any of the regulatory levels are exceeded, then the soil is considered hazardous under 40 CFR 261 Subpart C.

Attachment C – PMZ Summary Plume Map

PMZ Summary Plume Map http://ww7.mpcconnect.com/sites/ref-gbr-hess-org/docs/ENV%20Water%20%20Waste%20Documents/Forms/AllItems.aspx

Attachment D – Table 4A of the 2016 APAR

Table 4A. Surface Soil Residential Assessment Levels for Human Health Exposure Pathways

COC	Source area size (acres)	$^{Tot}Soil_{Comb}$ PCL (mg/kg)	^{GW}Soil PCL		MQL (mg/kg)	Back-ground (mg/kg)	Maximum concentration			
			(mg/kg)	Tier			Sample ID	Sample depth (ft)	Sample date	Conc (mg/kg)
Benzene	30	130	0.013	1	0.00500	NA	APAR-2E	3-4	6/14/2016	8500
Ethylbenzene	30	17000	3.8	1	0.00500	NA	APAR-7	2-5	3/11/2016	108
Methyl ethyl ketone	30	120000	15	1	0.0100	NA	APAR-6	2-5	03/11/2016	0.0132
Styrene	30	7800	1.6	1	0.00500	NA	APAR-7	2-5	03/11/2016	0.191 J
Toluene	30	29000	4.1	1	0.00500	NA	APAR-7	2-5	03/11/2016	2580
M,P-Xylene	30	6700	53	1	0.00500	NA	APAR-7	2-5	03/11/2016	257
o-Xylene	30	48000	35	1	0.00500	NA	APAR-7	2-5	03/11/2016	74.8
Anthracene	30	190000	3400	1	0.0167	NA	APAR-8	2-5	03/11/2016	10.4
Benzo[k] fluoranthene	30	240	310	1	0.0167	NA	APAR-2	0-2	03/11/2016	0.537
Bis(2-ethylhexyl) phthalate	30	560	82	1	0.0667	NA	APAR-6	0-2	03/11/2016	1.01
m & p – Cresol	30	3400	0.32	1	0.0333	NA	APAR-7	2-5	03/11/2016	1.29
Dimethyl phthalate	30	550000	31	1	0.0667	NA	APAR-1	0-2	03/11/2016	0.0666 J b
MTBE	30	1100	0.31	1	0.00500	NA	APAR-6	2-5	03/11/2016	0.0532
Phenol	30	1400	9.6	1	0.0167	NA	APAR-7	2-5	03/11/2016	0.886
Antimony	30	310	2.7	1	2.50	NA	APAR-9	2-5	03/11/2016	5.43
Barium	30	120000	220	1	1.00	NA	APAR-2	0-2	03/11/2016	2020
Beryllium	30	250	0.92	1	0.250	NA	APAR-1	2-5	03/11/2016	0.9
Cadmium	30	760	0.75	1	0.250	NA	APAR-1	0-2	03/11/2016	0.706
Chromium	30	75000	1200	1	0.500	NA	APAR-8	2-5	03/11/2016	412
Mercury	30	11	1	1	0.0170	NA	APAR-8	2-5	03/11/2016	2.07
Selenium	30	4900	1.1	1	2.00	NA	APAR-1	0-2	03/11/2016	0.522 J
Vanadium	30	610	0.24	1	0.500	NA	APAR-4	0-2	03/11/2016	19.5
Zinc	30	250000	1200	1	1.50	NA	APAR-8	2-5	03/11/2016	339 b
Benzo[a] anthracene	30	24	8.9	1	0.0167	NA	APAR-8	6-8	03/11/2016	29.4
Benzo[b] fluoranthene	30	24	30	1	0.0167	NA	APAR-8	6-8	03/11/2016	19.9
Acenaphthene	30	37000	120	1	0.0167	NA	APAR-8	6-8	03/11/2016	9.3
Carbon Disulfide	30	7200	6.8	1	0.0100	NA	APAR-6	6-8	3/11/2016	0.00117 J
Ethylene Dibromide	30	0.79	0.0001	1	0.00500	NA	APAR-6	6-8	03/11/2016	0.00115 J
Benzo[a]pyrene	30	2.4	3.8	1	0.0167	NA	APAR-8	6-8	03/11/2016	24.4
Chrysene	30	2400	770	1	0.0167	NA	APAR-8	6-8	03/11/2016	44.7
o-Cresol	30	34000	3.6	1	0.0167	NA	APAR-7	6-8	03/11/2016	1.43
Dibenz(a,h) anthracene	30	2.4	7.6	1	0.0167	NA	APAR-8	6-8	03/11/2016	4.54
2,4-Dimethylphenol	30	14000	1.6	1	0.0167	NA	APAR-6	6-8	03/11/2016	2.71
Fluoranthene	30	25000	960	1	0.0167	NA	APAR-8	6-8	03/11/2016	17.9
Fluorene	30	25000	150	1	0.0167	NA	APAR-8	6-8	03/11/2016	14.7
Indeno[1,2,3-cd] pyrene	30	24	87	1	0.0167	NA	APAR-8	6-8	03/11/2016	5.66
Naphthalene	30	190	16	1	0.0167	NA	APAR-8	6-8	03/11/2016	66.4
Phenanthrene	30	19000	210	1	0.0167	NA	APAR-8	6-8	03/11/2016	64.6
Pyrene	30	19000	560	1	0.0167	NA	APAR-8	6-8	03/11/2016	47.6
Arsenic	30	200	2.5	1	1.00	NA	APAR-8	6-8	03/11/2016	11.3
Cobalt	30	2000	110	1	0.500	NA	APAR-5	6-8	03/11/2016	20.2
Cyanide	30	280	20	1	0.500	NA	APAR-8	6-8	03/11/2016	1.66 b
Lead	30	1600	1.5	1	0.500	NA	APAR-8	6-8	03/11/2016	2900
Nickel	30	8600	79	1	1.00	NA	APAR-3	6-8	03/11/2016	13.4