

# **RECORD OF DECISION**

## **KERR-MCGEE COLUMBUS OPERABLE UNIT 1 SUPERFUND SITE**

**COLUMBUS, LOWNDES COUNTY, MISSISSIPPI**



**PREPARED FOR:  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
REGION 4  
SUPERFUND DIVISION  
ATLANTA, GEORGIA**

**PREPARED BY: .  
BLACK & VEATCH SPECIAL PROJECTS CORP.  
1120 SANCTUARY PARKWAY, SUITE 200  
ALPHARETTA, GEORGIA 30009**

**DCN: 49092-0113-04- B-02519R3  
EPA ID: MSD990866329**

## RECORD OF DECISION

### TABLE OF CONTENTS

#### Acronyms and Abbreviations

<b>PART 1: DECLARATION</b> .....	<b>1</b>
1.0 Site Name and Location .....	1
2.0 Statement of Basis and Purpose .....	1
3.0 Assessment of the Site.....	1
4.0 Description of Selected Remedy .....	1
5.0 Statutory Determinations.....	2
6.0 Data Certification Checklist .....	3
7.0 Authorizing Signature .....	3
<b>PART 2: THE DECISION SUMMARY</b> .....	<b>4</b>
1.0 Site Name, Location, and Brief Description .....	4
2.0 Site History and Activities.....	4
2.1 Regulatory History .....	5
2.2 Previous Investigations and Removal Actions .....	6
3.0 Community Participation .....	7
4.0 Scope and Role of the Response Action .....	7
5.0 Site Characteristics .....	9
5.1 Conceptual Site Model .....	9
5.2 Overview of the Site.....	9
5.2.1 Geologic, Hydrogeologic, and Topographic Information .....	10
5.3 Sampling Strategy .....	11
5.4 Known or Suspected Sources of Contamination .....	11
5.5 Nature and Extent of Contamination.....	12
5.5.1 Soil Contamination .....	12
5.5.2 Justification for Determining that Contaminated Soils in OU-1 Do Not Contain a RCRA Listed Waste .....	14
6.0 Current and Potential Future Land and Water Uses.....	14
6.1 Land Uses .....	14
7.0 Summary of Site Risks .....	14
7.1 Human Health Risk Assessment .....	15
7.1.1 Hazard Identification .....	15
7.1.2 Exposure Assessment .....	16
7.1.3 Toxicity Assessment .....	16
7.1.4 Risk Characterization.....	17

7.1.5	Uncertainties .....	20
7.2	Ecological Risk Assessment.....	20
7.2.1	Problem Formulation .....	20
7.2.2	Ecological Exposure Assessment .....	23
7.2.3	Ecological Effects Assessment .....	23
7.2.4	Ecological Risk Characterization.....	24
7.3	Basis for Action.....	24
<b>8.0</b>	<b>Remedial Action Objectives .....</b>	<b>24</b>
<b>9.0</b>	<b>Description of Alternatives .....</b>	<b>26</b>
<b>10.0</b>	<b>Comparative Analysis of Alternatives .....</b>	<b>32</b>
10.1	Overall Protection of Human Health and the Environment .....	32
10.2	Compliance with ARARs.....	33
10.3	Long-Term Effectiveness and Permanence.....	33
10.4	Reduce Toxicity, Mobility or Volume through Treatment .....	34
10.5	Short-Term Effectiveness.....	34
10.6	Implementability .....	34
10.7	Cost.....	35
10.8	State Acceptance .....	35
10.9	Community Acceptance .....	35
<b>11.0</b>	<b>Principal Threat Waste .....</b>	<b>36</b>
<b>12.0</b>	<b>Selected Remedy .....</b>	<b>36</b>
12.1	Detailed Description of the Selected Remedy.....	36
12.2	Summary of the Rationale for the Selected Remedy .....	37
12.3	Cost Estimate for the Selected Remedy .....	37
<b>13.0</b>	<b>Estimated Outcomes of the Selected Remedy .....</b>	<b>38</b>
<b>14.0</b>	<b>Statutory Determination .....</b>	<b>39</b>
14.1	Protection of Human Health and the Environment .....	39
14.2	Compliance with ARARs.....	39
14.3	Cost Effectiveness .....	41
14.4	Use of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable .....	41
14.5	Preference for Treatment as a Principal Element.....	41
14.6	Five-Year Review Requirements .....	41
14.7	Documentation of Significant Changes.....	41
<b>15.0</b>	<b>References.....</b>	<b>42</b>

<b>PART 3: RESPONSIVENESS SUMMARY .....</b>	<b>44</b>
<b>1.0 Public Review Process .....</b>	<b>44</b>
1.1 Introduction .....	44
1.2 Public Review Process .....	44
1.3 Public Comment Period, Public Meeting and Availability Sessions .....	45
1.4 Receipt and Identification of Comments.....	45
1.5 Locating Responses to Comments within the Comment and Response Index .....	45
<b>2.0 References.....</b>	<b>45</b>

## **TABLES**

Table 1	Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations for Pine Yard Surface Soil (0-2ft)
Table 2	Cancer Toxicity Criteria
Table 3	Non-cancer Toxicity Criteria
Table 4	Risk Characterization Summary – Carcinogens in Surface Soil (Future Resident)
Table 5	Risk Characterization Summary – Non-carcinogens in Surface Soil (Future Resident Child)
Table 6	Risk Characterization Summary – Non-carcinogens in Surface Soil (Future Resident Adult)
Table 7	Risk Characterization Summary – Carcinogens in Surface Soil (Indoor Worker)
Table 8	Risk Characterization Summary – Non-carcinogens in Surface Soil (Indoor Worker)
Table 9	Risk Characterization Summary – Carcinogens in Surface Soil (Outdoor Worker)
Table 10	Risk Characterization Summary – Non-carcinogens in Surface Soil (Outdoor Worker)
Table 11	Risk Characterization Summary – Carcinogens in Subsurface Soil (Construction Worker)
Table 12	Risk Characterization Summary – Noncarcinogens in Subsurface Soil (Construction Worker)
Table 13	Risk Characterization Summary – Carcinogens in Surface Soil (Construction Worker)
Table 14	Risk Characterization Summary – Noncarcinogens in Surface Soil (Construction Worker)
Table 15	Risk Characterization Summary – Carcinogens in Surface Soil (Trespasser)
Table 16	Risk Characterization Summary – Noncarcinogens in Surface Soil (Trespasser)
Table 17	Summary of Chemicals of Potential Ecological Concern in the Pine Yard Exposure Unit
Table 18	Summary of Ecological Risk Characterization for the Pine Yard
Table 19	Location-specific ARARs and TBCs
Table 20	Action-specific ARARs and TBCs

## **FIGURES**

Figure 1	Site Location Map
Figure 2	Site Layout Map
Figure 3	Pine Yard Features and Adjoining Properties
Figure 4	Estimated Areal Extent of Zone 2, Zone 3, and Zone 4 Soils
Figure 5	Conceptual Site Model

## **APPENDICES**

Appendix A	State of Mississippi Concurrence
Appendix B	Comment and Response Index
Appendix C	Transcript of December 13, 2018 Public Meeting

## **ACRONYMS AND ABBREVIATIONS**

%	Percent
ADD	Average Daily Dose
AOC	Area of Concern
AR	Administrative Record
ARAR	Applicable or Relevant and Appropriate Requirement
BaP	Benzo(a)pyrene
BERA	Ecological Risk Assessment
Black & Veatch	Black & Veatch Special Projects Corp.
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Chemical(s) of Concern
COPC	Chemical(s) of Potential Concern
CSF	Cancer Slope Factor
CSM	Conceptual Site Model
DNAPL	Dense Non-Aqueous Phase Liquid
EPA	U.S. Environmental Protection Agency
EPC	Exposure Point Concentration
FFS	Focused Feasibility Study
ft	Foot or feet
HHRA	Human Health Risk Assessment
HI	Hazard Index
HMWPAH	High Molecular Weight PAH
HQ	Hazard Quotient
HRS	Hazard Ranking Score
HSWA	Hazardous and Solid Waste Amendments
Integral	Integral Consulting Inc.
IC	Institutional Control(s)
KMCC	Kerr-McGee Chemical Corp.
LADD	Lifetime Average Daily Dose
LDR	Land Disposal Restrictions
LMWPAH	Low Molecular Weight PAH
MDEQ	Mississippi Department of Environmental Quality
mg/kg	Milligrams per Kilogram
MS	Mississippi
Multistate Trust	Greenfield Environmental Multistate Trust, LLC
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OU-1	Operational Unit 1
PAH	Polycyclic Aromatic Hydrocarbon

**ACRONYMS AND ABBREVIATIONS (Con't)**

PCP	Pentachlorophenol
PTW	Principal Threat Waste
RA	Remedial Action
Ramboll	Ramboll Environ US Corporation
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RfC	Reference Concentration
RfD	Reference Dose
RI	Remedial Investigation
ROD	Record of Decision
RS	Responsiveness Summary
SARA	Superfund Amendments and Reauthorization Act
Site	Kerr-McGee Columbus Superfund Site
SI	Site Investigation
SPLP	Synthetic Precipitation Leaching Procedure
SVOC	Semi-volatile Organic Compound(s)
SWMU	Solid Waste Management Unit
TBC	To Be Considered
TEQdf	Dioxin and Furan Toxicity Equivalent
T/M/V	Toxicity/Mobility/Volume
VOC	Volatile Organic Compound

## **PART 1: DECLARATION**

### **1.0 Site Name and Location**

Kerr-McGee Columbus Superfund Site

City of Columbus, Lowndes County, Mississippi

Superfund Site Identification Number MSD990866329

### **2.0 Statement of Basis and Purpose**

This Record of Decision (ROD) presents the Selected Remedy for the unsaturated surface and subsurface soil (soil above the water table) in the Pine Yard, Operable Unit 1 (OU-1) at the Kerr-McGee Columbus Superfund Site (Site) in Columbus, Mississippi (MS) (Figure 1). The Selected Remedy site-wide remedial action (RA) which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) 42 U.S.C. Section 9617 of the Superfund and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) as set forth in 40 Code of Federal Regulations (CFR) Part 300.430(f)(2). This decision is based on the Administrative Record (AR) for the Site.

The U.S. Environmental Protection Agency (EPA) is the lead agency for Site activities, and the Mississippi Department of Environmental Quality (MDEQ) is the support agency. In accordance with 40 CFR Part 300.430(f)(2), MDEQ has provided input during the remedial investigation (RI) and focused feasibility study (FFS) and decision-making process and thus the State of Mississippi concurs with the Selected Remedy (see Appendix A).

### **3.0 Assessment of the Site**

The response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances to the environment; and pollutants or contaminants from this Site which may present an imminent and substantial endangerment to public health or welfare.

### **4.0 Description of Selected Remedy**

The soil in the Pine Yard is divided into four depth-based zones:

- Zone 1—Debris and impacted material present on the ground surface. These materials were identified in six relatively small and localized areas within the Pine Yard.
- Zone 2—Impacted surface soils (0 to 2 feet below ground surface) most commonly associated with weathered creosote that is similar to asphalt, but also with localized areas where concentrations of chemicals of concern are present above health-based cleanup levels and/or debris is present.
- Zone 3—Soils in the unsaturated zone below Zone 2 (2 to approximately 8 feet below ground surface [bgs]) where concentrations of chemicals of concern are present above health-based cleanup levels.
- Zone 4—Soils in the saturated zone (below the water table) containing dense non-aqueous phase liquids that are a primary source of groundwater contamination.

The Selected Remedy is a final action for the unsaturated surface and subsurface soil in the Pine Yard (OU-1 Zones 2 and 3). Following completion of the remedial action, these areas will be ready for reuse. Most of the debris and impacted material in Zone 1 was removed from the Pine Yard in 2018. Soil below the water table (Zone 4) in the Pine Yard, will be addressed as a separate operable unit.

The Selected Remedy includes the following components:

- Excavation of approximately 41,513 cubic yards of contaminated soil from Zone 2 and approximately 13,497 cubic yards of contaminated soil from Zone 3 that exceed site-specific cleanup levels. The extent of the excavation is approximately 14 acres to a maximum depth of 8 feet bgs (Figure 4).
- Excavated soil may be used as fill material in areas of the Pine Yard that are designated for industrial/commercial if the concentration of chemicals of concern are between industrial/commercial and residential cleanup levels. Excavation areas within OU-1 that have been identified for potential future residential use will be backfilled with imported clean fill material.
- Excavated soil not used onsite will be disposed offsite in a permitted Resource Conservation and Recovery Act (RCRA) Subtitle D Landfill such as the Golden Triangle Regional Landfill located in Starkville, Mississippi. If encountered, RCRA hazardous waste will be disposed in a RCRA Subtitle C Landfill approved by EPA in accordance with the Off-site Rule in the NCP at 40 CFR 300-440.
- Confirmation sampling and analyses to demonstrate that cleanup levels have been achieved.
- Implementation of institutional controls (ICs) such as environmental covenant and deed restrictions for soil areas that exceed residential cleanup levels. The property owner is responsible for maintaining ICs.
- Five-Year Reviews will be conducted to evaluate the implementation and performance of the Selected Remedy to determine if the remedy is protective of human health and the environment. Mandatory Five-Year Review.

The desired outcome for the OU-1 remedial action is to achieve a cleanup that is protective of human health and the environment, maintains protection over time, minimize untreated waste, and returns the Pine Yard to a beneficial reuse. Community outreach activities, market studies and evaluations of site conditions will be documented in conceptual redevelopment plans, which are currently expected to be available in late 2019.

Total estimated net present value costs (discounted at seven (7) percent) for the Selected Remedy are \$9,892,000.00.

### **5.0 Statutory Determinations**

The Selected Remedy meets the requirements for remedial actions set forth in CERCLA Section 121, 42 U.S.C. Section 9621, and the NCP at 40 CFR Section 300.430(f)(1)(ii) because it: 1) is protective of human health and the environment; 2) meets a level or standard of control of hazardous substances, pollutants, and contaminants which at least attains the legally applicable or relevant and appropriate requirements under federal and state laws or justifies a waiver; 3) is cost

effective; and 4) utilizes permanent solutions and alternative treatments (or resource recovery) technologies to the maximum extent practicable.

The remedy in this operable unit does not satisfy the statutory preference for treatment as a principal element of the remedy. During the identification, screening and evaluation of technologies conducted as part of the feasibility study, several treatment options (i.e. *in situ* and *ex situ* stabilization, *in situ* chemical amendments, land farming, and soil washing) were considered. However, none were identified as viable alternatives for OU-1 because they would either be ineffective for several chemicals of concern (COCs) at the Site (e.g. creosote and TEQdf) or would limit future construction options. Consequently, treatment options were eliminated from further consideration.

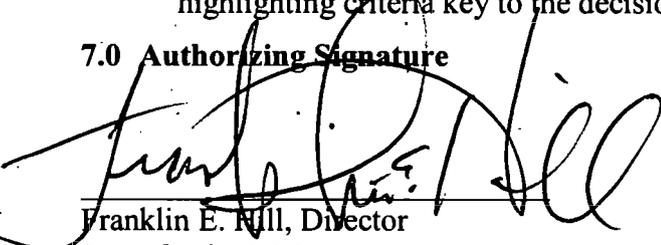
Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment. EPA will conduct a Five-Year Review until levels that allow for unlimited use and unrestricted exposures are achieved.

#### 6.0 Data Certification Checklist

The following information is included in the Decision Summary Section of this ROD. Additional information can be found in the AR file for this Site.

- Chemicals of concern and their respective concentrations (Section 7)
- Baseline risk represented by the chemicals of concern (Section 7)
- Cleanup levels established for chemicals of concern and the basis for these levels (Section 7)
- How source materials constituting principal threats will be addressed (Section 10)
- Current and reasonably anticipated future land use assumptions (Section 6)
- Potential land use that will be available at the Site as a result of the Selected Remedy (Section 6)
- Estimated capital, annual operation and maintenance (O&M), and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected (Section 10)
- Key factors that led to selecting the remedy (i.e., describe how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision) (Section 11)

#### 7.0 Authorizing Signature

  
Franklin E. Hill, Director  
Superfund Division  
U.S. Environmental Protection Agency, Region 4

5/6/2019  
Date

## **PART 2: THE DECISION SUMMARY**

### **1.0 Site Name, Location, and Brief Description**

The Kerr-McGee Chemical Corp. (KMCC) Columbus Superfund Site (Site), is located at 2300 14th Avenue North in Columbus, Lowndes County, Mississippi (Environmental Protection Agency ID: MSD990866329). EPA is the lead agency for Site activities, and the Mississippi Department of Environmental Quality (MDEQ) is the support agency.

The Site consists of two areas that total approximately 89 acres, separated by 14th Avenue North: the Former Plant area to the south and the Pine Yard area to the north (Figure 1). The KMCC Columbus Site is closed and all structures on the property have been demolished or dismantled except for the building housing the groundwater treatment system and the former office building currently serving as the community resource center. Access to the Site is restricted by a fence that encloses the entire property.

The Pine Yard portion of the Site consists of approximately 44 acres of land bounded by U.S. Highway 82 to the north, by the railroad rights-of-way to the east, by 14th Avenue North to the south, and by private properties to the west (Figure 2). The Pine Yard was used primarily for lumber and scrap metal storage and had few, if any, above or below ground structures. The Pine Yard is currently vacant and much of the northern end is considered wetlands. The railroad tracks on the eastern portion of the Site are present and will be removed as part of the remedial action activities at OU-1.

The Pine Yard property is zoned for mixed industrial/commercial use. The Pine Yard will be available for community-supported redevelopment upon completion of the OU-1 remedial action. The reasonably anticipated future use of OU-1 is mainly industrial/commercial with residential use along the western boundary of the Pine Yard (Figure 3).

### **2.0 Site History and Activities**

The Site was a wood treating facility originally developed and operated by T.J. Moss Tie Company. Construction of the plant began on August 15, 1928, and the plant was completed in February 1929. KMCC acquired the Site in 1963 and continued wood treating operations until the facility was closed in 2003. Manufactured products included railroad wooden cross ties, switch ties, and preserved timbers. Preservatives used in the operation were primarily creosote, creosote coal tar solutions, and pentachlorophenol (PCP) (Integral, 2018a).

During wood treating operations, green lumber was received and sorted at the plant, and was later seasoned, either by natural air drying, which required the wood to be stacked in a drying yard for up to 12 months, or by artificial seasoning using the Boulton process. Wood that was allowed to dry naturally was stored in the green tie storage areas and in the Pine Yard. The Boulton drying process involved subjecting the green lumber to heated creosote under a vacuum, which boiled the sap water out of the wood. After seasoning, the wood was then pressure-treated in a cylinder, or retort. The pressure treating process involved filling a cylinder with a treating solution (e.g., creosote or PCP) and applying pressure to force the treating solution into the wood (Integral, 2018a).

After treatment, the wood was placed on a drip track for drying, and excess preservative was allowed to drip onto bare soil. Treated lumber was supposed to remain on the drip track for 24 hours; however, former employees claimed that timbers were often taken on rail trams directly to

the Pine Yard, immediately after coming out of the retort. Between 1992 and 1996, wood was stored throughout the facility, except for the northern portion of the Pine Yard.

In 2003, the volume of wood storage was significantly reduced and by 2004, no wood storage or manufacturing activities were apparent in Site aerial photographs. Structures were visible onsite through at least 2007, but all above-grade structures, other than the current office and operation and maintenance (O&M) buildings, appeared to have been demolished by 2010.

Available documentation indicates the Pine Yard was used primarily for lumber and scrap metal storage. Historical aerial photographs suggest that between 1952 and 1959, the southern portion of the Pine Yard was used for storage of untreated lumber and the northern portion was used for storage of mixed untreated/treated lumber. Some treated wood storage took place in the southern portion of the Pine Yard in later stages of the plant operation. Former employees also said that some spray treatment operations were carried out in the Pine Yard and that on several occasions, KMCC brought in new gravel and crushed rock to place over stained soils at the Pine Yard. The RI data suggest that some waste dumping and/or process fluid (e.g., creosote, PCP solutions) spills may have also occurred in localized areas of the Pine Yard.

## **2.1 Regulatory History**

The following is a brief summary of the regulatory history of the Site:

- KMCC submitted a Resource Conservation and Recovery Act (RCRA) Part A permit application in 1981 that notified EPA of the presence of Solid Waste Management Units (SWMUs), including two hazardous waste (K001) surface impoundments.
- In 1989, KMCC entered into a consent order with the Mississippi Commission on Environmental Quality that required completion of a groundwater assessment and submittal of an addendum to the previously submitted RCRA Part B Permit Application.
- A State of Mississippi Hazardous Waste Management Permit (Permit No.: HW-90-329-01) was issued to KMCC on September 11, 1990. The permit identified 15 SWMUs and areas of concern (AOCs) that required a RCRA facility investigation. The permit expired on September 11, 2000. The permit was renewed effective June 11, 2001, for a term of 10 years. The permit expired again on May 31, 2011 and was not reissued.
- EPA issued the Hazardous and Solid Waste Amendments (HSWA) portion of the RCRA permit to KMCC on August 1, 1995. The HSWA portion required the facility to investigate releases of hazardous waste or hazardous constituents and to take appropriate corrective action for such releases. The HSWA portion of the permit expired on August 1, 2005. KMCC submitted a letter to EPA dated April 1, 2005, requesting renewal of the HSWA portion of the RCRA permit. The permit was not reissued.
- Permit No. HW-90-329-01 was transferred to Tronox in 2005, and then to Greenfield Environmental Multistate Trust, LLC, not individually but solely in its representative capacity as Trustee of the Multistate Environmental Response Trust, in February 2011. As previously noted, this permit expired on May 31, 2011 and was not reissued.

EPA placed the Site on the Superfund Program’s National Priorities List (NPL)<sup>1</sup> on September 16, 2011. Tronox’s environmental liabilities were resolved pursuant to a bankruptcy settlement approved by the Court in 2011 and established the Multistate Trust. In addition, Anadarko Petroleum Corp. (a successor to KMCC) settled with the U.S. Department of Justice. The settlements provided funding for EPA and the Multistate Trust to continue conducting assessments and cleanup work at the Site. All O&M, compliance monitoring, and inspections of the closed surface impoundments and the groundwater extraction and treatment system are now subject to the applicable requirements of CERCLA (Integral, 2018a).

**2.2 Previous Investigations and Removal Actions**

Multiple investigations were conducted at the Site starting in 1988 with the RCRA facility investigation; however, environmental characterization data were not collected in the Pine Yard until the Phase II RI was initiated in 2015. This included field sampling of surface and subsurface soil, surface water, and groundwater from December 2015 through June 2017. Samples were analyzed for polycyclic aromatic hydrocarbons (PAHs) and PCP, which are considered the primary contaminants associated with previous site operations. In addition, ten percent of the samples were analyzed for an “expanded analyte list” (volatile organic compounds [VOCs], semivolatile organic compounds [SVOCs], inorganics, pesticides, polychlorinated biphenyls [PCBs], and dioxins/furans), as detailed in the Phase II RI Report. A summary of the Site investigation (SI) activities completed prior to the recent Phase II RI is included in Appendix A of the Focused FS (Integral, 2018a) and in Section 3.4 of the Phase II RI Report (EarthCon, 2018).

The following table summarizes the characterization data that were collected in the Pine Yard and adjacent properties during the Phase II RI.

<b>Sample Type</b>	<b>Number of Locations / Samples Collected</b>
Test Trenching	11 transects within the Pine Yard area 2 transects along east and west boundaries
TarGOST	41 locations
Soil Samples	127 locations
Groundwater Samples (2017 Event)	49 locations sampled in the alluvial groundwater 7 locations sampled in the Eutaw groundwater
Drainage Ditch Samples	6 locations
Surface Water Samples	3 locations

<sup>1</sup>The National Priorities List (NPL) is the list of sites of national priority among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation.

In addition, the Phase II RI included the following studies/surveys:

- A geophysical survey was conducted in the southern portion of the Pine Yard prior to intrusive investigation activities to identify any debris and structures (e.g., utilities, concrete footings) that could pose an obstacle to investigation and/or remedial action activities.
- To inform the FS and remedial design activities, subsurface soil and groundwater characteristic data were collected in the Pine Yard, including moisture content, grain size analyses, hydraulic conductivity, pH, oxidant demand, nitrate/nitrite, total organic carbon, and alkalinity.
- A mini-excavator was used to conduct shallow test trenching (“potholing”) in portions of the Pine Yard to identify the presence and extent of shallow buried creosote material resulting from operations and buried waste material.
- A 24-hour aquifer test was conducted in the Pine Yard to evaluate groundwater drawdown extent at various pump rates and to collect data for potential dewatering during potential removal action(s).
- Soil samples representative of the buried waste material and creosote-contaminated soil/gravel encountered in the Pine Yard during the potholing activities were collected and subjected to the synthetic precipitation leaching procedure (SPLP) to evaluate potential leaching from soil/gravel to groundwater.

### **3.0 Community Participation**

The public has been informed of the progress on the RI and FS and other Superfund actions through community notification flyers, presentations, and updates in accordance with the community involvement plan developed for the Kerr-McGee Columbus Site. The Proposed Plan for OU-1 was released for public comment on December 7, 2018. The Proposed Plan and other Site-related documents were made available to the public in the administrative record file maintained in the information repository located at the Columbus-Lowndes Public Library, 314 N. Seventh Street, Columbus, Mississippi, and at the EPA Region 4 Superfund Records Center located at 61 Forsyth Street, Atlanta, Georgia. The notice of availability of these documents was published in the *Columbus Packet* on Thursday, December 6, 2018. A public comment period was held from December 7, 2018 to January 6, 2019.

A public meeting was held on December 13, 2018, at the Genesis Dream Center located at 1820 23rd Street North, Columbus, Mississippi, to discuss the findings of the RI and FS and to present EPA’s Proposed Plan to the community. At this meeting, EPA representatives answered questions about the RI and FS and the remedial alternatives. EPA also used this meeting to solicit input from a wider cross-section of the community on the reasonably anticipated future land use. Comments that were received by EPA at the public meeting and in writing during the public comment period are summarized and addressed in the Responsiveness Summary (see Part 3 and Appendices B and C).

### **4.0 Scope and Role of the Response Action**

The overall strategy for remedial action at the KMCC Columbus Site is to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment. As with many Superfund sites, the problems at the Kerr-McGee Columbus Site are complex. Contaminated media include saturated and unsaturated soils, groundwater, surface water

and sediment in storm drainage ditches and Luxapalila Creek. Multiple operable units are being used to allow contaminated media to be remediated in an expedited time frame, promoting redevelopment opportunities for portions the site. It is currently anticipated that the KMCC Columbus Site will be divided into four OUs:

- OU-1:** Pine Yard Unsaturated Soils
- OU-2:** Residential/Commercial Properties and Portions of Storm Water Ditches Between 14th and 7th Avenue with Site-Related Contamination above Clean-up Levels
- OU-3:** Portions of Main Facility with Contaminated Unsaturated Soil
- OU-4:** Portions of Main Facility and Pine Yard with Contaminated Saturated Soil and Groundwater

In July 2017, the EPA Superfund Task Force issued multiple recommendations with 5 overall goals: 1) Expediting Cleanup and Remediation; 2) Re-invigorating Responsible Party Cleanup and Reuse; 3) Encouraging Private Investment; 4) Promoting Redevelopment and Community Revitalization; and 5) Engaging Partners and Stakeholders. The overall purpose of the recommendations was to identify an expedited timeframe on how the EPA could restructure the Superfund cleanup process, realign incentives of all involved parties, to promote expeditious cleanups and the revitalization of properties across the country.

The following summarizes the completed and ongoing remedial actions at the Site:

- 1986: Surface Impoundment Closure (Kearney/Centaur 1988)—Surface impoundments, identified as “Aeration Impoundment” and “Sedimentation Impoundment,” were operated under Interim Status Standards until closure was completed in 1986.
- 1990 to Present: A groundwater extraction and treatment and DNAPL recovery system has been operational at the Former Plant Area since 1990.
- 2005: Ditch Sediment Removal (ERM 2005)—Interim measures were completed to remove sediment impacted by polycyclic aromatic hydrocarbons (PAHs) in the ditch system along the eastern Site boundary.
- 2006 – 2007: Ditch Sediment Removal (Tronox 2010)—Impacted soil was discovered during a City of Columbus drainage improvement project that began at Propst Park, approximately 2,200 ft southeast of the Site at the eastern end of 7th Avenue North (Tronox 2010).
- 2010 – 2011: Hunt School Removal Action (Tetra Tech 2011)—Removal evaluations and actions were conducted by Tetra Tech on behalf of EPA from October 2010 to May 2011. Removal actions were conducted at Hunt Intermediate School, at a residential property at 1009 Moss Street, and at Maranatha Faith Center.
- 2014 – 2015: 14th Avenue Ditch Improvement Project (Tetra Tech 2015)—The Multistate Trust’s contractor (Tetra Tech) performed the excavation necessary to construct the new 14th Avenue North ditch and provide a clean work area for the City of Columbus to construct a new concrete-lined drainage way.

- 2016: Residential Yard Removal—Soil was removed from the backyard of the residential property located at 2614 17th Avenue North where benzo[a]pyrene concentrations were found to exceed the residential regional removal management levels.
- 2016: 7th Avenue North Storm Drainage Ditch Removal Action—The first removal action to address contaminated ditch sediments and soils was implemented along the north side of 7th Avenue North, between the Maranatha Faith Center and North 28th Street. Work to remove the remaining areas of creosote from the ditch system is ongoing.

The Pine Yard (OU-1) remedial action is being performed to accelerate the overall remediation progress and to make the property at OU-1 available for community-supported redevelopment in as timely a manner as possible. This ROD documents the selected final remedial action to address contaminated unsaturated surface and subsurface soil at the Pine Yard, (OU-1) at the Kerr-McGee Columbus Site. Other Operable Units will be addressed in future proposed plans and decision documents.

## **5.0 Site Characteristics**

### **5.1 Conceptual Site Model**

The Conceptual Site Model (CSM) incorporates information on the potential chemical sources, affected media, release mechanisms, routes of migration, and known or potential human and ecological receptors. In this way, it illustrates the physical, chemical, and biological relationships between contaminant sources and affected resources. One simplified, idealized CSM depicting important features of the subsurface, sources of contamination, and aspects of contaminant degradation and migration was developed for the Site.

The CSM for the Pine Yard, presented in Figure 5, was developed from the nature and extent of contamination data presented in the RI Report (EarthCon, 2018), the baseline human health risk assessment (HHRA) (Integral, 2018b) and baseline ecological risk assessment (BERA) (Ramboll Environ US Corporation [Ramboll], 2018).

The Pine Yard CSM is not drawn to either a vertical or horizontal scale, but instead is intended to represent important relationships in the subsurface to the extent they are presently understood. The Pine Yard CSM illustrates that the primary release mechanisms were erosion and transport by wind/water from storage operations. Secondary release mechanisms include dissolution and transport with rain infiltration. Percolation of rainwater through contaminant source areas and other contaminated subsurface soils resulted in contaminants that leached into soil.

### **5.2 Overview of the Site**

The wood treating facility was originally owned and operated by T.J. Moss Tie Company. Construction of the plant began on August 15, 1928, and the plant was completed in February 1929. KMCC acquired the Site in 1963 and continued wood treating operations until the facility was closed in 2003. Manufactured products included railroad wooden cross ties, switch ties, and preserved timbers. Preservatives used in the operation were primarily creosote, creosote coal tar solutions, and PCP.

The Pine Yard is approximately 44 acres of land bounded by U.S. Highway 82 to the north, by the railroad rights-of-way to the east, by 14th Avenue North to the south, and by private properties to the west. The Pine Yard was used primarily for lumber and scrap metal storage and had few, if any, above or below ground structures. Some treated wood storage took place in the southern portion of the Pine Yard in later stages of the plant operation and it is likely that dumping and spills of waste

fluid (e.g., creosote, PCP solutions) occurred in localized areas of the Pine Yard. The Pine Yard is currently vacant and much of the northern end is wooded.

All above-grade structures, other than the current office and O&M buildings, appeared to have been demolished by 2010 (Integral, 2018a).

### **5.2.1 Geologic, Hydrogeologic, and Topographic Information**

The Pine Yard is relatively flat. Much of the stormwater infiltrates into the ground surface, although some of the stormwater from areas at the perimeter of the Pine Yard runs off via sheet flow into surrounding City of Columbus drainage ditches and ultimately, to Luxapalila Creek. The City of Columbus storm drainage system brings a significant volume of stormwater from areas located to the north of the Site under Highway 82 in a culvert and through and around the Pine Yard in a series of storm drainage ditches. The City's ditches collect additional stormwater from an area north of 14th Avenue North, bounded on the west by the Brick Yard industrial area and North 20th Street and on the east by the railroad tracks east of the Pine Yard. South of 14th Avenue North, the drainage basin includes the east half of the Former Plant Area.

Drainage features at the Pine Yard include a man-made ditch with a southerly-to-easterly flow through the wetlands in the northern part of the Pine Yard. The City of Columbus storm drainage system brings water from north of US Highway 82 into this ditch on the north end of the Pine Yard, and the ditch exits the east side of the Pine Yard through a culvert located approximately 1,400 feet (ft) north of 14th Avenue North. Another City of Columbus storm drainage ditch flows south along the north half of the western Pine Yard property boundary before turning to the southwest, and then south, through the neighborhood located to the west of the Pine Yard, toward 14th Avenue North. Another shallow drainage swale is located along the west property boundary in the southern half of the Pine Yard. The northern half of this drainage swale flows to the north and the southern half of the drainage swale flows to the south.

As shown in Figure 3, approximately 6.5 acres of the southern end of the Pine Yard lie within the 100-year floodplain.

The U.S. Fish and Wildlife Service National Wetlands Inventory "Wetlands Mapper" version 2 identifies a 5.66-acre area in the northeastern portion of the Pine Yard as a freshwater forested/ shrub wetland. As part of the RI, Headwaters Inc. completed a survey in 2017 to delineate the wetland boundaries in the Pine Yard. The Headwaters Inc., survey indicates that the northern portion of the Pine Yard contains a forested wetland and a forested upland with a man-made drainage ditch (which receives offsite stormwater drainage from the City of Columbus storm drainage system (Figure 3)). The survey determined that 9.10 acres is forested wetland.

The Pine Yard is underlain by two primary water-bearing units, the alluvial aquifer and the Eutaw formation. The shallowest water-bearing unit is the alluvial aquifer, an unconfined unit of unconsolidated alluvial sediment, consisting of a downward-coarsening sequence of interbedded clay, silt, sand, and gravel, to a depth of approximately 15 ft bgs. These materials were likely deposited by Luxapalila Creek, east of the Pine Yard. The water-bearing units are recharged by rainwater percolating through surface soils and by seepage from Luxapalila Creek. Groundwater in the alluvial aquifer is encountered at depths as shallow as 3 ft bgs in the Pine Yard.

The saturated zone of the alluvial aquifer in the Pine Yard is approximately 8 ft thick with the water table encountered between approximately 6 and 8 ft bgs with some seasonal water level fluctuations.

The groundwater flow of the alluvial aquifer is southeasterly with a velocity of approximately 40 ft per year.

The alluvial aquifer is underlain by the Upper Eutaw formation throughout the Pine Yard, which consists primarily of fine silty sand. As a result of this composition, this formation is less permeable than the alluvial aquifer and acts as an aquiclude, limiting the vertical migration of groundwater, as well as both DNAPL and dissolved-phase contaminants. Groundwater elevations within the Upper Eutaw indicate confined or semiconfined conditions in this unit beneath the Pine Yard, and a downward vertical hydraulic gradient of approximately 0.1 ft per ft exists between the alluvial aquifer and the Eutaw formation in the vicinity of the Pine Yard.

There are four public water supply wells operated by Columbus Light & Water approximately 200 to 750 ft to the east of the Pine Yard. These wells are situated at depths ranging from 885 to 915 ft bgs and are isolated from the shallower Pine Yard units (Black & Veatch, 2018).

### **5.3 Sampling Strategy**

Multi-media sampling was guided by the CSMs that were refined as understanding of the Site increased over time. Samples were collected and evaluated to determine the nature and extent of soil, sediment, surface water and groundwater contamination, support assessment of risks, improve hydrogeologic understanding, and evaluate potential remedy alternatives and treatment options. Details of the findings from the Phase II RI performed from 2015 to 2017 are included in the RI Report (EarthCon, 2018).

### **5.4 Known or Suspected Sources of Contamination**

As described in Section 1.3, past operations in the Pine Yard included storage of treated and untreated wood, and some scrap metal storage. These activities are anticipated to have resulted in impacts to OU-1 soils across a large portion of the Pine Yard. In localized areas where larger releases appear to have taken place, impacts extend deeper into the unsaturated zone and, at times, to below the groundwater table. Table 1 summarizes the chemicals present in OU-1 soils at concentrations that represent a potential unacceptable risk to potential receptors under the anticipated future land use for the Pine Yard. The majority of COCs are associated with wood treating-related chemicals (primarily PAHs and PCP), although arsenic, chromium, carbazole, copper, dioxins/furans and mercury have also been detected at levels that may pose a potential human health and/or ecological risk.

PAHs, and benzo[a]pyrene in particular, are common urban contaminants and are frequently present along roadways and rail corridors. Total dioxin and furan toxicity equivalents (TEQdf) are also a common urban contaminant frequently associated with combustion (e.g., aerial deposition associated with waste burning). Therefore, it is possible that some portion of the contamination in the Pine Yard is unrelated to past site activities. Most notably, a considerable volume of stormwater drains from Highway 82 and adjacent area, which may have been and continue to be a source of urban contaminants to the wetlands in the northeast end of the Pine Yard. Arsenic occurs naturally in soils from this region in Mississippi and was detected in background soil samples collected as part of the RI, typically at concentrations exceeding residential screening levels.

The majority of impacts to OU-1 soils are confined to the surface (0 to 2 ft bgs) and are associated with treated wood storage. This pattern of impacts to surficial soils near storage areas is common to wood treatment sites in general; however, is also common for areas adjacent to highways and rail corridors. These impacts typically occur as contaminated soils and/or thin layers of creosote only a few inches thick. The creosote layers and associated contaminants are subject to weathering processes including photodegradation, volatilization, and oxidation, and typically form an asphalt-like layer.

These materials tend to have lower contaminant concentrations than fresh creosote because of the weathering process and have relatively low permeability. As a result, the COCs associated with these materials typically do not migrate, and the materials do not represent a significant source of COC leaching to groundwater. Pine Yard operations are known to have included periodically spreading layers of gravel over the soil surface, burying the layers of asphalt-like creosote. As a result, these creosote layers are often observed as thin lenses in surface soils, typically at depths of less than 2 ft bgs, although they have been observed at deeper depths in a few distinct areas of the Pine Yard.

There are localized areas where greater amounts of residual creosote, sheen, and/or heavily-stained soils are observed in unsaturated zone soils within OU-1. These impacts often extend to several feet in depth and, in limited areas, to below the water table. OU-1 does not include the DNAPL Source Area where DNAPL is present below the water table and represents a persistent contaminant sources to groundwater. This area will be evaluated as part of the OU-4 feasibility study. The RI has identified an area along the eastern property boundary of the Pine Yard where soil impacts occur throughout much of the unsaturated zone, but do not appear to be extensively present below the water table. This area is included in OU-1.

## **5.5 Nature and Extent of Contamination**

This section presents a summary of the nature and extent of unsaturated surface and subsurface soil contamination at the Pine Yard (OU-1) based on the data and analyses presented in the RI Report. In addition, this section presents a summary of the findings of the baseline human health risk assessment (HHRA), which was submitted to EPA on April 4, 2018, and conditionally approved on June 20, 2018, and the baseline ecological risk assessment (BERA) submitted in September 2018, in relation to OU-1. While the focus of this section is on OU-1, a general description of the broader Pine Yard is included where necessary to provide context.

### **5.5.1 Soil Contamination**

The soil in the Pine Yard is divided into four depth-based zones:

- Zone 1—Debris and impacted material present on the ground surface. These materials were identified in six relatively small and localized areas within the Pine Yard.
- Zone 2—Impacted surface soils (0 to 2 feet below ground surface) most commonly associated with weathered creosote that is like asphalt, but also with localized areas where concentrations of chemicals of concern are present above health-based screening levels and/or debris is present.
- Zone 3—Soils in the unsaturated zone below Zone 2 (2 to approximately 8 feet below ground surface) where concentrations of chemicals of concern are present above health-based screening levels.
- Zone 4—Soils in the saturated zone (below the water table) containing dense non-aqueous phase liquids that are a primary source of groundwater contamination

Most of the debris and impacted material in Zone 1 was removed from the Pine Yard in 2018. Soil below the water table (Zone 4) will be addressed as a separate OU. Zones 2 and three were evaluated in the FFS. Zone 2 spans approximately 13 acres and contains approximately 41,513 cubic yards of contaminated soil. Zone 3 spans approximately 1 acre and contains approximately 13,497 cubic yards of contaminated soil. The extent of contamination present in Zones 2 and 3 are depicted in Figure 4.

The following summarizes key observations with respect to the distribution of contamination in Zones 2 and 3.

### **Zone 2**

Zone 2 spans the depth interval of 0 to 2 ft bgs. The 0 to 2-ft increment takes into consideration both the potential exposures and the available Pine Yard data. The inclusion of soils up to 2 ft allows for contact with soils that may be disturbed during activities such as gardening, outdoor maintenance, or landscaping accounted for in the HHRA.

Three data sets were considered in establishing the lateral extent of Zone 2:

- **Historical Aerial Photographs:** Historical aerial photographs were reviewed to evaluate the extent of the Pine Yard that was used for wood storage and related activities that potentially may have contributed to contamination of soils. This area represents an outer bound of the potential lateral extent of Zone 2 soils.
- **Soil Sample Data:** Chemical concentrations exceed one or more of the health-based screening levels in 75 of the 106 surface soil samples that have been collected from the Pine Yard. The majority of these exceedances occur within the footprint of historical activities evident in aerial photographs.
- **Pothole Data:** As part of the Phase II RI, a backhoe was used to dig potholes to a depth of 4 to 8 ft bgs on transects throughout the Pine Yard. Visual observation of the potholes revealed that thin, asphalt-like layers of creosote are present in surface soils in the northern and central portions of the Pine Yard, consistent with impacts from storage of treated wood and subsequent burial by gravel placed by plant operators. Additional pothole data collected in the southern portion of the Pine Yard during March 2018 confirmed that impacts to soils are generally less frequent in this area.

### **Zone 3**

Zone 3 includes impacted soils in the unsaturated zone that extend from below Zone 2 (>2 ft bgs) to the groundwater table (typically 8 ft bgs). At this time, the only area of Zone 3 impacted soils has been identified along the eastern Pine Yard property boundary in the approximate north-to-south center of the Pine Yard (Figure 4), where pothole data and boring logs revealed the presence of impacted soils and debris at or near the ground surface and extending to near the groundwater table. Additional soils may be excavated from Zone 3 where concentrations of chemicals of concern are present above health-based screening levels at the base of the Zone 2 excavation.

#### **5.5.2 Justification for Determining that Contaminated Soils in OU-1 Do Not Contain a RCRA Listed Waste**

In accordance with the EPA guidance document *Management of Remediation Waste Under RCRA* (EPA530-F-98-026), the Superfund Division of EPA has evaluated process knowledge information and any available documents and determined that the Pine Yard soil/material do not contain Listed RCRA hazardous waste (F032 and F034) associated with wood preservation processes. Excess wood preservative drippage that is the PCP-based is considered a RCRA Listed Hazardous waste (F032) under 40 CFR Section 261.31. Excess wood preservative drippage that is the creosote-based is considered a RCRA Listed Hazardous waste (F034) under 40 CFR Section 261.31. Excavated contaminated soil destined for off-site disposal will only be designated as hazardous based on characteristics (e.g., Toxicity Characteristic) identified by representative sampling and testing as required by RCRA regulations identified as ARARs.

This determination is based on EPA's review of the anecdotal process knowledge information provided by former workers suggesting that wood treating operations were conducted in the Pine Yard and process knowledge and information provided by Tronox (including manifest and other facility generated documentation) which indicate that no Listed RCRA waste was generated in the Pine Yard. Documentation regarding the source of the contamination in the Pine Yard is unavailable or inconclusive. Although anecdotal process knowledge information provided by former workers states that wood treating operations were conducted in the Pine Yard, a review of historical photos from 1955 to 2010 shows that at least one rail road tracks and some soil has been removed from the Pine Yard. Based on statements in the site's hazard ranking score (HRS) Package and sampling conducted at that time, it appears that soil that was removed from the Pine Yard under the RCRA program by Kerr-McGee before the facility closed down was handled and disposed as a non-Listed RCRA waste.

### **6.0 Current and Potential Future Land and Water Uses**

#### **6.1 Land Uses**

The Pine Yard property is owned by the Multistate Trust and is zoned for mixed industrial/commercial use. The Pine Yard will be available for community-supported redevelopment upon completion of the OU-1 remedial action. The reasonably anticipated future use of OU-1 is mainly industrial/commercial with residential use along the western boundary of the Pine Yard (Figure 3). Community outreach activities, market studies, and evaluations of site conditions are being conducted and will be documented in conceptual redevelopment plans.

#### **7.0 Summary of Site Risks**

A baseline risk assessment was conducted to estimate the current and future risks to human health and the environment associated with the site contaminants. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects of releases of hazardous substances from

a site in the absence of any actions or controls to mitigate such releases, under current and future land uses. The baseline risk assessment includes a human health risk assessment (HHRA) and a baseline ecological risk assessment (BERA). It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. This section of the ROD summarizes the results of the baseline risk assessment for the site.

## **7.1 Human Health Risk Assessment**

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario:

- Hazard Identification – uses the analytical data collected to identify the chemicals of potential concern (COPC) at the site for each medium, with consideration of several factors explained below;
- Exposure Assessment – estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways by which humans are potentially exposed;
- Toxicity Assessment – determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response); and
- Risk Characterization – summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks. The risk characterization also identifies contamination with concentrations which exceed acceptable levels, defined by the NCP as an excess lifetime cancer risk greater than  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$ , or a Hazard Index greater than 1.0; contaminants at these concentrations are considered COCs and are typically those that will require remediation at the site. Also included in this section is a discussion of the uncertainties associated with these risks.

The HHRA estimates what risks the site poses if no action were taken. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. This section of the ROD summarizes the results of the HHRA for this site.

### **7.1.1 Hazard Identification**

The baseline HHRA began with selecting COPCs in soil that could potentially cause adverse health effects in exposed populations. The COPCs were selected by comparing maximum detected concentrations in soil to risk-based screening levels (inorganic and organic chemicals) and, where available, background sample concentrations (inorganic chemicals only). Risks and hazards from groundwater, surface water and sediment were also evaluated in the HHRA; however, these media are not being addressed as part of OU-1 and are, therefore, not presented in this ROD. A comprehensive list of all COPCs can be found in the HHRA in the Administrative Record.

COCs were identified in accordance with EPA Region 4 Human Health Risk Assessment Supplemental Guidance (EPA, 2018a). Table 1 presents a summary of the COCs identified for the Pine Yard soil. The main drivers for exposure to surface soil and particulates and volatile chemicals emitted from surface soil into outdoor air for both cancer and noncancer risk are toxicity equivalent concentrations of dioxins and furans (TEQdf) and benzo[a] pyrene.

### 7.1.2 Exposure Assessment

The exposure assessment calculates potential chemical intake, or exposure concentration, for the exposure pathways evaluated in the HHRA. Exposure is a function of the chemical concentration at the point of contact (i.e. exposure point concentrations or EPCs) and parameters that characterize the activity patterns of the potentially exposed receptors. The Pine Yard is zoned for mixed industrial/commercial use. The reasonably anticipated future use is mainly industrial/commercial with residential use along the western boundary of the Pine Yard (Figure 3). Under current conditions, use of the former facility is limited to workers and trespassers. A broader set of receptor groups, including residents, recreators, and trespassers, use the areas surrounding the former facility. A range of future use scenarios (e.g., residential, industrial/commercial worker, indoor worker scenarios) was evaluated in the HHRA to support decisions regarding the management of the Site. The CSM for the site is shown as Figure 5. The following exposure pathways were evaluated in the HHRA:

- Residents (future)—incidental ingestion of surface soil, dermal contact with surface soil, inhalation of particulates and volatile compounds in outdoor air, and inhalation of volatile compounds in indoor air (i.e., vapor intrusion pathway).
- Outdoor workers (future)—incidental ingestion of surface soil, dermal contact with surface soil, and inhalation of particulates and volatile compounds in outdoor air.
- Indoor workers (future)—incidental ingestion of surface soil and inhalation of volatile compounds in indoor air (i.e., vapor intrusion pathway).
- Construction workers (future)—incidental ingestion of soil, dermal contact with soil, and inhalation of particulates and volatiles in outdoor air. (Exposure to the surface and subsurface soil increments were evaluated separately for construction workers).
- Trespasser (current, future)—incidental ingestion of soil and dermal contact with surface soil.

The EPCs used for the exposure assessment for the soil media are provided in Table 1.

The exposure parameters used to calculate the risk to receptors are summarized in Table 4-1 in the 2018 HHRA with details on the sources and rationale for each exposure parameter included in Appendix C of the HHRA document (Integral, 2018b).

### 7.1.3 Toxicity Assessment

The toxicity assessment summarizes the health effects that may be associated with exposure to the COPCs selected for the risk assessment and identifies doses that may be associated with those effects. It involves evaluating the potential for a constituent to cause an increase in the incidence of adverse effects in exposed individuals and quantitatively characterizing the chemical dose and the incidence of adverse health effects in the exposed receptor. The potential toxicological effects induced by a given dose of a chemical are classified as either non-cancer effects or cancer effects. Toxicity values typically employed to calculate baseline non-carcinogenic hazards include reference doses (RfDs) for oral and dermal exposures and reference concentrations (RfCs) for inhalation exposures; oral and dermal cancer slope factors (CSFs) and inhalation unit risks (IURs) are typically used to estimate carcinogenic risks. Constituent-specific toxicity values were used to calculate potential effects for these two types of effects. Toxicological criteria were selected following EPA's hierarchy (USEPA, 2003), as follows for the HHRA:

- Tier 1 - EPA's Risk Assessment Information System (IRIS), (EPA, 2018b).
- Tier 2 - EPA's Provisional Peer Reviewed Toxicity Values (PPRTVs), (EPA, 2018c)
- Tier 3 - Other toxicity values including EPA and non-EPA sources of toxicity information including, but are not limited to:
  - California's Office of Environmental Health Hazard Assessment (OEHHA);
  - Agency for Toxic Substances and Disease Registry (ATSDR);
  - EPA Health Effects Assessment Summary Table (HEAST) values.

Tables 2 and 3 summarize the toxicological criteria that were used in the HHRA for each COC for each of the exposure pathways evaluated. Chronic toxicological criteria were used for all exposure scenarios evaluated in the HHRA.

#### 7.1.4 Risk Characterization

The objective of the risk characterization for the HHRA was to integrate the exposure and toxicity assessments into quantitative and qualitative expressions of risk. This evaluation provides an evaluation of the nature and degree of potential carcinogenic and non-carcinogenic health risks posed to current and future receptors at the Site.

Cancer risk estimates are expressed as the incremental probability that the individual described by an exposure scenario might develop cancer during his or her lifetime as a result of exposure to COPCs in the area under study. The term "incremental" reflects the fact that the calculated risk associated with any exposures is in addition to the background risk of cancer experienced by all individuals in the course of daily life. Lifetime cancer risks are calculated as the product of the estimated dose and the expression of the carcinogenic potency of a chemical (e.g., CSF or inhalation unit risk [IUR]). Excess incremental lifetime cancer risk from oral and dermal exposures is calculated as:

$$\text{Cancer Risk (unitless)} = \text{LADD} \times \text{CSF}$$

Where:

LADD	lifetime average daily dose of the chemical
CSF	cancer slope factor (kg-day/mg)

Excess lifetime cancer risk from inhalation exposures is calculated as:

$$\text{Cancer Risk (unitless)} = \text{EC}_{\text{air}} \times \text{IUR}$$

Where:

$\text{EC}_{\text{air}}$  = exposure concentration in air (mg/m<sup>3</sup>)

IUR = inhalation unit risk (m<sup>3</sup>/mg)

Cancer risks are summed for all COPCs and across all relevant exposure pathways to estimate cumulative incremental cancer risk for a receptor. Both federal and state regulatory agencies define what they consider to be an acceptable level of incremental cancer risk associated with exposure to chemicals in environmental media. For cancer risk, EPA considers 10<sup>-4</sup> to 10<sup>-6</sup> to be the acceptable risk range. These risks are probabilities that usually are expressed in scientific notation (e.g., 1E-06). An excess lifetime cancer risk of 1E-06 indicates that an individual experiencing the RME estimate has a 1 in 1,000,000 chance of developing cancer over a 70-year lifetime as a result of

site-related exposure. This is referred to as an “excess lifetime cancer risk” because it would be in addition to the risks of cancer individuals face from other causes such as smoking or exposure to too much sun. Increased cancer risks less than 1E-06 indicate no action is required. Cancer risks between 1E-06 and 1E-04 generally do not warrant cleanup unless dictated by site-specific circumstances or other considerations. Increased cancer risks greater than 1E-04 indicate some type of action needs to be considered.

Noncancer health risks are termed hazards. To evaluate noncancer hazards, the ratio of the estimated exposure (e.g., average daily dose [ADD]) to the corresponding noncancer toxicity reference value (e.g., RfD) is calculated. The hazard quotient (HQ) is calculated for oral and dermal exposures as:

$$\text{HQ (unitless)} = \frac{\text{ADD}}{\text{RfD}}$$

Where:

- ADD = average daily dose of the chemical (mg/kg-day)
- RfD = reference dose (mg/kg-day)

The HQ is calculated for inhalation exposures as:

$$\text{HQ (unitless)} = \frac{\text{EC}_{\text{Air}}}{\text{Rfc}}$$

Where:

- EC<sub>Air</sub> = exposure concentration in air (mg/m<sup>3</sup>)
- Rfc = reference concentration (mg/m<sup>3</sup>)

All the HQ values for chemicals within each exposure pathway are summed to yield the HI for that pathway. Each pathway HI within a land use scenario is summed to yield the total HI for the receptor. If the total receptor HI exceeded 1, then more precise HIs were developed for each target organ and/or toxic effect which were then used to form the basis for the COC selection. If the value of the total target organ HI was less than 1, it was concluded that the non-carcinogenic hazard to that target organ is low. If the total target organ HI was greater than 1, it is indicative of some degree of non-carcinogenic hazard, and COCs contributing to that target organ HI are selected.

To evaluate cumulative noncancer effects for a receptor, HQs are summed for all COPCs and across all relevant exposure pathways to determine a noncancer HI as:

$$\text{HI (unitless)} = \text{HQ1} + \text{HQ2} + \dots + \text{HQi}$$

Where:

- HI = hazard index
- HQ = hazard quotient for a specified exposure route (unitless)

Tables 4 through 16 present the cancer risks and non-cancer hazards identified in the HHRA associated with exposure to the COCs in soil for the receptor scenarios evaluated. The following

conclusions were made regarding exposure to soil in the Pine Yard based on the results of the risk characterization:

### **Cancer Risk**

- Excess lifetime cancer risks for residents, outdoor workers, and indoor workers exceeded  $1 \times 10^{-4}$ . Cancer risk to future residents from exposure to COCs was  $1.7 \times 10^{-3}$  (Table 4). Exposure via direct and indirect soil pathways accounted for 52 percent of the risk, with the largest contributions from toxicity equivalent concentrations of dioxins and furans (TEQdf) and benzo(a)pyrene.
- Cancer risk to indoor workers was  $1.5 \times 10^{-4}$  (Table 7) with TEQdf responsible for the majority of the risk via direct and indirect soil pathways.
- Cancer risk to outdoor workers through direct and indirect exposure to soil was  $3.4 \times 10^{-4}$  (Table 9). TEQdf accounted for the majority of the cancer risk (84 percent), followed by benzo(a)pyrene (6 percent).
- Excess lifetime cancer risks for construction workers and trespassers were below  $1 \times 10^{-4}$  and therefore no COCs were identified for these receptors.

### **Noncancer Hazard**

- Noncancer HIs and target organ- specific HIs for all of the receptors exposed to surface soil exceeded 1. For child and adult residents, the noncancer HIs were 136 and 14, respectively (Tables 5 and 6). Direct and indirect exposure to soil accounted for the majority (i.e., 67 percent) of the HI, with the largest contributions from TEQdf.
- For both child residents and indoor workers, TEQdf in surface soil accounted for the vast majority of the noncancer HI via incidental ingestion of surface soil.
- Noncancer HIs for receptors exposed only via direct and indirect contact with soil were highest for construction workers exposed to surface soils (HI=33; Table 14), followed by outdoor workers (HI=9; Table 10) and trespassers (HI=3; Table 16). In each case, TEQdf accounted for 88 percent or greater of the hazard. Benzo(a)pyrene additionally contributed to the HIs, although to a much lesser extent.
- The noncancer HI for construction workers exposed to subsurface soils was below 1 and therefore no COCs were identified for this receptor

The following table summarizes the excess lifetime cancer risks (ELCR) and noncancer hazard indices applicable for OU-1 by receptor group.

Receptor	ELCR soil and outdoor air	Hazard Index soil and outdoor air <sup>a</sup>
Resident	<b>2 x 10<sup>-3</sup></b>	<b>100</b>
Outdoor Worker	<b>3 x 10<sup>-4</sup></b>	<b>9</b>
Indoor Worker	<b>2 x 10<sup>-4</sup></b>	<b>4</b>
Construction Worker (Surface)	5 x 10 <sup>-5</sup>	<b>30</b>
Construction Worker (Subsurface)	2 x 10 <sup>-6</sup>	0.6
Trespasser	6 x 10 <sup>-5</sup>	<b>3</b>

Notes:

In line with EPA guidance (USEPA 1989 RAGS A), all ELCR and HIs are shown to one significant digit.

<sup>a</sup> Risks to child resident

Bold indicates a lifetime cancer risk above 1 x 10<sup>-4</sup> and noncancer hazard index above 1.

### 7.1.5 Uncertainties

Uncertainties in the HHRA included several factors. There are numerous areas of uncertainty in any risk assessment, and assumptions made in the absence of information are often intentionally conservative. Such assumptions can lead to overestimates of risk. Some uncertainties could also lead to underestimates of risk. Uncertainties exist in each step, including the data collection and analysis, the estimation of potential site exposures, and the toxicity assessment. The table below is a summary of the major uncertainties inherent in the risk assessment and includes a brief discussion of how they may affect the risk estimates and conclusions.

### 7.2 Ecological Risk Assessment

A baseline ecological risk assessment (BERA) was conducted for the KMCC Columbus Site. The goals of this BERA are to 1) determine whether unacceptable risks are posed to ecological receptors from chemical stressors and 2) provide information necessary to make risk management decisions concerning the practical need for and extent of remedial action. The BERA consists of four (4) major components:

1. Problem Formulation
2. Ecological Exposure Assessment
3. Ecological Effects Assessment
4. Ecological Risk Characterization

#### 7.2.1 Problem Formulation

Problem formulation identifies the major factor to be considered in a baseline ecological risk assessment (BERA), including COPC characteristics, ecosystems and/or species potentially at

risk, and ecological effects to be evaluated. It establishes the goals, breadth, and focus of the assessment, develops a conceptual model, and selects assessment endpoints, which are explicit expressions of the environmental value that is to be protected. In a HHRA, only one species (humans) is evaluated and the cancer and non-cancer effects are the usual endpoints. In contrast, a BERA involves multiple species that are likely to be exposed to differing degrees and respond differently to the same contaminant. Assessment endpoints focus the risk assessment on particular components of the ecosystem that could be adversely affected by contaminants from the Site.

The following four (4) assessment endpoints were evaluated in the KMCC Columbus BERA:

1. Survival, growth, and reproduction of benthic and aquatic invertebrates
2. Survival and reproduction of fish populations
3. Survival and reproduction of bird populations
4. Survival and reproduction of mammal populations

Since OU-1 focusses on Pine Yard soil, the following subsections focus on the assessment endpoints that address the terrestrial receptors at the Site (Assessment Endpoints 3 and 4) Chemicals of potential ecological concern (COPECs) were selected based on frequency of detection and concentrations relative to background, local conditions, and/or conservative screening values. The COPECs identified for the Pine Yard soil are presented in Table 17.

### Summary of Uncertainties for the HHRA

Uncertainty Category/Source	Effect Direction	Magnitude	Comments
<b>Data</b>			
Inclusion of J flagged data.	Increase/Decrease	Low	J flags indicate uncertainty in quantification.
A subset of the ditch samples was not included in the HHRA.	Increase/Decrease	Low	Depth information was not available for ditch samples collected in 2014. Thus, these samples were not included in the HHRA given uncertainties about the relevancy of their exposure potential.
Duplicate samples were not averaged.	Increase/Decrease	Low	Some areas were sampled at a greater density and more frequently than others. Therefore, the inclusion of a small number of untreated duplicates are unlikely to impact the overall characterization of chemical concentrations.
Limited dioxin and furan data.	Increase/Decrease	Medium	Dioxins and furans have been analyzed in only a small subset of the samples collected on the Site and in surrounding areas. The available data shows a wide distribution. The impact of the uncertainty on the risk findings is larger in some exposure
No information on treatment methods for TEQdf calculation for some samples.	Increase/Decrease	Low	
<b>COPC Selection</b>			
Chemicals without toxicity data or an appropriate surrogate were not selected as COPCs.	Decrease	Low	Only 2 chemicals had no toxicity data or an appropriate surrogate. These were only detected in groundwater.
<b>Toxicity</b>			
CSFs and IURs assume no threshold for dose-response models used to evaluate cancer	Increase	High	This assumption may lead to high risk estimates for chemicals that cause cancer by a nonlinear mode of action.
Toxicity criteria for different isomers or for a derivative used to represent toxicity of COPC.	Increase/Decrease	Low	Toxicology likely similar in most cases.
Use of chronic toxicity values for estimating exposures to construction workers.	Increase	Low/Medium	Use of subchronic values would result in lower HIs.
Assumed total chromium as chromium(VI).	Increase	Medium/High	It is unlikely that the total chromium present is chromium(VI), which is significantly more toxic than chromium(III).
EPCs for some exposure units/media were based on small sample sizes.	Increase/Decrease	Low/Medium	The true concentrations of COPCs in media may not be fully characterized.
Used upper end concentrations as EPCs.	Increase	Low/Medium	EPCs were designed to overestimate, not underestimate average concentrations.
Vapor intrusion evaluation focused on potential emissions from impacted groundwater and did not quantify exposures from unsaturated soils.	Decrease	Low/Medium	Unsaturated soils would be more likely to impact on Site. In offsite areas, impacted groundwater is the most likely volatilization source.
Use of VISL tool to estimate impact of groundwater on indoor air.	Increase/Decrease	Low/Medium	
Exposure to volatiles in outdoor air emitted from groundwater was not quantified.	Decrease	Low	Vapor intrusion risks provide perspective on areas for which exposures would be greatest.
Assumed exposure unit sizes	Increase/Decrease	Low	Some receptor groups may be exposed to more localized regions within an exposure area that may contain higher or lower than average concentrations of COPCs.

**Summary of Uncertainties for the HHRA (contd.)**

Uncertainty Category/Source	Effect Direction	Magnitude	Comments
<b>Exposure (i.e., CSM, EPCs, Exposure Parameters)</b>			
Site-specific calculated PEF for constructionworkers	Increase/Decrease	Low	Site-specific PEF makes assumptions on the size of the construction zone as well as the weight and number of construction vehicles and the distance vehicles travel over the construction period. See text for additional discussion on the assumed areal extent of excavation.
Use of default exposure parameters for calculating exposures.	Increase	Medium	Exposure factors, including ingestion rates for sediment and surface water, were EPA defaults. These factors are designed to be conservative, and not underestimate
Depth for construction scenarios.	Increase/Decrease	Low	The available data do not allow for a comprehensive evaluation of COPC concentrations at depth; however, there is no reason, based on the conceptual model for the Site, to believe that subsurface concentrations would vary substantially with depth.
Lack of sediment adherence factors for dermal contact pathway.	Increase/Decrease	Low	Available studies indicate wide variation in adherence among different sediment types and among different parts of the body.
<b>Risk Characterization</b>			
Total risks for site were estimated by summing COPC-specific results.	Increase/Decrease	Low	Chemicals may interact to increase risks (synergy) or decrease risks (antagonism).
Total risks/hazards for each receptor/exposure unit combination were determined by summing across all exposure pathways.	Increase	Low	Summing the RME risks/hazards across multiple exposure pathways will tend to overestimate the total. An individual does not necessarily experience RME exposures through all pathways.

**7.2.2 Ecological Exposure Assessment**

Exposure to birds and mammals in the Pine Yard were estimated by evaluating dietary intake of the COPECs. Dietary intakes for the receptors of concern (American robin, mallard, great blue heron, short-tailed shrew, raccoon, mink) were estimated for ingestion of food items, drinking water ingestion, and incidental ingestion of soil and/or sediment while foraging or preening/grooming. For all applicable exposure media, exposure was modeled for mean and high-end exposure concentrations. For mean exposure concentrations, the EPCs are represented by mean observed environmental media concentrations. For high end exposure concentrations, the EPCs are represented by the 95 UCL or maximum concentration. EPCs for soil were based on measured concentrations while EPCs for biotic media (e.g., terrestrial plants, terrestrial invertebrates, small mammals) were estimated using available bioaccumulation factors (BAFs) from the literature. The EPCs for soil used in the wildlife exposure assessment are presented in Table 17. The EPCs for terrestrial biota (plants, invertebrates, and small mammals) and calculated dietary intakes of the COPECs are presented in the BERA (Tables 3-6 through 3-19).

**7.2.3 Ecological Effects Assessment**

The effects assessment evaluates the potential for COPECs to cause adverse effects in the ecological receptors and characterizes the relationship between the level of exposure and the severity of effects. This effects assessment presents the pertinent literature and selects the toxicity reference values (TRVs) used to interpret the potential for adverse effects. TRVs are literature-derived concentrations or doses, below which adverse effects are unlikely and are based on no observed adverse effect levels (NOAELs).

#### **7.2.4 Ecological Risk Characterization**

Effects on bird populations were evaluated in the BERA by comparing modeled dietary intake of COPECs by three representative avian species (American robin, mallard, great blue heron) to doses reported in the literature as TRVs for adverse effects on survival or reproduction. Hazard Quotients (HQs) for birds were developed as the ratio of the exposure dose to the NOAEL TRV. None of the HQs calculated for the mallard and great blue heron exceed 1, indicating that semi-aquatic herbivorous and piscivorous birds are not at risk of adverse effects due to dietary exposure to chemicals associated with the Site. The calculated HQs for the American robin at the Pine Yard are presented in Table 18. For the Pine Yard, high end HQs for American robins exceed 1 for exposure to dioxins and furans, copper, mercury, PAHs, and PCP. Except for mercury, these same COCs also yield mean HQs greater than 1 for American robins in the Pine Yard. Thus, there is a risk of adverse effects to terrestrial invertivorous birds in the Pine Yard.

Effects on mammal populations were evaluated in this BERA by comparing modeled dietary intake of COPECs by three representative mammalian species (short-tailed shrew, raccoon, mink) to doses reported in the literature as thresholds for adverse effects on survival or reproduction (mammal HQs). None of the HQs calculated for mink exceed 1, indicating that semi-aquatic piscivorous mammals are not at risk of adverse effects due to dietary exposure to chemicals associated with the Site. The calculated HQs for the short-tailed shrew and raccoon at the Pine Yard are presented in Table 18. For shrews in the Pine Yard, HQs exceed 1 for dioxins and furans, antimony, cadmium, copper, low molecular weight PAHs (LMWPAHs), high molecular weight PAHs (HMWPAHs), and PCP. For raccoons in the Pine Yard, HQs exceed 1 for dioxins and furans, LMWPAHs, and HMWPAHs. Thus, there is a risk of adverse effects to terrestrial invertivorous mammals and semi-aquatic omnivorous mammals in the Pine Yard.

The BERA found that there are ecological risks in the terrestrial portion of the Pine Yard. Contaminant concentrations in these surface soils also were predicted to pose a potential risk to human receptors. The EPA expects that the remediation of surface soils (0 to 2 feet below ground surface) required to address human health risks will also address excess ecological risks in OU-1 soils. Although there is still uncertainty about ecological risks in the wetland portions of the Pine Yard and areas outside of the scope of OU-1, those areas will be evaluated further and will be addressed in a subsequent operable unit.

#### **7.3 Basis for Action**

Based on the results of the baseline risk assessment, the response action selected in this Record of Decision is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

#### **8.0 Remedial Action Objectives**

Before developing cleanup alternatives for a Superfund site, EPA establishes remedial action objectives (RAOs) to protect human health and the environment. RAOs are specific goals to protect human health and the environment. These objectives are based on available information and standards, such as applicable or relevant and appropriate requirements (ARARS), to-be-considered (TBC) guidance, and site-specific, risk-based levels.

The HHRA demonstrated that the COCs at OU-1, toxicity equivalent concentrations of dioxins and furans (TEQdf) and benzo[a] pyrene, pose a risk to human health through ingestion of and dermal

contact with surface soil, inhalation of soil particulates and inhalation of volatile compounds in indoor air. The following RAOs were developed based on the current land use as industrial/commercial property and future potential land use as residential property:

- Reduce or eliminate the human exposure threat via inhalation, incidental ingestion, and dermal adsorption to contaminated site soils to levels protective of current land and anticipated future use.
- Prevent unacceptable risk to humans from exposure to soil with concentrations of COCs above health-based criteria.
- Prevent/minimize the migration of site contaminants off site through stormwater runoff or wind dispersion of fugitive dust.

### REMEDIATION GOALS

The aim of remediation goals (i.e., cleanup levels) is to meet ARARs and eliminate exposure to contaminants of concern such that human health and the environment are adequately protected. This can be achieved by eliminating exposure pathways or reducing contaminant concentrations to levels that are accepted to be adequately protective of human health and the environment. Remediation goals were selected by review of state and federal laws, regulations, and guidance documents, as well as by evaluating risks identified in the screening-level risk assessment. In The cleanup levels for cleaning up the unsaturated surface and subsurface soil at the Pine Yard are listed below.

#### Soil COCs and Cleanup Levels (CULs) - Residential and Industrial/Commercial Land Use

COC	CUL - Residential		CUL - Industrial/Commercial	
	(mg/kg)	Basis	(mg/kg)	Basis
TEQdf	5.0E-05	nc	2.3E-04	nc
Benzo[a ]pyrene	1.1E-01	c	2.1E+01	c
Benzo[a ]anthracene	1.1E+00	c	2.1E+02	c
Benzo[b ]fluoranthene	1.1E+00	c	2.1E+02	c
Benzo[k ]fluoranthene	1.1E+01	c	--	--
Dibenz[a,h ]anthracene	1.1E-01	c	2.1E+01	c
Indeno[1,2,3-cd ]pyrene	1.1E+00	c	--	--
Dibenzofuran	7.3E+01	nc	--	--
Chrysene	1.1E+02	c	--	--
Fluoranthene	2.4E+03	nc	--	--
Naphthalene	3.8E+00	c	1.7E+02	c
Carbazole	2.4E+01	c	--	--
Pyrene	1.8E+03	nc	--	--
2-Methylnaphthalene	2.4E+02	nc	--	--
1,1'-Biphenyl	4.7E+01	nc	--	--
Pentachlorophenol	1.0E+00	c	4.0E+01	c
Arsenic	8.7E+00	b	8.7E+00	b

**Notes:**

Cancer Remediation Goals are based on a target excess lifetime cancer risk of  $1 \times 10^{-6}$ . Noncancer Remediation Goals are based on a target hazard index of 1.  
For non-residential soil, the lower of the industrial/commercial and construction worker RALs are shown.  
-- = chemical is not a COC under industrial/commercial land use scenario  
b = background  
c = cancer basis  
nc = noncancer basis  
COC = chemical of concern  
TEQdf = toxicity equivalent concentration for dioxins and furans

The cleanup level for TEQdfs correspond to a non-cancer target hazard of 1, which is consistent with EPA's policy for dioxins that specifies that non-cancer toxicity criteria for TCDD will be used to develop site-specific risk-based clean up levels at Superfund Sites. The cleanup level for benzo(a)pyrene corresponds to an excess lifetime cancer risk of  $1 \times 10^{-6}$  or a non-cancer hazard of 1 for residential and commercial/industrial soils. The cleanup level for residential soil applies to surface soil. The cleanup level for industrial/commercial and construction worker soil applies to surface and subsurface soil.

## **9.0 Description of Alternatives**

As stated in 40 CFR 300.430(a)(1)(i) the national goal of the remedy selection process is to select remedies that are protective of human health and the environments, that maintain protection over time, and that minimize untreated waste. EPA generally shall consider the following expectations in developing appropriate remedial alternatives:

- EPA expects to use treatment to address the principal threats posed by a site, wherever practicable.
- EPA expects to use engineering controls, such as containment, for waste that poses a relatively low long-term threat or where treatment is impracticable.
- EPA expects to use a combination of methods, as appropriate, to achieve protection of human health and the environment.
- EPA expects to use institutional controls, such as water use and deed restrictions to supplement engineering controls as appropriate for short- and long-term management to prevent or limit exposure to hazardous substances, pollutants or contaminants.
- EPA expects to consider using innovative technology when such technology offers the potential for comparable or superior treatment performance or implementability, fewer or lesser adverse impacts than other available approaches, or lower costs for similar levels of performance than demonstrated technologies.
- EPA expects to return usable ground waters to their beneficial uses wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site.

CERCLA Section 121(b)(1), 42 U.S.C. Section 9621(b)(1) requires that each selected site remedy be protective of human health and the environment, be cost-effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the

use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

After identifying and considering numerous potential treatment technologies four remedial alternatives for the soil response action have been retained are summarized below. More detailed descriptions of the remedial alternatives can be found in the FFS report. Capital costs are those expenditures that are required to construct a remedial alternative. Operational and Maintenance (O&M) costs are those post-construction costs necessary to ensure or verify the continued effectiveness of a remedial alternative and are estimated on an annual basis. Indirect costs are the project and construction management costs necessary for the management of the remedial action as well as costs associated with institutional controls (ICs). Present value is the amount of money which, if invested in the current year, would be sufficient to cover all the costs over time associated with a project, calculated using a discount rate of seven percent and a 30-year time interval. Construction time is the time required to construct and implement the alternative and does not include the time required to design the remedy, negotiate performance of the remedy with the responsible parties, or procure contracts for design and construction.

Because hazardous substance will be left behind at levels that do not allow for unlimited use and unrestricted exposure, Five-Year Reviews will be required for each alternative, as required by CERCLA 121(c) and the NCP [40 C.F.R. §300.430(f)(4)(ii)].

#### Alternative 1 - No Action

Estimated Capital Cost: \$0

Estimated Annual Operation and Maintenance Cost: \$105,000

Indirect Costs: \$75,000

Net Present Value: \$180,000

Estimated Construction Timeframe: 0 year

Estimated Time to Achieve RAOs: Greater than 30 years

The NCP requires that a "No Action" alternative be developed as a baseline for comparing other remedial alternatives. No remedial action or monitoring would be performed under this alternative. The No Action alternative provides for an assessment of the environmental conditions if no remedial actions are implemented.

#### Alternative 2 - Removal and Offsite Disposal

Estimated Capital Cost: \$8,371,000

Estimated Annual Operation and Maintenance Cost: \$90,000

Indirect Costs: \$1,431,000

Net Present Value: \$9,892,000

Estimated Construction Timeframe: 6 to 12 months

Estimated Time to Achieve RAOs: Approximately 1 year

This alternative includes the following main elements:

- Excavation of Zone 2 soils with COC concentrations that exceed cleanup levels for surface soil and excavation of Zone 3 soils with COC concentrations that exceed cleanup levels for subsurface soil. Figure 4 presents the estimated extent of Zone 2 impacted soils and the estimated extent of Zone 3 impacted soils.
- Excavated soils with no visible evidence of contamination will be segregated from visibly-contaminated soils and analyzed to determine if these soils are suitable for use in the areas of the Pine Yard identified for potential future industrial/commercial use. Excavation areas within OU-1 that have been identified for potential future residential use will be backfilled with imported clean fill material.
- Offsite disposal of excavated contaminated soils determined by EPA to not contain RCRA hazardous wastes in a permitted RCRA Subtitle D Landfill such as the Golden Triangle Regional Landfill located in Starkville, Mississippi.
- Offsite treatment and disposal of unanticipated soils that may be encountered during construction, and subsequently determined to contain RCRA hazardous waste, in a permitted RCRA Subtitle C Landfill approved by EPA in accordance with the Off-site Rule in the NCP at 40 CFR Sections 300-440.
- Confirmation sampling and analyses to demonstrate that cleanup levels have been achieved.
- Placement of clean fill material in areas identified for potential future industrial/ commercial use, may be placed if needed to achieve final grades.
- Implementation of ICs such as environmental covenant and deed restrictions for soil areas that exceed residential cleanup levels. The property owner is responsible for maintaining ICs.
- Mandatory Five-Year Reviews.

The NCP requires an FS to identify ‘applicable’ and/or ‘relevant and appropriate’ environmental requirements (ARARs) related to chemicals at the site, site location characteristics and remedial activities such as excavation of contaminated soil. The FFS identified all ARARs for the site remedial alternatives. Key ARARs associated with Alternative 2 can be found in the following Table.

Action	Requirements	Prerequisite	Citation
Characterization of solid waste (all primary and secondary wastes)	Must comply with generator requirements of 40 CFR waste is excluded under 40 CFR § 261.4; and Must determine if waste is listed as a hazardous waste under 40 CFR Part 261 or characteristic waste.	Generation of solid waste as defined in 40 CFR § 261.2 – applicable	40 CFR § 262.11(a) and (b)
Temporary on-site storage of remediation waste in staging piles (e.g., excavated soils)	Must be located within the contiguous property under the control of the owner/operator where the wastes are to be managed in the staging pile originated.  May be temporarily stored (including mixing, sizing, blending, or other similar physical operations intended to prepare the wastes for subsequent management	Accumulation of non-flowing hazardous remediation waste (or remediation waste otherwise subject to land disposal restrictions) as defined in 40 CFR § 260.10 – applicable	40 CFR § 264.554(a)(1)  40 CFR § 264.554(a)(1)(i) and (ii)

Action	Requirements	Prerequisite	Citation
	or treatment) at a facility if used only during remedial operations provided that the staging pile: <ul style="list-style-type: none"> <li>• must facilitate a reliable, effective, and protective remedy;</li> <li>• must be designed to prevent or minimize releases of hazardous wastes and constituents into the environment, and minimize or adequately control cross-media transfer as necessary to protect human health and the environment (e.g., use of liners, covers, run-off/run-on controls)</li> </ul>		
Transportation of hazardous waste off-site	Must comply with the generator requirements of 40 CFR § 262.20-262.23 for manifesting, § 262.30 for packaging, § 262.31 for labeling, § 262.32 for marking, § 262.33 for placarding, §§ 262.40 and 262.41(a) for record keeping requirements, and § 262.12 to obtain EPA ID number.	Preparation and initiation of shipment of RCRA hazardous waste off-site – applicable	40 CFR § 262.10(h)

Alternative 2 will comply with ARARs identified in the FFS. No ARAR waivers are proposed for this alternative. The expected outcome of this Alternative is portions of the Pine Yard will be available for an unrestricted land use upon achieving RAOs and cleanup levels at the completion of construction. The remaining portions of the site will be available for industrial/commercial land use.

**Alternative 3 - Removal and Onsite Consolidation**

Estimated Capital Cost: \$5,372,000

Estimated Annual Operation and Maintenance Cost: \$132,000

Indirect Costs: \$961,000

Net Present Value: \$6,465,000

Estimated Construction Timeframe: 6 to 12 months

Estimated Time to Achieve RAOs: Approximately 1 year

This alternative includes the following main elements:

- Excavation of Zone 2 soils with COC concentrations that exceed cleanup levels and excavation of Zone 3 soils with COC concentrations that exceed cleanup levels for subsurface soil. Figure 4 presents the estimated extent of Zone 2 impacted soils and the estimated extent of Zone 3 impacted soils.
- Consolidation of excavated contaminated soils beneath a low permeability cover. Consolidation under this alternative would be integrated in with the future remedial action for the Former Plant Area (OU-2). The low-permeability cap would be designed to meet 'relevant and appropriate' RCRA landfill cover requirements which are identified as ARARs.
- Excavated soil would be placed into a temporary staging pile until a remedy is selected for the Former Plant Area (OU-2).

- Confirmation sampling and analyses to demonstrate that cleanup levels have been achieved. Placement of clean backfill.
- Implementation of ICs such as environmental covenant and deed restrictions for soil areas that exceed residential cleanup levels. The property owner is responsible for maintaining ICs.
- Implementation of ICs to prevent disturbance of the soil cover and prevent exposure to underlying contaminated soil. The property owner is responsible for maintaining ICs.

The FFS identified all ARARs for the site remedial alternatives. Key ARARs associated with Alternative 3 can be found in the following Table.

Action	Requirements	Prerequisite	Citation
Characterization of solid waste (all primary and secondary wastes)	<p>Must comply with generator requirements of 40 CFR waste is excluded under 40 CFR § 261.4; and</p> <p>Must determine if waste is listed as a hazardous waste under 40 CFR Part 261.</p>	Generation of solid waste as defined in 40 CFR § 261.2 – applicable	40 CFR § 262.11(a) and (b)
Temporary on-site storage of remediation waste in staging piles (e.g., excavated soils)	<p>Must be located within the contiguous property under the control of the owner/operator where the wastes are to be managed in the staging pile originated.</p> <p>May be temporarily stored (including mixing, sizing, blending, or other similar physical operations intended to prepare the wastes for subsequent management or treatment) at a facility if used only during remedial operations provided that the staging pile:</p> <ul style="list-style-type: none"> <li>• must facilitate a reliable, effective, and protective remedy;</li> <li>• must be designed to prevent or minimize releases of hazardous wastes and constituents into the environment, and minimize or adequately control cross-media transfer as necessary to protect human health and the environment (e.g., use of liners, covers, run-off/run-on controls)</li> </ul>	Accumulation of non-flowing hazardous remediation waste (or remediation waste otherwise subject to land disposal restrictions) as defined in 40 CFR § 260.10 – applicable	<p>40 CFR § 264.554(a)(1)</p> <p>40 CFR § 264.554(a)(1)(i) and (ii)</p>
Operation of a staging pile	The staging pile must not operate for more than two years, except when the EPA or Director grants an operating term extension under 40 CFR § 264.554(i).	Accumulation of non-flowing hazardous remediation waste (or remediation waste otherwise subject to land disposal restrictions [LDR]) as defined in 40 CFR § 260.10 –	40 CFR §§ 264.554(d)(1)(iii)

Action	Requirements	Prerequisite	Citation
		applicable	
Transportation of hazardous waste on-site)	The generator manifesting requirements of 40 CFR § 262.20-262.32(b) do not apply. Generator or transporter must comply with the requirements set forth in 40 CFR § 263.30 and 263.31 in the event of a discharge of hazardous waste on a private or public right-of-way.	Transportation of hazardous wastes on a public or private right-of-way within or along the border of contiguous property under the control of the same person, even if such contiguous property is divided by a public or private right-of-way – applicable	40 CFR § 262.20(f)

Alternative 3 will comply with ARARs identified in the FFS. No ARAR waivers are proposed for this alternative. The expected outcome of this Alternative is portions of the Pine Yard will be available for an unrestricted land use upon achieving RAOs and cleanup levels at the completion of construction. The remaining portions of the site will be available for industrial/commercial land use.

**Alternative 4 - Cover and Institutional Controls**

Estimated Capital Cost: \$2,519,000

Estimated Annual Operation and Maintenance Cost: \$132,000

Indirect Costs: \$490,000

Net Present Value: \$3,141,000

Estimated Construction Timeframe: 6 to 9 months

Estimated Time to Achieve RAOs: Approximately 1 year

This alternative includes the following main elements:

- Placement of a 2-ft thick semi-permeable soil cover over contaminated the semi-permeability cover would be designed to meet 'relevant and appropriate' RCRA landfill cover requirements which are identified as ARARs.
- Maintenance of the cover and repairs as necessary.
- Implementation of ICs to prevent disturbance of the soil cover and prevent exposure to underlying contaminated soil. The property owner is responsible for maintaining ICs.

The FFS identified all ARARs for the site alternatives. Key ARARs associated with Alternative 3 can be found in the following Table.

Action	Requirements	Prerequisite	Citation
Characterization of solid waste (all primary and secondary wastes)	Must comply with generator requirements of 40 CFR waste is excluded under 40 CFR § 261.4; and  Must determine if waste is listed as a hazardous waste under 40 CFR Part 261.	Generation of solid waste as defined in 40 CFR § 261.2 – applicable	40 CFR § 262.11(a) and (b)
Installation of low-permeability cover	Must cover the landfill (or cell) with a final cover designed and constructed to: (1) provide long-term minimization of migration of liquids through the closed landfill; (2) function with minimum maintenance; (3) promote drainage and minimize erosion or abrasion of the cover; (4) accommodate settling and subsidence so that the cover's integrity is maintained; and (5) have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.	Closure of RCRA hazardous waste landfill – relevant and appropriate	40 CFR § 264.310(a)

Alternative 4 will comply with ARARs identified. No ARAR waivers are proposed for this alternative. The expected outcome of this Alternative is portions of the Pine Yard will be available for an unrestricted land use upon achieving RAOs and cleanup levels at the completion of construction. The remaining portions of the site will be available for industrial/commercial land use.

### 10.0 Comparative Analysis of Alternatives

In selecting a remedy, EPA considered the factors set out in Section 121 of CERCLA, 42 U.S.C. § 9621, by conducting a detailed analysis of the viable remedial response measures pursuant to the NCP, 40 CFR §300.430(e)(9), and OSWER Directive 9355.3-01. The detailed analysis consisted of an assessment of each of the individual response measures per remedy component against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each response measure against the criteria. This section of the ROD describes the relative performance of each alternative against seven of the nine criteria, noting how each compare to the other options under consideration. A detailed analysis of the alternatives can be found in the 2018 FS Report.

**Threshold Criteria** – The first two criteria are known as “threshold criteria” because they are the minimum requirements that each response measure must meet in order to be eligible for selection as a remedy.

### 10.1 Overall Protection of Human Health and the Environment

Overall protection of human health and the environment addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through

each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls, and/or institutional controls.

All alternatives evaluated in the FFS except for Alternative 1 (No Action) would be protective of human health and the environment. Since Alternative 1 does not meet this threshold criterion, it will not be carried through the remaining criteria.

Alternatives 2 and 3 would remove soils with concentrations of COCs above health-based cleanup levels and replacing those soils with clean backfill. Excavated areas designated for residential use will be backfilled with soil which is at or below the residential cleanup level. Excavated areas designated for industrial/commercial use will be backfilled with soil which is at or below the industrial/commercial cleanup level. Alternative 4 would employ a soil cover to eliminate risks associated with exposure to soils with concentrations of COCs above health-based cleanup levels.

## **10.2 Compliance with ARARs**

Section 121(d) of CERCLA and NCP §300.430(f) (ii) (B) require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate Federal and State requirements, standards, criteria, and limitations which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA section 121(d)(4). Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those State standards that are identified by a state in a timely manner and that are more stringent than Federal requirements may be applicable. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, addresses problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Only those State standards that are identified in a timely manner, and are more stringent than Federal requirements, may be relevant and appropriate. Compliance with ARARs address whether a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes or provides a basis for invoking a waiver.

A complete list of ARARs can be found in Tables 19 and 20. Some of the key ARARs for each alternative are provided in Section 9 above.

Alternatives 2, 3 and 4 would achieve the location-specific, and action-specific ARARs identified in the FFS.

**Primary Balancing Criteria** – The next five criteria, criteria 3 through 7, are known as "primary balancing criteria". These criteria are factors by which tradeoffs between response measures are assessed so that the best options will be chosen, given site-specific data and conditions.

## **10.3 Long-Term Effectiveness and Permanence**

Long-term effectiveness and permanence refer to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup levels have been met. This criterion includes the consideration of residual risk that will remain on-site following remediation and the adequacy and reliability of controls.

Alternatives 2, 3, and 4 all would substantially attain the criteria of long-term effectiveness and permanence. Alternatives 2 and 3 would both eliminate soils with COC concentrations above health-based cleanup levels from the Pine Yard. Under Alternative 2, excavated soils would be disposed in an offsite landfill, while under Alternative 3 the soils would be consolidated under a cover within the Former Plant Area (OU-2) of the KMCC site. Thus, although Alternative 3 would eliminate contamination associated with soils from the Pine Yard, the contamination would still be present within the boundaries of the Former Main Plant Area (OU-2)—albeit within an engineered containment facility to prevent potential migration or receptor contact. For this reason, Alternative 3 is ranked lower for this criterion than Alternative 2.

Alternative 4 involves isolation of soils. Although this alternative has a high degree of certainty with respect to long-term effectiveness and permanence, ICs will be required to protect against disturbance of the soil cover and to prevent unacceptable exposure risks associated with potential future excavation work (e.g., to construct building footings or utilities). Therefore, because Alternative 4 leaves impacted soils in place in the Pine Yard, it ranks lower than Alternatives 2 and 3 with respect to long-term effectiveness and permanence.

#### **10.4 Reduce Toxicity, Mobility or Volume through Treatment**

Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.

Alternatives 2, 3 and 4 do not include treatment as a component of the remedy. Therefore, these alternatives would not reduce the toxicity, mobility, or volume of contamination at the Pine Yard through treatment.

#### **10.5 Short-Term Effectiveness**

Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community and the environment during construction and operation of the remedy until cleanup levels are achieved.

Alternatives 2, 3 and 4 rank similarly high with respect to the short-term effectiveness criterion, and all three alternatives would be immediately effective upon completion of the remedial action.

All three of the alternatives involve the use of conventional construction techniques and potential short-term impacts to workers and the community can be readily addressed through proper design and execution of the remedial action, including use of well-established best management practices. Many of the potential short-term impacts and nuisances associated with the active remedies are related to the excavation, stockpiling, and transport of contaminated soils.

#### **10.6 Implementability**

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

Alternatives 2, 3 and 4 are relatively easy to construct and involve readily available and highly reliable technologies and equipment, and the effectiveness of all three alternatives can be readily evaluated through monitoring. Alternative 2 does not pose any significant impedances to additional remedial actions in the future, while the cover under Alternatives 3 and 4 may pose some minor impedance to additional remedial action should it be warranted in the future. Alternative 3 also poses a potential logistical challenge in that it relies on consolidation onsite in the Former Plant Area (OU-2). Because the remedial action for the Former Plant Area has not been selected, it is not clear at this

time whether consolidation of Pine Yard OU-1 soils in the Former Plant Area would be compatible or inconsistent with the final remedy selected for the area. Further, the schedule for excavation and consolidation of OU-1 soils in the Former Plant Area would need to be coordinated with implementation of the Former Plant Area remedial action.

**10.7 Costs**

This criterion compares estimated capital and O&M costs, and net present worth value of capital and O&M costs.

A 7% discount rate was used to estimate the costs for each alternative.

<b>ESTIMATED COSTS FOR REMEDIAL ALTERNATIVES</b>				
<b>Activity</b>	<b>Alternative #1</b>	<b>Alternative #2</b>	<b>Alternative #3</b>	<b>Alternative #4</b>
Estimated Capital Cost	\$0	\$8,371,000	\$5,372,000	\$2,519,000
Indirect Cost	\$75,000	\$1,431,000	\$961,000	\$490,000
Estimated O&M Costs	\$105,000	\$90,000	\$132,000	\$132,000
Net Present Value	\$180,000	\$9,892,000	\$6,465,000	\$3,141,000
Estimated Time to Achieve RAOs	greater than 30 years	~1 year	~3 years	~3 years

At an estimated cost of \$3,140,000, Alternative 4 is the lowest-cost alternative. Alternative 3 is estimated to cost \$6,470,000, and Alternative 2 is estimated to cost \$9,890,000.

**Modifying Criteria** – The final two evaluation criteria, criteria 8 and 9, are called “modifying criteria” because new information or comments from the state or the community on the Proposed Plan may modify the preferred response measure or cause another response measure to be considered.

**10.8 State Acceptance**

*This criterion indicates whether based on its review of the RI/FS reports and the Proposed Plan, the state supports, opposes, and/or has identified any reservations with the selected response measure.*

The State of Mississippi concurs with all components of the Selected Remedy (see Appendix A).

**10.9 Community Acceptance**

This criterion summarizes the public’s general response to the response measures described in the Proposed Plan and the RI/FS reports. This assessment includes determining which of the response measures the community supports, opposes, and/or has reservations about.

The majority of the public comments expressed at the December 13, 2018 public meeting, and received during the comment period, were supportive of Alternative 2 for adequately addressing the contaminated soils within operable unit one at the site.

## 11.0 Principal Threat Waste

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP Section 300.430(a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water or air, or acts as a source for direct exposure. Principal threat wastes (PTW) are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur.

The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using the nine remedy selection criteria. This analysis provides a basis for making a statutory finding that the remedy employs treatment as a principal element. In accordance with the EPA guidance, treatment alternatives are considered for the principal threat wastes at the site. In instances where treatment is not implementable, other methods such as removal or containment that significantly reduce or eliminate the risks due to principal threat wastes are considered.

The Remedial Investigation Report (EarthCon 2018) identified an approximately 3-acre area along the western boundary of Pine Yard where soils below the groundwater water table have been impacted by dense, nonaqueous-phase liquid (DNAPL). These soils represent the primary ongoing source of COCs to groundwater in the Pine Yard and are considered principal threat waste. However, the soils within this "DNAPL Source Area" are not included in OU-1. The soils within this "DNAPL Source Area," and the unsaturated zone soils that overlie them, will be addressed as part of OU-4.

## 12.0 Selected Remedy

### 12.1 Detailed Description of the Selected Remedy

Based upon consideration of the results of the site investigations, the requirements of CERCLA, the detailed analysis of the response measures, and public comments, EPA has determined that Alternative 2: Removal and Offsite Disposal is the appropriate remedy for the contamination found in the unsaturated surface and subsurface soil in the Pine Yard, because it best satisfies the requirements of Section 121 of CERCLA, 42 U.S.C. § 9621, and the NCP's nine evaluation criteria for remedial alternatives, 40 CFR § 300.430(e)(9). The major components of the selected remedy include:

- Excavation of approximately 41,513 cubic yards of contaminated soil from Zone 2 and approximately 13,497 cubic yards of soil from Zone 3. The extent of the excavation is approximately 14 acres to a maximum depth of 8 feet below ground surface (Figure 4).
- Excavated soil may be used as fill material in areas of the Pine Yard that are designated for industrial/commercial if the concentration of chemicals of concern are between industrial/commercial and residential cleanup levels. Excavation areas within OU-1 that have been identified for potential future residential use will be backfilled with imported clean fill material.
- Excavated soil not used onsite will be disposed offsite in a permitted Resource Conservation and Recovery Act (RCRA) Subtitle D Landfill such as the Golden Triangle Regional Landfill located in Starkville, Mississippi. If encountered, RCRA hazardous waste will be disposed in a RCRA Subtitle C Landfill approved by EPA in accordance with the Off-site Rule in the NCP at 40 CFR Sections 300-440.

- Confirmation sampling and analyses to demonstrate that cleanup levels have been achieved.
- Implementation of institutional controls (ICs) such as environmental covenant and deed restrictions for soil areas that exceed residential cleanup levels. The property owner is responsible for maintaining ICs.
- Five-Year Reviews will be conducted to evaluate the implementation and performance of the Selected Remedy to determine if the remedy is protective of human health and the environment.

## **12.2 Summary of the Rationale for the Selected Remedy**

The selection of Alternative 2 is believed to provide the best balance of tradeoffs among the alternatives with respect to the evaluation criteria. EPA and MDEQ concur that the selected alternative will satisfy the following statutory requirements of CERCLA Section 121(b), 42 U.S.C. § 9621(b): 1) be protective of human health and the environment; 2) comply with ARARs; 3) be cost effective; 4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. None of the alternatives, including the selected alternative, satisfy the preference for treatment as a principal element.

## **12.3 Cost Estimate for the Selected Remedy**

The information in the cost estimate summary table below is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. Major changes may be documented in the form of a memorandum, in the Administrative Record file, an Explanation of Significant Differences, or a ROD amendment. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost. The full cost estimate can be found in Appendix B of the FFS (Integral 2018a).

				Alternative 2 - Removal and Offsite Disposal	
Item	Description	Unit	Unit Cost (\$)	Quantity	Total Cost (\$)
<b>Direct Capital Costs</b>					
1	Mobilization & Demobilization	%	1.50%	1	\$ 89,000.00
2	Contractor Plans and Submittals	LS	\$ 20,000.00	1	\$ 20,000.00
3	Construction Quality control	WK	\$ 9,000.00	24	\$ 216,000.00
4	Temporary Facilities	MO	\$ 20,242.00	6	\$ 121,000.00
5	Site Access and Traffic Control	LS	\$ 55,000.00	1	\$ 55,000.00
6	Surveying and Field Engineering	LS	\$ 93,700.00	1	\$ 93,700.00
7	Construction Pollution Prevention Control	LS	\$ 129,040.00	1	\$ 129,000.00
8	<b>Zone 2 Soil Removal (0-2 ft bgs) Subtotal</b>				<b>\$ 4,064,000.00</b>
	Excavation	CY	\$ 15.00	41,616	\$ 624,000.00
	Backfill and Grading	CY	\$ 15.00	59,511	\$ 893,000.00
	Transportation and Disposal	TN	\$ 38.25	66,586	\$ 2,547,000.00
9	<b>Zone 3 Soil Removal (2-8 ft bgs) Subtotal</b>				<b>\$ 1,166,000.00</b>
	Excavation	CY	\$ 15.00	11,943	\$ 179,000.00
	Backfill and Grading	CY	\$ 15.00	17,079	\$ 256,000.00
	Transportation and Disposal	TN	\$ 38.25	19,109	\$ 731,000.00
10	Site Restoration	LS	\$ 64,000.00	1	\$ 64,000.00
	<b>Construction Subtotal</b>				<b>\$ 6,017,700.00</b>
	<b>Contingency (30%)</b>				<b>\$ 1,805,000.00</b>
	<b>Tax (7%)</b>				<b>\$ 548,000.00</b>
	<b>Total Direct Capital Costs</b>				<b>\$ 8,371,000.00</b>
<b>Indirect Costs</b>					
1	Project Management	%	5%	1	\$ 419,000.00
2	Construction Management	%	7%	1	\$ 586,000.00
3	Contractor Payment and Performance Bond	%	4%	1	\$ 376,000.00
4	Institutional Controls	LS	\$ 50,000.00	1	\$ 50,000.00
	<b>Total Indirect Costs</b>				<b>\$ 1,431,000.00</b>
<b>Periodic Costs</b>					
1	5 Year Review	EA	\$ 15,000.00	6	\$ 90,000.00
	<b>Total Periodic Costs</b>				<b>\$ 90,000.00</b>
	<b>TOTAL NET PRESENT VALUE (+50% TO -30%)</b>				<b>\$ 9,892,000.00</b>

### 13.0 Estimated Outcomes of the Selected Remedy

The Selected Remedy will protect human health and the environment by eliminating, reducing, or controlling risks at OU-1 through physical removal of waste from areas of access by receptors, and implementation of the ICs. Future land use of the Site property is anticipated to be a mix of residential and industrial/commercial.

Implementation of the Selected Remedy and achievement of the final cleanup levels will accomplish the RAOs for OU-1. The final cleanup levels determined for this remedy are the same as those presented in the Proposed Plan.

## 14.0 Statutory Determination

As was previously noted, Section 121(b)(1) of CERCLA, 42 U.S.C. § 9621(b)(1), mandates that remedial actions must be protective of human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) of CERCLA, 42 U.S.C. § 9621(b)(1), also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity or mobility of the hazardous substances, pollutants, or contaminants at a site. Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), further specifies that a remedial action must attain a degree of cleanup that satisfies ARARs under federal and state laws, unless a waiver can be justified pursuant to Section 121(d)(4) of CERCLA, 42 U.S.C. § 9621(d)(4).

### 14.1 Protection of Human Health and the Environment

Protection of human health and the environment will be achieved through removal and offsite disposal of soil contamination.

The Selected Remedy, Alternative 2, will provide a greater degree of protection for human health and the environment through the excavation of contaminated unsaturated surface and subsurface soil in the Pine Yard. This action will result in the reduction of exposure levels to acceptable risk levels within EPA's generally acceptable risk range of  $10^{-4}$  to  $10^{-6}$  for carcinogens and below a HI of 1.0 for noncarcinogens.

Implementation of the Selected Remedy will not pose any unacceptable short-term risks to human health and the environment.

### 14.2 Compliance with ARARs

Section 121(d) of CERCLA, as amended, specifies, in part, that remedial actions for cleanup of hazardous substances must comply with requirements and standards under federal or more stringent state environmental laws and regulations that are applicable or relevant and appropriate (i.e., ARARs) to the hazardous substances or particular circumstances at a site or justify invoking a waiver under Section 121(d)(4). *See also* 40 C.F.R. §§ 300.430(f)(1)(ii)(B) and (C), and 40 C.F.R. §§ 300.430(f)(5)(ii)(B) and (C). ARARs include only federal and state environmental or facility siting laws/regulations and do not include occupational safety or worker protection requirements. Compliance with OSHA standards is required by 40 C.F.R. § 300.150 and therefore the CERCLA requirement for compliance with or waiver of ARARs does not apply to OSHA standards.

Under CERCLA Section 121(e)(1), federal, state, or local permits are not required for the portion of any removal or remedial action conducted entirely on-site as defined in 40 C.F.R. § 300.5. *See also* 40 C.F.R. §§ 300.400(e)(1) and (2). Also, CERCLA actions must only comply with the "substantive requirements," not the administrative requirements of a regulation. Administrative requirements include permit applications, reporting, record keeping, and consultation with administrative bodies. Although consultation with state and federal agencies responsible for issuing permits is not required, it is recommended for determining compliance with certain requirements such as those typically identified as Location-Specific ARARs.

*Applicable requirements*, as defined in 40 C.F.R. § 300.5, means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, or contaminant, remedial action, location, or other circumstance at a CERCLA site. Only those state standards that are identified by the state in a timely manner and that are more stringent than federal requirements may be applicable.

*Relevant and appropriate requirements*, as defined in 40 C.F.R. § 300.5, means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, or contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at a CERCLA site that their use is well suited to the particular site. Only those state standards that are identified by the state in a timely manner and that are more stringent than federal requirements may be relevant and appropriate.

Per 40 C.F.R. § 300.400(g)(5), only those state standards are promulgated, are identified in a timely manner, and that are more stringent than federal requirements may be applicable or relevant and appropriate. For purposes of identification and notification of promulgated state standards, the term promulgated means that the standards are of general applicability and are legally enforceable. State ARARs are considered more stringent where there is no corresponding federal ARAR, where the State ARAR provides a more stringent concentration of a contaminant, or the where a State ARAR is broader in scope than a federal requirement.

In addition to ARARs, the lead and support agencies may, as appropriate, identify other advisories, criteria, or guidance to be considered for a particular release. The "to-be-considered" (TBC) category consists of advisories, criteria, or guidance that were developed by EPA, other federal agencies, or states that may be useful in developing CERCLA remedies. See 40 C.F.R. § 300.400(g)(3). TBCs are not considered legally enforceable and, therefore, are not considered to be applicable for a site but are evaluated along with ARARs as part of the risk assessment to set protective cleanup goals.

#### ARAR Categories

For purposes of ease of identification, the EPA has created three categories of ARARs: Chemical-, Location- and Action-Specific. Under 40 C.F.R. § 300.400(g)(5), the lead and support agencies shall identify their specific ARARs for a particular site and notify each other in a timely manner as described in 40 C.F.R. § 300.515(d). Chemical-, and Location-Specific ARARs should be identified as early as scoping phase of the Remedial Investigation, while Action-Specific ARARs are identified as part of the Feasibility Study for each remedial alternative. See 40 C.F.R. §§ 300.430(b)(9) and 300.430(d)(3).

**Chemical-Specific** - Requirements that establish health- or risk-based numerical concentration limits or assessment methodologies for chemical contaminants in environmental media. No chemical-specific ARARs were identified for this remedial action.

**Location-Specific** - Requirements that can restrict, or limit response action based upon specific locations (e.g., wetlands, floodplains, historic places, or sensitive habitats). A portion of the Pine Yard falls within the 100-year floodplain and a separate area of the Pine Yard consists of a forested wetland but it will not be disturbed during implementation of the remedial action.

**Action-Specific** - Requirements that set controls or restrictions on the design, implementation, and performance levels of activities related to the management of hazardous substances, pollutants, or contaminants.

In accordance with 40 C.F.R. § 300.430(f)(5)(ii)(B) this ROD includes ARARs that the remedy is expected to attain that were identified by EPA and the State of Mississippi. Tables 19 and 20 list respectively the Location- and Action-Specific ARARs/TBCs for the selected remedial action.

Any remediation wastes that are generated and subsequently transferred off-site or transported in commerce along public right-of-ways must meet any applicable requirements such as those for

packaging, labeling, marking, manifesting, and placarding requirements for hazardous materials. In addition, CERCLA Section 121(d)(3) provides that the off-site transfer of any hazardous substance, pollutant, or contaminant generated during CERCLA response actions be sent to a treatment, storage, or disposal facility that is in compliance with applicable federal and state laws and has been approved by EPA for acceptance of CERCLA waste. *See also* 40 C.F.R. § 300.440 (so called "Off-Site Rule").

#### **14.3 Cost Effectiveness**

EPA has determined that the Selected Remedy is cost-effective and that the overall protectiveness of the remedy is proportional to the overall cost. As specified 40 CFR §300.430(f)(1)(ii)(D), the cost-effectiveness of the Selected Remedy was assessed by comparing the protectiveness of human-health and the environment in relation to three balancing criteria (i.e., long-term effectiveness and permanence; reduction in T/M/V; and short-term effectiveness) with the other alternatives considered.

The basis for EPA's determination of cost-effectiveness is summarized in Section 9 of the FS (Integral, 2018a). While more than one remedial alternative can be considered cost-effective, CERCLA does not mandate that the most cost-effective or least expensive remedy be selected.

#### **14.4 Use of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable**

EPA has determined that the Selected Remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the Site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the Selected Remedy provides the best balance of tradeoffs in terms of the five balancing criteria, while also considering the statutory preference for treatment as a principal element, bias against off-site treatment and disposal, and considering State and community acceptance.

The Selected Remedy does not present short-term risks different from the other treatment alternatives. There are no special implementability issues that set the Selected Remedy apart from any of the other alternatives evaluated.

#### **14.5 Preference for Treatment as a Principal Element**

Some of the contaminated soil may require treatment to meet the requirements of off-site disposal facilities; therefore, the selected remedy meets the statutory preference for the use of remedies that employ treatment that reduces toxicity, mobility or volume as a principal element.

#### **14.6 Five-Year Review Requirements**

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of the remedial action to ensure that the Selected Remedy is, or will be, protective of human health and the environment. EPA will conduct a Five-Year Review until levels that allow for unlimited use and unrestricted exposures are achieved.

#### **14.7 Documentation of Significant Changes**

Pursuant to CERCLA 117(b) and NCP §300.430(f)(3)(ii), the ROD must document any significant changes made to the Preferred Alternative discussed in the Proposed Plan.

EPA reviewed all written and verbal comments submitted during the public comment period. Although the Proposed Plan had indicated that unsaturated subsurface soil in Zone 3 would be delineated based on the presence of visible signs of contamination, this ROD defines Zone 3 soils

based on the presence of chemicals of concern at concentrations above health-based cleanup levels. There are no other significant changes to the remedy, as originally identified in the Proposed Plan.

### 15.0 References

- Black & Veatch, 2018. Proposed Plan, Kerr-McGee Columbus, OU-1, Columbus, Lowndes County, Mississippi, December 2018
- EarthCon. 2018. Phase II Remedial Investigation Report (Revised Draft). Kerr-McGee Chemical Corp – Columbus, October 11, 2018.
- EPA, 1989. U.S. Environmental Protection Agency. Risk Assessment Guidance for Superfund (RAGS): Volume I – Human Health Evaluation Manual (Part A), Interim Final. Office of Emergency and Remedial Response, Washington, DC, EPA/540/1-89/002. December 1989.
- EPA, 2003. Human health toxicity values in Superfund risk assessments. Internal memorandum from M.B. Cook, Office of Superfund Remediation and Technology Innovation to Superfund National Policy Managers, Regions 1–10, dated December 5, 2003. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, DC.
- EPA, 2004b. U.S. Environmental Protection Agency. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual, Part E, Supplemental Guidance for Dermal Risk Assessment, Final. July 2004.
- EPA, 2009. U. S. Environmental Protection Agency. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment). Office of Superfund Remediation and Technology Innovation. Washington, D.C. EPA-540-R-070-002 OSWER 9285.7-82. January 2009.
- EPA, 2014. U.S. Environmental Protection Agency. Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors. Office of Superfund Remediation and Technology Innovation. OSWER Directive 9200.1-120. February.
- EPA, 2018a. Region 4 Human Health Risk Assessment Supplemental Guidance. Technical Services Section, Superfund Division. March 2018 [https://www.epa.gov/sites/production/files/2018-03/documents/hhra\\_regional\\_supplemental\\_guidance\\_report-march-2018\\_update.pdf](https://www.epa.gov/sites/production/files/2018-03/documents/hhra_regional_supplemental_guidance_report-march-2018_update.pdf)
- EPA, 2018b. Integrated risk information system. <https://www.epa.gov/iris>. Last updated on February 20, 2018. U.S. Environmental Protection Agency, Washington, DC.
- EPA, 2018c. Provisional peer reviewed toxicity values for Superfund (PPRTV). [https://hhpprtv.ornl.gov/quickview/pprtv\\_compare.php](https://hhpprtv.ornl.gov/quickview/pprtv_compare.php). U.S. Environmental Protection Agency, Office of Land and Emergency Management, Washington, DC.
- ERM, 2005. Interim measures report, Columbus, Mississippi facility. EPA ID Number MDS 990866329. Prepared for Kerr-McGee Chemical LLC, Oklahoma City, OK. ERM EnviroClean-Southwest, LLC, Metairie, LA. April 29.
- Integral Consulting, Inc., 2018a. Focused Feasibility Study Report, Operable Unit 1, Kerr-McGee Chemical Corp. – Columbus Superfund Site, August 6, 2018.
- Integral Consulting, Inc., 2018b. Final Human Health Risk Assessment, Kerr-McGee Chemical Corp. – Columbus Superfund Site, August 15, 2018. Black & Veatch comments in April and EPA/MDEQ comments in May 2018.

Integral Consulting, Inc., 2018c. Removal Action Work Plan, Pine Yard – Operable Unit 1 Removal/Kerr-McGee Chemical Corp. – Columbus Superfund Site, July 9, 2018.

Kearney/Centaur, 1988. Interim RCRA facility assessment, Kerr-McGee Chemical Corporation, Columbus, Mississippi, 39701, EPA I.D. No. MSD 990866329. Prepared for U.S. Environmental Protection Agency, Atlanta, GA. Kearney/Centaur, A Division of A.T. Kearney, Inc., Alexandria, VA. August 1988.

Ramboll Environ US Corporation (Ramboll), 2018. Kerr-McGee Chemical Company Superfund Site, Columbus, Mississippi, Baseline Ecological Risk Assessment. Prepared for EarthCon Consultants, Inc., Memphis, TN. Ramboll Environ, Portland, ME. September 10, 2018.

Tetra Tech, 2011. Final Removal Action Letter Report, Kerr-McGee Chemical (Columbus) Removal. Prepared for U.S. Environmental Protection Agency, Jackson, TN. Tetra Tech, Duluth, GA. June 14.

Tetra Tech. 2015. 14th Avenue Ditch Improvement Project, Former Kerr-McGee Wood Treating Facility, Columbus, Mississippi. Prepared for Greenfield Environmental Trust, LLC, Watertown, MA. Tetra Tech. October 13.

Tronox. 2010. Ditch Investigation & Remediation Report, Propst Park & 7th Avenue 2006-2007. Tronox, Inc. June.24.

## **PART 3: RESPONSIVENESS SUMMARY**

### **1.0 Public Review Process**

#### **1.1 Introduction**

This Responsiveness Summary (RS) provides a summary of comments and concerns received during the public comment period related to the Kerr-McGee Chemical Corporation Superfund Site, Operable Unit 1 (OU-1) Proposed Plan, and provides the responses of the US Environmental Protection Agency (EPA) to those comments and concerns.

A RS serves two functions: first, it provides the decision maker with information about the views of the public, government agencies, and potentially responsible parties (PRPs) regarding the proposed remedial action and other alternatives; and second, it documents the way in which public comments have been considered during the decision-making process and provides answers to significant comments.

Public involvement in the review of Proposed Plans is stipulated in Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and Sections 300.430(f)(3)(i)(F) and 300.430(f)(5)(iii)(B) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). These regulations provide for active solicitation of public comment.

All public comments received are addressed in this RS. The RS was prepared following guidance provided by the EPA in *Community Relations in Superfund: A Handbook* (EPA, 1992) and the *Community Relations during Enforcement Activities and Development of the Administrative Record* (EPA, 1988). The comments presented in this document have been considered in EPA's decision in the selection of an interim remedy to address contaminated soils at OU-1 of the Kerr-McGee Site.

The text of this RS explains the public review process and how comments were responded to. Appendix B provides the Comment and Response Index, which contains summaries of every comment received during the public comment period and EPA's response. The transcript of the December 13, 2018 public meeting is included as Appendix C.

#### **1.2 Public Review Process**

The EPA relies on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, the Proposed Plan for the Kerr-McGee OU-1 Superfund Site, Columbus, Mississippi was made available to the community on December 7, 2018.

The complete Administrative Record file, which contains the RI/FS report and risk assessments, upon which the Selected Interim Remedy is based, is available at the locations listed below.

## Information Repositories for the Kerr-McGee Superfund Site Administrative Record

Columbus-Lowndes Public Library  
314 7th Street North  
Columbus, Mississippi 39701  
(662) 329-5300

U.S. EPA - Region 4  
Superfund Records Center  
61 Forsyth Street., SW – MS 9T25  
Atlanta, Georgia 30303

### 1.3 Public Comment Period, Public Meeting and Availability Sessions

The public comment period is intended to gather information about the views of the public regarding both the remedial alternatives and general concerns about the site. A notice of the start of the public comment period, the public meeting date, the preferred remedy, contact information, and the availability of above-referenced documents was provided in a fact sheet distributed to the public on December 6, 2018 and published in the *Columbus Packet* on the same day.

The public comment period for the KMCC Columbus Site OU-1 Proposed Plan commenced on December 6, 2018 and continued until January 7, 2019 for a total of 30 days. During that period, a public meeting was held on December 13, 2018. Approximately 50 people, including residents, representatives from environmental firms, media, and state and local government officials, attended. A question-and-answer session followed the formal presentation at the public meeting. A complete transcript of the public meeting can be found in Appendix C of this ROD. The purpose of the meeting was to provide the community with additional information relating to the preferred alternative and answer any questions presented.

### 1.4 Receipt and Identification of Comments

Public comments on the Proposed Plan and EPA Region 4 responses were received as written comments submitted to the EPA Region 4 via USPS, e-mail and oral comments made at the public meeting.

### 1.5 Locating Responses to Comments within the Comment and Response Index

The Comment and Response Index (Appendix B) contains a complete listing of all comments and responses from the EPA. The index allows readers to find answers to specific questions they have raised and is organized as follows:

- The first column in Appendix B provides the comment.
- The second column in Appendix B provides the response to the comment.

## 2.0 References

EPA, 1988. Community Relations During Enforcement Activities and Development of the Administrative Record. Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, DC. OSWER Directive 9836.0-01A. November 1988

EPA, 1992. Community Relations in Superfund: A Handbook. Office of Emergency and Remedial Response, U.S. Environmental Protection Agency, Washington, DC. OSWER Directive 9230.0-03C. EPA 540-R-92-009. January 1992

**TABLES**

**Table 1 - Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations for Pine Yard Surface Soil (0-2ft)**

Chemical	Frequency of Detection	Minimum (detect) mg/kg	Maximum (detect) mg/kg	Mean mg/kg	UCL Method	UCL	EPC
1,1'-Biphenyl	4/36	0.984J	35	18	95% KM (Chebyshev) UCL	7.6	7.6
2-Methylnaphthalene	13/37	0.0041J	130	6.4	99% KM (Chebyshev) UCL	46	46
Benzo[a]anthracene	84/98	0.0039 J	1600	42	95% KM (Chebyshev) UCL	120	120
Benzo[a]pyrene	86/98	0.0037 J	600	21	95% KM (Chebyshev) UCL	52	52
Benzo[b]fluoranthene	88/98	0.0059 J	1100	45	95% KM (Approximate Gamma) UCL	79	79
Benzo[k]fluoranthene	83/98	0.0037 J	380	15	95% KM (Chebyshev) UCL	35	35
Chrysene	88/98	0.0047 J	1700	51	97.5% KM (Chebyshev) UCL	180	180
Dibenzofuran	14/37	0.0079 J	140	10	99% KM (Chebyshev) UCL	66	66
Dibenzo[a,h]anthracene	67/98	0.0177 J	78	3.5	95% KM (Chebyshev) UCL	8	8
Fluoranthene	90/98	0.0057 J	9700	210	99% KM (Chebyshev) UCL	1300	1300
Indeno[1,2,3-cd]pyrene	81/98	0.00902 J	240	9.1	95% KM (Chebyshev) UCL	21	21
Naphthalene	44/96	0.0039 J	660	14	95% KM (Chebyshev) UCL	49	49
Pyrene	88/98	0.0049 J	5900	140	97.5% KM (Chebyshev) UCL	560	560
Arsenic	8/11	2.5	98	14	95% KM (Chebyshev) UCL	52	52
Carbazole	14/38	0.0471 J	560	18	97.5% KM (Chebyshev) UCL	140	140
Pentachlorophenol	48/97	0.018 J	307	190	95% KM (Chebyshev) UCL	48	2.2
TEQdf	14/14	0.00000347	0.00788	27	99% Chebyshev (Mean, Sd) UCL	0.002	3.6

Source: Human Health Risk Assessment (Integral, 2018)

Table 2. Cancer Toxicity Criteria

Chemical of Potential Concern	Mutagen	Oral CSF (mg/kg-day) <sup>-1</sup>	Absorbed CSF for Dermal (mg/kg-day) <sup>-1</sup>	IUR (µg/m <sup>3</sup> ) <sup>-1</sup>	EPA WOE Cancer Guideline Description <sup>a</sup>	Source for CSF/IUR	Date of Most Recent Update
<b>Semivolatile Organic Compounds</b>							
Pentachlorophenol		4.0E-01	4.0E-01	5.1E-06	Carcinogenic to humans	IRIS/CAL EPA	9/30/2010
<b>PAHs</b>							
1,1'-Biphenyl		8.0E-03	8.0E-03	--	Suggestive evidence of carcinogenic potential	IRIS	8/27/2013
2-Methylnaphthalene		--	NA	--	--	NA	NA
Benzo[a]anthracene	x	1.0E-01	1.0E-01	6.0E-05	B2	IRIS <sup>b</sup>	1/19/2017
Benzo[a]pyrene	x	1.0E+00	1.0E+00	6.0E-04	Carcinogenic to humans	IRIS	1/19/2017
Benzo[b]fluoranthene	x	1.0E-01	1.0E-01	6.0E-05	B2	IRIS <sup>b</sup>	1/19/2017
Benzo[k]fluoranthene	x	1.0E-02	1.0E-02	6.0E-06	B2	IRIS <sup>b</sup>	1/19/2017
Chrysene	x	1.0E-03	1.0E-03	6.0E-07	B2	IRIS <sup>b</sup>	1/19/2017
Dibenzo[a,h]anthracene	x	1.0E+00	1.0E+00	6.0E-04	B2	IRIS <sup>b</sup>	1/19/2017
Dibenzofuran		--	NA	--	D	NA	NA
Fluoranthene		--	NA	--	D	NA	NA
Indeno[1,2,3-cd] pyrene	x	1.0E-01	1.0E-01	6.0E-05	B2	IRIS <sup>b</sup>	1/19/2017
Naphthalene		1.2E-01	1.2E-01	3.4E-05	C	CAL EPA	1/20/2011
Pyrene		--	NA	--	D	NA	NA
<b>Pesticides</b>							
Carbazole		2.0E-02	2E-02	4.6E-03	--	HEAST	7/1/1997
<b>Inorganics</b>							
Arsenic		1.5E+00	1.5E+00	4.3E-03	A	IRIS	6/1/1995
<b>TEQ</b>							
TEQdf		1.3E+05	1.3E+05	3.8E+01	--	Cal EPA	1/20/2011

Notes:

-- = no value available

A = human carcinogen

B2 = Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

CSF = cancer slope factor

CAL EPA = California environmental protection agency (OEHHA 2018)

D = not classifiable as to human carcinogenicity

EPA = U.S. Environmental Protection Agency

HEAST = health effects summary table (USEPA 1997)

IRIS = Integrated Risk Information System (USEPA 2018c)

IUR = inhalation unit risk

NA = not applicable

PPRTV = provisional peer reviewed toxicity values for Superfund (USEPA 2018d)

TEQdf = toxicity equivalent concentrations for dioxins and furans

WOE = weight of evidence

<sup>a</sup> Historically EPA assigned WOE categories A (known human carcinogen), B1 and B2 (probable human carcinogen), C (possible human carcinogen) and D (not classifiable as to human carcinogenicity) to compounds.

More recently EPA has applied standard hazard descriptors including "carcinogenic to humans," "likely to be carcinogenic to humans," "suggestive evidence of carcinogenic potential," "inadequate information to assess carcinogenic potential," and "not likely to be carcinogenic to humans."

<sup>b</sup> CSF based on the relative potency factor for carcinogenic polycyclic aromatic hydrocarbons provided in the RSL User's Guide (USEPA 2018a)

Table 3. Non-cancer Toxicity Criteria

Chemical of Potential Concern	Chronic Oral RfD (mg/kg-day)	Chronic RfD for Dermal	Target Organ(s) for Oral/Dermal	Chronic RfC (mg/m <sup>3</sup> )	Target Organ(s) for Inhalation	Source for RfD/RfC	Date of Most Recent Update
<b>Semi-volatile Organic Compounds</b>							
Pentachlorophenol	5.0E-03	5.0E-03	Hepatic	--	NA	IRIS	9/30/2010
<b>PAHs</b>							
1,1'-Biphenyl	5.0E-01	5.0E-01	Renal	4.0E-04	Hepatic and renal	IRIS/PPRTV	8/27/2013
2-Methylnaphthalene	4.0E-03	4.0E-03	Respiratory	--	NA	IRIS	12/22/2003
Benzo[a]anthracene	--	NA	NA	--	NA	NA	NA
Benzo[a]pyrene	3.0E-04	3.0E-04	Developmental	2.0E-06	Developmental	IRIS	1/19/2017
Benzo[b]fluoranthene	--	NA	NA	--	NA	NA	NA
Benzo[k]fluoranthene	--	NA	NA	--	NA	NA	NA
Chrysene	--	NA	NA	--	NA	NA	NA
Dibenzo[a,h]anthracene	--	NA	NA	--	NA	NA	NA
Dibenzofuran	1.0E-03	1.0E-03	Organ/body weight	--	NA	PPRTV	6/11/2007
Fluoranthene	4.0E-02	4.0E-02	Hepatic and renal	--	NA	IRIS	9/1/1990
Indeno[1,2,3-cd]pyrene	--	NA	NA	--	NA	NA	NA
Naphthalene	2.0E-02	2.0E-02	Organ/body weight	3.0E-03	Nervous, respiratory	IRIS	9/17/1998
Pyrene	3.0E-02	3.0E-02	Renal	--	NA	IRIS	9/1/1990
<b>Pesticides</b>							
Carbazole	--	NA	NA	--	NA	NA	NA
<b>Inorganics</b>							
Arsenic	3.0E-04	3.0E-04	Cardiovascular, dermal	1.5E-05	Developmental	IRIS/CAL EPA	9/1/1991
<b>TEQ</b>							
TEQdf	7.0E-10	7.0E-10	Reproductive	4.0E-08	Hepatic, reproductive, developmental, endocrine, respiratory hematopoietic	IRIS/CAL EPA	2/17/2012

Notes:

-- = no value available

ATSDR = Agency for Toxic Substances and Disease Registry (ATSDR 2017) CAL EPA = California environmental protection agency (OEHA 2018)

EPA = U.S. Environmental Protection Agency

IRIS = Integrated Risk Information System (USEPA 2018c)

NA = not applicable

PPRTV = provisional peer reviewed toxicity values for Superfund (USEPA 2018d)

RfD = reference dose

RfC = reference concentration

TEQdf = toxicity equivalent concentrations for dioxins and furans

**Table 4. Risk Characterization Summary – Carcinogens in Surface Soil (Future Resident) (2018 Human Health Risk Assessment)**

Scenario Timeframe: Future Receptor Population: Resident Receptor Age: Child and Adult											
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risks							
				Ingestion	Inhalation	Dermal	Exposure Routes Total				
Soil	Surface Soil	Pine Yard	1,1-Biphenyl	8.7E-08	NA	NA	8.7E-08				
			Benzo[a]anthracene	7.6E-05	NA	2.6E-05	10.2E-05				
			Benzo[a]pyrene	3.2E-04	NA	1.0E-04	4.2 E-04				
			Benzo[b]fluoranthene	4.9E-05	NA	1.6E-05	6.5 E-05				
			Benzo[k]fluoranthene	2.1E-06	NA	6.9E-07	2.8E-06				
			Chrysene	1.1E-06	NA	3.6E-07	1.5E-06				
			Dibenzo[a,h]anthracene	4.9E-05	NA	1.6E-05	6.5 E-05				
			Indeno[1,2,3-cd] pyrene	1.3E-05	NA	4.1E-06	1.7E-05				
			Naphthalene	8.4E-06	NA	3.1E-06	11.5E-06				
			Arsenic	6.7E-05	NA	4.9E-06	7.2E-05				
			Carbazole	4.0E-06	NA	NC	4.0E-06				
			Pentachlorophenol	1.9E-05	NA	1.4E-05	3.3E-05				
			TEQdf	1.3E-03	NA	1.1E-04	1.4E-03				
	Surface Soil Particulates	Pine Yard	Benzo[a]anthracene	NA	3.7E-09	NA	3.7E-09				
			Benzo[a]pyrene	NA	1.6E-08	NA	1.6E-08				
			Benzo[b]fluoranthene	NA	2.4E-09	NA	2.4E-09				
			Benzo[k]fluoranthene	NA	1.0E-10	NA	1.0E-10				
			Chrysene	NA	5.5E-11	NA	5.5E-11				
			Dibenzo[a,h]anthracene	NA	2.4E-09	NA	2.4E-09				
			Indeno[1,2,3-cd] pyrene	NA	6.3E-10	NA	6.3E-10				
			Naphthalene	NA	4.2E-10	NA	4.2E-10				
			Arsenic	NA	5.6E-08	NA	5.6E-08				
			Carbazole	NA	1.6E-07	NA	1.6E-07				
	Surface Soil Volatiles	Pine Yard	1,1'-Biphenyl	NA	NA	NA	NA				
			Benzo[a]anthracene	NA	1.1E-06	NA	1.1E-06				
			Naphthalene	NA	1.2E-05	NA	1.2E-05				
							TEQdf	NA	4.5E-05	NA	4.5E-05
							Soil Risk Total =				1.7E-03

Notes:  
NA = Not Available (carcinogenic toxicity criteria not available for exposure pathway)  
Source: Draft Human Health Risk Assessment (Integral, 2018)

<b>Table 5: Risk Characterization Summary – Non-carcinogens in Surface Soil (Future Resident Child) (2018 Human Health Risk Assessment)</b>							
<b>Scenario Timeframe: Future</b>							
<b>Receptor Population: Resident</b>							
<b>Receptor Age: Child</b>							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Noncarcinogenic Hazard			Exposure Routes Total
				Ingestion	Inhalation	Dermal	
Soil	Surface Soil	Pine Yard	2-Methylnaphthalene	0.15	NA	0.046	0.2
			Benzo[a]pyrene	2.2	NA	0.68	2.9
			Dibenzofuran	0.85	NA	0.26	1.1
			Fluoranthene	0.42	NA	0.13	0.6
			Pyrene	0.24	NA	0.073	0.3
			Arsenic	1.3	NA	0.16	1.5
	Surface Soil Particulates	Pine Yard	TEQdf	120	NA	8.8	128.8
			Benzo[a]pyrene	NA	0.018	NA	0.02
			Arsenic	NA	0.0023	NA	0.002
	Surface Soil Volatiles	Pine Yard	TEQdf	NA	0.00011	NA	0.0001
			1,1'-Biphenyl	NA	0.15	NA	0.2
			Naphthalene	NA	0.32	NA	0.3
			TEQdf	NA	0.08	NA	0.08
						Soil HI Total =	136

**Notes:**

NA = Not Available (Noncarcinogenic toxicity criteria not available for exposure pathway)

<b>Table 6. Risk Characterization Summary – Non-carcinogens in Surface Soil (Future Resident Adult) (2018 Human Health Risk Assessment)</b>							
<b>Scenario Timeframe: Future</b>							
<b>Receptor Population: Resident</b>							
<b>Receptor Age: Adult</b>							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Noncarcinogenic Hazard			Exposure Routes Total
				Ingestion	Inhalation	Dermal	
Soil	Surface Soil	Pine Yard	Benzo[a]pyrene	0.21	NA	0.11	0.3
			Arsenic	0.12	NA	0.026	0.1
			TEQdf	12	NA	1.5	13
	Surface Soil Particulates	Pine Yard	Benzo[a]pyrene	NA	0.018	NA	0.02
			Arsenic	NA	0.0023	NA	0.002
			TEQdf	NA	0.00011	NA	0.0001
	Surface Soil Volatiles	Pine Yard	1,1'-Biphenyl	NA	0.15	NA	0.2
			Naphthalene	NA	0.32	NA	0.3
			TEQdf	NA	0.08	NA	0.08

**Notes:**

NA = Not Available (Noncarcinogenic toxicity criteria not available for exposure pathway)

**Table 7. Risk Characterization Summary – Carcinogens in Surface Soil (Indoor Worker)  
(2018 Human Health Risk Assessment)**

Scenario Timeframe: Future  
Receptor Population: Indoor Worker  
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risks			Exposure Routes Total
				Ingestion	Inhalation	Dermal	
Soil	Surface Soil	Pine Yard	Benzo[a]anthracene	1.96E-06	NA	NA	2.0E-06
			Benzo[a]pyrene	7.9E-06	NA	NA	7.9E-06
			Benzo[b]fluoranthene	1.2E-06	NA	NA	1.2E-06
			Dibenzo[a,h]anthracene	7.1E-06	NA	NA	7.1E-06
			Arsenic	2.7E-06	NA	NA	2.7E-06
			Pentachlorophenol	2.1E-06	NA	NA	2.1E-06
			TEQdf	1.3E-04	NA	NA	1.3E-04
Soil Risk Total =						1.5E-04	

**Notes:**

NA = Not Available (carcinogenic toxicity criteria not available for exposure pathway)

**Table 8. Risk Characterization Summary – Non-carcinogens in Surface Soil (Indoor Worker)  
(2018 Human Health Risk Assessment)**

Scenario Timeframe: Future  
Receptor Population: Indoor Worker  
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Noncarcinogenic Hazard			Exposure Routes Total
				Ingestion	Inhalation	Dermal	
Soil	Surface Soil	Pine Yard	TEQdf	4.2	NA	NA	4.2
Soil HI Total =						4	

**Notes:**

NA = Not Available (Noncarcinogenic toxicity criteria not available for exposure pathway)

**Table 9: Risk Characterization Summary – Carcinogens in Surface Soil (Outdoor Worker)  
(2018 Human Health Risk Assessment)**

Scenario Timeframe: Future Receptor Population: Outdoor Worker Receptor Age: Adult							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Pine Yard	Benzo[a]anthracene	3.4E-06	NA	2.0 E-06	5.4E-06
			Benzo[a]pyrene	1.4 E-05	NA	7.9 E-06	2.2E-05
			Benzo[b]fluoranthene	2.2 E-06	NA	1.2 E-06	3.4E-06
			Dibenzo[a,h]anthracene	2.2 E-06	NA	1.2E-06	3.4E-06
			Naphthalene	1.6 E-06	NA	8.9 E-07	2.5E-06
			Arsenic	1.3 E-05	NA	2.7 E-06	1.6E-05
			Pentachlorophenol	3.7 E-06	NA	3.9 E-06	7.6E-06
	TEQdf	2.4 E-04	NA	3.1E-05	2.7E-04		
	Surface Soil Particulates	Pine Yard	None	NA	NA	NA	NA
	Surface Soil Volatiles	Pine Yard	Naphthalene	NA	2.5E-06	NA	2.5E-06
		TEQdf	NA	9.3E-06	NA	9.3E-06	
Soil Risk Total =						3.4E-04	

Notes:  
NA = Not Available (Carcinogenic toxicity criteria not available for exposure pathway)

**Table 10: Risk Characterization Summary – Non-carcinogens in Surface Soil (Outdoor Worker)  
(2018 Human Health Risk Assessment)**

Scenario Timeframe: Future Receptor Population: Outdoor Worker Receptor Age: Adult							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Noncarcinogenic Hazard			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Pine Yard	Benzo[a]pyrene	0.13	NA	0.073	0.2
			TEQdf	7.5	NA	0.95	8.5
	Surface Soil Particulates	Pine Yard	Benzo[a]pyrene	NA	0.0038	NA	0.004
			TEQdf	NA	0.000025	NA	0.00003
	Surface Soil Volatiles	Pine Yard	None	NA	NA	NA	NA
Soil HI Total =						9	

Notes:  
NA = Not Available (Noncarcinogenic toxicity criteria not available for exposure pathway)

<b>Table 11: Risk Characterization Summary – Carcinogens in Subsurface Soil (Construction Worker) (2018 Human Health Risk Assessment)</b>							
<b>Scenario Timeframe: Future</b>							
<b>Receptor Population: Construction Worker</b>							
<b>Receptor Age: Adult</b>							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			Exposure Routes Total
				Ingestion	Inhalation	Dermal	
Soil	Subsurface Soil	Pine Yard	None				
	Subsurface Soil Particulates	Pine Yard	None				
	Subsurface Soil Volatiles	Pine Yard	None				
<b>Soil Risk Total =</b>							

<b>Table 12: Risk Characterization Summary – Noncarcinogens in Subsurface Soil (Construction Worker) (2018 Human Health Risk Assessment)</b>							
<b>Scenario Timeframe: Future</b>							
<b>Receptor Population: Construction Worker</b>							
<b>Receptor Age: Adult</b>							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Noncarcinogenic Risk			Exposure Routes Total
				Ingestion	Inhalation	Dermal	
Soil	Subsurface Soil	Pine Yard	None				
	Subsurface Soil Particulates	Pine Yard	None				
	Subsurface Soil Volatiles	Pine Yard	None				
<b>Soil HI Total =</b>							

**Table 13: Risk Characterization Summary – Carcinogens in Surface Soil (Construction Worker)  
(2018 Human Health Risk Assessment)**

Scenario Timeframe: Future  
Receptor Population: Construction Worker  
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			Exposure Routes Total
				Ingestion	Inhalation	Dermal	
Soil	Surface Soil	Pine Yard	None				
	Surface Soil Particulates	Pine Yard	None				
	Surface Soil Volatiles	Pine Yard	None				
Soil Risk Total =							

**Table 14. Risk Characterization Summary – Noncarcinogens in Surface Soil (Construction Worker)  
(2018 Human Health Risk Assessment)**

Scenario Timeframe: Future  
Receptor Population: Construction Worker  
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Noncarcinogenic Hazard			Exposure Routes Total
				Ingestion	Inhalation	Dermal	
Soil	Surface Soil	Pine Yard	Benzo[a]pyrene	0.49	NA	0.2	0.7
			Dibenzofuran	0.19	NA	0.078	0.3
			Arsenic	0.29	NA	0.047	0.3
			TEQdf	27	NA	2.6	30
	Surface Soil Particulates	Pine Yard	Benzo[a]pyrene	NA	1.4	NA	1.4
			Arsenic	NA	0.19	NA	0.2
			TEQdf	NA	0.0094	NA	0.009
Surface Soil Volatiles	Pine Yard	TEQdf	NA	0.08	NA	0.08	
Soil HI Total =							33

**Notes:**

NA = Not Available (Noncarcinogenic toxicity criteria not available for exposure pathway)

<b>Table 15: Risk Characterization Summary – Carcinogens in Surface Soil (Trespasser) (2018 Human Health Risk Assessment)</b>							
Scenario Timeframe: Future							
Receptor Population: Trespasser							
Receptor Age: Older Child							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			Exposure Routes Total
				Ingestion	Inhalation	Dermal	
Soil	Surface Soil	Pine Yard	None				
Soil Risk Total =							

<b>Table 16: Risk Characterization Summary – Noncarcinogens in Surface Soil (Trespasser) (2018 Human Health Risk Assessment)</b>							
Scenario Timeframe: Future							
Receptor Population: Trespasser							
Receptor Age: Older Child							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			Exposure Routes Total
				Ingestion	Inhalation	Dermal	
Soil	Surface Soil	Pine Yard	TEQdf	3.1	NA	0.25	3
Soil HI Total =							3

Table 17 - Summary of Chemicals of Potential Ecological Concern in the Pine Yard Exposure Unit

Exposure Medium	Chemical Class	COPEC	Frequency of Detection	Minimum Detected Concentration	Maximum Detected Concentration	95 UCL	Units	Screening Value	Screening Value Type	Background Value		
Surface Water	PAHs	Total HMW PAHs	2/3	4.3	4.8	--	µg/L	NA	--	ND		
		Total PAHs	2/3	7.3	7.8	--	µg/L	NA	--	ND		
Sediment	PAHs	Anthracene	2/3	199	1,690	--	µg/kg	590	RSV	ND		
		Pyrene	3/3	52.6	51,000	--	µg/kg	700	RSV	ND		
		Benzo[ghi]perylene	3/3	25.3	3,010	--	µg/kg	1,100	RSV	ND		
		Indeno[1,2,3-cd]pyrene	3/3	26.8	3,730	--	µg/kg	1,100	RSV	ND		
		Benzo[b]fluoranthene	3/3	85.4	25,600	--	µg/kg	980	RSV	ND		
		Fluoranthene	3/3	49.6	69,700	--	µg/kg	710	RSV	ND		
		Benzo[k]fluoranthene	3/3	29.2	10,800	--	µg/kg	NA	--	ND		
		Acenaphthylene	2/3	447	2,010	--	µg/kg	450	RSV	ND		
		Chrysene	3/3	54.7	26,200	--	µg/kg	840	RSV	ND		
		Benzo[a]pyrene	3/3	38.4	12,000	--	µg/kg	970	RSV	ND		
		Dibenzo[a,h]anthracene	2/3	692	1,200	--	µg/kg	1,100	RSV	ND		
		Benzo[a]anthracene	3/3	38.9	24,700	--	µg/kg	840	RSV	ND		
		Phenanthrene	2/3	362	625	--	µg/kg	600	RSV	ND		
		Total HMW PAHs	3/3	477	254,000	--	µg/kg	NA	--	ND		
		Total LMW PAHs	2/3	2,900	5,430	--	µg/kg	NA	--	ND		
		Total PAHs	3/3	607	260,000	--	µg/kg	1,600	ESV	ND		
			SVOC	Pentachlorophenol	1/3	1,940	1,940	--	µg/kg	1,200	RSV	ND
		Surface Soil	Inorganics	Cyanide	2/4	0.0909	0.709	--	mg/kg	0.1	ESV	NA
				Mercury	4/4	0.0143	0.438	--	mg/kg	0.1	ESV	0.3
Metals	Cadmium		2/4	0.244	0.863	--	mg/kg	0.38	ESV/RSV	0.7		
	Copper		4/4	1.62	68.7	--	mg/kg	28	ESV/RSV	22		
	PAHs		Anthracene	15/28	0.0076	2,040	230	mg/kg	210	RSV	0.2	
	Pyrene		18/28	0.0202	2,540	330	mg/kg	22	RSV	0.2		
	Dibenzofuran		3/4	0.0256	145	--	mg/kg	0.15	ESV	NA		
	Benzo[b]fluoranthene		18/28	0.0186	498	82	mg/kg	38	RSV	0.2		
	Fluoranthene		19/28	0.0105	4,180	540	mg/kg	22	RSV	0.2		
	Chrysene		18/28	0.0131	1,080	130	mg/kg	2.4	RSV	0.2		
	Benzo[a]anthracene		18/28	0.00807	839	110	mg/kg	1	RSV	0.1		
	Acenaphthene		6/28	0.0254	2,120	240	mg/kg	120	RSV	0.2		
	Phenanthrene		15/28	0.00812	7,380	830	mg/kg	10	RSV	0.2		
	Fluorene		6/28	0.0176	2,360	270	mg/kg	250	RSV	0.2		
	Naphthalene		6/28	0.0285	663	72	mg/kg	5.7	RSV	0.2		
	2-Methylnaphthalene		2/4	2.45	126	--	mg/kg	16	RSV	NA		
	Total HMW PAHs		19/28	0.173	10,900	1,400	mg/kg	1.1	ESV/RSV	1.9		
	Total LMW PAHs		18/28	0.0914	14,000	1,600	mg/kg	100	RSV	1		
	Total PAHs		19/28	0.289	24,900	3,000	mg/kg	NA	--	2.9		
	SVOCs		3/4-Methylphenol	1/4	1.14	1.14	--	mg/kg	0.08	ESV	NA	
		Pentachlorophenol	8/28	0.111	271	31	mg/kg	2.1	ESV/RSV	NA		
		4-Methyl-2-pentanone	1/4	0.0112	0.0112	--	mg/kg	NA	--	NA		

Notes:

-- = not applicable  
COPEC = chemical of potential ecological concern  
ESV = ecological screening value  
HWM = high molecular weight  
LMW = low molecular weight  
NA = not available

ND = not detected  
PAH = polycyclic aromatic hydrocarbon  
RSV = refined screening value  
SVOC = semivolatile organic compound  
UCL = upper confidence limit of the mean

**Table 18 - Summary of Ecological Risk Characterization for the Pine Yard**

Receptor	Chemical Class	COC	NOAEL HQ	
			Mean	95 UCL
American Robin	Metals	Copper	2	6
		Mercury	0.9	2
	PAHs	Total LMW PAHs	4	10
	SVOCs	Pentachlorophenol	2	4
	Dioxins/Furans	Total TEQdf bird	192	1,753
Short-tailed Shrew	Metals	Antimony	3	14
		Cadmium	0.6	2
		Copper	1	4
	PAHs	Total HMW PAHs	26	64
		Total LMW PAHs	4	13
		Pentachlorophenol	1	3
	Dioxins/Furans	Total TEQdf mammal	2,127	17,951
Raccoon	PAHs	Total HMW PAHs	1	2
		Total LMW PAHs	0.6	2
	Dioxins/Furans	Total TEQdf mammal	61	518

**Notes:**

- COC = chemical of concern
- HQ = hazard quotient
- HMW = high molecular weight
- LMW = low molecular weight
- NOAEL = no-observed-adverse-effect-level
- PAH = polycyclic aromatic hydrocarbon
- SVOC = semivolatile organic compound
- TEQdf = toxicity equivalent concentrations of dioxins and furans
- UCL = upper confidence limit of the mean

**Table 19 Location-Specific ARARs and TBCs**

<b>Location-Specific ARARs and TBCs</b>			
<b>Location</b>	<b>Requirement</b>	<b>Prerequisite</b>	<b>Citation</b>
Presence of Floodplains designated as such on a map <sup>1</sup>	Shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.	Federal actions that involve potential impacts to, or take place within, floodplains – TBC	Executive Order 11988 Section 1. <i>Floodplain Management</i>
	Shall consider alternatives to avoid, to the extent possible, adverse effects and incompatible development in the floodplain. Design or modify its action in order to minimize potential harm to or within the floodplain		Executive Order 11988 Section 2.(a)(2) <i>Floodplain Management</i>
	Where possible, an agency shall use natural systems, ecosystem processes, and nature-based approaches when developing alternatives for consideration.		Executive Order 13690 Section 2 (c)
Presence of floodplain designated as such on a map	The Agency shall design or modify its actions so as to minimize <sup>2</sup> harm to or within the floodplain.	Federal actions affecting or affected by Floodplain as defined in 44 CFR § 9.4 – relevant and appropriate	44 CFR § 9.11(b)(1) <i>Mitigation</i>
	The Agency shall restore and preserve natural and beneficial floodplain values.		44 CFR § 9.11(b)(3) <i>Mitigation</i>
	The Agency shall minimize: <ul style="list-style-type: none"> <li>• Potential harm to lives and the investment at risk from base flood, or in the case of critical actions<sup>3</sup> from the 500-year flood;</li> <li>• Potential adverse impacts that action may have on floodplain values.</li> </ul>		44 CFR § 9.11(c)(1) and (3) <i>Minimization provisions</i>

<sup>1</sup> Under 44 CFR § 9.7 *Determination of proposed action's location*, Paragraph (c) Floodplain determination. One should consult the FEMA Flood Insurance Rate Map (FIRM), the Flood Boundary Floodway Map (FBFM) and the Flood Insurance Study (FIS) to determine if the Agency proposed action is within the base floodplain.

<sup>2</sup> Minimize means to reduce to smallest amount or degree possible. See 44 C.F.R. § 9.4 *Definitions*.

<sup>3</sup> See 44 C.F.R. § 9.4 *Definitions, Critical action*. Critical actions include, but are not limited to, those which create or extend the useful life of structures or facilities such as those that produce, use or store highly volatile, flammable, explosive, toxic or water-reactive materials.

**Table 19 Location-Specific ARARs and TBCs**

<b>Location-Specific ARARs and TBCs</b>			
<b>Location</b>	<b>Requirement</b>	<b>Prerequisite</b>	<b>Citation</b>
Presence of Wetlands	Shall take action to minimize the destruction, loss or degradation of wetlands and to preserve and enhance beneficial values of wetlands.	Federal actions that involve potential impacts to, or take place within, wetlands – TBC	Executive Order 11990 Section 1.(a) <i>Protection of Wetlands</i>
	Shall avoid undertaking construction located in wetlands unless: (1) there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.		Executive Order 11990, Section 2.(a) <i>Protection of Wetlands</i>
Presence of Wetlands (as defined in 44 C.F.R. § 9.4)	The Agency shall minimize <sup>4</sup> the destruction, loss or degradation of wetlands. The Agency shall preserve and enhance the natural and beneficial wetlands values.	Federal actions affecting or affected by Wetlands as defined in 44 C.F.R. § 9.4 – relevant and appropriate	44 C.F.R. § 9.11(b)(2) and (b)(4) <b>Mitigation</b>
	The Agency shall minimize: <ul style="list-style-type: none"> <li>• Potential adverse impact the action may have on wetland values.</li> </ul>		44 C.F.R. § 9.11(c)(3) <i>Minimization provisions</i>
Location encompassing Aquatic Ecosystem as defined in 40 C.F.R. § 230.3(c)	Except as provided under [CWA] section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, or if it will cause or contribute to significant degradation of the waters of the United States.	Action that involves the discharge of dredged or fill material into waters of the United States, including jurisdictional wetlands – applicable	Clean Water Act Regulations – Section 404(b) Guidelines  40 C.F.R. § 230.10(a) and (c)
	No discharge of dredged or fill material shall be permitted if it: <ol style="list-style-type: none"> <li>(1) Causes or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable State water quality standard;</li> <li>(2) Violates any applicable toxic effluent standard or prohibition under section 307 of the CWA;</li> </ol>		40 C.F.R. § 230.10(b)

<sup>4</sup> Minimize means to reduce to smallest amount or degree possible. 44 C.F.R. § 9.4 Definitions.

**Table 19 Location-Specific ARARs and TBCs**

<b>Location-Specific ARARs and TBCs</b>			
<b>Location</b>	<b>Requirement</b>	<b>Prerequisite</b>	<b>Citation</b>
	<p>(3) Jeopardizes the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973, as amended, or results in likelihood of the destruction or adverse modification of a habitat which is determined by the Secretary of Interior or Commerce, as appropriate, to be a critical habitat under the Endangered Species Act of 1973, as amended. If an exemption has been granted by the Endangered Species Committee, the terms of such exemption shall apply in lieu of this subparagraph;</p> <p>(4) Violates any requirement imposed by the Secretary of Commerce to protect any marine sanctuary designated under title III of the Marine Protection, Research, and Sanctuaries Act of 1972.</p>		
	<p>Except as provided under [CWA] section 404(b)(2), no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps [in accordance with 40 C.F.R. 230.70 <i>et seq. Actions To Minimize Adverse Effects</i>] have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.</p>		<p>Clean Water Act Regulations – Section 404(b) Guidelines</p> <p>40 C.F.R. § 230.10(d)</p>
<p>Location encompassing aquatic ecosystem as defined in 40 C.F.R. § 230.3(c)</p>	<p>Must comply with the substantive requirements of the NWP 38 General Conditions, as appropriate, any regional or case-specific conditions recommended by the Corps District Engineer, after consultation.</p> <p><i>NOTE: Although permits are not required per CERCLA Section 121(e)(1), consultation with the USACE recommended to determine whether any adverse impacts not covered by the permit that may require mitigation. Such mitigation would be performed as part of the remedial action.</i></p>	<p>On-site CERCLA action conducted by Federal agency that involves the discharge of dredged or fill material into waters of the United States, including jurisdictional wetlands – relevant and appropriate</p>	<p>Nation Wide Permit (38) <u>Cleanup of Hazardous and Toxic Waste</u></p> <p>[33 C.F.R. § 323.3(b) requires EPA to obtain authorization under general permit]</p>

ARAR = Applicable or Relevant and Appropriate Requirement  
CWA = Clean Water Act  
C.F.R. = Code of Federal Regulations

TBC = To Be Considered  
USACE = United States Army Corps of Engineers

Table 20 Action-specific ARARs and TBCs

Action	Requirements	Prerequisite	Citation
<b>General Construction Standards – All Land Disturbing Activities</b>			
Activities causing storm water runoff (e.g., clearing, grading, excavation)	Implement good construction management techniques in accordance with the substantive requirements for permits issued pursuant to 40 CFR § 122.26(c) – storm water discharges associated with industrial activity <u>or</u> under a General Permit.  <i>NOTE:</i> Site has NPDES permit that includes requirements for discharges of storm water associated with industrial activity. EPA is currently operating the wastewater treatment system and monitoring discharges of effluent (including contaminated storm water) within the parameters of the permit.	Dewatering or storm water discharges associated with construction activity disturbing one or more acres as defined in 40 CFR 122.26(b)(15) – applicable	40 CFR Part § 122.26(c)(1)
	Shall provide a narrative description of: (A) The location (including a map) and the nature of the construction activity; (B) The total area of the site and the area of the site that is expected to undergo excavation; (C) Proposed measures, including BMPs to control stormwater discharges during construction, including a brief description of applicable State and local erosion and sediment control requirements; (D) Proposed measures to control pollutants in storm water discharges that will occur after construction operations have been completed, including a brief description of applicable State or local erosion and sediment control requirements; (E) Estimate of the runoff coefficient of the site and the increase in impervious area after the construction is completed, the nature of fill material and existing data describing the soil or the quality of the discharge; and (F) The name of the receiving water.		40 CFR Part § 122.26(c)(1)(ii)

**Table 20 Action-specific ARARs and TBCs**

Action	Requirements	Prerequisite	Citation
Activities causing storm water runoff (e.g., clearing, grading, excavation) <i>cont.</i>	You must design, install, and maintain stormwater controls required in Parts 2.2 and 2.3 to minimize the discharge of pollutants in stormwater from construction activities.  Must develop a Storm Water Pollution Prevention Plan (SWPPP) consistent with the requirements in Part 7 in the EPA 2017 Construction General Permit.  <i>NOTE:</i> Under CERCLA § 121(e)(1) permits are not required for on-site response actions. However, compliance with the substantive requirements in the EPA 2107 Construction General Permit (determined to be TBC) is recommended to ensure management of stormwater in order to prevent erosion or unauthorized discharges.	Dewatering or storm water discharges associated with construction activity disturbing one or more acres as defined in 40 CFR 122.26(b)(15) – <b>TBC</b>	2017 EPA NPDES General Permit for Discharges from Construction Activities  <a href="https://www.epa.gov/npdes/epas-2017-construction-general-permit-cgp-and-related-documents">https://www.epa.gov/npdes/epas-2017-construction-general-permit-cgp-and-related-documents</a>
Activities causing fugitive dust emissions	Shall not cause, allow, or permit the emission of particles, or any contaminants in sufficient amounts or of such duration from any process as to be injurious to humans, animals, plants, or property, or to create a condition of air pollution.	Fugitive emissions from construction operations, grading, or the clearing of land – <b>applicable</b>	MDEQ Regulation APC-S-1, Section 3, Paragraph 3

**Table 20 Action-specific ARARs and TBCs**

<b>Action</b>	<b>Requirements</b>	<b>Prerequisite</b>	<b>Citation</b>
<i><b>Waste Generation, Characterization – Primary waste (e.g., excavated soils and debris)<sup>1</sup></b></i>			
Characterization of <i>solid waste</i> (all primary and secondary wastes)	Must determine if solid waste is hazardous waste or if waste is excluded under 40 CFR § 261.4; and Must determine if waste is listed as a hazardous waste under 40 CFR Part 261.	Generation of solid waste as defined in 40 CFR § 261.2 – applicable	40 CFR § 262.11(a) and (b)
	Must determine whether the waste is (characteristic waste) identified in subpart C of 40 CFR part 261 by either: <ul style="list-style-type: none"> <li>• Testing the waste according to the methods set forth in subpart C of 40 CFR part 261, or according to an equivalent method approved by the Administrator under 40 CFR 260.21; or</li> <li>• Applying knowledge of the hazard characteristic of the waste in light of the materials or the processes used.</li> </ul>		40 CFR § 262.11(c)(1) and (2)
	Must refer to 40 CFR Parts §§ 261, 262, 264, 265, 266, 268, and 273 for possible exclusions or restrictions pertaining to management of the specific waste.	Generation of solid waste that is determined to be hazardous – applicable	40 CFR § 262.11(d)
Characterization of <i>hazardous waste</i> (all primary and secondary wastes)	Must obtain a detailed chemical and physical analysis on a representative sample of the waste(s), which at a minimum contains all the information that must be known to treat, store, or dispose of the waste in accordance with pertinent sections of 40 CFR §§ 264 and 268	Generation of RCRA hazardous waste for storage, treatment, or disposal – applicable	40 CFR § 264.13(a)(1)

<sup>1</sup> The State of Mississippi incorporates by reference the federal regulations governing hazardous waste generation, characterization, segregation, and storage. See MDEQ Regulations HW-1 (Sept. 29, 2008). Accordingly, only the federal regulations are cited in this table.

**Table 20 Action-specific ARARs and TBCs**

Action	Requirements	Prerequisite	Citation
<p>Determinations for management of hazardous waste</p>	<p>Must determine each EPA Hazardous Waste Number (waste code) applicable to the waste in order to determine the applicable treatment standards under 40 CFR 268 <i>et seq.</i></p> <p>This determination may be made concurrently with the hazardous waste determination required in Sec. 262.11 of this chapter.</p> <p><i>NOTE:</i> For purposes of part 268, the waste will carry the code any applicable listed waste (40 CFR 261, subpart D). In addition, where the waste exhibits a characteristic, the wastes will carry one or more characteristic codes (40 CFR 261, subpart C).</p>	<p>Generation of RCRA hazardous waste for storage, treatment, or disposal – applicable</p>	<p>40 CFR § 268.9(a)</p>
	<p>Must determine the underlying hazardous constituents [as defined in 40 CFR § 268.2(i)] in the characteristic waste.</p>	<p>Generation of RCRA characteristic hazardous waste (and is not D001 non-wastewaters treated by CMBST, RORGS, or POLYM of Section 268.42 Table 1) for storage, treatment or disposal – applicable</p>	<p>40 CFR § 268.9(a)</p>
	<p>A generator of hazardous waste must determine if the waste has to be treated before it can be disposed. This is done by determining if the hazardous waste meets the treatment standards in 40 CFR 268.40, 268.45, or 268.49 by testing in accordance with prescribed methods or use of generator knowledge of waste.</p> <p><i>NOTE:</i> This determination can be made concurrently with the hazardous waste determination required in 40 CFR § 262.11.</p>	<p>Generation of hazardous waste for storage, treatment or disposal – applicable</p>	<p>40 CFR § 268.7(a)</p>

**Table 20 Action-specific ARARs and TBCs**

<b>Action</b>	<b>Requirements</b>	<b>Prerequisite</b>	<b>Citation</b>
Characterization of remediation wastes	Obtain a detailed chemical and physical analysis of a representative sample of the hazardous remediation wastes to be managed at the site. At a minimum, the analysis must contain all of the information which must be known to treat, store or dispose of the waste according to this part and part 268 of this chapter and must be kept up to date.	Management of remediation wastes at facility that does not have a RCRA permit – applicable	40 CFR § 264.1(j)(2)
<i>Waste Storage – Primary waste (e.g., excavated soils)<sup>2</sup></i>			
Temporary on-site storage of hazardous waste in containers	<p>A generator may accumulate hazardous waste at the facility provided that:</p> <ul style="list-style-type: none"> <li>• waste is placed in containers that comply with 40 CFR §§ 265.171-173; and</li> <li>• the date upon which accumulation begins is clearly marked and visible for inspection on each container;</li> <li>• container is marked with the words “hazardous waste” or</li> </ul>	Accumulation of RCRA hazardous waste on-site as defined in 40 CFR § 260.10 – applicable	<p>40 CFR § 262.34(a);</p> <p>40 CFR § 262.34(a)(1)(i)</p> <p>40 CFR § 262.34(a)(2) and (3)</p>
	<ul style="list-style-type: none"> <li>• container may be marked with other words that identify contents</li> </ul>	Accumulation of 55 gals. or less of RCRA hazardous waste or 1 Qt. of acutely hazardous waste at or near any point of generation – applicable	40 CFR § 262.34(c)(1)
Use and management of hazardous waste in containers	If container is not in good condition or if it begins to leak, must transfer waste into container in good condition	Storage of RCRA hazardous waste in containers – applicable	40 CFR § 265.171
	Use container made with lined materials compatible with waste to be stored so that the ability of the container is not impaired		40 CFR § 265.172

<sup>2</sup> The State of Mississippi incorporates by reference the federal regulations governing waste generation, characterization, segregation, and storage. See MDEQ Regulations HW-1 (Sept. 29, 2008). Accordingly, only the federal regulations are cited in this table.

**Table 20 Action-specific ARARs and TBCs**

Action	Requirements	Prerequisite	Citation
	Keep containers closed during storage, except to add/remove waste		40 CFR § 265.173(a)
	Open, handle, and store containers in a manner that will not cause containers to rupture or leak		40 CFR § 265.173(b)
Storage of hazardous waste in a container area	Area must have a containment system designed and operated in accordance with 40 CFR § 264.175(b)	Storage of RCRA hazardous waste in containers <i>with free liquids</i> – applicable	40 CFR § 264.175(a)
	Area must be sloped or otherwise designed and operated to drain liquid from precipitation, or Containers must be elevated or otherwise protected from contact with accumulated liquid	Storage of RCRA hazardous waste in containers that do not contain free liquids (other than F021, F022, F023, F026 and F027) – applicable	40 CFR § 264.175(c)
Closure performance standard for RCRA container storage unit	<p>Must close the facility (e.g., container storage unit) in a manner that:</p> <ul style="list-style-type: none"> <li>• minimizes the need for further maintenance;</li> <li>• controls, minimizes or eliminates to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or the atmosphere; and</li> <li>• complies with the closure requirements of subpart, but not limited to, the requirements of 40 CFR § 264.178 for containers.</li> </ul>	Storage of RCRA hazardous waste in containers – applicable	40 CFR § 264.111

**Table 20 Action-specific ARARs and TBCs**

<b>Action</b>	<b>Requirements</b>	<b>Prerequisite</b>	<b>Citation</b>
<p>Closure of RCRA container storage unit</p>	<p>At closure, all hazardous waste and hazardous waste residues must be removed from the containment system. Remaining containers, liners, bases, and soils containing or contaminated with hazardous waste and hazardous waste residues must be decontaminated or removed.</p> <p>[Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with 40 CFR § 261.3(d) of this chapter that the solid waste removed from the containment system is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of parts 262 through 266 of this chapter].</p>	<p>Storage of RCRA hazardous waste in containers in a unit with a containment system – applicable</p>	<p>40 CFR § 264.178</p>
<p>Temporary on-site storage of remediation waste in staging piles (e.g., excavated soils, debris)</p>	<p>Must be located within the contiguous property under the control of the owner/operator where the wastes are to be managed in the staging pile originated.</p>	<p>Accumulation of <i>non-flowing hazardous remediation waste</i> (or remediation waste otherwise subject to land disposal restrictions) as defined in 40 CFR § 260.10 – applicable</p>	<p>40 CFR § 264.554(a)(1)</p>

**Table 20 Action-specific ARARs and TBCs**

Action	Requirements	Prerequisite	Citation
Temporary on-site storage of remediation waste in staging piles (e.g., excavated soils, debris)	May be temporarily stored (including mixing, sizing, blending, or other similar physical operations intended to prepare the wastes for subsequent management or treatment) at a facility if used only during remedial operations provided that the staging pile: <ul style="list-style-type: none"> <li>• must facilitate a reliable, effective, and protective remedy;</li> <li>• must be designed to prevent or minimize releases of hazardous wastes and constituents into the environment, and minimize or adequately control cross-media transfer as necessary to protect human health and the environment (e.g., use of liners, covers, run-off/run-on controls)</li> </ul>		40 CFR § 264.554(a)(1)(i) and (ii)
Operation of a staging pile	The staging pile must not operate for more than two years, except when the Director grants an operating term extension under 40 CFR § 264.554(i).  <i>NOTE:</i> Must measure the 2-year limit (or other operating term specified) from first time remediation waste placed in staging pile.	Accumulation of <i>non-flowing hazardous remediation waste</i> (or remediation waste otherwise subject to land disposal restrictions) as defined in 40 CFR § 260.10 – applicable	40 CFR § 264.554(d)(1)(iii)
	The Director may allow a staging pile to operate for up to two years after the hazardous waste is first placed into the pile. Must not use staging pile longer than the length of time designated by the Director in the permit, closure plan, or order (“operating term”), except as provided in paragraph (i) of this section.  <i>NOTE:</i> Additional time limits for storage will be justified and documented in an ESD, ROD Amendment issued by EPA.	Accumulation of <i>non-flowing hazardous remediation waste</i> (or remediation waste otherwise subject to land disposal restrictions) as defined in 40 CFR § 260.10 – applicable	40 CFR §264.554(h)

**Table 20 Action-specific ARARs and TBCs**

Action	Requirements	Prerequisite	Citation
	<p>The Director may grant one operating term extension of up to 180 days beyond the operating term limit contained in the permit, closure plan, or order. To justify to the Director the need for the extension, you must provide sufficient and accurate information to enable the Director to determine that continued use of the staging pile:</p> <ul style="list-style-type: none"> <li>(i) Will not pose a threat to human health and the environment; and</li> <li>(ii) Is necessary to ensure timely and efficient implementation of the remedial actions at the facility.</li> </ul>		40 CFR §264.554(h)(i)(1)
<p>Temporary on-site storage of remediation waste in staging piles (e.g., excavated soils, debris)</p>	<p>In setting standards and design criteria, must consider the following factors:</p> <ul style="list-style-type: none"> <li>• length of time pile will be in operation;</li> <li>• volumes of waste intended to store in pile;</li> <li>• physical and chemical characteristics of waste to be stored in unit</li> <li>• potential for releases from the unit hydrogeological and other relevant environmental conditions at the facility that may influence the migration of any potential releases; and</li> <li>• potential for human and environmental exposure to potential releases from the unit</li> </ul>	<p>Accumulation of <i>non-flowing hazardous remediation waste</i> (or remediation waste otherwise subject to land disposal restrictions) as defined in 40 CFR § 260.10 – applicable</p>	40 CFR § 264.554(d)(2)(i)-(vi)

**Table 20 Action-specific ARARs and TBCs**

Action	Requirements	Prerequisite	Citation
Temporary on-site storage of remediation waste in staging piles (e.g., excavated soils, debris)	Must not place ignitable or reactive remediation waste in a staging pile unless the remediation waste has been treated, rendered, or mixed before placed in the staging pile so that: <ul style="list-style-type: none"> <li>• the remediation waste no longer meets the definition of ignitable or reactive under 40 CFR § 261.21 or 40 CFR § 261.23; and</li> <li>• you have complied with 40 CFR §264.17(b); or</li> </ul> Must manage the remediation waste to protect it from exposure to any material or condition that may cause it to ignite or react.	Storage of “ignitable” or “reactive” remediation waste in staging pile – <b>applicable</b> .	40 CFR § 264.554(e)  40 CFR § 264.554(e)(1)(i) 40 CFR § 264.554(e)(1)(ii)  40 CFR § 264.554(e)(2)
	Must not place in the same staging pile unless you have complied with 40 CFR § 264.17(b).	Storage of “incompatible” remediation waste (as defined in 40 CFR 260.10) in staging pile – <b>applicable</b>	40 CFR § 264.554(f)(1)
	Must separate the incompatible waste of materials, or protect them from one another using a dike, berm, wall, or other device.	Staging pile of remediation waste stored nearby to incompatible wastes or materials in containers, other piles, open tanks or land disposal units – <b>applicable</b> .	40 CFR § 264.554(f)(2)
	Must not pile remediation waste on same base where incompatible wastes or materials were previously piled unless the base has been sufficiently decontaminated in compliance with 40 CFR § 264.17(b)		40 CFR § 264.554(f)(3)
Closure of staging pile of remediation waste	Must be closed within 180 days after the operating term by removing or decontaminating all remediation waste, contaminated containment system components, and structures and equipment contaminated with waste and leachate.	Storage of remediation waste in staging pile in <i>previously contaminated area</i> – <b>applicable</b>	40 CFR § 264.554(j)(1)

Table 20 Action-specific ARARs and TBCs

Action	Requirements	Prerequisite	Citation
	Must decontaminate contaminated sub-soils in a manner that EPA determines will protect human health and the environment.		40 CFR § 264.554(j)(2)
	Must be closed within 180 days after the operating term according to 40 CFR §§ 264.258(a) and 264.111 or 265.258(a) and § 265.111.	Storage of remediation waste in staging pile <i>in uncontaminated area</i> – applicable	40 CFR § 264.554(k)
Air emissions from RCRA waste storage units	The requirements of RCRA Subpart CC – <i>Air Emission Standards for Tanks, Surface Impoundments, and Containers</i> do not apply to a waste management unit that is solely used for on-site treatment or storage of hazardous waste that is placed in the unit as result of implementing remedial activities required under RCRA § 3004(u) and (v), or § 3008(h), or CERCLA authorities.	Air pollutant emissions with volatile organics from a hazardous waste tank, surface impoundment, or container – <b>relevant and appropriate</b>	40 CFR § 264.1080(a)(5)
<b>Waste Treatment and Disposal – Primary waste (e.g., excavated soils and debris)<sup>3</sup></b>			
Disposal of RCRA hazardous waste in land-based unit	May be land disposed if it meets the requirements in the table “Treatment Standards for Hazardous Waste” at 40 CFR § 268.40 before land disposal.	Land disposal, as defined in 40 CFR § 268.2, of restricted RCRA waste – <b>applicable</b>	40 CFR § 268.40(a)
	All underlying hazardous constituents [as defined in 40 CFR § 268.2(i)] must meet the Universal Treatment Standards, found in 40 CFR § 268.48 Table UTS prior to land disposal.	Land disposal of restricted RCRA characteristic wastes (D001-D043) that are not managed in a wastewater treatment system that is regulated under the CWA, that is CWA equivalent, or that is injected into a Class I nonhazardous injection well – <b>applicable</b>	40 CFR § 268.40(e)

<sup>3</sup> The State of Mississippi incorporates by reference the federal regulations governing land disposal restrictions. See MDEQ Regulations HW-1 (Sept. 29, 2008). Accordingly, only the federal regulations are cited in this table.

**Table 20 Action-specific ARARs and TBCs**

Action	Requirements	Prerequisite	Citation
	<p>To determine whether a hazardous waste identified in this section exceeds the applicable treatment standards of 40 CFR § 268.40, the initial generator must test a sample of the waste extract or the entire waste, depending on whether the treatment standards are expressed as concentration in the waste extract or waste, or the generator may use knowledge of the waste.</p> <p>If the waste contains constituents (including UHCs in the characteristic wastes) in excess of the applicable UTS levels in 40 CFR § 268.48, the waste is prohibited from land disposal, and all requirements of part 268 are applicable, except as otherwise specified.</p>	<p>Land disposal of RCRA toxicity characteristic wastes (D004–D011) that are newly identified (i.e., wastes, soil, or debris identified by the TCLP but not the Extraction Procedure) – <b>applicable</b></p>	<p>40 CFR § 268.34(f)</p>
<p>Disposal of RCRA <i>–hazardous waste soil</i> in a land-based unit</p>	<p>Must be treated according to the alternative treatment standards of 40 CFR § 268.49(c) <u>or</u> according to the UTSs specified in 40 CFR § 268.48 applicable to the listed and/or characteristic waste contaminating the soil prior to land disposal</p>	<p>Land disposal, as defined in 40 CFR 268.2, of restricted hazardous soils – <b>applicable</b></p>	<p>40 CFR § 268.49(b)</p>
<p>Disposal of RCRA <i>hazardous waste debris</i> in a land-based unit (i.e., landfill)</p>	<p>Must be treated prior to land disposal as provided in 40 CFR § 268.45(a)(1)–(5) unless EPA determines under 40 CFR 261.3(f)(2) that the debris no longer contaminated with hazardous waste <u>or</u> the debris is treated to the waste-specific treatment standard provided in 40 CFR 268.40 for the waste contaminating the debris.</p>	<p>Land disposal, as defined in 40 CFR 268.2, of restricted RCRA hazardous debris – <b>applicable</b></p>	<p>40 CFR § 268.45(a)</p>

Table 20 Action-specific ARARs and TBCs

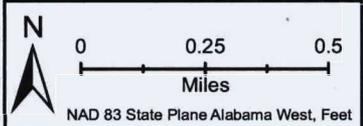
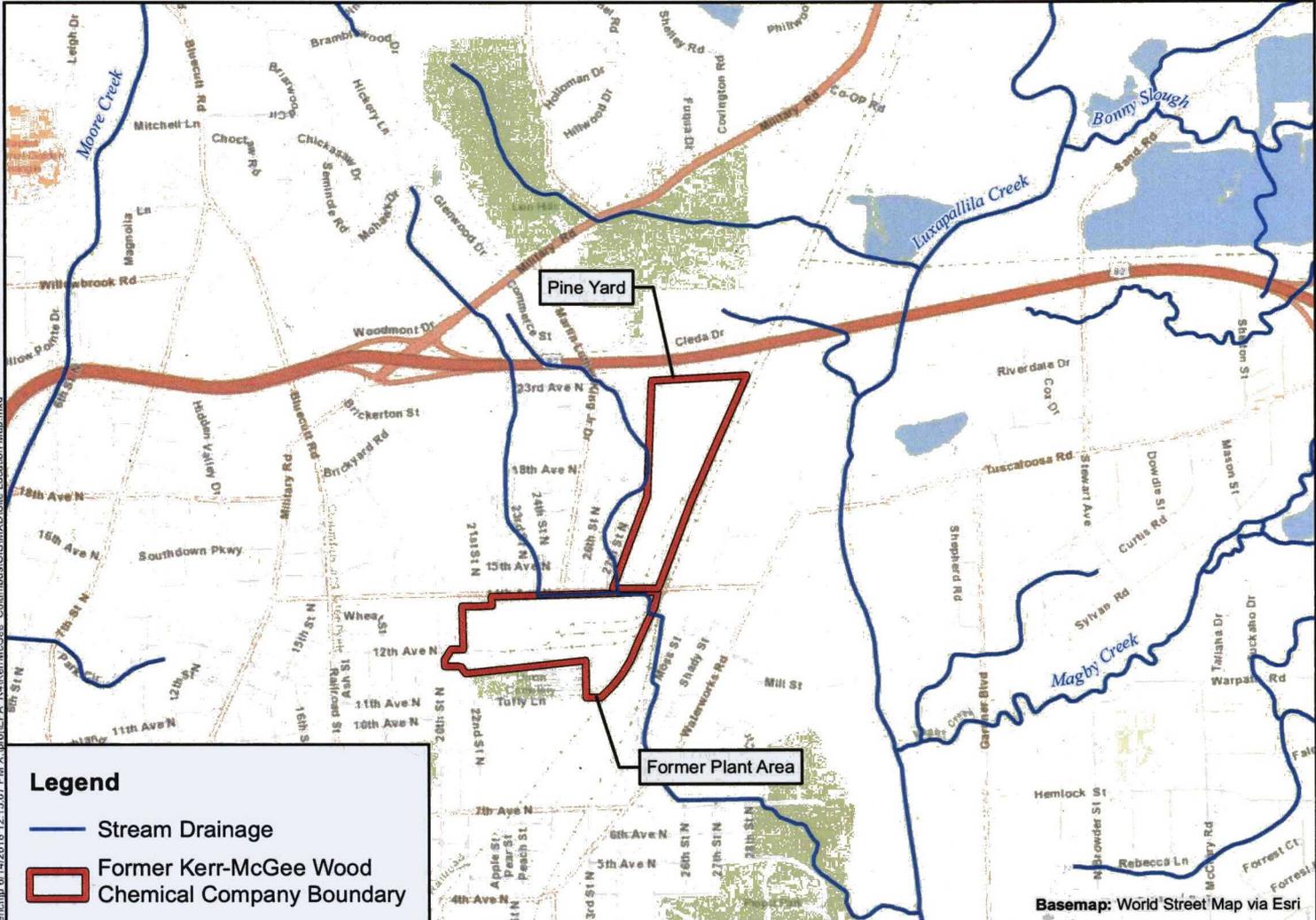
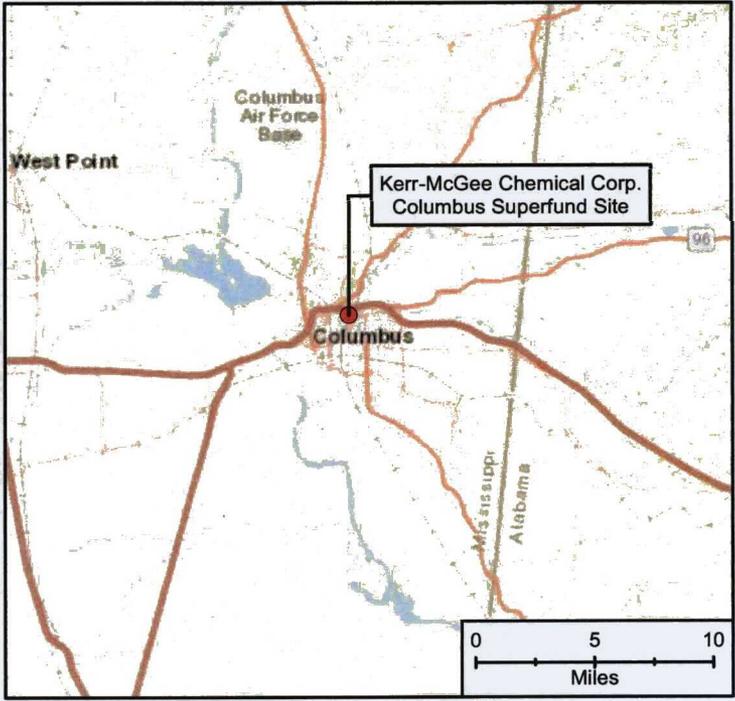
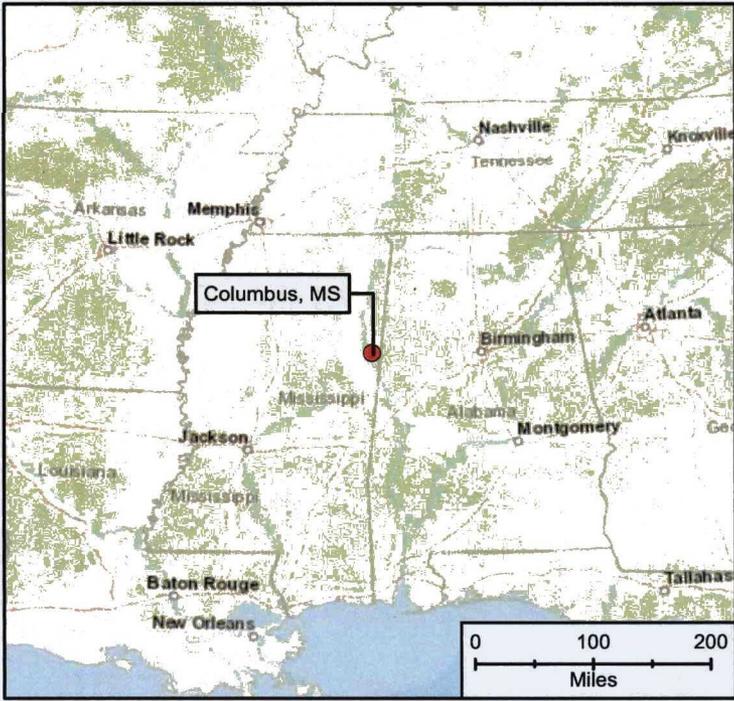
Action	Requirements	Prerequisite	Citation
<b>Waste Transportation</b>			
Transportation of hazardous waste <i>on-site</i>	The generator manifesting requirements of 40 CFR §§ 262.20-262.32(b) do not apply. Generator or transporter must comply with the requirements set forth in 40 CFR §§ 263.30 and 263.31 in the event of a discharge of hazardous waste on a private or public right-of-way.	Transportation of hazardous wastes on a public or private right-of-way within or along the border of contiguous property under the control of the same person, even if such contiguous property is divided by a public or private right-of-way – <b>applicable</b>	40 CFR § 262.20(f)
Transportation of hazardous waste <i>off-site</i>	Must comply with the generator requirements of 40 CFR §§ 262.20-262.23 for manifesting, § 262.30 for packaging, § 262.31 for labeling, § 262.32 for marking, § 262.33 for placarding, §§ 262.40 and 262.41(a) for record keeping requirements, and § 262.12 to obtain EPA ID number.	Preparation and initiation of shipment of RCRA hazardous waste off-site – <b>applicable</b>	40 CFR § 262.10(h)
Transportation of waste samples	Are not subject to any requirements of 40 CFR Parts 261 through 268 or 270 when: <ul style="list-style-type: none"> <li>the sample is being transported to a laboratory for the purpose of testing; or</li> <li>the sample is being transported back to the sample collector after testing.</li> </ul>	Samples of solid waste or a sample of water, soil for purpose of conducting testing to determine its characteristics or composition – <b>applicable</b>	40 CFR § 261.4(d)(1) 40 CFR § 261.4(d)(1)(i) 40 CFR § 261.4(d)(1)(ii)
	In order to qualify for the exemption in paragraphs (d)(1)(i) and (ii), a sample collector shipping samples to a laboratory must: <ul style="list-style-type: none"> <li>Comply with U.S. DOT, U.S. Postal Service, or any other applicable shipping requirements.</li> <li>Assure that the information provided in (1) thru (5) of this section accompanies the sample.</li> <li>Package the sample so that it does not leak, spill, or vaporize from its packaging.</li> </ul>		40 CFR § 261.4(d)(2)(i) 40 CFR § 261.4(d)(2)(i)(A) 40 CFR § 261.4(d)(2)(i)(B)

**Table 20 Action-specific ARARs and TBCs**

Action	Requirements	Prerequisite	Citation
Transportation of <i>hazardous materials</i>	Shall be subject to and must comply with all applicable provisions of the HMTA and HMR at 49 CFR §§ 171-180 related to marking, labeling, placarding, packaging, emergency response, etc.	Any person who, under contract with a department or agency of the federal government, transports "in commerce," or causes to be transported or shipped, a hazardous material – <b>applicable</b>	49 CFR § 171.1(c)

- ARAR = applicable or relevant and appropriate requirement
- EPA = Environmental Protection Agency
- ESD = Explanation of Significant Differences
- CFR = Code of Federal Regulations
- CWA = Clean Water Act of 1972
- DEACT = deactivation
- DOT = U.S. Department of Transportation
- EPA = U.S. Environmental Protection Agency
- HMR = Hazardous Materials Regulations
- HMTA = Hazardous Materials Transportation Act
- MDEQ = Mississippi Department of Environmental Quality
- NPDES = National Pollution Discharge Elimination System
- POTW = publicly owned treatment works
- RCRA = Resource Conservation and Recovery Act of 1976
- TBC = to be considered
- UTS = Universal Treatment Standard

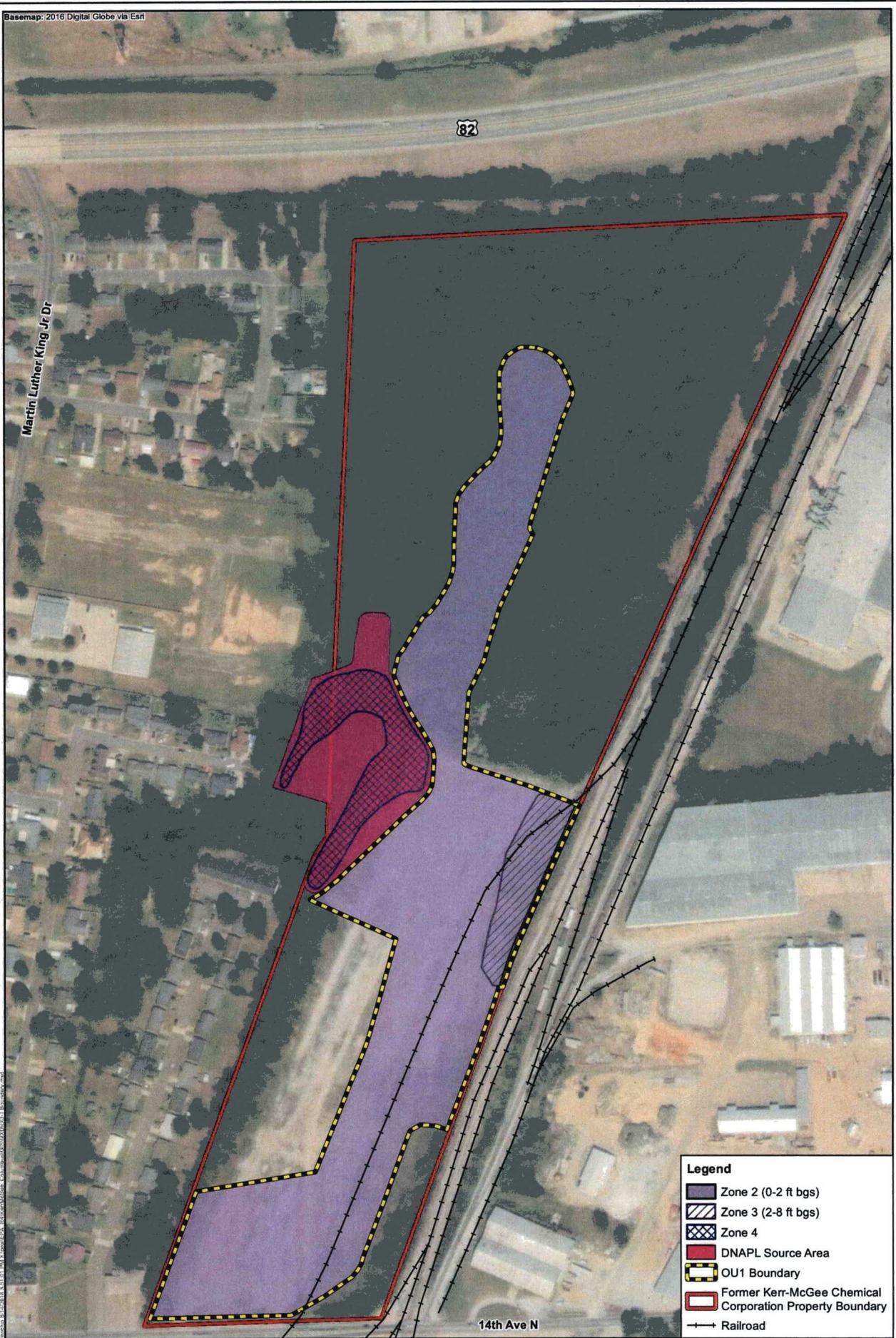
**FIGURES**



**Site Location Map**  
**Kerr-McGee Chemical Corp. - Columbus Superfund Site**  
**Columbus, Lowndes County, Mississippi**

**Figure**  
**1**

rchp 6/14/2018 12:15:07 PM X:\proj\IEPA\_R4\KerrMcGee\_Columbus\GIS\MXD\Site\_Location\_Map.mxd



**Legend**

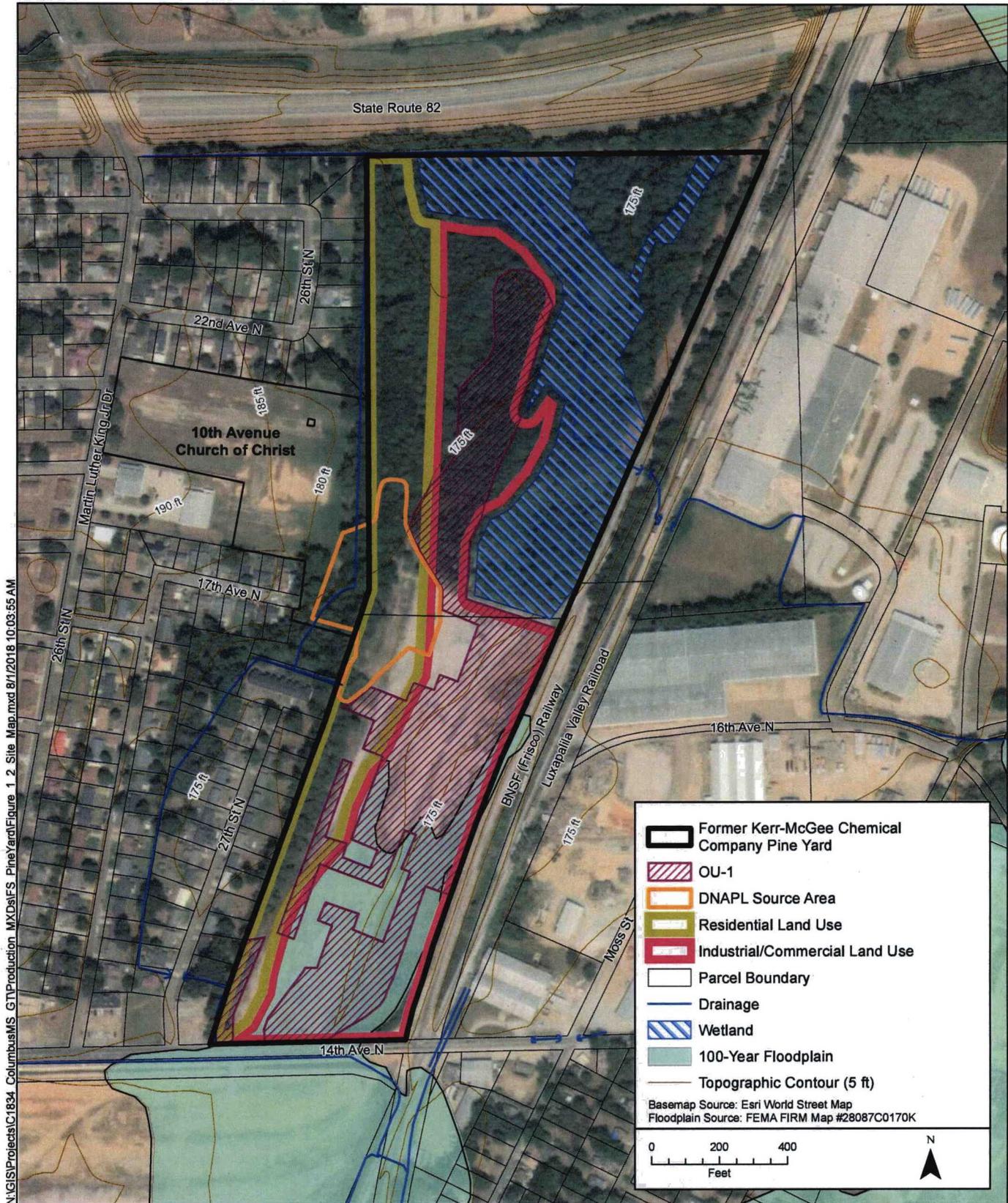
-  Zone 2 (0-2 ft bgs)
-  Zone 3 (2-8 ft bgs)
-  Zone 4
-  DNAPL Source Area
-  OU-1 Boundary
-  Former Kerr-McGee Chemical Corporation Property Boundary
-  Railroad

 **BLACK & VEATCH**

N 0 100 200 400  
 Feet  
 NAD83 Stateplane MS, East Feet

OU-1 Boundary  
 Kerr-McGee Chemical Corp. - Columbus Superfund Site  
 Columbus, Lowndes County, Mississippi

Figure  
 2



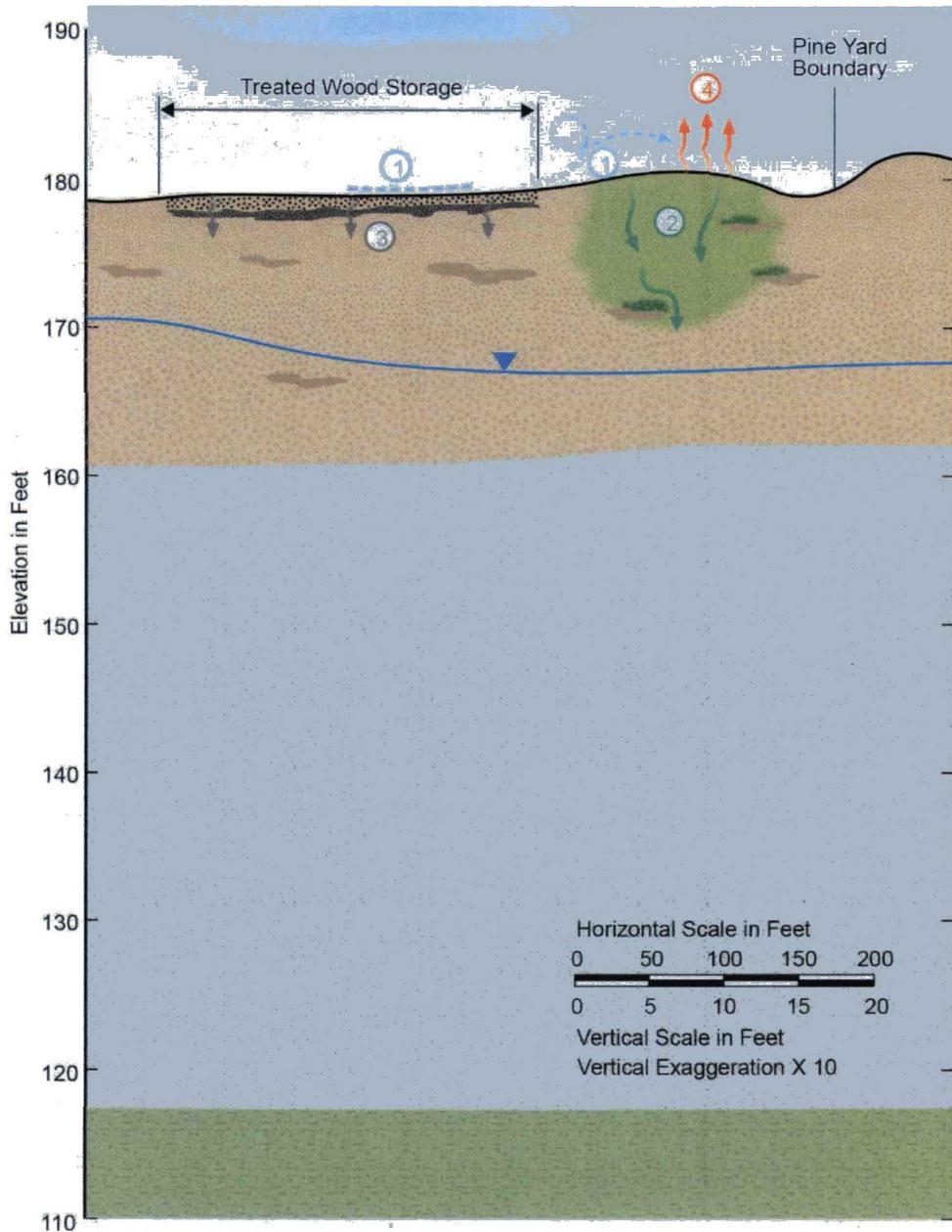
N:\GIS\Projects\1834\_Columbus\MS\_GIT\Production\_MXD\Site\_PineYard\Figure 1\_2\_Site\_Map.mxd 8/1/2018 10:05:55 AM

Prepared for:  Greenfield Environmental Multistate Trust, LLC  
Trustee of the Multistate Environmental Response Trust

Prepared by:  integral

**Figure 3.**  
Pine Yard Features and Adjoining Properties  
Ker-McGee Chemical Corp - Columbus Superfund Site  
Columbus, Mississippi  
Focused Feasibility Study Report, OU1  
August 2018





Evidence of Contamination:

- Possible Residual
- Creosote Stained Soils
- Water Table

- Alluvium
- Eutaw Formation
- McShan Formation
- Low Permeability Lens
- Creosote-Impacted Asphalt-Like Material

Potential Transport Mechanisms:

- Erosion and Transport by Wind/Water
- Dissolution and Transport with Rain Infiltration
- Leaching from Asphalt-Like Material with Rain Infiltration
- Volatilization (Naphthalene)

Note:  
Hydrogeology, extent of contamination, and contaminant transport mechanisms as shown are conceptual representations of site conditions informed by available data.

8/1/2018

Prepared for: Greenfield Environmental Multistate Trust, LLC  
Trustee of the Multistate Environmental Response Trust

Prepared by: integral

**Figure 5.** Conceptual Site Model of COC Transport Mechanisms for OU-1 Kerr-McGee Chemical Corp. – Columbus Superfund Site Columbus, Mississippi Focused Feasibility Study Report, OU-1 August 2018

**APPENDIX A**  
**STATE OF MISSISSIPPI CONCURRENCE**



STATE OF MISSISSIPPI  
PHIL BRYANT  
GOVERNOR  
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY  
GARY C. RIKARD, EXECUTIVE DIRECTOR

November 21, 2018

Mr. Charles King  
Remedial Project Manager  
US EPA Region 4  
61 Forsyth Street, SW  
Atlanta, GA 30303-8960

Re: **Draft PROPOSED PLAN** dated November 2018  
**Kerr McGee Columbus, OU1**  
**Columbus, Lowndes County, Mississippi**

Dear Mr. King:

The Mississippi Department of Environmental Quality (MDEQ) has reviewed the above referenced draft of the proposed plan as submitted by EPA on November 5, 2018. MDEQ concurs with the selection of the Preferred Remedial Alternative #2: Removal and Off-Site Disposal. This concurrence is contingent upon review of public comments during the upcoming public comment period. Please contact me at 601-961-5240 if you have any questions regarding this matter.

Sincerely,

A handwritten signature in blue ink, appearing to read "Thomas L. Wallace".

Thomas L. Wallace, P.E.  
Branch Chief – GARD I

**APPENDIX B**  
**COMMENT AND RESPONSE INDEX**

**COMMENT AND RESPONSE INDEX**

<b>Comment</b>	<b>EPA's Response to Comment</b>
<p><b>Attendee : Are they going to be able to get all of the creosote out of the Pine Yard?</b></p>	<p>Contaminated soil that exceeded the cleanup goals within the top two feet will be removed. Soils beneath the water table (saturated soils) containing dense non-aqueous-phase liquid (DNAPL) consisting of wood treating chemicals (creosote) that could be a primary source of groundwater contamination in the Pine Yard will not be addressed under this remedial action but will be addressed by a separate remedial action as a separate Operable Unit (OU).</p>
<p><b>Attendee: What is the post remediation land use for the Pine Yard?</b></p>	<p>Input was received from the local citizens on the potential reuse options for OU1. The results that came from the surveys were for mixed use, so the Environmental Protection Agency (EPA) has selected a remedy and cleanup goals that will allow for some residential use on portions of the property and for light industrial/commercial on other portions of the property. The final land use decision for the Pine Yard will be made by EPA, the Mississippi Department of Environmental Quality (MDEQ) and the Greenfield Multistate Environmental Trust (Trust) with input from the City of Columbus, local stakeholders and the local community.</p>
<p><b>Attendee: Will the creosote resurface? Who will manage the redeveloped site? Who will own it? Who will be responsible for keeping it up?</b></p>	<p>Once the contaminated material has been excavated and removed, it will not resurface. If some of the contaminated material is left on site, under Superfund Law, the area must be inspected/evaluated a minimum of every five years to determine if the remedy continues to be protective of human health and the environment. The findings and conclusions of the Five-Year Review inspections are documented in a report that will be included in the site file.</p> <p>After the remediation activities have been completed, based on the current discussions, the Multistate Trust will turn the property over to the City of Columbus, State of Mississippi or a Development Authority that has been set up to manage and maintain the property. The terms of agreement for the property transfer must be approved by the Multistate Trust, MDEQ and EPA.</p>

<p><b>Attendee: Will the landfill where the soil is being transported to now be considered contaminated?</b></p>	<p>The landfill is permitted to handle the type of material that is being transported from the site due to the low level of contamination present in the material. If we encounter highly contaminated material in portions of the main facility, the material will be disposed at a Subtitle C Landfill, which is equipped to receive highly contaminated material.</p>
<p><b>Commenter: The community on the southside of the town should also be informed, including the people in Sandfield. Columbus, Lowndes county belongs to us all.</b></p>	<p>EPA makes efforts to inform all local citizens and stakeholders of site activities. Some of our engagement efforts include: distribute site updates to a mailing list that contains over 300 residences; periodically place site updates in the local newspaper (<i>The Packet</i>); Site information available on-line at <a href="https://www.epa.gov/superfund/kerr-mcgee-chemical-columbus">https://www.epa.gov/superfund/kerr-mcgee-chemical-columbus</a>; monthly Community Advisory Group (CAG) meetings which are open to everyone are usually held the 4<sup>th</sup> Tuesday at 6:00 PM at the Columbus Municipal Complex which is located at 1501 Main Street; Site information can also be found at the Community Resource Building located at 2300 14<sup>th</sup> Avenue North (Old Kerr-McGee Office Building on the Main Facility) and the Columbus-Lowndes Public Library located 314 7<sup>th</sup> Street North (History Room) and the Multistate Trust prepares a periodic newsletter that contains site updates and a 24-hour hotline number, (662) 288-4412, that allows concerned citizens to report any concerns any time of the day or night.</p>
<p><b>Commenter: What is across the street from the Pine Yard on the Main Site?</b></p>	<p>The former Plant Area. The Former Plant Area consists of approximately 45 acres located south of 14th Avenue North and includes the former main treatment and process facilities, areas used for waste management, and treated and untreated lumber storage areas.</p> <p>The Pine Yard consists of approximately 44 acres located north of 14<sup>th</sup> Avenue North and was used for the storage of treated and untreated lumber, and scrap metal.</p>
<p><b>Commenters: We think the people working out there are doing a good job cleaning it up.</b></p>	<p>Thank you for your questions and comments.</p>

<p><b>Commenter:</b> You all are doing a good job of informing us and indicated that when the cleanup is finished, a clinic that addresses basic medical needs is desired in the area. The commenter also expressed a desire to see senior citizen apartments or a retirement complex in the area.</p>	<p>Both options appear to fit within the mixed-use redevelopment/reuse scenarios and will be passed on to the Multistate Trust and local stakeholders during a redevelopment meeting for further consideration.</p>
<p><b>Commenter:</b> In the fall of 2017, the EPA Remedial Project Manager promised to clean up the ditch (between the Kerr McGee Chemical Corporation Superfund Site and the community of Moss Street) in the spring. Now they are working on the Pine Yard to clean up contaminated soil.</p> <p>Every time they do a cleanup, they just take samples of the soil from the property which they only drill about one foot down. EPA needs to address the contamination on the property of the community. The groundwater and hazardous material are destroying the properties.</p> <p>The City and EPA need to come out and check on the situation when it is happening. This ditch needs to be cleaned up which is carrying hazardous material and creosote and washing away the soil. They say (EPA) they are cleaning up, but it's not working in the communities.</p>	<p>In several meetings, the EPA Remedial Project Manager has indicated that EPA and MDEQ will provide oversight of the sampling plans and activities to ensure that the site has been adequately characterized. After the site is characterized, EPA with input from MDEQ and the community will select appropriate remedial alternative(s) that will be implemented to address unacceptable risk identified at each/all operable units of the site, including the ditches. In addition, as required under Superfund Law, any remedial action that results in any hazardous substance remaining on-site must be inspected/evaluated a minimum of every five years to determine if the remedy continues to be protective of human health and the environment. The findings and conclusions of the Five-Year Review inspections are documented in a report that will be included in the site file.</p> <p>The current proposed plan addresses the Pine Yard (OU1) and does not include the ditches. However, cleanup activities have been conducted in portions of the 14<sup>th</sup> Avenue and 7<sup>th</sup> Avenue ditch systems. Additional cleanup activities are anticipated in future Operable Units that will adequately address the portions of the ditches between 14<sup>th</sup> Avenue and 7<sup>th</sup> Avenue. In the interim, if there are problems or concerns associated with the Kerr-McGee investigation or cleanup activities observed by the community, please call the 24-hour hotline number to express your concerns. The hotline number is (662)288-4412. After your concern has been evaluated, someone will contact you to respond to your concern/comment.</p>
<p><b>Commenter:</b> Having reviewed the attached action plan, I agree that Alternate 2 is the best for the public's safety as proposed on page 16 of the plan. In my opinion, the contaminated material needs removed and deposited in the approved location. The report is very detailed, professionally written and easy to understand. I plan to attend the Dec 13 meeting.</p>	<p>Thank you for your comment.</p>

<p><b>Commenter:</b> It was great to meet you last night at the hearing in Columbus. I thought it was very informative and I thought that you and your team did an excellent job explaining the project and what happens next. Please let me know anytime I or this office can assist your work in Columbus or any other projects in Mississippi.</p>	<p>Thank you for your comment.</p>
<p><b>Commenter:</b> Based on the Proposed Plan, the EPA's preferred remedial alternative for the Kerr McGee Site, Operable Unit 1 (OU-1) consists of removal and offsite disposal of contaminated soils, identified as Alternative 2. Of the options presented, we believe Alternative 2 provides the most aggressive approach to providing long-term protection of human health and the environment and allows for more options for future land use since this alternative removes the waste rather than leaving it in place. However, we do have concerns regarding the delineation of the operable unit, designated OU-1, addressed in the Proposed Plan.</p> <p>It appears that the boundaries of OU-1, as depicted in Figure 3, specifically avoid the wetland area along the east side of the property. Although the area identified as Zone 3 of OU-1 in Figure 4 shows soil impacts (both surface and subsurface), also visually observed during potholing, along the railroad tracks which border the eastern property boundary, this zone, as well as the boundary of OU-1, abruptly stops where the wetland area begins. We believe that the sampling results reflected in the Phase II Remedial Investigation Report (RIR) prepared on July 14, 2017, and revised on March 21, 2018, and accompanying figures show that contamination found in Zone 3</p>	<p>The U.S. Fish and Wildlife Service National Wetlands Inventory "Wetlands Mapper" version 2 identifies a 5.66-acre area in the northeastern portion of the Pine Yard as a freshwater forested/shrub wetland. As part of the remedial investigation, Headwaters Inc. completed a survey to delineate the wetland boundaries in the Pine Yard. The Headwaters Inc. survey (2017) indicates that the northern portion of the Pine Yard contains a forested wetland and a forested upland with a man-made drainage ditch (which receives offsite stormwater drainage from the City of Columbus storm drainage system) (Figure 1-2). The survey determined that 9.10 acres is forested wetland.</p> <p>There is no reasonably anticipated land use of the jurisdictional wetlands area within the Pine Yard (including the land bounded to the west and south by wetlands, to the east by the railways, and the north by Highway 82) due to lack of access. Pending completion of the redevelopment planning, the objective of the remedy for OU-1 is to achieve conditions that would be protective for residential use along the western portion of the Pine Yard and for industrial/commercial use in remaining developable areas. It is currently anticipated that redevelopment will occur in the western and southern portions of the Pine Yard, outside of the designated wetland boundary. Site development will also be subject to federal, state, and local regulations and standards governing development in floodplain settings.</p> <p>OU-1 does not include the wetlands in the northern portion of the Pine Yard. The draft baseline ecological risk assessment (BERA; Ramboll Environ 2017) found that there is potentially suitable habitat in the wooded area and wetlands in the northern portion of the Pine Yard. The OU-1 remedial action is anticipated to address risks</p>

likely extends further north along the railroad tracks and into the wetland area. We are concerned that potentially contaminated areas, which have shown exceedances of both industrial and residential screening levels, will be overlooked or further investigation and remediation postponed due to the more rigorous efforts required to disturb delineated wetlands. This appears to be alluded to the paragraph in the section "Sources and Distribution of COCs in OU1" describing other potential sources, particularly urban contaminants from roadways and rail corridors. Storm water from Highway 82 and adjacent areas is noted in the Proposed Plan as potentially being a past and current source of contaminants to the wetlands in the northeast end of the Pine Yard. Therefore, we prefer OU-1 be redefined to include the entire Pine Yard or this area be designated as a separate Operable Unit and a timeline be provided for remedial action addressing this area.

The Proposed Plan also states that there is still uncertainty about ecological risks in the wetland portions of the Pine Yard. We encourage you to expend the necessary resources to move forward with a plan to address the wetland area, as it borders JTB property and could have impacted and may continue to impact JTB property through both surface and subsurface pathways. JTB has made significant investments in this area of Columbus and employs many nearby residents; therefore, we believe it is in the interest of both JTB and our employees to have the entire Pine Yard restored to a condition protective of both human health and the environment.

We appreciate the transparency with which EPA, the Mississippi Department of Environmental Quality (MDEQ), and

to terrestrial receptors in the northern Pine Yard. Ecological risk conclusions with respect to the wetlands are pending resolution of comments to the draft BERA provided by the U.S. Environmental Protection Agency (EPA) on May 23, 2018. The final BERA will provide the basis for evaluating the need for any remedial action in the wetland area.

**the Greenfield Environmental Multistate Trust have conducted the investigation and remediation process thus far, and we look forward to continuing to be a part of the discussion regarding restoration of the Kerr McGee Site to benefit all Columbus residents and businesses alike in the area.**

**APPENDIX C**  
**TRANSCRIPT OF DECEMBER 13, 2018 PUBLIC MEETING**



COURT REPORTING

LEGAL VIDEOGRAPHY

VIDEOCONFERENCING

TRIAL PRESENTATION

MOCK JURY SERVICES

LEGAL TRANSCRIPTION

COPYING AND SCANNING

LANGUAGE INTERPRETERS



**RE: KERR-MCGEE CHEMICAL CORPORATION SITE  
PROPOSED CLEANUP PLAN**

**PUBLIC MEETING**

**HELD ON  
THURSDAY, DECEMBER 13, 2018  
6:00 P.M.**

**GENESIS DREAM CENTER  
1820 23RD STREET NORTH  
COLUMBUS, MISSISSIPPI 39701**



**DEPOSITION AND TRIAL**



**(800) 528-3335**

**NAEGELIUSA.COM**

2

1 RE: KERR-MCGEE CHEMICAL CORPORATION SITE  
 2 PROPOSED CLEANUP PLAN  
 3 PUBLIC MEETING  
 4 HELD ON  
 5 THURSDAY, DECEMBER 13, 2018  
 6 6:00 P.M.  
 7  
 8 MS. COLEMAN: Good evening again,  
 9 everyone. We would like to welcome you out tonight  
 10 despite the rainy weather. I do appreciate you all  
 11 attending the meeting tonight.  
 12 Well, let me control this presentation  
 13 here.  
 14 Okay, let me get it.  
 15 My name is Kerisa Coleman and I am the  
 16 Community Involvement Coordinator for the Kerr-McGee  
 17 Mississippi Site, here. This is Charles King. He's  
 18 the remedial project manager for the site.  
 19 And before we get started, I'll just ask  
 20 for my EPA folks that are here from EPA to stand so  
 21 that I can recognize you. We have, starting over  
 22 here from the left we have Latonya Spencer, Franklin  
 23 Hill, Caroline Robinson, Chris Cole and Bryan Myers.  
 24 And also, if I can have Lori Gorton from  
 25 the Trust, the Greenfield Multistate Environmental

4

1 into details about how you're able to submit  
 2 comments to the EPA if you have any questions,  
 3 concerns or comments on what we'll present to you  
 4 tonight. But the public comment period actually  
 5 started about a week ago on December the 7th and it  
 6 will end on January the 6th of 2019.  
 7 I'm going to turn it over to Charles here  
 8 for a quick minute.  
 9 Before we get started with the  
 10 presentation I do have a videographer here who will  
 11 capture the contents of this meeting tonight and  
 12 basically he's going to train the camera on us. He  
 13 will not train the camera on the audience. It will  
 14 just be trained on Charles and me.  
 15 What we are required to do for these types  
 16 of meetings is to make sure that we capture your  
 17 comments and your concerns, and then once we get  
 18 those comments and concerns we provide a response in  
 19 what's called a responsiveness summary and that will  
 20 go into the administrative record.  
 21 So he will be on camera, and at the end of  
 22 the meeting when we get to the question and answer  
 23 portion of the meeting I'll ask that you come up to  
 24 the microphone or either we'll have Latonya Spencer  
 25 bring a microphone and I'll ask that you provide

3

1 Trust, we have our MDEQ counterparts, Thomas Wallace  
 2 and Cassandra Johnson. I'm trying to make sure that  
 3 I get everyone. And also I would like to give a  
 4 special thanks and recognition to Pastor Leach who  
 5 allowed us use of his facility tonight and made sure  
 6 that he provided all the accommodations that we are  
 7 using.  
 8 Okay, so again my name is Kerisa. I'm the  
 9 Community Involvement Coordinator for the site. And  
 10 the purpose of this meeting is for us to present to  
 11 you EPA's proposed plan for cleanup for portions of  
 12 the site known as the Pine Yard. It's Operable Unit  
 13 1.  
 14 And this slide here shows us a historical  
 15 view of the site when it was in operation. And most  
 16 of you have received a copy of the fact sheet. If  
 17 you didn't get a copy of the fact sheet it's  
 18 probably because you're not on the mailing list. So  
 19 if you would like to be included in future mailings  
 20 I'll ask that you make sure that you sign the  
 21 mailing list so that you will receive notifications  
 22 as EPA as we do future updates.  
 23 But on the fact sheet it included  
 24 information about the public comment period. And  
 25 what I'll do at the end of the presentation is go

5

1 your name, your first and last name, if you have a  
 2 unique spelling to your name I'll ask that you spell  
 3 your name. But we'll get to that during the  
 4 question and answer session.  
 5 MR. KING: Thank you, Kerisa. My name is  
 6 Charles King. I'm the project manager for the site  
 7 from EPA. Before I really get started on the  
 8 presentation, let me just ask one question. For the  
 9 people who are here, let me see a show of hands if  
 10 this is your first time coming to a Kerr-McGee  
 11 meeting. I just want to kind of gauge my audience.  
 12 Okay, thank you.  
 13 Okay, this slide talks about the Superfund  
 14 process and it goes all the way from site discovery  
 15 down to deletion. And as of right now we're at the  
 16 proposed plan stage which means we've done an  
 17 investigation on a portion of it. We've tried to  
 18 determine the nature and extent of the  
 19 contamination. We're also looking at the  
 20 alternatives for addressing any unacceptable risks  
 21 that we found.  
 22 The Kerr-McGee site is about a nine-acre  
 23 site. Of course it's here in Columbus, separated by  
 24 14th Avenue. It has two primary portions. We have  
 25 the main facility and the Pine Yard area. Because



6

1 of the size and nature of this site it's going to be  
 2 addressed in several operable units.  
 3 This site was a chemical manufacturing  
 4 facility. It operated from 1928 to approximately  
 5 2003. It was placed on a national priorities list  
 6 in 2011 due to contamination in groundwater,  
 7 sediment and soil. The types of contamination were  
 8 those that you would typically expect with a  
 9 creosote type plant. You had creosote, coal tar,  
 10 pentachlorophenol, polyaromatic hydrocarbons and  
 11 dioxins and furans.  
 12 The site is currently owned by the  
 13 Multistate Trust, and this cleanup plan that we're  
 14 going to do will consider reuse input from the  
 15 communities.  
 16 This is just an aerial view of the site  
 17 after it had kind of closed. You can see the  
 18 buildings are gone. There are not as many crossies  
 19 that you saw in the first picture that Kerisa showed  
 20 earlier.  
 21 The Pine Yard is the area that we're  
 22 focusing on. The Pine Yard is approximately 44  
 23 acres. It's zoned for mixed and commercial use.  
 24 The historical use of the Pine Yard was to store  
 25 treated lumber and metal storage. This area is

7

1 currently vacant and it has some wooded portions of  
 2 it. There was contamination in the soil and  
 3 groundwater, but this operable unit is going to  
 4 focus only on soils that are not in contact with the  
 5 groundwater. And anticipated reuse as I mentioned  
 6 earlier is going to make sure that we consider  
 7 community input and redevelopment.  
 8 This was our cartoon version of the site  
 9 conceptual model which is how we think the  
 10 contamination got there. When the crossies and  
 11 scrap metal and treated lumber were placed in the  
 12 Pine Yard, if it rained, if wind blew, it was  
 13 possible for contamination to get in different  
 14 portions of the area.  
 15 As we were trying to assess and trying to  
 16 determine the extent of contamination in this Pine  
 17 Yard we took a lot of different type of samples, and  
 18 I just wanted to at least give you guys an  
 19 indication of the type of samples that we collected.  
 20 We collected soil samples in 127 locations.  
 21 We took a TarGOST, which is a special type  
 22 of soil boring that's designed specifically to look  
 23 for creosote type products. We took those from 41  
 24 locations.  
 25 We collected soils in the drainage ditches

8

1 near the Pine Yard from six locations. We  
 2 characterized groundwater beneath the Pine Yard from  
 3 49 shallow wells and seven deep wells. We collected  
 4 surface water characterization from three locations  
 5 and we did trenching, which we call potholing, in a  
 6 lot of areas in the Pine Yard.  
 7 This next slide, you're not going to be  
 8 able to see it from here. It didn't come out as  
 9 well as I thought it would, but the whole point of  
 10 this slide, all of the dots are just to show you  
 11 different areas where we collected samples. We made  
 12 a huge effort to make sure that we looked for the  
 13 contamination so that we could try to determine risk  
 14 and make the appropriate decisions.  
 15 The basis for taking our action, one of  
 16 the main things when you're dealing with a Superfund  
 17 project, when you determine nature and extent of  
 18 contamination you also try to identify the risks.  
 19 Once you identify the risks if they're unacceptable  
 20 risks that serves as your basis for taking the  
 21 action at the site.  
 22 And in this case we found contaminants of  
 23 concern, that's what COCs are, of dioxin and furans,  
 24 benzo(a)pyrene in the site at unacceptable levels.  
 25 And the main way that they could affect people is

9

1 through ingestion, dermal contact and inhalation.  
 2 Those are the three primary ways that when you come  
 3 in contact with contamination that's how it can  
 4 affect you.  
 5 These were the findings that caused EPA to  
 6 say we have a basis of taking action to ensure that  
 7 human health and the environment are protected.  
 8 This is another chart that just talks  
 9 about the main as we assess the risks, the main  
 10 risks, or the numerals that are in bold are the ones  
 11 that would be unacceptable. So the main  
 12 unacceptable risks were to residents. If we did not  
 13 take an action in the Pine Yard, a resident could be  
 14 at risk, an outdoor worker, indoor worker,  
 15 construction worker and a trespasser could come into  
 16 unacceptable risk.  
 17 If you're in this area and if you ever go  
 18 by 14th, you know that right now there's an ongoing  
 19 action in the Pine Yard. It's a voluntary action  
 20 that's being conducted by the Multistate Trust with  
 21 oversight from EPA and MDEQ. But this action was  
 22 taken because of a recommendation from the EPA  
 23 Administrative Task Force that came by in 2017.  
 24 We asked the agency to identify sites that  
 25 had redevelopment potential. The Pine Yard at this



10

1 site we feel like had a lot of redevelopment  
 2 potential. As a result, the Multistate Trust took  
 3 advantage of that opportunity. They are undergoing  
 4 this voluntary action. And what we're doing here  
 5 with this proposed plan is we are now having our  
 6 formal documentation of the basis for taking an  
 7 action.

8 This proposed plan also makes sure that  
 9 the cleanup levels are finalized. We have risk  
 10 assessments that are finalized. And the  
 11 alternatives that we considered have gone through  
 12 the nine evaluation criteria. We also have an  
 13 administrative record which will be at the library.  
 14 If you got the fact sheet, it tells the location of  
 15 the administrative record. But there's one here in  
 16 Columbus, also one at the EPA Office in Atlanta  
 17 which documents the basis for the action that we've  
 18 taken.

19 When you're dealing with the Superfund  
 20 process, once you determine that there is an  
 21 unacceptable risk then you develop remedial action  
 22 objectives. And in this case, at the site our  
 23 remedial action objectives are to prevent any  
 24 unacceptable risks to humans from exposure to soil  
 25 with concentrations of the contaminants of concern

12

1 came from our surveys were mixed use, so we wanted  
 2 to have some of the property for residential and  
 3 some for industrial commercial.

4 This figure shows the area that we think  
 5 we're going to have to clean up based on the  
 6 concentrations. This darker area is not a part of  
 7 this operable unit because it is soil that has gone  
 8 down into the groundwater where there's some  
 9 contaminants in the groundwater. But oops -- hold  
 10 on. We've got some operator error here. Here we  
 11 go. This lighter part is the area that we'll be  
 12 addressing with this operable unit.

13 Okay, evaluation of the cleanup  
 14 alternative. Now that we know that there's an  
 15 unacceptable risk, we know we have to do something,  
 16 we've identified the area that we think we're going  
 17 to have to do something with. So now we look at the  
 18 alternatives for addressing the area that we think  
 19 we have to address.

20 As a part of Superfund you have to look at  
 21 what they call the No Action Alternatives. The No  
 22 Action Alternative means just what it says. If you  
 23 don't do anything is there any unacceptable risk.  
 24 Well, in this case, we just saw in a previous slide  
 25 that if we didn't do anything there, there was

11

1 above any health-based levels. Also, we want to  
 2 prevent or minimize the migration of the site  
 3 contaminants off site through stormwater runoff or  
 4 wind or erosion.

5 This figure documents the land use and I  
 6 know it's a real busy figure. If you look at the  
 7 green data where I'm going here, everything -- well,  
 8 this is the border of the Pine Yard, let's start  
 9 here. That's the border of the Pine Yard. This  
 10 gold section is the area that we are going to clean  
 11 up to residential levels.

12 On the right side of this -- well, this  
 13 blue is the wetlands. This is not a part of this  
 14 operable unit. This little area right here is not a  
 15 part. But the area inside the purple is going to be  
 16 cleaned up to industrial levels or commercial  
 17 levels. The site on the goal will be to clean up, I  
 18 mean to residential levels based on a reasonably  
 19 anticipated future use.

20 And we had some involvement with the CAG,  
 21 some of the local folks. We had some charrettes  
 22 where we talked to people about what would you like  
 23 to see at the site once it's cleaned up. So we got  
 24 some input from the local citizens on the potential  
 25 reuse options and it was mixed. The results that

13

1 unacceptable risk. So even though the No Action  
 2 Alternative is a part of the evaluation, we know  
 3 that's not one that we can choose.

4 Alternative Number 2 is removal and  
 5 offsite disposal. That would be excavation of the  
 6 contaminated soil that exceeds cleanup levels taken  
 7 offsite to an appropriate landfill. Alternative  
 8 Number 3 is removal and offsite -- and onsite  
 9 consolidation, I apologize. The same excavation,  
 10 but rather than taking it offsite to a landfill we  
 11 would then take it, actually, over to the main  
 12 facility and consolidate it there with some other  
 13 soil that we address.

14 Alternative Number 4 is cover and  
 15 institutional controls. So we would do some kind of  
 16 a clay cap to prevent any direct contact with it,  
 17 probably vegetate and have institutional controls,  
 18 which would basically mean you can't disturb the  
 19 cap. You can't dig through it with whatever  
 20 redevelopment options that we'd look at. The costs  
 21 for these alternatives as you might imagine, the one  
 22 that's no action would cost the less, it's 180,000  
 23 over 30 years. The number 2 is about 9.8 million.  
 24 Number 3 was 6.4 million. And Alternative 4 was 3.1  
 25 million.



14

1 As you're looking at the alternatives, we  
 2 evaluate them through – well, Superfund requires us  
 3 to use an evaluation criteria called the nine  
 4 criteria, and of the nine criteria it has three  
 5 major components. There are threshold criteria,  
 6 balancing criteria and modifying criteria.  
 7 The threshold criteria are criteria that  
 8 it has to meet. It's not an option. You have to  
 9 make sure that it's protective of human health and  
 10 environment. You have to make sure that it complies  
 11 with all ARARs. And ARARs are state requirements or  
 12 federal requirements that apply to that particular  
 13 contamination that you're dealing with.  
 14 The balancing criteria are long-term effectiveness,  
 15 how long does it last. Is it going to be a long-  
 16 term, I mean will it be effective in the long term.  
 17 Reduction of Toxicity, mobility or volume, that's  
 18 can you make it less harmful, can you make it less  
 19 mobile, can you make the contamination smaller, can  
 20 you reduce the area of contamination.  
 21 Short-term effectiveness, as you are  
 22 trying to implement that remedy are there some risks  
 23 that come about as you're implementing the remedy  
 24 and is it going to be effective. Implementability  
 25 is just that, can you do it. Is it something that's

16

1 one that we recommend because we believe, first, it  
 2 is at least a threshold. All of them have to meet  
 3 the threshold if we're going to fully consider them.  
 4 Alternative Number 2 we believe has the  
 5 best tradeoff of the balancing criteria. Although  
 6 it does cost a little more, Alternative 2 is the  
 7 only alternative that takes the contamination and  
 8 gets it offsite. Alternative 3 does not cost as  
 9 much as Alternative 2 and it does reduce the – it  
 10 does take the contamination out of the Pine Yard,  
 11 but it doesn't take it off the whole site. So EPA  
 12 would prefer that in this case that we get it off  
 13 the entire site.  
 14 Alternative 4, the cover is the least  
 15 expensive of the alternative that meets the  
 16 threshold criteria, but if you put the cover there  
 17 you may limit your redevelopment potential and we  
 18 believe that the Pine Yard has the greatest  
 19 redevelopment potential there.  
 20 As I mentioned, our preferred remedy is  
 21 Alternative 2, removal, offsite disposal of  
 22 approximate 55,000 cubic yards of soil not in  
 23 contact with groundwater and implement the ICs that  
 24 would restrict the land use where appropriate. And  
 25 our rationale for selection is because it achieves

15

1 never been done before, is it something that's  
 2 pretty readily available, is it a practice that's  
 3 commonly used. And cost is just that, how much does  
 4 it cost to do that.  
 5 Modifying criteria is the state or support  
 6 agency and in this case it's MDEQ, are they  
 7 supportive of the remedy. MDEQ has sent us – well,  
 8 we have been involved with MEDQ. They've been  
 9 involved with the project throughout the entire  
 10 time. MDEQ has sent us information indicating that  
 11 they are in favor of this remedy as long as pending  
 12 public comment.  
 13 If you guys bring up something that we  
 14 hadn't thought of or something that we've missed,  
 15 then of course everybody would reconsider. But the  
 16 reason that we're here today and the reason for this  
 17 public comment period is for community acceptance.  
 18 We want to make sure that you understand what we are  
 19 doing and we want to make sure that we get your  
 20 input and your thoughts about what we're doing.  
 21 This diagram here is kind of talking about  
 22 the same thing that I just talked about, those three  
 23 criteria. I mean the threshold, the balancing and  
 24 the modifying. You see the highlighted one,  
 25 Alternative 2 is the one that we kind of favor, the

17

1 the threshold criteria it's protective of human  
 2 health and environment, complies with ARARs, it's  
 3 the best tradeoff of the balancing criteria, it's  
 4 cost effective and we have Headquarters, State and  
 5 MultiState Trust concurrence.  
 6 You know, I have this line in here. This  
 7 site is a little unique. I've been doing this for  
 8 30 years and this site is one where we've had an  
 9 opportunity to apply what we've called our team  
 10 concept. Together, everyone accomplishes more.  
 11 And when I say together, on these projects  
 12 we've had several partner – we've had several  
 13 stakeholder partnerships with the City of Columbus,  
 14 MDEQ, the Multistate Trust, the Memphistown CAG,  
 15 Columbus Light & Water, and other local  
 16 stakeholders. So that's the together part.  
 17 And everyone is critical to the process.  
 18 I mean and everyone is considered – is critical to  
 19 the success of this project. Accomplishes, we say  
 20 that these partnerships, it's helped us to  
 21 strengthen our relationship, EPA's relationship with  
 22 the local community. It's helped us to educate some  
 23 local folk about Superfund. You guys have been able  
 24 to help educate us about what you need. There have  
 25 been training opportunities for local contractors



18

1 and local workers here, given job opportunities for  
2 local citizens.

3 It was an initial investment from EPA,  
4 maybe it was a little bit slower to start off  
5 initially but the return on investment has been  
6 remarkable. We have people who at one time probably  
7 didn't know anything about environmental work who  
8 now have jobs who have had waste training, who are  
9 working on the site who can also give information to  
10 their neighbors and their friends.

11 We have invested time and energy with the  
12 CAG and the people in the CAG have understood what  
13 we're doing. Many of the folk in the CAG could  
14 probably come take the mike from me and finish the  
15 conversation. I just like the way we've done the  
16 team concept. And more is that in my opinion all of  
17 us win when we apply this concept.

18 This poster here is one where, I think  
19 it's in the back as well, but I just wanted to have  
20 just a little bit of data on what we've done and  
21 it's hard for me to read, that's why I'm on the  
22 stage. Over 60 individuals who have been employed  
23 for it have got specialized training; over 13  
24 companies were hired on this Pine Yard work. The  
25 7th Avenue work that happened in 2017, those of you

20

1 community. We've developed relationships. We have  
2 listened back and forth. And this is the product  
3 when you spend time and make sure you hear concerns  
4 back and forth.

5 That's just on the 7th Avenue ditch.

6 That's just another before and after.

7 That was an award given to the City of  
8 Columbus for the collaborative efforts with EPA and  
9 the Trust. That was in I think it happened in '17.

10 MS. COLEMAN: Thank you, Charles.

11 Okay, so you've heard from us and now it's  
12 your opportunity to present any comments, concerns  
13 or questions that you may have about the information  
14 that Charles has presented. As I indicated earlier,  
15 the public comment period began about a week ago on  
16 December the 7th and it goes through January the  
17 6th, 2019.

18 At this time you are allowed to ask your  
19 questions. If you are not -- if you don't have  
20 questions tonight and would like to review the  
21 information a little more you're able to submit  
22 comments to Charles either through email at  
23 king.charles1@epa.gov.

24 It's on the fact sheet. If you don't have  
25 a fact sheet make sure you pick one up tonight, but

19

1 guys that are here you understand that a lot of  
2 local workers that worked on that one as well, as  
3 well as the 14th Avenue ditch, you got a before and  
4 after picture here.

5 Those of you that live here know, but if  
6 you weren't here this right outside of 14th Avenue  
7 used to look like this and now you got this. So,  
8 and it was all because of the partnerships'  
9 collaborative efforts that EPA, MDEQ, the Multistate  
10 Trust, Columbus Light & Water and others, and I know  
11 I left somebody out but I apologize for whoever I  
12 left out.

13 I guess the last thing I'd say about this  
14 that's unique for me is on the construction parts of  
15 this project over 90 percent of the work has been  
16 done by local contracts and workers, you know, and  
17 that's very unique. And in general I would say that  
18 the projects have been on schedule, under budget,  
19 and I think we've developed significant trust within  
20 the community.

21 Those of you that know this community from  
22 seven, eight years ago when EPA would come to a  
23 meeting we didn't have this kind of situation. It  
24 was hostile and rough and probably rightfully so in  
25 a lot of cases. But we have spent time in the

21

1 it's also up here on the screen which you may or may  
2 not be able to see.

3 You can also submit written comments to  
4 Charles back in Atlanta at 61 Forsyth Street,  
5 Atlanta, Georgia 30303.

6 Now if you submit written comments, these  
7 comments have to be postmarked no later than January  
8 the 6th, 2019. And the proposed plan, the  
9 information that Charles presented tonight, it's in  
10 a longer version of the fact sheet that you  
11 received. It's about a 22 to 25-page document. You  
12 can find that document on the site profile page  
13 which we have the link here on the screen. It's  
14 also included in the information repository at your  
15 local library, the Columbus-Lowndes Library. We  
16 also have it over at the Community Resource Center  
17 which is located on 14th Avenue.

18 So at this time we'll open the floor up to  
19 questions. So if any of you have any questions  
20 about the information that Charles has presented  
21 about the proposed plan for Operable Unit 1, which  
22 is portions of the Pine Yard, we'll welcome those  
23 questions, comments and concerns at this time.

24 And when you ask your question, please  
25 state your name so we can get it on record.

22	<p>1 MS. LEWIS: Sharon Lewis.</p> <p>2 MR. KING: Yes, ma'am.</p> <p>3 MS. LEWIS: My question is, it's not in</p> <p>4 regards to the Pine Yard, but I do want to find out</p> <p>5 for sure about the covering on the main site.</p> <p>6 MR. KING: Okay, this is -- okay. What do</p> <p>7 you mean by the covering on the --</p> <p>8 MS. LEWIS: You said the covering could</p> <p>9 not disturb the --</p> <p>10 MR. KING: Oh, no, no. What I was saying</p> <p>11 about that is one of the alternatives that we</p> <p>12 considered that we did not choose was to take the</p> <p>13 soil from the Pine Yard and put it over on the other</p> <p>14 main site. But we did not choose that. That was</p> <p>15 just one of the ones that we were evaluating and we</p> <p>16 decided not to choose them because we didn't think</p> <p>17 people would be happy or we didn't think it was a</p> <p>18 good idea.</p> <p>19 MS. LEWIS: Okay, so the Pine Yard now,</p> <p>20 but then over on the main site did you say when that</p> <p>21 was going to be -- or the Pine Yard has to be</p> <p>22 completed before the main site?</p> <p>23 MR. KING: Yes. We're going to do them in</p> <p>24 sequence, but we're going to get the Pine Yard</p> <p>25 first. We have not forgot about the other parts of</p>	24	<p>1 on the community. As you know we sample, I think we</p> <p>2 probably even sampled your --</p> <p>3 MR. HICKS: No.</p> <p>4 MR. KING: Well, we were in that area.</p> <p>5 MR. HICKS: Right.</p> <p>6 MR. KING: You're on -- we sampled several</p> <p>7 houses on your area and 23rd and we did not find any</p> <p>8 concentrations that were above any unacceptable</p> <p>9 levels. So we actually went and did the residential</p> <p>10 samples and did a lot of that early on.</p> <p>11 MR. HICKS: Okay.</p> <p>12 MR. KING: But we just didn't find</p> <p>13 concentrations that gave us the ability to take an</p> <p>14 action.</p> <p>15 MR. HICKS: Right.</p> <p>16 MR. KING: Yes, sir.</p> <p>17 MR. HICKS: So in other words, there's</p> <p>18 more contamination in the Pine Yard --</p> <p>19 MR. KING: Yes, sir.</p> <p>20 MR. HICKS: -- than in the community.</p> <p>21 MR. KING: Than in the area that you're</p> <p>22 talking about. And that would make sense.</p> <p>23 MR. HICKS: Right.</p> <p>24 MR. KING: They were doing operations in</p> <p>25 the Pine Yard and they weren't doing operations in</p>
23	<p>1 the site, but this is just the part we're talking</p> <p>2 about here tonight.</p> <p>3 MS. LEWIS: So what's the time frame?</p> <p>4 MR. KING: On the Pine Yard?</p> <p>5 MS. LEWIS: Yes.</p> <p>6 MR. KING: Okay. This should be done</p> <p>7 within the next three to six months in the Pine</p> <p>8 Yard.</p> <p>9 MS. LEWIS: And then thereafter what's the</p> <p>10 next plan?</p> <p>11 MR. KING: We will update you in the</p> <p>12 future. We have documents come out. You're a</p> <p>13 regular member of the CAG. We are going to lay out</p> <p>14 a plan from this point. But right now we're just</p> <p>15 going to deal with the end of the Pine Yard.</p> <p>16 Mr. Roy Milton Hicks.</p> <p>17 MR. HICKS: My concern is I know that</p> <p>18 dumped a lot of contamination in the Pine Yard. Why</p> <p>19 is so much interest being placed on the Pine Yard</p> <p>20 than in the community? Like I live on 22nd Street -</p> <p>21 -</p> <p>22 MR. KING: Yes, sir.</p> <p>23 MR. HICKS: -- why so much on the Pine</p> <p>24 Yard rather than the community?</p> <p>25 MR. KING: We had some places and it was</p>	25	<p>1 the residential yards.</p> <p>2 MR. HICKS: Okay. Okay, I see. Okay.</p> <p>3 MR. KING: Yes, sir.</p> <p>4 MR. HICKS: I was, just was a big concern</p> <p>5 of mine because --</p> <p>6 MR. KING: Yes, sir.</p> <p>7 MR. HICKS: -- I live so close to the</p> <p>8 area.</p> <p>9 MR. KING: I got you.</p> <p>10 MR. HICKS: And I've been there since '58.</p> <p>11 MR. KING: Yes, sir.</p> <p>12 MR. HICKS: Okie-dokie, thank you. Thank</p> <p>13 you.</p> <p>14 MR. KING: You're welcome.</p> <p>15 REVEREND SAMUEL: Good evening, Mr. King.</p> <p>16 MR. KING: Good evening, sir. How are</p> <p>17 you? Say your name for the court reporter. I mean,</p> <p>18 I know who you are, but.</p> <p>19 REVEREND SAMUEL: My name is Reverend</p> <p>20 James E. Samuel.</p> <p>21 MR. KING: Yes, sir.</p> <p>22 REVEREND SAMUEL: And it's good to see you</p> <p>23 again.</p> <p>24 MR. KING: Likewise, sir. It's good to be</p> <p>25 seen.</p>

26

1 REVEREND SAMUEL: And I know that you  
 2 don't relish my rhetorical flourishes, however –  
 3 MR. KING: I'm going to learn something.  
 4 REVEREND SAMUEL: – you know I'm here to  
 5 challenge something.  
 6 MR. KING: Yes, sir.  
 7 REVEREND SAMUEL: We have heard the  
 8 statements of the EPA, the Brownfield Trust over a  
 9 number of years.  
 10 MR. KING: Yes, sir.  
 11 REVEREND SAMUEL: I'm like Brother Hicks  
 12 there. There are some abiding concerns even though  
 13 I've known you guys have worked on this extensively.  
 14 I know how you came about the plan of moving the  
 15 dirt, but you have some way created more questions  
 16 than you have answers and people are still left in  
 17 this void of vague ambiguities.  
 18 They've heard what you said but it's like  
 19 walking in a Frankenstein fog. All we can hear is  
 20 the grunts and we can't see you or what you're  
 21 doing. And it may just be because we're looking at  
 22 it from the wrong perspective, but I think, Mr.  
 23 King, that some concerted effort should be put in to  
 24 clarify where you are, where you started, what the  
 25 end result should be.

27

1 And I know that we're working on a  
 2 redevelopment plan for parks over there and the  
 3 whole nine yards, but people are waiting with bated  
 4 breath and have been since 2001 for resolution and  
 5 yet, here in 2018, we still have not seen the edges  
 6 of a solution and at some point we've got to get  
 7 there.  
 8 Now that's it for the question part, but  
 9 we've talked about this. My overriding concern is  
 10 with that being done, settled and culminated, I  
 11 still have this deep and abiding need to know that  
 12 whatever happens to the Pine Yard, the main yard and  
 13 that area as far as redevelopment is concerned – I  
 14 know you're still working on the plans and I'm  
 15 saying this public here tonight so that everybody  
 16 will know what page I'm on – if it does not benefit  
 17 the people who were injured by Kerr-McGee, the  
 18 lawyers that misrepresented them and the slick that  
 19 was put down to slide Kerr-McGee out of town  
 20 unaffected, then you will never reach a resolution  
 21 of satisfaction with these people.  
 22 Because if they are not going to benefit  
 23 those who have been hurt since 1924-26, then you  
 24 will not have done the job that should have been  
 25 done by the – because you are a representative

28

1 body. Yes, you're regulatory, but I'm kind of like  
 2 Pastor Jamison a lot of time. You're all too good  
 3 people. I know you, I've talked to you. I've even  
 4 supped with you. But I believe that the hierarchy  
 5 under which you are employed holds you to a standard  
 6 that prevents you from reaching a real resolution  
 7 for the people who have been injured extensively.  
 8 And so, Mr. King, I stand here tonight  
 9 because – and I will be sending you a submission by  
 10 email.  
 11 MR. KING: Yes, sir.  
 12 REVEREND SAMUEL: Okay, I've got the form  
 13 on my desk.  
 14 MR. KING: Yes, sir.  
 15 REVEREND SAMUEL: But I stand here tonight  
 16 because I'm still concerned. And I've heard Brother  
 17 Hicks say, "But you didn't dig around my house."  
 18 You said, "Well, we got two or three places." I  
 19 know Sister Lewis here, her family home is in that  
 20 area. And I know the Troups (phonetic) that live in  
 21 Atlanta, I don't know if that house was ever tested.  
 22 But they live less than a half mile from the plant,  
 23 from Kerr-McGee, people who were injured and have  
 24 seen no attempts at resolving their pain and their  
 25 concern.

29

1 And I don't want to elongate my  
 2 conversation, I just want to say what I want to say  
 3 and sit down. So you all forgive me if I get too  
 4 longwinded. Amen. I'm a Baptist preacher. It's  
 5 what we do, especially if you give us a microphone.  
 6 But all respect, Brother King, is that I'm  
 7 in a spot where I don't feel resolution has been  
 8 sought or reached. I know you did what is within  
 9 the parameters of your job description. I know you  
 10 did that the best you could to the best of your  
 11 ability. You convinced us, so on and so forth.  
 12 But that does not speak to the pain and  
 13 suffering of the people who got harmed and are still  
 14 stuck there. When will this be resolved? When will  
 15 we get our Love Canal release? When will we get our  
 16 Anniston, Alabama satisfaction? When will we get  
 17 our St. Louis, Illinois recovery?  
 18 At some point we can't be seen as country  
 19 hicks sitting on the side of a pine tree. We have  
 20 to be people who are part of this great nation who  
 21 deserve the acts and the pursuit of all government  
 22 agencies that are there for our edification and our  
 23 satisfaction and our protection and I just don't  
 24 feel like we're here.  
 25 I'm not here to hurt you or to tickle



<p style="text-align: right;">30</p> <p>1 anybody's ears, but that's just a fact that we  2 continue to deal with. And until that is resolved,  3 until a resolution is reached that is satisfactory  4 to the majority of us, none of us, in the words of  5 Martin Luther King, will escape. Because if one of  6 us is hurt, we're all hurt.  7 MR. KING: (Indiscernible).  8 MS. DOROTHY LEWIS: Thank you very much,  9 Reverend Samuel. My name is Dorothy McClellan  10 Lewis. I moved home at the end of '16, 2016, and I  11 thought I was coming home to have a retirement,  12 laugh and talk with friends. I get here and  13 discover that we're still in the midst of trying to  14 resolve this situation.  15 And not knowing that it was still going on  16 because our family was left out of it all of those  17 years, I have been trying to get them up to date on  18 what's going on by attending these meetings and  19 other meetings. I retired, live here, got married  20 here, taught school here, went to high school here,  21 you know, it's sad to see that since I've been home  22 I've attended so many funerals that died of cancer.  23 And so my neighborhood, I'm on 27th Street  24 and my neighborhood is dying and it's nothing that I  25 can do about it. So I just keep trying to find out</p>	<p style="text-align: right;">32</p> <p>1 other families that were left out. And so you're in  2 the midst of recovery and nobody is recovered.  3 MR. KING: Yes, ma'am. You know, I don't  4 disagree with you. I would probably feel the same  5 way. But like you said, it's unfortunate but EPA  6 doesn't have, we don't have any authority over the  7 tort suit side, we don't. The only thing we can do  8 is investigate the soil, the groundwater, and if we  9 find concentrations of contaminants in the soil or  10 groundwater at levels that are unacceptable or that  11 exceed risk, then we pay the cleanup.  12 And on your very street we collected a lot  13 of samples on 27th. We've come back and done it  14 again. We've collected on 26. When we get ready to  15 talk about the residential yards we will put a  16 diagram and we can show you hundreds of residential  17 properties that we sampled.  18 Now I know that doesn't make you feel any  19 better and I would feel the same way if I hadn't  20 gotten resolution about the lawsuit type issues.  21 You know, I wish they would come here myself, but  22 there's nothing I can do. We've tried to reach out  23 to the Multistate Trust and they're not responding  24 to us.  25 I don't know what to tell you other than</p>
<p style="text-align: right;">31</p> <p>1 about these meetings, why are we still having  2 meetings and folks are still concerned about paying  3 the doctor bill, taking care of themselves for the  4 rest of their lives, no money as they're resolved.  5 And I know you all would say you're in a  6 different category than the money part, but still  7 it's on the minds of the people that are still here  8 saying, "Why were we left out?" Why is it that you  9 are developing that area next to my street, 27th  10 Street, and mud is going up and down the street?  11 And you're fixing it up, and I'd be  12 concerned about the men that are working over there  13 whether they're getting contaminated even though you  14 say that they may not be, but then we're dealing  15 with contamination. We're dealing with all kind of  16 things that are going on that, like you say,  17 questions in the minds of people that are here and  18 have not been able to get an answer.  19 So I'm here for answers, that's why I keep  20 coming and showing up. And if -- it was nine of us,  21 there are only eight living, and so for that eight  22 that are scattered here and abroad that are sick and  23 suffering, I am the person that's getting the  24 message and giving them the information.  25 What just like my nine there are many</p>	<p style="text-align: right;">33</p> <p>1 if you have an attorney, work through your attorney,  2 but EPA has not been able to reach any resolution  3 with that tort trust either. And I --  4 Yes, sir.  5 REVEREND SAMUEL: Question. We've had  6 this discussion before of a city complex -- Reverend  7 James Samuel again. But we talk, and we hear what  8 you're saying about your limitations.  9 MR. KING: Yes, sir.  10 REVEREND SAMUEL: Okay, so the statutory  11 limitations on government employees abound, but  12 maybe it would give our hearts an ease if we had  13 some idea of what the end result would be.  14 MR. KING: End result of what? You said a  15 --  16 REVEREND SAMUEL: End result of this  17 project, because the truth --  18 MR. KING: Okay, okay.  19 REVEREND SAMUEL: Because the truth of the  20 matter is Kerr-McGee got out here dirt cheap and let  21 the dirt behind for us to deal with.  22 MR. KING: Okay.  23 REVEREND SAMUEL: Nothing we can do about  24 that because the courts cleared them to go, okay. I  25 disagree with the court's decision, but that's what</p>

<p style="text-align: right;">34</p> <p>1 we have to deal with. That's our reality.  2 MR. KING: Yes, sir.  3 REVEREND SAMUEL: But maybe if we -- and  4 there again it comes back to Bill Clinton said we're  5 all where we are, but what do we do now?  6 MR. KING: Okay.  7 REVEREND SAMUEL: Okay. I know that  8 there's going to be some mechanisms put in place  9 that will ensure continual oversight --  10 MR. KING: Yes, sir.  11 REVEREND SAMUEL: -- in case there's some  12 other rising up in the future. But this should also  13 be a model for every small town with minority  14 communities where corporate giants move in, settle  15 down, do their damage and can walk out for \$75  16 million. I'm not saying you're a legislator.  17 You're not in a position to change the law.  18 MR. KING: Yes, sir.  19 REVEREND SAMUEL: But you are in a  20 position to recommend up through the chain some kind  21 of report to our legislative leaders to make sure  22 that this doesn't happen again.  23 And the second thing is that maybe if we  24 know what the end result is, it will give us  25 something to work toward with whomever the entity is</p>	<p style="text-align: right;">36</p> <p>1 control over that. But I think the Trust as well as  2 EPA as well as even the mayor, I think they're  3 trying to work on something to where you guys can  4 have local control or at least have a good bit of  5 input on what happens.  6 MS. PETTY: My name is Geraldine Petty. I  7 live on 22nd Avenue North.  8 MR. KING: Yes, ma'am.  9 MS. PETTY: And I just rose to say that I  10 agree with everyone that has spoke. I agree with  11 what they've said. And which I don't understand is  12 how contamination can be all over there in the Pine  13 Yard and not on the residential property. I don't  14 understand that.  15 But one thing I hope that you all don't do  16 while you're cleaning up over there is tear up 14th  17 Avenue. It took them a hundred years to get it  18 fixed. It was in bad shape and now it's in good  19 shape, and I believe it may get tore up while this  20 mess, this stuff is going on.  21 MR. KING: Well, we hope that we won't  22 tear it up. And as you know we played a part in  23 making it look like it is, so it was a collaborative  24 effort between the Trust, EPA, MDEQ, City of  25 Columbus and others. So we certainly don't want to</p>
<p style="text-align: right;">35</p> <p>1 who's working on it. And there again, and I'll give  2 her the microphone back, I don't want to see  3 somebody walk in here that's dislocated from the  4 events that have happened in Columbus, Mississippi,  5 and through some kind of political hook or crook end  6 up with the title deed to that property and coming  7 in and set up something that may be more injurious  8 to us and then the people of this community get no  9 benefit from it. We paid the ultimate cost for it.  10 MR. KING: Right.  11 REVEREND SAMUEL: We all could get the  12 ultimate benefit.  13 MR. KING: All right. And Reverend Samuel  14 and I have had this conversation many, many times  15 and we're on the same page. That I mean I certainly  16 understand you guys want to make sure you have input  17 and up to this point wouldn't you say that we have  18 given you input?  19 We've had, I mean in the charrettes and  20 the different things that we've done at the  21 Multistate Trust that's gone out of their way, in my  22 opinion, to try to make sure that it's inclusive and  23 we foresee that continuing in the future.  24 Now what I cannot guarantee is I don't  25 know who the developer would be, we don't have any</p>	<p style="text-align: right;">37</p> <p>1 tear up anything we helped to build up.  2 MR. LEACH: Darren Leach. Mr. King, you  3 showed a slide back earlier that had the cleanup  4 limits or like you were cleaning to residential  5 standards, and then on the other side you were  6 cleaning to --  7 MR. KING: Industrial or commercial.  8 MR. LEACH: Is it light industrial or --  9 MR. KING: Light industrial, yeah.  10 MR. LEACH: So those two things together  11 kind of say what the property can be used for.  12 MR. KING: Yes, sir. Yes, sir.  13 MR. LEACH: So we know because it's light  14 industrial you're not going to be able to put  15 another --  16 MR. KING: Right.  17 MR. LEACH: -- plant on there that do that  18 kind of stuff. Am I correct in that, sir?  19 MR. KING: You are correct. And that  20 future use scenario came out of meetings that we had  21 with the CAG, with local folks when we asked what do  22 you want to see here, and just as important as what  23 do you want to see here, we asked what do you not  24 want to see here. And the overwhelming response of  25 what they did not want to see here was we don't want</p>

38	<p>1 something else that could cause contamination that 2 could put us back in this same position again. 3 MS. BALTHAZAR: My name is Ann Balthazar. 4 MR. KING: Yes, ma'am. 5 MS. BALTHAZAR: And I'm listening to what 6 everyone is having to say and I understand where 7 they're coming from, but look like we kind of gotten 8 off course. So what I'm wanting to find out from 9 you, you're going to move this dirt, remove so much 10 of this dirt -- 11 MR. KING: Yes, ma'am. 12 MS. BALTHAZAR: -- and clean up the site 13 so that it can be reused, right? 14 MR. KING: Redeveloped or reused. Yes, 15 ma'am. 16 MS. BALTHAZAR: Redeveloped and reused. 17 MR. KING: Yes, ma'am. 18 MS. BALTHAZAR: Now you're going to have 19 to look at what you plan and own, redevelop and then 20 reuse it. 21 MR. KING: Absolutely. 22 MS. BALTHAZAR: And then how many years 23 are you going to wait to make sure that that 24 contamination is gone? Because, just because you 25 move this dirt, put more dirt there, we're going to</p>	40
39	<p>1 continue to have rainfall and all these other things 2 are going to continue to take place which means 3 water can still get down into the soil and into our 4 water. 5 So my thing is, how long once you finish 6 cleaning are you going to wait before you try and do 7 anything with this land? 8 MR. KING: That's a very good question and 9 I didn't do a good enough job of explaining about 10 the groundwater issue. Because we were dealing with 11 soils not in contact with groundwater, the shallow 12 groundwater aquifer in the Pine Yard, which is the 13 one that has some contamination in it in some 14 portions, is about from eight by eight feet deep is 15 where it starts and it's not a very big aquifer. 16 The water that you guys drink, I think 17 there are about four city wells and they are around, 18 I have it in another plan, but I think it ranged 19 from 800 and some feet to around 900 and some feet. 20 So you've got 500 or 600 feet of clay that there is 21 not any connection between this shallow aquifer and 22 the public water supply that you guys are drinking 23 from. 24 Columbus Light &amp; Water, they do regular 25 testing of the water. There's been a lot of concern</p>	41
38	<p>1 about that because of the creosote and they do 2 regular testing and I think you can even go to their 3 office and get results from your testing for your 4 water supply. So I didn't do a good enough job of 5 letting you know that what you're drinking is not 6 impacted by what's in the Pine Yard. 7 The other part about how long do we have 8 to wait, we have ways of testing the soil, testing 9 the groundwater so we don't have to wait an extra 10 like a certain number of years. We can test it and 11 almost get an immediate reading. 12 But one thing that we do is whenever a 13 site construction done, cleanup done, there is 14 something called a five-year review process that EPA 15 has that every five years we come back and do an 16 evaluation of that remedy to make sure that it's 17 functioning as it intended. If there's anything 18 changed regarding cleanup goals because of maybe we 19 learned more in science and we find out something is 20 either more or less toxic than we thought it was, 21 then we adjust those numbers and we come back to 22 each of the Superfund sites and we make sure that 23 what we said was protected still remains protected. 24 And if for some reason we find out that it's not 25 protected then we'll take the appropriate actions.</p>	41
39	<p>1 MS. COLEMAN: Any other questions? 2 MR. HARRIS: My name is John Harris. I 3 just wanted to know do you have independent testing, 4 I mean or sample from EPA. 5 MR. KING: So the Multistate Trust has a 6 set of contractors that do testing. EPA can come in 7 and do additional testing, so yes, there are. There 8 are multiple lines of testing. We don't have the 9 chicken guarding the henhouse -- I mean the fox 10 guarding the henhouse. 11 I said it wrong. The chicken guarding the 12 henhouse wouldn't be a problem, but the fox guarding 13 it might just be -- I should have just stuck to the 14 science and not tried to come up with the -- I am a 15 country boy from Mississippi, but I'm from Natchez, 16 so we didn't have enough chickens and foxes, I 17 guess. 18 You know we do. Okay, anybody else? 19 MR. HICKS: Roy Milton Hicks again. 14 20 Avenue with the construction of the way the water 21 flow, it flows, you can -- okay, this cemented area 22 that's when they have a big, heavy rain seem like 23 that water is being flowed back down in that 24 community. It seem like it's -- is that wide enough 25 so the water can flow the direction that it's going?</p>	41

42	<p>1 Do you understand what I'm saying?</p> <p>2 MR. KING: I do understand your question.</p> <p>3 Well, I think I understand your question.</p> <p>4 MR. HICKS: Right.</p> <p>5 MR. KING: You said they got some drainage</p> <p>6 ditches because of 14th Avenue. But if you</p> <p>7 remember, before the ditch came there was some</p> <p>8 drainage ditches down there too.</p> <p>9 MR. HICKS: Right.</p> <p>10 MR. KING: So what we are trying to do is</p> <p>11 we're working with the City. We do have additional</p> <p>12 remediation and restoration work scheduled. And I</p> <p>13 think near that railroad track you've got some</p> <p>14 blockages there --</p> <p>15 MR. HICKS: Right.</p> <p>16 MR. KING: -- so we're working with that.</p> <p>17 We're working with the railroads to try to get the</p> <p>18 proper access from the authorities so that we can</p> <p>19 take the next actions. But yes, we are aware</p> <p>20 there's some issues there. One of the things that</p> <p>21 we do even with the installation of the 14th Avenue</p> <p>22 ditch, we made sure that we coordinated with the</p> <p>23 City of Columbus and area engineers because we want</p> <p>24 to make sure that whatever we do is going to be what</p> <p>25 the City wants in terms of their drainage flow.</p>	44	<p>1 we've got the 14th and the 7th Avenue ditch systems</p> <p>2 remediated.</p> <p>3 MR. HICKS: Okay, thank you for your</p> <p>4 answer.</p> <p>5 MR. KING: All right, thank you, sir.</p> <p>6 MR. HICKS: That was pretty smooth there.</p> <p>7 MS. DOROTHY LEWIS: Dorothy McClellan</p> <p>8 Lewis. During the redevelopment of where you work</p> <p>9 in --</p> <p>10 MR. KING: In the Pine Yard, yes, ma'am.</p> <p>11 MS. DOROTHY LEWIS: -- in the Pine Yard,</p> <p>12 when you get finished is that going to be</p> <p>13 residential area or is it going to be for something</p> <p>14 else?</p> <p>15 MR. KING: That's a fair -- so on one of</p> <p>16 the slides I had back there it was a portion of it,</p> <p>17 the part that's closest to 27 we're going to clean</p> <p>18 it up to residential standards. It doesn't have to</p> <p>19 be residences there. Whoever redevelops with input</p> <p>20 from you guys, you guys will determine what goes</p> <p>21 there.</p> <p>22 But we wanted to have some of it cleaned</p> <p>23 up to the residential levels, because in some of the</p> <p>24 initial surveys some of the responses of the surveys</p> <p>25 were that you guys wanted mixed use. You wanted to</p>
43	<p>1 So, all of the drainage flow is really a</p> <p>2 City issue. We work with them to make sure that</p> <p>3 we're doing things in compliance with their</p> <p>4 guidelines.</p> <p>5 MR. HICKS: Okay. That was one of my real</p> <p>6 concerns.</p> <p>7 MR. KING: Okay.</p> <p>8 MR. HICKS: Seemed like with the overflow</p> <p>9 it seemed like most of the water and contamination</p> <p>10 is being absorbed (indiscernible) like Reverend</p> <p>11 Jamison's church, in that area it seem like that</p> <p>12 area is subject to more contamination.</p> <p>13 MR. KING: Well, I think before all the</p> <p>14 remediation work I think you're correct. I think</p> <p>15 historically, at least my understanding of a lot of</p> <p>16 that contamination did go down in there. As you</p> <p>17 know when they were doing the church that's where</p> <p>18 they found a lot of stuff.</p> <p>19 But I hope that we're not getting that</p> <p>20 same kind of scenario now that we've done -- we</p> <p>21 believe it's better and we still have some more work</p> <p>22 to do. We've got to connect between 7th Avenue and</p> <p>23 14th, but I think once we do that then it'll be</p> <p>24 totally done. But it should be significantly better</p> <p>25 because we've got coverage on different areas, but</p>	45	<p>1 have the ability to have some light industrial,</p> <p>2 commercial and residential. And we just felt like</p> <p>3 the best place to clean up to residential levels</p> <p>4 were right next to 27th, so even if you did not,</p> <p>5 even if it was not developed for residential you've</p> <p>6 still got a residential cleanup next to the</p> <p>7 residences that line up on that side of the Pine</p> <p>8 Yard.</p> <p>9 MS. DOROTHY LEWIS: The reason I'm asking</p> <p>10 is because that area is so close to the railroad</p> <p>11 track, who wants to build a house next to the --</p> <p>12 MR. KING: I agree. That's why if you</p> <p>13 look at the figure on the right side, on the east</p> <p>14 side that's closest to the railroad track we said</p> <p>15 commercial/industrial because we knew nobody would</p> <p>16 want to. And nobody has to even build on this side,</p> <p>17 but we just cleaned out to those numbers.</p> <p>18 REVEREND SAMUEL: If you don't mind, let</p> <p>19 me just -- I'm going to dovetail off of what Ms.</p> <p>20 Lewis said.</p> <p>21 MR. KING: Tell him who you are again.</p> <p>22 REVEREND SAMUEL: James Samuel. When you</p> <p>23 have completed the process in this stage redlining</p> <p>24 undercover still exists.</p> <p>25 MR. KING: Okay.</p>

<p style="text-align: right;">46</p> <p>1 REVEREND SAMUEL: If I built an equitable 2 home to something that's built out at Prairie Water 3 and I built it where black folks live, it's going to 4 be worth 30 percent less money in real dollars. 5 MR. KING: Yeah. 6 REVEREND SAMUEL: Okay? 7 MR. KING: Okay. 8 REVEREND SAMUEL: That's in the minds of 9 real estate brokers, bankers, and the folks who set 10 the value on residential property based on who lives 11 there and what is in proximity to it. When you 12 finish will you do a report, will the EPA report to 13 the entities that need to know that these properties 14 have been cleaned, they are brought back to a 15 standard and so depreciating them does not serve a 16 purpose. In other words, they've lost enough. 17 When you get through are they still going 18 to be in a hole that they'll never crawl out of? If 19 the report doesn't go to the people who are in a 20 position to fix value on their properties where 21 their lives and their parents' lives are invested, 22 then all of this is for naught. 23 MR. KING: So Reverend Samuel, I don't 24 know whether or not you and I have talked about 25 this, but I know there are -- and I know Lori and I</p>	<p style="text-align: right;">48</p> <p>1 clean, so what I would -- if I was going to write 2 something now and figure out something, I would say 3 these properties haven't even been sampled and we've 4 determined that they're not impacted by the site, 5 should be evaluated just by any other property in 6 Columbus not impacted by the site. 7 Or if it was a property that we sampled, 8 we found out that it had contaminations above health 9 risk levels, we will say we sampled it, it had 10 health risks, results above health levels. We 11 cleaned it up. Here is the confirmation sample that 12 it is clean and now even though it was contaminated 13 at one time, now it is no longer contaminated and 14 should be considered as any other property in 15 Columbus not impacted by the site. 16 You know, now that might not be the right 17 buzz words for the bankers, but that's the framework 18 that we need to start with so that we can get to the 19 right people and have the right buzz words to give 20 those homeowners the information that they want. 21 REVEREND SAMUEL: (Inaudible) go to the 22 bank and I want to get a home loan or I want to get 23 a renovation loan, and the first thing they come up 24 with is an excuse why the house is not worth what we 25 need to borrow.</p>
<p style="text-align: right;">47</p> <p>1 have talked about it, but the issue you've just 2 brought up is something that I'm real passionate 3 about. 4 And one of the things that I have talked 5 about earlier was even trying to work with bankers 6 or the people who set those values, because we can 7 do our EPA terminology but I want to make sure that 8 as we write, whether we write -- we get with the 9 people who have the buzz words on the financial 10 side. 11 Because I may say that it's -- the law -- 12 it doesn't have any unacceptable risk and that might 13 not mean anything to the banker. 14 But we have talked about developing a 15 workgroup so that we can make sure we have the right 16 people at the table or that we have the right buzz 17 words. 18 But, in general, I mean what I would 19 probably say, technically, as an environmental 20 engineer is that we sampled these properties, so we 21 sampled over a hundred residences, I'm sure, but 22 there were just a few that may have had a problem. 23 So what I would want to say is we sampled these 24 properties. These are the ones that were the site, 25 but after we clean them then they're going to be</p>	<p style="text-align: right;">49</p> <p>1 MR. KING: I understand. 2 REVEREND SAMUEL: And this is just another 3 tack they can put in that leather to hold it 4 together so that they can always sit comfortably 5 behind the desk and say, "Well, we're not going to 6 put no money there because the property's not worth 7 it." But if there's a way we can alleviate that 8 then it would be beneficial to all the folks who 9 called it home. 10 MR. KING: We're going to do everything in 11 our power to make sure that the environmental issues 12 won't be a reason for whatever that happens. 13 MS. LEWIS: Okay, as far as the property - 14 - Sharon Lewis again. As far as the property values 15 over in that area of 26th, 27th, the property values 16 are already down. House over there \$25,000, so it's 17 already down. On the Pine Yard if there was solar 18 entity, how would that do? How much would it cover? 19 MR. KING: So we're not dealing -- and I 20 want to try to answer your question. The short 21 answer is I have not done investigations into solar. 22 What I want to do is make sure we get it clean. 23 These people who will redevelop will deal with what 24 you're going to bring there. 25 But so I don't know the answer to what</p>

<p style="text-align: right;">50</p> <p>1 you're saying. I know there's potential for solar,  2 but a part of solar is you've got to make sure you  3 have somebody you can sell it to at a rate that's  4 going to allow you to make some money. And I'm not  5 saying you don't. I'm just saying that there are a  6 whole lot of moving pieces.  7 MS. LEWIS: But on Highway 45 that I  8 travel all the time, there's a residence there --  9 MR. KING: Yes, ma'am.  10 MS. LEWIS: -- and they have solar right  11 outside of their home. I stopped. I talked to  12 them.  13 MR. KING: Okay.  14 MS. LEWIS: As a matter of fact, they've  15 already talked to some of the local folks that did  16 not want them to come here. So solar can be right  17 close to a residence.  18 MR. KING: Okay. I mean I'm not opposed  19 to -- I mean --  20 MR. LEACH: My question along those same -  21 - Darren Leach -- along the same lines as Sharon,  22 will the cleanup prevent us from doing solar on that  23 site?  24 MR. KING: No.  25 MR. LEACH: So if a redeveloper determines</p>	<p style="text-align: right;">52</p> <p>1 it out and be finished. (Indiscernible) and we'll  2 get you to pray us out since I forgot to let you  3 pray us in.  4 MR. HILL: Good afternoon. I'm Franklin  5 Hill. And it's always good to be back in Columbus.  6 Thank you all for your comments tonight. I want to  7 thank my staff, Charles, Kerisa, and the Multistate  8 Trust, the folks who have worked very hard here in  9 partnership to help clean up the site and to  10 specifically for the actions that are being taken in  11 the Pine Yard.  12 As I listened to the questions that came  13 from the community and I listened to Charles'  14 presentation, there's something else I want to leave  15 you with before you go because I think there were a  16 couple of questions that were asked that we didn't  17 really get specific answers to. One is do we have a  18 schedule? Yes, we do. We have a schedule once we  19 come out of the Pine Yard. We will be moving into  20 the main plant site.  21 There is some other activities that we  22 will be taking to connect the 14th Avenue ditch to  23 the 7th Street ditch. That work will take place.  24 There's some residential work that will follow as  25 well. So this group is working daily to make</p>
<p style="text-align: right;">51</p> <p>1 that's what they want to do we can do solar on the  2 site?  3 MR. KING: Yes, yes.  4 MR. LEACH: Okay.  5 MR. KING: Solar and anything, I mean you  6 can do solar but there are other options too. We  7 are not married or committed to a particular  8 technology. We want to make sure that it's  9 something that can be done that the community is  10 going to benefit and that whatever it takes to do  11 that is not going to violate any -- so let's say if  12 we were putting a cap there, which we're not, but I  13 need to give you an example of where it would be an  14 issue.  15 If we were going to put a cap or a cover  16 there and the technology or the redevelopment thing  17 that you want to do if it was going to require you  18 to go through that cap and cause a potential for  19 contamination to be released, then that would be  20 something that you could not do. But in this case  21 we're not proposing to do a cap or a cover, so  22 whatever you do should not impact.  23 Anybody else?  24 Well, thank you guys so much.  25 We'll let Franklin and then Caroline talk</p>	<p style="text-align: right;">53</p> <p>1 decisions to protect this community, so I don't want  2 people to think that we're here working on this  3 project and our goal is not to protect the people of  4 Columbus and to make this area better than what it  5 is today. That is our primary objective.  6 So we will use a number of different  7 remedies, treatment approaches to deal with this  8 site and we will always come to you and talk to you  9 about it. This is one venue where we're talking to  10 you about the activities that we're taking in the  11 Pine Yard.  12 I spent some time last night with the CAG,  13 and so we always talk to the CAG group and I would  14 challenge you if you're not participating with that  15 group to get engaged with them and talk to the CAG  16 about the activities that are going on. But we will  17 also provide that information to you. The Trust  18 will provide that information to you.  19 And we've done some great things here in  20 Columbus, so before you leave tonight these posters  21 on the back wall back here highlight some of those  22 great things. And when I speak of great things I'm  23 talking about economics. Some of us, you know, we  24 don't really focus on the economic aspect of this,  25 but the job training, the jobs that were created in</p>

54

1 this community, the economics behind that have been  
2 outstanding to this community.  
3 Local investment from a contractor  
4 perspective and what we're doing with local hires in  
5 the community, all of those are great things in the  
6 city of Columbus. Have we answered every question?  
7 Have we satisfied every resident? We have not. I  
8 have heard the argument and the discussion about the  
9 toxic tort.

10 What happens in that process as Charles  
11 has mentioned we have no control over it, but what  
12 we do have control over are the activities that we  
13 are taking to clean up this site and the actions  
14 that we're taking. The actions that we take every  
15 day in the Pine Yard as you see the trucks come down  
16 14th Avenue they are taking every precaution to do  
17 that in the safest way possible. And we're mindful  
18 of those activities and so this work will continue.

19 This is just one phase of many phases that  
20 we've already taken. I remember when I first came  
21 to this community and talked to you about what we  
22 were going to be doing here from a standpoint of  
23 cleanup and we're trying to fulfill those promises  
24 and those commitments. This is not easy work in the  
25 subsurface that we're dealing with, but we're making

56

1 of property of this nature.  
2 So I want to thank you all for your  
3 patience. I want to thank you for the questions  
4 that you brought. They've been very good questions.  
5 We're going to continue to focus on this site. Our  
6 focus is always – it has been and will continue to  
7 be on the people in this community as well, so don't  
8 think that we are not focused on the residents of  
9 Columbus. Don't think that we are not focused on a  
10 schedule to try and get to an overall cleanup in  
11 this community to provide a piece of property back  
12 to this community where you can do something with  
13 it.

14 I don't know what those end results are  
15 going to be, but I do know the end results of when  
16 we finish our cleanup here that this site will be  
17 protected. And what I mean by that no one will be  
18 exposed to any contaminants at this site whether  
19 it's in the Pine Yard, whether it's on the main  
20 plant site or whether it's in the ditches.

21 And I think you can already see some of  
22 those improvements. Those improvements are there,  
23 folks can see those. I remember that 14th Street  
24 ditch. I came here before that renovation took  
25 place and I think it was maybe the next day a car

55

1 those decisions and we're doing it as methodically  
2 as we possibly can.

3 There is a schedule and, Charles, at some  
4 point I want to make sure that people know what our  
5 schedule is to get to a record of decision in the  
6 Pine Yard. We had some discussions on yesterday  
7 with the Multistate Trust. They brought their  
8 entire team in. I brought my entire team in. There  
9 are three additional sites like this that we're  
10 working on in the Southeast and so that entire team  
11 was here and we talked about what we were doing on  
12 those sites as well.

13 But I want everyone here to know that the  
14 EPA is committed to cleaning up this site. We're  
15 also equally committed to the redevelopment aspect  
16 of it. Redevelopment can be interesting. I've  
17 heard a lot of different things whether it's solar,  
18 whether it's residential, whether it's light  
19 industrial, all of those are options.

20 And what we want to do is not tell anyone  
21 what they can and can't do, but what we want to do  
22 is develop a piece of property or create a piece of  
23 property that will support multiple options and  
24 therefore the City and this committee will have a  
25 broader flexibility of what they can do with a piece

57

1 was buried in it. So but again we don't have that  
2 to happen today, I don't think so. And so it is  
3 quite an improvement on the 14th Avenue ditch and  
4 we're going to continue to make those kinds of  
5 improvements and we're going to continue to finish  
6 the Pine Yard, and I want to thank you all for  
7 coming out tonight.

8 And I will turn the mike over to the  
9 Reverend, or do we have another question? I didn't  
10 intend to open it up for additional questions. I  
11 just wanted to thank everyone for your patience.  
12 Thank you all for coming out. And I also wanted to  
13 reassure you that we do have a schedule to get to  
14 cleanup for the entire site as well.

15 MS. SHARON LEWIS: The stuff that's coming  
16 up inside of these people's homes who's to take care  
17 of that?

18 MR. HILL: I'm going to let Charles answer  
19 that, but I do know that we've taken significant  
20 action with Columbus Water & Light.

21 Do you want to talk about the slip work?

22 MR. KING: Sure. They did a slip line on  
23 the 14th Avenue ditch, but I think she's more  
24 talking about the things that have come up in  
25 individual homes. Ms. Lewis and I have talked

<p style="text-align: right;">58</p> <p>1 several times. I think we got Todd Gale to come and  2 I think he came to this church, I think, for one of  3 our CAG meetings. And we actually did a tap water  4 sampling and we were not able to show an indication  5 of anything coming from the Pine Yard.  6 Lori Gorton that's back there in the back  7 with the Trust, if there's anything you want to add?  8 Lori, is that accurate? I couldn't let you stay the  9 whole day. I come and work with you.  10 MS. GORTON: I almost made it home.  11 MR. KING: You almost made it. You made  12 it to the end. I'm sorry, but I know she has a bit  13 more detail.  14 MS. GORTON: Yeah, no.  15 Thanks, Ms. Sharon. One of the things  16 that we did when we slip lined, worked with Columbus  17 Light &amp; Water to slip line the sewer that was in  18 14th Avenue, is that some of the reason that things  19 were backing up into people's homes all through  20 those neighborhoods was that there was extra water  21 that was getting into the sewers. And that water,  22 because the sewer was cracked and broken and what  23 was happening was when that extra water got in there  24 it was backing up into people's homes and along with  25 it there was black material that several people have</p>	<p style="text-align: right;">60</p> <p>1 things. I know that you know, Ms. Sharon, your  2 mom's home. They did actually check one of the  3 lines, I think Ms. Sharon Wilson's house, but  4 sometimes that happens when there are roots or  5 things that get between the home and the sewer.  6 But I guess the short answer to it is we have been  7 working with Columbus Light &amp; Water to take care of  8 that whole system so water doesn't back up anymore  9 because we know that's been an issue.  10 So, yes, Reverend Samuel?  11 REVEREND SAMUEL: (Inaudible) what you  12 seem to be saying and what they're experiencing – I  13 don't need that. I'll just stand up.  14 MS. GORTON: Okay, I just want to make  15 sure people can hear you.  16 REVEREND SAMUEL: What you're saying is  17 that that's an infrastructure problem, a city  18 infrastructure problem. The question then becomes  19 what testing has been done to find out what the  20 composition of that (indiscernible) is within those  21 homes and in their yards.  22 MS. GORTON: Do you want to keep going?  23 Great question. Yeah, we did. As Charles  24 was saying – great question, Reverend Samuels.  25 And for those of you who didn't hear him,</p>
<p style="text-align: right;">59</p> <p>1 indicated was in their bathtubs – I see heads  2 nodding – and coming up there.  3 MR. HILL: Lori, can you explain to them  4 the slip line process that needs to prevent –  5 MS. GORTON: Yeah. I will, yeah. Thanks,  6 Franklin.  7 What we did with Columbus Light &amp; Water  8 knew this was a problem and so they actually had a  9 bigger program through the neighborhoods to try and  10 basically take care of the pipes, get the cracks  11 fixed and everything else. And what the Trust and  12 EPA did was work with Columbus Light &amp; Water  13 particularly for that sewer line along 14th Avenue  14 to do something called slip lining.  15 And what that is, is if you've got an old  16 cracked pipe, you imagine a pipe that's cracked,  17 they actually pull a liner through on the inside of  18 it from one manhole to the next. They line that  19 whole pipe and then they put a chemical in there so  20 that it coats the inside of the pipe and basically  21 creates a hard lining all on that inside of the pipe.  22 to close up all the cracks and keep any water, extra  23 water from coming in and then driving that water up  24 into the homes.  25 Now there may still be some residual</p>	<p style="text-align: right;">61</p> <p>1 he wanted to know did we test any of the black  2 material that was backing up into people's homes and  3 the answer is yes, we did and we did a couple of  4 things. One of the things we did was we actually  5 tested the material in the sewers themselves.  6 With Columbus Light &amp; Water we went and we  7 tested several of the manholes and pipes along 14th  8 Avenue and then up the streets. We actually have  9 gone to a couple of homes where residents have  10 called to try and get a sample of material right at  11 the house. Sometimes we haven't been able to get  12 enough material to take to the lab because you need  13 a certain amount to send it in for sampling.  14 There was one case though where one of the  15 homeowners was replacing their hot water heater and  16 when they did that there was a bunch of material  17 that we actually did sample and there was nothing in  18 it. The only chemical that showed up at all was a  19 chemical that is associated with the plastic piping,  20 you know, for some of the new plumbing that folks  21 are putting in their houses. It's that white  22 plastic piping. It was that.  23 But we have not found – yeah, nothing  24 site related. And, you know the black stuff in the  25 sewer system, there's a lot of things that cause</p>

62	<p>1 what's in the sewer to be black and we did not find                  2 any of it as creosote related yet. But I've                  3 mentioned this before at the CAG meeting and I will                  4 again.                  5 If there's somebody who has something                  6 that's backing up in their bathtub, you know, if                  7 that's still happening, or a sink, if you call us,                  8 and there's a hotline number that we have on our                  9 newsletters, we have folks ready to come over and                  10 get and collect, you know, something to sample right                  11 from the house because there's no better                  12 demonstration than what happens at a person's home.                  13 REVEREND SAMUEL: Thank you, Charles.                  14 You're so worthy. This is for the edification of                  15 all the citizens of Columbus. If they're going to                  16 write a report that states what she just stated, if                  17 it is indeed an infrastructure problem then as                  18 voters and taxpayers we have to put it -- because                  19 understand that Kerr-McGee got out of here as easy                  20 as they did because we had a solid board of                  21 supervisors and city council. They need to be                  22 investing in our neighborhoods as they put money                  23 everywhere else for industrial development because                  24 we're paying for it.                  25 So if we sit silently by again then we ask</p>	64
63	<p>1 them to put another knife in our spine. We ask for                  2 the pain that's going to follow. If we won't                  3 change, we have to be the change that we see. And                  4 we can't sit silently by and okie-doke when we keep                  5 electing people every four years who don't do                  6 anything for the people who pay taxes and vote for                  7 them at the ballot box. Thanks.                  8 MR. KING: Thanks for your comment.                  9 I just wanted to give the number to the                  10 hotline that Lori mentioned. If you have your                  11 pencils, the hotline number, and report anything                  12 from the Kerr-McGee site, that number is (662)288-                  13 4412. That number again is (662)288-4412 and that's                  14 a 24-hour hotline. Okay, (662)288-4412.                  15 Pastor, if you'll pray us out we'll really                  16 appreciate it.                  17 MR. LEACH: Certainly. If you don't mind,                  18 I'll say one thing real quickly. One, I want to                  19 tell you all that we appreciate you coming out to                  20 the Dream Center. We were honored to host the EPA                  21 and the Multistate Trust in this informational                  22 meeting.                  23 I want to thank you Mr. Charles and Ms.                  24 Kerisa for giving us the update, helping us                  25 understand exactly what's going on over here. I</p>	65
62	<p>1 want to thank you, Lori, for helping us understand                  2 the questions that Pastor Samuel's asking because I                  3 don't know what he's saying, so thank you for                  4 clarifying that.                  5 If you can, all let's stand. We're going                  6 to pray us out of here. Bow your heads.                  7 Heavenly Father, we thank you for allowing                  8 us to come out today. I thank you, Father, for the                  9 evolution of these meetings. I thank you, Father,                  10 for how the trust has been built between us and                  11 while the questions are still tough that the people                  12 are not anymore. I thank you for the team that                  13 you've developed.                  14 And, Father, I thank you that most of all                  15 You are in charge of making sure that when this is                  16 all over people are made whole. I pray, Father,                  17 that you will move on the hearts of those that have                  18 the power and the authority to make people whole in                  19 this place. And I thank you for what's going on                  20 right now and we pray that there be no injuries, no                  21 accidents, no illnesses associated with this project                  22 and that it comes in in time, on budget and that                  23 when it's all said and done we're all proud of what                  24 happens.                  25 We pray, Father, that as we leave this</p>	65

66

1 CERTIFICATE

2  
 3 I, Patty English, do hereby certify that the  
 4 proceedings named herein was professionally transcribed  
 5 on the date set forth in the certificate herein; that I  
 6 ranscribed all testimony adduced and other oral proceedings  
 7 had in the foreging matter; and that the foregoing  
 8 transcript pages constitue a full, true, and correct record  
 9 of such testimony adduced and oral proceeding had and of  
 10 the whole thereof.

11  
 12  
 13 IN WITNESS HEREOF, I have hereunto set my hand this  
 14 9th day of January, 2019.

15  
 16  
 17  
 18  
 19  
 20 /S/ Patty English

21  
 22  
 23  
 24  
 25



<p>§</p> <p><b>\$25,000</b> 49:16</p> <p><b>\$75</b> 34:15</p> <hr/> <p>1</p> <p><b>1</b> 3:13 21:21</p> <p><b>127</b> 7:20</p> <p><b>13</b> 2:5 18:23</p> <p><b>14</b> 41:19</p> <p><b>14th</b> 5:24</p> <p>9:18 19:3</p> <p>19:6</p> <p>21:17 36:16</p> <p>42:6</p> <p>42:21 43:23</p> <p>44:1</p> <p>52:22 54:16</p> <p>56:23</p> <p>57:3</p> <p>57:23 58:18</p> <p>59:13 61:7</p> <p><b>16</b> 30:10</p> <p><b>17</b> 20:9</p> <p><b>180,000</b> 13:22</p> <p><b>1924-26</b> 27:23</p> <p><b>1928</b> 6:4</p> <hr/> <p>2</p> <p><b>2</b> 13:4</p> <p>13:23 15:25</p> <p>16:4 16:6</p> <p>16:9 16:21</p> <p><b>2001</b> 27:4</p> <p><b>2003</b> 6:5</p> <p><b>2011</b> 6:6</p> <p><b>2016</b> 30:10</p> <p><b>2017</b> 9:23</p>	<p>18:25</p> <p><b>2018</b> 2:5 27:5</p> <p><b>2019</b> 4:6</p> <p>20:17 21:8</p> <p><b>22</b> 21:11</p> <p><b>22nd</b> 23:20</p> <p>36:7</p> <p><b>23rd</b> 24:7</p> <p><b>24-hour</b> 63:14</p> <p><b>25-page</b> 21:11</p> <p><b>26</b> 32:14</p> <p><b>26th</b> 49:15</p> <p><b>27</b> 44:17</p> <p><b>27th</b> 30:23</p> <p>31:9</p> <p>32:13</p> <p>45:4 49:15</p> <hr/> <p>3</p> <p><b>3</b> 13:8</p> <p>13:24 16:8</p> <p><b>3.1</b> 13:24</p> <p><b>30</b> 13:23 17:8</p> <p>46:4</p> <p><b>30303</b> 21:5</p> <hr/> <p>4</p> <p><b>4</b> 13:14 13:24</p> <p>16:14</p> <p><b>41</b> 7:23</p> <p><b>44</b> 6:22</p> <p><b>4412</b> 63:13</p> <p><b>45</b> 50:7</p> <p><b>49</b> 8:3</p> <hr/> <p>5</p>	<p><b>500</b> 39:20</p> <p><b>55,000</b> 16:22</p> <p><b>58</b> 25:10</p> <hr/> <p>6</p> <p><b>6.4</b> 13:24</p> <p><b>6:00</b> 2:6</p> <p><b>60</b> 18:22</p> <p><b>600</b> 39:20</p> <p><b>61</b> 21:4</p> <p><b>662)288</b> 63:12</p> <p><b>662)288-</b></p> <p><b>4412</b></p> <p>63:13 63:14</p> <p><b>6th</b> 4:6 20:17</p> <p>21:8</p> <hr/> <p>7</p> <p><b>7:20</b> 65:8</p> <p><b>7th</b> 4:5 18:25</p> <p>20:5</p> <p>20:16 43:22</p> <p>44:1 52:23</p> <hr/> <p>8</p> <p><b>800</b> 39:19</p> <hr/> <p>9</p> <p><b>9.8</b> 13:23</p> <p><b>90</b> 19:15</p> <p><b>900</b> 39:19</p> <hr/> <p>A</p> <p><b>abiding</b> 26:12</p> <p>27:11</p> <p><b>ability</b> 24:13</p> <p>29:11 45:1</p>	<p><b>able</b> 4:1</p> <p>8:8 17:23</p> <p>20:21</p> <p>21:2</p> <p>31:18</p> <p>33:2</p> <p>37:14</p> <p>58:4 61:11</p> <p><b>abound</b> 33:11</p> <p><b>abroad</b> 31:22</p> <p><b>Absolutely</b></p> <p>38:21</p> <p><b>absorbed</b></p> <p>43:10</p> <p><b>acceptance</b></p> <p>15:17</p> <p><b>access</b> 42:18</p> <p><b>accidents</b></p> <p>64:21</p> <p><b>accommodation</b></p> <p>s 3:6</p> <p><b>accomplishes</b></p> <p>17:10 17:19</p> <p><b>accurate</b> 58:8</p> <p><b>achieves</b></p> <p>16:25</p> <p><b>acres</b> 6:23</p> <p><b>action</b> 8:15</p> <p>8:21 9:6</p> <p>9:13 9:19</p> <p>9:19 9:21</p> <p>10:4 10:7</p> <p>10:17 10:21</p> <p>10:23 12:21</p> <p>12:22</p> <p>13:1</p> <p>13:22 24:14</p> <p>57:20</p>
--	--	--	--



<b>actions</b> 40:25 42:19 52:10 54:13 54:14	<b>agencies</b> 29:22	<b>amount</b> 61:13	<b>approaches</b> 53:7
<b>activities</b> 52:21 53:10 53:16 54:12 54:18	<b>agency</b> 9:24 15:6	<b>Ann</b> 38:3	<b>appropriate</b> 8:14 13:7 16:24 40:25
<b>acts</b> 29:21	<b>ago</b> 4:5 19:22 20:15	<b>Anniston</b> 29:16	<b>approximate</b> 16:22
<b>actually</b> 4:4 13:11 24:9 58:3 59:8 59:17 60:2 61:4 61:8 61:17	<b>Alabama</b> 29:16	<b>answer</b> 4:22 5:4 31:18 44:4 49:20 49:21 49:25 57:18 60:6 61:3	<b>approximately</b> 6:4 6:22
<b>add</b> 58:7	<b>alleviate</b> 49:7	<b>answered</b> 54:6	<b>aquifer</b> 39:12 39:15 39:21
<b>additional</b> 41:7 42:11 55:9 57:10	<b>allow</b> 50:4	<b>answers</b> 26:16 31:19 52:17	<b>ARARs</b> 14:11 14:11 17:2
<b>address</b> 12:19 13:13	<b>allowed</b> 3:5 20:18	<b>anticipated</b> 7:5 11:19	<b>area</b> 5:25 6:21 6:25 7:14 9:17 11:10 11:14 11:15 12:4 12:6 12:11 12:16 12:18 14:20 24:4 24:7 24:21 25:8
<b>addressed</b> 6:2	<b>allowing</b> 64:7	<b>anybody</b> 41:18 51:23	27:13 28:20 31:9 41:21 42:23 43:11 43:12 44:13 45:10 49:15 53:4
<b>addressing</b> 5:20 12:12 12:18	<b>already</b> 49:16 49:17 50:15 54:20 56:21	<b>anybody's</b> 30:1	<b>areas</b> 8:6 8:11 43:25
<b>adjust</b> 40:21	<b>alternative</b> 12:14 12:22 13:2 13:4 13:7 13:14 13:24 15:25 16:4 16:6 16:7 16:8 16:9 16:14 16:15 16:21	<b>anymore</b> 60:8 64:12	<b>argument</b> 54:8
<b>administrativ e</b> 4:20 9:23 10:13 10:15	<b>alternatives</b> 5:20 10:11 12:18 12:21 13:21 14:1 22:11	<b>anyone</b> 55:20	<b>aspect</b> 53:24 55:15
<b>advantage</b> 10:3	<b>am</b> 2:15 31:23 37:18 41:14	<b>anything</b> 12:23 12:25 18:7 37:1 39:7 40:17 47:13 51:5 58:5 58:7 63:6 63:11	<b>assess</b> 7:15 9:9
<b>aerial</b> 6:16	<b>ambiguities</b> 26:17	<b>apologize</b> 13:9 19:11	<b>assessments</b>
<b>affect</b> 8:25 9:4	<b>amen</b> 29:4 65:3 65:5	<b>apply</b> 14:12 17:9 18:17	
<b>afternoon</b> 52:4		<b>appreciate</b> 2:10 63:16 63:19	

10:10		49:5 54:1	<b>board</b> 62:20
<b>associated</b>	<hr/> <b>B</b> <hr/>	<b>believe</b>	<b>body</b> 28:1
61:19 64:21	<b>backing</b> 58:19	16:1 16:4	<b>bold</b> 9:10
<b>Atlanta</b> 10:16	58:24	16:18	<b>border</b> 11:8
21:4 21:5	61:2 62:6	28:4	11:9
28:21	<b>bad</b> 36:18	36:19 43:21	<b>boring</b> 7:22
<b>attempts</b>	<b>balancing</b>	<b>beneath</b> 8:2	<b>borrow</b> 48:25
28:24	14:6	<b>beneficial</b>	<b>Bow</b> 64:6
<b>attended</b>	14:14 15:23	49:8	<b>box</b> 63:7
30:22	16:5 17:3	<b>benefit</b> 27:16	<b>boy</b> 41:15
<b>attending</b>	<b>ballot</b> 63:7	27:22	<b>breath</b> 27:4
2:11 30:18	<b>Balthazar</b>	35:9	<b>bring</b> 4:25
<b>attorney</b> 33:1	38:3 38:3	35:12 51:10	15:13 49:24
33:1	38:5	<b>benzo (a)</b>	<b>broader</b> 55:25
<b>audience</b> 4:13	38:12 38:16	<b>pyrene</b> 8:24	<b>broken</b> 58:22
5:11	38:18 38:22	<b>best</b> 16:5	<b>brokers</b> 46:9
<b>authorities</b>	<b>bank</b> 48:22	17:3	<b>Brother</b> 26:11
42:18	<b>banker</b> 47:13	29:10 29:10	28:16 29:6
<b>authority</b>	<b>bankers</b>	45:3	<b>brought</b> 46:14
32:6 64:18	46:9 47:5	<b>better</b>	47:2 55:7
<b>available</b>	48:17	32:19 43:21	55:8 56:4
15:2	<b>Baptist</b> 29:4	43:24	<b>Brownfield</b>
<b>Avenue</b> 5:24	<b>based</b> 11:18	53:4 62:11	26:8
18:25	12:5 46:10	<b>bigger</b> 59:9	<b>Bryan</b> 2:23
19:3 19:6	<b>basically</b>	<b>bill</b> 31:3	<b>budget</b>
20:5	4:12	34:4	19:18 64:22
21:17	13:18 59:10	<b>bit</b> 18:4	<b>build</b> 37:1
36:7	59:20	18:20	45:11 45:16
36:17 41:20	<b>basis</b> 8:15	36:4 58:12	<b>buildings</b>
42:6	8:20 9:6	<b>black</b> 46:3	6:18
42:21 43:22	10:6 10:17	58:25	<b>built</b> 46:1
44:1	<b>bated</b> 27:3	61:1	46:2 46:3
52:22 54:16	<b>bathtub</b> 62:6	61:24 62:1	64:10
57:3	<b>bathtubs</b> 59:1	<b>blew</b> 7:12	<b>bunch</b> 61:16
57:23 58:18	<b>becomes</b> 60:18	<b>blockages</b>	
59:13 61:8	<b>behind</b> 33:21	42:14	
<b>award</b> 20:7		<b>blue</b> 11:13	
<b>aware</b> 42:19			

<b>buried</b> 57:1	<b>Cassandra</b> 3:2	62:13 63:23	<b>clean</b> 11:10
<b>busy</b> 11:6	<b>category</b> 31:6	<b>charrettes</b>	11:17
<b>buzz</b> 47:9	<b>cause</b> 38:1	11:21 35:19	12:5
47:16 48:17	51:18 61:25	<b>chart</b> 9:8	38:12 44:17
48:19	<b>caused</b> 9:5	<b>cheap</b> 33:20	45:3
<hr/>	<b>cemented</b>	<b>check</b> 60:2	47:25
C	41:21	<b>chemical</b>	48:1
<b>CAG</b> 11:20	<b>Center</b>	2:1 6:3	48:12 49:22
17:14 18:12	21:16 63:20	59:19 61:18	52:9 54:13
18:12 18:13	<b>certain</b> 40:10	61:19 65:7	<b>cleaned</b> 11:16
23:13 37:21	61:13	<b>chicken</b>	11:23 44:22
53:12 53:13	<b>certainly</b>	41:9 41:11	45:17 46:14
53:15	35:15 36:25	<b>chickens</b>	48:11
58:3 62:3	63:17	41:16	<b>cleaning</b>
<b>camera</b> 4:12	<b>chain</b> 34:20	<b>choose</b> 13:3	36:16
4:13 4:21	<b>challenge</b>	22:12 22:14	37:4 37:6
<b>Canal</b> 29:15	26:5 53:14	22:16	39:6 55:14
<b>cancer</b> 30:22	<b>change</b>	<b>Chris</b> 2:23	<b>cleanup</b> 2:2
<b>cap</b> 13:16	34:17	<b>church</b>	3:11 6:13
13:19 51:12	63:3 63:3	43:11 43:17	10:9
51:15 51:18	<b>changed</b> 40:18	58:2	12:13
51:21	<b>characterizat</b>	<b>citizens</b>	13:6
<b>capture</b>	<b>ion</b> 8:4	11:24	32:11
4:11 4:16	<b>characterized</b>	18:2 62:15	37:3
<b>car</b> 56:25	8:2	<b>city</b> 17:13	40:13 40:18
<b>care</b> 31:3	<b>charge</b> 64:15	20:7 33:6	45:6
57:16 59:10	<b>Charles</b>	36:24 39:17	50:22 54:23
60:7	2:17 4:7	42:11 42:23	56:10 56:16
<b>Caroline</b> 2:23	4:14 5:6	42:25	57:14 65:8
51:25	20:10 20:14	43:2 54:6	<b>cleared</b> 33:24
<b>cartoon</b> 7:8	20:22	55:24 60:17	<b>Clinton</b> 34:4
<b>case</b> 8:22	21:4 21:9	62:21	<b>close</b> 25:7
10:22 12:24	21:20	<b>clarify</b> 26:24	45:10 50:17
15:6	52:7	<b>clarifying</b>	59:22
16:12 34:11	52:13 54:10	64:4	<b>closed</b> 6:17
51:20 61:14	55:3	<b>clay</b> 13:16	<b>closest</b> 44:17
<b>cases</b> 19:25	57:18 60:23	39:20	45:14
			<b>coal</b> 6:9
			<b>coats</b> 59:20

<b>COCs</b> 8:23	<b>coming</b> 5:10	17:22 19:20	10:25 23:17
<b>Cole</b> 2:23	30:11 31:20	19:21	25:4 27:9
<b>Coleman</b> 2:8	35:6 38:7	20:1	28:25 39:25
2:15	57:7	21:16 23:20	<b>concerned</b>
20:10 41:1	57:12 57:15	23:24	27:13 28:16
<b>collaborative</b>	58:5 59:2	24:1	31:2 31:12
19:9 20:8	59:23 63:19	24:20	<b>concerns</b>
36:23	<b>comment</b>	35:8	4:3 4:17
<b>collect</b> 62:10	3:24 4:4	41:24	4:18 20:3
<b>collected</b>	15:12 15:17	51:9	20:12 21:23
7:19 7:20	20:15 63:8	52:13	26:12 43:6
7:25 8:3	<b>comments</b>	53:1 54:1	<b>concerted</b>
8:11	4:2 4:3	54:2 54:5	26:23
32:12 32:14	4:17 4:18	54:21	<b>concluded</b>
<b>Collectively</b>	20:12 20:22	56:7	65:8
65:4	21:3 21:6	56:11 56:12	<b>concurrence</b>
<b>Columbus</b> 5:23	21:7	<b>companies</b>	17:5
10:16 17:13	21:23 52:6	18:24	<b>conducted</b>
17:15 19:10	<b>commercial</b>	<b>completed</b>	9:20
20:8 35:4	6:23	22:22 45:23	<b>confirmation</b>
36:25 39:24	11:16	<b>complex</b> 33:6	48:11
42:23	12:3 37:7	<b>compliance</b>	<b>connect</b> 43:22
48:6	45:2	43:3	52:22
48:15	<b>commercial/</b>	<b>complies</b>	<b>connection</b>
52:5 53:4	<b>industrial</b>	14:10 17:2	39:21
53:20	45:15	<b>components</b>	<b>consider</b> 6:14
54:6 56:9	<b>commitments</b>	14:5	7:6 16:3
57:20 58:16	54:24	<b>composition</b>	<b>considered</b>
59:7	<b>committed</b>	60:20	10:11 17:18
59:12	51:7	<b>concentration</b>	22:12 48:14
60:7 61:6	55:14 55:15	<b>s</b> 10:25	<b>consolidate</b>
62:15	<b>committee</b>	12:6 24:8	13:12
<b>Columbus-</b>	55:24	24:13 32:9	<b>consolidation</b>
<b>Lowndes</b>	<b>commonly</b> 15:3	<b>concept</b> 17:10	13:9
21:15	<b>communities</b>	18:16 18:17	<b>construction</b>
<b>comes</b> 34:4	6:15 34:14	<b>conceptual</b>	9:15
64:22	<b>community</b>	7:9	19:14 40:13
<b>comfortably</b>	2:16 3:9	<b>concern</b> 8:23	
49:4	7:7 15:17		



41:20	57:4 57:5	<b>council</b> 62:21	14:3 14:4
<b>contact</b> 7:4	<b>continuing</b>	<b>counterparts</b>	14:4 14:5
9:1 9:3	35:23	3:1	14:6 14:6
13:16 16:23	<b>contractor</b>	<b>country</b> 29:18	14:7 14:7
39:11	54:3	41:15	14:14
<b>contaminants</b>	<b>contractors</b>	<b>couple</b>	15:5
8:22	17:25 41:6	52:16	15:23
10:25	<b>contracts</b>	61:3 61:9	16:5
11:3 12:9	19:16	<b>course</b> 5:23	16:16
32:9 56:18	<b>control</b>	15:15 38:8	17:1 17:3
<b>contaminated</b>	2:12 36:1	<b>court</b> 25:17	<b>critical</b>
13:6	36:4	<b>courts</b> 33:24	17:17 17:18
31:13 48:12	54:11 54:12	<b>court's</b> 33:25	<b>crook</b> 35:5
48:13	<b>controls</b>	<b>cover</b> 13:14	<b>crossties</b>
<b>contamination</b>	13:15 13:17	16:14 16:16	6:18 7:10
5:19 6:6	<b>conversation</b>	49:18 51:15	<b>cubic</b> 16:22
6:7 7:2	18:15	51:21	<b>culminated</b>
7:10 7:13	29:2 35:14	<b>coverage</b>	27:10
7:16 8:13	<b>convinced</b>	43:25	<b>currently</b>
8:18 9:3	29:11	<b>covering</b> 22:5	6:12 7:1
14:13 14:19	<b>coordinated</b>	22:7 22:8	<hr/>
14:20	42:22	<b>cracked</b> 58:22	D
16:7	<b>Coordinator</b>	59:16 59:16	<b>daily</b> 52:25
16:10 23:18	2:16 3:9	<b>cracks</b>	<b>damage</b> 34:15
24:18 31:15	<b>copy</b> 3:16	59:10 59:22	<b>darker</b> 12:6
36:12	3:17	<b>crawl</b> 46:18	<b>Darren</b> 37:2
38:1	<b>corporate</b>	<b>create</b> 55:22	50:21
38:24 39:13	34:14	<b>created</b> 26:15	<b>data</b> 11:7
43:9	<b>CORPORATION</b>	53:25	18:20
43:12 43:16	2:1 65:7	<b>creates</b> 59:21	<b>date</b> 30:17
51:19	<b>correct</b> 37:18	<b>creosote</b>	<b>day</b> 54:15
<b>contamination</b>	37:19 43:14	6:9 6:9	56:25 58:9
<b>s</b> 48:8	<b>cost</b> 13:22	7:23 40:1	<b>deal</b> 23:15
<b>contents</b> 4:11	15:3 15:4	62:2	30:2
<b>continual</b>	16:6 16:8	<b>criteria</b>	33:21
34:9	17:4 35:9	10:12	34:1
<b>continue</b> 30:2	<b>costs</b> 13:20		49:23 53:7
39:1 39:2			<b>dealing</b>
54:18			
56:5 56:6			



8:16	8:13 8:17	38:25	15:1
10:19 14:13	10:20 44:20	<b>disagree</b> 32:4	18:15 18:20
31:14 31:15	<b>determined</b>	33:25	19:16
39:10 49:19	48:4	<b>discover</b>	23:6
54:25	<b>determines</b>	30:13	27:10 27:24
<b>December</b>	50:25	<b>discovery</b>	27:25 32:13
2:5 4:5	<b>develop</b> 10:21	5:14	35:20 40:13
20:16	55:22	<b>discussion</b>	40:13 43:20
<b>decided</b> 22:16	<b>developed</b>	33:6 54:8	43:24 49:21
<b>decision</b>	19:19	<b>discussions</b>	51:9
33:25 55:5	20:1 45:5	55:6	53:19 60:19
<b>decisions</b>	64:13	<b>dislocated</b>	64:23
8:14 53:1	<b>developer</b>	35:3	<b>Dorothy</b>
55:1	35:25	<b>disposal</b> 13:5	30:8 30:9
<b>deed</b> 35:6	<b>developing</b>	16:21	44:7 44:7
<b>deep</b> 8:3	31:9 47:14	<b>disturb</b> 13:18	44:11 45:9
27:11 39:14	<b>development</b>	22:9	<b>dots</b> 8:10
<b>deletion</b> 5:15	62:23	<b>ditch</b> 19:3	<b>dovetail</b>
<b>demonstration</b>	<b>diagram</b> 15:21	20:5 42:7	45:19
62:12	32:16	42:22	<b>drainage</b> 7:25
<b>DEPARTMENT</b>	<b>died</b> 30:22	44:1	42:5 42:8
65:6	<b>different</b>	52:22 52:23	42:25 43:1
<b>depreciating</b>	7:13 7:17	56:24	<b>Dream</b> 63:20
46:15	8:11 31:6	57:3 57:23	<b>drink</b> 39:16
<b>dermal</b> 9:1	35:20 43:25	<b>ditches</b>	<b>drinking</b>
<b>description</b>	53:6 55:17	7:25 42:6	39:22 40:5
29:9	<b>dig</b> 13:19	42:8 56:20	<b>driving</b> 59:23
<b>deserve</b> 29:21	28:17	<b>doctor</b> 31:3	<b>due</b> 6:6
<b>designed</b> 7:22	<b>dioxin</b> 8:23	<b>document</b>	<b>dumped</b> 23:18
<b>desk</b> 28:13	<b>dioxins</b> 6:11	21:11 21:12	<b>during</b> 5:3
49:5	<b>direct</b> 13:16	<b>documentation</b>	44:8
<b>despite</b> 2:10	<b>direction</b>	10:6	<b>dying</b> 30:24
<b>detail</b> 58:13	41:25	<b>documents</b>	
<b>details</b> 4:1	<b>dirt</b> 26:15	10:17	<hr/>
<b>determine</b>	33:20 33:21	11:5 23:12	<b>earlier</b>
5:18 7:16	38:9	<b>dollars</b> 46:4	6:20 7:6
	38:10 38:25	<b>done</b> 5:16	20:14
			37:3 47:5



<b>early</b> 24:10	59:11 62:23	36:2	55:13 57:11
<b>ears</b> 30:1	<b>email</b> 20:22	36:24 40:14	<b>everything</b>
<b>ease</b> 33:12	28:10	41:4 41:6	11:7
<b>east</b> 45:13	<b>employed</b>	46:12	49:10 59:11
<b>easy</b> 54:24	18:22 28:5	47:7	<b>everywhere</b>
62:19	<b>employees</b>	55:14 59:12	62:23
<b>ECOLOGY</b> 65:6	33:11	<b>EPA's</b> 3:11	<b>evolution</b>
<b>economic</b>	<b>energy</b> 18:11	17:21	64:9
53:24	<b>engaged</b> 53:15	<b>equally</b> 55:15	<b>exactly</b> 63:25
<b>economics</b>	<b>engineer</b>	<b>equitable</b>	<b>example</b> 51:13
53:23 54:1	47:20	46:1	<b>excavation</b>
<b>edges</b> 27:5	<b>engineers</b>	<b>erosion</b> 11:4	13:5 13:9
<b>edification</b>	42:23	<b>error</b> 12:10	<b>exceed</b> 32:11
29:22 62:14	<b>ensure</b> 9:6	<b>escape</b> 30:5	<b>exceeds</b> 13:6
<b>educate</b> 17:22	34:9	<b>especially</b>	<b>excuse</b> 48:24
17:24	<b>entire</b> 15:9	29:5	<b>exists</b> 45:24
<b>effective</b>	16:13	<b>estate</b> 46:9	<b>expect</b> 6:8
14:16 14:24	55:8 55:8	<b>evaluate</b> 14:2	<b>expensive</b>
17:4	55:10 57:14	<b>evaluated</b>	16:15
<b>effectiveness</b>	<b>entities</b>	48:5	<b>experiencing</b>
14:14 14:21	46:13	<b>evaluating</b>	60:12
<b>effort</b> 8:12	<b>entity</b>	22:15	<b>explain</b> 59:3
26:23 36:24	34:25 49:18	<b>evaluation</b>	<b>explaining</b>
<b>efforts</b>	<b>environment</b>	10:12 12:13	39:9
19:9 20:8	9:7 14:10	13:2 14:3	<b>exposed</b> 56:18
<b>eight</b> 19:22	17:2	40:16	<b>exposure</b>
31:21 31:21	<b>environmental</b>	<b>evening</b> 2:8	10:24
39:14 39:14	2:25 18:7	25:15 25:16	<b>extensively</b>
<b>either</b> 4:24	47:19 49:11	<b>events</b> 35:4	26:13 28:7
20:22	<b>EPA</b> 2:20 2:20	<b>everybody</b>	<b>extent</b> 5:18
33:3 40:20	3:22 4:2	15:15 27:15	7:16 8:17
<b>electing</b> 63:5	5:7 9:5	<b>everyone</b>	<b>extra</b> 40:9
<b>elongate</b> 29:1	9:21 9:22	2:9 3:3	58:20 58:23
<b>else</b> 38:1	10:16 16:11	17:10 17:17	59:22
41:18 44:14	18:3 19:9	17:18 36:10	
51:23 52:14	19:22	38:6	
	20:8 26:8		
	32:5 33:2		

F



<b>facility</b> 3:5 5:25 6:4 13:12	18:14 39:5 46:12 56:16 57:5	18:13	<b>functioning</b> 40:17
<b>fact</b> 3:16 3:17 3:23 10:14 20:24 20:25 21:10 30:1 50:14	<b>finished</b> 44:12 52:1	<b>folks</b> 2:20 11:21 31:2 37:21 46:3 46:9 49:8 50:15 52:8 56:23 61:20 62:9	<b>funerals</b> 30:22
<b>fair</b> 44:15	<b>first</b> 5:1 5:10 6:19 16:1 22:25 48:23 54:20	<b>Force</b> 9:23	<b>furans</b> 6:11 8:23
<b>families</b> 32:1	<b>five</b> 40:15	<b>foresee</b> 35:23	<b>future</b> 3:19 3:22 11:19 23:12 34:12 35:23 37:20
<b>family</b> 28:19 30:16	<b>five-year</b> 40:14	<b>forgive</b> 29:3	<hr/> <b>G</b> <hr/>
<b>Father</b> 64:7 64:8 64:9 64:14 64:16 64:25	<b>fix</b> 46:20	<b>forgot</b> 22:25 52:2	<b>Gale</b> 58:1
<b>favor</b> 15:11 15:25	<b>fixed</b> 36:18 59:11	<b>form</b> 28:12	<b>gauge</b> 5:11
<b>federal</b> 14:12	<b>fixing</b> 31:11	<b>formal</b> 10:6	<b>general</b> 19:17 47:18
<b>feel</b> 10:1 29:7 29:24 32:4 32:18 32:19	<b>flexibility</b> 55:25	<b>Forsyth</b> 21:4	<b>Georgia</b> 21:5
<b>feet</b> 39:14 39:19 39:19 39:20	<b>floor</b> 21:18	<b>forth</b> 20:2 20:4 29:11	<b>Geraldine</b> 36:6
<b>felt</b> 45:2	<b>flourishes</b> 26:2	<b>fox</b> 41:9 41:12	<b>gets</b> 16:8
<b>figure</b> 11:5 11:6 12:4 45:13 48:2	<b>flow</b> 41:21 41:25 42:25 43:1	<b>foxes</b> 41:16	<b>getting</b> 31:13 31:23 43:19 58:21
<b>finalized</b> 10:9 10:10	<b>flowed</b> 41:23	<b>frame</b> 23:3	<b>giants</b> 34:14
<b>financial</b> 47:9	<b>flows</b> 41:21	<b>framework</b> 48:17	<b>given</b> 18:1 20:7 35:18
<b>findings</b> 9:5	<b>focus</b> 7:4 53:24 56:5 56:6	<b>Frankenstein</b> 26:19	<b>giving</b> 31:24 63:24
<b>finish</b>	<b>focused</b> 56:8 56:9	<b>Franklin</b> 2:22 51:25 52:4 59:6	<b>goal</b> 11:17 53:3
	<b>focusing</b> 6:22	<b>friends</b> 18:10 30:12	<b>goals</b> 40:18
	<b>fog</b> 26:19	<b>fulfill</b> 54:23	<b>gold</b> 11:10
	<b>folk</b> 17:23	<b>fully</b> 16:3	<b>gone</b> 6:18 10:11 12:7 35:21 38:24



61:9	41:17 60:6	<b>Headquarters</b>	24:3 24:5
<b>Gorton</b> 2:24	<b>guide</b> 65:2	17:4	24:11 24:15
58:6	<b>guidelines</b>	<b>heads</b> 59:1	24:17 24:20
58:10 58:14	43:4	64:6	24:23
59:5	<b>guys</b> 7:18	<b>health</b> 9:7	25:2 25:4
60:14 60:22	15:13 17:23	14:9 17:2	25:7
<b>gotten</b>	19:1	48:8	25:10 25:12
32:20 38:7	26:13 35:16	48:10 48:10	26:11 28:17
<b>government</b>	36:3	<b>health-</b>	29:19 41:19
29:21 33:11	39:16 39:22	<b>based</b> 11:1	41:19
<b>great</b> 29:20	44:20 44:20	<b>hear</b> 20:3	42:4 42:9
53:19 53:22	44:25 51:24	26:19	42:15
53:22		33:7	43:5 43:8
54:5	<hr/> <u>H</u> <hr/>	60:15 60:25	44:3 44:6
60:23 60:24	<b>half</b> 28:22	<b>heard</b> 20:11	<b>hierarchy</b>
<b>greatest</b>	<b>hands</b> 5:9	26:7	28:4
16:18	<b>happen</b>	26:18 28:16	<b>high</b> 30:20
<b>green</b> 11:7	34:22 57:2	54:8 55:17	<b>highlight</b>
<b>Greenfield</b>	<b>happened</b>	<b>hearts</b>	53:21
2:25	18:25	33:12 64:17	<b>highlighted</b>
<b>groundwater</b>	20:9 35:4	<b>heater</b> 61:15	15:24
6:6 7:3 7:5	<b>happens</b> 27:12	<b>Heavenly</b> 64:7	<b>Highway</b> 50:7
8:2 12:8	36:5	<b>heavy</b> 41:22	<b>Hill</b> 2:23
12:9	49:12 54:10	<b>HELD</b> 2:4	52:4 52:5
16:23	60:4	<b>help</b> 17:24	57:18 59:3
32:8	62:12 64:24	52:9	<b>hired</b> 18:24
32:10 39:10	<b>happy</b> 22:17	<b>helped</b>	<b>hires</b> 54:4
39:11 39:12	<b>hard</b> 18:21	17:20 17:22	<b>historical</b>
40:9	52:8 59:21	37:1	3:14 6:24
<b>group</b> 52:25	<b>harmed</b> 29:13	<b>helping</b> 63:24	<b>historically</b>
53:13 53:15	<b>harmful</b> 14:18	64:1	43:15
<b>grunts</b> 26:20	<b>Harris</b> 41:2	<b>henhouse</b> 41:9	<b>hold</b> 12:9
<b>guarantee</b>	41:2	41:10 41:12	49:3
35:24	<b>haven't</b>	<b>he's</b> 2:17	<b>holds</b> 28:5
<b>guarding</b> 41:9	48:3 61:11	4:12 64:3	<b>hole</b> 46:18
41:10 41:11	<b>having</b> 10:5	<b>hicks</b> 23:16	<b>home</b> 28:19
41:12	31:1 38:6	23:17 23:23	30:10 30:11
<b>guess</b> 19:13			30:21



46:2	<b>hundreds</b>	38:5 38:8	<b>indeed</b> 62:17
48:22	32:16	41:15	<b>independent</b>
49:9	<b>hurt</b> 27:23	42:1 45:9	41:3
50:11 58:10	29:25	45:19	<b>indicated</b>
60:2 60:5	30:6 30:6	47:2	20:14 59:1
62:12	<b>hydrocarbons</b>	47:21	<b>indicating</b>
<b>homeowners</b>	6:10	50:4 50:5	15:10
48:20 61:15	<hr/>	50:18	<b>indication</b>
<b>homes</b> 57:16	I	52:4	7:19 58:4
57:25 58:19	<hr/>	53:22 57:18	<b>indiscernible</b>
58:24 59:24	<b>ICs</b> 16:23	58:12	30:7
60:21	<b>I'd</b> 19:13	<b>imagine</b> 13:21	43:10
61:2 61:9	31:11	59:16	52:1 60:20
<b>honored</b> 63:20	<b>idea</b> 22:18	<b>immediate</b>	<b>individual</b>
<b>hook</b> 35:5	33:13	40:11	57:25
<b>hope</b> 36:15	<b>identified</b>	<b>impact</b> 51:22	<b>individuals</b>
36:21 43:19	12:16	<b>impacted</b> 40:6	18:22
<b>host</b> 63:20	<b>identify</b> 8:18	48:4 48:6	<b>indoor</b> 9:14
<b>hostile</b> 19:24	8:19 9:24	48:15	<b>industrial</b>
<b>hot</b> 61:15	<b>I'll</b> 2:19	<b>implement</b>	11:16
<b>hotline</b>	3:20 3:25	14:22 16:23	12:3 37:7
62:8	4:23 4:25	<b>Implementabil</b>	37:8 37:9
63:10 63:11	5:2 35:1	<b>ity</b> 14:24	37:14
63:14	60:13 63:18	<b>implementing</b>	45:1
<b>house</b> 28:17	<b>Illinois</b>	14:23	55:19 62:23
28:21 45:11	29:17	<b>important</b>	<b>information</b>
48:24 49:16	<b>illnesses</b>	37:22	3:24
60:3	64:21	<b>improvement</b>	15:10
61:11 62:11	<b>I'm</b> 3:2 3:8	57:3	18:9
<b>houses</b> 24:7	4:7 5:6	<b>improvements</b>	20:13 20:21
61:21	11:7	56:22 56:22	21:9
<b>huge</b> 8:12	18:21	57:5	21:14 21:20
<b>human</b> 9:7	26:3 26:4	<b>Inaudible</b>	31:24 48:20
14:9 17:1	26:11 27:14	48:21 60:11	53:17 53:18
<b>humans</b> 10:24	27:16	<b>included</b> 3:19	<b>informational</b>
<b>hundred</b> 36:17	28:1	3:23 21:14	63:21
47:21	28:16	<b>inclusive</b>	<b>infrastructur</b>
	29:4 29:6	35:22	e. 60:17
	29:25 30:23		
	31:19 34:16		



60:18 62:17	32:8	<b>Jesus</b> 65:3	26:10 26:23
<b>ingestion</b> 9:1	<b>investigation</b>	<b>job</b> 18:1	28:8
<b>inhalation</b>	5:17	27:24	28:11 28:14
9:1	<b>investigation</b>	29:9 39:9	29:6 30:5
<b>initial</b>	<b>s</b> 49:21	40:4 53:25	30:7 32:3
18:3 44:24	<b>investing</b>	<b>jobs</b> 18:8	33:9
<b>initially</b>	62:22	53:25	33:14 33:18
18:5	<b>investment</b>	<b>John</b> 41:2	33:22
<b>injured</b> 27:17	18:3 18:5	<b>Johnson</b> 3:2	34:2 34:6
28:7 28:23	54:3		34:10 34:18
<b>injuries</b>	<b>involved</b> 15:8		35:10 35:13
64:20	15:9		36:8
<b>injurious</b>	<b>involvement</b>		36:21
35:7	2:16 3:9		37:2 37:7
<b>input</b> 6:14	11:20		37:9
7:7 11:24	<b>issue</b> 39:10		37:12 37:16
15:20 35:16	43:2 47:1		37:19
35:18	51:14 60:9		38:4
36:5 44:19	<b>issues</b>		38:11 38:14
<b>inside</b>	32:20 42:20		38:17 38:21
11:15 57:16	49:11		39:8 41:5
59:17 59:20	<b>it'll</b> 43:23		42:2 42:5
59:21	<b>I've</b> 17:7		42:10 42:16
<b>installation</b>	25:10 26:13		43:7
42:21	28:3 28:3		43:13
<b>institutional</b>	28:12 28:16		44:5
13:15 13:17	30:21 30:22		44:10 44:15
<b>intend</b> 57:10	55:16 62:2		45:12 45:21
<b>intended</b>			45:25
40:17			46:5 46:7
<b>interest</b>			46:23
23:19			49:1
<b>interesting</b>			49:10 49:19
55:16			50:9
<b>invested</b>			50:13 50:18
18:11 46:21			50:24
<b>investigate</b>			51:3 51:5
			57:22 58:11
			63:8
			<b>king.</b>
			<b>charlesl@ep</b>
			<b>a.gov</b> 20:23



<b>knew</b> 45:15 59:8	16:14 36:4 43:15	57:15 57:25	38:5
<b>knife</b> 63:1	<b>leather</b> 49:3	<b>library</b> 10:13 21:15 21:15	<b>little</b> 11:14 16:6 17:7 18:4 18:20 20:21
<b>known</b> 3:12 26:13	<b>leave</b> 52:14 53:20 64:25	<b>light</b> 17:15 19:10 37:8 37:9 37:13 39:24 45:1 55:18 57:20 58:17 59:7 59:12 60:7 61:6	<b>live</b> 19:5 23:20 25:7 28:20 28:22 30:19 36:7 46:3
<hr/> <b>L</b> <hr/>	<b>legislative</b> 34:21	<b>lighter</b> 12:11	<b>lives</b> 31:4 46:10 46:21 46:21
<b>lab</b> 61:12	<b>legislator</b> 34:16	<b>Likewise</b> 25:24	<b>living</b> 31:21
<b>land</b> 11:5 16:24 39:7	<b>less</b> 13:22 14:18 14:18 28:22 40:20 46:4	<b>limit</b> 16:17	<b>loan</b> 48:22 48:23
<b>landfill</b> 13:7 13:10	<b>let's</b> 11:8 51:11 64:5	<b>limitations</b> 33:8 33:11	<b>local</b> 11:21 11:24 17:15 17:22 17:23 17:25 18:1 18:2 19:2 19:16 21:15 36:4 37:21 50:15 54:3 54:4
<b>last</b> 5:1 14:15 19:13 53:12	<b>letting</b> 40:5	<b>limits</b> 37:4	<b>located</b> 21:17
<b>later</b> 21:7	<b>levels</b> 8:24 10:9 11:1 11:11 11:16 11:17 11:18 13:6 24:9 32:10 44:23 45:3 48:9 48:10	<b>line</b> 17:6 45:7 57:22 58:17 59:4 59:13 59:18	<b>location</b> 10:14
<b>Latonya</b> 2:22 4:24	<b>Lewis</b> 22:1 22:1 22:3 22:8 22:19 23:3 23:5 23:9 28:19 30:8 30:10 44:7 44:8 44:11 45:9 45:20 49:13 49:14 50:7 50:10 50:14	<b>lined</b> 58:16	<b>locations</b> 7:20 7:24 8:1 8:4
<b>laugh</b> 30:12		<b>liner</b> 59:17	<b>long</b> 14:15 14:15 14:16 15:11 39:5 40:7
<b>law</b> 34:17 47:11		<b>lines</b> 41:8 50:21 60:3	<b>longer</b>
<b>lawsuit</b> 32:20		<b>lining</b> 59:14 59:21	
<b>lawyers</b> 27:18		<b>link</b> 21:13	
<b>lay</b> 23:13		<b>list</b> 3:18 3:21 6:5	
<b>Leach</b> 3:4 37:2 37:2 37:8 37:10 37:13 37:17 50:20 50:21 50:25 51:4 63:17		<b>listened</b> 20:2 52:12 52:13	
<b>leaders</b> 34:21		<b>listening</b>	
<b>learn</b> 26:3			
<b>learned</b> 40:19			
<b>least</b> 7:18 16:2			

21:10 48:13 <b>long-term</b> 14:14 <b>longwinded</b> 29:4 <b>Lori</b> 2:24 46:25 58:6 58:8 59:3 63:10 64:1 <b>lost</b> 46:16 <b>lot</b> 7:17 8:6 10:1 19:1 19:25 23:18 24:10 28:2 32:12 39:25 43:15 43:18 50:6 55:17 61:25 <b>Louis</b> 29:17 <b>Love</b> 29:15 <b>lumber</b> 6:25 7:11 <b>Luther</b> 30:5 <hr/> M <hr/> <b>ma'am</b> 22:2 32:3 36:8 38:4 38:11 38:15 38:17 44:10 50:9 <b>mailing</b> 3:18 3:21 <b>mailings</b> 3:19 <b>main</b> 5:25	8:16 8:25 9:9 9:9 9:11 13:11 22:5 22:14 22:20 22:22 27:12 52:20 56:19 <b>major</b> 14:5 <b>majority</b> 30:4 <b>manager</b> 2:18 5:6 <b>manhole</b> 59:18 <b>manholes</b> 61:7 <b>manufacturing</b> 6:3 <b>married</b> 30:19 51:7 <b>Martin</b> 30:5 <b>material</b> 58:25 61:2 61:5 61:10 61:12 61:16 <b>matter</b> 33:20 50:14 <b>may</b> 16:17 20:13 21:1 21:1 26:21 31:14 35:7 36:19 47:11 47:22 59:25 <b>maybe</b> 18:4 33:12 34:3 34:23 40:18 56:25	<b>mayor</b> 36:2 <b>McClellan</b> 30:9 44:7 <b>MDEQ</b> 3:1 9:21 15:6 15:7 15:10 17:14 19:9 36:24 <b>mean</b> 11:18 13:18 14:16 15:23 17:18 22:7 25:17 35:15 35:19 41:4 41:9 47:13 47:18 50:18 50:19 51:5 56:17 <b>means</b> 5:16 12:22 39:2 <b>mechanisms</b> 34:8 <b>MEDQ</b> 15:8 <b>meet</b> 14:8 16:2 <b>meeting</b> 2:3 2:11 3:10 4:11 4:22 4:23 5:11 19:23 62:3 63:22 65:8 <b>meetings</b> 4:16 30:18 30:19 31:1 31:2 37:20 58:3 64:9 <b>meets</b> 16:15 <b>member</b> 23:13	<b>Memphistown</b> 17:14 <b>men</b> 31:12 <b>mentioned</b> 7:5 16:20 54:11 62:3 63:10 <b>mess</b> 36:20 <b>message</b> 31:24 <b>metal</b> 6:25 7:11 <b>methodically</b> 55:1 <b>microphone</b> 4:24 4:25 29:5 35:2 <b>midst</b> 30:13 32:2 <b>migration</b> 11:2 <b>mike</b> 18:14 57:8 <b>mile</b> 28:22 <b>million</b> 13:23 13:24 13:25 34:16 <b>Milton</b> 23:16 41:19 <b>mind</b> 45:18 63:17 <b>mindful</b> 54:17 <b>minds</b> 31:7 31:17 46:8 <b>mine</b> 25:5 <b>minimize</b> 11:2 <b>minority</b> 34:13
---	--	---	---



<b>minute</b> 4:8	<b>Multistate</b>	<b>nodding</b> 59:2	45:25
<b>misrepresente</b>	2:25 6:13	<b>none</b> 30:4	46:6 46:7
<b>d</b> 27:18	9:20 10:2	<b>North</b> 36:7	49:13 50:13
<b>missed</b> 15:14	17:14	<b>nothing</b> 30:24	50:18
<b>Mississippi</b>	19:9	32:22 33:23	51:4
2:17 35:4	32:23 35:21	61:17 61:23	60:14 63:14
41:15	41:5 52:7	<b>notifications</b>	<b>okie-doke</b>
<b>mixed</b> 6:23	55:7 63:21	3:21	63:4
11:25	<b>Myers</b> 2:23	<b>numerals</b> 9:10	<b>Okie-dokie</b>
12:1 44:25	<b>myself</b> 32:21		25:12
<b>mobile</b> 14:19			<b>old</b> 59:15
<b>mobility</b>	<u>N</u>	<u>O</u>	<b>ones</b> 9:10
14:17	<b>Natchez</b> 41:15	<b>objective</b>	22:15 47:24
<b>model</b> 7:9	<b>nation</b> 29:20	53:5	<b>ongoing</b> 9:18
34:13	<b>national</b> 6:5	<b>objectives</b>	<b>onsite</b> 13:8
<b>modifying</b>	<b>nature</b> 5:18	10:22 10:23	<b>oops</b> 12:9
14:6 15:5	6:1 8:17	<b>office</b>	<b>open</b> 21:18
15:24	56:1	10:16 40:3	57:10
<b>mom's</b> 60:2	<b>naught</b> 46:22	<b>offsite</b>	<b>operable</b> 3:12
<b>money</b> 31:4	<b>neighborhood</b>	13:5 13:7	6:2 7:3
31:6 46:4	30:23 30:24	13:8	11:14
49:6 50:4	<b>neighborhoods</b>	13:10	12:7
62:22	58:20	16:8 16:21	12:12 21:21
<b>months</b> 23:7	59:9 62:22	<b>Oh</b> 22:10	<b>operated</b> 6:4
<b>move</b> 34:14	<b>neighbors</b>	<b>okay</b> 2:14 3:8	<b>operation</b>
38:9	18:10	5:12 5:13	3:15
38:25 64:17	<b>newsletters</b>	12:13 20:11	<b>operations</b>
<b>moved</b> 30:10	62:9	22:6 22:6	24:24 24:25
<b>moving</b>	<b>night</b> 53:12	22:19	<b>operator</b>
26:14	<b>nine</b> 10:12	23:6	12:10
50:6 52:19	14:3 14:4	24:11	<b>opinion</b> 18:16
<b>mud</b> 31:10	27:3	25:2 25:2	35:22
<b>multiple</b> 41:8	31:20 31:25	28:12 33:10	<b>opportunities</b>
55:23	<b>nine-acre</b>	33:18 33:18	17:25 18:1
<b>multistate</b>	5:22	33:22 33:24	<b>opportunity</b>
17:5	<b>nobody</b> 32:2	34:6 34:7	10:3 17:9
	45:15 45:16	41:18 41:21	20:12
		43:5 43:7	
		44:3	

<b>opposed</b> 50:18	53:14	31:17	<b>pieces</b> 50:6
<b>option</b> 14:8	<b>particular</b>	35:8	<b>pine</b> 3:12
<b>options</b> 11:25	14:12 51:7	46:19	5:25 6:21
13:20	<b>particularly</b>	47:6 47:9	6:22 6:24
51:6	59:13	47:16 48:19	7:12 7:16
55:19 55:23	<b>partner</b> 17:12	49:23	8:1 8:2 8:6
<b>others</b>	<b>partnership</b>	53:2 53:3	9:13 9:19
19:10 36:25	52:9	55:4 56:7	9:25 11:8
<b>outdoor</b> 9:14	<b>partnerships</b>	58:25 60:15	11:9
<b>outside</b>	17:13 17:20	63:5 63:6	16:10 16:18
19:6 50:11	19:8	64:11 64:16	18:24 21:22
<b>outstanding</b>	<b>passionate</b>	64:18	22:4
54:2	47:2	<b>people's</b>	22:13 22:19
<b>overall</b> 56:10	<b>Pastor</b> 3:4	57:16 58:19	22:21 22:24
<b>overflow</b> 43:8	28:2	58:24 61:2	23:4 23:7
<b>overriding</b>	63:15 64:2	<b>percent</b> 19:15	23:15 23:18
27:9	<b>patience</b> 56:3	46:4	23:19 23:23
<b>oversight</b>	57:11	<b>period</b> 3:24	24:18 24:25
9:21 34:9	<b>pay</b> 32:11	4:4 15:17	27:12 29:19
<b>overwhelming</b>	63:6	20:15	36:12 39:12
37:24	<b>paying</b> 31:2	<b>person</b> 31:23	40:6
<b>owned</b> 6:12	62:24	<b>person's</b>	44:10 44:11
<hr/>	<b>pencils</b> 63:11	62:12	45:7
<b>P</b>	<b>pending</b> 15:11	<b>perspective</b>	49:17 52:11
<b>p.m</b> 2:6 65:8	<b>pentachloroph</b>	26:22 54:4	52:19 53:11
<b>page</b> 21:12	<b>enol</b> 6:10	<b>Petty</b> 36:6	54:15
27:16 35:15	<b>people</b> 5:9	36:6 36:9	55:6
<b>paid</b> 35:9	8:25	<b>phase</b> 54:19	56:19
<b>pain</b> 28:24	11:22	<b>phases</b> 54:19	57:6 58:5
29:12 63:2	18:6	<b>phonetic</b>	<b>pipe</b> 59:16
<b>parameters</b>	18:12 22:17	28:20	59:16 59:19
29:9	26:16	<b>pick</b> 20:25	59:20 59:21
<b>parents</b> 46:21	27:3	<b>picture</b>	<b>pipes</b> 59:10
<b>parks</b> 27:2	27:17 27:21	6:19 19:4	61:7
<b>participating</b>	28:3 28:7	<b>piece</b> 55:22	<b>pipng</b>
	28:23 29:13	55:22 55:25	61:19 61:22
	29:20 31:7	56:11	<b>placed</b> 6:5
			7:11 23:19
			<b>places</b>
			23:25 28:18



<b>plan</b> 2:2 3:11 5:16 6:13 10:5 10:8 21:8 21:21 23:10 23:14 26:14 27:2 38:19 39:18 65:8	<b>possible</b> 7:13 54:17 <b>possibly</b> 55:2 <b>poster</b> 18:18 <b>posters</b> 53:20 <b>postmarked</b> 21:7 <b>potential</b> 9:25 10:2 11:24 16:17 16:19 50:1 51:18 <b>potholing</b> 8:5 <b>power</b> 49:11 64:18 <b>practice</b> 15:2 <b>Prairie</b> 46:2 <b>pray</b> 52:2 52:3 63:15 64:6 64:16 64:20 64:25 65:3 <b>preacher</b> 29:4 <b>precaution</b> 54:16 <b>prefer</b> 16:12 <b>preferred</b> 16:20 <b>Presence</b> 65:1 <b>present</b> 3:10 4:3 20:12 <b>presentation</b> 2:12 3:25 4:10 5:8	52:14 <b>presented</b> 20:14 21:9 21:20 <b>pretty</b> 15:2 44:6 <b>prevent</b> 10:23 11:2 13:16 50:22 59:4 <b>prevents</b> 28:6 <b>previous</b> 12:24 <b>primary</b> 5:24 9:2 53:5 <b>priorities</b> 6:5 <b>probably</b> 3:18 13:17 18:6 18:14 19:24 24:2 32:4 47:19 <b>problem</b> 41:12 47:22 59:8 60:17 60:18 62:17 <b>process</b> 5:14 10:20 17:17 40:14 45:23 54:10 59:4 <b>product</b> 20:2 <b>products</b> 7:23 <b>profile</b> 21:12	<b>program</b> 59:9 <b>project</b> 2:18 5:6 8:17 15:9 17:19 19:15 33:17 53:3 64:21 <b>projects</b> 17:11 19:18 <b>promises</b> 54:23 <b>proper</b> 42:18 <b>properties</b> 32:17 46:13 46:20 47:20 47:24 48:3 <b>property</b> 12:2 35:6 36:13 37:11 46:10 48:5 48:7 48:14 49:13 49:14 49:15 55:22 55:23 56:1 56:11 <b>property's</b> 49:6 <b>proposed</b> 2:2 3:11 5:16 10:5 10:8 21:8 21:21 65:7 <b>proposing</b> 51:21 <b>protect</b> 53:1 53:3 <b>protected</b> 9:7 40:23 40:23
<b>plans</b> 27:14 <b>plant</b> 6:9 28:22 37:17 52:20 56:20 <b>plastic</b> 61:19 61:22 <b>played</b> 36:22 <b>please</b> 21:24 <b>plumbing</b> 61:20 <b>point</b> 8:9 23:14 27:6 29:18 35:17 55:4 <b>political</b> 35:5 <b>polyaromatic</b> 6:10 <b>portion</b> 4:23 5:17 44:16 <b>portions</b> 3:11 5:24 7:1 7:14 21:22 39:14 <b>position</b> 34:17 34:20 38:2 46:20			

<p>40:25 56:17  <b>protection</b>                  29:23  <b>protective</b>                  14:9 17:1  <b>proud</b> 64:23  <b>provide</b>                  4:18 4:25                  53:17 53:18                  56:11  <b>provided</b> 3:6  <b>proximity</b>                  46:11  <b>public</b> 2:3                  3:24 4:4                  15:12 15:17                  20:15 27:15                  39:22  <b>pull</b> 59:17  <b>purple</b> 11:15  <b>purpose</b>                  3:10 46:16  <b>pursuit</b> 29:21  <b>putting</b> 51:12                  61:21  <hr/> <p style="text-align: center;">Q</p> <hr/> <b>question</b> 4:22                  5:4 5:8                  21:24                  22:3 27:8                  33:5 39:8                  42:2 42:3                  49:20 50:20                  54:6 57:9                  60:18 60:23                  60:24  <b>questions</b> 4:2</p>	<p>20:13 20:19                  20:20 21:19                  21:19 21:23                  26:15 31:17                  41:1                  52:12 52:16                  56:3 56:4                  57:10                  64:2 64:11  <b>quick</b> 4:8  <b>quickly</b> 63:18  <b>quite</b> 57:3  <hr/> <p style="text-align: center;">R</p> <hr/> <b>railroad</b>                  42:13 45:10                  45:14  <b>railroads</b>                  42:17  <b>rain</b> 41:22  <b>rained</b> 7:12  <b>rainfall</b> 39:1  <b>rainy</b> 2:10  <b>ranged</b> 39:18  <b>rate</b> 50:3  <b>rather</b>                  13:10 23:24  <b>rationale</b>                  16:25  <b>RE</b> 2:1  <b>reach</b> 27:20                  32:22 33:2  <b>reached</b>                  29:8 30:3  <b>reaching</b> 28:6  <b>readily</b> 15:2</p>	<p><b>reading</b> 40:11  <b>ready</b> 32:14                  62:9  <b>real</b> 11:6                  28:6 43:5                  46:4 46:9                  47:2 63:18  <b>reality</b> 34:1  <b>really</b> 5:7                  43:1                  52:17 53:24                  63:15  <b>reason</b>                  15:16 15:16                  40:24                  45:9                  49:12 58:18  <b>reasonably</b>                  11:18  <b>reassure</b>                  57:13  <b>receive</b> 3:21  <b>received</b> 3:16                  21:11  <b>recognition</b>                  3:4  <b>recognize</b>                  2:21  <b>recommend</b>                  16:1 34:20  <b>recommendatio</b>  <b>n</b> 9:22  <b>reconsider</b>                  15:15  <b>record</b> 4:20                  10:13 10:15                  21:25 55:5</p>	<p><b>recovered</b>                  32:2  <b>recovery</b>                  29:17 32:2  <b>redevelop</b>                  38:19 49:23  <b>Redeveloped</b>                  38:14 38:16  <b>redeveloper</b>                  50:25  <b>redevelopment</b>                  7:7 9:25                  10:1                  13:20 16:17                  16:19                  27:2                  27:13                  44:8                  51:16 55:15                  55:16  <b>redevelops</b>                  44:19  <b>redlining</b>                  45:23  <b>reduce</b>                  14:20 16:9  <b>Reduction</b>                  14:17  <b>regarding</b>                  40:18  <b>regards</b> 22:4  <b>regular</b> 23:13                  39:24 40:2  <b>regulatory</b>                  28:1  <b>related</b> 61:24                  62:2</p>
--	---	--	--

<b>relationship</b> 17:21 17:21	62:16 63:11	27:4	30:11
<b>relationships</b> 20:1	<b>reporter</b> 25:17	27:20	<b>return</b> 18:5
<b>release</b> 29:15	<b>repository</b> 21:14	28:6 29:7	<b>reuse</b> 6:14 7:5 11:25 38:20
<b>released</b> 51:19	<b>representativ e</b> 27:25	30:3 32:20 33:2	<b>reused</b> 38:13 38:14 38:16
<b>relish</b> 26:2	<b>require</b> 51:17	<b>resolve</b> 30:14	<b>Reverend</b> 25:15 25:19 25:19 25:22 26:1 26:4 26:7 26:11 28:12 28:15 30:9 33:5 33:6 33:10 33:16 33:19 33:23 34:3 34:7 34:11 34:19 35:11 35:13 43:10 45:18 45:22 46:1 46:6 46:8 46:23 48:21 49:2 57:9 60:10 60:11 60:16 60:24 62:13
<b>remains</b> 40:23	<b>required</b> 4:15	<b>resolved</b> 29:14 30:2 31:4	
<b>remarkable</b> 18:6	<b>requirements</b> 14:11 14:12	<b>resolving</b> 28:24	
<b>remedial</b> 2:18 10:21 10:23	<b>requires</b> 14:2	<b>Resource</b> 21:16	
<b>remediated</b> 44:2	<b>residence</b> 50:8 50:17	<b>respect</b> 29:6	
<b>remediation</b> 42:12 43:14	<b>residences</b> 44:19 45:7 47:21	<b>responding</b> 32:23	
<b>remedies</b> 53:7	<b>resident</b> 9:13 54:7	<b>response</b> 4:18 37:24	
<b>remedy</b> 14:22 14:23 15:7 15:11 16:20 40:16	<b>residential</b> 11:11 11:18 12:2 24:9 25:1 32:15 32:16 36:13 37:4 44:13 44:18 44:23 45:2 45:3 45:5 45:6 46:10 52:24 55:18	<b>responses</b> 44:24	
<b>remember</b> 42:7 54:20 56:23	<b>residents</b> 9:12 56:8 61:9	<b>responsiveness</b> 4:19	
<b>removal</b> 13:4 13:8 16:21	<b>residual</b> 59:25	<b>rest</b> 31:4	
<b>remove</b> 38:9	<b>resolution</b>	<b>restoration</b> 42:12	
<b>renovation</b> 48:23 56:24		<b>restrict</b> 16:24	
<b>replacing</b> 61:15		<b>result</b> 10:2 26:25 33:13 33:14 33:16 34:24	
<b>report</b> 34:21 46:12 46:12 46:19		<b>results</b> 11:25 40:3 48:10 56:14 56:15	<b>review</b> 20:20 40:14
		<b>retired</b> 30:19	<b>rhetorical</b> 26:2
		<b>retirement</b>	<b>rightfully</b> 19:24
			<b>rising</b> 34:12
			<b>risk</b> 8:13 9:14 9:16

10:9	61:13	19:18 52:18	<b>serve</b> 46:15
10:21 12:15	<b>Samuel</b>	52:18	<b>serves</b> 8:20
12:23	25:15 25:19	55:3 55:5	<b>session</b> 5:4
13:1	25:20 25:22	56:10 57:13	<b>settle</b> 34:14
32:11 47:12	26:1 26:4	<b>scheduled</b>	<b>settled</b> 27:10
48:9	26:7	42:12	<b>seven</b> 8:3
<b>risks</b> 5:20	26:11 28:12	<b>school</b>	19:22
8:18 8:19	28:15	30:20 30:20	<b>several</b> 6:2
8:20 9:9	30:9 33:5	<b>science</b> 40:19	17:12 17:12
9:10 9:12	33:7	41:14	24:6 58:1
10:24 14:22	33:10 33:16	<b>scrap</b> 7:11	58:25 61:7
48:10	33:19 33:23	<b>screen</b> 21:1	<b>sewer</b> 58:17
<b>Robinson</b> 2:23	34:3 34:7	21:13	58:22 59:13
<b>roots</b> 60:4	34:11 34:19	<b>second</b> 34:23	60:5
<b>rose</b> 36:9	35:11 35:13	<b>section</b> 11:10	61:25 62:1
<b>rough</b> 19:24	45:18 45:22	<b>sediment</b> 6:7	<b>sewers</b>
<b>Roy</b> 23:16	45:22	<b>seem</b> 41:22	58:21 61:5
41:19	46:1 46:6	41:24 43:11	<b>shallow</b> 8:3
<b>runoff</b> 11:3	46:8	60:12	39:11 39:21
<hr/>	46:23 48:21	<b>seemed</b> 43:8	<b>shape</b> 36:18
<b>S</b>	49:2	43:9	36:19
<hr/>	60:10 60:11	<b>seen</b> 25:25	<b>Sharon</b> 22:1
<b>sad</b> 30:21	60:16 62:13	27:5	49:14 50:21
<b>safest</b> 54:17	<b>Samuels</b> 60:24	28:24 29:18	57:15 58:15
<b>sample</b> 24:1	<b>Samuel's</b> 64:2	<b>selection</b>	60:1 60:3
41:4	<b>satisfaction</b>	16:25	<b>sheet</b> 3:16
48:11 61:10	27:21 29:16	<b>sell</b> 50:3	3:17 3:23
61:17 62:10	29:23	<b>send</b> 61:13	10:14 20:24
<b>sampled</b>	<b>satisfactory</b>	<b>sending</b> 28:9	20:25 21:10
24:2 24:6	30:3	<b>sense</b> 24:22	<b>she's</b> 57:23
32:17 47:20	<b>satisfied</b>	<b>sent</b> 15:7	<b>short</b> 49:20
47:21 47:23	54:7	15:10	60:6
48:3 48:7	<b>saw</b> 6:19	<b>separated</b>	<b>Short-term</b>
48:9	12:24	5:23	14:21
<b>samples</b>	<b>scattered</b>	<b>sequence</b>	<b>showed</b> 6:19
7:17 7:19	31:22	22:24	37:3 61:18
7:20 8:11	<b>scenario</b>		
24:10 32:13	37:20 43:20		
<b>sampling</b> 58:4	<b>schedule</b>		

<b>showing</b> 31:20	11:17 11:23	59:4 59:14	<b>special</b> 3:4
<b>shows</b> 3:14	16:11 16:13	<b>slower</b> 18:4	7:21
12:4	17:7 17:8	<b>small</b> 34:13	<b>specialized</b>
<b>sick</b> 31:22	18:9	<b>smaller</b> 14:19	18:23
<b>sign</b> 3:20	21:12	<b>smooth</b> 44:6	<b>specific</b>
<b>significant</b>	22:5	<b>soil</b> 6:7	52:17
19:19 57:19	22:14 22:20	7:2 7:20	<b>specifically</b>
<b>significantly</b>	22:22	7:22	7:22 52:10
43:24	23:1	10:24	<b>spell</b> 5:2
<b>silently</b>	38:12 40:13	12:7 13:6	<b>spelling</b> 5:2
62:25 63:4	47:24	13:13 16:22	<b>Spencer</b>
<b>sink</b> 62:7	48:4 48:6	22:13	2:22 4:24
<b>sir</b> 23:22	48:15 50:23	32:8 32:9	<b>spend</b> 20:3
24:16 24:19	51:2 52:9	39:3 40:8	<b>spent</b> 19:25
25:3 25:6	52:20	<b>soils</b> 7:4	53:12
25:11 25:16	53:8	7:25 39:11	<b>spine</b> 63:1
25:21 25:24	54:13 55:14	<b>solar</b> 49:17	<b>spoke</b> 36:10
26:6	56:5	49:21	<b>spot</b> 29:7
26:10 28:11	56:16 56:18	50:1 50:2	<b>St</b> 29:17
28:14	56:20 57:14	50:10 50:16	<b>staff</b> 52:7
33:4 33:9	61:24 63:12	50:22	<b>stage</b> 5:16
34:2	65:7	51:1 51:5	18:22 45:23
34:10 34:18	<b>sites</b> 9:24	51:6 55:17	<b>stakeholder</b>
37:12 37:12	40:22	<b>solid</b> 62:20	17:13
37:18 44:5	55:9 55:12	<b>solution</b> 27:6	<b>stakeholders</b>
<b>Sister</b> 28:19	<b>sitting</b> 29:19	<b>somebody</b>	17:16
<b>sit</b> 29:3 49:4	<b>situation</b>	19:11	<b>stand</b> 2:20
62:25 63:4	19:23 30:14	35:3 50:3	28:8
<b>site</b> 2:1 2:17	<b>six</b> 8:1 23:7	62:5	28:15 60:13
2:18 3:9	<b>size</b> 6:1	<b>Son</b> 65:3	64:5
3:12 3:15	<b>slick</b> 27:18	<b>sorry</b> 58:12	<b>standard</b> 28:5
5:6 5:14	<b>slide</b> 3:14	<b>sought</b> 29:8	46:15
5:22 5:23	5:13 8:7	<b>Southeast</b>	<b>standards</b>
6:1 6:3	8:10	55:10	37:5 44:18
6:12 6:16	12:24 27:19	<b>speak</b> 29:12	<b>standpoint</b>
7:8 8:21	37:3	53:22	
8:24 10:1	<b>slides</b> 44:16	<b>SPEAKERS</b> 65:4	
10:22	<b>slip</b> 57:21		
11:2 11:3	57:22 58:16		
	58:17		

54:22	37:18 43:18	20:25	11:22 15:22
<b>start</b> 11:8	57:15 61:24	22:5	27:9 28:3
18:4 48:18	<b>subject</b> 43:12	34:21 35:16	46:24
<b>started</b>	<b>submission</b>	35:22 38:23	47:1 47:4
2:19 4:5	28:9	40:16 40:22	47:14 50:11
4:9 5:7	<b>submit</b> 4:1	42:22 42:24	50:15 54:21
26:24	20:21	43:2 47:7	55:11 57:25
<b>starting</b> 2:21	21:3 21:6	47:15 47:21	<b>talking</b> 15:21
<b>starts</b> 39:15	<b>subsurface</b>	49:11 49:22	23:1
<b>state</b> 14:11	54:25	50:2 51:8	24:22
15:5 17:4	<b>success</b> 17:19	55:4	53:9
21:25	<b>suffering</b>	57:22 60:15	53:23 57:24
<b>stated</b> 62:16	29:13 31:23	64:15	<b>talks</b> 5:13
<b>statements</b>	<b>suit</b> 32:7	<b>surface</b> 8:4	9:8
26:8	<b>summary</b> 4:19	<b>surveys</b>	<b>tap</b> 58:3
<b>states</b> 62:16	<b>Superfund</b>	12:1	<b>tar</b> 6:9
<b>statutory</b>	5:13 8:16	44:24 44:24	<b>TarGOST</b> 7:21
33:10	10:19 12:20	<b>system</b> 60:8	<b>Task</b> 9:23
<b>stay</b> 58:8	14:2	61:25	<b>taught</b> 30:20
<b>stopped</b> 50:11	17:23 40:22	<b>systems</b> 44:1	<b>taxes</b> 63:6
<b>storage</b> 6:25	<b>supervisors</b>	T	<b>taxpayers</b>
<b>store</b> 6:24	62:21	<b>table</b> 47:16	62:18
<b>stormwater</b>	<b>supped</b> 28:4	<b>tack</b> 49:3	<b>team</b> 17:9
11:3	<b>supply</b>	<b>taking</b> 8:15	18:16
<b>street</b> 21:4	39:22 40:4	8:20 9:6	55:8 55:8
23:20 30:23	<b>support</b>	10:6	55:10 64:12
31:9	15:5 55:23	13:10	<b>tear</b> 36:16
31:10 31:10	<b>supportive</b>	31:3	36:22 37:1
32:12 52:23	15:7	52:22 53:10	<b>technically</b>
56:23	<b>sure</b> 3:2	54:13 54:14	47:19
<b>streets</b> 61:8	3:5 3:20	54:16	<b>technology</b>
<b>strengthen</b>	4:16 7:6	<b>talk</b> 30:12	51:8 51:16
17:21	8:12 10:8	32:15	<b>term</b> 14:16
<b>stuck</b> 29:14	14:9	33:7	14:16
41:13	14:10 15:18	51:25	<b>terminology</b>
<b>stuff</b> 36:20	15:19 20:3	53:8	47:7
		53:13 53:15	<b>terms</b> 42:25
		57:21	
		<b>talked</b>	



<b>test</b> 40:10 61:1	10:15 12:8	<b>title</b> 35:6	18:23 53:25
<b>tested</b> 28:21 61:5 61:7	12:14 24:17 32:22 34:8	<b>today</b> 15:16 53:5 57:2 64:8	<b>travel</b> 50:8
<b>testing</b> 39:25 40:2 40:3 40:8 40:8 41:3 41:6 41:7 41:8 60:19	34:11 39:25 40:17 42:20 49:7 50:1 50:8 52:14 52:24 58:7 61:25 62:5 62:8 62:11	<b>Todd</b> 58:1	<b>treated</b> 6:25 7:11
<b>thank</b> 5:5 5:12 20:10 25:12 25:12 30:8 44:3 44:5 51:24 52:6 52:7 56:2 56:3 57:6 57:11 57:12 62:13 63:23 64:1 64:3 64:7 64:8 64:9 64:12 64:14 64:19	<b>they'll</b> 46:18 <b>they're</b> 8:19 31:4 31:13 32:23 36:2 38:7 47:25 48:4 60:12 62:15 <b>they've</b> 15:8 26:18 36:11 46:16 50:14 56:4 <b>Thomas</b> 3:1	<b>tonight</b> 2:9 2:11 3:5 4:4 4:11 20:20 20:25 21:9 23:2 27:15 28:8 28:15 52:6 53:20 57:7 <b>tore</b> 36:19 <b>tort</b> 32:7 33:3 54:9 <b>totally</b> 43:24 <b>tough</b> 64:11 <b>toward</b> 34:25 <b>town</b> 27:19 34:13 <b>toxic</b> 40:20 54:9 <b>Toxicity</b> 14:17 <b>track</b> 42:13 45:11 45:14 <b>tradeoff</b> 16:5 17:3 <b>train</b> 4:12 4:13 <b>trained</b> 4:14 <b>training</b> 17:25 18:8	<b>treatment</b> 53:7 <b>tree</b> 29:19 <b>trenching</b> 8:5 <b>trespasser</b> 9:15 <b>tried</b> 5:17 32:22 41:14 <b>Troups</b> 28:20 <b>trucks</b> 54:15 <b>trust</b> 2:25 3:1 6:13 9:20 10:2 17:5 17:14 19:10 19:19 20:9 26:8 32:23 33:3 35:21 36:1 36:24 41:5 52:8 53:17 55:7 58:7 59:11 63:21 64:10 <b>truth</b> 33:17 33:19 <b>try</b> 8:13 8:18 35:22 39:6 42:17 49:20 56:10
<b>thanks</b> 3:4 58:15 59:5 63:7 63:8	<b>thoughts</b> 15:20 <b>threshold</b> 14:5 14:7 15:23 16:2 16:3 16:16 17:1 <b>throughout</b> 15:9 <b>THURSDAY</b> 2:5 <b>tickle</b> 29:25		
<b>themselves</b> 31:3 61:5			
<b>thereafter</b> 23:9			
<b>therefore</b> 55:24			
<b>there's</b> 9:18			

59:9 61:10 <b>trying</b> 3:2 7:15 7:15 14:22 30:13 30:17 30:25 36:3 42:10 47:5 54:23 <b>turn</b> 4:7 57:8 <b>type</b> 6:9 7:17 7:19 7:21 7:23 32:20 <b>types</b> 4:15 6:7 <b>typically</b> 6:8 <hr/> <b>U</b> <hr/> <b>ultimate</b> 35:9 35:12 <b>unacceptable</b> 5:20 8:19 8:24 9:11 9:12 9:16 10:21 10:24 12:15 12:23 13:1 24:8 32:10 47:12 <b>unaffected</b> 27:20 <b>undercover</b> 45:24 <b>undergoing</b> 10:3 <b>understand</b> 15:18 19:1 35:16 36:11 36:14 38:6 42:1	42:2 42:3 49:1 62:19 63:25 64:1 <b>understanding</b> 43:15 <b>understood</b> 18:12 <b>unfortunate</b> 32:5 <b>UNIDENTIFIED</b> 65:4 <b>unique</b> 5:2 17:7 19:14 19:17 <b>unit</b> 3:12 7:3 11:14 12:7 12:12 21:21 <b>units</b> 6:2 <b>update</b> 23:11 63:24 <b>updates</b> 3:22 <hr/> <b>V</b> <hr/> <b>vacant</b> 7:1 <b>vague</b> 26:17 <b>value</b> 46:10 46:20 <b>values</b> 47:6 49:14 49:15 <b>vegetate</b> 13:17 <b>venue</b> 53:9 <b>version</b> 7:8 21:10 <b>videographer</b>	4:10 <b>view</b> 3:15 6:16 <b>violate</b> 51:11 <b>void</b> 26:17 <b>volume</b> 14:17 <b>voluntary</b> 9:19 10:4 <b>vote</b> 63:6 <b>voters</b> 62:18 <hr/> <b>W</b> <hr/> <b>wait</b> 38:23 39:6 40:8 40:9 <b>waiting</b> 27:3 <b>walk</b> 34:15 35:3 <b>walking</b> 26:19 <b>wall</b> 53:21 <b>Wallace</b> 3:1 <b>waste</b> 18:8 <b>watch</b> 65:1 <b>water</b> 8:4 17:15 19:10 39:3 39:4 39:16 39:22 39:24 39:25 40:4 41:20 41:23 41:25 43:9 46:2 57:20 58:3 58:17 58:20 58:21 58:23 59:7	59:12 59:22 59:23 59:23 60:7 60:8 61:6 61:15 <b>ways</b> 9:2 40:8 <b>weather</b> 2:10 <b>we'd</b> 13:20 <b>week</b> 4:5 20:15 <b>welcome</b> 2:9 21:22 25:14 <b>we'll</b> 4:3 4:24 5:3 12:11 21:18 21:22 40:25 51:25 52:1 63:15 <b>wells</b> 8:3 8:3 39:17 <b>we're</b> 5:15 5:19 6:13 6:21 10:4 12:5 12:16 15:16 15:20 16:3 18:13 22:23 22:24 23:1 23:14 26:21 27:1 29:24 30:6 30:13 31:14 31:15 34:4 35:15 38:25 42:11 42:16 42:17 43:3
--	--	--	---



43:19 44:17	<b>whenever</b>	43:2	6:22 6:24
49:5	40:12 65:1	43:14 43:21	7:12 7:17
49:10 49:19	<b>WHEREUPON</b>	44:8 47:5	8:1 8:2 8:6
51:12 51:21	65:6	52:23 52:24	9:13 9:19
53:2 53:9	<b>whether</b> 31:13	54:18 54:24	9:25 11:8
53:10	46:24	57:21	11:9
54:4	47:8	58:9 59:12	16:10 16:18
54:14 54:17	55:17 55:18	<b>worked</b> 19:2	18:24 21:22
54:23 54:25	55:18 56:18	26:13	22:4
54:25	56:19 56:20	52:8 58:16	22:13 22:19
55:1 55:9	<b>white</b> 61:21	<b>worker</b> 9:14	22:21 22:24
55:14	<b>whoever</b> 19:11	9:14 9:15	23:4 23:8
56:5 57:4	44:19	<b>workers</b>	23:15 23:18
57:5	<b>whole</b> 8:9	18:1 19:2	23:19 23:24
62:24	16:11	19:16	24:18 24:25
64:5 64:23	27:3 50:6	<b>workgroup</b>	27:12 27:12
<b>wetlands</b>	58:9	47:15	36:13 39:12
11:13	59:19	<b>working</b>	40:6
<b>we've</b> 5:16	60:8	18:9 27:1	44:10 44:11
5:17	64:16 64:18	27:14 31:12	45:8
10:17 12:10	<b>whomever</b>	35:1	49:17 52:11
12:16 15:14	34:25	42:11 42:16	52:19 53:11
17:8 17:9	<b>who's</b> 35:1	42:17 52:25	54:15
17:12 17:12	57:16	53:2	55:6
18:15 18:20	<b>wide</b> 41:24	55:10 60:7	56:19
19:19	<b>Wilson's</b> 60:3	<b>worth</b> 46:4	57:6 58:5
20:1 27:6	<b>win</b> 18:17	48:24 49:6	<b>yards</b> 16:22
27:9	<b>wind</b> 7:12	<b>worthy</b> 62:14	25:1 27:3
32:13 32:14	11:4	<b>write</b> 47:8	32:15 60:21
32:22	<b>wish</b> 32:21	47:8 48:1	<b>yesterday</b>
33:5	<b>wooded</b> 7:1	62:16	55:6
35:19 35:20	<b>work</b> 18:7	<b>written</b>	<b>yet</b> 27:5 62:2
43:20 43:22	18:24 18:25	21:3 21:6	<b>you'll</b> 63:15
43:25	19:15	<b>wrong</b> 26:22	<b>you've</b>
44:1 48:3	33:1	41:11	20:11 39:20
53:19 54:20	34:25	<hr/>	42:13
57:19	36:3 42:12	<hr/> Y <hr/>	45:5 47:1
<b>whatever</b>		<b>yard</b> 3:12	50:2
13:19 27:12		5:25 6:21	59:15 64:13
42:24 49:12			<hr/> Z <hr/>
51:10 51:22			



<p><b>zoned</b> 6:23</p>			
--------------------------	--	--	--

