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January 2, 2015

Mr. Michael Farabee  
Chief Eastern Evaluation Section, Regulatory Branch  
U.S. Army Corps of Engineers  
New Orleans District  
P. O. Box 60267  
New Orleans, LA 70160-0267

Ms. Elizabeth Johnson  
Dept. of Environmental Quality  
P. O. Box 82135  
Baton Rouge, LA 70884-2135

Re: Permit Application No. MVN-2013-02952-ETT  
State Water Quality Certification Application  
Helis Oil & Gas Company, L.L.C.  
Proposed Drill Site and Structures  
Eads Poitevent No. 1 Well Section 34, T7S-R12E  
St. Tammany Parish, Louisiana

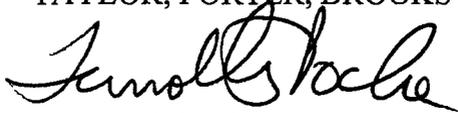
Dear Mr. Farabee and Ms. Johnson:

On behalf of Helis Oil & Gas Company, L.L.C. (Helis), we are submitting the attached Response to Comments and USACE's Requests for Information Dated 12.2.14 and 11.4.14 (sic).

Please feel free to contact me at 225-381-0254 if you have any questions or require any additional information. Thank you for your attention to this matter.

Sincerely,

TAYLOR, PORTER, BROOKS & PHILLIPS L.L.P.



Timothy J. Poche

TJP:rs

**HELIS OIL & GAS COMPANY, L.L.C.**

**RESPONSE TO COMMENTS AND  
USACE'S REQUESTS FOR  
INFORMATION DATED 12.2.14 AND  
11.4.14 (SIC)**

## HELIS RESPONSE TO COMMENTS

### RESPONSES TO COE LETTER DATED DECEMBER 2, 2014

#### COMMENT:

(A) Many St. Tammany Parish residents expressed concerns regarding local traffic with respect to congestion and *safety* on the roads, of this area of the parish, due to the anticipated increase in number of large trucks and other equipment that would travel back and forth from the proposed site. Many respondents expressed concerns that the entrance to Log Cabin Road is +300 feet from the nearest drive way into Lakeshore High School and +1,200 feet from the second driveway to the school off of State Hwy 1088 (1088). That two lane road already experiences a heavy amount of traffic, especially so twice a day when teachers, administrators and students of that school arrive in the morning, depart in the evening and when attending school sporting events and other extracurricular activities. Many concerns have been expressed with regards to incompatibility of industrial traffic (with existing school traffic) to occur on 1088 from heavy trucks and equipment that would be required to service the proposed drill site operations.

Please address these issues detailing the logistics of planned/anticipated large pump trucks, storage trucks, trailer equipment, pickup trucks etc. to be used for this specific proposal. Please respond to these concerns and describe the type of vehicles, an estimate of the numbers of vehicles and equipment anticipated for this proposal; the time of day anticipated that they would be traveling on the local roads; the length of days, weeks or months the increased road traffic for this proposal is expected to last. Please describe in detail what measures will be taken to address traffic congestion and safety for this proposal.

#### RESPONSE:

Helis has planned its Phase 1 (vertical well only) operations to: (1) limit potential impact on Highway 1088 traffic volumes and (2) reduce the risks its site traffic might pose to other motorists using Highway 1088 including those accessing Lakeshore High School.

Phase 1 will have minimal impact on Highway 1088 traffic volume. The entirety of Phase 1 operations (and the increased traffic associated with those operations) will last approximately 30 days. The number of heavy trucks (tractor rigs, lowboys, cement trucks, tanker trucks) and light trucks (pick-up trucks, small dump trucks) accessing the site during this 30 day period will vary depending upon the on-site activities being conducted. As indicated in Helis' Response to the COE's 6/20/14 request for information, Helis anticipates that the average daily traffic volume accessing the site during this period will equal approximately 4-5 heavy trucks and 10-20 light trucks. Thus, Helis anticipates that during the entirety of Phase 1 operations, heavy trucks will access the site from Highway 1088 on a total of approximately 150 separate occasions for a variety of purposes including but not limited to the transport of grading/construction equipment, the drill rig, drilling equipment, drilling muds, water, cement, etc. and light trucks will access the site on a total of approximately 450 separate occasions for a variety of purposes including

transport of workers and materials. To the extent possible, Helis will use non-contact stormwater falling and collected on-site in the Phase 1 drilling operations thus reducing the number of water transport trucks required to deliver water to the site during Phase 1.

Helis will relieve potential traffic congestion and improve traffic safety on Highway 1088 during peak traffic hours by prohibiting heavy trucks servicing its site from traveling on Highway 1088 between the hours of 6:30 a.m. and 8:30 a.m. and between 1:30 p.m. and 3:30 p.m. which periods generally coincide with the arrival and dismissal of students and faculty at Lakeshore High School (i.e., classes generally commence at 7:25 a.m. and dismiss at 2:41 p.m.). (See, Exhibit 1, Bourgoyne testimony, p. 115) Before commencing site operations, Helis will request a meeting with the St. Tammany Parish School Board and Lakeshore High School administrators. At the meeting, Helis will: (1) request information regarding any special events that may be conducted at the High School during Phase 1 operations (e.g., athletic events) so that Helis can alter traffic flows where necessary to accommodate such events; (2) brief the officials on Helis' proposed activities and traffic plan; and (3) discuss any questions or concerns those officials may raise in connection with the proposed traffic plan.

Helis will maintain a transportation staging area located adjacent to the I-12 and Highway 1088 exchange. This staging area will provide Helis the ability to regulate traffic flow into and out of the drill site and on Highway 1088. All trucks traveling to the site will be directed to this staging area where they will be required to check in with the traffic dispatcher for the site. The dispatcher will be in communication with both traffic security located at the entrance to Log Cabin Road (a private road) and personnel at the drill site. Trucks at the staging area will only be released for movement on Highway 1088 when the drill site is clear and ready to receive the cargo being transported to the drill site.

Helis will also further reduce impacts to local traffic by scheduling those site activities that will generate the most heavy truck traffic (i.e., rig installation and removal and cementing) to incorporate the movement of material and equipment on the weekend to the extent possible.

Helis will employ traffic security (off-duty law enforcement where possible) at the intersection of Highway 1088 and Log Cabin Road to restrict access to Log Cabin Road; direct and supervise traffic accessing Log Cabin Road; monitor traffic at the intersection of Highway 1088 and Log Cabin Road; and assist in response to traffic incidents or situations in the area of the intersection.

Helis will continue to work with the local school officials and the St. Tammany Parish Government to address traffic related issues should any arise after commencement of Phase 1 operations.

**COMMENT:**

(B) As stated in 33 CFR Part 320.4 (m) *Water supply and conservation*: "Water is an essential resource, basic to human survival, economic growth, and the natural environment. Water conservation requires the efficient use of water resources in all actions which involve the significant use of water or that significantly affect the availability of water for alternative uses including opportunities to reduce demand and improve efficiency in order to minimize

new supply requirements. Actions affecting water quantities are subject to Congressional policy as stated in section 101(g) of the Clean Water Act which provides that the authority of states to allocate water quantities shall not be superseded, abrogated, or otherwise impaired."

A majority of commenter's expressed concerns over the, perceived adverse effects this proposal and anticipated future similar proposals, cumulatively, would have on St. Tammany's *water supply and conservation*, i.e. its natural water bodies and its underground source of drinking water (USDW). Your application states that 800,000 gallons would be used during drilling. Please clarify if this is the projected amount for the entire exploratory well proposal; or is the 800,000 gallons a projected daily amount? Many of the objectors question the availability of this amount of water from private ponds in the vicinity of the proposed site. Please indicate whether the private ponds mentioned in the application (as the source for drilling water) are in the vicinity of the proposed site, or will some or all of the necessary water supply be trucked in from private ponds in other areas. If the water will be transported from other areas, what geographical area will it come from? If the drilling water will be sourced from ponds in the vicinity of the proposed site please describe what method of delivery will be used i.e. trucks or pumped via pipe or hose to the site.

**RESPONSE:**

To the extent possible, Helis will use non-contact stormwater falling and collected on-site for use in Phase 1 drilling operations. The balance of water required for use in Phase 1 development and operations will be delivered to the site by truck. None will be obtained from on-site wells. The total estimated volume of freshwater required to complete the drilling of the exploratory well in Phase 1 is approximately **800,000 gallons**. (See, Ex. 1, Connor testimony, p. 186) This is roughly the equivalent of the amount of water that would be contained within a **single 0.31 acre pond with a uniform water depth of eight (8) feet**. Helis has identified private ponds from which it can obtain the total estimated 800,000 gallons of water required for Phase 1 (one of the ponds identified is approximately 40 acres in size). These ponds are located within 3-5 miles of the Helis drill site and are not supplied and will not be replenished by groundwater wells. The water would have to be transported to the drill site by tanker truck.

Helis will not install a water supply well in connection with Phase 1 and will not use groundwater in the execution of Phase 1. (See, Ex. 1, Connor testimony, pp. 133, 186 and 187)

The Louisiana Office of Conservation (LOC) acknowledged Helis' voluntary commitment to use water from local ponds rather than groundwater in its drilling operations in Helis' well permit application proceeding (Docket No. 14-626 hereafter referred to as the well permit proceeding). By order dated December 19, 2014 (LOC Order), the LOC issued the requested well permit to Helis and **mandates the use of pond water for Helis' operations as a condition of Helis' well permit**. (See, Ex. 2, Order No. 1577-1, p. 13; and Ex. 3, Permit to Drill) (Although the mandate in the Order may appear limited to water used in the potential future hydraulic fracturing process (if any), Helis has committed to using surface pond water for all drilling operations including the Phase 1 drilling of the vertical well.)

**COMMENT:**

(C) As stated in 33 CFR Part 320.4 (d) *Water quality*: Applications for permits for activities which may adversely affect the quality of waters of the United States will be evaluated for compliance with applicable effluent limitations and water quality standards, during the construction and subsequent operation of the proposed activity. *The evaluation should include the consideration of both point and non-point sources of pollution.* It should be noted, however, that the Clean Water Act assigns responsibility of non-point sources of pollution to the individual states with ultimate Federal authority held by the US Environmental Protection Agency (EPA). "Certification of compliance with applicable effluent limitations and water quality standards required under provisions of section 401 of the Clean Water Act will be considered conclusive with respect to water quality considerations unless the Regional Administrator, Environmental Protection Agency (EPA), advises of other water quality aspects to be taken into consideration." Numerous respondents expressed concerns regarding pollutants associated with the proposed vertical well drilling operations relative to adjacent wetlands, wildlife habitat, river and streams that receive precipitation runoff from the project site and surrounding areas. Of upmost concern, expressed by the residents, is the potential contamination of the parish's USDW, which may result from the proposed drilling through that source.

The Emergency Planning and Community Right-to-Know Act (EPCRA) was passed by Congress in response to concerns regarding the environmental and safety hazards posed by the storage and handling of toxic chemicals. EPCRA requires local governments to prepare chemical emergency response plans, and to review plans at least annually. State governments are required to oversee and coordinate local planning efforts. Facilities that maintain Extremely Hazardous Substances (EHS) on-site in quantities greater than corresponding threshold planning quantities must cooperate in emergency plan preparation. Sections 311 and 312 of EPCRA further define the Community Right-to-Know requirements for facilities manufacturing, processing, or storing designated hazardous chemicals. These facilities must make Material Safety Data Sheets (MSDSs) available to state and local officials and local fire departments. MSDSs describe the properties and health effects of these chemicals. Facilities must also report, to state and local officials and local fire departments, inventories of all on-site chemicals for which MSDSs exist. Information about chemical inventories at facilities and MSDSs must be available to the public. Please describe what measures have been taken or will be taken, for this specific proposal to comply with the EPCRA requirements? In the public interest, please describe what measures/BMPs will be used to reduce the risk of entry of contamination, into the parish's USDW, wetlands and streams.

**RESPONSE:**

Helis is committed to maintaining the environmental integrity of its drilling operations and will employ structural and procedural controls and practices that will effectively eliminate any appreciable risk its operations might pose to surface waters or the USDW (i.e., the Southern Hills Aquifer).

Phase 1: Surface Waters/Wetlands

Helis has taken ample measures to minimize risks to surrounding surface waters and wetland resources:

- (1) Helis has developed and will employ Best Management Practices (BMPs) and structural controls during the preparation and development of the drill pad site and during Phase 1 drilling operations to ensure that the project does not contaminate surrounding surface waters or wetlands. These BMPs and structural controls are set forth in Helis' Integrated Stormwater Management Sediment and Erosion Control Best Management Practices Plan ("Integrated Stormwater Plan"), including but not limited to the following:
  - Helis will use a self-contained, closed loop mud system to drill the Phase 1 vertical well; no reserve or production pits will be used in the drilling of the vertical well. [The LOC acknowledged Helis' voluntary commitment to use a closed loop system rather than surface pits in the well permit proceeding. The LOC Order **mandates the use of this closed loop system rather than surface ponds/pits for Helis' operations as a condition of Helis' well permit.** (See, Ex. 2, Order No. 1577-1, p. 12; and Ex. 3, Permit to Drill)]
  - Deck drainage from the rig will be collected in the rig basement and transported off-site for disposal in accordance with all applicable regulations.
  - Produced water and drilling wastes will be containerized and likewise transported off-site for disposal in accordance with all applicable regulations.
  - Sanitary waste water will be collected in portable facilities and transported off-site for disposal in accordance with all applicable regulations.
  - Material stored on-site will be properly contained and storage areas subject to routine inspection.
  - Except for emergency situations, vehicle maintenance, repair, refueling, and cleaning shall be performed off-site; there shall be no on-site storage of gasoline/diesel for the fueling of on-road vehicles or heavy equipment.
  - Structural controls (e.g., silt fences, sediment traps, etc.) will be used where appropriate to retard the entrainment of sediment/constituents in site generated storm water during pad construction and the site will be promptly stabilized upon completion of grading activities (anticipated to be completed within ±30 days). (See, Ex. 4, Integrated Stormwater Plan)
  - Upon completion of Phase 1 operations, Helis will remove the drilling rig and all drilling materials and equipment from the drill site.
  - Helis will install security fencing around the well head to secure the well while Helis evaluates the geological data collected during Phase 1.
  
- (2) Helis will enclose the entire drill site within a 2.5 foot high ring levee and elevated access way to contain stormwater and materials within the drill site; the entire stormwater retention capacity of the site (i.e., the amount of water that can be contained within the site without exceeding ring levee height) is approximately 2,542,549 gallons of stormwater. (See, Ex. 5) A 100 year storm event for the area (13 inches/24 hours) (See, Ex. 6, Rainfall Frequency/Magnitude Atlas for the South-Central United States) would generate approximately 1,133,150 gallons of stormwater, well below the retention

capacity of the site. In the event of a major storm event (e.g., hurricane), Helis would implement its Hurricane Preparedness Plan, shutting down and securing its drill site operations until the event concludes. (*See*, Ex. 7, Hurricane Preparedness Plan)

- (3) Non-contact stormwater generated at the site will be collected and processed through multiple on-site filtration systems and will be visually inspected to confirm the absence of visible sheen or floating or settleable solids or visible foam (other than allowable trace amounts), either before being discharged from the drill site or recycled for use in the drilling operation. (*See*, Ex. 4, Integrated Stormwater Plan; Ex. 1, Connor testimony, pp. 148-150) [The LOC acknowledged Helis' voluntary commitment to manage and monitor the controlled discharge of non-contact stormwater from the site in the well permit proceeding. The LOC Order **mandates that Helis implement its proposed management and monitoring plan as a condition of Helis' well permit.** (*See*, Ex. 2, Order No. 1577-1, p. 13; and Ex. 3, Permit to Drill)]
- (4) The risk of well blowout is governed principally by the pressures and temperatures encountered in the formations encountered during drilling. Available data from several wells previously drilled in the area indicate that the geologic environment in which Helis intends to drill its proposed well does not exhibit high pressures or temperatures that may increase a well's blowout potential. There is also no indication that H<sub>2</sub>S gas is present in the formations below the proposed well site. (*See*, Ex. 1, Bourgoyne testimony, pp. 111-112)
- (5) Although not required by applicable drilling regulations and despite the extremely low potential for a blowout, Helis will employ a diverter system in the drilling of the surface hole. Upon completion of the surface casing, Helis will install a blowout prevention system which will be used during the drilling of the pilot hole and future drilling operations (if any) at the well site. (*See*, Ex. 1, Bourgoyne testimony, p. 114)
- (6) Helis will comply with its detailed Emergency Action Plan in responding to any emergency situation (however unlikely) that may occur at the project site. (*See*, Ex. 8, Emergency Action Plan)
- (7) Helis does not expect to use or store hazardous or extremely hazardous substances during Phase 1 operations that would trigger EPCRA requirements for the drill site. Nonetheless, in its commitment to safety of the community and emergency response organizations within the Parish, Helis has established, at its own expense, a training program to meet the requirements of LAC 33 Part V Section 10107 and Emergency Planning and Community Right-to-Know Act (EPCRA) standards 40 CFR Parts 350-372. Helis will provide this training to all personnel identified by St. Tammany Parish. This one day program will provide St. Tammany Parish 1<sup>st</sup> Responders with information on:
  - Contents of the Emergency Action Plan (EAP) which has been prepared for the drill site (copies will be filed with the Emergency Response Commission via the Louisiana State Police and the Local Emergency Planning Committee in compliance with LAC 33 Part V Section 10107)

- Response procedures in the unlikely event of a well control incident
- Chemicals to be used and stored on site (MSDS) and relevant Personal Protective Equipment (PPE)
- Emergency communication protocols and contacts information found in the EAP
- Command and Control procedures Helis will utilize in the unlikely event of an incident requiring parish emergency response resources
- Introduction to Wild Well Control; Helis has offered, at its own expense, to host a training course conducted by Wild Well Control for all first responders designated by the Parish.

Once the drill site is established and before commencement of drilling operations Helis will contact the St. Tammany Local Emergency Planning Committee (LEPC) to coordinate a facility familiarization for 1<sup>st</sup> Responders with specifics of the drill site:

- Access route to drill site
- Layout of drill site
- Emergency Shut Down procedures
- Location of chemical stores
- Location of critical equipment, including emergency response equipment
- Review Emergency Notification Procedures
- Location and anticipated duration of the drilling operations
- Name and telephone numbers of facility personnel to contact in the case of an emergency
- During operations, copies of the MSDS shall be maintained on the drill site, accessible to all crew members, and will be reviewed in safety meetings prior to a chemical's use on-site. Safety meetings will be documented and copies maintained on-site, in contractor's office, and a copy forwarded to the designated Helis representative. This requirement will be included in the HazCom section of the Safe Work Practices Plan (SWPP) for each contractor.

Helis has already begun consultation and planning with local Parish emergency officials.

- (8) Drilling operations will also be subject to a Spill Prevention Control & Countermeasures Plan compliant with all applicable state and federal regulations.
- (9) Helis has drilled over 650 wells in the United States and since 2006 Helis facilities have undergone over 900 LDNR inspections resulting in only 11 citations, none of which involved or resulted in environmental impacts. (*See, Ex. 1, Connor testimony, pp. 127-128*)

### Phase 1: USDW/Groundwater

A significant number of oil and gas wells (approximately 1700) have already been drilled through the Southern Hills Aquifer in the Florida Parishes generally and over 76 have been drilled in St. Tammany Parish alone (*See, Ex. 1, Dale testimony, pp. 92, 93, and 164*) without any known appreciable impact on the aquifer.

Helis has taken ample measures, many beyond those mandated by applicable laws and regulations, to ensure its operations will likewise not adversely impact the Southern Hills Aquifer in the area and will protect the potable water supplies of residents:

- (1) Helis will use water based (not oil based) drilling muds composed principally of fresh water (95%) and minor amounts of benign substances. (*See*, Ex. 1, Bourgoyne testimony, pp. 114 and 197) Helis will not use oil additives in the drilling muds.
- (2) The vertical exploratory well will be installed in an environmentally protective manner and the installed well will be environmentally secure and effectively isolated from the surrounding aquifer. The initial surface hole will be drilled down to approximately 4000 feet, extending approximately 600 feet below the base of the deepest freshwater aquifer in the area. A steel surface casing will then be installed into this initial surface hole, its total depth extending approximately 600 feet below the base of the deepest freshwater aquifer. This surface casing will then be cemented the entirety of its length all the way back up to ground surface. Helis will confirm the integrity of the surface casing by pressure testing the casing.

Helis will then drill a pilot hole within the surface casing to a depth of approximately 13,374 feet and collect geologic data from the target formation. If preliminary review of the data is promising and warrants more detailed review, Helis will install intermediate casing to a depth of  $\pm 12,260$  feet and cement the casing over the entirety of its length back to ground surface. Helis will then confirm the integrity of the intermediate casing by pressure testing and will run a cement bond log on the intermediate casing cement. Helis will then discontinue drilling activities while it undertakes a more detailed evaluation of the geological data to determine the economic viability of production from the target formation. On the other hand, if based upon the collected geological data, Helis concludes the target zone is not an economically viable source of production Helis will plug and abandon the well in accordance with applicable regulatory requirements. [If the detailed evaluation of the geological data confirms the potential economic viability of production from the target geologic zone and Helis decides to proceed with Phase 2, it will seek required authorizations before drilling the horizontal well and installing a third (production) casing the entire length of the well back up to the surface. This production casing will be pressure tested to confirm its integrity; in sum the well would be triple cased if Helis were to proceed with Phase 2 before conducting the hydraulic fracture of the well]. (*See*, Ex. 1, Bourgoyne testimony, pp. 115, 117, 194; and Connor testimony, pp. 143-144)

- (3) The surface casing and intermediate casing will effectively isolate the aquifer from material within the well in Phase 1. [As noted, if Helis were to proceed to Phase 2 a third casing would be set providing an additional layer of separation and isolation from the aquifer]. (*Id.*)
- (4) Noted expert and former Dean of LSU's College of Engineering, Dr. Adam "Ted" Bourgoyne, has reviewed Helis' drilling plan and information pertinent to its proposed

well and has concluded Helis' drilling plan uses the best available and safest technology. From a drilling and completion standpoint, Dr. Bourgoyne sees no alternatives to Helis' proposed drilling and completion plan that would offer more protection to the environment. (*See*, Ex. 1, Bourgoyne testimony, p. 120)

- (5) With the LOC's approval, Helis will install a groundwater monitor (sentinel well) system at the site composed of multiple groundwater monitor wells around the vertical well. The sentinel wells will be screened at multiple depths within the aquifer, corresponding to the depths at which the nearest private and public wells are generally screened. These sentinel wells will be used to collect baseline groundwater quality data before operations at the site commence and to monitor groundwater quality within the aquifer after drilling and potential hydraulic fracturing operations to confirm that Helis' operations are having no impact on the drinking water aquifers. (*See*, Ex. 1, Connor testimony, pp. 145-147 and 183-184)

[The LOC acknowledged Helis' voluntary commitment to install the sentinel well system and monitor groundwater quality in the area as an additional environmental safeguard in the well permit proceeding. The LOC Order **mandates that Helis implement its proposed sentinel well groundwater monitoring system as a condition of Helis' well permit.** (*See*, Ex. 2, Order No. 1577-1, p. 13; and Ex. 3, Permit to Drill)]

With the approval of the respective well owners, Helis will also monitor water quality in certain private wells in the area to confirm that its operations are having no impact on the quality of water provided by those private wells.

Third party contractors will conduct sampling of the sentinel and private wells and perform the requisite analysis, not Helis. Helis will make all of the sampling results available to the public and appropriate state regulatory agencies.

Helis has vast experience and expertise in the drilling of exploration and production wells and as noted above has a proven record of environmentally secure drilling operations:

- (1) Helis has been in operation since 1934 and, as noted above, has successfully drilled over 650 wells in the United States and is currently operating over 100 wells in Louisiana. (*See*, Ex. 1, Dale testimony, p. 87; and Connor testimony, p. 127)
- (2) Since 2006 Helis facilities have undergone over 900 LDNR inspections resulting in only 11 citations none of which involved or resulted in environmental impacts. (*See*, Ex. 1, Connor testimony, p. 128)

The well's location will also minimize the risk that any release into the aquifer from Helis' operations, however unlikely, will impact local water wells:

- (1) The proposed Helis well site is in an isolated, uninhabited area, far from residential areas and local water supply wells. The closest private water well is over 1.5 miles away from the Helis well site. (*See*, Ex. 1, Connor testimony, pp. 137-138 and 178-179) The

average groundwater flow velocity in the aquifer in the area of the well site is extremely low, approximately 61 ft/year. (See, Ex. 9, Potential Fracture Fluid Migration and Chemical Fate and Transport Analysis) In assessing the potential risk associated with the hydraulic fracturing of the horizontal well in Phase 2 (should it occur), Kleinfelder, Inc., an international engineering firm, analyzed the potential fracture fluid migration and chemical fate and transport of several common hydraulic fracture fluid components that might be released in the unlikely event that all three of the well casings were to fail during the hydraulic fracture process. Kleinfelder selected the constituents with the longest half-lives (i.e., those that would take more time to degrade in the subsurface) to provide a conservative (i.e., worst case scenario) analysis. Kleinfelder concluded that, in the worst case, the farthest any of the constituents analyzed might travel before their concentrations were reduced to levels compliant with U.S. Environmental Protection Agency's risk screening levels, was 1131 feet – far less than the distance to the nearest local water well. Kleinfelder used conservative parameters in its analysis. (See, Ex. 9, Potential Fracture Fluid Migration and Chemical Fate and Transport Analysis)

- (2) In addition to the great distance separating the local wells from Helis' proposed vertical well, all of the local wells within 2 miles of the Helis well site are either cross gradient (to the west) or upgradient (to the north) of the Helis site; there are no local water wells within two miles downgradient of the proposed Helis well site according to well registration records. (See, Ex. 1, Connor testimony, pp. 137-138 and 178-180)
- (3) Finally, in the unlikely event that a release were to occur, the sentinel well system will be in place to provide an additional detection method for such a release. Upon detection of a release by operation safeguards or by the sentinel wells, drilling operations would cease until such time as corrective measures were in place. Some or all of the sentinel wells and/or new wells would be used as recovery wells to remove released constituents from the aquifer and inhibit the migration of those constituents away from the Helis well.

**COMMENT:**

- (D) As stipulated in 33 CFR Part 320.4 (j) *Other Federal, state, or local requirements.* (1) Processing of an application for a DA permit normally will proceed concurrently with the processing of other required Federal, state, and/or local authorizations or certifications. Final action on the DA permit will normally not be delayed pending action by another Federal, state or local agency (See 33 CFR 325.2 (d)(4)). However, where the required Federal, state and/or local authorization and/or certification has been denied for activities which also require a Department of the Army permit before final action has been taken on the Army permit application, the district engineer will, after considering the likelihood of subsequent approval of the other authorization and/or certification and the time and effort remaining to complete processing the Army permit application, either immediately deny the Army permit without prejudice or continue processing the application to a conclusion. If the district engineer continues processing the application, he will conclude by either denying the permit as contrary to the public interest, or denying it without prejudice indicating that except for the other Federal, state or local denial the Army permit could, under appropriate conditions, be issued. Denial without prejudice means that there is no prejudice to the right of the

applicant to reinstate processing of the Army permit application if subsequent approval is received from the appropriate Federal, state and/or local agency on a previously denied authorization and/or certification. Even if official certification and/or authorization is not required by state or federal law, but a state, regional, or local agency having jurisdiction or interest over the particular activity comments on the application, due consideration shall be given to those official views as a reflection of local factors of the public interest. (2) The primary responsibility for determining zoning and land use matters rests with state, local and tribal governments. The district engineer will normally accept decisions by such governments on those matters unless there are significant issues of overriding national importance. Such issues would include but are not necessarily limited to national security, navigation, national economic development, water quality, preservation of special aquatic areas.

As was the case for the PN of April 14, 2014, one of the most dominant objections and an issue of great concern for the citizens of St. Tammany Parish and local officials responding to this PN, is that the project site is located in an area of St. Tammany Parish zoned as A-3(d) a Suburban Zoning Classification. CEMVN has received documents (available to you upon request), submitted by the law firm Blue Williams, L.L.P. on behalf of St. Tammany Parish Government indicating that the parish has recently initiated legal procedures, in the Nineteenth Judicial District Court, challenging the State of Louisiana, Department of Natural Resources' (DNR) contention that they have sole authority over regulating oil and gas exploration throughout the entire State of Louisiana. St. Tammany Parish contends that the proposed activity would violate their zoning ordinance and that the DNR does not have the right to supersede St. Tammany Parish Government's jurisdiction on zoning issues. As of the date of this letter final judgment in that case, by the Nineteenth Judicial District Court, is still pending. Please respond to this issue.

**RESPONSE:**

As noted above, by order dated December 19, 2014 (the "Order"), the LOC issued Helis a drilling permit (the "drilling permit") authorizing the drilling of Helis' proposed well at the drill site subject to this pending 404 application. No other state or local permit is required in connection with the drilling operations contemplated in this pending 404 permit application.

With respect to the referenced zoning issue, contrary to the assertions made in the above referenced lawsuit, St. Tammany Parish lacks the authority to regulate the siting of oil and gas wells as the regulation of oil and gas wells including the siting of same has been vested exclusively in the Louisiana Office of Conservation.

A governmental body such as St. Tammany Parish is generally authorized to exercise any power necessary, requisite or proper for the management of its affairs not denied by general law (i.e., a state law uniformly applicable to all persons or all political subdivisions in the state) (La. Const. Art. 6 Section 5(E)). In this case, the general law of the state grants exclusive authority over the regulation of the drilling of oil and gas wells within the state including the regulation of where an oil and gas well may be drilled to the Louisiana Office of Conservation:

“No other agency or political subdivision of the state shall have the authority, and they are hereby expressly forbidden, to prohibit or in any way interfere with the drilling of a well or test well in search of minerals by the holder of such a permit.”  
(La. R.S. 30:28(F))

This current state of the law was confirmed by the U.S. Fifth Circuit Court of Appeals in *Energy Management Corporation v. City of Shreveport*, 397 F.3d 297 (5<sup>th</sup> Cir. 2005), aff’d and remanded by 467 F.3d 471 (5<sup>th</sup> Cir. 2006) which held that local regulation of oil and gas drilling operations have been preempted by state law which according to the Court, grants exclusive authority to the Louisiana Office of Conservation to regulate where an oil and gas well may be drilled. The opponents who raised the zoning issue in their comments to the COE in this permit proceeding, have not and cannot cite any Louisiana judicial decision which questions the holding of *Energy Management*, or has otherwise concluded or held that local governments within the State have the authority to regulate the siting of oil and gas wells within their respective jurisdictions.

As noted above, on December 19, 2014 the LOC issued Helis a drilling permit authorizing the drilling of Helis’ proposed well at the drill site subject to this pending 404 application. (See, Ex. 3, Permit to Drill) Under the plain and express wording of La. R.S. 30:28(F) quoted above, St. Tammany Parish Government is prohibited from interfering in any way with the drilling of the Helis well.

In addition, as discussed above the well site is in an isolated location far from any residential developments. (See, Ex. 1, Dale testimony, p. 94) The area in which the well site will be located is uninhabited timber land. The surrounding acreage is subject to a long term timber lease and has been used in timber farming for over 30 years. (See, Ex. 1, Dale testimony, pp. 95-99) The only access into the surrounding timber areas are private gravel roads. Further, in his reasons for decision approving the Helis well permit, the Commissioner of Conservation noted that at the public hearing in the well permit proceeding, “there was uncontroverted testimony ... supporting that the property at issue is subject to a long-term timber lease and is currently used as a commercial pine tree farm” and further that, “given the testimony received at the hearing and the statements made by the landowner, it appears that the subject property will remain a timber farm and will not be used for ‘single family residential purposes’ for the foreseeable future.” (See, Ex. 2, Order No. 1577-1)

The drill site will not be visible from the road; the Phase 1 operation will be of short duration (approximately 30 days); and as noted above, operations will be coordinated so as to reduce impact on surrounding roadways/traffic.

## **RESPONSES TO COE LETTER DATED NOVEMBER (sic) 4, 2014**

### **COMMENT:**

The proposed site is located in a region of the state which is subjected to periodic heavy storm events that bring heavy precipitation and in some cases, such as Hurricane Isaac of August 2012, the amount of rain was extreme causing widespread street flooding, residential flooding in some area and caused area rivers; creeks and bayous to overflow. What contingency plans and

associated best management practices have been developed for this specific proposal to deal with such events to prevent pollutants that would be used during the proposed drilling operation, from overflowing into unprotected soils in the area, adjacent wetlands and/or other receiving waters of the US?

**RESPONSE:**

Helis' Integrated Stormwater Plan includes operational and structural controls that serve to limit the generation of contact stormwater at the drill site and provide adequate structural controls (i.e., the 2.5 foot ring levee) to contain anticipated stormwater volumes that may be generated in such events. (See, Ex. 4, Integrated Stormwater Plan) As noted above the retention capacity of the ring levee surrounding the site is approximately 2,542,549 gallons. (See, Ex. 5) A 100 year storm event in the area would produce approximately 13 inches of rainfall over a 24 hour period. Such an event would generate approximately 1,133,150 gallons within the 3.21 acre drill site – well below the ring levee's retention capacity. With regard to COE's reference to rainfall generated during Hurricane Isaac, and the site's ability to handle similar events, Helis notes that the reported rainfall amount for the area during that event (72 hour period) was 9 - 15 inches. (See, Ex. 10, Hurricane Isaac With and Without 2012 100-year HSDRRS Evaluation; Final Report, February, 2013) A 15 inch rainfall event would generate approximately 1,307,410 gallons of storm water within the 3.21 acre drill site, still well within the retention capacity of the ring levee. In addition, such an event would trigger Helis' Hurricane Preparedness Plan, which is designed to address operational, safety and environmental issues that may arise in Hurricane events. (See, Ex. 7, Hurricane Preparedness Plan) As also noted above, Helis intends to use stormwater collected on-site in drilling operations to the extent possible.

**COMMENT:**

**A. Avoidance:** Your project is considered to be non-water dependent because it does not have to be located in a special aquatic site to achieve the basic purpose. For non-water dependent fill there is a presumption that less damaging alternative sites exist, which are available to the applicant that would be less damaging. There is a presumption that fill placed elsewhere, other than in special aquatic sites, would have less adverse impact on natural resources. The applicant is required to consider less damaging practicable alternatives or must successfully rebut these presumptions.

The Corps presumes that there may be other available sites in this geographical area that would accommodate the applicant's desired goals, for exploration of the Tuscaloosa Shale Play that would be environmentally less damaging. The state's Department of Natural Resources (DNR) web site at: (<http://dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=909>) indicates that the Tuscaloosa Shale Play covers approximately 6.6 million acres in Louisiana with numerous parishes totally or partially within those borders. The site currently selected for this proposal contains approximately 91% wetlands. CEMVN presumes that alternative sites are available in this region, in which the proposed activity could be sited, that are environmentally less damaging. CEMVN recommends that you conduct a search and submit an alternative analysis that encompasses other available sites regionally located. Please be aware that we cannot examine minimization and compensatory mitigation until you have successfully rebutted these presumptions. Please discuss what alternative sites were considered with a map showing their

locations and provide a detailed discussion about of how the parameters for your alternative site search was established.

**RESPONSE:**

The purpose of Helis' exploratory vertical well is **not** to gather information for exploration of the Tuscaloosa Marine Shale play that is being actively produced to the North of St. Tammany Parish. As presented to John Johnston, State Geologist, during the Geological Review (and other agency representatives present), the purpose is to gather geologic data needed to determine whether a **new play** within the Tuscaloosa Marine Shale, a **localized silt/sandstone formation** (the "target formation"), which appears **limited to the southern portion of St. Tammany Parish** only, has the required geological characteristics to make this newly identified and localized formation an economically viable source of oil and gas production. Therefore, contrary to assertions made by several of the public commenters, Helis' proposed project cannot be conducted and its purpose cannot be fulfilled by simply drilling a well anywhere within the established Tuscaloosa Marine Shale play that is being actively produced to the North of St. Tammany Parish. (See, Ex. 11, Paul Lawless Statement) State Geologist, John Johnston concurred in this conclusion after reviewing the geologic and siting information presented by Helis at the Geological Review as evidenced by his recommendation that there are, "No less damaging feasible alternatives" to the drill site selected. (See, Ex. 12, Louisiana Geological Survey Geological Review Recommendation Form).

Helis has confirmed the presence of this target formation using existing (but limited) geologic data from old vertical wells (the Wagner & Brown Keller Heirs #1-12, the Hunt Currie #1-8, Shubuta Salmen #1-10, the Exchange Carollo #1-25 and the Tenneco Kennedy #1-25, hereafter the "control wells") in the area. Well logs produced in the drilling of these older wells confirm the presence of the target formation but do not provide the necessary geological data required to determine whether the new silt/sandstone play can be economically produced.

If the geologic data confirms that this target formation in this area provides an economically viable source of production, it will increase the known oil and gas reserves within the State available for potential production and contribute to achieving the national policy goal of energy independence of the United States.

Helis selected the proposed drill site by first identifying the general geographic boundaries of the area within which the existing geologic data (i.e., control wells) show the target formation to be present and which is sufficiently isolated from populated, residential areas and their associated private water wells and certain environmentally sensitive areas (hereafter referred to as the "control well area"):

- Geologic data from the control wells running roughly parallel to I-12 (Wagner & Brown Keller Heirs #1-12, Hunt Currie #1-8, Shubuta Salmen #1-10, and Exchange Carollo #1-25) confirm the presence of the target formation at sufficient thickness to accommodate a horizontal well. (See, Ex. 11, Paul Lawless Statement and Figures 2 and 3 attached thereto)
- Geologic data shows the target formation thinning to the North as one moves away from the aforementioned line of wells along I-12. Specifically, geologic data shows a

significant thinning of the target formation at the Tenneco Kennedy #1-25 well and as one progresses further Northward the target formation disappears completely at the Forest Sherwood #1-21 well. (See, Ex. 11, Paul Lawless Statement and Figures 4 and 5 attached thereto) Based upon this information, the Northern boundary of the target formation with sufficient thickness is south of the Tenneco Kennedy #1-25 control well. This boundary establishes the Northern boundary of the control well area. (See, Ex. 14, Fenstermaker Figure 1)

- To avoid interference with the State's Coastal Management Plan or potential impact on Coastal Zone resources, Helis excluded from the control well area, the area within the Louisiana Coastal Zone south of I-12. Thus I-12 forms the Southern boundary of the control well area. (See, Ex. 15, Fenstermaker Figure 2)
- Helis excluded from the control well area, the residentially populated areas and associated private water wells to the west of the control wells. (See, Ex. 16, Fenstermaker Figure 3)
- Helis likewise excluded from the control well area, the residentially populated areas and associated private water wells and the Pearl River Wildlife Management Area and the designated critical habitat of the Dusky Gopher Frog to the east of the control wells. (See, Ex. 16, Fenstermaker Figure 3 and Ex. 18, Fenstermaker Figure 5)

Published data confirms that wetlands are interspersed throughout the entirety of the above defined control well area.

Once the control well area was defined, Helis in association and consultation with C.H. Fenstermaker & Associates, LLC ("Fenstermaker") identified four sites potentially suitable for location of the proposed well and associated drill pad for wetland evaluation. These four sites were chosen based principally upon access to existing roadways which were to be subject to further evaluation and a preliminary review of potential wetland impact (any new roadway constructed through wetland would take approximately 2.4 acres per mile of roadway constructed). Fenstermaker conducted a further, more detailed evaluation of the four potential well pad sites (identified as Sites 1-4 on Ex. 13), based upon soil, vegetation and hydrologic characteristics. This evaluation confirmed that potential Sites 1 and 2 contained a greater percentage of hydric soils and more jurisdictional wetlands than either Sites 3 or 4. Sites 3 and 4 had similar soil profiles and contained similar amounts of jurisdictional wetlands.

Helis then evaluated the four potential drill pad sites within the identified control well area using a number of factors focused on isolation, access and minimization of potential wetland impact including:

- (1) Total wetland acreage impacted;
- (2) Isolation from local receptors within the control well area (e.g., private water wells, major roadways such as I-12 and Highway 1088, proximity to local bayous, proximity to designated critical habitat areas, and Lakeshore High School);
- (3) Access to major roadways (e.g., I-12 and Highway 1088);
- (4) Proximity to an access road capable of accommodating heavy truck traffic without the need of major alteration or widening in order to minimize potential wetland impacts;

- (5) Proximity of the well site to existing pipelines that would minimize wetland impact should the geologic data prove favorable and Phase 2 proceed; and
- (6) Proximity to the Southern control wells in which the target zone of the required thickness has been confirmed.

Site 3 was ultimately selected as the most favorable based upon the combination of the above factors and minimizing impact to wetlands of the four alternative sites considered:

- Site 3 wetland acreage is less than Sites 1 and 2 and comparable to Site 4 (*See*, Ex. 19, Nicholas Gaspard Statement);
- The access road adjacent to Site 3 (Log Cabin Road – a private road) is the only access road within the control well area that can accommodate heavy trucks required for site operations without significant additional wetland impacts (*See*, Ex. 20, Mike Barham Statement);
- Only Site 3 is in close proximity to an existing natural gas pipeline;
- Site 3 is sufficiently isolated from major roadways (i.e., I-12 and Highway), Lakeshore High School, water wells and local bayous (contrast the Site 4 area adjacent to Bayou Lacombe and Liberty Bayou and designated critical habitat of the Gopher frog); and
- Site 3, as the most southerly of alternatives, is closest to the Southern control wells (and is approximately 1 mile south of alternative Site 4).

Although Sites 3 and 4 have similar potential wetland impacts, Helis ultimately selected Site 3 due to Site 4's proximity to sensitive receptors (e.g., Bayou Lacombe, Liberty Bayou, designated critical habitat for the Gopher frog) and the other selection criteria discussed above.

Helis presented the above referenced geologic data supporting its proposal and site selection in the Geological Review process. After reviewing Helis' data and rationale for siting the drill pad, John Johnston's recommendation found "No less damaging feasible alternatives" to the drill site selected. (*See*, Ex. 12, Louisiana Geological Survey Geological Review Recommendation Form) In addition, the Commissioner of Conservation's Order authorizing issuance of a well permit includes a specific finding that uncontroverted expert testimony supports the chosen well site is "an optimum location to efficiently and economically drain the unit and to minimize the environmental impact and disruption or inconvenience to the public." (*See*, Ex. 2, Order No. 1577-1, pp. 3 and 8)

**B. Minimization:** Only after the least damaging alternative site is selected, or after the applicant successfully rebuts the above avoidance presumptions can minimization be considered to reflect the least damaging practicable alternative that meets the basic project purpose. Minimization includes alternate site plans and other steps that would reduce both direct and indirect impacts to waters of the US. During the meeting of July 29, 2014, facilitated by the Louisiana Geological Survey (LGS) in Baton Rouge, John Johnston of the LGS stated that a maximum  $\pm 3.2$  acre fill pad is the standard industry requirement for an exploratory well. No statement was made on what minimum acreage would be required for the same activity. CEMVN recommends that Helis consider alternative project plans that would reduce the proposed project footprint. Please

describe additional measures such as other site plans and other steps you can take to minimize the impact of your project on wetland resources. If measures cannot be taken to minimize direct impacts to the on-site wetlands please explain why not.

**RESPONSE:**

Helis has already altered its original proposal to minimize impacts to on-site wetlands by reducing the footprint from 10.35 acres to 3.21 acres and locating the pad adjacent to an existing access road. The reduced pad size cannot be decreased any further. As indicated in its previous submittals to the COE, Helis has voluntarily committed to implement several environmentally protective measures to address concerns raised by certain members of the public regarding potential stormwater and groundwater impacts ( notwithstanding that the other operational safeguards identified in response to Comment (C) above already effectively address these concerns). Specifically, Helis will install a groundwater monitoring network consisting of sentinel wells around the exploratory well to monitor groundwater quality at multiple levels within the aquifer. These sentinel wells will be used to confirm operations are not impacting groundwater. (See, Ex. 1, Connor testimony, pp. 145-147 and 183-184) In addition, Helis will provide a series of two filtration units and accompanying tankage through which it will process the non-contact stormwater generated on-site prior to controlled discharge of the effluent after evaluation of the effluent's quality for compliance with certain applicable water quality standards. (See, Ex. 4, Integrated Stormwater Plan; Ex. 1, Connor testimony, pp. 148-150) The installation and implementation of these measures will require the full extent of the 3.21 acre drill site; any reduction in pad size would require that one or both of these measures employed to address the specific concerns of members of the public would have to be excluded from the project. As discussed above, the well permit issued by the LOC to Helis is conditioned upon the installation and/or implementation of the stormwater management and monitoring plan and the sentinel well groundwater monitoring system. (See, Ex. 3, Permit to Drill)

**APPLICANT COMMENTS REGARDING OTHER RELEVANT FACTORS**

**(A) CUMULATIVE IMPACTS**

Several of the public comments assert that the COE must consider alleged cumulative impacts of the potential Phase 2 drilling and hydraulic fracturing of a horizontal well at the proposed site as well as the additional multiple well sites they allege (or assume) will be developed as a result of the proposed Phase 1 vertical well. These alleged future activities are too speculative to warrant consideration as cumulative impacts:

- (1) It is far from certain that any drilling operations will be conducted after the conclusion of Phase 1. The purpose of the Phase 1 exploratory vertical well is to obtain subsurface geologic data from the target formation required to confirm whether that formation has the geological characteristics needed to be an economically viable source of oil and gas production. If the geological data does not confirm that the target formation has the requisite geological characteristics, Helis will not proceed with the Phase 2 drilling and hydraulic fracturing of a horizontal well but will instead plug and abandon the vertical well. (See, Ex. 1, Bourgoyne testimony, p. 116) As acknowledged by the COE Project Manager,

after reviewing the data presented by Helis at the Geological Review, John Johnston “determined (with agreement from Helis representatives) that the site had no more than a 50% chance of becoming a viable production site” and further that, “proceeding with a 404 review of the proposed project as a production site ... would be speculative”. (See, Ex. 21, Robert Tewis Memo dated 8.19.14)

- (2) Even assuming the geological data confirms the economic viability of the target formation, the drilling and hydraulic fracturing of a Phase 2 horizontal well will require additional acreage above the 3.21 acres sought to be permitted in the present proceeding. An expansion of the pad site into surrounding wetland acreage to accommodate Phase 2 operations would require a second 404 permit from the COE as well as an associated water quality certification from the Louisiana Department of Environmental Quality (LDEQ) both subject to review and possible denial.
- (3) The alleged “explosion” of oil and gas development opponents assert will result from Helis’ drilling of the vertical exploratory well is sheer speculation unsupported by any meaningful evaluation of the alleged potential future development:
  - As noted above, the State Geologist concluded that there is only a 50% chance that the target zone will be an economically viable source of production.
  - The uncertainty of the target zone’s economic viability is reflected in the fact that Helis has retained **options** only on the vast majority of potential lease acreage in the area rather than obtaining mineral leases on this acreage.
  - Although existing geologic data indicates the target formation is localized within the Southern portion of St. Tammany Parish, the geographic boundaries of the target formation in this area have not yet been defined so it is not possible to define the size of the area that could potentially be subject to oil and gas production assuming the target formation proves to be economically viable.
  - The present proposed exploratory vertical well is the only well site within St. Tammany Parish that Helis is seeking to permit; Helis has no other applications pending for a drilling permit for any other site(s) in St. Tammany Parish.
  - If information supports the conclusion that the target formation can economically support production and the drilling of additional wells would be appropriate, each future well would require application to LOC for a well permit. In the event that any such future well would be proposed to be located in wetlands that pervade the optioned acreage, additional COE permits would be required before construction of any drill pad in those wetland areas.

Notwithstanding that the drilling of the Phase 2 horizontal well (much less the development of additional well sites) is too speculative to warrant consideration as a cumulative impact should the geological data collected in Phase 1 provide the basis for Phase 2 drilling of the lateral and horizontal fracturing to proceed, Helis has designed those potential Phase 2 operations to minimize risk of potential impact from those activities.

#### LOCAL TRAFFIC

- Phase 2 operations will be relatively short. The drilling of the horizontal well including the mobilization and re-installation of the drilling rig on-site and drilling and completion of the lateral will take  $\pm 30$  days only; the hydraulic fracturing of the well including mobilization of the necessary water, tankage, pump trucks and associated equipment and the hydraulic fracturing of the well will take  $\pm 14-21$  days only.
- During Phase 2 drilling operations, Helis anticipates the average daily (24 hr) traffic volume accessing the site will be approximately 5-6 heavy trucks and 10-20 light trucks per day.
- Helis will minimize site traffic impact on Highway 1088 during peak traffic hours by employing similar traffic controls as those established for Phase 1 and outlined in response to COE's 12.2.14 Comment (A) above (e.g., restrict heavy truck traffic on Highway 1088 during arrival and dismissal periods at Lakeshore High School; traffic security at intersection of Log Cabin Road (private road) and Highway 1088; etc.)

#### WATER SUPPLY AND CONSERVATION

The total estimated volume of freshwater required to complete Phase 2 including the drilling of the horizontal well and hydraulic fracturing is approximately **5 million gallons**. This is roughly the equivalent of the amount of water that would be contained within a **single 2.0 acre pond with a uniform water depth of eight (8) feet or two 1.0 acre ponds of the same depth**. Helis has identified private ponds which can supply the required amount of water for the Phase 2 drilling of the horizontal well. These ponds are located within 3-5 miles of the Helis drill site and the water would have to be transported to the drill site by tanker truck.

Helis will not install a water supply well in connection with Phase 2 and will not use groundwater in the prosecution of Phase 2. (See, Ex. 1, Connor testimony, pp. 133 and 186)

As noted above, the LOC acknowledged Helis' voluntary commitment to use pond water rather than groundwater in the drilling of its proposed well in the wellpermit proceeding. The LOC Order **mandates the use of pond water for Helis' operations as a condition of Helis' well permit**. (See, Ex. 2, Order No. 1577-1, p. 13; and Ex. 3, Permit to Drill)

PROTECTION OF SURFACE WATER RESOURCES/WETLANDS

- (1) Helis will employ the same operational and structural safeguards during Phase 2 operations that it has developed for Phase 1 and outlined in response to COE's 12.2.14 Comment (C) above, including but not limited to:
  - Controls identified in the Integrated Stormwater Plan.
  - Maintenance of 2.5 foot high ring levee.
  - Filtration, evaluation and controlled discharge of non-contact stormwater. [As noted above, the LOC acknowledged Helis' voluntary commitment to manage and monitor the controlled discharge of non-contact stormwater from the site in the well permit proceeding. The LOC Order **mandates that Helis implement its proposed management and monitoring plan as a condition of Helis' well permit.** (See, Ex. 2, Order No. 1577-1, p. 13; and Ex. 3, Permit to Drill)]
  - Deployment of a blow out prevention system during Phase 2 including the drilling of the horizontal well and the hydraulic fracturing of that well.
  - Compliance with the Helis Emergency Action Plan.
  - Compliance with Helis' Hurricane Preparedness Plan.
  - Compliance with Helis' Spill Prevention Control & Countermeasures Plan.
- (2) Helis will invite St. Tammany 1<sup>st</sup> responders to the location once the hydraulic fracturing equipment is installed to review the equipment and well pad layout and to participate in a safety meeting before hydraulic fracturing commences.
- (3) During Phase 2 operations, copies of the MSDS shall be maintained on the drill site, accessible to all crew members, and will be reviewed in safety meetings prior to a chemical's use on-site. Safety meetings will be documented and copies maintained on-site, in the contractor's office, and a copy forwarded to the designated Helis representative. This requirement will be included in the HazCom section of the Safe Work Practices Plan (SWPP) for each contractor.
- (4) Helis will NOT use diesel fuel additives to water used to hydraulically fracture the well (See, Ex. 1, Bourgoyne testimony, pp. 197-198).
- (5) Helis will use a closed loop system for Phase 2 drilling of the lateral; Helis will not use any surface ponds or pits. [The LOC acknowledged Helis' voluntary commitment to use a closed loop system rather than surface pits in the well permit proceeding. The LOC Order **mandates the use of this closed loop system rather than surface ponds/pits for Helis' operations as a condition of Helis' well permit.** (See, Ex. 2, Order No. 1577-1, p. 12; and Ex. 3, Permit to Drill)]

- (6) All produced water, mud and solid or liquid wastes produced during Phase 2 will be containerized and sent offsite to a properly permitted disposal facility for disposal.

PROTECTION OF THE AQUIFER/USDW

Helis has designed its potential Phase 2 operations to minimize any potential risk hydraulic fracturing of the horizontal well might pose to the Southern Hills Aquifer and the potable water supplies of the local residents:

- The aquifer will be isolated from fracturing fluids by three separate strings of steel casing each of which will be installed, cemented and pressure tested to ensure integrity before hydraulic fracturing is conducted. In addition, a cement bond log will be run on the cement job encasing the vertical portion of the production casing to confirm its integrity/tightness within the 5-1/2” and 9-5/8” annulus before hydraulic fracturing commences. (See, Ex. 1, Bourgoyne testimony, pp. 112, 115, 117, and 194; and Connor testimony, pp. 142-144)
- During the hydraulic fracturing process, pressures in both the intermediate casing annulus and the production casing annulus will be continuously monitored. (See, Ex. 1, Connor testimony, p. 132) In the unlikely event that a leak in the production casing develops during the fracture process, a noticeable change in annulus pressure would be detected and the fracturing process immediately terminated. In such an event, the intermediate casing would contain the pressure, preventing it from ever reaching the surface casing. In addition, appropriate corrective measures would be implemented to ensure the integrity of the well seal and protection of the groundwater.
- The hydraulic fracturing will take place at a depth of over 12,000 feet below the earth’s surface and approximately 1.8 miles below the base of the deepest freshwater aquifer in the area. (See, Ex. 1, Dale testimony, p. 91; Bourgoyne testimony, pp. 113 and 118; and Connor testimony, pp. 130 and 179-180)
- The physical limitations on the fracturing process effectively preclude the upward propagation of the fractures more than several hundred feet from the well casing: (1) the pressure exerted during the fracture process is insufficient to propagate the fractures far from the production casing and through intervening strata within the approximately 9,000 feet between the target formation and the base of the freshwater aquifer. (See, Ex. 1, Connor testimony, pp. 132 and 142)
- Helis will perform cement bond logs to ensure the tightness of the cement to their respective casing strings. (See, Ex. 1, Connor Testimony, p. 143; and Bourgoyne testimony, p. 194)
- As noted above, Helis will NOT use diesel fuel additives in water used to hydraulically fracture of the well (See, Ex. 1, Bourgoyne testimony, p. 198); the fracturing will be done with a water carrier (i.e., the fracture fluid will be composed of approximately 90% water, 9.5% sand or other neutral proppant and 0.5% percent chemicals). (See, Ex. 1, Connor testimony, p. 134) Helis will ensure that it and its

contractors comply with all regulatory requirements regarding disclosure of fracturing fluid constituents. [The LOC acknowledged Helis' voluntary commitment to provide full disclosure of the chemicals it will use to hydraulically fracture the well in the well permit proceeding. The LOC Order **mandates that Helis fully disclose those chemicals as a condition of Helis' well permit.** (*See, Ex. 2, Order No. 1577-1, p. 13; and Ex. 3, Permit to Drill*)]

- Helis will install a groundwater monitoring (sentinel well) system at the site. The sentinel well system will be monitor groundwater quality at several depths within the aquifer before during and after hydraulic fracturing process to confirm that Helis' operations are having no impact on the aquifer. [As noted above, the LOC acknowledged Helis' voluntary commitment to install the sentinel well system and monitor groundwater quality in the area as an additional environmental safeguard in the well permit proceeding. The LOC Order **mandates that Helis implement its proposed sentinel well groundwater monitoring system as a condition of Helis' well permit.** (*See, Ex. 2, Order No. 1577-1, p. 13; and Ex. 3, Permit to Drill*)]

#### **SURFACE SUBSIDENCE AND SEISMICITY**

Several of the public comments raise alleged concerns regarding the risk of seismic activity and/or subsidence they allege Helis Phase 2 hydraulic fracturing might induce. These alleged concerns are groundless:

- Although raising the faulting issue, public commenters failed to identify any known faults in the area of the proposed Helis well site which might be reactivated.
- Even assuming such a fault in the area did exist (which it does not), mineral development using hydraulic fracturing has been actively prosecuted in both the Haynesville Shale in North Louisiana and the Tuscaloosa Marine Shale across the central portion of the state for a number of years, yet commenters fail to cite any evidence that those hydraulic fracturing activities have resulted in appreciable seismic activity or subsidence. Commenters certainly fail to cite any evaluation demonstrating an increased likelihood that either seismic "re-activation" or subsidence will result from the potential hydraulic fracturing of a Phase 2 horizontal well in the area of Helis' potential Phase 2 operation. (*See, Ex. 11, Paul Lawless Statement*)

#### **(B) NEED/BENEFIT OF PHASE 1 EXPLORATORY WELL**

The need for the vertical exploratory well is self-evident: if the geological data confirms that the target formation within the southern part of St. Tammany Parish provides an economically viable source of production, it will increase the known oil and gas reserves within the State available for potential production. Additionally, if the geological characteristics of the target formation confirmed by the exploratory well are very favorable, the formation may be an economically viable source of production at lower oil and gas market prices at which production in other shale plays is no longer profitable. The economic benefits of the potential play Helis is exploring with its vertical well are

recognized by many of the businesses and business organizations in the area including among others:

- The Northshore Business Council
- West St. Tammany Chamber of Commerce
- Business Council of New Orleans and the River Region
- Greater New Orleans, Inc.
- Hammond Area Economic and Industrial Development District
- Jefferson Business Council
- Jefferson Chamber of Commerce
- Jefferson Parish Economic Development Commission
- New Orleans Chamber of Commerce
- Plaquemines Association of Business and Industry
- River Region Chamber of Commerce
- St. Bernard Chamber of Commerce
- St. Tammany Economic Development Foundation
- St. Tammany Homebuilders Association
- Southeast Regional Coalition of Business Councils
- Tangipahoa Economic Development Foundation
- Washington Economic Development Foundation

(See, <http://gnoinc.org/news/publications/press-release/regional-business-community-stands-behind-northshore-business-council-in-support-of-energy-industry/>)

**(C) PARALLEL LDNR/OC WELL PERMIT PROCEEDING**

Many of the issues raised by those submitting public comments in this 404 permit proceeding have already been addressed in parallel proceedings before the Louisiana Department of Natural Resources, Office of Conservations (LDNR/OC), the State Agency vested with responsibility for regulating oil and gas exploration, production and disposal activities and possessing the requisite engineering and geological expertise to ensure that such operations are conducted in the most efficient and environmentally

secure manner. As the COE is aware, the purpose of the pad site for which Helis is seeking a 404 permit is to accommodate an exploratory well designed to collect geologic data, and if that data proves favorable, a potential production well. In connection with its proposed drilling activity, Helis submitted an application for a well permit to the LDNR/OC as mandated by Louisiana law. In response to requests for public hearing submitted by Town of Abita Springs and Concerned Citizens of St. Tammany (CCST) (two of the principal opponents submitting public comments in the pending 404 permit proceeding), the LDNR/OC held a public hearing to receive testimony, evidence and public comments regarding Helis' proposed well and drilling operations. Legal counsel for both the Town of Abita Springs and CCST participated in the LDNR/OC hearing and were afforded the opportunity to present live expert testimony and evidence in support of their respective positions asserted in opposition to Helis' well permit application.

At the LDNR/OC hearing held on November 12, 2014, the LDNR/OC received sworn testimony from experts called by both Helis and Abita Springs as well as evidence and public comments regarding a number of issues addressed in the COE's request for information issued to Helis on December 2<sup>nd</sup> and December 4<sup>th</sup>, including but not limited to: (1) protection of surface waters and wetlands; (2) protection of the aquifer; and (3) conservation of potable water supplies. The witnesses were placed under oath and subject to cross examination.

During the hearing, the Town of Abita Springs cross examined the experts called to testify on behalf of Helis, including those identified by Helis in the above response (i.e., Wilton R. "Bill" Dale, Jr.; Adam T. "Ted" Bourgoyne, Jr.; and John A. Connor).

After a review of the testimony and evidence presented at the hearing and all of the public comments received by the LDNR/OC in the well permit proceeding, the LDNR/OC issued Order No. 1577-1 approving Helis' well permit and issuing Helis a permit to drill its proposed well. In rendering its decision to issue the well permit, the LDNR/OC made a number of factual findings relevant to the 404 permit application now pending before the COE, including but not limited to the following:

- "That experts for Helis and Abita Springs/CCST have agreed that the deepest freshwater in the area of the above-referenced drilling permit is between 2300 and 3400 feet below the surface"
- "Uncontroverted testimony established that the target zone (Tuscaloosa Marine Shale) is approximately 13000 feet below the surface and approximately 1.8 miles below the deepest freshwater aquifer in this area"
- "Uncontroverted testimony established that approximately 1700 oil and gas wells have been previously drilled through the area referred to as the Southern Hills Aquifer system in search of oil and gas"
- "Uncontroverted testimony established that over 76 oil and gas wells have been drilled in St. Tammany Parish"

- “Uncontroverted testimony established that there are no structures within a one-mile radius of the proposed drill site”
- “Uncontroverted testimony was presented along with aerial photography to support that the property at issue has been a pine tree farm for at least the past thirty (30) years, and further that the property at issue remains under a long-term timber lease now operated by Weyerhaeuser. Written statements were also made by counsel for the landowner which also supports these facts”
- “Uncontroverted testimony supports that the chosen well site is at an optimum location to efficiently and economically drain the unit and to minimize the environmental impact and disruption or inconvenience to the public”
- “Expert testimony supports that hydraulic fracturing is necessary to complete the proposed well so that it will have enough flow to produce commercially”
- “Expert testimony supports that the proposed drilling plan uses the best available and safest technology”

The Office of Conservation’s decision, memorialized in Order No. 1577-1, is attached hereto as Exhibit 2. The Office of Conservation’s decision and factual findings in issuing the well permit to Helis likewise supports the 404 permit application now pending before the COE.

## EXHIBITS

1. Exhibits and excerpts of testimony presented at the 11.20.14 Public Hearing before the Louisiana Department of Natural Resources, Office of Conservation (“LDNR/OC”) in Docket no. ENG 14-0626.
2. LDNR/OC Order No. 1577-1.
3. LDNR/OC Permit to Drill the Eads Poitevent, et al., No. 001 Well.
4. Integrated Stormwater Management Sentiment and Erosion Control Best Management Practices Plan (“Integrated Stormwater Plan”).
5. Ring Levee capacity plat.
6. Rainfall Frequency/Magnitude Atlas for the South-Central United States.
7. Hurricane Preparedness Plan.
8. Emergency Action Plan.
9. Potential Fracture Fluid Migration and Chemical Fate and Transport Analysis prepared by Kleinfelder, Inc.
10. Hurricane Isaac With and Without, 2012 100-year HSDRRS evaluation, Final Report, February, 2013, U.S. Army Corps of Engineers.
11. Statement by Paul Lawless.
12. Louisiana Geological Survey geological review recommendation form executed by John E. Johnston, III.
13. Map of alternative well pad locations.
14. Figure 1 – Control Well Area – Northern Boundary.
15. Figure 2 – Control Well Area – Southern Boundary.
16. Figure 3 – Control Well Area – East/West Boundaries.
17. Figure 4 – Control Well Area – Sensitive Receptors.
18. Figure 5 – Comprehensive Map of Control Well Area.
19. Statement by Nicholas Gaspard.
20. Statement by Mike Barham.
21. Robert Tewis memo dated 8.19.14.