To: **Environmental Protection Agency**
**National Remedy Review Board**

From: **International Paper Company**
**McGinnes Industrial Maintenance Corporation**

Date: **October 6, 2017**

Re: **USEPA Region 6 Responses dated October 2, 2017 to the National Remedy Review Board Recommendations for the San Jacinto River Waste Pits Superfund Site, Harris County, Texas**

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The following comments are provided by International Paper Company and McGinnes Industrial Maintenance Corporation (Respondents) in response to the October 2, 2017 responses of the United States Environmental Protection Agency (USEPA) Region 6 to the National Remedy Review Board Recommendation for the San Jacinto River Waste Pits Superfund Site (Region 6 Response). The comments are presented in the order in which statements appear in the Region 6 Response:

**Overview of Proposed Action**

Region 6 fails to acknowledge that the Respondents performed a Time Critical Removal Action (TCRA) at the Site under USEPA Region 6 oversight. The TCRA involved constructing a protective armored cap over the entire northern impoundments in 2011 at a cost of approximately $10 MM, Region 6 also fails to note that Respondents have maintained the cap since it was completed according to the Region 6 –approved Site Operations, Monitoring and Maintenance Plan. Because it does not mention the TCRA armored cap, Region 6 also does not acknowledge that its preferred remedy for removal necessarily involves removal of that functioning cap – something that has never been done before and involves technical challenges and risks that were detailed in Respondents' comments on Region 6's Proposed Remedial Action Plan (Proposed Plan).

It should be noted that a range of alternatives was considered by Region 6 for the TCRA, including removal, and capping was chosen as the preferred remedy. It should also be noted that according to USEPA guidance, TCRA actions should be consistent with the long-term remedial actions for the Site and vice-versa; the preferred alternative is the antithesis of a remedy that satisfies that directive.

**The Preferred Remedy Presented to the NRRB for the Northern Impoundments**

Despite numerous comments submitted on the Proposed Plan that raise concerns regarding the implementability of Region 6's preferred remedy, Region 6 does not provide any additional detail on how the removal action would be implemented without causing significant releases and harm to the environment. In any case, the actual cost for a removal action recommended by Region 6 would be significantly higher than what was provided to the NRRB, given the enhanced best management practices (BMPs) which would be required. The additional costs would most likely mean that the increase in the costs would exceed the plus or minus 50% factor cited by Region 6. Again, there is no acknowledgement by Region 6 that the existing armored cap would have to be removed to implement the preferred alternative recommended by Region 6.

**Achieving Protectiveness**

Region 6 states that the Preferred Alternatives 6N and 4S are the only ones that will reliably result in no catastrophic future release of waste material upon completion of construction. Region 6 goes on to state that methods used to predict the long-term performance of the San Jacinto River and the stability of containment have a high degree of uncertainty, and that future changes in the river channels and riverbanks are not predictable.

The Region 6 Response is dated October 2, 2017, but in the Response, Region 6 does not anywhere acknowledge that the Site was subjected to a 500+ year flood event associated with Hurricane Harvey a month prior. This event provided the opportunity to compare model predictions made by the USACE and assumptions used by Region 6 regarding catastrophic failure of the cap during a "worst case" scenario, to actual post-storm observations.

Following Hurricane Harvey, Respondents performed visual, bathymetric and topographic surveys, and probing inspections under Region 6 direction and supervision, to evaluate the integrity of the cap following this historic storm. All of these inspections showed that even though the existing armored cap was subjected to flow from a 500+ year storm event, it performed exceptionally well, although it was designed to withstand a 100-year flood event. All of these post-storm assessments demonstrated that there was not a release of material to the environment, and the armored cap performed well. It should be noted that the recommendations for cap enhancements for the entire Site, as envisioned under Alternative 3aN (the enhanced cap) in USEPA's Feasibility Study (FS), provide additional enhancements to further stabilize this area to prevent the potential for any future issues.

The information provided regarding the impact of Hurricane Harvey requires Region 6 to reconsider its concerns about the uncertainty associated with modeling future events.

Region 6 also does not acknowledge that its preferred alternative would include utilizing BMPs involving structures at heights up to +9 feet mean sea level to prevent releases during construction, and the flood waters from Hurricane Harvey would have overtopped those structures by several feet. As a result, there would likely have been a catastrophic release to the river while the waste was exposed during the removal operations. It is also important to note that any laydown, wastewater management, and transloading areas would have been flooded, resulting in releases from those facilities as well. These concerns about releases during construction in a storm event similar to Hurricane Harvey apply to removal from both the northern and southern impoundment areas.

It should also be noted that USACE concluded in its August 2016 report that "if a storm (e.g. tropical storm of high flows under flood conditions) occurred during the actual removal/dredging operation, the likelihood of extremely significant releases of contaminated sediment occurring is very high." This would have been fully realized during the Hurricane Harvey flood.

**Risk Assessments - General**

The risk assessment information in the Region 6 Response is based on pre-TCRA conditions. Region 6 does not acknowledge this fact. Region 6 also does not acknowledge that the scenarios that have the highest hazard indices in their risk assessment were mitigated by implementation of the TCRA. This, combined with Region 6's failure to take into account the design and function of the TCRA cap, documents the bias in the information disseminated by Region 6 for use in evaluating remedial alternatives for the Site.

**Human Health Risk Assessment (HHRA)**

The Region 6 Response (p. 6) states that "Only the cancer hazard approach deviated from traditional USEPA risk assessment guidance." The cancer hazard assessment approach used in the baseline HHRA (BHHRA) prepared by Respondents was discussed with and approved by Region 6 in the RI process. It is no more or less a deviation from "tradition" than is the use of the cancer slope factor: both the tolerable daily intake (TDI, the basis for calculation of cancer hazards) and the cancer slope factor are Tier 3 toxicity criteria in USEPA's IRIS database.

The non-cancer reference dose (RfD) is most appropriate because it is the only Tier 1 toxicity criteria that USEPA has established for dioxin toxicity to people. USEPA considers the RfD to be protective against cancer risk within USEPA's acceptable cancer risk range. The RI Report presents protective concentration levels (PCLs) derived using the noncancer RfD, as well as PCLs based on the TDI.

Regarding specific statements in the Region 6 Response:

- "…EPA used a Tier 3 toxicity value or slope factor that is used in the EPA Regional Screening Level Calculator for evaluating excess cancer risk…" (p.7). This approach is inappropriate as the project-specific documentation clearly identifies the TDI as the preferred cancer toxicity criterion for dioxins. The TDI was used with EPA's approval in the BHHRA for the site. Risk assessment results using the cancer slope factor create uncertainty and undue concern among the public.

- "There were no cancer risks above the upper limit of the EPA's target cancer risk range…except for Beach Area E" (p.7). Beach Area E no longer exists, as it is contained and isolated from contact with people by the TCRA armored cap. Region 6 ignores the information on post-TCRA risk described in Appendix F of the approved Baseline Human Health Risk Assessment. This is misleading. Tables F-17 and F-18 of that appendix indicate that, with the TCRA cap in place, there are no unacceptable non-cancer hazards, except to the subsistence fisher that subsists on fish captured within fish collection area 2/3. Region 6 acknowledges that the subsistence fisher is an unrealistic scenario for the Site (p.9).

- "The basis for action at the site are the unacceptable risks to the recreational fisher… [and] the recreational visitor…" (p.7). See comment above. This statement ignores current conditions (i.e., the TCRA cap) and therefore does not provide an appropriate basis for action.

**Tables of Non-Cancer Hazards**

On p. 7, the Region 6 Response states: "EPA provided an addendum to the risk assessment report in the form of a memorandum dated August 29, 2016 and titled: Human Health Risk Evaluation and Recommended Sediment Cleanup Level for Site Specific Exposure to Sediment at the San Jacinto River Superfund Site" (Region 6's HHRA Addendum). Region 6's HHRA Addendum is not transparent in several respects:

- It appears to, in part, adopt the approach taken in the Region 6-approved BHHRA for the Site,[1] but does not clearly explain important departures from the BHHRA. For example, some of the exposure factors assumed in Region 6's HHRA Addendum and other considerations in its exposure calculations are different from those adopted in the BHHRA (e.g., child body weight, life time). Neither Region 6's HHRA Addendum nor the Region 6 Response provides any rationale for departing from exposure assumptions previously developed and documented by Respondents in collaboration with and as approved by Region 6.[2]

- Region 6's HHRA Addendum does not explain or present the data used to estimate exposure, and the exposure point concentration (EPCs) calculations are not reproducible.

- Region 6's HHRA Addendum does not present or describe the specific environmental samples used to calculate EPCs used in its evaluation, how those data were treated (e.g., averaging of duplicates), or how TEQ concentrations were calculated (e.g., using a value of one-half the detection limit, the full detection limit, or zero for non-detected congeners).

Region 6's HHRA Addendum does not describe the statistical methods used for estimating EPCs, and does not present equations used for estimating PRGs for individual exposure pathways or for all exposure pathways combined.

- In a significant departure from USEPA's risk assessment guidance,[3] Region 6's HHRA Addendum fails to recognize and discuss the sources and impacts of uncertainties on the calculated risk estimates and PRGs.[4] USEPA guidance on completing risk assessments, establishing PRGs, and selecting remedies clearly states that uncertainties must be evaluated, and their impacts considered in the context of decision making. USEPA's 1991 Guidance for Establishing PRGs states "[r]isk based PRGs are associated with varied levels of uncertainty depending on many factors … To place risk based PRGs that have been developed for a site into perspective, an assessment of the uncertainties associated with the concentrations should be conducted."[5] USEPA's Rules of Thumb states that evaluating and discussing uncertainties is a key component of the risk characterization process that is critical for the selection of a remedy.

[1] BHHRA (AR 685631).

[2] EA Memorandum (AR 9385075).

[3] Risk Assessment Guidance for Superfund (RAGS): Volume 1 – Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals), Interim. USEPA, Office of Emergency and Remedial Response, Washington, DC. EPA/540/R-92/003. 1991. (RAGS B).

[4] Region 6's HHRA Addendum at 2.

[5] Rules of Thumb at 6, 8.

- The non-cancer hazards presented for the construction worker are not consistent with those presented in the BHHRA (Integral 2013) for this receptor, but were presented in the Proposed Plan. The Proposed Plan provides no backup for how these non-cancer hazards were calculated. These calculations were not provided in Region 6's HHRA Addendum.

**Principal Threat Waste**

In addressing the NRRB's comments on Principal Threat Waste (PTW), Region 6 relies on the argument that "with the regular occurrence of severe storms and flooding in the area, there is uncertainty that the waste material can be reliably contained over the long-term and should therefore be considered highly mobile." As stated above, the existing cap, which was only designed for a 100-year storm event performed exceptionally well in a 500+ year storm event (Hurricane Harvey) which occurred the month prior to Region 6's submission of the Region 6 Response. There was no catastrophic change in river course at the cap, or release from the existing cap. Region 6 had experts from USACE assess the long-term stability of an enhanced cap, and USACE concluded that with the enhancements envisioned under Alternative 3aN, the enhanced armored cap would have long-term reliability from scour related processes.

These observations and conclusions by USACE indicate the waste material can be reliably contained and should not be considered PTW. The additional evidence about the cap's performance during Hurricane Harvey further confirms that the waste can be reliably contained and therefore is not PTW.

Region 6's apparent willingness to ignore real-world performance of the existing cap under the very circumstances it relies on in concluding that the waste cannot be reliably contained demonstrates that Region 6 is not prepared to consider the actual factual information that is available to it – and in particular, new and highly relevant facts not available to it when it selected its proposed remedy – that are inconsistent with its conclusions.

**Remedy Effectiveness**

The FS performed by Region 6 includes an evaluation of an enhanced cap that includes recommendations provided by the USACE report, referred to as Alternative 3aN. That evaluation is not discussed or even acknowledged as an alternative in the summary of alternatives described by Region 6 in the Region 6 Response (see the summary table of remedial alternatives on p. 15 of the Region 6 Response). This would appear to be a blatant attempt to disregard and to not fully evaluate an alternative that was developed, recommended and supported by USACE work under Region 6's direction.

**Army Corps of Engineers Report Comment**

Region 6 continues to refer to modeling that USACE completed for a hypothetical synoptic occurrence of Hurricane Ike and the October 1994 flood with a peak discharge of 115,000 cubic feet of water per second (cfs) occurring at the time of peak storm surge height at the Site. According to Region 6, the results of that modeling indicated there could be substantial displacement of the cap that would result in releases of the underlying waste.

Region 6 fails to acknowledge, however, that:

- Files for the modeling performed by the USACE for USEPA are not available, due to the failure of a USACE computer that contained those files, and therefore that the results of the modeling cannot be replicated. The loss of the modeling data was only disclosed after the comment period of the Proposed Plan closed, and it not apparent that USEPA has taken any steps to replicate the modeling results.

- Respondents were unable, using the available information, to replicate the reported results of the modeling that underpins Region 6's rejection of the capping alternative. Region 6 also rejected requests by Respondents to discuss the modeling results with the USACE in order to understand why Respondents' modeling did not replicate the reported results.

- USEPA did not ask the USACE to model the Alternative 3aN enhanced cap before it selected its Proposed Plan. Unless Region 6 has since done so – but has not shared the results of that modeling with Respondents or the public – it did not model the enhanced capping alternative it rejected.

Region 6 notes that the uncertainty inherent in any quantitative analysis technique used to estimate the long-term (500 years or more) reliability of the cap is very high. It ignores, however, that there is now ACTUAL data – not modeling results – that demonstrates the performance of the existing cap in an "ultra-extreme" event that Region 6 had suggested might result in a catastrophic failure of the cap. As discussed above, Region 6 has acted to rush to a final remedy selection without even considering any post-storm data or observations of the performance of the cap during the Hurricane Harvey flood. For comparison, this flood event produced flows of over 330,000 cfs at the peak of the storm. The post-storm data and observations indicate the USACE model of the existing cap is extremely conservative and that it grossly overestimated the potential impacts of a severe storm on the existing cap, which means that the Alternative 3aN cap with the enhancements that USACE recommended will assure long-term cap reliability. Region 6 continues to ignore those recommendations.

**Cost**

The NRRB recommended that Region 6 provide more detailed alternative cost estimates; however, Region 6 does not provide any new information or detail in the Region 6 Response. As stated previously, the actual cost for removing the existing cap (something that has never before been done) and then excavating the underlying waste would be significantly higher than the cost estimate that Region 6 presented to the NRRB, given the BMPs which would be required. Its cost would very likely exceed the plus or minus 50% factor quoted by USEPA. This is a glaring omission in Region 6's response to the NRRB, in that one of the remedy selection criteria in the CERCLA process is cost and a remedy that is not cost-effective does not meet the selection criteria.