

MEMORANDUM FOR RECORD

SUBJECT: Department of the Army Environmental Assessment and Statement of Finding for Above-Numbered Permit Application

This document constitutes the Environmental Assessment, 404(b)(1) Guidelines Evaluation, Public Interest Review, and Statement of Findings.

1. Application as described in the public notice.

APPLICANT: Helis Oil and Gas Company, LLC (Helis)

WATERWAY & LOCATION: North of Interstate 12 (I-12) and east of Louisiana Highway 1088 (LA 1088), abutting the west side of Log Cabin Road, in Saint Tammany Parish Louisiana.

LATITUDE & LONGITUDE:

Latitude North: 30.38778
Longitude West: -89.97861

PROJECT PURPOSE:

Basic: Energy Resource Exploration

Overall: Clear, grade, excavate, and deposit fill for a security facility, three road bypasses, well pad, ring levee and appurtenances to install and to service a vertical exploratory test well for potential oil and gas exploration.

Water Dependency Determination: Energy exploration as proposed is not considered to be a water dependant activity as defined in 40 CFR 230.10.

Brief File History: On April 14, 2014, the U.S. Army Corps of Engineers, New Orleans District (CEMVN) published a public notice for a proposed ± 10.55 acre well pad that would accommodate an oil and gas exploration well and up to 10 hydraulic fracturing (fracking) production wells. Due to public interest, two time extensions to the comment period were granted and the comment period ended on June 16, 2014 (33 C.F.R. §325.2(d)(2)). On July 29, 2014, a geological review meeting (GR) coordinated by CEMVN and facilitated by the Louisiana Geological Survey (LGS) was held to discuss geological aspects associated with the proposal. The GR was attended by several representatives for the applicant, its consultant, and state and federal resource agency representatives. The focus

of discussion was on the viability of the proposed location as a production site for fossil fuels to be extracted from the Tuscaloosa Marine Shale Play (TMS).

After reviewing the information presented by Helis, the consulting geologist at the GR recommended that a single exploratory well be constructed to obtain better data to assess the site's viability as an oil and gas production site. CEMVN concurred with this recommendation, concluding that the site's uncertain viability for production of fossil fuels called into question whether the proposed 10.55 acre production well pad could meet Corps Regulatory requirements for permit issuance. CEMVN suggested Helis submit revised plans proposing a single exploratory well, based on a revised purpose to obtain additional data/information to evaluate the viability of producing fossil fuels in this specific geographical area.

On October 3, 2014, Helis submitted an amended permit application that reduced the scope and the footprint of the proposed work. (Exhibit 1) On October 14, 2014, CEMVN issued a public notice for the revised application and invited comments from interested parties. The comment period was 30 days. (Exhibit 2)

PROPOSED WORK: Clear, grade, excavate, and deposit fill to construct a turn-around apron at the intersection of LA 1088 and Log Cabin Road, three bypasses (20' x 100' each) and a security facility (30' x 30') on Log Cabin Road, a borrow ditch and ring levee around the majority of the well site, a well pad, and appurtenances for installation of a single drill rig. The drill rig will obtain geological data from a target formation believed to exist at an approximate depth of 13,000 feet in this specific area of the TMS Play that will be used to make a determination as to whether the site is economically viable for oil and gas production. The proposed well pad site is 3.21 acres (350 feet by 400 feet), of which 2.81 acres are jurisdictional wetlands. Access road improvements (the turn-around and road bypasses) and the construction of a guard shack (at LA 1088 and Log Cabin Road) would result in an additional 0.32 acre of wetland impacts, for a total of 3.13 acres of wetlands to be directly impacted by the proposed work.

The site plans have incorporated a ditch, a storm water collection area, a 2.5 foot high ring levee and an elevated access into the site from Log Cabin Road. The drill pad surface has been designed with sloping features to drain stormwater to a 2,500 sq ft drainage sump abutting the perimeter ditch within the drill site. The ditch and stormwater collection area will be used to manage and to collect stormwater runoff within the site. The drilling rig will use a self-contained, closed-loop mud system to drill the vertical well; no reserve or production pits are proposed. Deck drainage from the drilling rig, including stormwater, will be collected in the rig basement and transported off-site. Helis maintains that ±800,000 gallons of water would be required for this single vertical well operation and that the water would be obtained from private ponds offsite. Drilling muds

and waste water would be contained and hauled off to an existing disposal facility.

Drilling activities for the vertical exploratory well would include an initial surface hole followed by a pilot hole. The initial surface hole will be drilled to a depth of approximately 4,000 feet, extending approximately 600 feet below the surface of the deepest freshwater found in the Southern Hills Aquifer system (USGS, 1983). A steel surface casing will be installed into the surface hole and the casing will then be cemented throughout. The integrity of the surface casing will be tested via pressure testing. After the surface hole, the pilot hole would be drilled within the surface cement casing to a depth of approximately 13,374 feet where the geologic data will be extracted from the TMS deposits. If a preliminary review of this data warrants a more detailed review, an intermediate casing will be installed to a depth of $\pm 12,260$ feet and cemented over the entirety of its length back to the ground surface. (Exhibit 3) The integrity of the casing will be pressure tested. At this point, drilling activities will be discontinued for a more detailed evaluation of the geological data obtained. As a precaution, three groundwater-monitoring "sentinel wells" will be installed within the ring levee, up-gradient and down-gradient of the well site to assess and to monitor water quality in the Southern Hills Aquifer beneath the site.

Helis' vertical exploratory well will be constructed to accommodate potential future production. If the geological data obtained from the test well confirms the economic viability of oil and gas production from the well, Helis would likely seek authorization for hydraulic fracturing production well(s). In that event, additional CEMVN evaluation and authorization would be required.

Avoidance and Minimization Information: As originally proposed, the project site was a ± 10.55 acre parcel located within a historically silvicultured loblolly pine plantation. The applicant proposed to construct a well pad that would accommodate the exploratory well and up to ten subsurface hydraulic fracturing production wells. That proposal would have directly impacted the entire parcel, of which ± 9.46 acres are wetlands. Helis' revised proposal consists of a single exploratory well for the purpose of obtaining the additional data/information to evaluate the production potential of fracking well(s). The revised application reduced the 10.55 acre footprint containing 9.46 acres of jurisdictional wetlands to 3.53 acres, of which 3.13 are jurisdictional wetlands. While the footprint was reduced for the revised project, the location of the site is the same as in the original application.

Helis has targeted the southern portion of St. Tammany Parish based on data from five existing wells that suggests the presence of a geologic formation in the vicinity of those wells with properties favorable to oil and gas production through hydraulic fracturing. The project purpose is to gather the geologic data needed to determine whether this potential new sub-play within the TMS has the required

geologic characteristics to make this formation an economically viable source of oil and gas production. This geologic formation appears to be confined to the southern portion of St. Tammany Parish, which limits the range of sites that would be suitable for the project.

If, after evaluating the samples and data from the exploratory well, Helis desires to produce the site using fracking methods, another GR will be coordinated by CEMVN with the LGS, the applicant and participating resource agencies. If the findings of the GR meeting indicate the project site is a viable production site, Helis would submit an application to develop the site for hydraulic fracturing production wells. At that point, CEMVN would begin a new evaluation of the project, starting with a new public notice and comment period. On the other hand, if the applicant decides not to pursue oil and gas production upon completion of the exploratory drilling, the vertical test well will be plugged, abandoned, and the site restored to as near pre-project conditions as practicable.

Existing Conditions: The project site is located in Sections 34 and 35, T7S-R12E and Section 3, T8S-R12E within the Liberty Bayou/Tchefuncta watershed (HUC Unit: 08090201) in St. Tammany Parish, Louisiana. The existing access road (Log Cabin Road) intersects with LA 1088 and extends 1.2 miles south to the eastern boundary of the drill site. The proposed drill site is 400 feet by 350 feet in size. Log Cabin Road is 14 feet wide and is situated within a 30 foot right-of-way that includes the road and drainage swales.

The 3.21 acre drill site is undulating to flat with 0 to 1 percent slopes. The site is considered a forested loblolly pine plantation, which is actively managed for the timber industry under the silviculture exemption (33 CFR Part 323.4 and 40 CFR Part 232.3). Small pine saplings (loblolly pine) dominate the area with hardwood saplings (water oak, red maple, and black tupelo) and shrubs scattered throughout the site. Historical imagery indicates that timber activities took place in the project area between 2006-2007 and again in 2009. The project site lies within a 40,000+ acre tract that has been used for timber production for over 100 years.

The site is part of a larger contiguous forested wetland system (estimated to be around 200 square miles) that is bounded by Lake Pontchartrain to the south, the developed extent of Mandeville/Covington to the west, Lacombe/Slidell to the east, and the Pearl River Basin to the north. Lakeshore High School is located approximately 1.2 miles north of the project site. The nearest residential areas are located approximately 2.5 miles west of the site, near the I-12/Louisiana Highway 59 interchange. (Exhibit 4)

The Southern Hills regional aquifer system is located beneath the drill site. The system extends from the northern limits near Vicksburg, Mississippi, to the Baton Rouge, Louisiana metropolitan area, and includes the southern part of the

eastern Florida Parishes of southeastern Louisiana. The Southern Hills aquifer system has an order of 12 different sub-aquifers that overlap at different depths within the system (USGS 1983). These sub-aquifers are separated by geologic features, typically sand, that isolate them from one another. The aquifer system is the primary source of water for public and domestic use in St. Tammany Parish.

Compensatory Mitigation: The Ratio Matrix (RM) wetland evaluation tool was utilized to determine the appropriate credits required to offset the unavoidable impacts to wetland resources for this action. The RM method focuses on the functional quality of the wetlands present at the proposed project site to determine appropriate compensatory mitigation for authorized wetland impacts. In assessing the qualitative value of a wetland, considerations are given to the overall functional performance based on all physical and biological characteristics. The 3.13 acres of pine plantation wetlands impacted at this site are considered to be of high functional quality. While this site is historically loblolly pine trees cleared via standard silviculture practices, it continues to perform most intrinsic aquatic ecosystem functions as a forested wetland system. The 3.13 acre area is part of a much larger contiguous ecosystem, as it is located in an undeveloped portion of St. Tammany Parish. The site is important for wildlife values, water quality, and flood storage.

Three mitigation banks are located within this watershed primary service area: Abita Creek Mitigation Bank-Perino Tract, Mossy Hill Mitigation Bank, and Mossy Hill Mitigation Bank- Oaklawn Tract. It was determined that the 3.13 acres of unavoidable wetland impacts would be offset through the purchase of credits from one of the following approved compensatory mitigation banks:

- 12.4 acres of pine flatwood/savannah credits at Abita Creek-Perino Tract
- 16.7 acres of pine flatwood/savannah credits at Mossy Hill
- 18.6 acres of pine flatwood/savannah credits at Mossy Hill-Oaklawn Tract

In order to satisfy these requirements, the applicant agreed to purchase 16.7 acres of pine savannah/flatwoods credits from the Mossy Hill Wetland Mitigation Bank on June 3, 2015.

2. Authority.

- ☐ Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. §403).
- ☒ Section 404 of the Clean Water Act (33 U.S.C. §1344).
- ☐ Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

3. Scope of Analysis.

a. NEPA. *(Write an explanation of rationale in each section, as appropriate)*

To satisfy section 102 of the National Environmental Policy Act (NEPA), this project was coordinated with federal and state resource agencies to obtain their comments regarding potential environmental impacts to be considered in the evaluation of this project. Based on a systematic interdisciplinary approach and after consideration of agency comments, comments received during the public comment period, and an evaluation of the proposed project and its anticipated effects, it has been determined that the project will not require an Environmental Impact Statement (EIS).

(1) Factors.

(i) **Whether or not the regulated activity comprises "merely a link" in a corridor type project.** The project is not part of a corridor-type project.

(ii) **Whether there are aspects of the upland facility in the immediate vicinity of the regulated activity which affect the location and configuration of the regulated activity.** The project has been designed and located to avoid wetland areas and to utilize upland areas to the maximum extent practicable in accordance with the Clean Water Act. The project is not an appendage to an upland facility.

(iii) **The extent to which the entire project will be within the Corps jurisdiction.** Of the total 3.53 acres of surface impacts, approximately 3.13 acres are within the Corps' jurisdiction. Consequently, the entire well pad construction and access road improvement project as described previously has been evaluated pursuant to NEPA.

(iv) **The extent of cumulative Federal control and responsibility.** Federal control and responsibility of this project is based on Section 404 of the Clean Water Act. No other federal approvals are required.

(2) Determined scope.

☐ **Only within the footprint of the regulated activity within the delineated water.** Federal involvement is limited to regulating work and structures in navigable waters and the discharge of dredged or fill material into waters of the U.S. and analyzing both direct and indirect impacts (to waters of the U.S.) resulting from such activity. The scope of analysis was determined to be the project fill areas.

☒ **Over entire property.** The proposed project is considered to be subject to Corps evaluation.

b. National Historic Preservation Act (NHPA) "Permit Area".

(1) **Tests.** Activities outside the waters of the United States ☒are/☐are not included because all of the following tests ☒are/☐are not satisfied: Such activity ☐would/☒would not occur but for the authorization of the work or structures within the waters of the United States; Such activity ☒is/☐is not integrally related to the work or structures to be authorized within waters of the United States (or, conversely, the work or structures to be authorized must be essential to the completeness of the overall project or program); and Such activity ☒is/☐is not directly associated (first order impact) with the work or structures to be authorized. It does not appear that the proposed project would have any impact on historic properties. No comments were received during the public notice period concerning cultural/historic sites.

(2) **Determined scope.** The Scope of Analysis covers the entire project site. This includes clearing, grading, and filling activities associated with the drill pad, ring levee, and access road improvements.

c. Endangered Species Act (ESA) "Action Area".

(1) **Action area means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.** Action area is a biological determination of the reach of the action on listed species. It includes the area of direct and indirect effects. In this instance, two listed species potentially could be present in the project area: the threatened Gopher Tortoise (*Gopherus polyphemus*) and the endangered Red-Cockaded Woodpecker (RCW - *Picoides borealis*). If those species were present, potential direct effects to those species would be limited to the project footprint. Potential indirect effects such as vibration, dust, noise and fumes from vehicles and equipment would extend beyond the project footprint but would fairly quickly dissipate.

(2) **Determined scope.** In light of the nature of the activity that will occur on the project site, the action area is considered to be the immediate project area and the areas around the project site that would be impacted by vibration, dust, noise and fumes.

d. Public notice comments. ☐ **NA** A public notice (PN) describing the project (as outlined in 33 C.F.R. § 325.3) was issued on October 14, 2014. It was sent to all adjacent landowners (by mail) and was provided to appropriate state and

Federal agencies (via CEMVN's public notice website). The PN and permit application were also posted to CEMVN's main homepage. The public notice invited comments from interested parties and allowed a 30 day comment period.

In November and December 2014, CEMVN provided Helis the comments received from the public and stakeholders and requested additional information. Helis' January 2, 2015 Response to Comments and USACE's Requests for Information was posted to CEMVN's website. That response may be accessed at: <http://www.mvn.usace.army.mil/Media/Helis.aspx>

(1) The public also provided comments at ☐ public hearing, ☐ public meeting, and/or ☒ N/A. Public hearings are held at the discretion of the District Engineer when a hearing would provide additional information that is necessary for a thorough evaluation of pertinent issues, but that is not otherwise available. Factors considered in the decision to hold a public hearing include whether the issues identified to support a public hearing request are already addressed by comments submitted in response to the public notice and whether those issues represent information not otherwise available to the Corps.

A public hearing was requested. However, CEMVN determined a public hearing was not necessary on the grounds that: a) the issues identified in support of the public hearing request were addressed in comments already submitted; and b) a hearing would not provide CEMVN information not otherwise available to it. Additionally, many of the commenters requesting a public hearing identified concerns and information related to hydraulic fracturing, a process that is not included in the stated project purpose.

On January 21, 2015, CEMVN advised the Tulane Environmental Law Clinic (TELC) that it was denying TELC's request for a public hearing on the project as currently proposed. CEMVN noted that if Helis decides to proceed with hydraulic fracturing wells in the future, Helis would be required to submit another permit application, which would be subject to public notice and comment. TELC would have the opportunity to request a public hearing on that permit application at that time.

On November 12, 2014, the Louisiana Department of Natural Resources, Office of Conservation (LOC) held a public hearing in Mandeville, Louisiana regarding Helis' proposed permit for mineral exploration. Contents of the meeting were recorded and provided to CEMVN for review.

- (2) Commenters and issues raised.** All comments received from the public, stakeholders and other agencies have been considered. All substantive issues raised by those comments that pertain to the current proposed project have been addressed within this decision document. In some instances, the concerns raised by the comments are addressed within Corps of Engineers regulations, 33 CFR Parts 320, 323, 325 and 325 Appendix B, and Environmental Protection Agency regulations, 40 CFR Part 230.

Name	Issue
Environmental Protection Agency (EPA)	On November 13, 2014, EPA recommended that a Department of Army Permit not be issued for this activity until the applicant demonstrates the need for the project and its location within a wetland area, and provides a full evaluation of less environmentally damaging alternatives. EPA continued by saying, that if there are no less damaging sites for the project, the applicant should be required to examine opportunities to minimize impacts on the site by reducing and/or reconfiguring the proposed project. If it's determined that the proposed work is in the public's interest, compensatory mitigation within the project watershed should be provided for all unavoidable impacts to fully offset all lost wetlands functions and values before a Department of Army permit is issued. On February 25, 2015, EPA determined that after reviewing the alternatives analysis, it does not object to the project as proposed provided that the applicant satisfies the 404(b)(1) guidelines. EPA did not advise of any other water quality aspects that CEMVN should consider. On May 18, 2015, EPA offered no objection to the compensatory mitigation options using the RM in the event CEMVN determines that permit issuance is not contrary to the overall public interest.
Louisiana Department of Environmental Quality (DEQ)	DEQ issued a section 401 Water Quality Certification (WQC # 140328-02) on March 19, 2015. The WQC, DEQ's Rationale for Decision and its Response to Comments Summary are attached hereto and incorporated herein. (Exhibit 5) Certification of compliance with applicable effluent limitations and water quality standards required under the provisions

	of Section 401 of the Clean Water Act is considered conclusive with respect to water quality considerations unless the EPA has advised CEMVN of other water quality aspects to be taken into consideration. The EPA's comments are summarized above.
LOC	Issued a permit to drill (Ser No. 248819) on December 19, 2014. (Exhibit 6)
TELC	TELC submitted a letter by traditional mail and e-mail on behalf of the Town of Abita Springs dated October 31, 2014. TELC requested a public hearing on the vertical test well which, according to them, would "...ultimately be used for fracking...". TELC stated that the residents in the Town of Abita Springs are concerned about wetland impacts, the potential impacts to groundwater, surface water contamination, and zoning. A public hearing was considered more important if this would be the public's last opportunity to comment on "Phase II" (<i>referencing the fracking procedures</i>). If a public hearing is not granted, TELC requested a time extension to provide comments. On November 13, 2014, TELC sent an additional letter. It addressed the following: • Parish zoning • Insufficient information in the application and public notice • Alternative sites in non-wetland areas are available • The integrity of the Geologic Review and its process • The need for the project with the current oil and gas market • Cumulative and Secondary impacts • The need for an Environmental Impact Statement (EIS) to consider the cumulative impacts associated with oil and gas exploration in this area • If an EIS is not conducted, the Environmental Assessment should be published for comment • Endangered species interaction • Public interest • Water quality

	On January 14, 2015, TELC sent an additional letter by traditional mail and e-mail requesting a response to the public hearing request. They also requested that Helis' January 2, 2015, response to the public notice comments be made public and that CEMVN allow a comment period on this information. On February 12, 2015, TELC informed CEMVN of a lawsuit filed on behalf of the Town of Abita Springs against CEMVN due to CEMVN's denial of the request for a public hearing and its failure to reopen the public comment period. The lawsuit was filed in the U.S. District Court, Eastern District of Louisiana.
Blue Williams, L.L.P. Attorneys and Counselors at Law	Blue Williams, L.L.P. sent a letter on November 10, 2014, with a copy of the June 18, 2014, "Petition for Declaratory and Injunctive Relief" filed in the 19 th JDC, Parish of East Baton Rouge, State of Louisiana, No. 631370. The letter stated that St. Tammany Parish objects to the issuance of any permit citing zoning violations at the well location.
Louisiana Environmental Action Network (LEAN)	On November 11, 2014 LEAN submitted a letter of opposition to the proposed project. LEAN provided a brief history of the application and objected to the project at this location based on water dependency, water quality, zoning, alternatives, and risks associated with fracking.
Concerned Citizen of St. Tammany (CCST)	CCST requested a public hearing by traditional mail and e-mail to voice opposition on this project. Wildlife, wetlands, water quality, and zoning were listed as concerns. Water dependency and information on least damaging alternatives were questioned.
Other Public Comments	During the 30 day comment period, CEMVN received 79 individual comments by e-mail, 34 comments by traditional mail, 1 e-mail petition with 51 signatures, and 1 petition by traditional mail with 64 signatures. CEMVN received an additional 87 individual comments by e-mail, several petitions by e-mail with 247 signatures, and several petitions by traditional mail with 230 signatures. All but 4 comments were in opposition to the project. The opposition's major concerns are: zoning laws; aquifer/groundwater impacts; drill water storage and disposal; surface water impacts; impacts to water quality; cumulative impacts; and endangered species. Those in favor of

	the project cited energy independence, job growth, tax revenue, and the benefits of existing oil and gas infrastructure (pipelines) as benefits that a fracking project could provide to St. Tammany Parish.
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(3) Site ☐ was/☒ was not visited by the Corps to obtain information in addition to delineating jurisdiction. A field site visit was conducted by CEMVN botanist in order to determine jurisdiction. (MVN-2013-2277-SK) (Exhibit 10)

(4) **Issues identified by the Corps. Describe.** This proposal was reviewed internally by Real Estate Division (RE) and on April 8, 2014, determined that a RE instrument is not required. CEMVN's Office of Counsel (OC) reviewed this document in conjunction with the Department of Justice. OC completed their review on May 29, 2015.

(5) **Issues/comments forwarded to the applicant.** ☐ NA/☒ Yes.

(6) **Applicant replied/provided views.** ☐ NA/☒ Yes. January 2, 2015 response.

(7) **The following comments are not discussed further in this document as they are outside the Corps purview.** ☐ NA/☒ Yes. Multiple commenters raised the issue that the project site is located within an area that the St. Tammany Parish Unified Development Code zones as single-family residential. However, the issue whether parish zoning law applies to prevent the proposed Helis well was resolved by a state court. In *St. Tammany Parish Government v. James H. Welsh*, Commissioner of Conservation, State of Louisiana (19th JDC, Parish of East Baton Rouge, No. 631370), the Court found that La. R.S. 30:28(F) (which provides that agencies or political subdivisions of the state may not prohibit or otherwise interfere with the drilling of a well or test well for the exploration of minerals by a holder of a drilling permit) expressly preempts St. Tammany Parish's zoning ordinances and that such ordinances are unconstitutional insofar as they prohibit or in any way interfere with the drilling of Helis' well.

4. Alternatives Analysis.

a. **Basic and Overall Project Purpose (as stated by applicant and independent definition by Corps).**

☒ Same as Project Purpose in Paragraph 1.

☐ Revised: N/A

b. Water Dependency Determination.☒ Same as in Paragraph 1.☐ Revised: N/A**c. Applicant preferred alternative site and site configuration.**☒ Same as Project Description in Paragraph 1.☐ Revised: N/A

The applicant selected its preferred project site based on the following criteria:

Impacts to Wetlands	Can wetlands be avoided or impacts minimized? How many acres of direct impact?
How to Access the Site	What is the proximity to major roadways and existing access roads? Would access need to be constructed or significantly improved, causing increased wetland and other impacts?
Is the Site Near Populated Areas, Sensitive Habitat, Sensitive Receptors	Is the site a reasonable distance from residences, private water wells, heavily-trafficked roadways, local bayous, and critical habitat areas?
Proximity to Oil and Gas Infrastructure	Is the well site near existing pipelines for access in the event the geologic data prove favorable?
Location within potential new TMS sub-play	Is the site within southern St. Tammany Parish and relatively close to the southern control wells?
Is the site located within the Louisiana State Coastal Zone?	Is the site outside the coastal zone to avoid interference with the State's Coastal Management Plan (and presumably to avoid the need to obtain a Coastal Use Permit and to comply with increased regulatory burden placed on drilling and wells in the coastal zone)?

d. Off-site locations and configuration(s) for each.

Helis was able to identify the presence of this target formation from existing (but limited) geologic data from old vertical wells in the area. The existing wells are the Wagner and Brown Keller Heirs #1-12, the Hunt Currie #1-8, Shubuta Salmen #1-10, the Exchange Carollo #1-25, and the Tenneco Keneddy #1-25. These wells are the "control wells." (Exhibit 7) Data from the Forest Sherwood

#1-21 in the northwestern corner of St. Tammany Parish also provides important information. Well logs produced in the drilling of these older wells indicate the presence of the target formation but do not provide the necessary geological data required to determine whether the potential new TMS play can be economically produced.

Helis selected the proposed drill site by first identifying the general geographic boundaries of the area where the existing geologic data (from the control wells) suggests the target formation is present. Helis then narrowed that area to locations that are sufficiently isolated from the built environment, residential areas, private water wells, and environmentally sensitive areas. Additionally, Helis excluded areas within the Louisiana Coastal Zone, presumably to avoid the increased regulatory burden for drilling operations within the Coastal Zone. The resulting area was considered the "control area."

Once the control area was defined and based on the above search criteria, Helis identified four potential sites for this activity. (Exhibit 8) All four sites are located within a larger tract managed for timber production. Each site contains similar pine plantation habitat with similar soil and vegetation types.

Off-site locations and configurations (Exhibit 8)

Alternative sites	Comparison to criteria
Site 1 30.388556, -89.94925	A greater amount of wetlands is present on this site than on the preferred site; the existing access road would need substantial improvement to accommodate the heavy trucks that will be used to service the drill site, causing further wetland and other impacts
Site 2 30.389306, -89.968972	A greater amount of wetlands is present on this site than on the preferred site; the closest road would need to be extended to access this site; construction of the extension and other necessary road improvements would cause a greater amount of wetland impacts than at the preferred site
Site 3- Preferred Alternative 30.38778, -89.97861	This site is adjacent to Log Cabin Road which was determined to be the only road within the control area able to accommodate heavy trucks without substantial improvement (avoiding greater wetland impacts); the site is in close proximity to an existing natural gas pipeline; it is the site closest to the the Southern control wells (approx. 1 mile south of site 4); it is also sufficiently isolated from residences, private water wells, development, heavily-trafficked roadways, local waterways, sensitive habitat and designated Dusky Gopher Frog critical habitat

Site 4 30.402333, -89.851222	This site contains a similar amount of wetlands as site 3; however the access road would require substantial improvement causing greater wetland impacts; further, this site is closer to Bayou Lacombe and Liberty Bayou and to designated Dusky Gopher Frog critical habitat

Helis presented these four sites with geologic data supporting its proposal in the GR. After reviewing the data, the criteria for site selection and the rationale for selecting the preferred site, the consulting geologist concluded that no less damaging feasible alternatives were available by comparison with the selected site.

e. (☐ NA) Site selected for further analysis and why.

f. On-site alternative configurations.

Helis' revised proposal has reduced wellpad size significantly. The site footprint has been minimized to the greatest extent possible for an exploratory wellpad. Per the GR, the 3.2 acre fill pad is within the industry standard for an exploratory well. Well pad size is due in part to the space needed for the environmentally protective measures that Helis will install such as the monitoring wells and two filtration units for non-contact stormwater. The .32 acre of access road improvement impacts are necessary to accommodate large truck traffic to and from the site.

g. Other alternatives not requiring a permit, including No Action.

Alternative	Effects
No Action	Under the no action alternative, the permit application would be denied. The well pad and associated structures and road improvements for the exploratory well would not be constructed or would be constructed in an area not requiring a CEMVN permit. The 3.13 acres of impacts to jurisdictional wetlands would not occur. The site would likely continue to be managed for silviculture. However, the no action alternative could have short- and long-term adverse impacts. Given the restricted area of the potential new play and the prevalence of interspersed wetlands throughout that area, the existence of a site meeting the applicant's other criteria for access and avoidance is questionable.

	The applicant likely would not have the opportunity to confirm a potential new oil and gas deposit, which could affect economic revenue and other business prospects for the applicant. Additional economic benefits in the form of wages paid to workers, materials purchased from local businesses for construction and operation of the exploratory well, sales tax revenues and new jobs generated by the project would not be realized.
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h. Alternatives not practicable or reasonable. Locations beyond the area containing the target geological formation at sufficient thickness to allow horizontal production were not evaluated for potential sites, as a test well in those areas would not meet the project purpose. Areas containing sensitive environmental receptors (such as residences, private water wells, waterways, critical and sensitive habitat) were also not considered reasonable and were not evaluated for potential sites in order to avoid the safety issues, public inconvenience and risks of environmental harms that a drilling operation at such sites could create. Further, considering costs, logistics and potential impacts, areas that have no access by an existing road within a reasonable distance are not considered practicable or reasonable.

i. Least environmentally damaging practicable alternative. After adequate investigation, the proposed site and project configuration is determined to be the least environmentally damaging practicable alternative in accordance with 40 C.F.R. § 230.10(a).

CEMVN has independently evaluated the information and analyses submitted by Helis and its accuracy and agrees that the process employed by Helis to identify, to evaluate and to select a site has resulted in the selection of the least environmentally damaging practicable alternative. Because the project purpose is to obtain data regarding whether the target formation in the TMS is economically viable for oil and gas production, all potential sites must be located in an area known to contain that target formation. Based on information from the control wells, the formation is known to exist at a sufficient thickness for production in the vicinity of the four southern control wells. At the site of the northernmost well (Forest Sherwood #1-21, located in the upper western corner of St. Tammany Parish), the formation is not present, suggesting that it does not extend that far north. At the second northernmost well (Tenneco Kennedy #1-25), the formation is too thin for horizontal production. Consequently, the northern boundary for the potentially producible area of the formation (and thus the northern boundary for potential sites) appears to lie south of the Tenneco Kennedy control well. Further, given the potential variation in the geologic formation itself, the closer to the control wells the test well is located, the more likely it is to find a

producible area of that formation. In light of the project purpose, the various alternative sites, which are all located in undeveloped areas fairly close to the southern control wells represent an appropriate array of reasonable alternative sites.

Regarding the other criteria used by Helis to select its preferred site, CEMVN agrees that these criteria and the evaluation based thereon has resulted in selection of the least environmentally damaging practicable alternative. Each of the other three sites would result in greater wetland impacts. While two sites contain more wetlands on-site (Sites 1 and 2) and one site contains a similar amount of wetlands (Site 4), all three other sites would require substantial improvements to the nearest access road, resulting in even greater wetland impacts. The preferred site (Site 3) requires only minimal improvements (.32 acre of impact to wetlands) to make it serviceable for drilling operations. The one alternative site with an equal amount of wetlands on-site (Site 4) would potentially result in greater risks to the environment as it is located near waterways (Liberty Bayou and Bayou Lacombe) and designated critical habitat.

In sum, CEMVN finds that Site 3, the selected site, represents the least damaging practicable alternative.

5. Evaluation of the 404(b)(1) Guidelines. (☐NA)

a. Factual determinations.

Physical Substrate.

☒ See Existing Conditions, paragraph 1

☒ The Natural Resources Conservation Service has classified project area soils as Stough fine sandy loam, 0 to 1 percent slopes (St).

Stough fine sandy loam (St) is level and somewhat poorly drained. It is on broad, slightly convex ridges on the broad stream or marine terraces. The surface layer is 3 inches thick and is dark grayish brown. The subsurface extends 6 inches and is pale brown, mottled, extremely acidic fine sandy loam. The subsoil extends to 70 inches in depth and is light yellow. Water and air move through this soil at a moderately slow rate, and water runs off the surface at a slow rate. A seasonal high water table fluctuates between depths of about 1 foot and 1.5 feet from January to April. This soil is well suited as a woodland and pasture land; moderately well suited to intensive recreational areas, and crops. The soil is poorly suited for urban uses.

Fill will be placed in the project area for a guard shack, road improvements (3 bypasses), an elevated access into the site and the drill pad. Log Cabin Road is 14 feet wide with a ditch on both sides of the road. The water flow

along these ditches will be preserved with the use of culverts. Fill will be placed in the existing ditches with culverts to allow water passage at the guard shack and the bypasses. Fill and culverts will be removed after work is completed. Impacts associated with this work are considered to be direct, minimal, and (if the well produces data unfavorable to production) short term in duration. With considerations to the existing ground contours, approximately 2 feet of fill from an off-site source will be placed at the drill site location. A borrow ditch and ring levee will surround the perimeter of the pad. Material for the ring levee will be taken from the borrow ditch within the perimeter of the drill site. The ring levee will prevent sheet flow and runoff at the project site. The fill site will be contoured to allow drainage into a 50 foot by 50 foot collection area. Drill pad construction will directly impact the entire project site. Minimal impacts would be expected outside project areas. If the project is not economically viable, the fill will be removed and the ring levee will be degraded back to pre-project conditions. If the findings from this prospect suggest successful future production, future impacts at the site could be long-term, thus requiring additional review by way of a separate permit application. The habitat values associated with the project will be lost, but will be functionally replaced through mitigation at an approved compensatory mitigation bank.

Water circulation, fluctuation, and salinity.

☐ Addressed in the Water Quality Certification.

☒ The impacts to surrounding waters concerning current patterns, water circulation, normal water fluctuation, and salinity are considered to be minor. Drainage, water retention times, and sheet flow patterns are already modified in this environment by the existing road bed, drainage swale, and silviculture practices. The culverts to be installed at the guard shack, road bypasses and access way should maintain current flow patterns.

Helis provided a "Integrated Stormwater Plan" to list measures taken to minimize risks to surrounding surface waters and wetlands. The best management practices (BMP's) that will be implemented at the site include:

- A self contained, closed-loop mud system to drill the vertical test well.
- Deck drainage from the rig will be collected and transported off-site for proper disposal.
- Produced water and drilling wastes will be containerized and transported off-site for disposal.
- Sanitary waste water will be collected in portable facilities and transported off-site for disposal.
- No on-site storage of gasoline/diesel for fueling vehicles or heavy equipment will be kept on-site. Vehicle maintenance, repair, and refueling will be done off site, unless an emergency occurs.
- After drilling the vertical test well, a security fence will be installed around the well head to secure the well while Helis evaluates the geological data.

DEQ issued a section 401 Water Quality Certification (WQC # 140328-02) on March 19, 2015. (Exhibit 5) The WQC, Rationale for Decision and Response to Comments Summary are incorporated herein.
Suspended particulate/turbidity. ☐ Turbidity controls in Water Quality Certification. ☒ The addition of fill within the project area has the potential to increase suspended sediments in local waters and wetlands; however the effects are expected to be minimal. The permittee will be required to implement BMP's for all earthwork activity (clearing, grading, excavating, and/or deposition of fill material) to prevent sediments from entering adjacent wetlands. Following construction, the drill site would be a self contained system. The drill pad would be surrounded by a 2.5 foot high ring levee and elevated access way to contain stormwater and material within the drill site. The ring levee has a stormwater retention capacity of approximately 2,542,549 gallons (i.e., the amount of water that can be contained within the site without exceeding the ring levee elevation). For scale, a 100 year storm event occurring over the 3.21 acre drill site (13 inches in 24 hours) would generate approx. 1,133,150 gallons of water. Suspended particulate/turbidity impacts during construction are expected to be short-term in duration and minor in extent.
Contaminant availability. ☐ General Condition requires clean fill. ☒ The fill material is not expected to contain higher than normal background levels of contaminants; DEQ has certified that the discharge of fill material for the project will not violate state water quality standards. Any contaminants which may be present are expected to have negligible effects. In addition, the waste water disposal methods outlined in Helis' "Integrated Stormwater Plan" minimize any anticipated risk to soil/surface water/groundwater resources.
Aquatic ecosystem and organism. ☐ Wetland/wildlife evaluations, paragraphs 5, 6, 7 & 8. ☒ The 3.13 acres of jurisdictional wetlands to be directly impacted are part of a much larger contiguous system within the Liberty Bayou-Tchefuncta River Watershed (HUC Unit: 08090201). Filling of the wetlands at the project site would have adverse impacts to those aquatic species that are partially or totally dependent upon those wetlands for survival. Typically, motile aquatic organisms would relocate in adjacent wetlands, but some benthic organisms may be impacted due to their inability to vacate the construction areas. Impacts to organisms and the aquatic ecosystem in this altered environment are expected to be localized to the project area, with minor adverse impacts. The impacts to 3.13 acres of jurisdictional wetlands will decrease the available habitat to species in the area; however, given the abundance of similar habitat in the project area, this effect is considered

to be minimal. The compensatory mitigation credits purchased at a Corps approved Mitigation Bank are expected to adequately compensate for the wetland losses within HUC 08090201, St. Tammany Parish, and Southeast Louisiana.
Proposed disposal site. ☒ Public interest, see discussion in Paragraph 7. ☒ An explanation regarding the placement of the hauled-in fill is detailed in the 5.a. Physical Substrate section.
Cumulative effects on the aquatic ecosystem. ☐ See Paragraph 7.e. ☒ Cumulative impacts are changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material. Although the impact of a particular discharge may constitute a minor change itself, the cumulative effect of similar activities could result in a major impairment of the existing aquatic ecosystems. On a macro-scale, the elimination of an additional 3.13 acres of jurisdictional wetlands within HUC 08090201 adds to historical and continued impacts to pine flatwood/savannah habitat in this region of Southeastern Louisiana. The project area is managed for timber production and appears to have been harvested within the last 10 years. The site is located within a larger, undeveloped and forested area. Where wetlands are impacted by authorized activities, the functions and values lost from the fill activity are replaced through adequate compensatory mitigation. To date, no evidence has been provided to indicate that this or future oil and gas activities would significantly impact HUC 08090201. If CEMVN determines that future filling activities could significantly impact this watershed, a higher scrutiny for such action is to be expected. Due to the project scale, location, habitat type, impact evaluation and proper utilization of the 404(b)(1) guidelines, the project is not expected to contribute to significant adverse cumulative impacts to the aquatic ecosystem.
Secondary effects on the aquatic ecosystem. ☒ See Paragraph 7.e. ☒ Secondary adverse impacts would include, but are not limited to, noise, traffic, reduction in wildlife/fisheries habitat value, and slightly decreased air/water quality in the immediate project area. The following Special Condition will be incorporated into the permit in order to reduce the potential secondary effects to the ecosystem caused by construction: "Many local governing bodies have instituted laws and/or ordinances in order to regulate dredge and/or fill activities in floodplains to assure maintenance of floodwater storage capacity and avoid disruption of drainage patterns that

may affect surrounding properties. Your project involves dredging and/or placement of fill, therefore, you must contact the local municipal and/or parish governing body regarding potential impacts to floodplains and compliance of your proposed activities with local floodplain ordinances, regulations or permits.”

b. Restrictions on discharges (230.10).

- (1) It ☒has/☐has not been demonstrated in paragraph 4 that there are no practicable nor less damaging alternatives which could satisfy the project's basic purpose. The activity ☒is/☐is not located in a special aquatic site (wetlands, sanctuaries, and refuges, mudflats, vegetated shallows, coral reefs, riffle & pool complexes). The activity ☐does/☒does not need to be located in a special aquatic site to fulfill its basic purpose.
- (2) The proposed activity ☐does/☒does not violate applicable State water quality standards or Section 307 prohibitions or effluent standards (☐based on information from the certifying agency that the Corps could proceed with a provisional determination). The proposed activity ☐does/☒does not jeopardize the continued existence of federally listed threatened or endangered species or affects their critical habitat. The proposed activity ☐does/☒does not violate the requirements of a federally designate marine sanctuary.
- (3) The activity ☐will/☒will not cause or contribute to significant degradation of waters of the United States, including adverse effects on human health; life stages of aquatic organisms' ecosystem diversity, productivity and stability; and recreation, esthetic, and economic values.
- (4) Appropriate and practicable steps ☒have/☐have not been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (see Paragraph 8 for description of mitigative actions).

6. Public Interest Review: All public interest factors have been reviewed as summarized here. Both cumulative and secondary impacts on the public interest were considered. Public interest factors that have had additional information relevant to the decision are discussed in number 7.

				+	0	-	M	
								+ Beneficial effect
								0 Negligible effect
								- Adverse effect
								M Neutral as result of mitigative action
				☒	☐	☐	☒	Conservation.
				☒	☐	☐	☐	Economics.
				☐	☐	☒	☐	Aesthetics.
				☐	☐	☐	☒	General environmental concerns.
				☐	☐	☐	☒	Wetlands.
				☐	☒	☐	☐	Historic properties.
				☐	☐	☐	☒	Fish and wildlife values
				☐	☒	☐	☐	Flood hazards.
				☐	☒	☐	☐	Floodplain values.
				☒	☐	☐	☐	Land use.
				☐	☒	☐	☐	Navigation.
				☐	☒	☐	☐	Shore erosion and accretion.
				☐	☒	☐	☐	Recreation.
				☐	☐	☐	☒	Water supply and conservation.
				☐	☐	☐	☒	Water quality.
				☒	☐	☐	☐	Energy needs.
				☐	☒	☐	☐	Safety.
				☐	☒	☐	☐	Food and fiber production.
				☐	☒	☐	☐	Mineral needs.
				☒	☐	☐	☐	Considerations of property ownership.
				☒	☐	☒	☐	Needs and welfare of the people.

7. Effects, policies and other laws.

a. ☐ NA

Public Interest Factors. (add factors that are relevant to specific project that you checked in number 6 above and add a discussion of that factor)

Factor	Discussion
Economics, Aesthetics, Land use, Energy needs, Considerations of property ownership	If the geologic data obtained from this vertical test well demonstrates that the target formation in this area is an economically viable source of production, it could increase the known oil and gas reserves within Louisiana and the U.S. available for potential production which could contribute to achieving the

	national policy goal of energy independence in the U.S. While these are not benefits of the current project, this project does increase the likelihood that such benefits may be realized in the future. The economic benefits associated with oil and gas production from the TMS Play are recognized by: • 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 • St. Tammany West Chamber of Commerce • Southeast Regional Coalition of Business Councils • Tangipahoa Economic Development Foundation • Washington Economic Development Foundation (NOLA.com, October 31, 2014) Economic benefits from the vertical test well include: temporary jobs/wages, revenues generated by the purchases of materials and supplies from local businesses, and increased sales tax revenues. Some commenters view the vertical test well as a phased approach to circumvent regulations, eventually leading to fracking activities at this location; however, CEMVN views this project as a “standalone” activity to determine if the oil and gas reserves within the target formation can be economically extracted. If fracking procedures are proposed at this site, additional evaluation and authorization by CEMVN and other agencies will be required. Local residents are concerned that this project will decrease property values in the area; however, no evidence has been provided to indicate that this will
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	occur. The nearest residential areas are more than 1.5 miles from the project site. The project is located on a timber farm, which will not be used for residential purposes for the foreseeable future. Distance from residential areas was a primary factor in choosing this site. As such, the vertical test well is not anticipated to have significant impacts on existing property values.
Water quality	Surface water: As previously mentioned, Helis provided an "Integrated Stormwater Plan" that includes measures that will be taken to minimize risks to surrounding surface waters and wetlands. This includes a self-contained, closed-loop mud system to drill the well. The water required for use in drilling the vertical exploratory well will be collected stormwater and/or will be delivered by truck from off-site ponds. No water will be obtained from on-site wells. The total estimated volume of freshwater required is $\pm 800,000$ gallons. For scale, this is roughly the equivalent to the amount of water that would be contained within a 0.3 acre pond with a uniform depth of eight feet deep. Helis maintains that private ponds have been identified within 3 to 5 miles to extract water for transport by truck and use at the drill site. Ground water: A number of oil and gas wells (approx. 1700) have already been drilled through the Southern Hills Aquifer and over 76 have been drilled in St. Tammany alone (Dale public hearing testimony, pp. 92, 93, and 164) without any known impact to the aquifer. Water-based drilling muds and a surface and intermediate casing in the wellbore will be used in drilling the vertical exploratory well. The casings will be pressure tested and will isolate the aquifer from the wellbore. Multiple groundwater monitoring wells will be installed around the vertical test well. These wells would collect groundwater quality data to determine if Helis' drilling operations are impacting water in the aquifer. Helis chose this site in part due to its distance from residential areas and local water supply wells. (Exhibit 9) The closest private water well is over 1 mile away from the exploratory well site. (Exhibit 11) Helis has identified 112 water wells within two miles of the

	project. There are 64 water wells that extend to approximately 530 feet in depth and 48 wells that extend 250 feet in depth. The deepest recorded well is found at Lakeshore High School. It is a 1,200 foot well that is located approximately 1.5 miles away from the drill site. No wells are located within a mile of the project. Groundwater flow velocity within the Southern Hills Aquifer is extremely low, ranging from a few feet per year to several hundred feet per year (on average 61 ft/year) (USGS 1983). In addition, water within the aquifer moves in a south-southwest direction towards Lake Pontchartrain, away from the wells and residential areas in Mandeville and Abita Springs (USGS 1983).
Safety	Helis provided an Integrated Stormwater Plan, Emergency Action Plan, Hurricane Preparedness Plan, and a Spill Prevention Control and Countermeasures Plan to use as operational and structural safeguards for the vertical test well. As mentioned, the vertical test well will have surface and intermediate casings that will enclose the wellbore and will separate it from the aquifer. The drill pad will have three groundwater-monitoring sentinel wells. Many of the comments expressed concerns regarding local traffic with respect to congestion and safety on LA 1088. Helis' entrance to Log Cabin Road is $\pm$300 feet from the nearest driveway into Lakeshore High School. LA 1088 is a two lane highway, which currently experiences heavy amounts of traffic before/after school and during school sporting events and other extracurricular activities. For the vertical test well, Helis plans to conduct work during the summer months when school is not in session. The entirety of this action will last approximately 30 days. Helis anticipates 4-5 heavy trucks and 10-20 light trucks per day during this period. If school is in session or the high school requests it, Helis proposes to relieve traffic congestion and improve traffic safety on LA 1088 by

	prohibiting heavy trucks servicing its site from travelling LA 1088 between the hours of 6:30 am and 8:30 am and between 1:30 pm and 3:30 pm. Additional coordination will be required to limit traffic during other school events. Helis will establish a transportation staging area adjacent to the I-12 and LA 1088 exchange. This will give Helis the flexibility to regulate traffic flow in and out of the site. The guard shack at LA 1088 and Log Cabin Road will restrict and supervise ingress and egress of traffic onto LA Highway 1088 and Log Cabin Road.
Conservation, Environmental concerns, Wetlands, Fish and wildlife values	Helis has proposed to fill the 3.13 acres of pine plantation wetland habitat within the project boundary. The project area provides habitat for many wildlife species. Animals such as, deer, opossum, raccoon, squirrel, turkey, reptiles and amphibians, several species of songbirds, raptors and other migratory birds can be found in this habitat. Project construction would convert this forested wetland habitat into an oil and gas facility, causing mobile wildlife to move out of the project area. The surrounding area is mostly undeveloped and forested. Consequently, there exists ample similar habitat for any displaced species. Though considered insignificant, this action could contribute to continued environmental stressors from development and a corresponding reduction in species carrying capacity for the Liberty Bayou-Tchefuncta River Watershed (HUC Unit: 08090201). The loss of wetland and non-wetland habitat resulting from the project is not likely, in itself, to decrease local wildlife populations; however, the future cumulative impacts associated with continued encroachment by human developments into these areas could be substantial and long-term, unless appropriate compensatory mitigation is required to offset habitat losses within the watershed. All unavoidable impacts to jurisdictional wetlands will be offset through credits purchased at an approved compensatory mitigation bank.

	BMP's will be utilized to restrict fill material from entering into adjacent wetlands/waterways.
Needs and welfare of the people	The proposed project is expected to have both beneficial and adverse effects concerning needs and welfare of the people. Discovery of another producible shale deposit could aid the nation to reduce dependence on foreign oil. Some individuals commented during the review about a variety of issues related to the conversion of a pine savannah/flatwood wetland to a vertical test well. However, the project is located in an area managed for timber production. If the test well is not successful, the site will be restored to pre-project conditions. Overall, the project is not expected to have more than a negligible effect on the needs and welfare of the people as the applicant will provide adequate and appropriate compensatory mitigation at an approved compensatory mitigation bank.
Historic properties, Flood hazards, Floodplain values, Navigation, Shore erosion and accretion, Recreation, Water Supply and conservation, Food and fiber production, Mineral needs	The Southern Hills Aquifer is not expected to be adversely impacted by the test well. Helis will install 3 groundwater monitoring wells to monitor water quality in the aquifer in the vicinity of the project area. In light of the project location and design and implementation of BMP's, the aquifer and other sources of drinking water are also not expected to be impacted. If the test well indicates that an economically viable geologic formation exists, opportunities for mineral production would increase in St. Tammany Parish. However, additional authorizations would be required to produce from this well site.

b. Endangered Species Act. ☐ NA**The proposed project:****(1) Will not affect these threatened or endangered species:**

☐ Any/ ☒ Gopher Tortoise, Red-Cockaded Woodpecker. **Explain.**

The project site is located in an area potentially inhabited by the threatened Gopher Tortoise (*Gopherus polyphemus*) and the endangered Red-Cockaded Woodpecker (RCW - *Picoides borealis*) protected by the Endangered Species Act. Pursuant to the Standard Local Operating Procedures for Endangered Species (SLOPES) entered between CEMVN and the U.S. Fish and Wildlife

Service, Ecological Services Office (dated October 22, 2014) when “a species is registered on the parish list where the project is proposed, but no suitable habitat is present within the action area, then a determination of ‘no effect’ is reasonable and no further coordination with the Service is necessary.” In this instance, both species are listed in St. Tammany Parish. However, as explained below, no suitable habitat for either species is present in the area that will be directly or indirectly impacted by the project. Consequently, CEMVN finds that the proposed work will have no effect on these species. Under the SLOPES procedure, no further coordination with the Service is necessary. The Service did not comment on the public notice.

The gopher tortoise is associated with areas that have well-drained, sand or gravel soils appropriate for burrow establishment, ample sunlight for nesting, and understory vegetation suitable for foraging. Gopher tortoises prefer open longleaf pine scrub oak communities that are thinned and burned every few years and can be found in Washington, Tangipahoa, and St. Tammany Parishes.

Suitable soil types for gopher tortoises include Latonia and Bassfield (highly suitable), Cahaba, Ruston, and Smithdale (less suitable), and Abita, Malbis, Angie, and Prentiss (marginal). The action area consists of Myatt fine sandy loams and Stough fine sandy loam, neither of which is suitable for the gopher tortoise. Additionally, the site contains loblolly pine managed for timber production, not the longleaf pine scrub oak habitat preferred by the tortoise. Portions of the area contain a thick understory which restricts sunlight and limits the open areas preferred for foraging. The action area does not contain suitable habitat for the gopher tortoise.

RCWs inhabit open, park-like stands of mature pine trees containing little hardwood understory or midstory. RCWs excavate roost and nest cavities in large living pines (10 inches or greater in diameter at breast height). Foraging habitat is defined as pine and pine hardwood stands over 30 years of age that are located contiguous to and within one-half mile of the cluster. The action area is used for silviculture and is dominated by trees that appear to be much younger than 30 years of age. Forested areas surrounding the action area appear to have ample understory and midstory, making those areas unsuitable as nesting habitat. The action area does not contain habitat suitable for the RCW.

(2) May affect, but is not likely to adversely affect:

Species: _____ Explain.

(3) ☐Will/☐Will not adversely modify designated critical habitat for the _____ . Explain.

(4) ☐Is/☐Is not likely to jeopardize the continued existence of the _____. **Explain.**

(5) The Services ☐concurred/☐provided a Biological Opinion(s).

c. **Essential Fish Habitat. Adverse impacts to Essential Fish Habitat** ☐will/☒will not result from the proposed project. No comments were received from the National Marine Fisheries Service during the public notice period.

d. **Historic Properties. The proposed project** ☐will/☐will not have any affect on any sites listed, or eligible for listing, in the National Register of Historic Places, or otherwise of national, state, or local significance based on ☐letter from SHPO/☒SHPO offered no comment during the public notice period.

e. **Cumulative & Secondary Impacts. The geographic area for this assessment is the** Liberty Bayou-Tchefuncta River (HUC Unit: 08090201) watershed.

(1) **Baseline.** There are approximately 168 stream miles contained within the 08090201 watershed. **Corps permits for the period** of October 2008 to present **have authorized the fill of approximately 327.4 acres** of jurisdictional wetlands and waters of the U.S. within the watershed. **Authorizations are projected to continue** ☒at the current rate/☐increase/☐_____ because of population increases and human demands. **Natural resource issues of particular concern from Corps & non-Corps activities are** continued loss of wetlands (in this watershed), adverse water quality impacts, shoreline erosion, and habitat loss for fish and wildlife in this area.

(2) **Context. The proposed project is** ☒typical of /☐a precedent /☐very large compared to /☐_____ other activities in the watershed. **Development similar to the proposal has occurred since** the U.S Army Corps of Engineers started regulating Section 10/404 activities. **Future conditions are expected to be** similar as the need for oil and gas continues. **Besides Corps authorized projects, other activities include** development in areas not subject to Corps jurisdiction. **These resources are also being affected by** other projects impacting wetland and wildlife habitat. **A key issue(s) of concern in this watershed is/are the** diminished resource support functions and habitat loss **resulting from** increased development and wetland loss. For a more comprehensive discussion and evaluation of cumulative impacts due to public and private development and

CEMVN water resource projects, please reference the Final Comprehensive Environmental Document Phase 1, Greater New Orleans Hurricane and Storm Damage Risk Reduction System available at <http://www.nolaenvironmental.gov/CED.aspx>. Those discussions are incorporated herein.

- (3) **Mitigation and Monitoring.** The project affects the following key issue(s): conservation, aesthetics, fish and wildlife values, water quality, and safety. The magnitude of the proposed effect is minimal within the watershed. Avoidance and minimization methods include project design incorporating a ring levee and storm water collection area, compensatory mitigation and siltation devices that will result in functional wetland replacement and a reduction in impacts to surrounding aquatic resources. Compensatory mitigation, namely at a mitigation bank and monitoring described herein will result in no net loss to wetlands within the watershed.
- f. **Corps Wetland Policy.** Based on the public interest review herein, the beneficial effects of the project outweigh the detrimental impacts of the project.
- g. (☐ NA) **Water Quality Certification under Section 401 of the Clean Water Act** ☒ has/☐ has not yet been issued by ☐ /☒ State/☐ Commonwealth. DEQ issued a section 401 Water Quality Certification (WQC # 140328-02) on March 19, 2015.
- h. **Coastal Zone Management (CZM) consistency/permit:** Issuance of a State permit certifies that the project is consistent with the CZM plan. ☒ There is no evidence or indication from the State of Louisiana that the project is inconsistent with their CZM plan. This project is located outside the coastal zone and does not require a CZM consistency determination.
- i. **Other authorizations.** LOC issued a permit to drill (Ser No. 248819) on December 19, 2014.
- j. (☒ NA) **Significant Issues of Overriding National Importance.** *Explain.* CEMVN's permit decision is not contrary to any enforceable state or local decision.
8. **Compensation and other mitigation actions.**
- a. **Compensatory Mitigation**
- (1) Is compensatory mitigation required? ☒ yes ☐ no [If "no," do not complete the rest of this section]

- (2) Is the impact in the service area of an approved mitigation bank?
☒ yes ☐ no

- (i) Does the mitigation bank have appropriate number and resource type of credits available? ☒ yes ☐ no

Issuance of this permit confirms that the US Army Corps of Engineers, New Orleans District, Regulatory Branch (CEMVN) has been provided with written notification from Ecosystem Investment Partners that the permittee has contracted for 16.7 acres of pine flatwoods/savannah mitigation credits at the Mossy Hill Wetland Mitigation Bank. Ecosystem Investment Partners has assumed responsibility for completing the mitigation in accordance with the Mossy Hill Wetland Mitigation Banking Instrument and has recorded the allocation of the mitigation required by this permit in the Regulatory In-lieu fee and Bank Information Tracking System (RIBITS).

- (3) Is the impact in the service area of an approved in-lieu fee program? ☒ yes ☐ no

- (i) Does the in-lieu fee program have appropriate number and resource type of credits available? ☐ yes ☒ no

- (4) Check the selected compensatory mitigation option(s):

- ☒ mitigation bank credits
☐ in-lieu fee program credits
☐ permittee-responsible mitigation under a watershed approach
☐ permittee-responsible mitigation, on-site and in-kind
☐ permittee-responsible mitigation, off-site and out-of-kind

- (5) If a selected compensatory mitigation option deviates from the order of the options presented in §332.3(b)(2)-(6), explain why the selected compensatory mitigation option is environmentally preferable. Address the criteria provided in §332.3(a)(1) (i.e., the likelihood for ecological success and sustainability, the location of the compensation site relative to the impact site and their significance within the watershed, and the costs of the compensatory mitigation project): N/A

- (6) Other Mitigative Actions:

Issuance of this permit confirms that the US Army Corps of Engineers, New Orleans District, Regulatory Branch (CEMVN) has been provided with written notification from Ecosystem Investment Partners that the permittee has contracted for 16.7 acres of pine flatwoods/savannah

mitigation credits at the Mossy Hill Wetland Mitigation Bank. Ecosystem Investment Partners has assumed responsibility for completing the mitigation in accordance with the Mossy Hill Wetland Mitigation Banking Instrument and has recorded the allocation of the mitigation required by this permit in the Regulatory In-lieu fee and Bank Information Tracking System (RIBITS).

If the proposed project requires any additional work not expressly permitted herein, the permittee must apply for an amendment to this authorization.

The permittee shall employ siltation controls around all construction sites that require earthwork (clearing, grading, dredging and/or deposition of fill material) such that eroded material is prevented from entering adjacent wetlands and/or waterways.

Ring levees shall be degraded by restoring the material with which they were built into the areas from which it was removed, and the areas leveled to as near pre-project conditions as practicable within 30 days after abandonment of the well.

All fills associated with the bypass roads and drill site shall be degraded when the site is abandoned. Fill areas shall be restored to as near pre-project conditions as practicable.

Broken boards and other extraneous construction materials shall be removed from the site when the well site is abandoned by the permittee. All plastic sheeting shall be removed from areas of the roadway and pad from which the boards are removed.

All discharges associated with drilling and production activities will be handled in a manner consistent with applicable Federal, state, and local laws and guidelines.

Many local governing bodies have instituted laws and/or ordinances in order to regulate dredge and/or fill activities in floodplains to assure maintenance of floodwater storage capacity and avoid disruption of drainage patterns that may affect surrounding properties. Your project involves dredging and/or placement of fill, therefore, you must contact the local municipal and/or parish governing body regarding potential impacts to floodplains and compliance of your proposed activities with local floodplain ordinances, regulations or permits.

Prior to commencing work on the project, the permittee must obtain all approvals necessary from the State of Louisiana and St. Tammany Parish.

9. General evaluation criteria under the public interest review. We considered the following within this document:

- a. **The relative extent of the public and private need for the proposed structure or work. (e.g. Public benefits include employment opportunities and a potential increase in the local tax base. Private benefits include land use and economic return on the property; for transportation projects benefits include safety, capacity and congestion issues.)** The public benefits include employment opportunities, increase in sales tax revenues, and economic benefits to local businesses and residents (materials purchased, jobs, etc). Private benefits include land use, consideration of property ownership, economic returns, a better understanding of the geology in this area in reference to oil and gas, and the potential to find additional oil and gas reserves.
- b. ☒ **There are no unresolved conflicts as to resource use. (☐ There are unresolved conflicts as to resource use. One or more of the alternative locations and methods described above are reasonable or practicable to accomplish the objectives of the proposed structure or work but are not being accepted by the applicant.) (☐ There are unresolved conflicts as to resource use however there are no practicable reasonable alternative locations and methods to accomplish the objective of the purposed work.)**
- c. **The extent and permanence of the beneficial and/or detrimental effects, which the proposed work is likely to have on the public, and private uses to which the area is suited. ☒ Detrimental impacts are expected to be minimal** although they would be permanent in the construction area, if the well is successful. If successful, the both the adverse and the beneficial effects associated with utilization of the property would be permanent. See sections 6 and 7. If the well is not successful, both beneficial and adverse effects would be temporary. The work at the project site would cease and the project area would be returned to pre-project conditions.

10. Determinations.

- a. **Public Hearing Request:** ☐ **NA** As none was requested during the public notice period.

☒ **I have reviewed and evaluated the requests for a public hearing. There is sufficient information available to evaluate the proposed project; therefore, the requests for a public hearing are denied.**

CEMVN received a number of public hearing requests during and after the public notice. The main concerns were in reference to: fracking; water dependency; alternatives; zoning laws; aquifer/groundwater impacts; drill

water storage and disposal; surface water impacts; impacts to water quality; cumulative impacts, and; endangered species. Issues raised during the comment period that are within CEMVN's regulatory authority have been addressed in this document. On January 21, 2015, CEMVN determined that a public hearing was not necessary for this project as currently proposed on the grounds that: a) the issues identified in support of the public hearing request were addressed in comments already submitted; and b) a hearing would not provide CEMVN information not otherwise available to it. See also Paragraph 3(d).

- b. Section 176(c) of the Clean Air Act General Conformity Rule Review:** The proposed permit action has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. It has been determined that the activities proposed under this permit will not exceed de minimis levels of direct or indirect emissions of a criteria pollutant or its precursors and are exempted by 40 CFR Part 93.153. Any later indirect emissions are generally not within the Corps' continuing program responsibility and generally cannot be practicably controlled by the Corps. For these reasons a conformity determination is not required for this permit action.

c. Relevant Presidential Executive Orders.

- (1) **EO 13175, Consultation with Indian Tribes, Alaska Natives, and Native Hawaiians.** ☒ This action has no substantial direct effect on one or more Indian tribes.
- (2) **EO 11988, Floodplain Management.** ☒ Not in a floodplain. (☐ Alternatives to location within the floodplain, minimization, and compensation of the effects were considered above.) The term floodplain in EO 11988 is described as: "the lowland and relatively flat areas adjoining inland and coastal waters including floodprone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year." Ground elevation at this site is 28.8 feet and the site is located in flood zone X. (Flood zone X is for areas determined to be outside 500-year floodplain, which is the area between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood.) The project area is not in a floodplain.
- (3) **EO 12898, Environmental Justice.** In accordance with Title III of the Civil Right Act of 1964 and Executive Order 12898, it has been determined that the project would not directly or through contractual or other arrangements, use criteria, methods, or

practices that discriminate on the basis of race, color, or national origin nor would it have a disproportionate effect on minority or low-income communities.

(4) EO 13112, Invasive Species.

- ☒ **There were no invasive species issues involved.**
- ☐ **The evaluation above included invasive species concerns in the analysis of impacts at the project site and associated compensatory mitigation projects.**
- ☐ **Through special conditions, the permittee will be required to control the introduction and spread of exotic species.**

(5) EO 13212 and 13302, Energy Supply and Availability.

- ☒ **The project was not one that will increase the production, transmission, or conservation of energy, or strengthen pipeline safety. (☐ The review was expedited and/or other actions were taken to the extent permitted by law and regulation to accelerate completion of this energy-related (including pipeline safety) project while maintaining safety, public health, and environmental protections.)**

- d. Finding of No Significant Impact (FONSI).** Having reviewed the information provided by the applicant and all interested parties and an assessment of the environmental impacts, I find that this permit action will not have a significant impact on the quality of the human environment. Within the delegated authority of Section 404 of the Clean Water Act, CEMVN has determined that the proposed action would not have a significant impact on aquatic resources and/or quality of the human environment; **therefore, an Environmental Impact Statement will not be required.**

SUBJECT: Department of the Army Environmental Assessment and Statement of Findings for the Above-Numbered Permit Application

e. Compliance with 404(b)(1) guidelines. ☐ NA

Having completed the evaluation in paragraph 5, I have determined that the proposed discharge ☒ complies/☐ does not comply with the 404(b)(1) guidelines.

f. Public Interest Determination: I find that issuance of a Department of the Army permit ☒ is not/☐ is contrary to the public interest.

External sources referenced:

Buono, Anthony, The Southern Hills Regional Aquifer System of Southeastern Louisiana and Southwestern Mississippi: U.S. Department of the Interior Geologic Survey, 1983.

Chacko, John J, et al., An Unproven Unconventional Seven Billion Barrel Oil Resource – the Tuscaloosa Marine Shale: Basin Research Institute. 1997.

Chatelain, Kim, GNO, Inc. comes out in support of energy industry and fracking in St. Tammany,
http://www.nola.com/business/index.ssf/2014/10/gno_inc_comes_out_in_support_o.htm
], October 31, 2014.

State of Louisiana, Office of Conservation, Application of Helis Oil and Gas Company Public Hearing, Mandeville, Louisiana, November 12, 2014.

PREPARED BY:


Project Manager

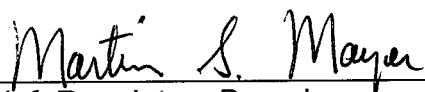
June 5, 2015
Date

REVIEWED BY:


Chief, Eastern Evaluation Section

JUNE 5, 2015
Date

APPROVED BY:


Chief, Regulatory Branch

5 June 2015
Date