

Kerr-McGee Chemical, LLC
1611 Talleyrand Avenue
Jacksonville, FL
County: Duval
District: Northeast
Site Lead: EPA
Placed on NPL: March 4, 2010
ERIC ID # 3944

Site Description and History

The Kerr McGee Chemical site is located at 1611 Talleyrand Avenue along the western bank of the St. Johns River in Duval County, Florida in Township 02S, Range 27E, Section 08, at 30° 20' 35.3455" N, 81° 37' 31.8818" W. The site occupies approximately 31 acres and is located within an industrialized area of the City of Jacksonville. It is bordered to the north by the Port of Jacksonville (JAXPORT) marine terminal, to the south by undeveloped property owned by CSX Transportation Corporation (CSXT), to the east by the St. Johns River, and to the west by Talleyrand Avenue. Residential and commercial properties are also located near the site.

From 1893 to 1978, the site was utilized as a fertilizer and pesticide formulating, packaging, and distributing facility. Operations at the site initially consisted of fertilizer manufacturing. Pesticide formulation operations were added in the 1950's. Kerr-McGee Chemical, LLC purchased the facility in 1970. Tronox, the successor to Kerr-McGee, currently owns the property. Demolition of onsite buildings occurred over several years after operations ceased and was completed in 1989. The site is currently vacant and unused. A 6-foot high chain-link fence surrounds the site to prevent unauthorized entry.

Historical operations involved the use of organophosphates, organochlorines, sulfur products and metals in pesticide formulation and fertilizer manufacturing. The pesticide/herbicide manufacturing/processing area was located primarily on the western half of the property. Structures associated with former operations included a formulator building, a pesticide storage warehouse, and herbicide building. Superphosphate was also manufactured along with agricultural fertilizers. Fertilizer operations were located primarily on the eastern half of the property. Sulfuric acid used to make superphosphate was produced in an onsite acid plant. An onsite surface impoundment located north of the pesticide formulation building collected wastewater as well as spills and residues from formulation units. A dredge fill area located in the northeast corner of the site was used to dispose of sediments dredged from the St. Johns River.

Threat

Environmental studies completed by the potentially responsible party (PRP) under the jurisdiction of the Florida Department of Environmental Regulation (FDER, now DEP) and EPA from 1984 to present, have confirmed the presence of volatile organic compounds, semi-volatile organic compounds, pesticides, polychlorinated biphenyls, and metals in the soils, groundwater, and sediments. Soil contaminant levels are above allowable concentrations for both residential and commercial/industrial land use and pose a potential health risk to onsite workers or trespassers due to direct contact. Soil contaminant levels also present an ongoing source and threat to groundwater

quality. Groundwater contaminant levels in the surficial aquifer (including the “rock aquifer”) are above drinking water standards and State groundwater cleanup target levels. While classified as potential drinking water aquifers by the State, a well survey over a 2-mile radius of the site indicates that potable use of these aquifers is unlikely. Groundwater in the immediate area of the site is not being currently used by the public. Drinking water for the area is provided by the City of Jacksonville and drawn from the Floridan Aquifer at depths of approximately 500 feet below land surface (bls). A confining unit separates the surficial and Floridan aquifers. Contaminants associated with the site have not been identified in the Floridan Aquifer.

Pesticides and metals in sediments in the St. Johns Rivers occur at concentrations above the EPA and DEP ecological screening levels and sediment quality guidelines, respectively, and therefore pose a potential risk to ecological receptors.

Response Strategy and Status (December 2020)

Environmental studies conducted between 1984 and 2000 confirmed that past facility operations and associated releases resulted in contamination of soil and groundwater, as well as adjacent sediments in the St. Johns River, with metals, pesticides, semi-volatile and volatile organic compounds.

In March 2000, EPA assumed oversight responsibilities for the site and entered into an administrative order with Kerr-McGee whereby the PRP agreed to complete a remedial investigation/feasibility study (RI/FS) at the site. The RI/FS was completed under the EPA Region 4 Superfund Alternative Approach (SAA), which uses the same investigation and cleanup process and standards that are used for sites listed on the NPL.

From 2000 to 2006, the PRP conducted a remedial investigation (RI) to determine the nature and extent of contamination in soil, sediment, surface water and groundwater resulting from past site operations. The final January 2006 RI Report confirmed the widespread occurrence of onsite soil contamination by organochlorine pesticides, metals including arsenic and lead, and semi- volatiles. An estimated 213,400 cubic yards of soils are contaminated at concentrations that exceed federal and state criteria for the protection of groundwater or future land use. Although soil contamination is widespread across the site, the predominant areas of soil contamination occur north of the former herbicide building and in the former surface impoundment where highest concentrations of pesticides reach a depth of 6-8 feet bls. Radium-226 and uranium-238 were identified in a small area in the southeastern corner of the site as a result of the former phosphate rock-sludge stockpile operations. Dioxin/furans and PCBs were also identified in surface soils in limited areas of the site. Pesticide and metals contamination was also identified in offsite soils south and north of the former facility property. Groundwater contamination in the surficial aquifer extends to depths of approximately 75 feet bls and is comprised of chlorobenzene; pesticides including BHC compounds, toxaphene, dieldrin, DDD and aldrin; arsenic and manganese; and volatile organic compounds (VOCs) including trichloroethene and *cis*-1,2-dichloroethene. Groundwater flow in the surficial aquifer is generally east-southeast, discharging into the St. Johns River. Groundwater contamination extends offsite to the north and south as well as east where it enters the St. Johns River. Groundwater monitoring was conducted in 2009 and 2010 to track the behavior of the

plume and confirms previously observed contamination. DEP has recommended additional monitoring wells be installed to better delineate the plumes and support design of the groundwater remedy.

A human health risk assessment was completed in November 2005. A Screening Level Ecological Risk Assessment was also conducted to evaluate the potential for ecological risks posed by sediment contamination. Pore water and sediment sampling was conducted in December 2007 along the eastern edge of the site in the St. Johns River. Additional sediment sampling was performed in August 2008 to assess the lateral extent of impacted sediments. The results showed elevated levels of pesticides and metals in pore water samples; primarily arsenic, α -BHC, β -BHC and dieldrin; indicating that discharge of groundwater may be affecting pore water quality in sediments in the St. Johns River. Sediment sampling results detected DDD most frequently. Surface water sampling has also identified chlordane, 4,4-DDD and several metals at levels above surface water criteria.

Treatability studies were conducted to support development of the feasibility study and included testing of stabilization and bioremediation to treat contaminated soils and groundwater treatment using an in situ zero-valent iron technology. The final Feasibility Study was issued by the PRP in June 2008, which provided an evaluation of feasible remedial technologies for cleanup of site related soils, groundwater and sediment contamination.

In June 2008, EPA held a public meeting to present the final RI/FS and Proposed Plan summarizing the Agency's preferred remedy to address the site contamination. The public comment period on the proposed plan was extended twice with a final deadline of August 27, 2008. The proposed remedy consisted of a containment remedy including a low permeability cap and 4,800-foot long slurry wall encompassing approximately 29 acres of the former facility property. The slurry wall was to be constructed to a depth of approximately 42 feet bbls on the north, south and west boundaries of the property. A bulkhead containment system was proposed for the east boundary to encapsulate approximately 2.5 acres of submerged contaminated sediments along the western side of the St. Johns River, to prevent continued migration of contaminated groundwater offsite or into the river. Installation and long-term operation of a groundwater extraction and treatment system inside containment system was included to ensure that an overall inward flow of groundwater within the containment system would be maintained, with an estimated 20 million gallons of groundwater to be extracted and treated annually. The remedy also included institutional controls to limit future onsite land use to commercial/industrial and prevent the use of groundwater until cleanup goals are met. Offsite soils exceeding cleanup goals along with construction debris on the immediately adjacent CSXT property would be excavated and consolidated on the former Kerr McGee facility property. Offsite groundwater contamination north of the site on the JAXPORT property would be treated in situ by injecting zero-valent iron to address pesticide and VOC contamination. The remaining offsite groundwater contamination would be addressed by monitored natural attenuation.

In January 2009, Tronox (the current site owner) filed for financial relief under Chapter 11, U.S. bankruptcy code, indicating their inability to continue funding the cleanup through the SAA. As a result, the site was proposed for listing on the Superfund National Priorities List (NPL) in

September 2009 and adopted for final NPL listing by the EPA in March 2010. In February 2011, a Multi-State Trust Agreement was signed between EPA, some States including Florida and the responsible parties, in which Tronox LLC agreed to transfer its assets including approximately \$97.8 million and site-owned properties to the Trust. Assets were distributed to individual Trust accounts as designated in the settlement agreement, for use in environmental actions and government agency oversight at specified sites including the Kerr-McGee Superfund site. Greenfield Environmental Multistate Trust LLC (“Greenfield”) was designated to manage the Trust accounts. A final payment of \$4,220,981.00 was designated for the Kerr–McGee Multistate Trust Environmental Cost account. The Anadarko settlement in 2014 resulted in an additional \$88,829,370 designated to be used to fund Response Action/Environmental Actions and Operation and Maintenance Environmental Actions at the Kerr-McGee Superfund site.

Greenfield selected AECOM as the environmental contractor to review and update the 2008 Feasibility Study (FS), prior to EPA selection of a final Superfund remedy for the site.

The revised FS was submitted for review in April 2012, and included remedial alternatives to address contaminated soils and groundwater as well as sediments in the St. Johns River. In June 2012, DEP and EPA discussed the alternatives presented in the FS and how the proposed cleanup criteria and the uncertainty of the magnitude of the source material might adversely impact the effectiveness of the treatment alternatives being considered and the overall cost of the site remedy. DEP recommended that an updated containment remedy be included as an alternative in the final feasibility study, and that the proposed leachability criteria be re-evaluated to demonstrate the relative cost and effectiveness of those criteria if applied to remedial alternatives where source treatment without containment are to be considered.

The final May 2013 Ecological Risk Assessment was approved by EPA in August 2013. A draft final Feasibility Study was submitted for review in October 2013. DEP provided review comments in November 2013.

In January 2014 EPA and DEP met to discuss DEP FS review comments and possible site remedies. One remedial alternative proposed by EPA included in situ treatment using a permeable reactive barrier (PRB) wall to treat contaminated groundwater prior to discharge of groundwater into the St. Johns River. DEP expressed concerns regarding the ability of the PRB to treat all site related contaminants to surface water discharge criteria and the absence of data to support key assumptions related to construction and operation and maintenance costs of the PRB. Review by an independent remedial consultant identified similar concerns with a recommendation for additional treatability testing to confirm the likely effectiveness of the PRB and to better predict remedial costs using that technology to accomplish site cleanup.

Following a June 2015 meeting between EPA, DEP and the Trust to discuss outstanding data gaps at the site, a Data Gap Sampling Plan was submitted to address DEP concerns and facilitate finalizing the feasibility study. A comprehensive round of groundwater sampling including water quality data and data pertinent to the predicted effectiveness of a PRB remedial alternative was conducted in August 2015. This data will be incorporated into a final feasibility study.

A revised draft Feasibility Study report was submitted by the Trust in December 2015. EPA and DEP provided input on the report. A revised Feasibility Study report was provided in February 2016. EPA, DEP and the Trust met with stakeholders including Jaxport, JM Family Enterprises, CSX, the Eastside Environmental Coalition, the City of Jacksonville and the County Department of Health (DOH) to discuss the remedial alternatives presented in the feasibility study. A revised feasibility study was submitted in August 2016. EPA issued a proposed plan and conducted a public meeting to present the EPA's recommended site remedy in September 2016.

The final selected Superfund remedy for Operable Unit 1 (OU1) was documented by EPA in a Record of Decision (ROD), signed in December 2016. The EPA selected OU1 remedy consists of an onsite low permeability cap, in situ remediation using solidification/stabilization to treat specific onsite source areas below the water table, groundwater recovery and treatment to prevent ongoing discharge of contaminated groundwater to the St Johns River, construction of an environmental bulkhead to encapsulate contaminated sediments in place in the St Johns River adjacent to the former facility property, and natural attenuation with monitoring of the dissolved groundwater plume. Onsite soils and offsite soils on the CSX property that exceed remedial goals will be excavated and relocated onsite under the cap. A subsurface passive soil ventilation system will be installed above the entire area within which all soil above the radium-226 remedial goal is relocated. Institutional controls will be put in place to ensure continued commercial/industrial land use consistent with the onsite remedy and to prevent exposure to contaminated groundwater in the interim until groundwater remedial goals are met.

The Remedial Design for the OU1 remedy is underway. The groundwater monitoring event was conducted in April of 2017, to support design of the remedy. Geosyntec has been selected as the Remedial Design Contractor. The draft OU1 Remedial Design Work Plan Addendum was submitted for EPA and DEP review and comment in January 2018. Following response to comments, the final Design Work Plan and Groundwater Model Work Plan was provided May 2018 and again in December 2018. The Groundwater modeling was reviewed and approved by the Department in April 2019. The field work is underway and includes onsite and offsite soil sampling for delineation and treatability testing; sediment sampling in the St Johns River for design of the bulkhead; and groundwater sampling and aquifer testing for modeling and design of the groundwater remedy. Results will be incorporated into a 30% percent Design report including groundwater modeling, due in June 2019.

Florida Department of Health (DOH) issued a Toxicology Consult in February 2018 that evaluated the results of fish tissue sampling conducted in 2017 to assess the potential public exposure to contamination through the ingestion of fish in the St Johns River near the Kerr McGee site. Based on those results, DOH recommended a "Do Not Eat" fish advisory over the area of the River evaluated by the assessment. A public Availability Meeting was held near the site on April 19, 2018, to allow questions and discuss the upcoming remedial design for the Kerr McGee site. Warning signs were placed at the Kerr McGee site at the site entrance and along the River in August 2018.

The 30% Design and the Pre-Design Investigation report was provided for review in July 2019. The Department provided comments to the Trust in August 2019. Tetra Tech replaced Geosyntec as design contractor.

The 60% Design met with extensive comments in 2020 and 2021, and the In Situ Stabilization (ISS) footprint & volume has been increased beyond recommendations in the 60% and 30% designs.

In addition to an enhanced ISS footprint & volume, the 100% Design will also incorporate an enhanced groundwater recovery system with more recovery wells and higher pumping rates. Tetra Tech will run system optimization analyses and recommend system operational details for review.

Schedule

ISS is scheduled to begin in late 2021. Contaminated sediment in Deer Creek will be evaluated for remediation as Operable Unit 2 (OU2).