The San Jacinto River Waste Pits Superfund Site: An Assessment of Remedial Options for Sites with Dioxin-contaminated Sediments with Implications for Remedy Selection at the San Jacinto Site

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For Texans Together

March 2015

9645452

Abstract

A survey of seven Superfund sites which share location and contaminant characteristics with the San Jacinto River Waste Pit Superfund site shows that EPA required removal of the most highly contaminated materials as a part of the chosen remedy anywhere such a removal did not irreversibly damage the surrounding waterway. Areas of lesser contamination were capped to prevent further exposure and dispersion of these contaminants into the ecosystem. The practice of removing highly contaminated materials and containing those less contaminated falls in line with EPA's stated policies concerning sites where contaminants include extremely toxic materials such as the ones at the SJRWPs. In light of these findings, EPA's National Remedy Review Board should consider complete removal of both the residual wastes in the pits and the most highly contaminated sediments outside the original waste lagoon structures, with a containment strategy to address sediments contaminated above recommended site cleanup goals within the site perimeter, as the remedy which best conforms to both past agency practice and stated agency policy for sites contaminated with PCBs, mercury, and dioxin.

Executive Summary

The following report was completed on behalf of Texans Together for the San Jacinto River Coalition, an organization representing the communities of Highlands and Channelview, Harris Co., Texas. These communities abut the San Jacinto River Waste Pits (SJRWP) Superfund Site and are concerned about the past, current, and future health and environmental impacts of the site. The citizens are especially interested in the final disposition of this site, and that whatever remedial solution is selected be the most protective of long-term human and environmental health in the area.

This report was completed by Dr. Kathleen A. Garland under contract to Texans Together. Dr. Garland is a faculty member at the University of Houston Clear Lake in the Environmental Management Program (vita attached). This report represents Dr. Garland's professional research and findings as an independent consultant, and in no way reflects the opinions or viewpoints of the University of Houston Clear Lake or the University of Houston System.

This report summarizes the past and current site conditions at the SJRWP site and the health and environmental impacts of the Contaminants of Concern (COCs) found at the site. It then discusses the seven case studies available in EPA's Superfund Information database where similar COCs exist under similar site conditions. These discussions focus on any emergency removal actions conducted at the sites, and on the final remedial actions chosen to address contamination at these sites. The report then compares the removal actions and remedies chosen at the studied sites to the proposed remedy at the SJRWP site. In addition, the report highlights EPA's stated policies and guidance with respect to the COCs and conditions such as those found at SJRWP site, and reviews the proposed remedy in light of those policies and guidance. The report concludes with recommendations for the final disposition of the SJRWP site.

The SJRWP site lies adjacent to and partially submerged in the San Jacinto River, Harris Co., TX. The waste pits were owned by McGinnis Industrial Services Co. (acquired by Waste Management, Inc.) and received about 200,000 cubic yards of concentrated paper mill wastes from the Champion Paper Mill (acquired by International Paper, Inc.) from 1965-1966. Over time, and to some extent due to human activity, the San Jacinto River encroached upon the abandoned pits, eroding part of the containment structure and releasing the wastes into the San Jacinto River. The COCs at the site consist of dioxins, PCBs, and mercury, all of which are proven to be highly toxic to both humans and to aquatic ecosystems. Seafood consumption advisories for these COCs exist in the river adjacent to the site as well as upstream and downstream in the river system, the Houston Ship Channel, and parts of Galveston Bay. Following discovery of the site in 2006, a Time-critical Removal Action (TCRA) took place to reduce the emergency conditions posed by on-going release of the site's highly concentrated wastes. A Human Health Risk Assessment was not deemed necessary to confirm the risks associated with the COCs prior to implementing the TCRA, as the risks of exposure to extreme levels of dioxin are well-documented. The TCRA took the form of an armored cap, which was constructed over the northern part of the site in 2011. The ensuing Draft Remedial Investigation/Feasibility Study (RI/FS), released in 2013 by the Potentially Responsible Parties, proposes that the final remedy for this site be reinforcement of the existing cap along with administrative controls to limit access to and activities at and around the site.

The seven cases summarized for this report share four characteristics with the SJRWPs which allows them to be compared:

1. COCs include dioxins, PCBs, and mercury; and,

2. COCs are present in riverine, estuarine, or shallow marine sediments; and,

3. Environmental conditions at the site include subaerial and subaqueous exposure of contaminants in a tidally-influenced, estuarine or shallow marine environment; and,

4. Consumption advisories for fish and/or shellfish based on the increased risk of cancer and/or developmental defects for individuals consuming the contaminated seafood have been implemented in adjacent waters.

Analysis of these cases leads to the following conclusions:

A. In all cases, remedy selection for dioxin-contamined sediments included physical removal of the most highly contaminated sediments unless such removal would cause channel or bank instability.

Implications for the SJRWP: Such a removal appears to be feasible at the SJRWP site.

B. In all cases, selection of sediment removal as a remedy was based on a Human Health Risk Assessment which demonstrated that the site posed an elevated cancer risk to humans through the consumption of contaminated fish and shellfish. The Human Health Risk Assessments at these sites were conducted **PRIOR TO** any removal actions taken to reduce the immediate threat of exposure from the principal threat wastes at the site.

***Implications for the SJRWP*:** Such a pre-existing risk assessment does not exist for the SJRWP site, but extreme risk can be inferred from EPA's requirement that emergency action to protect human and environmental health be taken at the site in 2009.

C. In all cases, areas of lower-concentration, dispersed contamination were capped.

Implications for the SJRPW: The SJRWP site includes areas of such dispersed contamination that should be considered for capping to prevent further dispersion into the San Jacinto River and Galveston Bay systems.

D. Remedy selection in all the cases studied conformed to EPA's policy on management of principal threat wastes as stated in the National Contingency Plan (40 CFR 300.430(a)(1)(ii)).). That policy can be summarized as:

"EPA expects to use treatment to address the principal threats posed by a site, wherever practicable…," including "…liquids, areas contaminated with high concentrations of toxic compounds and highly mobile materials.

EPA expects to use engineering controls, such as containment (*n.b. which includes capping*), for waste that poses a relatively low long-term threat or where treatment is impracticable.

EPA expects to use a combination of methods, as appropriate, to achieve protection of human health and the environment…" (40 CFR 300.430(a)(1)(ii)).

In addition, EPA has recently released guidance on calculating cleanup levels at dioxin contaminated sites which states, "…preliminary site cleanup goals for dioxin-contaminated soils should consider 50 ppt (parts per trillion) for residential soils and 664

ppt for industrial/commercial soils as recommended values to be used in order to be protective of human health and the environment." (USEPA February 2012)

Implications for the SJRWP: The preferred remedy for the site as proposed in the RI/FS by the PRPs does not conform to this policy, as it specifies reinforcement of the current cap and added institutional controls as the remedy. Caps do not qualify as "treatment" for principal threat wastes under the National Contingency Plan criteria; such containment strategies are only acceptable for areas of lower-threat wastes. According to the NCP, the existing impoundments and surrounding highly contaminated wastes should be "treated" in order to permanently reduce toxicity at the site, and surrounding lower-level wastes should be contained to prevent further dispersion. Because of the nature of the contaminants at this site, the chosen treatment must be removal, as no other options exist to reduce the toxicity of these COCs to the levels recently proposed in EPA's guidance for cleanup levels at dioxin-contaminated sites.