51362

S.C. Department of Health and Environmental Control

SCANNED

RECORD OF DECISION

FORMER LOBECO PRODUCTS, INC. FACILITY

BEAUFORT COUNTY, SOUTH CAROLINA

PREPARED BY:

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

BUREAU OF LAND AND WASTE MANAGEMENT

June 2020

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The Former Lobeco Products, Inc. Facility is located at 23 John Meeks Way in Lobeco, South Carolina. The Site (Figure 1) is located in an area of mixed industrial, residential and agricultural use, and consists of 91.4 acres of land. The current owner of record is Nautica & Company, Inc. The property is bordered to the north by forested land owned by Mitchell Brothers Construction, Inc. along Keans Neck Road, to the east by numerous residential and forested properties along Morgan and Kinlaw Roads, to the south by Morgan Road, and to the west by John Meeks Way and Mitchell Brothers Construction, Inc. There are no occupied structures within the footprint of known impacts to groundwater, however there are two occupied structures about two hundred feet southeast of the defined extent of the groundwater plume.

2.0 Statement of Basis and Purpose

This Decision Document presents the Selected Remedy for a portion of the Former Lobeco Products, Inc. Site identified as the "Remediated Burn Site Area." The remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and to the extent practicable, the National Contingency Plan (NCP). This decision is based on the Administrative Record for the Former Lobeco Products, Inc. Facility.

3.0 Assessment of the Site

The response action selected in this Record of Decision (ROD) is necessary to protect the public health and welfare or the environment from actual or threatened releases of hazardous substances into the environment.

4.0 Description of Selected Remedy

SCDHEC has selected a remedial alternative for groundwater contaminated with trichloroethylene and minor concentrations of other volatile organic compounds (VOCs). The selected remedial alternative uses containment and biological treatment methods to achieve site cleanup. A slurry wall will be installed downgradient and in the path of the groundwater plume, both on the Former Lobeco Products, Inc. property and off-property. A portion of the slurry wall will be replaced by a biological treatment zone consisting of limestone for pH adjustment and organic mulch to provide a carbon source for microbial breakdown of TCE and its daughter products. Institutional

controls including monitoring of both shallow groundwater and the limestone drinking water aquifer will be required.

5.0 Statutory Determination

The Selected Remedy attains the mandates of CERCLA Section 121 and to the extent practicable the NCP. The remedy is protective of human health and the environment, complies with applicable or relevant and appropriate requirements (ARARs), is cost effective, and utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The remedy also satisfies the statutory preference for treatment which permanently and significantly reduces the toxicity, mobility, and volume of hazardous substances, pollutants, or contaminants as a principal element of the remedy.

6.0 Authorizing Signature

This ROD documents the South Carolina Department of Health & Environmental Control's selected remedy for groundwater at the Former Lobeco Products, Inc. facility, Remediated Burn Site Area.

Henry J. Porter, Chief
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control

6-26-2020
Date

PART II - THE DECISION SUMMARY

1.0 Site Name, Location, and Description

The Former Lobeco Products, Inc. Facility is located at 23 John Meeks Way in Lobeco, South Carolina. The Site (Figure 1) is located in an area of mixed industrial, residential and agricultural use in Lobeco, South Carolina, and consists of 91.4 acres of land. The current owner of Record is Nautica & Company, Inc. The property is bordered to the north by forested land owned by Mitchell Brothers Construction, Inc. along Keans Neck Road, to the east by numerous residential and forested properties along Morgan Road and Kinlaw Road, to the south by Morgan Road, and to the west by John Meeks Way and Mitchell Brothers Construction, Inc. There are no occupied structures within the footprint of known impacts to groundwater, however there are two occupied structures about two hundred feet southeast of the defined extent of the groundwater plume.

2.0 Site History and Enforcement Activities

2.1 Site History

The facility was constructed 1966-67 by the Berkshire Color and Chemical Company, a division of Tenneco Chemicals, Inc. (later Tenneco Resins, Inc.). The facility was designed for the manufacture of dye chemicals and intermediates. Tenneco operated the facility until January, 1974, when it sold the facility to American Color and Chemicals, Inc. Several companies operated the plant until 2009 when it was sold and subdivided. Plant operations from 1967 to 2009 include the manufacture dye intermediates, chemicals for the well drilling industry, and agricultural chemicals. Prior to 1966, the site had been used for agriculture.

The part of the property addressed by this ROD is known as the "Remediated Burn Site Area, or "RBSA." The site is referred to in older documents as the "Abandoned Burn Site," "Old Burn Site," or simply "Burn Site." The RBSA is located in the northeastern area of the 91.4 acre property. This area was used in the early history of the site to dispose of chemical wastes by burning. Environmental investigations conducted at the RBSA beginning in December 1984 discovered elevated levels of PCBs (Arochlor 1248) in soil. In 1987, DHEC issued Consent Order 87-65-W listing Tenneco Resins, Inc. (Tenneco), American Color and Chemical Corporation (ACC) and Lobeco Products, Inc. (LPI) as "the Respondents." The Consent Order directed the Respondents to determine the full extent and degree of contamination at the site, including what was then called the Abandoned Burn Site.

2.2 Previous Investigations

An investigation of the Abandoned Burn Site was conducted in 1988. A soil removal action was completed in 1990. A clay slurry wall was installed around the Abandoned Burn Site to prevent infiltration of groundwater from outside the area of known soil contamination. Contaminated groundwater from inside the slurry wall was pumped through a filtration system to remove PCBs and then discharged to the facility's wastewater treatment plant. PCB contaminated soil and metal debris were removed from the site and disposed in a hazardous waste landfill (Emelle, Alabama). In all, approximately 8700 tons of soil were removed from the RBSA. A subsequent groundwater investigation was conducted throughout the 1990s, and a groundwater extraction and treatment system operated from 2004-2010.

2.3 Recent Activities

A Site-Wide Investigation of the Tertiary Limestone Aquifer (TLA) was completed in 2014. A Pre-Design Investigation was also completed in 2014. The 2014 Pre-Design Investigation confirmed that contaminants had spread southeast beyond the property boundary. Groundwater contamination is present in the shallow aquifer both on the former LPI property and off-property. Shallow groundwater is contaminated with VOCs, primarily the solvent trichloroethylene (TCE) and breakdown products of TCE. Contamination from the RBSA is limited to the shallow aquifer, which is further divided into three zones. These zones are identified as the shallow, intermediate, and deep-marl zones. The results of the 2014 Pre-Design Investigation indicate that the amount of contamination decreases significantly from the intermediate zone to the deep-marl zone.

Below the deep marl zone there is a clay layer approximately 35-40 feet thick separating the contaminated shallow aquifer from the deeper limestone aquifer. Drinking water wells in the area are typically installed into the limestone aquifer. Wells installed in the limestone aquifer have been sampled both on and off the former LPI property. Based on analysis of these samples, there is no known impact to the limestone aquifer from the RBSA.

A Focused Feasibility Study (FFS) was conducted subsequent to the Pre-Design Investigation and was approved by SCDHEC in 2017.

3.0 Community Participation

Public participation activities prior to the issuance of this ROD included publishing a Notice of Public Meeting and Comment Period in the Island Packet and the Beaufort Gazette, delivery of the Administrative Record to the Lobeco Branch of the Beaufort County Public Library, the mailing of 329 post cards to owners of surrounding properties, government officials, and other affected entities, and posting the Proposed Plan and Administrative Record for the site on the SCDHEC website. SCDHEC also coordinated with the Beaufort County Council representative for the Dale community to help ensure that news of the meeting reached interested community

members. The Public Meeting was held the evening of June 13, 2019 at the Dale Early Childhood Learning Center, about one mile from the site.

All reports and documents that formed the basis for the selection of the response action are contained in the Administrative Record. The Administrative Record was available for review at the Beaufort County Public Library at Lobeco and at the Department's Bureau of Land and Waste Management office in Columbia, South Carolina. The notice of the availability of these documents was published in the Beaufort Gazette on June 9, 2019.

The official public comment period ran from June 13 through July 15, 2019. There were no formal comments submitted by mail, telephone or email. Several comments were received at the Proposed Plan public meeting held on June 13, 2019. These comments are presented and discussed in the Responsiveness Summary.

4.0 Scope and Role of Response Action

This action will be the final cleanup action for the RBSA. The proposed actions include installation of a slurry wall to prevent further migration of contaminated groundwater, construction of a bio-wall to enhance biological breakdown of contaminants in groundwater, and long-term monitoring and maintenance of the remedy. This monitoring will include the tertiary limestone aquifer to ensure that area drinking water wells are not affected by contaminants present in shallow groundwater. The proposed remedy will permanently reduce the toxicity, mobility, and volume of contamination at the Site.

5.0 Site Characteristics

5.1 Overview of Site Characteristics

The property encompassing the RBSA is currently owned by Nautica & Co, Inc. RBSA was used during the 1960s and 70s to dispose of off-spec chemicals as well as empty containers by burning. During the soil remediation in 1990 metal debris including empty drums was identified and removed from the facility. The water table beneath the RBSA is shallow, and groundwater is contaminated by chemicals disposed of in the RBSA. Groundwater contamination is limited to the shallow water table aquifer. Beneath the shallow water table aquifer, a 30-40 foot thick clay layer serves as a confining unit and protects the underlying Eocene Limestone Aquifer which serves as the source of drinking water for the surrounding area.

5.2 Geology/Hydrogeology

The Site is located within the Lower Coastal Plain of South Carolina. A geologic exploration hole was drilled approximately five hundred feet northwest of the RBSA, and the resulting continuous core was described by the Coastal Plain Regional Geologist for the South Carolina Geologic Survey. The Pleistocene-age Princess Anne Formation is present at the land surface to a depth of 38 feet and consists of coarse sand and shell material. From 38 feet to approximately 78 feet below the ground surface, the geology consists of Miocene-age continental shelf deposits of the Hawthorn Group. Below 78 feet lies an Eocene-age unit of mixed carbonate and silica sediments. This Eocene Limestone Aquifer is the sole drinking water source for residents in the Dale area. (William Doar, III, SCDNR, personal communication 2014). Prior investigations give similar descriptions of the geology beneath the site, although the names given for the individual formations vary.

The 2014 Pre-Design Investigation identified three distinct water bearing zones within the Princess Anne Formation. These are referred to as the shallow perched zone, intermediate zone, and deep marl zone. The shallow perched zone is encountered within a few feet of the ground surface at the site, although it is not continuous. The intermediate zone extends from about ten to twenty feet below the ground surface at the RBSA. The deep marl zone extends from below the intermediate zone down to the top of the clay confining layer known regionally as the Hawthorn Formation. Groundwater flow direction in the Princess Anne Formation is to the southeast, toward Whale Branch. Groundwater flow in the deeper Eocene Limestone Aquifer is generally from east to west; nearly opposite the direction of the shallower aquifer.

Slug tests conducted during the Pre-Design Investigation gave average hydraulic conductivities of 0.02 ft/day for the shallow perched zone, 1.22 ft/day for the intermediate water bearing zone, and 3.19 ft/day for the deep marl zone.

5.3 Nature and Extent of Contamination

The Pre-Design Investigation confirmed that VOC contamination has migrated beyond the eastern property boundary in the shallow aquifer. The highest concentrations are contained in the intermediate water bearing zone. A concentration of 12,000 micrograms per liter (ug/L) was measured in intermediate monitoring well TP-20 in 2014.

5.3.1 Soil

Based on the site history, VOCs were most likely released to soils for burning, and/or buried in containers at the burn site during the early history of the facility. The remedial action conducted in 1990 removed soils contaminated with PCBs, but also removed other contaminants including VOCs and metal debris. During the Pre-Design Investigation, trichloroethylene (TCE) and its

daughter product cis-1,2-dichloroethylene (cis-1,2-DCE) were detected in significant concentrations in OW-5DM, near the property boundary at depths of 4.5-7 ft bls (190 and 71 ug/kg respectively) and 16.5-19 ft bls (80 and 34 ug/kg respectively). In TP-09DM, within the existing slurry wall from the 1990 removal action, TCE was detected at 6000 ug/kg; cis-1,2-DCE was detected at an estimated concentration of 170 ug/kg at 4.5-7' bls. At a depth of 30 to 33 feet below land surface, TCE was detected at 9.3 ug/kg; cis-1,2-DCE was not detected (<0.66 ug/kg). Soils are not considered a medium of concern at this time due to the dates of disposal, the prior removal of contaminated soils and the shallow occurrence of groundwater.

5.3.2 Groundwater

Groundwater is contaminated with VOCs, primarily TCE and cis-1,2-DCE. The greatest concentrations of VOCs are detected in the intermediate water bearing zone, with lesser concentrations in the shallow perched zone and deep marl zone. Cis-1,2-DCE is abundant, indicating that some breakdown of TCE has occurred. Vinyl chloride is rarely detected, suggesting either rapid degradation of vinyl chloride, or that conditions do not favor breakdown of cis-1,2-DCE. Trans-1,2-dichloroethylene is also present in five intermediate and 2 deep wells, exceeding the MCL in two of the intermediate wells. Minor concentrations of other VOCs are present, including 1,1-dichloroethylene, methylene chloride, carbon disulfide,

5.3.3 Indoor Air

There are currently no structures within the defined area of the RBSA groundwater contaminant plume. Residential structures are present downgradient of the plume. The two nearest residences are manufactured homes having some open space between the ground surface and the floor of the structure. Contamination is primarily found in the intermediate water bearing zone, suggesting that migration into soil gas is unlikely.

5.3.4 Surface Water

No surface water samples were collected during the 2014 Pre-Design Investigation. Because most of the groundwater contamination is within the intermediate zone, impacts to surface water are not anticipated.

5.3.5 Sediment

No sediment samples were collected during the 2014 Pre-Design Investigation. This investigation focused on known impacts to groundwater. Because most of the groundwater contamination is within the intermediate zone, impacts to sediment are not anticipated.

6.0 Current and Potential Future Site and Resource Uses

At present the former Lobeco Products, Inc. facility is vacant. A previous owner of the property (Arr-Maz Specialty Chemicals, Inc.) placed a Declaration of Covenants and Restrictions on the property in 2009 prior to selling it. The DCR prohibits residential use of the property, stipulates protection of remedial measures, and guarantees access to SCDHEC and others conducting environmental response actions. The former warehouse building to the north and east of the RBSA was leased briefly in 2014 by a business concern attempting to demonstrate the viability of processing cannonball-jellyfish for export as a food product.

The current owner of the property has not conducted any significant activities at the time of this writing, but has expressed an interest in developing a business on the property. Future use is most likely to be commercial/light industrial.

7.0 Summary of Site Risks

Groundwater was impacted by waste disposal practices in the area of the RBSA. Some groundwater was treated during the 1990 removal action as well as during operation of the former extraction and treatment system. Groundwater contamination remains the focus of the planned response action. Groundwater within the Princess Ann Formation in the vicinity of the RBSA is contaminated with VOCs and should not be used for drinking water or for other domestic use where contaminants could be ingested, inhaled, or absorbed through the skin.

The removal of soils from the RBSA in 1990 was intended to eliminate PCB contamination, but also removed other contaminants. Therefore risks from direct contact with soils are not expected. Due to the presence of contamination in groundwater, soils below the water table are likely to be contaminated in the plume area. Construction workers performing excavation or subsurface work in the area of the RBSA could potentially be exposed to contaminated soil and groundwater. Indoor air exposure is not a complete risk pathway at this time because there are no occupied structures above the area of contamination.

DHEC's current decision is that the Preferred Alternative identified in the Proposed Plan is necessary to reduce VOC concentrations in soil and groundwater to protect public health and the environment, and ultimately reduce contaminants in groundwater to below the MCLs.

8.0 Remedial Action Objectives

Remedial action objectives (RAOs) are developed in order to set goals for protecting human health and the environment. The goals should be as specific as possible but should not unduly limit the

range of alternatives that can be developed. Accordingly, the following RAOs were developed for the Site:

1. Reduce the concentration of contaminants in the RBSA.

2. Address the migration of dissolved contaminants in groundwater downgradient from the RBSA.

3. Reduce concentrations of contaminants in the off-property groundwater to achieve applicable groundwater quality criteria.

4. Prevent potential unacceptable exposure to the off-property contaminants.

Applicable groundwater criteria are the Maximum Contaminant Levels (MCLs) established by the South Carolina Primary Drinking Water Regulations. The individual MCLs for the contaminants of interest are:

Table 1: Remedial Goals

Contaminant	Media	Concentration
Tetrachloroethylene (PCE)	Groundwater	5 ug/L
Trichloroethylene (TCE)	Groundwater	5 ug/L
cis-1,2-dichloroethylene (cis-1,2-DCE)	Groundwater	70 ug/L
Trans-1,2-dichloroethylene	Groundwater	100 ug/L
Vinyl Chloride	Groundwater	2 ug/L
Methylene Chloride	Groundwater	5 ug/L
1,1-dichloroethylene	Groundwater	7 ug/L
Benzene	Groundwater	5ug/L
Chlorobenzene	Groundwater	100 ug/L
Chloroform	Groundwater	80 ug/L
Toluene	Groundwater	1000 ug/L

9.0 Remedial Alternatives

The *Final Revised Focused Feasibility Study (FFS) (Key Environmental, 2017)* was conducted to identify, develop, and evaluate options and remedial alternatives to address the groundwater contamination at the site. The alternatives listed below were identified and screened. Three

alternatives were carried through to the final detailed analysis. A final Remedial Design will be developed prior to implementation.

- Alternative 1: No Action Alternative: Evaluated for baseline comparison only, the No Action alternative would consist of monitoring and institutional controls, but would not include any active remedial measures.
- Alternative 2: In-Situ Chemical Oxidation: Onsite groundwater would be contained by a slurry wall and directed to an on-property biological treatment wall. ISCO would be conducted off-property to rapidly destroy contaminants of concern.
- Alternative 3: Groundwater Extraction, Treatment & Discharge: An off-property slurry wall would be used to prevent further migration of contaminants. Wells both on and off-property would be used to pump groundwater to the surface. Air would be used to strip contaminants from the groundwater prior to discharge.
- Alternative 4: On-Property Bio-Wall: A slurry wall would be installed both on and off the property to prevent further flow of groundwater off-site, and to direct contaminated groundwater to an on-property biological treatment wall.

All of the alternatives include groundwater monitoring and institutional controls (groundwater use restriction,) on the property. It is assumed that institutional controls will remain in place until the groundwater remedial goals (RGs) are achieved.

9.1 Description of Remedial Alternatives

9.1.1 Alternative 1: No Action Alternative

The regulations governing the Superfund program require the Department to consider a No Action alternative. The No Action alternative serves as a baseline against which the other remedial alternatives can be compared. Under this alternative, land use controls would remain in place to prevent groundwater use on the former Lobeco Products Site, and groundwater monitoring would be conducted to ensure that conditions are stable or improving.

The estimated 30-year present value cost for this alternative is $586,000.

9.1.2 Alternative 2: In-Situ Chemical Oxidation

Alternative 2 combines in-situ chemical oxidation, (ISCO), a slurry wall to control groundwater flow, and a bio-wall to condition groundwater to aid in the biological breakdown of contaminants. ISCO involves injection of a chemical such as hydrogen peroxide or potassium permanganate into contaminated portions of the aquifer. This allows destruction of the contaminants "in-situ" or in

place. This technology is suitable for destroying many VOCs. This option was evaluated using ISCO for the off-property groundwater contamination.

A slurry wall is an underground wall consisting of a mixture of natural soils and clay. Because groundwater can flow through native soils more quickly than it can travel through the clay mixture, slurry walls can be used to redirect groundwater toward treatment and prevent it from traveling toward drinking water wells. A slurry wall would be used on-property to stop additional contaminated groundwater from moving off-property.

A bio-wall would be installed within the slurry wall on-property to allow microbes to treat contaminated groundwater before it can migrate off-property. Some breakdown has already occurred naturally at the site; however, the low pH and lack of organic carbon have limited the amount of microbial activity. The bio-wall would contain of a mixture of limestone and organic mulch and allow water to flow through it. As the water passes through, the limestone raises the pH of the water and the mulch provides food for microorganisms that can break down the contaminants. Groundwater would flow through the bio-wall before flowing off-property. Addition of specific bacteria and nutrients might also be required to support microbial breakdown. Groundwater would be monitored, and existing land use restrictions would remain in effect.

The estimated 30-year present value cost for Alternative 2 is **$4,690,000**.

9.1.3 Alternative 3: Groundwater Extraction, Treatment & Discharge

Alternative 3 involves pumping water out of the ground and treating it to remove contaminants. The treated water must then be discharged to a wastewater treatment plant or to surface water or injected back into the aquifer. Alternative 3 would use pumping wells both on-property and off-property to control the movement of the contaminated groundwater and to extract it for above-ground treatment. Contaminated groundwater would move toward the extraction wells, rather than continuing to migrate off-property. This alternative would also use a slurry wall off-site to prevent contaminated groundwater from moving any farther off-property.

Alternative 3 would also include injection of a vegetable oil-based substrate to enhance biological breakdown of contaminants in a manner similar to the bio-wall. Vegetable oil would supply the organic carbon, and a caustic agent would be used to make the groundwater less acidic. This injection would be used to treat parts of the aquifer that are too far from the pumping wells for contaminants to be captured efficiently. Groundwater would be monitored, and existing land use restrictions would remain in effect.

The estimated 30-year present value cost for this alternative is **$4,220,000**.

9.1.4 Alternative 4: On-Property Bio-wall

Alternative 4 combines a slurry wall and bio-wall. The slurry wall would be installed both on and off-property. The bio-wall would be installed in the on-property portion. The contaminated groundwater would be directed toward the bio-wall, and on-property wells could be used to monitor the effectiveness of treatment. Additionally, this alternative would utilize vegetable oil-based substrate injection as discussed in Alternative 3 to enhance biological breakdown in areas where groundwater would not be affected by the bio-wall. Groundwater would be monitored, and existing land use restrictions would remain in effect.

The estimated 30-year present value cost for this alternative is **$2,500,000**.

10.0 Comparative Analysis of Alternatives

The National Contingency Plan requires the Department use specific criteria to evaluate the different remediation alternatives individually and against each other in order to select a remedy. Two of these criteria, overall protection of human health and the environment and compliance with State and Federal regulations, are threshold criteria. If an alternative does not meet these two criteria, it cannot be considered as the Site remedy. Five of the criteria are balancing criteria: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume of contaminants through treatment; short-term effectiveness; implementability; and cost. These criteria are used to weigh the strengths and weaknesses of the alternatives. Community response to the preferred alternative and the other considered alternatives is a modifying criterion that was carefully considered by the Department prior to the final remedy selection.

The following section of the ROD profiles the relative performance of each alternative against the criteria, noting how it compares to the other options under consideration.

Although Alternative 1 (No Action) does not meet the threshold criteria, it is retained for discussion because it provides a baseline for comparing the other alternatives to the criteria outlined above.

10.1 Overall Protection of Human Health and the Environment

When evaluating alternatives in terms of overall protection of human health and the environment, consideration is given to the manner in which Site-related risks are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

Alternative 1, the No Action alternative, does not provide adequate protection of human health and the environment.

Alternative 2 would utilize a slurry wall installed on-property. Reduction of contaminants off-property would rely on ISCO.

Alternative 3 would utilize a treatment technology that has previously been proven effective at this site. Addition of a slurry wall would aid in controlling the migration of contaminated groundwater. Addition of vegetable oil-based substrate would address contamination in areas outside the capture zone of the extraction system.

Alternative 4 uses technology that has been proven at other sites. Modifications may be necessary to ensure that biological treatment is effective. Replenishment of the bio-wall components would be required periodically. A slurry wall would be used to aid in controlling the migration of contaminated groundwater. Addition of vegetable oil-based substrate would address contamination in areas farther from the bio-wall.

Alternatives 2, 3, and 4 would protect human health and the environment through modifying groundwater flow, treatment of groundwater to reduce contamination, continued monitoring to ensure effectiveness of the remedy and the safety of the drinking water aquifer, and maintenance of land use controls to prevent exposure of on-site workers to contaminated groundwater. Alternatives 3 and 4 would also address residual groundwater contamination within the RBSA. Alternative 2 does not address this residual contamination.

Alternatives 3 and 4 best meet this criterion.

10.2 Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

This criterion evaluates whether an alternative meets state and federal environmental statutes and regulations that pertain to the Site. Each alternative is evaluated with respect to its ability to comply with such requirements. ARARs are used to determine the extent of cleanup, to formulate the remedial action alternatives, and to govern the implementation and operation of the selected remedy.

Applicable requirements are those legally enforceable standards that specifically address a hazardous substance, pollutant, contaminant, remedial action, or other circumstance encountered at a site. Relevant and appropriate requirements are federal or state standards, criteria, or limitations that, while not legally applicable to a site, address problems sufficiently similar to those found so their use is well-suited to a particular site.

Alternative 1 would not restore groundwater to applicable South Carolina groundwater quality standards within a reasonable amount of time. The monitoring and land use controls proposed under Alternative 1 do not trigger any other ARARs.

Alternatives 2, 3 and 4 could potentially restore groundwater to South Carolina groundwater quality standards within a reasonable amount of time. Each of these alternatives would require

compliance with Underground Injection Control requirements, and Alternative 3 would also require compliance with regulations governing operation of the treatment system and discharge of treated water.

Alternatives 2 and 4 best meet this criterion because they do not require operation of a wastewater treatment system or discharge of treated water.

10.3 Long-Term Effectiveness and Permanence

This criterion evaluates the magnitude of risk remaining from untreated media or treatment residuals and the adequacy and reliability of containment systems and institutional controls.

The No Action alternative includes no controls for exposure and no long-term management measures, aside from an existing prohibition on the use of shallow groundwater on the former LPI property. All current and potential future risks would remain under this alternative.

Alternative 2 would provide permanent destruction of contaminants through ISCO off-property, and through enhanced biological breakdown at the property boundary.

It is anticipated that more than one ISCO event would be required to sufficiently reduce contaminant concentrations off-property. Replacement of the limestone and mulch in the bio-wall would be needed at ten-year intervals, because these materials would be depleted over time. While these technologies have the potential to be effective, actual effectiveness is dependent on a number of factors that cannot be modelled reliably. Alternative 2 would not address the Remedial Action Goals within the RBSA. This means that groundwater within the RBSA would remain impacted. In terms of long-term effectiveness, Alternative 2 is not as effective as Alternatives 3 and 4.

Alternative 3 would provide permanent removal of contaminants. Extraction and above-ground treatment is a reliable and proven technology for removal of VOCs. This technology was previously used at the RBSA and was shown to be effective. Repair and maintenance of wells, pumps, and equipment would likely be required over time. Fencing, signage and surveillance would be required to ensure the system remained functional. Injection of vegetable oil-based substrate would likely need to be repeated. One additional injection event is anticipated ten years after the initial event.

Alternative 4 would also provide permanent removal of contaminants through biological breakdown, but would rely on this approach for both on-property and off-property contamination. Similar degrees of uncertainty apply to both the bio-wall treatment and the vegetable oil-based substrate treatment. Bio-wall materials are estimated to require replacement at ten-year intervals. One additional injection of vegetable oil-based substrate is anticipated ten years after the initial event. After installation of the slurry wall and bio-wall and completion of the injection events there would be no equipment, plumbing, or electrical service remaining. Because all aspects of this treatment system would be implemented below the ground surface, the potential for accidental

damage to the system would be low. This means a reduced potential for interruption of treatment due to storms, power failures, equipment failure, or damage to infrastructure.

Alternatives 3 and 4 best meet this criterion. Alternative 3 has been proven effective previously at the RBSA. Alternative 4 would minimize the amount of time that machinery and equipment remains above ground, and would enhance the breakdown of contaminants that is already occurring.

10.4 Reduction of Toxicity, Mobility, or Volume through Treatment

This criterion evaluates the degree to which an alternative employs treatment to reduce the harmful effects of contaminants, limit the ability of contaminants to move in the environment, and reduce the amount of contamination present.

Alternative 1 would not provide any reduction of toxicity, mobility, or volume of contaminated media. The No Action alternative could allow the volume of impacted groundwater to increase over time through diffusion.

Alternative 2 would reduce the toxicity and volume of contaminants through chemical oxidation. Mobility of on-property contamination would be reduced by the proposed slurry wall. Treatment within the bio-wall would reduce the volume of contaminants through biological breakdown. Contaminant toxicity, mobility and volume within the RBSA would not be addressed by Alternative 2.

Alternative 3 would reduce the toxicity and volume of contaminants through both ex-situ (extraction and treatment) and in-situ (biological breakdown) mechanisms. Mobility would be reduced in two ways. The slurry wall would prevent further migration of contaminated groundwater, while operation of pumping wells would pull contaminated water back toward the former LPI property.

Alternative 4 would reduce the toxicity, and volume of contaminants by enhancing biological breakdown. The slurry wall would reduce mobility by preventing further migration of contaminated groundwater.

Alternative 3 best meets this criterion by controlling contaminant mobility through both pumping and use of a slurry wall, and by reducing contaminant mass through a technology previously proven effective at the RBSA.

10.5 Short-Term Effectiveness

Short-term effectiveness takes into consideration any risk the alternative poses to on-Site workers, the surrounding community, or the environment during implementation, as well as the time needed to implement the alternative.

Alternative 1 would pose no additional risk to the community, workers, and the environment in the short-term.

Implementation of Alternative 2 would involve installation of a slurry wall and bio-wall on the former LPI property, installation of permanent injection wells off-property and injection of oxidizing chemicals off-property. These activities present some additional risk to workers handling chemicals and injection equipment. These risks could be managed through careful planning and safe work practices. The estimated time required to construct the remedial components is anticipated to be less than one year; however, design and permitting would extend this timeframe. The presence of the injection wells off-property could adversely affect the owners of the adjacent property.

Implementation of Alternative 3 would involve installation of a slurry wall on and off-property and could potentially impact adjacent property owners. Protective measures would be implemented to manage risks. The Focused Feasibility Study estimates that it will take approximately two years to complete construction following remedy selection.

Alternative 4 would involve similar construction activities to Alternatives 2 and 3. The slurry wall would be installed both on and off-property, and the bio-wall would be installed on-property. The Focused Feasibility Study estimates it will take slightly less than one year to complete construction following remedy selection.

Construction activities would be similar for Alternatives 2, 3 and 4. Alternative 4 requires the least amount of time to design and construct (4 months) followed by Alternative 3 (7 months), and Alternative 2 (approximately one year). Alternative 4 best meets this criterion based on the amount of time required to design and construct the remedy.

10.6 Implementability

Implementability considers the technical and administrative challenges of construction and start-up, as well as the availability of required materials and services.

Alternative 1 has no implementability issues other than securing access for continued sampling, and maintenance of land use-controls.

Alternative 2 involves the installation of an on-property slurry wall, and 6 monitoring wells and 117 permanent injection wells off-property. This activity would require access agreements with the property owners. An Underground Injection Control (UIC) permit would be required for operation of the injection wells. These wells would be required to remain in place and operable for many years.

Alternative 3 also requires access agreements with property owners for installation of a slurry wall and for pumping wells to remain on their property for many years. Access to these wells would

be required periodically to perform any necessary maintenance or repairs. A UIC permit would be required for injection of vegetable oil-based substrate. These injection wells would be temporary and would not remain on the property following the injection events. Operation of the groundwater extraction and treatment system would require a separate permit to dispose of the treated groundwater. This permit could be a second UIC permit, or a permit for discharge to surface water under the National Pollutant Discharge Elimination System (NPDES).

Alternative 4 requires access agreements with owners of adjacent properties, and permission to conduct construction of the slurry wall and bio-wall and injection of vegetable oil-based substrate on their properties. Access would be required periodically in order to repeat the injection process and to replenish the bio-wall materials. A UIC permit would be required. Because Alternative 4 uses passive technology to restore groundwater, there would be no permanent wells or equipment remaining other than the existing monitoring wells.

Alternative 4 would be easier to implement than Alternatives 2 and 3.

10.7 Cost

The cost criterion includes estimated initial capital costs and annual O&M costs, as well as a 30-year present value cost estimate. Present value cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of -30% to +50%.

Remedial Alternative	30-Year Net Present Value
Alternative 1: **No-Action, Monitoring, Closure of Existing System**	**$568,000**
Alternative 2: **ISCO, Slurry Wall, Bio-Wall**	**$4,690,000**
Alternative 3: **Extract & Treat, Slurry Wall, Vegetable Oil Injection**	**$4,220,000**
Alternative 4: **Slurry Wall, Bio-Wall, Vegetable Oil Injection**	**$2,500,000**

10.8 Community Acceptance

During a Community Meeting on June 13, 2019 one comment was received from a community member. The commenter felt that the Department had selected the lowest-cost remedy of those considered, and that this was improper considering the harm to the community and profit to the chemical companies during the years of operation.

11.0 Selected Remedy

The Department has selected Alternative 4, On-property and off-property slurry wall, on-property bio-wall, on-property and off-property vegetable oil injection, and monitored natural attenuation as the remedy.

11.1 Description of Selected Remedy

The selected remedy will require installation of a slurry wall at the downgradient edge of the groundwater contamination plume and extending beyond the plume. The slurry wall will be installed by mixing clay with native materials in order to eliminate as much pore space as possible from the subsurface. This may be accomplished in several different ways, such as by using an excavator, a single-pass trencher, or augurs. Once the slurry wall is in place, a portion of the wall will be excavated and backfilled with a mixture of materials designed to enhance biological breakdown of groundwater contaminants. Areas on the former chemical plant property and on adjoining properties will also be treated by injection of a vegetable oil-based compound. This will provide a long-lasting source of organic carbon to enhance destruction of contaminants by indigenous bacteria in areas of high contaminant concentrations, and where groundwater will not be captured by the bio-wall. It is anticipated that the materials in the bio-wall will become depleted and need to be replaced at approximately ten-year intervals. An additional injection of vegetable oil-based compound is anticipated to be needed during the operation of the remedy. Annual monitoring will be conducted to evaluate the effectiveness of the remedy. A comprehensive review of remedy effectiveness will be conducted at five-year intervals until groundwater is restored to Class GB standards.

12.0 Statutory Determinations

The Department expects the Preferred Remedy to satisfy the following statutory requirements: 1) be protective of human health and the environment; 2) comply with applicable or relevant and appropriate requirements; 3) be cost-effective; 4) utilize permanent solutions to the maximum extent practicable; and 5) satisfy the preference for treatment as a principle element of the remedy.

PART III - RESPONSIVENESS SUMMARY

The Proposed Plan was made available on the Department's website and announced to area property owners and other interested parties by mail on June 28, 2019, July 1, 2019 and July 2, 2019. Post cards were mailed to 329 property owners identified by property records. Additional post cards were mailed to local, county, state, and federal officials. A community meeting was announced by publication of a notice in the Beaufort Gazette and the Island Packet on June 9, 2019. The community meeting was held on June 13, 2019 at the Early Childhood Development Center to present the Department's Proposed Plan. A transcript of the Community Meeting is included in this ROD. A public comment period followed this meeting, and ended on July 14, 2019. No comments were received by telephone, email, or regular mail. No requests for an extension of the comment period were received and therefore the comment period ended on July 14, 2019.

During the question and answer session following the Community Meeting, several community members expressed concern over the safety of their drinking water and a strong desire for the Department to facilitate regular testing of drinking water wells near the site. The speakers indicated that the community had been burdened by the presence of this facility for generations, and that the specter of contamination problems has unfairly affected the people living nearby. They told Department staff that periodically testing the drinking water wells would give the community some peace of mind to ease this burden.

Department staff summarized the testing that had been done:

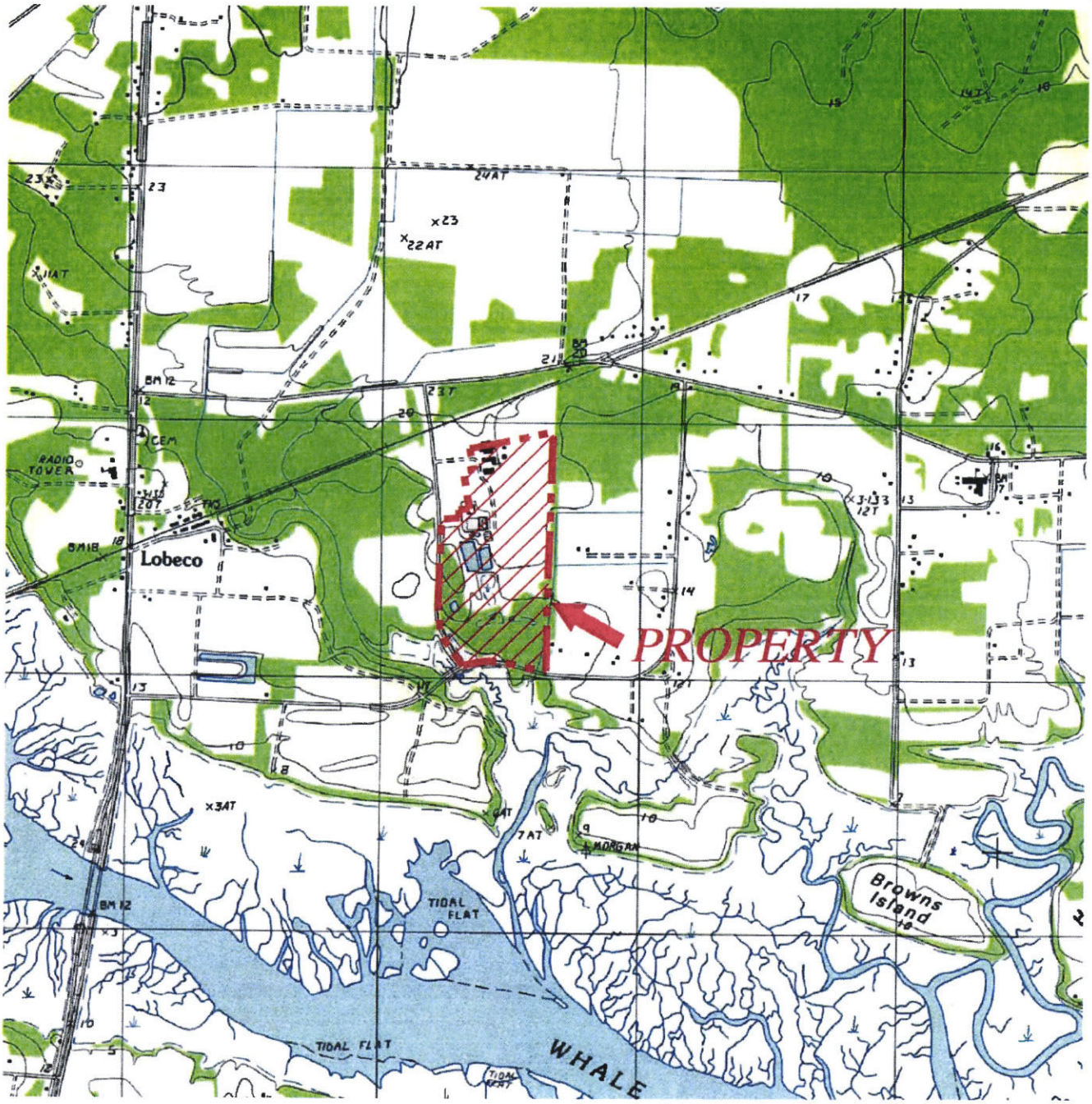
- Comprehensive drinking water well sampling was conducted in 2009.
- A second event proposed to sample five wells in 2016. Two of these wells could not be sampled. One was not operational, and one was on a property that appeared to be abandoned. No permission could be obtained for access to sample the well.
- The drinking water well closest to the RBSA was resampled in November 2018, and again in January 2019.

Thirty-six private drinking water supply wells were sampled during the 2009 event. No contaminants from the site were present in any of the wells. Based on the results of the preliminary sampling event, the scope of subsequent sampling events has been reduced. However, the Department agrees with the community members that periodic sampling of drinking water wells near the facility is reasonable and justified. The Department will work with the Responsible Party during development of the Remedial Action Work Plan to devise an appropriate sampling scope and schedule.

The remainder of the Responsiveness Summary is included in Appendixes A and B, and consists of the following:

- Appendix A: The Department's Proposed Plan;
- Appendix B: Transcript of Community Meeting, 6/13/2019

Figures



N

SOUTH CAROLINA

QUADRANGLE LOCATION

0 2000 4000

FEET

AMERICAN COLOR & CHEMICAL, L.L.C.
LOCK HAVEN, PENNSYLVANIA

DRWN: SCC	DATE: 07/11/16	KEY ENVIRONMENTAL INCORPORATED
CHKD: TEJ	DATE: 07/20/16	
APPD:	DATE:	
SCALE:	1"=2000'	

REVISED FOCUSED FEASIBILITY STUDY
RBSA AND DOWNGRADIENT GROUNDWATER REMEDIATION
FORMER LOBECO PRODUCTS, INC. FACILITY
LOBECO, SOUTH CAROLINA

REFERENCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE
DALE, SOUTH CAROLINA, 1988

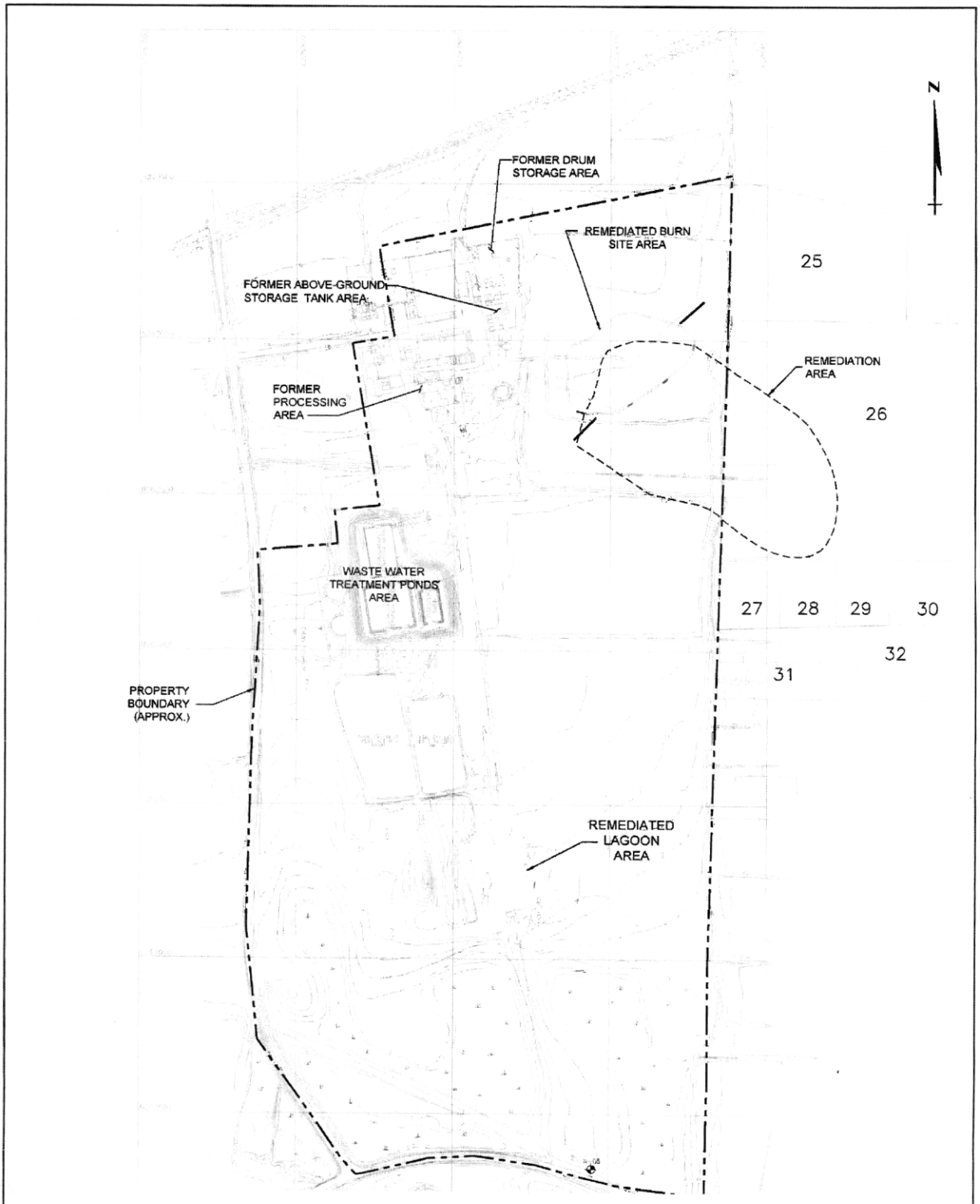
ISSUE DATE:

KEY ENVIRONMENTAL, INC.
200 THIRD AVENUE
CARNEGIE, PA 15106

PROPERTY LOCATION MAP

PROJECT NO: 16-205

FIGURE 1



LEGEND

- PROPERTY BOUNDARY (APPROX.)
- FENCE
- ABANDONED RAILROAD BED
- STATE PLANE COORDINATE SYSTEM IN FEET NORTH AND EAST
- 32 OFF PROPERTY PARCELS
- WET VEGETATED AREAS
- SLURRY WALL
- LOCATION OF SLURRY WALL BREACH
- SURFACE TOPOGRAPHY 1 FOOT INTERVAL
- INFILTRATION GALLERY

0 300 600 FEET

AMERICAN COLOR & CHEMICAL, L.L.C.
LOCK HAVEN, PENNSYLVANIA

DRWN:	SCC	DATE:	07/11/18
CHKD:	TEJ	DATE:	07/20/18
APPD:		DATE:	
SCALE:	AS SHOWN		

KEY ENVIRONMENTAL INCORPORATED

REVISED FOCUSED FEASIBILITY STUDY
RBSA AND DOWNGRADIENT GROUNDWATER REMEDIATION
FORMER LOBECO PRODUCTS, INC. FACILITY
LOBECO, SOUTH CAROLINA

PROJECT AREA PLAN

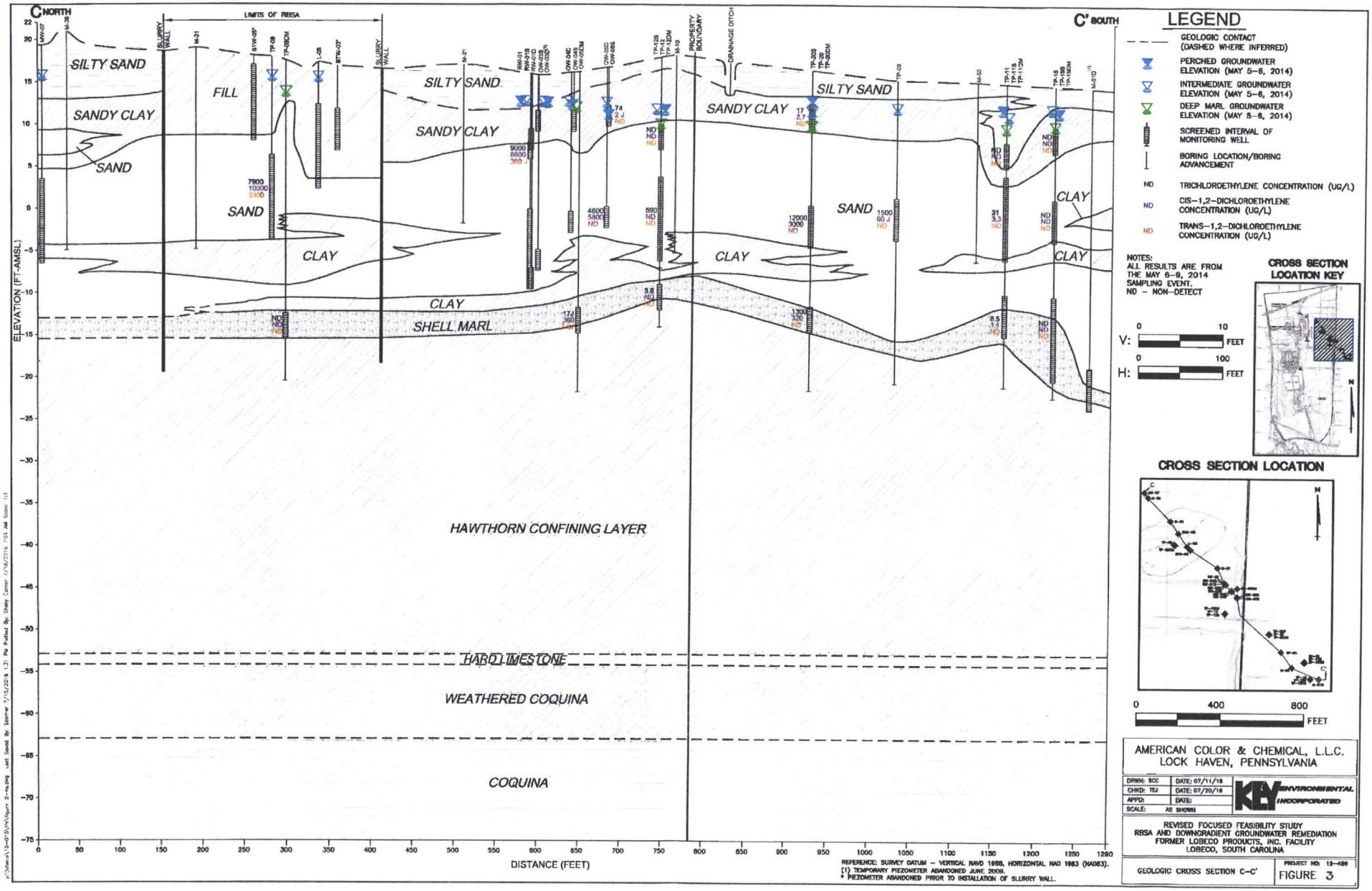
PROJECT NO. 16-205
FIGURE 2

REV #	DATE	DESCRIPTION	APPD
1			
2			
3			

REFERENCES:
1. TOPOGRAPHY AND PLANIMETRICS BY LANE ENVIRONMENTAL SERVICES CORPORATION AND RMT, INC. DECEMBER 1992, GROUND WATER ASSESSMENT REPORT, PLATE.
2. PROPERTY BOUNDARY BY ARMAZ SPECIALTY CHEMICALS, INC. PLAT MAP MARCH 02, 2009.
3. COORDINATES REFERENCED TO SOUTH CAROLINA STATE PLANE HORIZONTAL DATUM NORTH AMERICAN DATUM 1983 (NAD83) VERTICAL DATUM NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).

ISSUE DATE:

KEY ENVIRONMENTAL, INC.
200 THIRD AVENUE
CARNEGIE, PA 15106



AMERICAN COLOR & CHEMICAL, L.L.C.
LOCK HAVEN, PENNSYLVANIA

DRWN: SCC	DATE: 07/11/18
CHKD: TEJ	DATE: 07/20/18
APPD:	DATE:
SCALE: AS SHOWN	

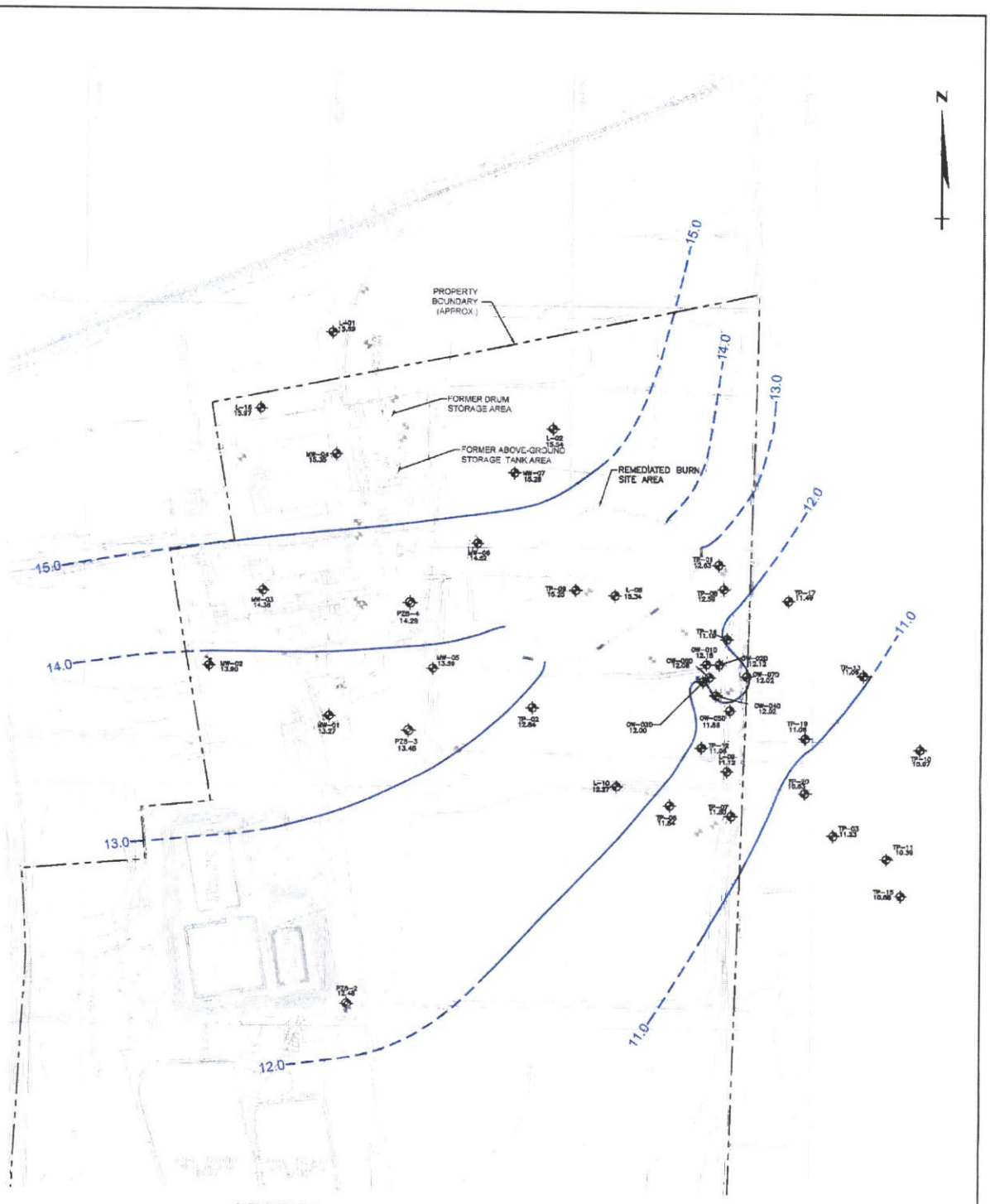
KEY ENVIRONMENTAL INCORPORATED

REVISED FOCUSED FEASIBILITY STUDY
RBSA AND DOWNGRADIENT GROUNDWATER REMEDIATION
FORMER LOBECO PRODUCTS, INC. FACILITY
LOBECO, SOUTH CAROLINA

GEOLOGIC CROSS SECTION C–C'

PROJECT NO: 12–486

FIGURE 3



LEGEND

- PROPERTY BOUNDARY (APPROX.)
- FENCE
- ABANDONED RAILROAD BED
- WET VEGETATED AREAS
- STATE PLANE COORDINATE SYSTEM IN FEET NORTH AND EAST
- SLURRY WALL
- LOCATION OF SLURRY WALL BREACH
- SURFACE TOPOGRAPHY 1 FOOT INTERVAL
- RECIRCULATION WELL
- INDUSTRIAL WATER WELL
- TP-15 MONITORING WELL
- TEMPORARILY ABANDONED PUMPING WELL
- PZB-1 PIEZOMETER
- 11.0 POTENTIOMETRIC SURFACE ELEVATION CONTOUR (FT-MSL) (DASHED WHERE INFERRED)
- 11.57 POTENTIOMETRIC SURFACE ELEVATION (FT-MSL)

0 200 400 FEET

NOTE:
1. WELLS IN GRAY NOT CONSIDERED FOR CONTOURING PURPOSES.

REFERENCES:
1. TOPOGRAPHY AND PLANIMETRICS BY LAKE ENVIRONMENTAL SERVICES CORPORATION AND RMT, INC. DECEMBER 1992, GROUND WATER ASSESSMENT REPORT, PLATE.
2. PROPERTY BOUNDARY BY ARSMAZ SPECIALTY CHEMICALS, INC. PLAT MAP MARCH 02, 2009.
3. COORDINATES REFERENCED TO SOUTH CAROLINA STATE PLANE HORIZONTAL DATUM NORTH AMERICAN DATUM 1983 (NAD83) VERTICAL DATUM NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88)

REV #	DATE	DESCRIPTION	APPD
1			
2			
3			

ISSUE DATE:

KEY ENVIRONMENTAL, INC.
200 THIRD AVENUE
CARNEGIE, PA 15106

AMERICAN COLOR & CHEMICAL, L.L.C.
LOCK HAVEN, PENNSYLVANIA

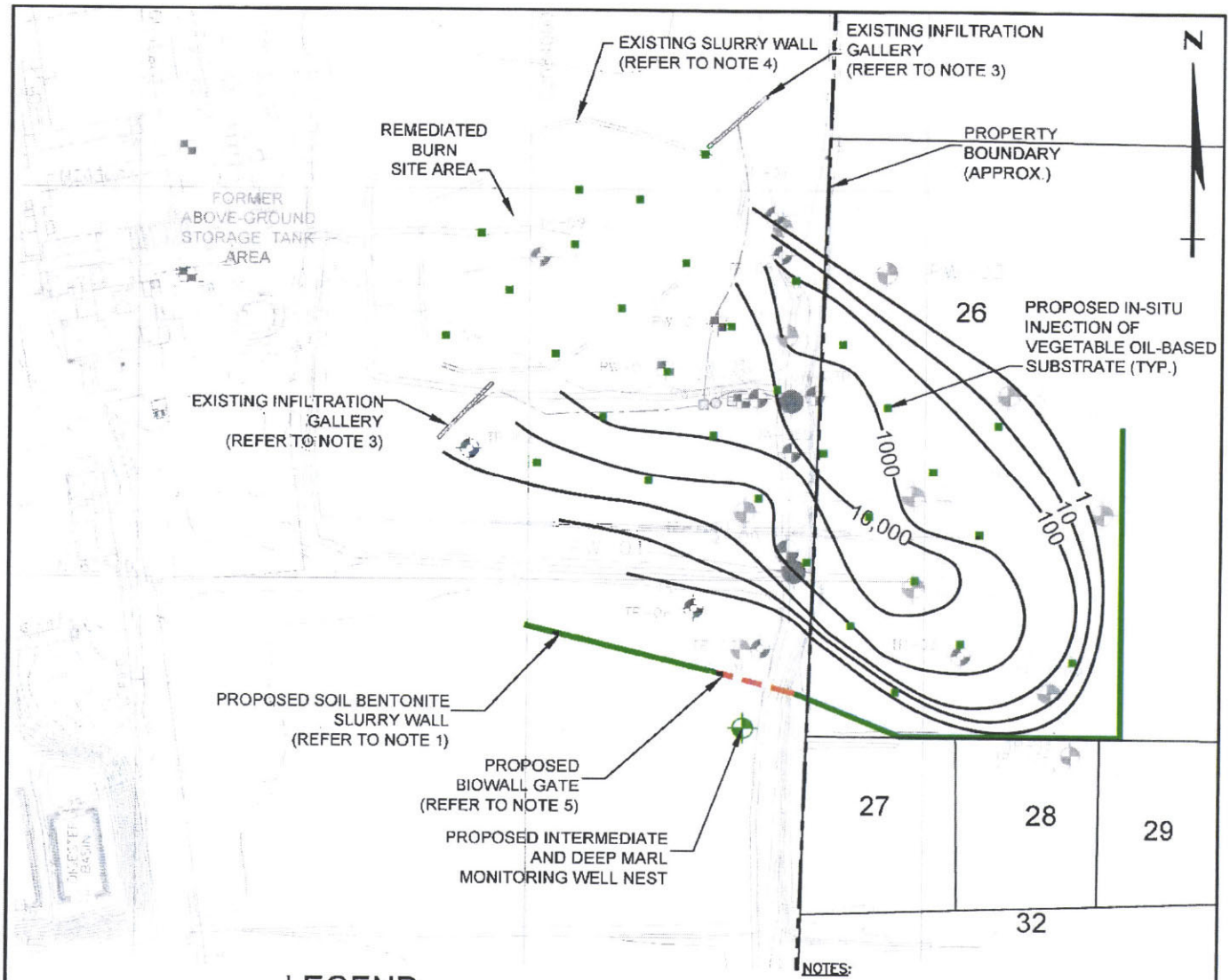
DRWN: SCC	DATE: 07/11/16	KEY ENVIRONMENTAL INCORPORATED
CHKD: TEJ	DATE: 07/20/16	
APPD:	DATE:	
SCALE: AS SHOWN		

REVISED FOCUSED FEASIBILITY STUDY
RBSA AND DOWNGRADIENT GROUNDWATER REMEDIATION
FORMER LOBECO PRODUCTS, INC. FACILITY
LOBECO, SOUTH CAROLINA

INTERMEDIATE ZONE
POTENTIOMETRIC SURFACE CONTOURS
MAY 19, 2015

PROJECT NO: 19-208

FIGURE 4



LEGEND

- PROPERTY BOUNDARY (APPROX.)
- FENCE
- ABANDONED RAILROAD BED
- STATE PLANE COORDINATE SYSTEM IN FEET NORTH AND EAST
- EXISTING SLURRY WALL
- LOCATION OF EXISTING SLURRY WALL BREACH
- SURFACE TOPOGRAPHY 1 FOOT INTERVAL (FT-MSL)
- EXISTING MONITORING WELL LOCATION
- PROPOSED VEGETABLE OIL-BASED SUBSTRATE INJECTION LOCATION
- EXISTING INFILTRATION GALLERY
- EXISTING PIEZOMETER
- EXISTING RECIRCULATION WELL (TO BE ABANDONED)
- EXISTING PUMPING WELL (TO BE ABANDONED)
- PROPOSED INTERMEDIATE AND DEEP MARL MONITORING WELL NEST
- 32 — OFF PROPERTY PARCELS
- -100- — VOC CONCENTRATION CONTOURS (UG/L) (MAY 2014)
- PROPOSED BIOWALL
- PROPOSED SLURRY WALL

NOTES:

1. THE FOOTPRINT OF THE PROPOSED THREE FEET WIDE SLURRY WALL HAS BEEN ESTIMATED VIA GROUNDWATER MODELING RESULTS. THE SLURRY WALL WOULD BE KEYED-INTO THE HAWTHORN CLAY CONFINING LAYER.
2. THE EXISTING PUMPING WELLS (PW-01 AND PW-02) AND RECIRCULATION WELLS WOULD BE ABANDONED.
3. THE EXISTING INFILTRATION GALLERIES WOULD BE ABANDONED.
4. THE LATERAL LIMITS OF THE EXISTING RBSA SLURRY WALL AND BREACHES WERE ESTIMATED BASED ON BEST AVAILABLE INFORMATION.
5. THE ESTIMATED BIOWALL GATE DIMENSIONS (BASED ON MODELING RESULTS) ARE 100 FEET LONG X 4 FEET WIDE X 10 FEET DEEP.

0 200 400 FEET

REFERENCES:
1. TOPOGRAPHY AND PLANIMETRICS BY LANE ENVIRONMENTAL SERVICES CORPORATION AND RMT, INC. DECEMBER 1992, GROUND WATER ASSESSMENT REPORT, PLATE.
2. PROPERTY BOUNDARY BY ARRMAZ SPECIALTY CHEMICALS, INC. PLAT MAP MARCH 02, 2009.
3. COORDINATES REFERENCED TO SOUTH CAROLINA STATE PLANE HORIZONTAL DATUM NORTH AMERICAN DATUM 1983 (NAD83) VERTICAL DATUM NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).

ISSUE DATE:

KEY ENVIRONMENTAL, INC.
200 THIRD AVENUE
CARNEGIE, PA 15106

AMERICAN COLOR & CHEMICAL, L.L.C.
LOCK HAVEN, PENNSYLVANIA

DRWN: SCC	DATE: 07/11/16
CHKD: MJV	DATE: 07/20/16
APPD:	DATE:
SCALE: AS SHOWN	

KEY ENVIRONMENTAL INCORPORATED

REVISED FOCUSED FEASIBILITY STUDY
RBSA AND DOWNGRADIENT GROUNDWATER REMEDIATION
FORMER LOBECO PRODUCTS, INC. FACILITY
LOBECO, SOUTH CAROLINA

REMEDIATION AREA PLAN – ALTERNATIVE IV

PROJECT NO: 16-205

FIGURE 5

Appendix A

Proposed Plan

S.C. Department of Health and Environmental Control

Proposed Plan for Site Remediation
Remediated Burn Site Area
Former Lobeco Products, Inc. Facility
John Meeks Way, Beaufort, South Carolina

June 2019

ANNOUNCEMENT OF PROPOSED PLAN

The South Carolina Department of Health and Environmental Control (DHEC) has completed an evaluation of cleanup alternatives to address groundwater contamination at the Remediated Burn Site Area (RBSA) of the former Lobeco Products Inc. (LPI) Facility. This Proposed Plan identifies DHEC's preferred alternative for cleaning up the contaminated groundwater and provides the reasoning for this preference. In addition, this Proposed Plan includes summaries of the other cleanup alternatives evaluated. These alternatives were identified based on information gathered during environmental investigations conducted since 2012.

DHEC is presenting this Proposed Plan to inform the public of our activities, gain public input, and fulfill the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (National Contingency Plan or NCP). This Proposed Plan summarizes information that can be found in greater detail in the Final Revised Focused Feasibility Study Report (September 2017), the Pre-Design Investigation Report (September 2014), and other documents contained in the Administrative Record file. DHEC encourages the public to review these documents to gain an understanding of the Site and the activities that have been completed.

DHEC will select a final cleanup remedy after reviewing and considering comments submitted during the 30-day public comment period. DHEC may modify the Preferred Alternative or select another response action presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives presented in this Proposed Plan.

DHEC's Preferred Cleanup Summary
Alternative 4:

DHEC's preferred remedial option includes:

- Groundwater Containment by an On-property and Off-property slurry wall;
- In-Situ Groundwater Treatment through installation of a Bio-wall within a part of the slurry wall;
- On-property and Off-property Injection of Vegetable Oil Substrate;
- Monitored Natural Attenuation;
- Project Management and Institutional Controls

MARK YOUR CALENDAR

❑ PUBLIC MEETING:

When: Thursday, June 13, 2019, at 7:00 pm

Where: James Davis Early Childhood Center
(formerly James Davis Elementary School)
Kean Neck Road
Beaufort, SC

DHEC will hold a meeting to explain the Proposed Plan and all alternatives presented in the Evaluation of Remedial Options report. After the Proposed Plan presentation, DHEC will respond to your questions. Oral and written comments will be accepted at the meeting.

❑ PUBLIC COMMENT PERIOD:

June 13, 2019 through July 15, 2019

DHEC will accept written comments on the Proposed Plan during the public comment period. Please submit your written comments to:

Tim Hornosky, Project Manager
SC DHEC Bureau of Land & Waste Management
2600 Bull Street
Columbia, SC 29201
hornostr@dhec.sc.gov

❑ FOR MORE INFORMATION:

Call: Tim Hornosky, Project Manager, 803-898-0733

See: DHEC's website at:
www.scdhec.gov/publicnotices

View: The Administrative Record at the following locations:

Beaufort County Public Library
1862 Trask Parkway, Lobeco, SC
Hours: Monday through Thursday: 11 a.m. – 6 p.m.
Friday & Saturday 11 a.m. – 5 p.m.

DHEC Freedom of Information Office
2600 Bull Street, Columbia, SC
(803) 898-3817
Monday - Friday: 8:30 am - 5:00 pm

SITE HISTORY

The Former Lobeco Products Incorporated (LPI) Facility is located at 23 John Meeks Way, in the Lobeco community of Beaufort County, South Carolina. This property was developed as a specialty chemical manufacturer in the 1960s and was owned and operated by several different companies until being sold and subdivided in 2009. The entire LPI property formerly consisted of 245.9 acres. The current property discussed in this proposed plan is the part that was developed as a chemical manufacturing facility, and consists of 91.4 acres. The current owner of record for this property is Nautica & Company, Inc. The area surrounding the property is a mix of agricultural and residential parcels, and undeveloped land. The Site is bordered to the north by Keans Neck Road, to the east by residential and undeveloped properties, to the south by Morgan Road, and to the west by John Meeks Way.

The part of the property addressed by this Proposed Plan is currently known as the "Remediated Burn Site Area," or "RBSA." Some of the older reports and documents refer to this area as the "Old Burn Site" or "Abandoned Burn Site." The RBSA is located in the northeast corner of the 91.4 acre parcel. This area was used in the early history of the site to dispose of chemical wastes by burning. Environmental investigations conducted at the RBSA beginning in December 1984 discovered elevated levels of polychlorinated biphenyls (PCBs) in soil.

In 1987, DHEC issued Consent Order 87-65-W listing Tenneco Resins, Inc. (Tenneco), American Color and Chemical Corporation (ACC) and LPI as "the Respondents." The Consent Order directed the Respondents to determine the full extent and degree of contamination at the site, including the Abandoned Burn Site.

REMOVAL ACTION

In October 1988, the Respondents submitted to DHEC a Remedial Action Plan for the removal of soils contaminated with polychlorinated biphenyls (PCBs). DHEC approved the Remedial Action Plan on February 27, 1989. Consent Order 87-65-W was amended in 1989 to direct implementation of the Remedial Action Plan. The removal action was completed in 1990.

First, a clay slurry wall was installed around the Abandoned Burn Site. Next, contaminated soil was excavated. Groundwater removed from the excavation was treated to remove PCBs then discharged to the facility's wastewater treatment system. The slurry wall prevented additional groundwater from flowing back into the area being excavated. A total of 8,700 tons of soil and debris were excavated from the Abandoned Burn Site and shipped to a hazardous waste disposal facility in Emelle, Alabama. Samples were collected from the bottom and sides of the excavation to ensure that the remaining soil met the 25 mg/kg goal established by the Remedial Action Plan. Clean soil was added to fill the excavation, and the slurry wall was breached to prevent ponding of rainwater.

In 1991 the Department issued Consent Order 91-12-W to ACC and LPI, requiring the Respondents to determine the full extent of groundwater contamination at the site. Investigations identified a

number of volatile organic chemicals (VOCs) in groundwater in and around the RBSA.

PREVIOUS GROUNDWATER REMEDIATION

A groundwater treatment system was installed at the RBSA in late 2004. This system extracted contaminated water from two wells and used air to remove the VOCs. The treated water was then injected back underground. The system was shut down in 2010 after some of the system components were damaged by demolition of the former reactor building. Additional groundwater investigation was conducted with the goal of designing a more reliable groundwater remedy. The results were presented in the Pre-Design Investigation Report in 2014.

SUMMARY OF SITE RISKS

Groundwater - Some groundwater from within the slurry wall was recovered and treated during the 1990 removal action, but contaminated groundwater had already spread beyond the Burn Site by that time. The 2014 Pre-Design Investigation confirmed that contaminants had spread southeast beyond the property boundary. Groundwater contamination is present in the shallow aquifer both on the former LPI property and off-property. Shallow groundwater is contaminated with VOCs, primarily the solvent trichloroethylene (TCE) and breakdown products of TCE. Contamination from the RBSA is limited to the shallow aquifer, which is further divided into three zones. These zones are identified as the shallow, intermediate, and deep-marl zones. The results of the 2014 Pre-Design Investigation indicate that the amount of contamination decreases significantly from the intermediate zone to the deep-marl zone.

Below the deep marl zone there is a clay layer approximately 35-40 feet thick which separates the contaminated shallow aquifer from the deeper limestone aquifer. Drinking water wells in the area are typically installed into the limestone aquifer. Wells installed in the limestone aquifer have been sampled both on and off the former LPI property. Based on analysis of these samples, there is no known impact to the limestone aquifer from the RBSA.

Soil – In 1990 soils from the RBSA were removed and properly disposed off-site in a licensed hazardous waste landfill. This removal action focused on PCBs, but also removed other contaminants present in soils in the RBSA.

CLEANUP GOALS

Remedial action objectives (RAOs) are developed in order to set goals for protecting human health and the environment. The goals should be as specific as possible, but should not unduly limit the range of remedial alternatives that can be developed. Accordingly, the following RAOs were developed for the Site:

1. Reduce the concentration of contaminants in the RBSA.
2. Address the migration of dissolved contaminants in groundwater downgradient from the RBSA.
3. Reduce concentrations of contaminants in the off-property groundwater to achieve applicable groundwater quality criteria.
4. Prevent potential unacceptable exposure to the off-property contaminants.

Applicable groundwater criteria are the Maximum Contaminant Levels (MCLs) established by the South Carolina Primary Drinking Water Regulations. The individual MCLs for the contaminants of interest are:

- Trichloroethylene (TCE): 5 ug/L
- Cis-1,2-dichloroethylene (cis-DCE): 70 ug/L
- Trans-1,2-dichloroethylene (trans-DCE): 100 ug/L
- Vinyl chloride (VC): 2 ug/L
- Methylene chloride: 5 ug/L
- 1,1-dichloroethylene (1,1-DCE): 7 ug/L
- Benzene: 5 ug/L
- Chlorobenzene: 100 ug/L
- Chloroform: 80 ug/L
- Toluene: 1000 ug/L

SCOPE AND ROLE OF THE ACTION

The action described in this Proposed Plan is intended to be the final cleanup action for the remediation of contaminated groundwater from the RBSA. This Proposed Plan is not intended to address other environmental issues at the Site. The remedial action objectives for this proposed action include reducing concentrations of contaminants on the former LPI property, addressing the migration of contaminants off-property, and preventing exposure to contaminants.

The proposed response action identified in this Proposed Plan will permanently reduce the toxicity, mobility, and volume of groundwater contamination at the Site.

SUMMARY OF REMEDIAL ALTERNATIVES

The *Final Revised Focused Feasibility Study (FFS) (Key Environmental*, 2017) was conducted to identify, develop, and evaluate options and remedial alternatives to address the groundwater contamination at the Site.

Note: A final Remedial Design will be developed prior to implementation of any alternative.

SUMMARY OF REMEDIAL ALTERNATIVES

Alternative	Description
1: No Action	• Groundwater Monitoring; • Monitored Natural Attenuation; and • Project Management and Institutional Controls • Estimated 30-year present value cost: $568,000
2: In-Situ Chemical Oxidation (ISCO)	• Groundwater Containment (on-property slurry wall); • In-situ Groundwater Treatment (on-property bio-wall and off-property ISCO); • Groundwater Monitoring; • Monitored Natural Attenuation; and • Project Management and Institutional Controls • Estimated 30-year present value cost: $4,690,000
3: Groundwater Extraction, Treatment & Discharge	• Groundwater Containment (on-property and off-property groundwater recovery wells and off-property slurry wall); • Ex-situ Groundwater Treatment and Discharge; • In-situ Groundwater Treatment (on-property and off-property vegetable oil-based substrate injections); • Groundwater Monitoring; • Monitored Natural Attenuation; and • Project Management and Institutional Controls • Estimated 30-year present value cost: $4,220,000

4: On-Property Bio-Wall	• Groundwater Containment (on-property and off-property slurry wall);
	• In-situ Groundwater Treatment:
	  ○ On-property bio-wall (installed within the slurry wall);
	  ○ On-property and off-property vegetable oil-based substrate injections;
	• Groundwater Monitoring;
	• Monitored Natural Attenuation;
	• Project Management and Institutional Controls
	• Estimated 30-year present value cost: $2,500,000

DESCRIPTION OF ALTERNATIVES

Alternative 1 - No Action

The No Action alternative is required by the National Contingency Plan to be carried through the screening process, and serves as a baseline for comparison of the other remedial action alternatives.

The No Action alternative consists of leaving the Site in its current condition. Existing institutional controls (land use restrictions) would remain in effect. Groundwater monitoring would still be conducted, and some natural breakdown of TCE would continue to occur. However, contaminated groundwater could continue to migrate off-property, resulting in contamination of more of the shallow aquifer.

No remedial activities would be implemented, and the long-term human health and environmental risk would exist indefinitely. This alternative would not control contaminated groundwater and would provide no reduction in risk to human health.

Risk to the community and the environment from contaminant migration would remain if the No Action alternative was implemented.

While no remedial action would be taken under this alternative, implementability would depend on continued access to the property and adjoining properties for continued monitoring. Protection of groundwater monitoring wells is also necessary to implement this remedy.

Alternative 2 – In-Situ Chemical Oxidation

Alternative 2 combines in-situ chemical oxidation, or "ISCO", a slurry wall to control groundwater flow, and a bio-wall to condition groundwater to aid in the biological breakdown of contaminants.

ISCO involves injection of a chemical such as hydrogen peroxide or potassium permanganate into contaminated portions of the aquifer. This allows destruction of the contaminants "in-situ" or in place. This technology is suitable for destroying many VOCs. This option was evaluated using ISCO for the contamination off-property.

A slurry wall would be used on-property to stop contaminated groundwater from moving off-property. A slurry wall is an underground wall consisting of a mixture of natural soils and clay. Because groundwater can flow through native soils more quickly than it can travel through the clay mixture, slurry walls can be used to redirect groundwater toward treatment, and prevent it from traveling toward drinking water wells.

A bio-wall would be installed within the slurry wall on-property to allow microbes to treat contaminated groundwater before it can migrate off-property. Some breakdown has already occurred naturally at the site; however, the low pH and lack of organic carbon have limited the amount of microbial activity. The bio-wall would contain of a mixture of limestone and mulch and allow water to flow through it. As the water passes through, the limestone raises the pH of the water and the mulch provides food for microorganisms that can break down the contaminants. Groundwater would flow through the bio-wall before flowing off-property. Addition of specific bacteria and nutrients might also be required to support microbial breakdown.

Groundwater would be monitored and existing land use restrictions would remain in effect.

Alternative 3 – Groundwater Extraction, Treatment & Discharge

Alternative 3 involves pumping water out of the ground and treating it to remove contaminants. The treated water must then be discharged to a wastewater treatment plant or to surface water or injected back into the aquifer. Alternative 3 would use pumping wells both on-property and off-property to control the movement of the contaminated groundwater and to extract it for above-ground treatment. Contaminated groundwater would move toward the extraction wells, rather than continuing to migrate off-property. This alternative would also use a slurry wall off-site to prevent contaminated groundwater from moving any farther off-property.

Alternative 3 would also include injection of a vegetable oil-based substrate to enhance biological breakdown of contaminants in a manner similar to the bio-wall. Vegetable oil would supply the organic carbon, and a caustic agent would be used to make the groundwater less acidic. This injection would be used to treat parts of the aquifer that are too far from the pumping wells for contaminants to be captured efficiently. Groundwater would be monitored and existing land use restrictions would remain in effect.

Alternative 4: On-Property Bio-wall

Alternative 4 combines a slurry wall and bio-wall. The slurry wall would be installed both on and off-property. The bio-wall would be installed in the on-property portion. The contaminated groundwater would be directed toward the bio-wall, and on-property wells could be used to monitor the effectiveness of treatment.

This alternative would utilize vegetable oil-based substrate injection as discussed in Alternative 3 to enhance biological breakdown in areas where groundwater would not be affected by the bio-wall.

Groundwater would be monitored and existing land use restrictions would remain in effect.

EVALUATION OF ALTERNATIVES

The National Contingency Plan requires that the Department use specific criteria to evaluate and compare the different remediation alternatives individually and against each other in order to select the best remedy. This section of the Proposed Plan profiles the relative performance of each alternative against the criteria, noting how it compares to the other options under consideration. The criteria are:

1. Overall protection of human health and the environment;
2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs);
3. Long-term effectiveness and permanence;
4. Reduction of toxicity, mobility, or volume through treatment;
5. Short-term effectiveness;
6. Implementability;
7. Cost; and
8. Community acceptance

The main objectives for the preferred remedial action are to be protective of human health and the environment and to comply with State and Federal regulations. These two objectives are considered *threshold criteria*. Threshold criteria are requirements each alternative must meet in order to be eligible for selection. For an alternative to be considered as final, these two threshold criteria must be met. The Department's remedial action must be protective of human health and the environment and comply with state and federal standards.

The following measures are considered *balancing criteria*: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. These criteria are used to weigh the technical feasibility, strengths and weaknesses, and cost advantages and disadvantages of each alternative.

Community response to the preferred alternative and the other considered alternatives is a *modifying criterion* that will be carefully considered by the Department prior to final remedy selection.

COMPARATIVE ANALYSIS OF ALTERNATIVES

A comparative analysis of each alternative was performed. In this type of analysis, the alternatives were evaluated in relation to one another for each of the evaluation criteria. The purpose of the analysis is to identify the relative advantages and disadvantages of each alternative.

Note: Although Alternative 1 (No Action) does not meet the threshold criteria, it is retained for discussion because it provides a baseline for comparing the other alternatives to the criteria outlined above.

Overall Protection of Human Health and the Environment

When evaluating alternatives in terms of overall protection of human health and the environment, consideration is given to the manner in which Site-related risks are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

Alternative 1, the No Action alternative, does not provide adequate protection of human health and the environment. Since this alternative does not meet this threshold criterion, it has been eliminated from consideration as a response action and is only retained for discussion because it provides a baseline for comparing the other alternatives to the balancing criteria.

Alternatives 2, 3, and 4 would protect human health and the environment through modifying groundwater flow, treatment of groundwater to reduce contamination, continued monitoring to ensure effectiveness of the remedy and the safety of the drinking water aquifer, and maintenance of land use controls to prevent exposure of on-site workers to contaminated groundwater. Alternatives 3 and 4 would also address residual groundwater contamination within the RBSA. Alternative 2 does not address this residual contamination.

Alternative 4 uses technology that has been proven at other sites. Modifications may be necessary to ensure that biological treatment is effective. Replenishment of the bio-wall components would be required periodically.

The ex-situ treatment proposed in Alternative 3 is a reliable technology that has previously been proven effective at this site.

Alternative 2 scores lower on this criterion because the slurry wall would only be installed on-property. Reduction of contaminants off-property would rely entirely on ISCO.

Alternatives 3 and 4 best meet this criterion.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

This evaluation criterion evaluates whether an alternative meets state and federal environmental statutes and regulations that pertain to the Site. Each alternative is evaluated with respect to its ability to comply with such requirements. ARARs are used to determine the extent of cleanup, to formulate the remedial action alternatives, and to govern the implementation and operation of the selected remedy.

Applicable requirements are those legally enforceable standards that specifically address a hazardous substance, pollutant, contaminant, remedial action, or other circumstance encountered at a site. Relevant and appropriate requirements are federal or state standards, criteria, or limitations that, while not legally applicable to a site, address problems sufficiently similar to those found so their use is well-suited to a particular site.

Alternative 1 would not restore groundwater to applicable South Carolina groundwater quality standards within a reasonable amount of time.

Alternatives 2, 3 and 4 would require compliance with Underground Injection Control requirements, and could potentially restore groundwater to South Carolina groundwater quality standards within a reasonable amount of time. Alternative 3 would also require compliance with regulations governing operation of the treatment system and discharge of treated water.

Alternatives 2 and 4 best meet this criterion because they do not require operation of a water treatment system or discharge of treated water.

Long-Term Effectiveness and Permanence

This criterion evaluates the magnitude of risk remaining from untreated media or treatment residuals and the adequacy and reliability of containment systems and institutional controls.

The No Action alternative includes no controls for exposure and no long-term management measures, aside from an existing temporary prohibition on the use of shallow groundwater on the former LPI property. All current and potential future risks would remain under this alternative.

Alternative 2 would provide permanent destruction of contaminants through ISCO off-property, and through enhanced biological breakdown at the property boundary. Remediation of groundwater within the RBSA is not addressed in Alternative 2.

It is anticipated that more than one ISCO event would be required to sufficiently reduce contaminant concentrations off-property. Replacement of the limestone and mulch in the bio-wall would be needed at ten-year intervals, because these materials would be depleted over time. While these technologies have the potential to be effective, actual effectiveness is dependent on a number of factors that cannot be modelled reliably. Alternative 2 would not address the Remedial Action Goals within the RBSA. This means that groundwater within the RBSA would remain impacted. In terms of long-term effectiveness, Alternative 2 is not as effective as Alternatives 3 and 4.

Alternative 3 would provide permanent removal of contaminants. Extraction and above-ground treatment is a reliable and proven technology for removal of VOCs. This technology was previously used at the RBSA and was shown to be effective. Repair and maintenance of wells, pumps, and equipment would likely be required over time. Fencing, signage and surveillance would be required to ensure the system remained functional. Injection of vegetable oil-based substrate would likely need to be repeated. One additional injection event is anticipated ten years after the initial event.

Alternative 4 would also provide permanent removal of contaminants through biological breakdown, but would rely on this approach for both on-property and off-property contamination. Similar degrees of uncertainty apply to both the bio-wall treatment and the vegetable oil-based substrate treatment. Bio-wall materials are estimated to require replacement at ten-year intervals. One additional injection of vegetable oil-based substrate is anticipated ten years after the initial event. After installation of the slurry wall and bio-wall and completion of the injection events there would be no equipment, plumbing, or electrical service remaining. Because all aspects of this treatment system would be implemented below the ground surface, the potential for accidental damage to the system would be low. This means a reduced potential for interruption of treatment due to storms, power failures, equipment failure, or damage to infrastructure.

Alternatives 3 and 4 best meet this criterion. Alternative 3 has been proven effective previously at the RBSA. Alternative 4 would minimize the amount of time that machinery and equipment remains above ground, and would enhance the breakdown of contaminants that is already occurring.

Reduction of Toxicity, Mobility, or Volume through Treatment

This criterion evaluates the degree to which an alternative employs treatment to reduce the harmful effects of contaminants, limit the ability of contaminants to move in the environment, and reduce the amount of contamination present.

Alternative 1 would not provide any reduction of toxicity, mobility, or volume of contaminated media. The No Action alternative could allow the volume of impacted groundwater to increase over time.

Alternative 2 would reduce the toxicity and volume of contaminants through chemical oxidation. Mobility of on-property contamination would be reduced by the proposed slurry wall. Treatment within the bio-wall would reduce the volume of contaminants through biological breakdown. Contaminant toxicity, mobility and volume within the RBSA would not be addressed by Alternative 2.

Alternative 3 would reduce the toxicity and volume of contaminants through both ex-situ (extraction and treatment) and in-situ (biological breakdown) mechanisms. Mobility would be reduced in two ways. The slurry wall would prevent further migration of contaminated groundwater, while operation of pumping wells would pull contaminated water back toward the former LPI property.

Alternative 4 would reduce the toxicity, and volume of contaminants by enhancing biological breakdown. The slurry wall would reduce mobility by preventing further migration of contaminated groundwater.

Alternative 3 best meets this criterion by controlling contaminant mobility through both pumping and use of a slurry wall, and by reducing contaminant mass through a technology previously proven effective at the RBSA.

Short-Term Effectiveness

Short-term effectiveness takes into consideration any risk the alternative poses to on-Site workers, the surrounding community, or the environment during implementation, as well as the length of time needed to implement the alternative.

Alternative 1 would pose no additional risk to the community, workers, and the environment in the short-term.

Implementation of Alternative 2 would involve installation of a slurry wall and bio-wall on the former LPI property, installation of permanent injection wells off-property and injection of oxidizing chemicals off-property. These activities present some additional risk to workers handling chemicals and injection equipment. These risks could be managed through careful planning and safe work practices. The estimated time required to construct the remedial components is anticipated to be less than one year; however, design and permitting would extend this timeframe. The presence of the injection wells off-property could adversely affect the owners of the adjacent property.

Implementation of Alternative 3 would involve installation of a slurry wall on and off-property and could potentially impact adjacent property owners. Protective measures would be implemented to manage risks. The Focused Feasibility Study estimates that it will take approximately two years to complete construction following remedy selection.

Alternative 4 would involve similar construction activities to Alternatives 2 and 3. The slurry wall would be installed both on and off-property, and the bio-wall would be installed on-property. The Focused Feasibility Study estimates it will take slightly less than one year to complete construction following remedy selection.

Construction activities would be similar for Alternatives 2, 3 and 4. Alternative 4 requires the least amount of time to design and construct (4 months) followed by Alternative 3 (7 months), and Alternative 2 (approximately one year). Alternative 4 best meets this criterion based on the amount of time required to design and construct the remedy.

Implementability

Implementability considers the technical and administrative challenges of construction and start-up, as well as the availability of required materials and services.

Alternative 1 has no implementability issues other than securing access for continued sampling, and maintenance of land use-controls.

Alternative 2 involves the installation of an on-property slurry wall, and 6 monitoring wells and 117 permanent injection wells off-property. This activity would require access agreements with the property owners. An Underground Injection Control (UIC) permit would be required for operation of the injection wells. These wells would be required to remain in place and operable for many years.

Alternative 3 also requires access agreements with property owners for installation of a slurry wall and for pumping wells to remain on their property for many years. Access to these wells would be required periodically to perform any necessary maintenance or repairs. A UIC permit would be required for injection of vegetable oil-based substrate. These injection wells would be temporary and would not remain on the property following the injection events. Operation of the groundwater extraction and treatment system would require a separate permit to dispose of the treated groundwater. This permit could be a second UIC permit, or a permit for discharge to surface water under the National Pollutant Discharge Elimination System (NPDES).

Alternative 4 requires access agreements with owners of adjacent properties, and permission to conduct construction of the slurry wall and bio-wall and injection of vegetable oil-based substrate on their properties. Access would be required periodically in order to repeat the injection process and to replenish the bio-wall materials. A UIC permit would be required. Because Alternative 4 uses passive technology to restore groundwater, there would be no permanent wells or equipment remaining other than the existing monitoring wells.

Alternative 4 would be easier to implement than Alternatives 2 and 3.

Cost

The cost criterion includes estimated initial capital costs and annual O&M costs, as well as a 30-year present value cost estimate. Present value cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of -30% to +50%.

Remedial Alternative	30-Year Net Present Value
Alternative 1: No-Action, Monitoring, Closure of Existing System	**$568,000**
Alternative 2: ISCO, Slurry Wall, Bio-Wall	**$4,690,000**
Alternative 3: Extract & Treat, Slurry Wall, Vegetable Oil Injection	**$4,220,000**
Alternative 4: Slurry Wall, Bio-Wall, Vegetable Oil Injection	**$2,500,000**

Community Acceptance

Community acceptance of the preferred remedy will be evaluated after the public comment period. Public comments will be summarized and responses provided in the Responsiveness Summary Section of the Record of Decision, which will present the Department's final selected remedy. The Department may choose to modify the preferred alternative or select another remedy based on public comments or new information.

SUMMARY OF THE DEPARTMENT'S PREFERRED ALTERNATIVE

The Department has identified a preferred alternative to address the volatile organic compound contamination in groundwater at the Remediated Burn Site Area. This preferred remedial alternative, Alternative 4, consists of the following components:

- Decommissioning of the existing extraction and treatment system;
- Installation of a 1200 foot long slurry wall, 2-3 feet thick and 33 feet deep both on-property and off-property;
- Installation of a 100 foot long bio-wall on-property, within the slurry wall. The bio-wall will be 3 feet thick and 30 feet deep;
- Installation of 2 additional monitoring wells;
- Off-site disposal of all contaminated materials at an appropriately-licensed facility;
- Injection of vegetable oil-based substrate to promote biological breakdown of VOCs in groundwater;
- Replenishment, as necessary of the bio-wall components and additional injections of vegetable oil-based substrate (estimated to occur at 10 year intervals);
- Periodic monitoring of groundwater; and
- Maintenance of existing land use restrictions.

The total estimated net present worth of this alternative is approximately $2,500,000.

The proposed remedy was selected because it provides protection of human health and the environment, meets applicable or relevant and appropriate requirements, provides long-term effectiveness through permanent destruction of contaminant mass, presents relatively little short-term risk, is easily implementable, and is cost-effective.

Prior to any Site activities, a Remedial Design/Remedial Action Work Plan must be submitted to the Department for approval. Once approved, a Remedial Design will be developed.

Based on information currently available, it is the Department's judgment that the preferred alternative identified in this Proposed Plan or another remedy is necessary to protect public health and the environment.

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for the Former Lobeco Products, Inc. Facility Site is important. Comments provided by the public are valuable in helping DHEC select a final cleanup remedy.

You may use the space below to write your comments, then fold and mail. Comments must be postmarked by **July 15, 2019**. If you have any questions, please contact Tim Hornosky at 803-898-0733. You may also submit your questions and/or comments electronically to: hornostr@dhec.sc.gov.

Name _____ Telephone _____

Address _____ Email _____

City _____

State _____ Zip _____

Appendix B

Meeting Transcript

Transcript of
Public Meeting

6/13/2019

Former Lobeco Products Inc. Proposed Plan for
Groundwater at the Remediated Burn

COPY

Southern Reporting, Inc.
Phone: 803.749.8100
Fax: 803.749.9991
Email: Depos@southernreporting.net

South Carolina Department of Health and Environmental Control

In Re: Proposed Plan for Site Remediation (Remediated Burn Site Area) Former Lobeco Products, Inc. Facility	)	Transcript of Public Meeting

Date: June 13, 2019

Time: 7:07 p.m.

Location: James J. Davis Elementary School,

364 Keans Neck Road, Seabrook, South Carolina

Reported by
Julie C. Taradash

APPEARANCES

DHEC officials present:	Lucas Berresford
	Donna Moye
	Tim Hornosky
	Jacob Terry
	Keisha Long
	Elisa Vincent
Speakers from the public:	Councilman Gerald Dawson
	Lenora Jenkins
	George Dawson
	James Moore
	Frank Mullen
	Tom Jordan
	George Marks
	Gloria Johnson
	Mary Blackwell
	Millicent Simpson
	RuFas Williams
	Joseph Kline
	Greggory Gilbert

INDEX

EXHIBITS

No exhibits were marked during this meeting.

PROCEEDINGS

COUNCILMAN DAWSON: Let's -- let's go ahead and get started, everybody. First of all, I'd like to say a few words to introduce our guests who are the DHEC officials from Columbia. Thank you to all of you for coming this afternoon to our third community meeting dealing with the situation that we have with the groundwater contamination at the Lobeco Chemical site up the road.

As I said earlier, I don't think I need a mic.

MR. BERRESFORD: Yeah. You need --

MS. MOYE: You're low. You're low.

COUNCILMAN DAWSON: You can't hear without the mic?

THE COURT REPORTER: It would be easier if you could.

COUNCILMAN DAWSON: Okay. But, as I said earlier, we had -- this is our third meeting. Our first meeting we had, we first addressed the situation at the Lobeco Chemical site. Out of that meeting came the well-testing of the residents over on Morgan -- on Morgan Road. And then the subsequent meeting -- follow-up meeting we had, then we dealt with the DHEC coming in and taking away some of the contaminants that was in the -- some of the liquid contaminants that were in the drums and stuff that spilled out on the site after the -- the past owner

started the demolition process.

And so this afternoon, this meeting is a -- is a update of where we started from to where we are today in the process. The DHEC is going to bring us up to speed as to where they are dealing with the groundwater contamination and the remediation process as -- as we go forward. They've given us all handouts tonight as to propose how they plan to address the issue moving forward. So I -- at this point, I'm just going to turn it over to Lucas from DHEC and let them take over the meeting.

Oh, it'll be question and answers. (To Mr. Berresford) Do you want to take questions as you go through, or you want to wait until the end of the presentations? What do you want to do?

MR. BERRESFORD: Wait until the end.

COUNCILMAN DAWSON: (To all attendees) Wait until the end of the presentation, and then you can ask questions, okay?

MR. BERRESFORD: Thank you, Councilman Dawson. Thank everybody for coming out tonight. My name is Lucas Berresford. I'm working in DHEC with the State Voluntary Cleanup Program. I manage that section, and this site falls in that section. And we've been working with -- we've been working with the

responsible parties to assess and evaluate cleanup alternatives to the site, and we're here tonight to share those alternatives that were evaluated, present DHEC's preferred option for cleanup, and to get your feedback, get your comments.

So -- so, over to our right, we do have two court reporters here, who will be recording the meeting tonight. We ask you save your questions for the end, please. We will bring microphones around to you. Please state your name so that they can record your name, and ask Tim your questions, and he'll -- he'll provide the answers.

I'm going to turn it over to Tim Hornosky who's the project manager for the site, and he's going to walk you through the cleanup alternatives.

MR. HORNOSKY: (To Mr. Berresford) I'm going to keep that handy just in case.

Good evening. Thank you for being here tonight. My name is Tim Hornosky. I'm DHEC's project manager for the former Lobeco Products site. I'm invited here tonight so I can present DHEC's preferred remedy and the proposed plan for groundwater cleanup at part of the site called the "Remediated Burn Site Area" or "RBSA." Printed copies of the complete proposed plan are available

for you to take home, and it's also available on our website.

So, after discussing the history of the site and current conditions, I'll summarize the different cleanup alternatives for groundwater and explain why DHEC feels that our preferred remedy is the best choice. As Lucas mentioned, there'll be an opportunity for questions at the end of the presentation. There's also a 30-day public comment period, so you can take some time and learn more about the site and send in written comments. Your input is important to us, and DHEC will respond to your comments as part of the remedy selection process.

I'll answer one important question. This cleanup is being paid for by the responsible parties, the past owners and operators of the site.

This site was first developed as a specialty chemical manufacturer in 1966 and was operated by a number of different companies until 2009. These companies made a variety of different chemicals including ingredients for textile dyes and agricultural chemicals.

In 2009, the property was sold to Coastal Demolition, and Coastal subdivided the property and

sold off parts of it. The part that contained the chemical plant is now a 91-acre parcel. There are several different areas of environmental concern on the site, but the one I want to talk about tonight is the Remediated Burn Site Area, shown here in yellow, in the northeastern corner of the property.

In the early history of the site, trash was burned at a small area to the east of the plant. And off-grade products and process wastes were also burned at this location. The burn area was investigated in the 1980s, and chemicals called "PCBs" were identified in the soils.

In 1990, a large soil cleanup took place. One of the first steps was to install what's called a "slurry wall" around the whole contaminated soil area. The slurry wall is basically a wall of clay, underground, that extends down 30 feet into a natural clay layer. The purpose of the wall is to prevent groundwater from coming back into the excavation as the soil was removed. The groundwater that was already inside the slurry wall was pumped out, run through a filtration system, and then sent to the wastewater treatment plant.

So, as the soil was removed, the underlying soils were tested, and the digging continued until

the remaining soil met the PCB cleanup goal of less than 25 parts per million.

Metal debris was also found as the digging progressed, and, in total, 8800 tons of soil and debris were taken off-site and properly disposed at a hazardous-waste landfill. So, after the excavation, the hole was backfilled with clean soil and reseeded.

This is an aerial view of what the site looked like in 1990. And what it looks like today.

Following soil cleanup, we investigated groundwater contamination. The primary contaminant at the site, in groundwater, is trichloroethylene, which is a common industrial solvent. We see this at a lot of our sites. It's part of a family of compounds called "VOC" or "volatile organic compounds," and the drinking-water limit for that compound is 5 parts per billion, so very low. The treatment system did operate on this site from 2004 through 2009.

I'm going to skip ahead here just a bit. Sorry. I got my slides out of order. Here we go.

The greatest concern, of course, is making sure the groundwater contamination does not reach residential wells. To make sure of that, a

comprehensive sampling event of residential wells was conducted in 2009. No impacts were found from site-related chemicals. Additional sampling was conducted in 2016, 2017, and 2019, but focused on wells closest to the Remediated Burn Site Area.

So, in 2014, there was a comprehensive groundwater investigation. Property access was gained, to put wells on the adjacent property. And, from this, it was determined that groundwater contamination extends 300 feet east of the property line. The nearest residential well is about 200 feet farther from the edge of contamination, but that well gets its water from a deep aquifer, well below the contamination.

This is a map of the VOC concentrations in 2014. Additional sampling was conducted at the wells at the southeastern edge of the contamination earlier this year and showed that there has been no expansion of the plume since 2014.

I want to point out that no VOCs were detected in this furthest well, either in 2014 or in 2019. I should also point out that's actually two wells installed at different depths in the shallow aquifer. This slide gives you an underground look at the geology beneath the site along the property

boundary. To the left is the northern edge of the property boundary where it crosses a contaminant plume, and to the right is the southern edge.

Groundwater contamination from the Remediated Burn Site is in this upper shallow aquifer, down to the depth of about 30 feet. The contamination actually gets less as you reach the bottom of this zone. Beneath that upper aquifer is a 35- to 40-foot-thick clay layer that separates the contaminated aquifer from the aquifer that supplies drinking-water wells in the area. This is a very good thing.

Also in 2014, four wells were installed through the clay into the limestone aquifer across the former Lobeco Products site. Investigation indicated that that clay-confining layer is continuous across the site and also confirmed that contamination has not leaked down through the confining layer.

So, before we talk about the individual treatment alternatives, I want to go over some terminology so that you'll understand what we're talking about in later slides. When we talk about "monitored natural attenuation," that simply means monitoring to make sure contamination doesn't

spread further while natural processes are allowed to break down the contaminants or dilute them.

"ERD" simply refers to doing something to improve conditions in the aquifer to allow that monitored natural attenuation to be more effective.

A "bio-wall" is a type of ERD, but it's a wall that's basically installed underground so that contaminated groundwater passes through it and is conditioned and treated as it goes through.

A "slurry wall" is similar to the wall installed in the 1990 cleanup, and it can stop groundwater flowing through, it can stop contaminants flowing through, and it can also be used to direct groundwater towards treatment.

"In-situ chemical oxidation" refers to the process of -- excuse me -- injecting oxidizing chemicals into groundwater. Hydrogen peroxide is one good example of an oxidizing chemical, and that's used at many sites.

"Pump and treat" means extracting groundwater through wells and treating it above ground.

And, finally, "land use controls," that refers to things like fences and deed restrictions, and those would be a necessary component of each of the remedies -- or each of the alternatives that were

evaluated.

The "No Action" alternative is always evaluated in this process as a baseline for comparison of the other alternatives. It's required under state and federal cleanup regulations. And, in this case, the alternative would include groundwater monitoring, and land use controls already established for the plant property would continue to be in effect.

Given the age of the site and the amount of contamination still present, this option would not be considered viable on its own. There has been some breakdown of the contaminants at the site, but groundwater conditions are not ideal to make this an effective remedy. So, because this remedy would not be protective of human health and the environment and wouldn't meet South Carolina groundwater standards in a reasonable amount of time, it's not considered a viable alternative.

Alternative 2 uses in-situ chemical oxidation to treat the off-property groundwater contamination and a slurry wall and bio-wall at the property boundary.

So the slurry wall we see here, in green, follows the property line across the contaminant

plume and cuts back into the plant property. Within that wall is a bio-wall installed to treat groundwater from the plant site, before it passes through, and prevent contamination from -- additional contamination from moving off-site. The off-site portion of the plume would be treated by chemical oxidation. Permanent wells would be needed to inject the oxidized chemicals safely. And information developed during the 2014 investigation indicated that it would require a large number of wells and a large volume of the oxidizing chemical to make this remedy effective. The injection wells would need to remain in place on this adjacent property for many years so that retreatment could occur as needed.

Alternative 3 involves using pumping wells to extract the contaminated water and treat it above ground. The water would be sent to a treatment system that uses air to strip out contaminants. The treated water then would need to be managed by either discharging the surface water or injecting it back into the ground in the contaminated area. Surface water discharge was assumed because the limited areas available for reinjection of groundwater made it ineffective.

This is the type of system that was used from 2004 until it was shut off in 2009. At that time, treated water was injected into the ground, which helped drive contamination back towards the pumping wells. One limitation of that system is that it didn't capture all the contaminated groundwater from off-property.

Alternative 3 would also include a slurry wall off-property and cutting back towards the plant site. As it's shown here, this option includes three pumping wells, one at the property boundary and two off-property. Water will be pumped back to a treatment system here and discharged to surface water, under permit.

This remedy also includes injection of amendments to assist natural attenuation, the ERD that we talked about before. This would be injection of a vegetable-oil substrate that would provide nutrients for bacteria to break down contaminants and also something to adjust the pH to make the groundwater less acidic than it is now.

Alternative 4 uses a slurry wall off-property and an on-property bio-wall -- excuse me -- an on- and off-property slurry wall and on-property bio-wall and also includes the injection of vegetable-

oil-based substrate to enhance breakdown of contaminants.

So you can see that the alignment of the slurry wall was very similar to Option 3. It comes back into the plant property so that all contaminated groundwater is now funneled inside this containment area and forced through treatment here, and back onto the plant property.

And, again, these green dots indicate locations that would be used to inject vegetable oil and an amendment to adjust the groundwater pH. One thing I want to pointed out -- point out about these green dots is that injection could be done using temporary wells, so that workers would go in and inject each of those holes and then leave, and the hole would be filled back up, leaving nothing at the surface to interfere with use of the property. Again, if you go back to Alternative 2, these wells would have to be permanent wells in order to work effectively and would remain on the property for many years.

The comparison criteria that we used to evaluate the remedies are shown here. The first two, in red, are called "threshold criteria." The remedy has to meet these two requirements in order

to be considered. The next five are considered "balancing criteria." These are used to evaluate the remedies comparably. And, finally, community acceptance is going to be evaluated based on your comments tonight, as well as any written comments that are submitted during the 30-day public comment period.

So let me explain what some of these mean. Overall protection of human health and the environment is pretty obvious. Alternatives 3 and 4 protect human health and the environment best by preventing further migration of the contaminant plume, using that slurry wall, and by reducing contamination by treatment. Alternative 2 is less effective in this criterion because it doesn't include the off-site slurry wall and relies on the ISCO portion to treat off-site contamination. Also, Remedy 2 does not address contamination still inside that old excavation area at the burn site.

Alternatives 2, 3, and 4 could all comply with state and federal regulatory requirements. Alternatives 2 and 4 would require underground-injection-control permits to inject either the oxidizing chemical or vegetable-oil substrate. Alternative 3 would require that permit, as well as

a permit to discharge treated groundwater.

Long-term effectiveness and permanence considers the degree of risk remaining from untreated media after the cleanup and the reliability of containment systems and institutional controls -- I should say "landings controls." Alternatives 3 and 4 are more effective because they reduce contaminant migration, using the slurry wall, and treat both on- and off-property contamination. Alternative 2 is less effective in the long term because it would not treat some of the on-property contamination and because there's no containment for off-property groundwater.

Reduction of toxicity, mobility, and volume through treatment considers the degree to which the alternative uses treatment to reduce the harmful effects of contaminants, limit their ability to move, and reduce the amount of contamination present. Alternative 4 scored slightly lower on this criteria because it relies on natural processes alone to break down contaminants.

Short-term effectiveness considers risks posed to on-site workers, the surrounding community, and the environment while the remedy is being

implemented. It also considers the amount of time it takes to implement the remedy. Alternative 4 requires the least amount of time to implement and limits the off-property disturbance to the initial installation of the slurry wall.

Implementability considers challenges to implementing the remedy. That includes design requirements, construction, availability of materials, and getting the necessary permits. And, because significant work will be required on adjacent properties, access agreements for those properties are essential for all remedies.

Finally, costs are considered over a 30-year period, which is assumed to be the life span of treatment. These figures include construction, design, operating costs, monitoring, and maintenance.

So Alternative 4 was selected as the preferred remedy because it meets the threshold criteria of protecting human health and the environment and complies with regulations, that minimizes disruptions to property owners, uses fewer resources, is less susceptible to mechanical failure, requires less maintenance, and has a lower overall cost than Remedies 2 and 3.

As we said earlier, your input is important to DHEC, and we will respond to all of your comments, and a summary of these comments will be recorded in the Record of Decision, which is the document that formally selects the remedy.

So, at this point, I'll be glad to answer any questions you have. If I don't know the answer tonight, I may have to take down your name and get your contact information so I can look up the answer and get back to you. And, again, we do have court reporters here, so please state your name slowly and clearly so that they can get all the comments recorded accurately.

I think it's working now, Donna.

MS. MOYE: Hi. My name is -- can you hear me okay? My name is Donna Moye, and I am a public participation coordinator for DHEC in Columbia. I've been here a couple of different times, and I always seem to see some new faces. (Feedback is heard from the sound system.) I'll try to make sure I avoid the feedback.

So we really do appreciate you being here tonight. I know this is a lot of technical information, and it's at the end of a long day, so the reason why we like to stay and have this

question-and-answer period is for you to be able to talk one-on-one with us.

If you have any questions about anything that you saw here or anything that you have heard in the community or in any way you have been affected by this or feel like you will be affected by this, the whole purpose of us coming here tonight is so that you can talk with us about that. So don't be shy. If you have a question, if you'll just raise your hand, I'll bring the mic to you, and we'll try to get you an answer.

Okay. If you'll just state your name, please.

MR. MOORE: James Moore. You said that Alternative 4 was the recommended one, and it was the easiest and the cheapest to implement; is that right? Did I get you right?

MR. HORNOSKY: You are correct.

MR. MOORE: Okay. Looking at Number 3, of which you said is effective --

MR. HORNOSKY: Okay.

MR. MOORE: If you were to compare 3 with 4, as far as the effectiveness is concerned, which -- understanding that 3 is hardest to implement, which would be more -- most effective?

MR. HORNOSKY: I think the biggest thing that makes both

3 and 4 effective is the injection treatment throughout the aquifer. Three did operate from 2004 to 2009. It was not effective in reaching the off-property contamination, but, again, the wells were installed on-property, so that remedy could be effective with another well installed off-property. I don't know that there would be a tremendous difference in the overall effectiveness between 3 and 4.

MR. MOORE: I -- I think, as you -- and I don't want to monopolize the time -- but I think, as you gave the brief, you said that, on 3, the wells would be temporary, they could be filled and treated?

MR. HORNOSKY: Okay. The injection wells, yes, would be temporary.

MR. MOORE: Yes.

MR. HORNOSKY: However, the pumping wells that would be used to extract the groundwater for treatment would need to remain on that landowner's property for many years, again, probably the 30 years that we're looking at.

MR. MOORE: My concern is -- is that, in communities that are not economically blessed, if you will, we tend to do the cheaper thing, of which I just believe we ought to get away from. And so somebody

made a decision to contaminate that area in this community, and I believe somebody ought to have the total responsibility, regardless to what the cost is, and I just don't see how a $2,000,500 remedy will be equal to a $4,220,000 remedy. That's just my belief.

MR. HORNOSKY: I want -- I want to thank you for that. That is a good comment, and thank you for bringing that up. I do want to sort of reiterate that cost is one of the criteria that we look at; it is not the only criteria we look at. And, for every superfund site throughout the country, it is one of the criteria considered.

MR. MOORE: Understood. Thank you.

MR. KLINE: My name is Joseph Kline. As part of what you've cited, the difference would be a problem with permitting, and what's -- what I'm not grasping is, you're the guy who sets the criteria for permitting, so why would there be a problem with permitting?

MR. HORNOSKY: There is not -- okay. The permitting is not, of itself, going to be a problem that would just prevent the remedy from going into place. The type of permit that would be required is for the discharge of treated water. That takes a little

more than a year to get that permit in place, and it's not that anybody's dragging their feet. It's a process that has to be gone through, including a public comment period, like we're about to do here, before that permit is allowed. Part of that reason is that surface-water discharge ultimately winds up at Campbell Creek, and what I've heard in the community in the past is we didn't want to revisit that. If you don't feel that -- that that is a problem, if the community is okay with that, please make that comment. That -- that is important information.

MR. KLINE: Well, it -- that would depend on the condition of what's being discharged. If it -- if the discharge is at a level of what is scientifically called "drinkable," that will not -- if you can prove to us that the final effluent will have no degradation to sea creatures, then that would not be a problem.

So it is my understanding that your -- if the final effluent will be at that level, where you would put your stamp of approval on it, that it would not be a degradation to the waterways or any of the living creatures in the water. So -- but if you clear that hurdle, that discharge would not be

a problem, so, therefore, I -- I could approve that.

We've had this problem -- they built the plant in 1966. It operated until it was shut down. We want a solution that's permanent and the best for us, the -- not the living, but the unborn. We've lived with it. We want to be sure that the unborn will be able to live with it. Thank you.

MR. HORNOSKY: Thank you.

MS. MOYE: Anyone else have a question?

MR. HORNOSKY: Can I -- can I speak to the permanence of the remedy that you've just asked about?

MR. KLINE: Yes.

MR. HORNOSKY: Okay. If -- if the pumping and treating remedy got absolutely every last bit of the contamination in its lifetime and then was shut down, that would be very effective. What we typically see is that that type of system removes a significant amount of contamination early and becomes progressively less effective as time goes by. I'm not saying it's a bad remedy. I -- I actually like those types of systems myself.

However, that same remedy includes the slurry wall, which cuts off contamination from moving further. Remedy 4 includes that slurry wall, as

well as an area that biologically treats water as it moves through. That biological treatment doesn't shut off. There's -- there's no switch for that. Once that's in the ground, that's there, so it can be replenished if it's found to be ineffective over time, but it continues to operate whether you feed electricity to it or not. So, in -- in that respect, it can be a more continuing remedy.

MR. KLINE: I have a follow-up.

MR. HORNOSKY: Please.

MR. KLINE: What will be the future impact of what's deemed as currently non-active acreage on the site? If you identified the burn pit and other areas with contaminants, what will be the impact on the future of the rest of the site and for the future?

MR. HORNOSKY: Are you speaking specifically with respect to the remedy, or just the history overall?

MR. KLINE: Both.

MR. HORNOSKY: Okay. The impact with respect to the remedy would depend on the remedy. So, if we do Option 4, all of that takes place underground, and any maintenance that has to be done would be periodic. Say upon the order of about once every ten years, someone would be able to come in and

reinject or to dig up the bio-wall and replace the media there. But there would be less impact at the surface from that.

If you were to do Option 2, pretty much the same thing on the plant property. Off the plant property, there would be a long-term impact from the presence of those wells on that property owner's land.

If you were to do Option 3, both the plant property and the adjacent property would have well structures above ground surface, there would be a treatment building to house the treatment system on the plant property, and there would be the associated electrical utility conduits and pipelines to move water both on- and off-property.

Does that help answer your question?

MR. KLINE: Yes.

MS. MOYE: Anybody else have a question?

MS. JENKINS: I have an observation.

MS. MOYE: Okay.

MS. JENKINS: I don't know if it's going to -- I just -- well, I can do without the mic. I just wanted --

MS. MOYE: They always say that, and then somebody can't hear you.

MS. JENKINS: Okay.

MS. MOYE: So, if you would . . .
MS. JENKINS: It's on?
MS. MOYE: It's on.
MS. JENKINS: My name is Lenora Grace Jenkins, and I guess my concern is -- and all of this is late. I mean, I don't understand a lot of it. I'm trying to keep up when you were keeping -- doing it, but I guess I'm going to go back a little bit.

If the plant was actually here since, what, 1966 or somewhere around there, what issues -- or were there issues at the time when it was actually active, you know, up and going, up and running? Were there issues? Now, we've got issues because it's a cleanup, it's -- it's ready to be cleaned up. But were there issues when it was actually active? You understand what I'm saying? Okay.

The plant was here since 1966. It was an ongoing plant. It was actually functioning. What problems occurred, or what problems were there prior to now, when we got such a large cleanup and the cost is so high?

MR. HORNOSKY: Are you asking what led up to this?
MS. JENKINS: Yeah.
MR. HORNOSKY: Or --
MS. JENKINS: Okay. What led up to it -- what led up to

it, in addition to -- prior to this, when it was actually functioning? Was there harm to the water? Was there harm to the community at that time? Now, the cleanup seems so vast. What happened prior to that when it was actually ongoing?

MR. HORNOSKY: Are you -- so are you asking was the contamination worse back then and --

MS. JENKINS: Well, we could put it that way.

MR. HORNOSKY: -- effective --

MS. JENKINS: That's fine.

MR. HORNOSKY: Okay. That, I don't know, and -- and I really wouldn't know how to even test that --

MS. JENKINS: Okay.

MR. HORNOSKY: -- now.

MS. MOYE: Tim, maybe, partly, what you can describe -- or Lucas can speak to the -- whenever the regulations came into effect --

MR. HORNOSKY: Uh-huh.

MS. MOYE: -- and so what was done, maybe, prior to that as opposed to what would've done -- been done after that.

MR. HORNOSKY: Okay. That -- that's a really good point. It -- it's hard to look at the history of this site because, when you go back to 1966 when it was built, it's very easy for me to stand here and

say, "Wow, this is terrible that someone would burn chemicals, would burn trash."

And then I realized DHEC didn't exist at that time. The EPA didn't exist at that time. The Clean Water Act hadn't been written at that time. So the environmental movement has evolved along with the history of sites like this.

As far as what the impact was to the community back then, I really -- I can't speak to that. I'm looking only at a small window that is: What can I fix now?

MS. MOYE: (To Ms. Jenkins) That -- does that help at all?

MS. JENKINS: I mean, if he can't answer no more than that, then I have nothing -- I mean -- "I can't speak to it." Understood.

MS. MOYE: And -- right. It's a very hard question that, unfortunately, all we know is from the time we started regulating the sites.

MS. JENKINS: Yeah. And it's really hard. I understand that, because it was not in effect, but, when you're talking the longevity of that plant, what has it done to the community and the people who even work there?

MS. MOYE: I understand.

MS. JENKINS: Okay.

MR. GILBERT: Hi. My name is Gregg Gilbert. That site is 91 acres, and, based on the presentation, out of the 91 acres, I'm assuming that it's a small -- a fairly small area in comparison to the entire property. You know, I guess my thoughts are: There's a small part of the property that's contaminated. What do you see in terms of usefulness for the remaining portion of the property? You know, in the next 30 years, is that property -- will the property be able to be used in any form whatsoever? And, if you could -- the burn parts -- portion, how -- how large are the parts of the property is that area?

MR. HORNOSKY: I don't know the acreage of the burn area, and I'm really bad at estimating acreage, but I would go roughly 3 to 5 acres. The whole property that was owned by Lobeco Products Company was 246 acres, and that extended to the west of John Meeks Way. All that property was sold off after the land was subdivided in 2009.

So, when we talk about that 91-acre parcel, that is specifically the part that was developed as a chemical plant, so it includes the burn site, where the production buildings were, the wastewater

treatment plant, all the above-ground storage-tank area and drum storage, and the lagoons. So all -- all of that is within that 91 acres.

MR. BERRESFORD: I -- I think, if you're asking is there a potential of re-use of this property for some industry or something to come in and do some type of work there, the answer to that question is yes. Because we have sites all across the state that are similar to this or worse than this that have been able to get cleanup done on them and also have people come in and redevelop those and get industry back into the area. Maybe it's a problem now; that doesn't mean that it can never be used again.

We have a specific program within our division called the "Brownfields Program" that works with companies who want to redevelop sites with a stigma or contamination on them and get them back into use, and give them -- since they weren't the parties who had contaminated the property, give them some protections from that environmental liability, to allow the property to be reused. And they do tons of those across the state.

MR. HORNOSKY: As a -- as a brief follow-up to that, the 91-acre parcel does have land-use restrictions on it, and it is zoned as industrial. The remaining

parcels do not contain that restriction.

MS. SIMPSON: Is there an aerial view? An aerial view?

MS. MOYE: (To Mr. Hornosky) The aerial view of the site. Can you point out the -- the approximate -- about the way it would've gone through there?

MR. HORNOSKY: The cleared area that you see there was --

MR. DAWSON: That's the -- that's the point we're trying to make better?

MR. HORNOSKY: Yes, sir. That's -- there's no trees there because that's where the soil was excavated, and they didn't allow trees back up.

MS. MOYE: Can you pull up the roads just to show them where the general roads are?

MR. HORNOSKY: I can, and, if we have Internet access, I might be able to get a better map up.

MS. MOYE: Okay.

MR. HORNOSKY: But this is Morgan Road, John Meeks Way, Kinlaw Road, back here, which extends back in towards the site. And we are here.

MR. MULLEN: Hi. I have a question. My name is Frank Mullen. I don't need a mic. I live on Morgan Road.

MR. HORNOSKY: They need -- they need you to use the mic.

MR. MULLEN: Oh, sorry.

I live on -- like I said, my name is Frank Mullen, and I live in this community.

MR. HORNOSKY: Yes, sir.

MR. MULLEN: I live on Morgan Road. Been there for many, many years. In the event that what you're proposing, for some reason, happens to fail, the citizens in this -- residents in the community, I mean, where do we go to say, "Hey, it didn't work, so what do we do?" I mean, is this the final analysis of your study, your burning, your undergroundwater treatment? In other words, when this is over, we, as the community, has to -- has to -- we have to live with what's left, and, like I said, in the event that it -- it decides to not work like we would like it to work, then what do we do?

I mean, if it starts to affect us, the groundwater -- I mean, when you look at what's really happening in this country now with -- they want to say global warming, rising tides, you know, salt getting into our underwater drinking, the aquifers, I feel like -- this is right around the corner from my house, and I'm very concerned how this is going to work.

Is there anything that you can tell me, like, basically, as a citizen, that I have nothing to worry about, and, if this thing doesn't work -- the process doesn't work, here's what we can do 30 years from now? Or my kids can -- as one of the -- just another in the audience mentioned the fact that what do we -- what do we do with our -- the newborns, the kids coming along? How do we look out for their interests? And -- because I've got some friends that live over on that side, and they're not here anymore. They're deceased. So their kids, they're living over in that area, too. Who fights for them if this thing fails? Where do we go? What do we do?

There's a lot of unanswered questions that maybe we can't answer at this time, but is there anything you can help me with, with that -- help us with as we deal with that? What do we do -- what do we do if this thing don't work?

MR. HORNOSKY: I'll -- I'll try. And let me answer your first question first, the, "What do we do if a remedy fails?"

MR. MULLEN: Right. Right.

MR. HORNOSKY: You can see, from the presentation, that somebody put a lot of thought into the process for

doing the superfund cleanup. Another part of that process we haven't mentioned is called a "five-year remedy review."

MR. MULLEN: Right.

MR. HORNOSKY: So that, even if we select the remedy, implement it, and just move forward and don't look back --

MR. MULLEN: Right.

MR. HORNOSKY: -- we'll look back. Every five years, that remedy gets evaluated, and the question that's asked is: Is the remedy still effective?

MR. MULLEN: Okay.

MR. HORNOSKY: If that answer is no, we have recourse to reopen it. If the answer is yes, we continue with the remedy.

MR. MULLEN: Gotcha.

MR. HORNOSKY: I -- I would like to offer you this -- and I never tell anybody life's a hundred percent safe or there's nothing to worry about. That would just be --

MR. MULLEN: I understand that.

MR. HORNOSKY: Yeah. You don't do that. But I want to show you this slide again and point out, from 1966 to 2019, that's how far it's gone.

MR. MULLEN: Uh-huh.

MR. HORNOSKY: From 2014 to 2019, nothing moved further. So I -- I don't want to give you the impression that this contamination is in a race to get to everyone's house.

MR. MULLEN: Right.

MR. HORNOSKY: It appears to be more or less stagnant right now. The rate of groundwater flow is not that great. I -- I can't tell you off the top of my head what it is, but it's in feet per year, not miles per year --

MR. MULLEN: Right.

MR. HORNOSKY: -- or anything like that. We are seeing evidence of breakdown of those chemicals within this point, and, to me, that's very good news because, if it breaks down from a complex contaminant to a less-complex contaminant, then eventually it can break down to harmless, and that's what we've hoped for, and, if we can augment that process, we can do that very effectively.

MR. MULLEN: Okay. Still, what do we do when it -- if -- if -- let's just say, worst-case -- worst-case scenario, it doesn't work, and we keep moving with this program, and we find out that we have some type of illness in the community that's caused by this plant, what do we do then?

MR. BERRESFORD: I think one of the pieces when the remedy is put into place -- we know where the contamination is now. We have wells that show it's not going this far.

MR. MULLEN: Right.

MR. BERRESFORD: There's residential wells that are closest to the contamination that will continue to be monitored. That won't stop because that's -- if it's -- if there's any potential for a private well to be impacted, we want to continue monitoring and make sure it's not impacted, and, if it is, find a way to address it immediately so that there's not a risk to the community.

I think some questions that've been asked are, "Oh, this is the cheapest remedy. Is that why you're picking it?" No. That's not it.

I -- I've worked on a site down the road. I've been at DHEC for 21 years. Twenty of them, I've worked on that site. We put in a groundwater pump-and-treat system at that site, trying to clean up the contamination. We ran it for ten years at the cost of about $5 million. It reduced the contamination, but it didn't clean up the site, so we went back to the drawing board.

We said, in the review process, "This isn't

working. We need to look at something that will, something that will allow for a line in the sand that says, 'Once the contamination gets to this point, it will be treated, and what comes out the other side will be clean, and we won't have contamination going any further than here.'" We did something similar to this with the reactive wall, and, within about three years, everything on the other side of the wall was clean.

Now, the stuff that was flowing through the wall, there was still contamination there, but it was contained in the site; it wasn't going any further, and, over the next ten years that we implemented that remedy, we saw much more improvement than when we put the pump-and-treat system in. So, just because something ends up being cheaper to put in the ground doesn't make it a worse long-term remedy for the site.

Thirty years ago, pump-and-treat would've been the remedy that was picked for every site that had groundwater contamination. Science has changed so much over the years, there's been so much research done on how to clean these chemicals up, that now it's an option that's out there, but it's not the first one you jump to because it's not always the

best. Typically, it'll stop your cleanup process well short of the goals you're trying to get to, whereas other options give you a better chance to reach those goals.

Tim said five-year review. We will reevaluate the whole remedy in the five-year review, but every year we will be looking at the data from the site, evaluating it. If we see something's going wrong Year 2, we're going to get with the parties, and we're going to work to get it fixed. We're not going to wait five years down the road. We will be keeping a close eye on this site through the whole process.

Tim will be overseeing the implementation of the remedy. He'll review the design of the remedy. He'll go out there and see the remedy put into the ground and make sure it's done correctly. And then he will be monitoring those reports, making sure wells are in the right places to monitor the groundwater, making sure the remedy is doing what it's supposed to, and, if we get to the point that it's not, we're going to act to get it fixed.

MR. MULLEN: So are you -- let me see how I want to put this -- monitoring the wells in this area? Like, I got a -- I have a well system, pump-drilled well,

right? So, I mean, like, do you have a program for -- every now and then, to like -- could y'all come around -- DHEC come around and check the drinking water for us that's on the well system to see exactly what's going on and if the water's still good to drink? I mean like -- I mean just take a sample of it once a year or once every two years or every three years, take a sample of the water, the people that's on the well system here, and see if anything is happening to it.

And, also, I don't think I got my -- my last question answered. I'm still concerned with the fact that -- because I see so -- I see a lot of this going on in the country, where people get in a position in the community, they don't have anybody to really look out for them, and all of a sudden, we're having a health problem, health issues.

We just had one over here at the air station at Laurel Bay. They're still trying to find out what the heck is going on over there with that water system over there. Okay. We got some stuff, I think, up in Michigan, I think it was, where the kids are drinking contaminated water and, you know, they -- so I'm a little bit concerned about that, because, you know, like, we don't have -- we have

to kind of look out for ourselves out here, too, you know. So, when you come, we -- we have questions we -- we would really would like to have some answers.

The second -- like I said, the second part, I don't think I got that answered, and the -- the -- the question I asked about monitoring our personal wells on our property is that -- would that be a problem for DHEC, for them to offer -- or would that be a problem for you guys to create a system where you come out every so often and say, "Well, let's just check this guy's well and see how much he -- what's going on with his well, what kind of water he's drinking, what kind of water he's giving his kids, what kind of water his wife's drinking, his family drinking"? You know what I mean? Because everybody out here is not on city water. We do have city water in some areas, but there's a lot of us that don't have it. Is that something that you guys might entertain in the future? I mean, whatever. I mean, I'm just trying to get some of the questions out to see if they -- there's any answers there for us here.

MR. HORNOSKY: Yeah. I'll give you -- I'll give you the worst-case answer first. We don't want you to be

drinking contaminated water, and DHEC can test your water. We will test well water for anybody. DHEC charges a fee for that.

MR. MULLEN: That's fine.

MR. HORNOSKY: Now, that fee is not even enough to cover the testing, but it's to make sure that people just don't bring a sample in every day.

MR. MULLEN: Right. Right.

MR. HORNOSKY: So that testing is available. If you have a genuine concern about something that might be in your water, please call the local office. That testing can be done.

MR. MULLEN: What's the fee?

MR. HORNOSKY: I'm -- I'm not sure. I think it's on the order of $50. I will say that the residential well-testing that was done relative to this site, we cast a wide net the first time out and sampled about 36 wells throughout the community, because the question hadn't been answered, and it's a valid question that needed to be answered: Is there an impact across the community from this site? And the results of that sampling showed, no, there's not an impact to the community from the site.

When I came onto this project about five years ago, I had the same question, so I looked. You can

see the old study. And I asked the responsible parties, "What have you done since then?" So they went back out and sampled more wells, but they tended to focus the sampling closer to where we know there's a problem. So we will use a little bit of science there to say, "If we know we have a baseline and we don't see a problem in the community, we should go back out and look, but we should look in between the problem and the people." So the first people to be affected, that's who we're going to keep an eye on. If this problem doesn't go beyond the edge of this picture, and you're a mile away from that, it's not that I'm not concerned about you. We do want you to have clean water, but, if it doesn't go past there, it can't reach you.

Again, the other thing that makes me feel good about this is your community has what we call a "confining unit." That clay layer is the best protection you could ask for to keep anything from the surface, whether it's a chemical plant or contamination from a gas station or a drycleaner or anything from the surface, from getting into your drinking water. I'm very glad that layer is there.

If you could please remind me --

MS. MOYE: I'll -- I'll actually address that second part, because I think what you were asking is: How can your community be assured that, 20/30 years down the road, that somebody is still here who cares about this --

MR. MULLEN: Right.

MS. MOYE: -- with your government? And that's a valid question, because, as you all know, just like you said, these environmental concerns across our country right now, we're hearing more and more about them: climate change, the Flint, Michigan water crisis. We've had some of those here in our own state, that I'm sure you've heard about, as well.

So we can't predict what's going to happen in the future, but I can tell you that DHEC is committed to community engagement and to making sure that you have an avenue to talk with us to ask us questions to get the information that affects your lives. So every one of us in here are committed to that, and everyone back in Columbia is committed to that. Everyone in the region is committed to that.

So we may not always have the answers. We may not always have the answer that you want. But

we're going to always be here to get you the answer, and we're going to be here watching this because this is a -- is concerning to us as well, and we want to make sure that you're safe. That's part of why we're here. That's part of why you pay us. Does that help?

MR. MULLEN: Oh, yeah.

MS. MOYE: Okay.

MR. BERRESFORD: Just to kind of add to that, there is an agreement with the responsible parties to clean up the site, and we're going to be administering it, making sure we stay on top of it, to make sure that achieves. Hopefully, one day none of us have to worry about this site anymore because we have it all cleaned up. That's our goal in every site that we work on.

In environmental time, it can take years and decades to get there. This contamination has been out there almost 50 years or more, so it took a long time to get to this point. It's going to take a little while to clean it up, but we're going to make sure that it gets done. We're going to make sure it's evaluated. We're going to make sure that we have those private wells closest to the site monitored on a routine basis, so if anything shows

up in any of those wells, we can expand it through the -- further out in the community and we can figure out what's happening, we can assure that your water's safe. We have a whole drinking-water program that will work with the property owners, if they have concerns about their wells, to get samples for them. If -- I'm -- I'd be happy to give you my card when we're done, and you can call me directly, and I can put you directly in contact with them, if you would -- if that's a concern that you want to explore. We'd be happy to do that.

COUNCILMAN DAWSON: Councilman Gerald Dawson.

MS. MOYE: Hey, Mr. Dawson.

COUNCILMAN DAWSON: Okay. Councilman Gerald Dawson, representative for this district. Tim, you said that you tested about 36 wells in close proximity to this plume that is -- that is coming through the community. My question is for the concerns of the -- for the concerns of the residents who are not in close proximity to that plume, but live on the other side of the road. If they have their well tested and it shows that there is contamination in the wells, what process does DHEC take, and what is the responsibility of that property owner?

MR. HORNOSKY: I want to make sure I understand your

question right. If a property owner over here, you said, had contamination in their well from this site up here?

COUNCILMAN DAWSON: Uh-huh.

MR. HORNOSKY: Please let us know. I will be very shocked if that contamination were able to make it from here to the other side of the road there, but we would certainly respond.

MR. MOYE: Why would that shock you?

MR. HORNOSKY: Because it took 50 years to go from here to here, so for that contamination to reach a drinking-water well here and go down through that clay would be extremely unlikely. Now, if it happened, whether it's from the site, whether it's from some other source, we want to know about it.

COUNCILMAN DAWSON: Okay. But it's not impossible?

MR. HORNOSKY: I think it's -- it's highly, highly unlikely.

MR. BERRESFORD: If anybody was to have their private well sampled and find something in it, we would want to know about it, and we would investigate it and try to figure out where it was coming from. Whether it be this site, whether it be somewhere else, we would put forth the resources to find that out. That -- that would not rely on, "Oh, the

property owner has got contamination. Now, they've got to go out and investigate it." That wouldn't be the case. If they had contamination in a private well, made us aware, we would work with them to go out and figure out where it's coming from.

COUNCILMAN DAWSON: Okay.

MR. MOORE: I hear you, and I hear you. You really do give good answers. You know, the -- the comment about, you know, whether the -- the cheapest is motivated by something else -- is that the only place on that property that has contamination?

MR. HORNOSKY: No, sir.

MR. MOORE: I didn't think so. I -- I did not think so. So, therefore, the comment of, you know, being uneasy -- why would we -- if we know that there are different sites on that property that actually have proven to be contaminated, to include the creek, why wouldn't we now actually just go, and, out of a peace of mind for the residents on Morgan Road and way up -- why wouldn't we simply say to them, "Once a year, we will test your water, and we will not charge you," just for a peace of mind because we know that there are more than that site that is contaminated? Why wouldn't we -- and you probably

cannot give the answer tonight, but I just ask if DHEC and you would actually look at that and let that be a part of the process. Because these people, their state of peace in their homes is -- is at stake, and I just believe that we ought to be doing everything we can to give people a peace of mind.

They talked about the contamination over at Laurel Bay, out at the station up in Camp Lejeune, and -- and get a letter 20 years/25 years later that, "If you were stationed here at this time" -- and so it -- it is a problem, and we don't just, and should not just, take everybody's word for it. But -- but I believe it ought to be a partnership whereby we can give everybody as much a peace of mind as we possibly can, knowing and understanding that you were not, you know, a part of a -- or a party to the -- the cause, if you will. So would -- would somebody commit to considering that?

MR. BERRESFORD: I -- I think one thing that -- hearing your concerns, we'll have to take it back and run it through a few chains to get approval to do something like that, but we will take it back, we will run it through, and we will see what we can do, even if it's, maybe, looking at

expanding from the one or two wells that are being sampled to a little bigger set to make the community feel more at ease in the situation. We can definitely go back and look at it and evaluate it.

And part of what will have to happen, once a remedy gets in the ground, is a long-term sampling plan of what wells will be sampled. How frequently they'll be sampled will have to be developed, and then we'll have to look at the private wells to evaluate which ones are included in that mix.

So it's definitely something we can take your concerns and take them back and see how we can work with it. I -- I -- it's a valid concern, that people are concerned that they have safe water.

MS. MOYE: So, maybe, just to make sure that we follow up on that with you, sir -- and I know that everyone else will want to know the answer to that -- is it okay if we're in communication with Councilman Dawson once we find out what's going on with that so we can make sure that it gets out to everybody? Okay.

MR. MULLEN: Excuse me. I got one more -- one -- one more question or suggestion or whatever. Would it be possible to get DHEC and their associates to

make the people that contaminate our area pay for the regular water sample? In other words, like, people that contaminated, why not -- you said the cost would be somewhere around 50 bucks. That's what -- that was roughly the cost you gave. So why -- why can't we -- you say, "Well, you guys came into the area, you made money, you created this plant, and now you left -- you left a problem. Okay. These people have to live with it, so they want to monitor their water. They want -- they've suggested that, you know, the monitor of their private wells be done once a year"? Why can't you-all make them pay for it, and then, everybody that want that -- wants that done every year can apply for it? They come out -- you come out and do it, they pay the cost for it, and you do that until this problem is completely solved?

I mean, it would -- it would be a great incentive for the people out in this community to know that the people that ruined our area have an incentive to help us clean it up, and DHEC is the only source of power that we have to make them do that. Because you know how most companies are. They -- they come in, rape the land, and they're gone. I mean, I can name some places right around

this planet where oil wells are just dripping in the running water; oil wells are just dripping in drinking water; oil wells are just dripping where people get their fish, where they wash their clothes, and that is totally, totally wrong.

So, if you could force DHEC or suggest that they say -- I mean, not DHEC, the people that -- that -- that caused the problem, to say, "Okay. You guys, y'all are going to have to come in and pay for their -- their -- the -- the people in that community, you know, asked could y'all pay for the monitoring of the private wells like once a year," so they'll know and we'll know, they'll have faith in us and we'll have faith in them, and we'll get this thing cleaned up down the road. I appreciate that. Thanks.

MR. HORNOSKY: And thank you, sir, for that -- for raising that comment. I think you raised a good point. Up till now, the sampling that was done in 2009 and 2016, 2017, and earlier this year has been paid for by the responsible parties. So we compel them to do that from time to time. We have not done it on a broad scale since 2009. When we do compel the responsible parties to do that, they hire their own contractors, their own laboratories.

People come in from out of town, etc. DHEC may be able to do that more efficiently, so I thank you for bringing that up. We will address your comment.

MS. MOYE: And I will remind everyone that what you're saying tonight is being recorded by a court reporter, so it will be part of this record, so you don't -- if you said something tonight, you don't necessarily have to repeat it in a letter to us. We do have it. But if you want to repeat it in a letter, you certainly are welcome to do that.

Anybody else have any questions? Okay.

COUNCILMAN DAWSON: Okay. If -- if I might? Tim, you -- you gave your presentation, and, basically, you have shown us the difference between -- well, DHEC is basically proposing to use Alternative Number 4, and the -- the community has raised some concerns about 4 being the -- the less expensive alternative, versus Alternative 3. But they both -- from what I'm seeing in your presentation, they both do basically the same thing. The only difference is that Alternative 3 has the -- the above-ground wells situated throughout the -- throughout the area and is permanent, from what I -- I think I heard you say that in the

presentation, that they're permanent wells. And so that will hamper the use of -- property owners' use of the property because of the wells being situated on their property.

But -- but both Alternative 3 and 4 basically use the -- the slurry walls to contain the spread of contamination further into the community. That being said, once the -- once the -- the contamination is contained and treated, does it -- does it come back -- does that water go back on-site and then release off-site into the creeks?

MR. HORNOSKY: The water within the slurry wall, so inside that area, is contained. With the passive remedy, it would move very slowly the way it does now, back onto the site, be treated through the bio-wall, and then be released back out, again, onto the site. That water then could flow south on the property or it could flow southeast off the property. Are you asking about the remedy with the pumping wells, if that's going to be different?

COUNCILMAN DAWSON: Yeah, yeah. Basically.

MR. HORNOSKY: Okay. So, with that, again, the slurry wall prevents contamination from moving further, but all the water within that containment area would be pumped out and treated and discharged as

surface water on the plant site.
COUNCILMAN DAWSON: On the property?
MR. HORNOSKY: Yes.
COUNCILMAN DAWSON: Does it not leave the property at some point?
MR. HORNOSKY: It eventually drains out to Campbell Creek.
COUNCILMAN DAWSON: All right. But it -- but it's been treated?
MR. HORNOSKY: Yes, sir.
MS. SIMPSON: So there's no discharge, right?
MR. HORNOSKY: There would be a discharge site with Alternative 3, not with Alternative 4.
MR. MULLEN: I didn't hear your answer on the previous question -- excuse me -- because I was too busy trying to concentrate on what I wanted to ask. You -- you -- you -- you made mention that Reverend Moore asked about more contamination on the property itself -- the total property, right? There's still contamination, other than that burn site, right?
MR. HORNOSKY: There are several parcels.
MR. MULLEN: Okay. How do we -- how do you deal with that? I mean -- I mean, I didn't get your answer because I was so busy trying to remember what I

wanted to ask. So -- so I'm sorry.

MR. HORNOSKY: Yeah.

MR. MULLEN: So how -- how -- how do we deal with that problem?

MR. HORNOSKY: Okay. I didn't want to bring up too much information in one night and --

MR. MULLEN: Okay. I'm sorry.

MR. HORNOSKY: -- and confuse the mission, but it's -- it's okay, since you're asking the question. This area down here was known as the "Remediated Lagoon Site." At that same time, the big soil removal was done back in 1990. There were about 21,000 tons of soil removed from the lagoon area. That contamination has been monitored since 2003 and is going away naturally. Once the contaminant source was removed, the remaining groundwater contamination has been breaking down. That's done under a -- a sort of a permit mechanism through DHEC called a "mixing zone." And that's been very successful. Again, we report on that once a year, monitoring the contaminant levels in groundwater, and that site gets -- continues to get better. It's very close to meeting drinking-water standards now. And, again, that's shallow groundwater that would not be used for drinking water just because

it's close to the surface.

The other area that will be looked at in the future is up here and was a storage area where there were drums and above-ground tanks. The contamination there is less severe than what we see at the burn-site area, but the groundwater flows towards the burn-site area from there. What is beneficial about that is anything we do at the burn site, eventually, can catch what's coming from here. So this isn't going to get off-property without going through whatever treatment we install here.

Now, I would point out again, the -- the slurry wall and anything that's permanent in the ground is beneficial because that could take hundreds of years to move that far.

MR. MULLEN: Are those the only contaminated -- contaminated areas?

MS. MOYE: (To Mr. Hornosky) Are those the only contaminated areas?

MR. HORNOSKY: The other areas that have been investigated were Campbell Creek, where the discharge point was, and the primary concern there was with PCBs, many years ago. I have seen oyster tissue-sample results that show there are no PCBs

in those oysters at this point. And that goes back from samples from 1990, 2005, and 2010. We don't have anything more recent than that because that sampling was done as part of a wastewater permit for the plant, so, since that shut down, we hadn't required that sampling.

MR. MULLEN: Thank you.

MR. HORNOSKY: Thank you.

MS. MOYE: Councilman Dawson, did you have another question?

COUNCILMAN DAWSON: No. I was -- for -- for the sake of the community, you -- you have proposed that DHEC utilize Alternative 4. And you're asking for the community's input tonight, and I -- I see where there's a time frame to submit comments and recommendations. So you're not looking for us to make a decision tonight? You just wanted input for discussion?

MR.HORNOSKY: That's correct.

COUNCILMAN DAWSON: And then we have a window to get our comments in before you make your final decision?

MR. HORNOSKY: That is correct, sir.

COUNCILMAN DAWSON: Okay. All right.

MR. HORNOSKY: This is the beginning of the process. We present the preferred remedy to the community, and

we consider your comments. That 30-day comment period will actually extend to July 15th because the 13th falls on a weekend.

MR. BERRESFORD: One more thing to add. At the library, we placed some of the key documents: the investigation document; the feasibility study, which gives a weighty, thorough, detailed evaluation of all the different cleanup alternatives; the most recent sampling results report from 2019; and a bunch of other documents. Those are available, in hard copy, at the library. There's a bunch of other documents also available, or will be available, on a flash drive, electronically, at the library next week. And, if at any point you decide to go look at those, you have questions, feel free to call Tim or myself, and we'll try to answer any questions you have.

If there becomes a lot of concerns and the community would like an extension of the public comment period for another 30 days, they can make that request, and we'll evaluate it. Typically, we -- we'll grant that to the community if they need more time to digest the remedy and the information. There's a lot of historic information on this site.

COUNCILMAN DAWSON: All right. I -- I don't want to

speak for the community, so the community has an open window, a 30-day calendar to get their comments in to you, before you go through the decision-making process.

I -- I would reiterate what Pastor Moore asked of DHEC, and that is that you wholeheartedly consider the annual monitoring of the wells in the community so that the community of the residents on Morgan Road will have some peace of mind as they go from day to day, living there. Because, initially, when it was found out that there -- there was problems on this site with contamination, some of the community residents actually moved out -- sold their property and moved out.

We have residents now who were born and raised here, the native generation of community members. They're not going anywhere, and so . . .

And any and everything we can do to give these folks a peace of mind that they can continue living there, because they don't have the feasibility to up and sell their property and move elsewhere. So, anything we can do to give them peace of mind, that living there -- they can live there being ensured that they won't be impacted by the contamination that is coming from this site, knowing that we're

making every effort to stop the further degradation of the -- of the -- of the contamination leaving -- leaving the site and coming further into the community. So, if -- if you would ensure the community that that would -- that request would be considered and made part of your implementation of whatever plan you decide to go with, whether it's 3 or 4.

MR. HORNOSKY: You're requesting that that specifically be included as a part of the remedy?

COUNCILMAN DAWSON: Yes, sir. Yes, sir.

MR. HORNOSKY: (Nods head up and down.) Thank you.

MS. MOYE: Thank you, Councilman Dawson. Thank you for remaining engaged with us on this site for as long as I've been working and been a part of it. So we appreciate your continued involvement for the community.

So I know it's getting a little bit late. Does anybody have any other questions? Before you leave, I just want to introduce you, real quickly, to two other DHEC staff people who are here. Jacob Terry, who is in our local office in Beaufort. One thing that wasn't said tonight that I hope you already know, but if you don't: If you ever see, smell, hear, you know, think, you know, that

there's a problem that you think that we need to come out and investigate, or that you have a question about, Jacob would be the person that you would call. You don't have to call us in Columbia. You can, but we're going -- we're going to call him, so that he can come out and check to see what's going on, to give you some reassurance about that.

The other person I'd like to introduce you to is Keisha Long, who is our new environmental justice coordinator at DHEC. And she's in the back of the room. She's been on the job about a month now, but I suspect that she's going to remain involved in community meetings with us and working in communities and building some relationships.

So, if you have any more questions, you want to approach any one of us tonight before you leave, please do so. We'd be glad to talk with you. We have your information up front here, and I think they've already told you where everything's going to be. I think the presentation will be on the website, too; is that correct? So, if you need it, you know, after tonight, you can get it there, as well, so . . .

Thank you again for coming. We do appreciate

your questions. And I think Councilman Dawson's going to have the last word.

COUNCILMAN DAWSON: Before we dismiss, Jacob Terry? Is that you, Jacob?

MR. TERRY: Yes, sir.

COUNCILMAN DAWSON: All right. It's nice to meet you. Your predecessor -- I can't remember his name. What's his name?

MR. TERRY: Shawn.

COUNCILMAN DAWSON: No.

MS. MOYE: Shawn?

MR. TERRY: Or Shane?

MS. MOYE: Shane? Shane.

MR. TERRY: Shawn Adams.

COUNCILMAN DAWSON: All right. So -- so you're -- you're our local representative here in Beaufort?

MR. TERRY: Yes, sir.

COUNCILMAN DAWSON: Okay. So you're at the DHEC office --

MR. TERRY: Yes, sir.

COUNCILMAN DAWSON: -- DHEC office on Parker Drive?

MR. TERRY: Yes, sir. I'm down off of 21.

COUNCILMAN DAWSON: All right. Do you have any cards with you tonight?

MR. TERRY: I'm sorry?

COUNCILMAN DAWSON: Do you have any cards with you tonight?
MR. TERRY: I do. Yes, sir.
COUNCILMAN DAWSON: Business cards?
MR. TERRY: Yes, sir.
COUNCILMAN DAWSON: All right. For everyone here tonight, if you would get one of his cards before you leave, so that you -- if you do encounter any problems with your drinking water or contamination or anything environmental, then just give him a call, and then he'll follow up through.
MR. TERRY: I will say, I do not handle drinking water; it's wastewater and stormwater. But, if you call our office, my -- our -- our office number's on here, and if you call them, drinking water will be in contact with you immediately.
COUNCILMAN DAWSON: Okay. Thank you.
MS. MOYE: Thank you again. We appreciate you being here, and have a safe trip home. Good night.
(Whereupon, at 8:38 p.m., the meeting of the above-entitled matter was concluded.)
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