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SECRETARY

State of Louisiana
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL COMPLIANCE

January 6, 2016

Apache
c/o Michael Pisani & Associates
Attn.: Jon Miller
1100 Poydras
1430 Energy Center
New Orleans, LA 70163

RE: Sediment Summary Report Technical Review and Comments
Belle Isle; **AI Number 197778**
Belle Isle (Sediment); Former LADNR Act 312 Legacy Site
South of Morgan City/East of Wax Lake Outlet Delta
St. Mary Parish, Louisiana

Dear Mr. Miller:

The Louisiana Department of Environmental Quality (LDEQ) has completed the technical review of the document *Belle Isle Sediment Data* dated July 31, 2015. The Department understands that you requested for your client (Apache) a technical review of the sediment data as presented in the aforementioned submittal. It is also the Department's understanding that you requested the review, per LDNR (Gary Snellgrove), in support of closure under Statewide Order 29-B.

The Department has completed the review of the sediment data and associated Risk Evaluation/Corrective Action Program (RECAP) evaluation presented in the document. The summary and conclusions cannot be approved prior to receipt of additional information as noted in the attached comments.

This facility has been assigned an internal tracking number which must appear on all correspondence submitted to the Department. The Agency Interest (AI) number for this facility is **197778**.

Apache (c/o Michael Pisani & Associates)
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Please direct all future correspondence regarding remediation issues in duplicate to:

Gary A. Fulton Jr., Administrator
Underground Storage Tank and Remediation Division
P.O. Box 4312
Baton Rouge, LA 70821-4312

If you have any questions concerning this matter, you may contact me at dana.shepherd@la.gov
or 225-219-3077.

Sincerely,



Dana C. Shepherd, MSPH
Underground Storage and Remediation Division

c: Imaging Operations – Solid Waste
Darlene Williams - USTRD

Gary Snellgrove
Louisiana Department of Natural Resources
Office of Conservation
617 North 3rd Street, 9th floor
Baton Rouge, LA 70802

Belle Isle Sediment Data
July 31, 2015
Apache
AI# 197778
Technical Review Comments

Sediment Data

- Please provide a detailed discussion of the extraction and analytical methods used in this assessment. As you are aware, LDNR and LDEQ have different extraction methods and manage barium based on different forms (soluble vs insoluble).
- It is noted that PAHs were below their detection limits. Please provide a data evaluation discussion including the acceptability of the detection limits achieved by the laboratory for this investigation and assessment.
- The method for estimating the concentration of soluble barium is not consistent with RECAP methods.

Sediment Evaluation: Human Health Screening Assessment

- RECAP standards developed for soil are typically not applicable for the evaluation of sediments. It is unclear how RECAP soil standards are appropriate in this situation at the Belle Isle area. If there is potential for human contact with sediments in the area(s) of concern please provide that information and specifics of potential exposure. Would hunters, fisherman or other recreational users exhibit behaviors or have activities where they might be exposed to sediments?
 - The assumptions of potential exposure incorporated into RECAP soil standards do not address or include any typical scenario of potential exposure to sediments. It cannot be assumed that soil standards are protective of potential exposure to sediments due to the differences in the way potential receptors are exposed.
- It is stated the seafood ingestion pathway was not assessed because barium accumulates in non-edible portions of fish and TPH analysis in fish tissue is non-specific to TPH.
 - It is the Department's experience that neither of these assumptions hold true.
 - The ATSDR Toxicological Profile for Barium and Barium Compounds indicates a potential uptake of barium by fish.
 - This would certainly be dependent on the form of barium. A detailed discussion of the forms of barium at the site in addition to submitting the references supporting the statement regarding barium and edible fish tissues should be provided.
 - The Department has observed and reviewed datasets of TPH in fish tissue that support the fact that the amount of petroleum hydrocarbon in fish is highly dependent on species. In addition, the availability of aliphatic and aromatic fractions for petroleum hydrocarbons associated with the site gives more dependable data on which to evaluate TPH in fish tissues.
 - Please provide any references and supporting information and discussion regarding TPH in fish tissue.
- It is stated that both soluble and insoluble forms of barium were compared to RECAP standards. The RECAP evaluation of barium is based on the assumption that barium is in the soluble form of barium chloride. Only those data reflecting the Department's preferred

extraction and analytical methods for barium chloride would, therefore, be acceptable to compare to any RECAP standard. It is not appropriate to compare both soluble and insoluble barium concentrations to the same standards. This is secondary to the comment as noted above regarding soil standards not applicable to sediment evaluation.

- The extraction and analytical methods for barium are of importance in the evaluation of barium, as is the assumption and information regarding the form of barium (soluble vs insoluble).
- It is suggested that the 29-B Submerged Wetlands criteria for barium would be applicable for comparison to sediment concentrations in this situation. Please provide a discussion as to the applicability of this approach.

Sediment Evaluation: Ecological Screening Assessment

- It is noted that the sediment data is compared to USEPA Ecological Invertebrate Soil Screening Levels for barium and for PAHs.
 - Likewise for the comparison to soil RECAP standards above, it is expected that ecological standards for soil would not be applicable to comparison to sediment. The Department did find some freshwater sediment screening standards that may be more appropriate for use at this site.
 - Again, both extraction and analytical methods consistent with regulatory requirements are necessary for implementation of RECAP.

Tables/Appendices

- The lab report indicates there may be some issue with detection limits for some compounds in some samples. Please provide a data quality and usability discussion for the data.
- Please provide the conversions from dry weight to wet weight used in the evaluation.
- The TCLP (x 20) method for estimating soluble barium concentrations is not consistent with RECAP analytical methods. The resulting concentrations should not be used to compare to standards presented in RECAP.

The summary and conclusions cannot be approved at this point in time prior to receipt of additional information as noted above.