ARABIE ENVIRONMENTAL SOLUTIONS

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April 5, 2017

Mr. Gary Snellgrove, Director
Office of Conservation -Environmental Division
Louisiana Department of Natural Resources
617 North 3rd Street, 8th Floor
Baton Rouge, Louisiana 70802

RE: Landowner Response to HET Response to Agency Comments March 16, 2017
Betty D. Blanchard et al Lease
Compliance Order No. E-I&E-05-0233
OC Legacy Project No. 023-007-001

Dear Mr. Snellgrove:

I appreciate being copied on your email correspondence to Stewart L. Stover dated Monday April 03, 2017 1:11 PM. In that email it was stated that the Office of Conservation "*has no objection to HET's proposed Phase I aquifer determination, monitor well plugging and abandonment and replacement plan provided in the subject response to comments.*" It appears that the subject response to comments refers to a March 16, 2017 HET Response to Agency Comments - Phase I Evaluation. Neither the landowner nor her representatives were aware of the March 16 correspondence from HET to the Office of Conservation. After requesting a copy of the March 16 correspondence, Arabie Environmental was provided a copy on April 3, 2017, by the Office of Conservation.

This response is submitted to represent the landowner's interest in this matter. Items are numbered in this response to correspond to item numbers used in the March 16, 2017 HET response.

1. Landowner Consent (LDNR Comment Nos. 1 and 5) :

In the March 26, 2017 Response, HET offers its interpretation of the Office of Conservation's landowner consent requirement. The Office of Conservation correspondence on this matter has clearly stated their requirement on multiple occasions. Some examples follow:

September 24, 2014 – Daniel D. Henry, Jr., Attorney, Office of Conservation, to Charles Minyard, ESQ – *"Please note since RECAP is used to address groundwater and soils below 3 feet for salt parameters as an exception to LAC 43:XIX.Subpart 1.Chapter 3 criteria, landowner consent will be necessary for the agency to grant the exception and issue a letter of no further action at this time."*

May 11, 2015 Supplement to Compliance Order No. E-I&E-05-0232 *"In response to HET's Chapter 3 exception and NFAATT request, this Office informed HET that written consent from the land owner in support of HET's Chapter 3 exception and NFAATT request would be necessary for this Office to approve the Chapter 3 exception and issue a NFAATT letter."*

October 12, 2016 Letter from Gary W. Snellgrove to Tortuga Operating Company c/o Stewart L. Stover- Item 1 *"Written affirmation that the landowner has no objection to Tortuga Operating Company's (Tortuga) RECAP Report has not been submitted to this Office to date."*

October 12, 2016 Letter from Gary W. Snellgrove to Tortuga Operating Company c/o Stewart L. Stover-Item 5. *"The agency requires written affirmation that the landowner has no objection to higher*

limits for EC, SAR and ESP as justification for future land use unless the operator clearly demonstrates with background analyses that native soil conditions exceed that criteria."

As the Office is aware, the landowner has not consented to higher limits for oilfield waste parameters, has not consented to an exception to Order 29-B, and has not approved the use of RECAP.

2. Aquifer Classification (LDNR Comment No. 3) :

HET presents discussion regarding aquifer classification and concludes that since very few, to no wells are screened from 25 to 40 feet below land surface "*that a more accurate classification of the aquifer would be the Atchafalaya aquifer confining unit."* Then HET presents evidence that the Chicot aquifer also underlies the site.

In response it should be noted that LAC 43:XIX.301 defines a groundwater aquifer as follows:

Groundwater Aquifer - water in the saturated zone beneath the land surface that contains less than 10,000 mg/l TDS.

The shallow groundwater aquifer beneath the Blanchard property is consistent with that definition. Additionally, LAC 43:XIX.303.C states that contamination of a groundwater aquifer or an Underground Source of Drinking Water (USDW) with E&P waste is strictly prohibited. The Office of Conservation has considered "*strictly prohibited*" to be a "*background concentration*" requirement for groundwater.

Therefore whether there are "*very few*" wells screened in the aquifer or whether it is called the Atchafalaya or the Chicot aquifer is of no consequence when considering the regulations.

Arabie Environmental has been aware for quite some time that HET intended to apply the RECAP procedure to the groundwater evaluation. In response to those intentions, and in the interest of protecting the aquifer beneath Ms. Blanchard's property, Arabie Environmental has demonstrated that the shallow groundwater is an "*aquifer*" as defined by Order 29-B and that it can supply sufficient water to be considered a GW 2 under RECAP.

3. Technical Issues with the RECAP Report (LDNR Comment Nos. 2, 4, 8, 10, and 11) and Registration and Screened Interval of the Blanchard Well (LDNR Comment 7).

HET has proposed a phased approach to address this item. Phase I, which includes the replacement of monitor wells and conducting an "aquifer test." Phase I accomplishes nothing towards the cleanup of the contamination that was identified as early as 2003. If monitor wells were improperly installed or needed to be replaced for some other reason, that could have been done at any time. Other monitor wells have been replaced as needed.

It is also troublesome that there is no explanation as to the "problems" with existing wells and why they need to be replaced. There are no details that include the installation details of the existing monitoring wells nor any details of the planned replacement wells. It must be questioned if the replacement wells be installed at the location and depth that will be most likely to provide accurate information regarding the groundwater contamination.

Another concern in this item is the plan to conduct an "*aquifer test*" utilizing Ms. Blanchard's 70-year old water well of unknown depth, unknown screen length/interval, unknown screen condition (i.e. corroded, collapsed), unknown silting, and unknown lithology at that location. One has to question the purpose of the aquifer test utilizing this well. It was pointed out in my correspondence to Gary Snellgrove on October 19, 2016, that Ms. Blanchard's well has been in use as a domestic well for a number of years and does not require "*classification.*"

If the purpose for the proposed aquifer test is to evaluate for potential connection between the aquifer where the monitor wells are screened and the deeper portion of the aquifer, the test is likely to be inconclusive. HET has not specified a pumping rate and he nearest monitor well is approximately 1,000 feet from the water supply well. With all of these unknowns, it is impossible to predict any responses due to pumping of the water supply well. Due to the distance and an unknown pumping rate, it is expected that there will be no response recorded in monitor well water levels, and the test will be inconclusive. An aquifer test should be conducted to provide conclusive results.

Ample evidence has been produced through soil borings on the site, that the shallow and deeper groundwater zones are interconnected. Since a drilling rig will be on site to install replacement monitor wells, it would make more sense to use that opportunity to install nested monitor wells (adjacent wells screened in various intervals) to assess the interconnection of the shallow and deeper zones of the aquifer. An aquifer test using nested wells would provide far greater certainty of aquifer characteristics.

Evidence that the shallow and deeper aquifers are connected, or are actually one aquifer, has been presented in previous correspondence. The following discussion has been copied from my May 15, 2015 correspondence to Gary Snellgrove. It provides the evidence of the connection.

> ***"The connection of the shallow, water-bearing strata to the Atchafalaya Aquifer on the property has now been confirmed."***
>
> *A relatively deep boring, JAB-1E-R, has been installed near the JAB Pit as part of the recent site investigation activities. The log for this boring indicates water-bearing silts were encountered from a depth of 38 feet to the total depth of the boring at 64 feet below ground surface. The drillers log for the rig supply wells registered as "101-5920z" and "101-5365z" located on the property indicate sand from a depth of 60 feet to the well total depth of 200 feet below ground surface and 67 feet to the well total depth of 167 feet below ground surface, respectively. A copy of the log for JAB-1E-R and water well registration forms with driller's logs for 101-5920z and 101-5365z are attached to this letter for your convenience. The registration forms were submitted and discussed in a letter by the landowner to LDNR dated August 9, 2011. A copy of that letter is included in the attached correspondence.*
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> *The information contained in the log for boring JAB-1E-R conflicts with the description of the site on page 17 of the Report where it is stated that, "surface lithology indicates the presence of clay with alternating layers of silt layers (sic) on-site to a depth of at least sixty-four (64) feet below land surface that would not be indicative of the Atchafalaya aquifer." Figure 10 of the Report is a cross section traversing this boring and represents all sediments from about 38 feet to boring total depth as "SILT".*
>
> *Contrary to the pages of arguments relying on regional literature and data from five miles away to insist that the water-bearing units screened by the site monitor well network was isolated and separated from the main aquifer, the site specific information now unquestionably confirms that the depth interval of the "alternating and discontinuous silt zone" where the site monitor wells are screened, overlaps with the Atchafalaya Aquifer. The JAB-1E-R boring indicates that the top of the Atchafalaya Aquifer is no deeper than 38 feet below the surface at the heavily impacted JAB Pit, where the vertical extent of impacts remains undocumented. However, site impacts are documented to 64 feet: soil sample ON150-S3-R (62-64') from March 2013 had an EC of 7.1."*

In Item 3, the work proposed by HET is divided into two (2) phases. Phase I consists of monitoring well replacement and the pumping test. It has been over eleven (11) years since Compliance Order No. E-I&E-05-0233 was issued and almost two years since the Supplement to that Order was issued. No schedule for Phase I of the proposed work has been presented, therefore there is no schedule for Phase II.

HET has proposed that Phase II will address horizontal and vertical delineation of soil and groundwater. HET states that Phase II will depend on result of Phase I. It is not clear how the outcome of the monitor well replacements and the pump test can possibly affect the horizontal and vertical extent of soil contamination, and why Phase II has to be put off any longer. Several areas (SE-SW Pit, SB on 150, 11 AC, and SB-11AC-w) have been previously identified where initial sampling revealed contamination and where no additional sampling has been performed to provide delineation. There is no apparent reason that soil contamination and groundwater investigation activities cannot proceed immediately.

I recently reviewed literature published by the Office of Conservation with the quote ***"Our Lives….Our Water".*** It further states ***"Aquifers are the major source for drinking water in the state, and now is the time for all of our citizens to be a part of a movement to protect and manage this precious resource."***

I appreciate the opportunity to provide these comments and hope that they assist the Office in achieving their goal of protecting "Our Lives….Our Water." **Now is time.**

Sincerely,

Austin R. Arabie

cc: John Adams
Jonathan Rice
Nancy Blanchard