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ADMITTED IN LOUISIANA

June 14, 2021

Via HAND DELIVERY AND EMAIL

Honorable Richard P. Ieyoub
Commissioner of Conservation
Louisiana Department of Natural Resources
617 North 3rd Street, 9th Floor
Baton Rouge, LA70802

Mr. John Adams, Esq.
Louisiana Office of Conservation
LaSalle Building, 9th Floor
P.O. Box 94275
Baton Rouge, Louisiana 70804

Re: *Jeanerette Lumber & Shingle Co., LLC v. ConocoPhillips Company, et al.*
16th Judicial District Court, Parish of Iberia, No. 134307, Div. "E"
DNR OC Legacy File No. 016-065

Dear Mr. Adams:

On behalf of the plaintiff, Jeanerette Lumber & Shingle Co., LLC ("Jeanerette" or "JLS"), in the above-captioned case, we respectfully submit these comments regarding the Site Investigation Report and Remediation Work Plan – Chevron Limited Admission, dated May 14, 2021, submitted by Environmental Resources Management Southwest, Inc. ("ERM") on behalf of Chevron U.S.A., Inc. ("Chevron").

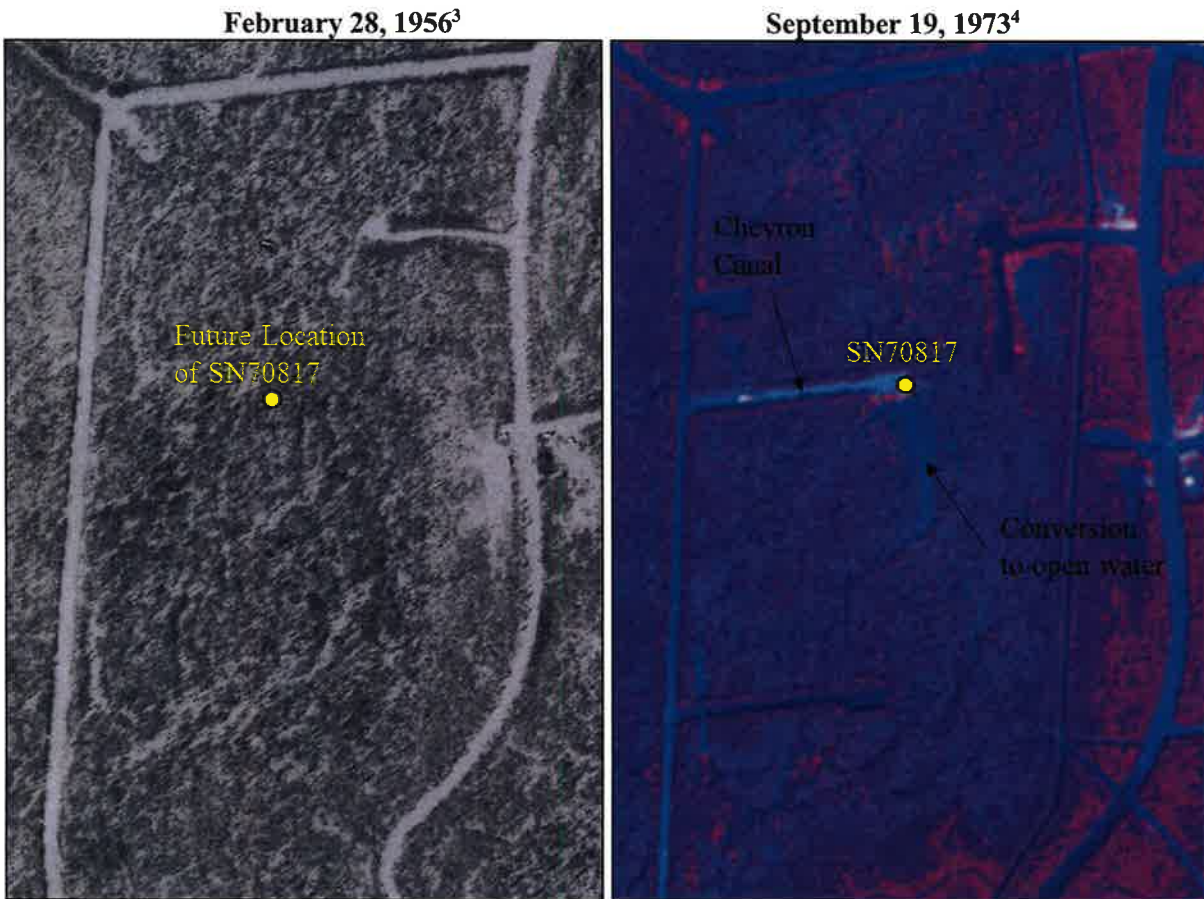
Chevron has submitted yet another Limited Admission plan to the LDNR that lacks merit and functionality. Without fully characterizing the site, Chevron puts forth an incomplete and unreliable remediation plan. Relying on flawed data sets, Chevron renders unsupportable findings and misguided proposals. Ignoring relevant data, Chevron brushes aside obvious impacts to the subject property. Failing to comply with regulatory obligations, Chevron can't meet minimum standards for a reliable plan. Misapplying standards and analyses, Chevron cannot adequately evaluate site characteristics, conditions, or risks. Chevron's plan should be denied on its face, any exceptions to SWO 29-B denied, and alternatively, its hypothetical plan for groundwater be approved.

As required by Sections 613 and 617, we note that these comments seek only the application of the rules and regulations of the Office of Conservation; we have included related attachments; and we have copied here all parties to the above-captioned matter.

I. Chevron’s characterization of the site cannot support its proposed remediation plans. Likewise, Chevron fails to account for all potential future land use scenarios.

A. Chevron should be required to fully characterize the site within the Limited Admission area.

In 1958, operators dredged the “Chevron Canal” to reach the drilling location of the Jeanerette L&S No. 1 well (sn70817).¹ As a result of the operation of this well and associated discharges, the JLS property became contaminated with oilfield waste.² An example of the impacts to the property is evident from the 1973 historical imagery, where the cypress forest south of the well site and canal converted to open water. Sample data in these de-forested areas confirm the presence of oilfield wastes.



In 1983, after Chevron plugged and abandoned its Jeanerette No. 1 well, Apache Corporation’s predecessor dredged the “Apache Canal” to reach the drilling location of the JL&S No. 1 well (sn187214).⁵ The Apache Canal extended south from the Chevron Canal directly through the heart of the damaged area

¹ Louisiana Department of Natural Resources, Well File, Jeanerette L&S No. 1 (sn70817) – **Attachment 1**

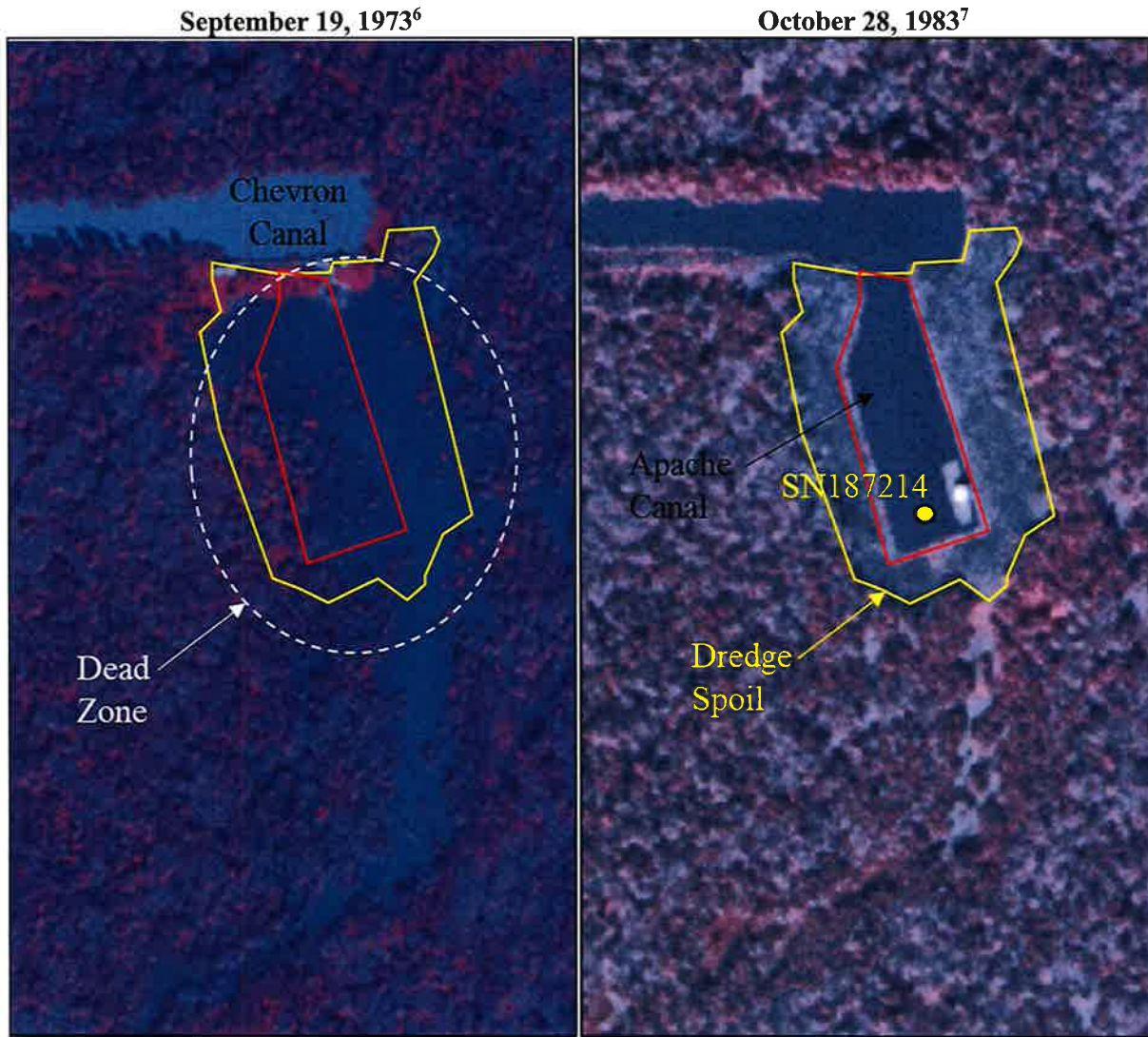
² May 14, 1969, Letter from Louisiana Department of Conservation to K&H Operating Co. (Chev_JLSCPC-0000068) – **Attachment 2**; September 17, 1969, Letter from Louisiana Department of Conservation to K&H Operating Co. (Chev_JLSCPC-00000145) – **Attachment 3**; March 2, 1971, Letter from Louisiana Department of Conservation to Kewanee Oil Co. (Chev_JLSCPC-00000134) – **Attachment 4**

³ February 28, 1956, aerial photograph – **Attachment 5**

⁴ September 19, 1973, aerial photograph – **Attachment 6**

⁵ Louisiana Department of Natural Resources, Well File, JL&S No. 1 (sn187214) – **Attachment 7**

on the JLS property. The dredging of the Apache Canal effectively unearthed much of the damage caused by Chevron's Jeanerette No. 1 well (sn70817) and redistributed contaminated site media outside the bounds of the Apache Canal.



In this case, Chevron has failed to adequately sample the spoil bank of the Apache Canal where contaminated media was undoubtedly deposited after being excavated from the “dead zone.” Within the area of Limited Admission, Chevron took a single sample on the Apache Canal spoil banks at JLS-11. The soil samples there show exceedingly high levels of salt contamination that drastically increase with depth. Chevron sampled the Apache Canal spoil bank at only one other location (JLS-12), which falls outside the area of the Limited Admission. The sample data at JLS-12 also indicates extremely high levels of salt that increase with depth.

Chevron does not provide a single sample within the area of Limited Admission that is located in the Cypress swamp extending beyond the backside of the Apache Canal spoil bank—locations where one would expect seepage of contaminated spoil bank material to take place. The only samples taken outside

⁶ September 19, 1973, aerial photograph

⁷ October 28, 1983, aerial photograph – **Attachment 8**

of the Apache Canal spoil bank are located outside the area of the Limited Admission. These samples, JLS-13 and SB-4, likewise show high levels of salt that increase with depth.

The Apache Canal spoil banks serve as a likely source of contamination that continue to impact the surrounding JLS property. Nonetheless, Chevron has failed to fully characterize the Apache Canal spoil banks and adjacent cypress swamp, and, instead, Chevron proposes a “do nothing” remedial strategy. Without a proper assessment of this source of contamination, Chevron’s proposals hold little merit and must be denied.

B. Chevron’s proposed remedial alternatives do not account for all potential future land use scenarios.

Chevron proposes no remediation for contaminated site media on the JLS property. But in the event the panel disagrees with Chevron’s “do nothing” plan, Chevron provides two contingent sediment remediation plans. The first consists of placing a synthetic cap over the contaminated sediment. The second contingent plan involves excavating the impacted sediment to a depth of three feet for offsite disposal. Each one of Chevron’s proposals fails to account for potential future land use and exposure scenarios.

Many sample locations within the Limited Admission Area found high concentrations of oilfield constituents that increase with depth, without any additional deeper sample data to determine the extent of the impacts. For example, at JLS-2, EC concentrations reach as high as 49 mmhos/cm to a depth of 6 feet. No sampling was conducted immediately below that depth to determine the vertical extent of these increasing concentrations. At JLS-2 and JLS-23, TPH-D readings increase with depth up to 6 feet without any additional samples taken immediately below these depths to determine the vertical extent of increasing concentrations.

One likely potential future use scenario of the subject property includes the need to dredge areas of the property for access. In fact, Chevron acknowledges such a possibility as part of its risk analysis, noting that “These RME assumptions also address a hypothetical scenario in which canal bottom sediments are dredged and placed on spoil banks and become more accessible for recreational contact.”⁸ In this scenario, canal dredging would require excavating a canal a minimum of 70 feet wide and 8 feet deep to accommodate access of drilling equipment.⁹ Canal depths at many sample locations reach only a couple feet deep.¹⁰ Under such a scenario, a sediment cap or superficial cleanup of impacted sediment would not prevent the unearthing of contaminated site media. High levels of contaminated sediments that exceed SWO 29-B numerical standards placed on spoil banks would impede plant growth and leach into the surrounding waterways. Chevron cannot assure DNR or the plaintiff-landowner that any waste remaining on the JLS property will be left undisturbed and the future environmental harm will not result from redistribution of contaminated site media.

II. Chevron’s evaluation of rooting depths has no bearing on Chevron’s proposed remedial alternatives.

A. Chevron has only taken responsibility for canal impacts, rendering its root study and ecological risk analyses for swamp habitats meaningless.

⁸ ERM Site Investigation Report and Remediation Work Plan – Chevron Limited Admission, dated May 14, 2021, pg.23

⁹ Baumann, R.H., et al., “Onshore Oil and Gas Activities Along the Northern Gulf of Mexico Coast - Final Report,” March 10, 1989, U.S. Environmental Protection Agency, page 27

¹⁰ Chevron’s canal depth measurements between sample locations are primarily conjecture, unsupported by data. (See, ERM Site Investigation Report and Remediation Work Plan – Chevron Limited Admission, dated May 14, 2021, Figures 12 & 13)

On April 28, 2021, Chevron filed a Limited Admission, including an exhibit depicting the Limited Admission Area.¹¹ As part of Chevron's Limited Admission Plan, Chevron has provided analytical data for several sample locations. However, none of the samples within the Limited Admission Area represent site media located in the cypress swamp on the JLS property.

Chevron goes to great lengths to examine rooting depths of trees and the ecological risks to swamp habitats. However, the only impacts Chevron has taken responsibility for occur within the canal environment. As previously noted, within Chevron's Limited Admission Area, Chevron provides no sample data for the swamp located behind Apache Canal spoil banks and has not adequately characterized the Apache Canal spoil banks. Therefore, any assessment of rooting depths and ecological risks to swamp habitats is inapplicable to the Limited Admission filed by Chevron.

Any proposed remedial strategies for canal bottoms should be based on the damages for which Chevron has accepted responsibility. Rooting depths have nothing to do with the area in which Chevron has admitted responsibility. And should therefore be entirely disregarded. The area of admission includes samples taken within the canal and does not consider any damage associated outside of the canal. Therefore, rooting depths should play no part in the evaluation of Chevron's Limited Admission.

B. In the event rooting depths are considered, Chevron's evaluation is inappropriate and inconsistent with available data.

As part of its Limited Admission plan, Chevron attaches a root study that purportedly evaluates the effective root zone of the trees within the swamp on the JLS property.¹² Plaintiff objects to any reference to rooting depths in considering the appropriate remedial options on the JLS property for two main reasons: SWO 29-B contains no depth restriction for addressing environmental damage¹³; and because Chevron has not accepted responsibility for any damages to the forested parts of the JLS property. However, in the event the LDNR panel deems it advisable to consider Chevron's root study, it should be noted that Chevron's rooting zone analysis is flawed and unreliable.

First, the Chevron root study documents rooting depths on the JLS property that extend to 24 inches. Despite these findings, Chevron's experts state that "if required, a remediation depth of 18.0 inches would be generous for the areas and trees around the Site."¹⁴ If roots extend to 24 inches by Chevron's own account, any remediation based on rooting depths should extend at least to 24 inches, not 18 inches as Chevron proposes.

Second, the Chevron root study is inconsistent with other Chevron reports and the Iberia Parish Soil Survey. This inconsistency falls within a pattern where Chevron's root zone experts routinely underestimate rooting depths. In fact, in conducting between 35 and 40 root zone studies for litigation, Chevron's rooting zone expert has rarely found roots extending below two feet.¹⁵ A cursory review of a sub-set of Chevron's root zone studies compared to United States Department of Agriculture (USDA) Soil Survey observations shows Chevron's gross underestimates of rooting depths.

¹¹ April 28, 2021, Chevron's Limited Admission of Regulatory Responsibility for Environmental Damage – **Attachment 9**

¹² ERM Site Investigation Report and Remediation Work Plan – Chevron Limited Admission, May 14, 2021, Appendix G (Expert Report and Vegetation Root Study on the Jeanerette Lumber and Shingle Company, L.L.C. Property in Iberia Parish, Louisiana)

¹³ *Agri-South, L.L.C., et al. v. Exxon Mobil Corporation, et al.*, LDNR, Office of Conservation's Most Feasible Plan Developed and Submitted as Required by LA. R.S. 30:29.

¹⁴ See *supra*, ERM Report, Appendix G, pg10.

¹⁵ Luther Holloway Deposition Transcript, February 17, 2021, *Louisiana Wetlands, LLC, et al v. Energen Resources Corp., et al.* (52:15-20; 53:25-54:19) – **Attachment 10**

<i>LA Wetlands, LLC, et al. v. Energen Resources Corp., et al.</i>		
St. Mary Parish Soil Survey¹⁶ (Deepest Documented Rooting Depth for Soil Class on Property)		Holloway Analysis¹⁷ (Deepest Root Depth)
Iberia clay (row crops)	37 inches	Sugarcane = 10.5” Hardwoods = 14”
Galvez silt loam (row crops)	91 inches	
Loreauville silt loam (row crops)	30 inches	
Baldwin silty clay loam (sugar cane)	40 inches	
Schriever clay (conifers & hardwoods)	80 inches	
Harahan (conifers & hardwoods)	65 inches	
Allemands (marshlands)	43 inches	
<i>Hero Lands Company, L.L.C. v. Chevron U.S.A., Inc., et al.</i>		
Plaquemines Parish Soil Survey¹⁸ (Deepest Documented Rooting Depth for Soil Class on Property)		Holloway Analysis¹⁹ (Deepest Root Depth)
Cancienne (cropland)	79 inches	Hardwoods = 15.0” Herbaceous perennials = 15.0”
Schriever (hardwoods)	80 inches	
<i>Jeanerette Lumber & Shingle Co., LLC v. ConocoPhillips Company, et al.</i>		
Iberia Parish Soil Survey²⁰ (Deepest Documented Rooting Depth for Soil Class on Property)		Holloway Analysis²¹ (Deepest Root Depth)
Fausse (Water Tupelo and Bald Cypress swamp)	61 inches	Tupelo gum / Baldcypress = 24.0”

Furthermore, Chevron’s Limited Admission Plan attaches a number of soil boring logs taken from the JLS property that characterize the soil at several sample locations. A review of the boring log descriptions reveals an inconsistency with Chevron’s own root study findings. At sample locations JLS-2, the associated boring log description notes that “rootlets” extend down to a depth of 20 feet.²² At MW-2, “rootlets” are documented down to a depth of 4 feet. These observations are inconsistent with the root

¹⁶ U.S. Department of Agriculture, 2001 Soil Survey of St. Mary Parish, Louisiana – **Attachment 11**

¹⁷ Expert Report and Vegetation Root Study, New 90 LLC Property, St. Mary Parish, Louisiana, October 22, 2020 – **Attachment 12**

¹⁸ U.S. Department of Agriculture, Official Series Description - CANCIENNE Series – **Attachment 13**; U.S. Department of Agriculture, Official Series Description - SCHRIEVER Series – **Attachment 14**

¹⁹ Expert Report and Vegetation Root Study, Hero Lands Company, L.L.C. Property, Plaquemines Parish, Louisiana, May 8, 2020 – **Attachment 15**

²⁰ U.S. Department of Agriculture, Official Series Description - CANCIENNE Series – **Attachment 16**

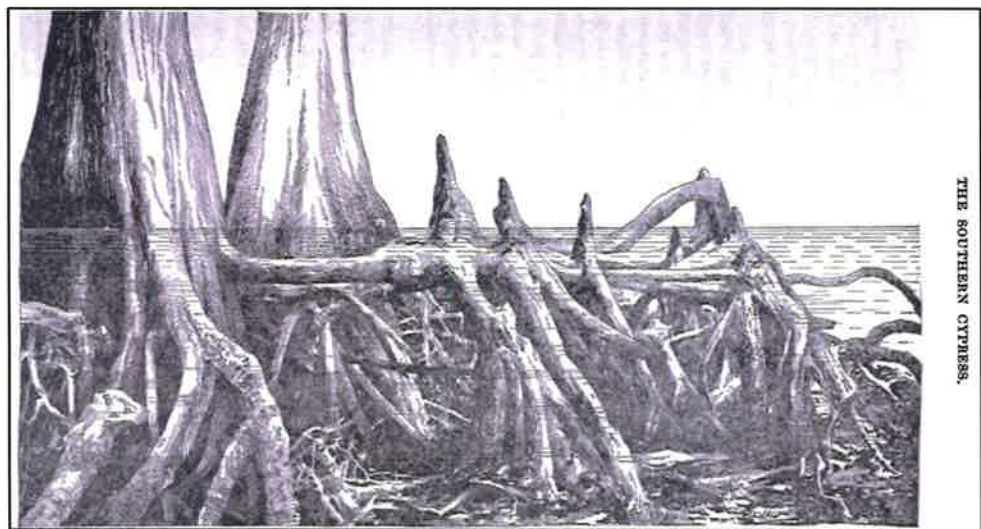
²¹ See *supra*, ERM Report, Appendix G.

²² ERM Site Investigation Report and Remediation Work Plan – Chevron Limited Admission, May 14, 2021, Appendix C (Boring Logs)

study that alleges roots extend no deeper than 2 feet.²³ It's also noteworthy that Chevron's soil boring logs regarding rootlets and iron accumulations (indications of oxygen at depth) appear to confirm the Iberia Parish Soil Survey findings.²⁴

Roots, even small ones, will adsorb whatever is in the soil/water. In fact, records of rooting depths "should emphasize very fine and fine roots, if present, because roots of these sizes are active in absorption of water and nutrients."²⁵ Chevron's methods of probing for roots with a metal rod would not indicate the presence of very fine roots, which could actively take up and absorb water and nutrients. Chevron's methodology to establish the root zone of swamp habitat on the JLS property is flawed and unreliable for making proper rooting depth and remediation determinations.

Not only is Chevron's root study methodology unreliable, it is inconsistent with observations of cypress tree root morphology. The USDA has noted that "The conical base of cypress divides below the surface into about six to ten strong descending and spreading roots, which provide a deep anchorage for the tree. The form suggests that of a mushroom anchor. In addition to the descending roots, a number of large laterals extend outward near the surface like cables and form the widely spreading and branching superficial root system that has been more commonly recognized."²⁶



Sketch of cypress root system extending four feet deep and exposed by erosion (Mattoon 1915).

There is no reason to doubt that based on ERM's boring logs, the Iberia Parish Soil Survey, and documented observations of cypress root morphology, that the cypress trees on the JLS property exhibit rooting depths much deeper than 24 inches.

III. Regardless of site characterizations, Chevron must address SWO 29-B requirements to treat and remove "all" E&P waste, provisions to which Chevron fails to comply.

²³ Chevron's field notes do not include all boring log descriptions. The field notes include boring log descriptions only for the following sample locations: JLS-10; JLS-11; JLS-2.

²⁴ See soil boring log MW-2, noting Iron staining at 4 to 6 feet. See also the USDA Official Soil Series Description for Fausee soil series noting iron accumulations down to 61 inches.

²⁵ U.S. Department of Agriculture, 2017 Soil Survey Manual, Agriculture Handbook No. 18, pg. 194 – **Attachment 17**

²⁶ Mattoon, W.R., 1915, "The Southern Cypress," U.S. Department of Agriculture, Bulletin No. 272.

A. The JLS property does not fit within a one-size-fits-all characterization as a “submerged wetland.”

Chevron characterizes the JLS property as a submerged wetland, pursuant to the definitions used in SWO 29-B. The regulation distinguishes between submerged and elevated wetland areas in the following way:

Elevated Wetland Area—a wetland area which is not normally inundated with water **and** where land mass and levee material are available for mixing with waste fluids during closure of a pit.

Submerged Wetland Area—a wetland area which is normally inundated with water **and** where only levee material is available for mixing with waste fluids during closure of a pit.²⁷

However, Chevron’s classification of the wetlands on the JLS property as “submerged” is not consistent with state and federal agency data that suggests otherwise. In fact, the LDNR has classified nearby property as “elevated” wetlands. At two separate pit sites located east of the JLS property across Bayou Pigeon, both about 4,000 feet away from Chevron’s JLS well #1, the LDNR characterized the sites as elevated wetlands.²⁸

Data from the U.S. Fish and Wildlife Service (USFWS) also seems to contradict the characterization of this property as submerged. The USFWS characterizes the wetlands present on the JLS property as Freshwater Emergent Wetland (PEM1Cs) and Freshwater Forested/Shrub Wetland (PFO1/2F).²⁹ These codal designations are defined as follows:

PEM1Cs – Palustrine, Emergent, Persistent, Seasonally Flooded, Spoil³⁰

Seasonally flooded – “**Surface water is present for extended periods (generally for more than a month) during the growing season, but is absent by the end of the season in most years.** When surface water is absent, the depth to substrate saturation may vary considerably among sites and among years.”³¹

PFO1/2F – Palustrine, Forested, Broad-Leaved Deciduous, Needle-Leaved Deciduous, Semi-permanently flooded³²

Semi-permanently flooded – Surface water persists **throughout the growing season** in most years. When surface water is absent, the water table is usually at or very near the land surface.³³

²⁷ LAC Title 43, Part XIX, §301 (emphasis added).

²⁸ Pit ID 23P0115 – **Attachment 18**; Pit ID 23P0116 – **Attachment 19**

²⁹ See *supra*, ERM Report, Figure 5 – USFWS Wetlands

³⁰ Federal Geographic Data Committee, 2013. Classification of Wetlands and Deepwater Habitats of the United States. – **Attachment 20**

³¹ Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC., pg. 38 (emphasis added) – **Attachment 21**

³² Federal Geographic Data Committee, 2013. Classification of Wetlands and Deepwater Habitats of the United States.

³³ Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC., pg. 38. (emphasis added)

These habitat classification definitions stand in stark contrast to the SWO 29-B definition of a submerged wetland that is “normally inundated” with water. In other words, the varying habitats found on the JLS property only have water present during the growing season, and for some habitats, only a small portion of the growing season. These water regimes should not be characterized as “normally inundated”.

Chevron’s own findings support a site characterization of an elevated wetland. ERM experts documented 50 different vegetative species observed on the JLS property. Many of these species were identified as Facultative and Facultative Upland, according to USDA classifications as defined below:

Facultative (FAC). “Occur in wetlands and non-wetlands. These plants can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.”³⁴

Facultative Upland (FACU). “Usually occur in non-wetlands, but may occur in wetlands. **These plants predominately occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soils or floods the soil surface seasonally.**”³⁵

A site containing plants that can occur, with some predominantly occurring, in upland settings do not indicate that the property is normally inundated with water. And to apply a blanket characterization of the JLS property as a submerged wetland would be inconsistent with agency observations and data, and Chevron’s own observations of site conditions.

B. Even if the JLS could be classified as a “submerged wetland”, Chevron must remove all E&P waste.

The sample data available for the JLS property clearly indicates the presence of elevated salt readings in site soils and sediments. Despite their proposed plan, Chevron did not admit responsibility for the extensive chloride contamination present in the soils at the site, nor did Chevron submit a plan to remediate such contamination. The reason is because Chevron, as part of its Limited Admission plan, notes that SWO 29-B does not have numerical standards for salts in “submerged wetlands”—a characterization by which Chevron attempts to classify the site. Chevron states, “Furthermore, there are no 29-B standards for salt parameters in submerged wetland settings....soil samples were compared to Statewide Order 29-B standards for land treatment in submerged wetlands.”³⁶ Because there are no numerical salt standards in SWO 29-B for submerged wetlands for the land treatment option, Chevron effectively ignores any of the salt concentrations in the soils and sediments on the site.

Chevron’s assumption that there is no salt parameter for submerged areas is based upon a selective reading of 29-B. But, Chapter 3 of 29-B is clear:

Reserve pit fluids, as well as drilling muds, cuttings, etc. from holding tanks, may be disposed of onsite provided the technical criteria of §313.C, D, E, F, or G below are met, as applicable. **All E and P waste** must be either disposed of on-site, temporarily used in hydraulic fracture stimulation operations in accordance with the requirements of LAC 43:XIX:313.J or transported to an approved commercial facility or transfer station in

³⁴ Lichvar, R.W., 2012, National Wetland Plant List Indicator Rating Definitions, US Army Corps of Engineers, pg. 5 (emphasis added) – **Attachment 22**

³⁵ *Id.* (emphasis added)

³⁶ ERM Site Investigation Report and Remediation Work Plan – Chevron Limited Admission, May 14, 2021, pg. 8

accordance with the requirements of LAC 43:XIX.Chapter 5 or under the direction of the commissioner.³⁷

“E and P waste” includes “drilling wastes, salt water, and other wastes associated with the exploration, development, or production of crude oil or natural gas wells...”³⁸ Produced water, in turn, is a well-known “E and P waste,” containing exceedingly high levels of chloride salts.³⁹ There should be no dispute that Chevron introduced high levels of salt into the soils and sediments of the JLS property. As such, these salt constituents constitute “E and P waste,” which must be addressed and in turn, as indicated above, require offsite disposal.

The rationale for addressing all E&P waste is clear when considering the impacts of salt on freshwater wetland environments. The absence of numerical salt standards for submerged wetlands does not obviate the fact that salt can impact submerged wetlands environments. In fact, plaintiff’s experts have calculated that an EC of 6.3 would represent a salt concentration that would result in some mortality of seedlings, and would likely stress the remaining population of trees. In addition, it is not a coincidence that where high levels of salt are found in the cypress swamp, historical aerials show the swamp converting to open water (i.e. the trees die). Just because SWO 29-B does not contain numerical standards for salt in submerged wetlands does not mean that the JLS property has not been impacted by the dumping of oilfield brine into the soils and sediments of the property.

Lastly, Chevron made no attempt to determine whether the spoil banks surrounding the access canals would be characterized as elevated or submerged wetlands. Salt standards are provided in SWO 29-B for elevated wetlands. The spoil banks should likely be considered elevated wetlands according to SWO 29-B definitions. Chevron has failed to adequately characterize and sample the spoil banks within the Limited Admission Area. A proper assessment of the JLS property cannot be completed without this data.

IV. Chevron does not comply with SWO 29-B requirements.

A. Chevron’s Hypothetical 29-B Plan failed to calculate background concentrations for groundwater, and thereby fails to comply with SWO 29-B.

In its Hypothetical 29-B Plan, Chevron developed a groundwater remediation program to address elevated chlorides concentrations. Chevron selected a target concentration for cleanup of 250 mg/L. However, pursuant to 29-B, the appropriate cleanup level is background.⁴⁰ Chevron consistently remarks that 29-B has no numerical standards for groundwater remediation, and for that reason it must use EPA’s secondary maximum contaminant level standards. Of course SWO 29-B doesn’t have numerical standards for groundwater remediation because background levels of constituents can differ from site to site. Clearly SWO 29-B requires cleanup of groundwater to background conditions. Chevron at this site has made no effort to calculate background levels.

³⁷ LAC 43:XIX.Subpart 1.Chapter 3 § 313(A) (emphasis added); *see also*, LAC 43:XIX.Subpart 1.Chapter 3 § 301 (defining “E and P waste” as “exploration and production waste”).

³⁸ LAC 43:XIX.Subpart 1.Chapter 5 § 501.

³⁹ 29-B accounts for these E&P wastes by providing standards for Electrical Conductivity (EC), Sodium Adsorption Rate (SAR), Exchangeable Sodium Percentage (ESP), and Leachate Chlorides.

⁴⁰ 2011, First Amended Memorandum of Understanding Between Louisiana Department of Natural Resources Office of Conservation and Louisiana Department of Environmental Quality Regarding Approval of RECAP Groundwater Evaluation and Remediation Plans at Oilfield Sites. Office of Conservation.

Chevron notes that the 250 mg/L standard for chlorides is based on an estimated background concentration using monitoring wells on the site. However, Chevron has not identified a single background well. Or made any effort to calculate background. In fact, sample data for chlorides came from wells that could potentially all be located within a plume of chlorides emanating from the Chevron well site. Without an established background standard, Chevron cannot comply with SWO 29-B requirements.

B. Chevron has not fully characterized the site because the contamination has not been fully delineated.

Chevron has all but conceded that it has not delineated the site, saying “ERM believes that, based upon the unique site setting and the currently available analytical data, additional sampling data is not likely to change the proposed remedy. However, ERM anticipates that LNDR may ultimately request additional sampling for delineation purposes.”⁴¹ To comply with SWO 29-B and fully characterize the site to evaluate all risks, Chevron must delineate the contamination on the JLS property. Chevron has not complied with the rules. In fact, Chevron lays out a plan costing over \$120,000 to conduct more delineation sampling. How can reliable remedial strategies be developed with the nature, extent, and kind of contamination on the JLS property still unknown?

With respect to groundwater, Chevron has not calculated a background and has not evaluated groundwater conditions north of the impacted where the groundwater flows, according to Chevron’s own potentiometric maps. Chevron alleges that some samples are consistent with natural background groundwater quality. However, again, Chevron has made no effort and does not have the appropriate data to calculate background concentrations. Without this data, Chevron’s allegations are unfounded.

With respect to soil, Chevron states that soil and sediment are “generally well delineated”. But this qualified assessment is not the standard set forth in SWO 29-B. The oilfield constituents present on the JLS property must be vertically and horizontally delineated to ensure that appropriate remedial strategies can be developed to address all areas of concern. Chevron does not meet this standard.

C. Chevron offers no supportable reason to ignore SWO 29B by leaving groundwater at the JLS property contaminated with radium.

Chevron has reported levels of radium in groundwater at high concentrations of combined Radium 226 and Radium 228. These levels far exceed the EPA standard of 5 pCi/L for combined radium 226/228. Chevron argues that no standards apply to Radium in groundwater at the JLS property because of its naturally poor water quality and low yield. However, that is most certainly not the standard. The remedial standard set forth in SWO 29-B for groundwater is background. Chevron has not calculated background concentrations for constituents of concern in the groundwater at the JLS property. Chevron ignores the background groundwater standards set forth in SWO 29-B, for not only radium, but all other groundwater constituents present on JLS property as a result of oilfield activities.

V. Chevron’s RECAP risk analysis is fundamentally flawed and cannot serve as a reliable basis for remedial decisions.

A. Chevron failed to analyze sediment data using dry-weight concentrations.

Chevron consistently uses wet weight concentrations when analyzing its data using RECAP guidance. However, RECAP requires that for soils with high moisture content such as sediments, the reported concentrations should be adjusted to account for the percent moisture by converting data to a dry weight basis.

⁴¹ ERM Site Investigation Report and Remediation Work Plan – Chevron Limited Admission, May 14, 2021, pg. 28

“Dry Weight versus Wet Weight. In general, it is not necessary to adjust the reported constituent concentration in soil prior to calculation of the AOIC. Typically, exposure concentrations (and the risk-based SS and RS) are based on a wetweight concentration whereas source concentrations (and environmental fate and transport SS and RS) are based on a dry-weight concentration. Analytical data for soil are routinely reported on a wet-weight basis. If requested, the analytical laboratory can report the percent moisture of the sample to allow for the conversion of the results to a dry-weight basis. In general, most soils have a relatively low percent of moisture and the difference between the wet-weight concentration and the dry-weight concentration is not usually significant. Therefore, it is not necessary to adjust the reported constituent concentration prior to calculation of the AOIC for comparison with an environmental fate and transport SS or RS. For soils with a high moisture content (such as sediment), the wet-weight and dry-weight concentrations may differ significantly, therefore, the reported concentration should be adjusted to account for the percent moisture prior to calculation of the AOIC for comparison with an environmental fate and transport SS or RS.”⁴²

Using dry weight to evaluate sediment sampling is consistent with Louisiana Department of Environmental Quality (LDEQ) practice.⁴³ Failing to make these adjustments, Chevron’s analysis underestimates that risks posed by constituents of concern on the JLS property.

B. Chevron uses inappropriate input factors to analyze sediment data with RECAP.

Chevron’s experts have been involved in evaluating sites impacted by oilfield activities all across Louisiana. Some of these sites have involved contaminated sediments and submission of plans to the LDEQ. The LDEQ has made it quite clear in the past that RECAP is not designed to address risk to receptors from exposure to sediments. Despite these concerns, Chevron’s experts have used RECAP to perform risk analyses of contaminated sediments. For example, at a site in Belle Isle, Michael Pisani & Associates (MP&A) submitted a RECAP evaluation of contaminated sediments located within access canals at the site. In response, LDEQ noted that:

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.⁴⁴

MP&A responded to the LDEQ by calculating site-specific sediment standards, based on alleged reasonable maximum exposure scenarios. These calculations included sediment standards for adult and juvenile recreational receptors. MP&A identified several input factors to make their calculations.

⁴² RECAP, page 45

⁴³ See for example, July 12, 2011, Letter from LDEQ to Exide Technologies (LDEQ EDMS) – **Attachment 23**

⁴⁴ January 6, 2016, Letter from LDEQ to Apache re Sediment Summary Report Technical Review and Comments, Belle Isle (LDEQ EDMS 10038874) (emphasis added) – **Attachment 24**

In the JLS case, numerous exceedances of oilfield constituents are present in the sediment on the property. In evaluating these contaminated sediments, Chevron chose to perform a RECAP analysis, again ignoring the limitations of RECAP regarding sediments. Chevron’s experts calculated a site-specific sediment standard using RECAP soil risk assessment algorithms in combination with exposure assumptions they deemed appropriate for the site. However, many of the input factors used by Chevron’s experts in this case varied from those they used at Belle Isle. The input factors used for the JLS site would serve to increase the protective limit under the given exposure scenario compared to those used at Belle Isle.

	Belle Isle ⁴⁵		JLS ⁴⁶	
	Juvenile	Adult	Juvenile	Adult
Exposure Duration, years	6	30	6	30
Reasonable Maximum Exposure Frequency	104 (2 days/week for 52 weeks)	104 (2 days/week for 52 weeks)	104 (2 days/week for 52 weeks)	104 (2 days/week for 52 weeks)
Body Surface Area	5300 cm ²	6045 cm ²	2373 cm ²	6032 cm ²
Body Weight	88.8 kg	112.7 kg	15 kg	80 kg
Soil Adherence Factor	5.64	0.39	0.2	0.07

Also, the Belle Isle analysis performed by Chevron’s experts provides separate standards for juveniles and adults.

Constituent	SED _{ni} Adult	SED _{ni} Juvenile	Maximum Sediment Concentration (mg/kg) wet weight
	(mg/kg) wet weight	(mg/kg) wet weight	
Barium	1.98E+05	1.56E+05	1.53E+03
Aliphatics >C12-C16	4.65E+04	3.66E+04	9.70E+01
Aliphatics >C16-C35	6.43E+05	9.25E+04	1.58E+02
Aromatics >C12-16	4.60E+04	6.62E+04	2.10E+01
Aromatics >C16-C21	1.21E+04	1.44E+03	4.30E+01

The calculated sediment standards and associated sediment concentrations for the Belle Isle site.⁴⁷

But Chevron chose not to provide a final exposure sediment standard for juveniles and adults at the JLS property as they did in Belle Isle—their experts only provided a single exposure standard at the JLS property. In the JLS case, Chevron’s experts fail to consider how differing exposure scenarios could present risk to juveniles and adults differently.⁴⁸

⁴⁵ July 26, 2016, Michael Pisani & Associates, Inc., Response to LDEQ Comments, Belle Isle (LDEQ EDMS 10292941) (emphasis added) – **Attachment 25**

⁴⁶ ERM Site Investigation Report and Remediation Work Plan – Chevron Limited Admission, May 14, 2021, Table N-10

⁴⁷ July 26, 2016, Michael Pisani & Associates, Inc., Response to LDEQ Comments, Belle Isle (LDEQ EDMS 10292941), pg. 6 (emphasis added)

⁴⁸ ERM Site Investigation Report and Remediation Work Plan – Chevron Limited Admission, May 14, 2021, Table 11.

Lastly, in conducting its MO-3 risk assessment for contaminated sediments on the JLS property, Chevron blatantly ignores the limitations of such an assessment and violates some of the basic tenets of RECAP. In describing an exposure assessment for using Management Option 3, RECAP states as follows:

Site-specific exposure data shall be used when available and shall be accompanied by supporting documentation. **If the site-specific exposure time and/or exposure frequency is significantly less than the standard exposure frequency for an industrial scenario (8 hours/workday; 250 days/year), financial assurance and institutional controls may be required depending on site-specific considerations such as current and future land use and receptor activities at, and in the vicinity of, the AOI.** Exposure time (hours/day) may be considered in the development of RS when exposure time is necessary for the estimation of contact rate, such as for the ingestion of chemicals in surface water while swimming pathway, the dermal contact with chemicals in water pathway, the inhalation of airborne (vapor phase) chemicals pathway (industrial land use only), and the inhalation of airborne particulates pathway (industrial land use only) (Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual, Part A, EPA 1989). **Exposure time shall not be included in the estimation of exposure via the ingestion of water, ingestion of soil or sediment, inhalation of volatile emissions from groundwater to indoor air during household (residential) use of the water, dermal contact with soil or sediment, ingestion of biota, or other exposure pathways that do not require the consideration of exposure time to estimate contact rate for the calculation of chemical intake** (Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual, Part B, Development of Risk-based Preliminary Remediation Goals, EPA 1991; Soil Screening Guidance, EPA 1997; Risk-Based Concentration Table, EPA Region III; Preliminary Remediation Goals, EPA Region IX). The Submitter shall ensure that the property remains suitable for commerce and, at a minimum, suitable for industrial use.⁴⁹

In performing its MO-3 risk assessment, Chevron factored in multiple input factors to evaluate potential risks. Among those factors included an exposure frequency of 104 days per year, significantly less than 250 days/year for a standard exposure frequency for an industrial scenario. According to RECAP, Chevron's use of this reduced exposure time may require financial assurance and institutional controls depending on current and future land use and receptor activities. Chevron failed to acknowledge this fact in its Limited Admission submissions to LDNR.

In using exposure time to estimate exposure via ingestion and dermal contact with sediments, Chevron disregards RECAP criteria. Chevron notes that "The site-specific risk assessment performed for sediment under MO-3 includes identification of reasonable maximum exposure (RME) for sediment at the base of a canal. For an adult and child recreator, visitation was assumed to occur twice weekly (or daily for 3 months of the year) for the RECAP default duration of 30 years, with sediment ingestion, dermal contact, and inhalation (as applicable) on each visit."⁵⁰ This approach is contrary to RECAP guidance.

Chevron does not comply with RECAP requirements, calls for the potential use of institutional controls, and underestimates risk on the JLS property posed by Chevron's oilfield constituents. Based on these shortcomings and Chevron's flawed analysis, Chevron's proposed use of exceptions and its proposed remediation must be denied.

⁴⁹ LDEQ, 2003, Risk Evaluation/Corrective Action Program, pg. 102 (emphasis added)

⁵⁰ ERM Site Investigation Report and Remediation Work Plan – Chevron Limited Admission, May 14, 2021, pg. 23

C. Chevron's sensitivity analysis is inappropriate and flawed.

Chevron compared constituent concentrations (dry-weight) found on the JLS property to RECAP MO-1 standards to perform a sensitivity analysis. Chevron concluded that because the concentrations did not exceed the MO-1, the concentrations of constituents found on the JLS property presented no risk. However, Chevron's analysis here is flawed.

First, RECAP clearly states an MO-1 analysis for sediments is inappropriate: "**The MO-1 RS do not address the following pathways:** inhalation of particulates, the ingestion of surface water, the inhalation of volatiles from surface water, dermal contact with surface water, **the ingestion of sediment, dermal contact with sediment, the inhalation of volatiles from sediment**, or the ingestion of biota (recreational or subsistence fishing and/or fish/shellfish propagation or production; meat or dairy production; agricultural crop production). If any of these pathways are of concern at an AOC, they shall be addressed under MO-2 or MO-3."⁵¹

Second, in its Table N-6, Chevron identifies barium as a constituent of concern that can have additive effects on the Kidney. Chevron uses an industrial standard for MO-1, when a non-industrial standard is more appropriate. In fact, Chevron uses the non-industrial standards for the MO-3 assessment. Using an MO-1 non-industrial standard, the site concentrations exceed the standard when considering the additivity effects from the concentrations of Aromatic >C21-35. Likewise, the arsenic concentrations exceed the MO-1 non-industrial standards.

VI. Hypothetical 29B Plan

As part of its Limited Admission Plan, Chevron proposes to leave soil contaminated with SWO 29-B constituents. This proposal does not comply with 29B requirements. So, in an effort to supply a separate plan that complies with 29B requirements, Chevron offers a Hypothetical 29B Plan. But even Chevron's "Hypothetical 29B Plan" fails to comply with 29B requirements because it offers no hypothetical plan to clean up soil exceedances of SWO 29-B, which contains no depth restriction.

Likewise, Chevrons' Hypothetical 29-B Plan for groundwater fails to comply with the regulatory requirements because it fails to propose remediation to background. In fact, Chevron has not derived background concentrations for any constituents on the JLS property. Without question, in the absence of an exception, SWO 29-B requires groundwater to be remediated to background conditions.⁵² Chevron has failed to take that fact into account here. Without knowing the background concentrations of groundwater chlorides, Chevron has no way of knowing the extent of the groundwater contamination.

Instead, Chevron uses EPA's SMCL of 250 mg/L of chlorides as their remedial target. But Chevron's groundwater samples have not defined the extent of the plume containing chloride concentrations exceeding 250 mg/L. Without this delineation, Chevron cannot offer a reliable estimate for cleaning up the groundwater contamination that consists of 250 mg/L chlorides or background conditions.

⁵¹ LDEQ, 2003, Risk Evaluation/Corrective Action Program, pg. 85 (emphasis added)

⁵² 2011, First Amended Memorandum of Understanding Between Louisiana Department of Natural Resources Office of Conservation and Louisiana Department of Environmental Quality Regarding Approval of RECAP Groundwater Evaluation and Remediation Plans at Oilfield Sites. Office of Conservation.

Surprisingly, Chevron notes that “Furthermore, this Hypothetical 29-B Plan uses an approach consistent with the Hypothetical 29-B Plan provided with the Limited Admission Plan in the Hero Lands Company, L.L.C. vs. Chevron U.S.A. Inc, et al. matter, which was considered and rejected by LDNR.” To the contrary, the LDNR granted no exceptions for Chevron’s proposed feasible plan, and deferred any decisions on whether the hypothetical plan may be implemented based on additional testing.

Sincerely,

A handwritten signature in blue ink, consisting of a large, stylized initial 'E' followed by a long horizontal line.

Emma Elizabeth Antin Daschbach