August 3, 2017

Mr. Al Linero
Florida Department of Environmental Protection
2600 Blair Stone Road
MS 3588
Tallahassee, FL 32499

Re: Spooner Exploratory Oil and Gas Well Permit Application #OG 1370, Calhoun County, Florida

Dear Mr. Linero:

Apalachicola Riverkeeper has reviewed the referenced permit application and provides the following preliminary comments.

Apalachicola Riverkeeper is a 501c3 membership-supported non-profit corporation established in 1998 and licensed by the Waterkeeper Alliance in 1999. The mission of Apalachicola Riverkeeper is to *provide stewardship and advocacy for the protection of the Apalachicola River and Bay, its tributaries and watersheds, in order to improve and maintain its environmental integrity and to preserve the natural, scenic, recreational, and commercial fishing character of these waterways*. Headquartered on the Bay at the mouth of the Apalachicola River, Apalachicola Riverkeeper's 1500 supporting members and their families include those who live within the Apalachicola River Basin and visitors from across the country and the world who visit this premiere natural resource regularly. Our members enjoy numerous recreational activities in this watershed including, fishing, hunting, kayaking, bird and wildlife watching, nature photography, hiking, and other pursuits. Apalachicola Riverkeeper is committed to working with all levels of local, state and nation agencies and other stakeholders to develop reasonable, equitable and sustainable uses of the water resources of the Apalachicola River system.

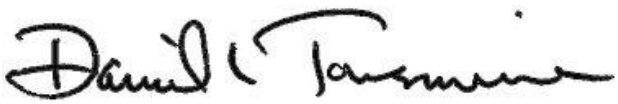
The Apalachicola River and its floodplain – including the Chipola River and its interconnected water bodies - form an incredibly rich and diverse system of exceptional ecological importance. More than 131 species of fresh and estuarine fish live in the Apalachicola River Basin, more than any other river basin in Florida. More than 50 species of mammals, including the Florida black bear and the endangered West Indian Manatee are found in the Apalachicola drainage basin. More than 40 species of amphibians and 80 species of reptiles live within the Apalachicola River basin, the highest diversity of amphibians and reptiles in the United States and Canada. More than 1,300 species of plants, including 103 that are threatened or endangered, are also found in the Apalachicola drainage basin. Sufficient high quality and properly timed freshwater flows are critical for this rich array of species and for maintaining the estimated $5 billion in free services provided by the Apalachicola ecosystem, including clean water, flood protection, and fish and wildlife habitat.

The Apalachicola River is the lifeblood of the Apalachicola Bay, an estuary of major ecological and economic importance to the eastern Gulf of Mexico. Sufficient high quality freshwater flows are essential for maintaining the salinity regimes needed to sustain an economically viable oyster harvest from the Apalachicola Bay, and for sustaining many other commercially viable fisheries. Apalachicola Bay provides 90 percent of Florida's oysters and over 13 percent of the total oyster production in the United States. It is also a major nursery for shrimp, blue crabs, and many species of fish including striped bass, sturgeon, grouper, snapper, red fish, speckled trout, and flounder. The commercial and recreational fisheries in the Gulf of Mexico generate over $8 billion dollars in sales revenue and support almost 80,000 jobs in West Florida. The harvest of shrimp, crab, fish, and oysters is the driving force in the economy of Franklin County, Florida.

Both surface and groundwater serve as primary sources of water to Apalachicola Bay and the Gulf of Mexico in this region. The Floridan Aquifer is also the source of drinking water in much of Florida. Protection of these water sources is of the utmost importance to the human health, wellbeing, culture and economy of this region. The development of oil and gas in this area threatens the basic quality of life of the region due to the high risk of pollution of the surface and groundwater, subsidence of coastal plain as is being experienced around other areas of the Gulf, air quality, and community character. Apalachicola Riverkeeper is opposed to the issuance of this permit as explained below.

Thank you for consideration of these concerns in your evaluation of the application.

Sincerely,



Dan Tonsmeire
Riverkeeper

WATERKEEPER® ALLIANCE MEMBER

Table of Contents

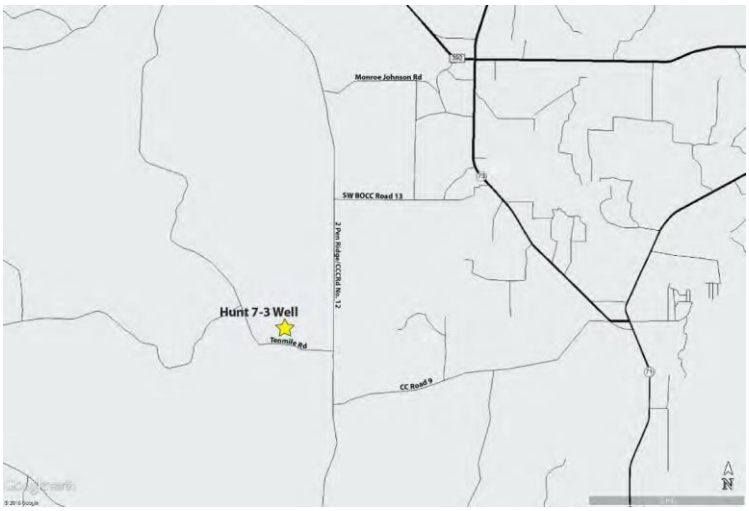
I. Project Background

Spooner Petroleum of Ridgeland Mississippi, registered as a Foreign Profit Corporation with the Florida Division of Corporations (Document Number P05511), applied for an exploratory drilling permit with the Oil and Gas Division of the Florida Department of Environmental Protection (DEP) on April 25, 2017. Application # is OG 1370 and the well is also referred to as Hunt 7-3. We have referred to the project as OG 1370 in the text of this comment letter and in the graphics provided.

Spooner Petroleum Company has leased drilling rights to approximately 10,680 acres in Calhoun and Gulf Counties, Florida from the Hunt Oil Company of Dallas, Texas. The term of the lease is from June 1, 2016 until May 31, 2019 – "and so long thereafter as oil and/or gas is being produced in paying quantities from the Leased Premises, or so long thereafter as drilling, deepening, or reworking operations for the production of oil or gas are being conducted hereon, as therein provided." We note here that the terms of this lease encompass "reworking operations" which are normally referred to in Florida as "workover operations." Those operations include processes such as matrix acidizing and/or hydraulic fracturing (or fracking) and the use of water, pressure, chemicals and proppants.

The surface rights in the leased area are owned by Deseret Ranches of North Florida, LLC (DRNF), Wewahitchka, Florida. Deseret has provided a Surface Use Agreement to the applicant for construction of or upgrades to access roads and for the construction of a well pad.

The location of OG 1370 is provided by the Site Access Map from the application (see below). According to Spooner's application, "All vehicles will enter the Deseret property at a gate located immediately west of CCC Road No. 12 approximately 0.7 miles north of the intersection CC Road 9 and 3.3 miles south of the intersection with Monroe Johnson Road at Kinard (Figure 8). Vehicles will use an existing road internal to the Deseret property to reach the project area." Public and private roads are seen in the map below provided in Spooner's application. CCC Road 12 is also referred to as "2 Pen Ridge." The "internal road" on the Deseret Property is labeled "Tenmile Road" and refers to the Tenmile Swamp in the vicinity of the access road and oil pad.



Spooner intends to hire a contractor to upgrade the existing access road to the site – and construct a 350 by 350-foot drilling pad. The pad will incorporate the drilling rig itself, housing

and office trailers for workers, sanitation facilities, diesel generators and fuel tanks for power, and a water well to supply water for the production of drilling fluids "and to supplement fluids lost to the surrounding formations as the oil well is drilled." Other structures and equipment (e.g. lighting, storage tanks for fluids) will also be brought onsite.

A photo of an exploratory drilling operation in progress in the Raccoon Point section of the Big Cypress National Preserve (see below) provides a good illustration and overview of what the site will look like during exploratory drilling operations - including the variety of equipment, structures, tanks and vehicles which will be active on the oil pad:

According to the application, "The vertical well will be drilled to total depth of 12,900 feet to a bottom hole location proposed at Latitude 30° 14' 05.3412" N and Longitude 85° 16' 57.3661" W. The upland surface area at a nominal elevation of 74.4 feet NAVD88 is used for agriculture." Spooner describes the geological objective of this well as follows: "Spooner Petroleum Company intends to test the Jurassic Age Smackover and Norphlet geologic horizons in the Apalachicola Embayment." As no commercial deposits of oil have ever been found in this general area (see below), the well is also considered a "wildcat" well.

II. Criteria for the Issuance of Permits

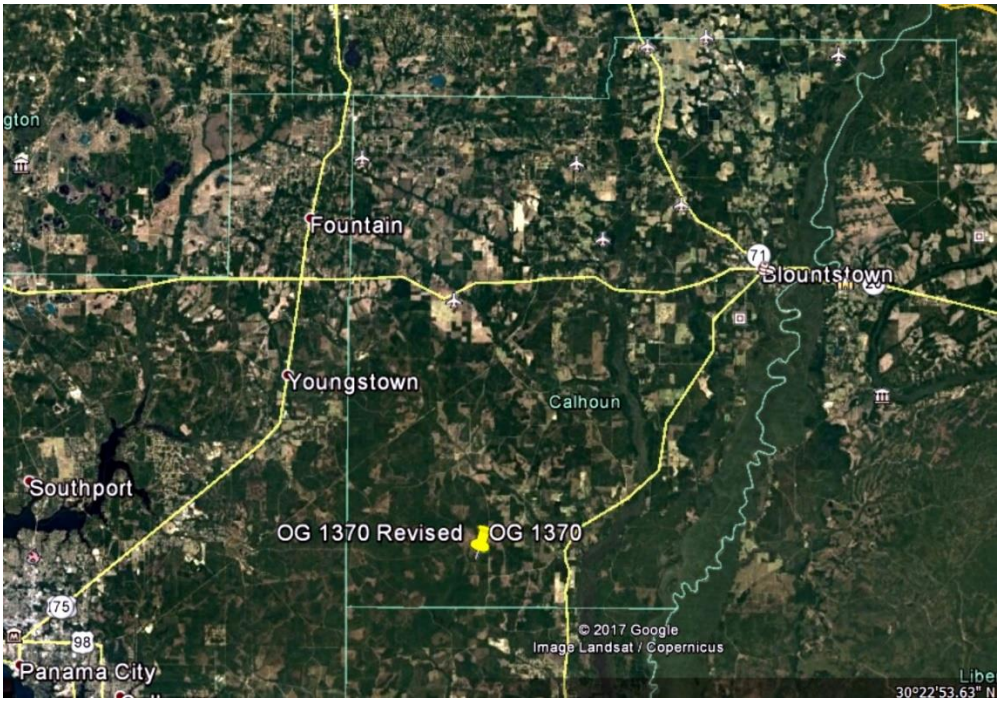
The criteria for the issuance of permits for oil and gas exploration in Florida are briefly described in FL Statutes § 377.241 - Criteria for issuance of permits. This statute is copied below.

377.241 Criteria for issuance of permits—The division, in the exercise of its authority to issue permits as hereinafter provided, shall give consideration to and be guided by the following criteria:
(1) The nature, character and location of the lands involved; whether rural, such as farms, groves, or ranches, or urban property vacant or presently developed for residential or business purposes or are in such a location or of such a nature as to make such improvements and developments a probability in the near future.
(2) The nature, type and extent of ownership of the applicant, including such matters as the

length of time the applicant has owned the rights claimed without having performed any of the exploratory operations so granted or authorized.
(3) The proven or indicated likelihood of the presence of oil, gas or related minerals in such quantities as to warrant the exploration and extraction of such products on a commercially profitable basis.
(4) For activities and operations concerning a natural gas storage facility, the nature, structure, and proposed use of the natural gas storage reservoir is suitable for the storage and recovery of gas without adverse effect to public health or safety or the environment.

A careful examination of the nature, character and location of the lands involved in the vicinity of OG 1370 strongly supports a denial of the drilling permit for this location.

The general location of the OG 1370 Well is in the southern end of Calhoun County near the border with Gulf County. It is shown in the map below provided by Google Earth Professional:



The entire area surrounding the well site is included in the "Gulf Coastal Lowlands" as described in the Florida Geological Survey OPEN FILE REPORT 32 - THE GEOMORPHOLOGY AND GEOLOGY OF CALHOUN COUNTY, FLORIDA, Frank Rupert, 1990[1]

According to the report:

Calhoun County is situated in the Northern Zone geomorphic province of White (1970). In this portion of the east-central Florida panhandle, the Northern Zone is divided into four geomorphic subzones based largely on topographic elevations. These include the Gulf Coastal Lowlands, Fountain Slope, New Hope Ridge, and Grand Ridge.

[1] Rupert, F. (1990). *The Geomorphology and Geology of Calhoun County, Florida* (No. 32). Florida Geological Survey. http://ufdc.ufl.edu/UF00001031/00001

The Gulf Coastal Lowlands (Figure 1) comprise much of the lower half of Calhoun County. This subzone is characterized by a generally flat and often swampy, seaward sloping sandy plain. Most of the lowlands area is ancient marine terrace, shaped by high-standing Pleistocene seas. Elevations in the Gulf Coastal Lowlands of Calhoun County range from between 25 and 65 feet above mean sea level (MSL) at the southern edge of the county to approximately 100 feet above MSL where the lowlands meet the highlands to the north in mid-Calhoun County.

Figure 1 referenced in the above excerpt is copied below. It clearly locates the OG 1370 well site inside the "Gulf Coastal Lowlands geomorphic zone." The interconnected web of wetlands surrounding the OG 1370 site and which we discuss in detail below are an integral part of this "often swampy, seaward sloping sandy plain." It should also be emphasized that the wetlands surrounding OG 1370 are not "isolated wetlands." Rather, they are a part of a headwater and recharge area, draining a variety of streams and rivers where the waters they carry eventually merge with estuaries and other water bodies before emptying into Apalachicola Bay and the Gulf of Mexico.

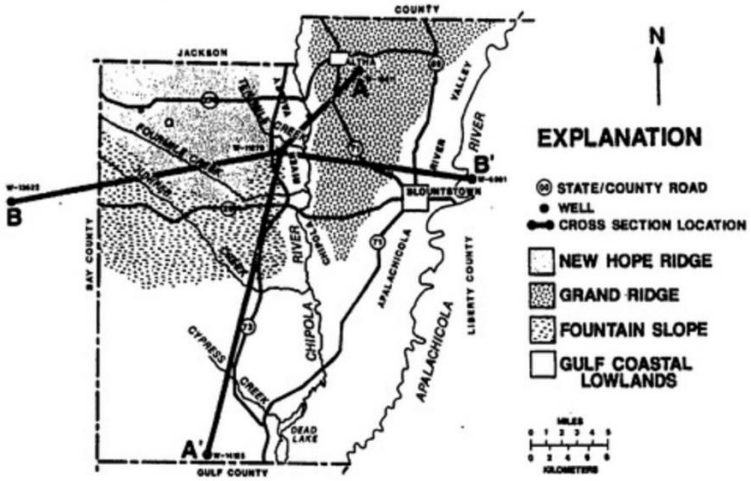
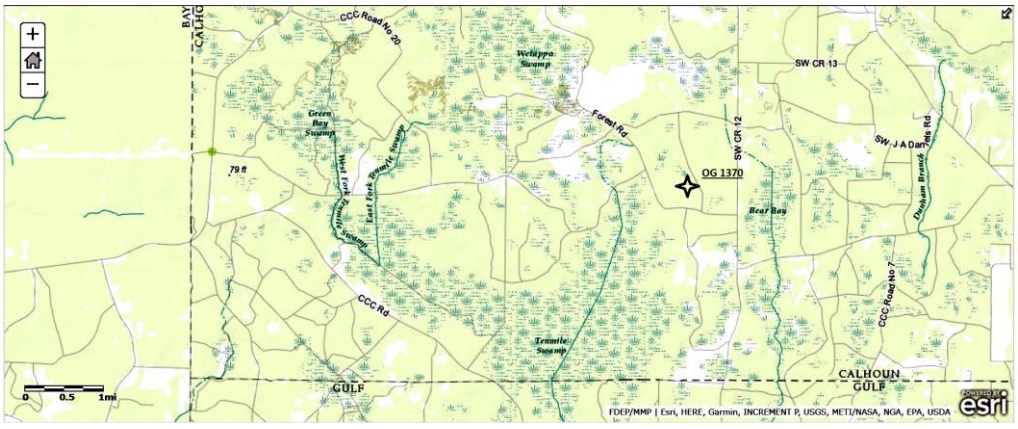


FIGURE 1. Calhoun County location map.

The map below indicates a more precise location for OG 1370. It is excerpted from the Florida Department of Environmental Protection "Oil and Gas Data" website[2] and is referred to as "Interactive Map of Permitted Wells." We have placed the location of OG 1370 on this map.



2 Oil and Gas Data. Retrieved from http://www.dep.state.fl.us/water/mines/oil_gas/data.htm

This map requires explanation. The OG 1370 application describes the well-site as follows:

"The Hunt 7-3 Well site is located in an upland agricultural area in Calhoun County, Florida; the access road and drilling location will not encompass any wetlands."

While "upland agricultural area" may be technically accurate as far as the site of the potential drill pad itself, the description ignores the fact that the drill site and access road are surrounded by numerous wetlands in all directions – Wetappo Swamp to the northwest, Green Bay Swamp to the west, Tenmile Swamp to the southwest, and Bear Bay to the east. Nearest of these appears to be the Tenmile Swamp and the drainage basin for the Right Prong Stonemill Creek which includes Bear Bay and other wetlands. Tenmile Swamp is drained by Stone Mill Creek while Bear Bay and other wetlands east of OG 1370 are drained by Right Prong Stonemill Creek. These swamps serve as the headwaters for both streams. They combine in Stonemill Creek proper to form a major tributary to Dead Lakes and the Chipola River.

As we pointed out in our letter to DEP of July 12th, 2017, the original application for OG 1370 contained a major error regarding the DEP Oil and Gas Program's required "Form 3." While we noted that the OG 1370 surface hole location is clearly less than one mile from Stone Mill Creek – a "stream" for the purpose of Form 3 - the application answered "No" to that particular question.

We incorporate by reference the totality of our July 12th letter to these comments - including supporting maps and other documents.

We appreciate the fact that Spooner Petroleum has now acknowledged their error on the original Form 3 submitted to DEP and has now answered "Yes" to question "i" in the Form 3 resubmitted on July 7th, 2017. The surface hole is in fact located less than a mile from two streams – Stonemill Creek and Right Prong Stonemill Creek. We note that the surface hole location was also adjusted slightly to the south-southeast of the original hole – apparently to satisfy Calhoun County requirements. See excerpt from resubmitted Form 3 below.

(Please answer YES or NO) Is the structure intended for the drilling or production of this well located (See section 377.24, F. S.)

a) in a municipality? No
b) in tidal waters within 3 miles of a municipality? No
c) on an improved beach? No
d) on any submerged land within a bay, estuary, or offshore waters? No
e) within one mile seaward of the coastline of the state? No
f) within one mile seaward of the boundary of a local, state or federal park or an aquatic or wildlife preserve? No
g) On the surface of a freshwater lake, river or stream? No
h) within one mile inland from the shoreline of the Gulf of Mexico, the Atlantic Ocean or any bay or estuary? No
i) within one mile of any freshwater lake, river or stream? Yes

If the answer to **a**, **b**, or **c** is YES, attach copies of local governing authorities' permits. If the answer to **h** or **i** is YES, attach a contingency plan specifying safeguards being implemented to prevent accidents and/or blowouts and to protect the natural resources of such bodies of water and shore areas in the event of an accident or blowout.

Lampl-Herbert Consultants, Inc. Letter, June 19, 2017 – "Stream Protection"

We have reviewed the letter sent by Lampl-Herbert to DEP on June 19, 2017 and labeled

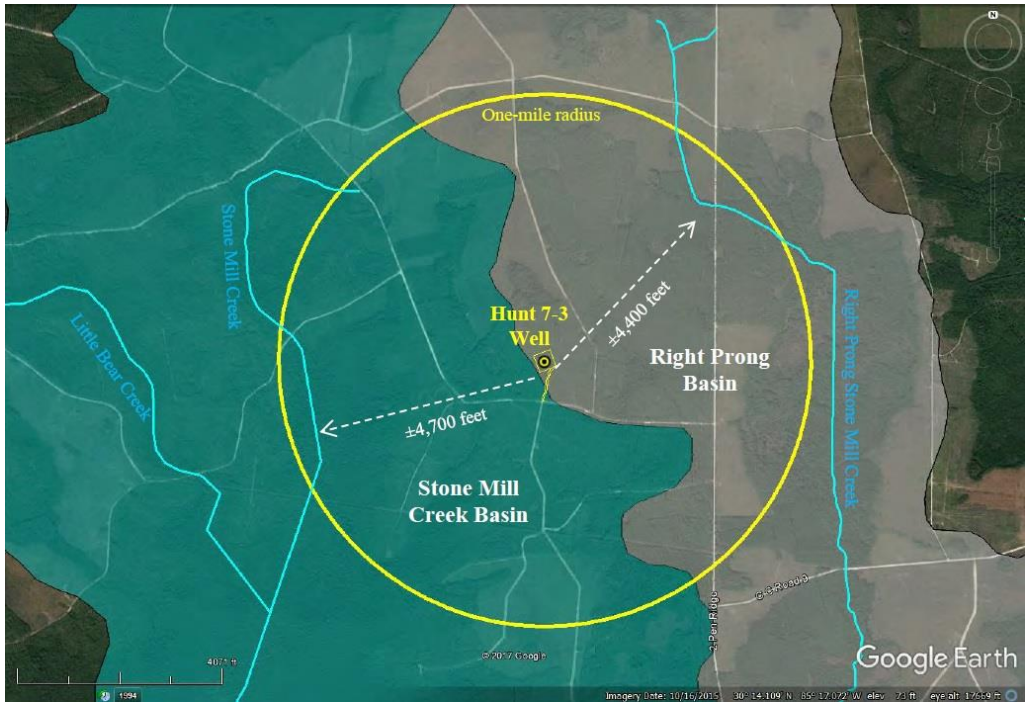
"Stream Protection" on the DEP Oil and Gas "Current Application" website. The letter was written in support of the Spooner Petroleum's OG 1370 application.

The letter describes its subject matter as:

Adequate protection of streams in the event of accident or blowout
Oil & Gas Permit to Drill Application 1370: Spooner Petroleum Company
Hunt 7-3 Well in Calhoun County, Florida

It appears to be proffered as the required "*contingency plan specifying safeguards being implemented to prevent accidents and/or blowouts and to protect the natural resources of such bodies of water and shore areas in the event of an accident or blowout*" – specified in DEP's Form 3.

The Lampl-Herbert letter not only acknowledges that Stonemill Creek is less than a mile from the OG 1370 well, but adds a second nearby stream, the Right Prong Stonemill Creek, as located within a one-mile radius of the surface hole of OG 1370 as well. See location map from the Lampl-Herbert letter below:



According to Lampl-Hebert (see excerpt below), both streams pass through wetlands east and west and adjacent to the drill site and combine in Stonemill Creek to form a major tributary to the Dead Lakes, the Chipola River, and the other important water bodies we have described above:

Stone Mill Creek drains through Tenmile Swamp to the southwest and reforms into Stone Mill Creek to the south. Right Prong Stone Mill Creek drains to Bear Bay to the east and into Stone Mill Creek to the south of the proposed well. Stone Mill Creek drains into the West Arm of Dead Lake. Dead Lake drains into the Chipola River.

Lampl-Herbert listed the following factors as adequate to protect the two streams that are at question here:

Geologic Factor in the Smackover Formation
• The Smackover Formation east of the Jay Field area in the Panhandle typically exhibit low bottom-hole pressures.

Engineering Factors Operational during Drilling
• Please see a discussion of Well Control Equipment section at page 24 of the application. The Well Control Program includes a Blowout Preventer Stack System depicted in Attachment 22 of the application.
• The outer berm surrounding the drilling pad (pg. 15 of the application) is designed to contain fluids within the work area.

Topographic Factors at the Surface
• Distances from the proposed well location to intermittent streams (Figure 1).

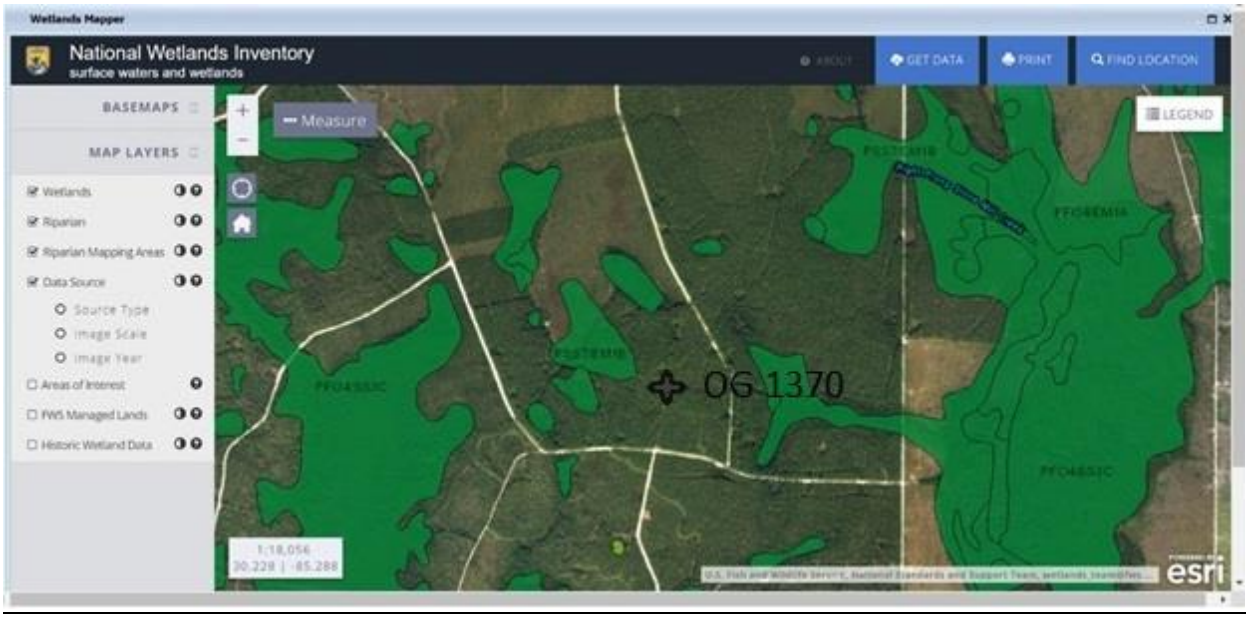
Stone Mill Creek is ±4,700 feet west-southwest
Right Prong Stone Mill Creek is ±4,400 feet northeast

• The flat gradient of about two-feet per mile across the land surface between pad and streams impedes overland flow that would occur over a ±4,400 to 4,700 foot distance to connect with the stream systems.

They conclude on the basis of the above – low pressure in the formation (although "troublesome formations" with high pressure do exist in the Florida Panhandle), blowout prevention on the drill rig, pad construction, and local topography – that the likelihood of fluids from this operation reaching Stonemill Creek, Right Prong Stonemill Creek, or other waterbodies downstream is low.

We believe the above assumptions are not correct and that this contingency plan is inadequate for a number of reasons. While the two streams are characterized by the letter as "intermittent" – that simply means that they contain flowing water during the long north Florida wet season and may not have flow during the dry season. However, depending on rainfall in any particular year, these streams could flow year-round. That flow could also increase substantially in the event of heavy rains. In the event of the tropical depressions, tropical storms, and even hurricanes which frequently pass through this area of the Gulf Coastal Lowlands (see section below), both the quantity of water passing through the wetlands and the size of the stream shorelines increase dramatically. Of great concern are the Palustrine System wetlands drained by Stonemill Creek (Tenmile Swamp) and Right Prong Stonemill Creek (Bear Bay and other wetlands). As described above, these are heavily vegetated, roadless areas which will be nearly impossible to recover oil or other fluids from in the event of a spill, accident or other release. Regardless of rainfall and flow of streams, any pollutants entering these nearby wetlands will eventually wash into Stonemill Creek or Right Prong Stonemill Creek. That is, the fluids and pollutants will simply follow the surface hydrology into the two streams and end up at points downstream - if not immediately, then following rains and inundations of the swamps. Cleanup efforts in swamps and marshes of the Gulf Coast following the BP oil spill of 2010 have shown a persistence of oil and chemical residue years later (see section below on oil spills). See map below excerpted from the U.S. Fish and Wildlife Service "Mapper" website depicting the boundaries of the extensive

Palustrine System wetlands immediately surrounding both Stonemill Creek and Right Prong Stonemill Creek[3]. Note also their proximity to OG 1370.



We also take issue with Lampl-Herbert's characterization of the possible source of spills as limited to the well pad and that "fluid volumes would likely be small." In addition to the actual oil well as a source, fluids can also enter the swamps (and eventually the two streams) from tanker trucks, holding tanks, diesel fuel tanks, gathering and other flow lines, and other sources. The amount of brine likely to be held on the site - given the ratio of oil to brine found in oil-bearing formations in the western end of the Florida Panhandle - can be extensive. We also know that the area is frequented by hurricanes and other storm types. These are potentially destructive to the many structures on the well pad – the drilling rig and other infrastructure but also holding tanks of all kinds (e.g. oil and brine separating tanks, diesel fuel tanks, tanker trucks, and lines holding and carrying all these fluids). The pad (with all surface contaminants), retention pond containing collected fluids, and the surrounding area could be inundated in that eventuality. The lease also allows for workover operations – and enormous amounts of fracking and matrix acidizing fluids could be present on the site in that eventuality. The "cocktail" of toxic chemicals, oil, and brine subject to spills or other accidents in this sensitive location could have long-lasting and potentially catastrophic impacts on the lands, waters, and aquifers surrounding the OG 1370 drill site.

An extensive analysis of the risk to waters and wetlands from oil drilling in Florida was undertaken as part of the General Management Plan and Environmental Impact Statement written for the Big Cypress National Preserve in 1991 by the National Park Service (NPS). See: United States. National Park Service., (1991). *Big Cypress National Preserve, Florida: general management plan, final environmental impact statement.* Atlanta, GA: U.S. Dept. of the Interior, National Park Service, Southeast Regional Office.[4]

[3] U.S. Fish and Wildlife Service; National Wetlands Inventory; National Standards and Support Team. Wetlands Mapper. Retrieved from https://www.fws.gov/wetlands/data/mapper.html

[4] U.S. Dept. of the Interior, National Park Service, Southeast Regional Office (1991, September).Catalog Record: Big Cypress National Preserve, Florida general management plan, final environmental impact statement. Retrieved from https://catalog.hathitrust.org/Record/002512987/Home

"Appendix B: Area of Influence for Oil and Gas Development," provides a comprehensive look at the four phases of oil and gas operations – geophysical, drilling, production and site reclamation – and the ecological impacts of each to the wetlands ecosystem of the Big Cypress National Preserve. Due to the document's relevance to drilling and possible future production should oil be found and developed from OG 1370, we are incorporating by reference the NPS analysis of all possible impacts of drilling and production on the preserve's water quality and other criteria (i.e. noise, visual quality, hydrology, water quality, vegetation and soils, air quality and odors, wildlife, and visitor use and perceptions) into this comment letter.

Many impacts elaborated in the NPS analysis have a high likelihood of taking place in the vicinity of OG 1370. They include both spills and accidents as well as leakage from routine operations. However, as already noted, the pristine wetlands and streams in this area act as headwaters to extremely important waters directly downstream – and in close proximity. All sources of pollution to the two streams mentioned as well as the streams' swampy shore areas – i.e. Tenmile Swamp, Bear Bay, and other Palustrine System Wetlands – must be accounted for in the required contingency plan. Cleanup procedures (if even possible in a Palustrine System wetland) must also be noted. It is insufficient to simply claim that spills of oil, brine and chemicals will not enter these adjacent wetlands due to safeguards. Given the topography of the area and proximity of OG 1370 to these wetlands they certainly can be directly impacted. The initial paragraph of this section of the NPS document (copied below) provides an overview of the problem - and the variety of sources for accidental spills.

Drilling and Production. Turbidity and sedimentation could occur due to clearing, deposition, and grading activities associated with road and pad construction. Surface spills of production fluids would affect surface water quality near producing wells. Spills of crude oil or brines would be possible at the wellhead, at the tank battery, or along the pipelines. While crude oil can have severe effects on the environment, brine spills may be more damaging in both the short- and long-term.

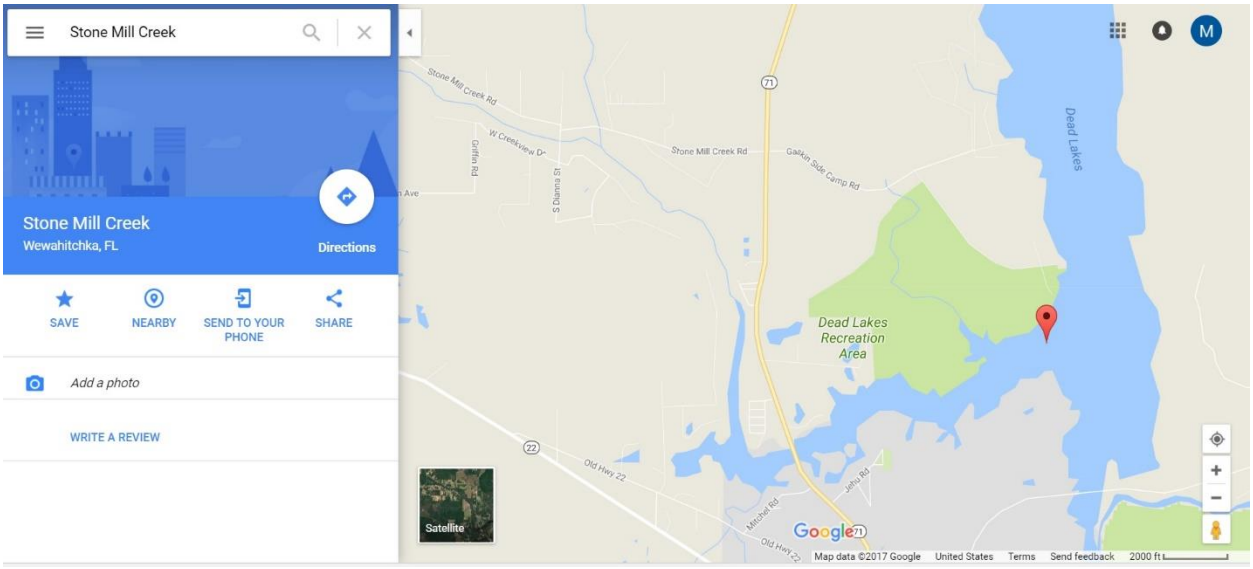
The document emphasizes the variety of sources of spills from the OG 13 here – and also mentions the possible release of oil, brine, and chemicals during transport.

> *In addition to crude oil and brine spills, other potential water contaminants are well fluids, drilling fluids, cement, chemical dispersants, acidizing and fracturing fluids, production chemicals, and construction materials and wastes...the potential for release of such contaminants into the environment during vehicular transportation remains a threat to water quality.*

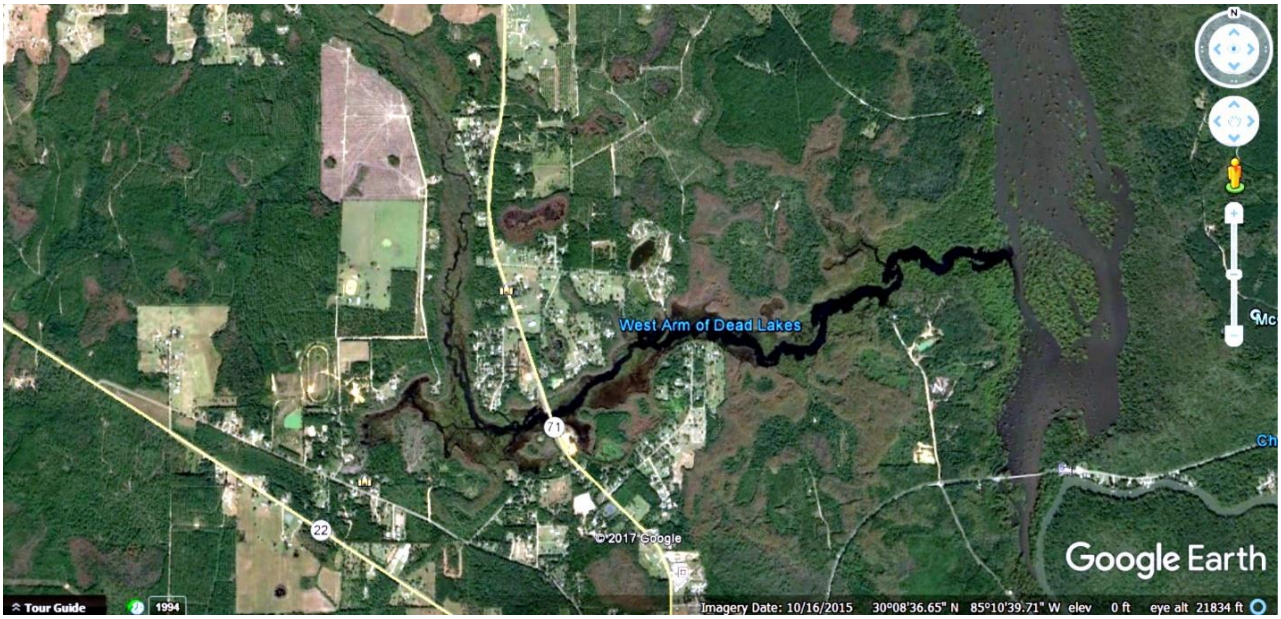
It is important to emphasize again that Tenmile Swamp, Bear Bay and the other Palustrine System wetlands surrounding the OG 1370 site are significant headwaters for the main body of Stonemill Creek, which is itself a major tributary to the waterbody known as "Dead Lakes." See map and link from "Google Maps" below to explore this connection between Stonemill Creek and Dead Lakes in detail [5]. Water flows from the headwater areas – east and west and very close to the proposed site for OG 1370 - into the southern end of Dead Lakes is significant. This is indicated by the extreme widening of the main course of Stonemill Creek south of the confluence of the western branch of Stonemill Creek (draining Tenmile Swamp) and Right Prong Stonemill Creek (draining Bear Bay and other wetlands). The transport of any toxic pollutants

[5] https://goo.gl/maps/f1qagwPvtvv

whatsoever from this proposed well site into the “Outstanding Florida Waters” (see below) of Dead Lakes is unacceptable. Impacts to wildlife, vegetation, ecology, drinking water and ecotourism would be enormous.



A topographical aerial map of this same area (showing the eastern final portion of Stone Mill Creek as the “West Arm of Dead Lakes”) and the significant amount of water which flows through the Stone Mill Creek from Tenmile swamp Bear Bay and vicinity - can be seen below. It is an enormous flow of water – and the movement of any contaminants from an oilfield into this stream is completely incompatible with the nature of the Chipola River and its importance to wildlife, ecology, and ecotourism in this part of Florida.



A more complete list of waterbodies connected to Stonemill Creek (downstream from the headwaters area of Tenmile Swamp and other wetlands surrounding OG 1370) which could potentially be impacted by an accident or blowout from the well or drilling pad (depending on the severity of the spill and/or flood conditions present at the site at the time of the incident) include the following:

West Arm of Dead Lakes
Dead Lakes
Chipola River
Hathcock Bay
Apalachicola River
St. Mark's River
Apalachicola Bay
Gulf of Mexico

Public lands which are recipients of water from Tenmile Swamp and Stone Mill Creek include:

Dead Lakes Recreation Area
Apalachicola River Water Management Area
Florida River Island Recreation Area
Apalachicola Bay Aquatic Preserve
Apalachicola National Estuarine Research Reserve
St. Vincent National Wildlife Refuge
Cape St. George Island State Reserve
St. George Island State Park

It should be noted that Apalachicola Bay – including the Apalachicola National Estuarine Research Reserve – is also located inside the Central Gulf Coast Plain Biosphere Reserve. This is a special designation created by The United Nations Educational, Scientific and Cultural Organization (UNESCO) which recognizes the important biodiversity of the wetlands and waters in this area. Its description underscores just how much is at risk here:

This biosphere reserve is situated on the coast of the northwestern part of the Florida Peninsula within the Apalachicola River floodplain. It comprises Apalachicola Bay which is one of the most productive estuarine systems in the northern hemisphere. There are typical estuarine and coastal formations with river channels, slough, backwaters, bay islands and swamp hardwood forests. The Apalachicola Basin has the highest species density of amphibians and reptiles in all of North America (north of Mexico).

The Apalachicola Reserve, which is part of the biosphere reserve, is involved in various research and monitoring projects. It is also active in resource management, particularly in land acquisition and a prescribed burning program to restore upland areas.

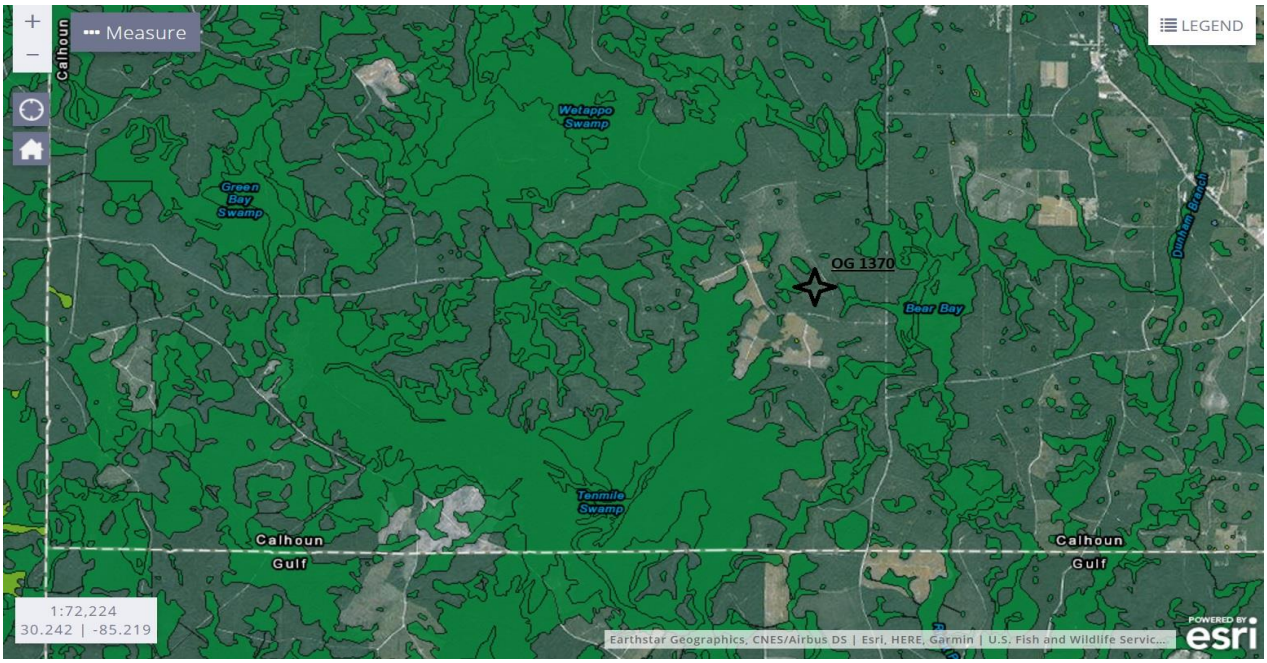
Increased demand for water by large upstream cities and agriculture now puts pressure on the floodplain ecosystem. People in the area make their living mainly from fishing industry and tourism.

See link[6] for more information on the biosphere reserve.

III. Wetlands in the Vicinity of OG 1370

Having noted the wetlands and some of the surface hydrology in the area (a major component of the nature, character and location of the lands involved), this would be a good place to examine those wetlands in greater detail – and explain why we believe a "contingency plan" will be problematic at best. Fortunately, the wetlands in the vicinity of OG 1370 are "jurisdictional wetlands" that have already been surveyed as part of the U.S. National Wetlands Inventory. See the U.S. Fish and Wildlife Service (FWS) "mapper" website[7]:

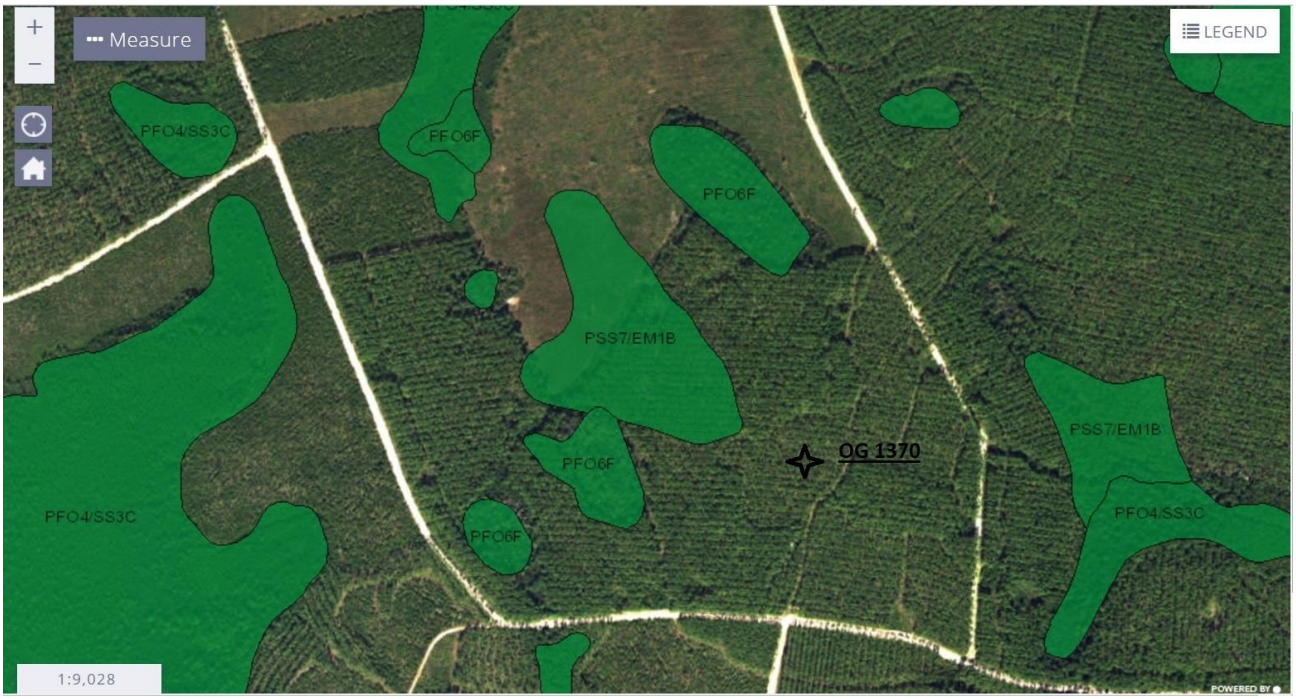
Map below from the FWS mapper website shows the jurisdictional wetlands surrounding OG 1370. It is clear that these are not "isolated wetlands," but a network of hydrologically interconnected wetlands whose waters drain into the important waterbodies referenced above. It would be fair to characterize this area as "mostly wetland."



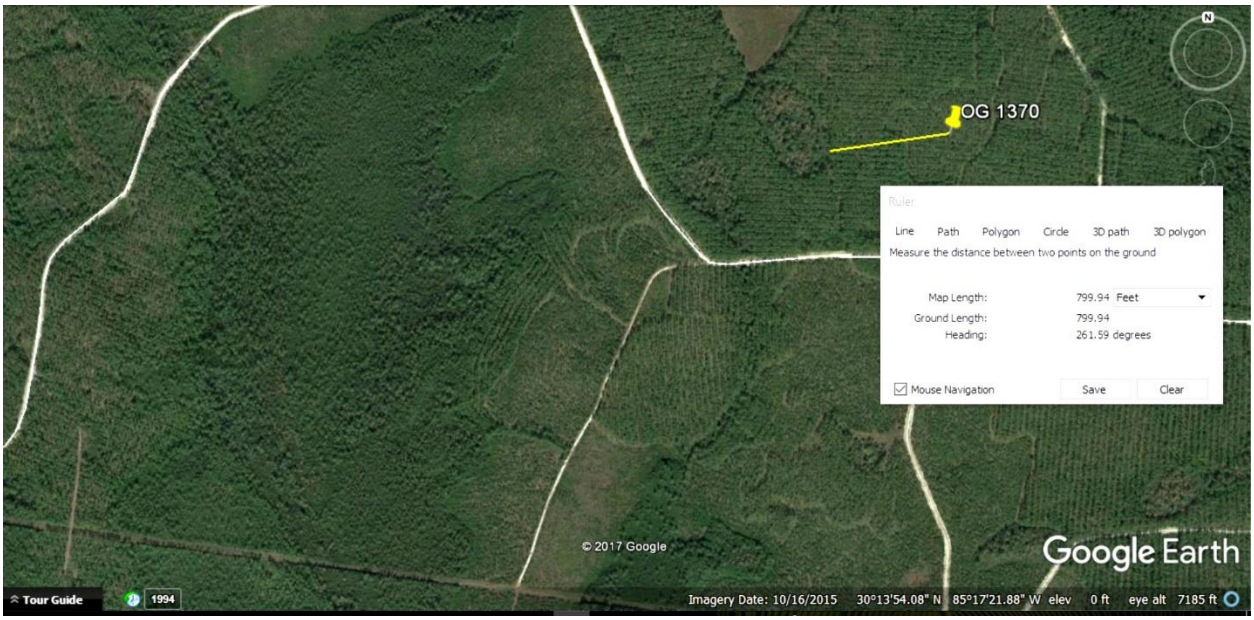
If we zoom in closer (see map on following page), we are able to obtain boundaries for the jurisdictional wetlands in close proximity to OG 1370:

6 Biosphere Reserve Information—Central Gulf Coast Plain. Retrieved from http://www.unesco.org/mabdb/br/brdir/directory/biores.asp?mode=all&code=USA+37

7 U.S. Fish and Wildlife Service; National Wetlands Inventory; National Standards and Support Team. Wetlands Mapper. Retrieved from https://www.fws.gov/wetlands/data/mapper.html



Note that the nearest wetland – likely connected to Tenmile Swamp and Stonemill Creek by the surficial aquifer system underlying this area and discussed below – is only about 800 feet from the surface hole location and an even shorter distance from the drilling pad and its associated infrastructure.



We can also view the Wetland Classification Codes which the National Wetlands Inventory provides for those nearby wetlands.

The code "P606F" – describes the two wetlands which prompted Spooner Petroleum to locate their well in a non-routine location within the drilling unit. See Attachment 8 of the OG 1370 Application: "Hunt Oil Company Agrees to the Non-routine Location of the Hunt 7-3 Well." Excerpt here:

> Attached is a Survey Plat showing the location of our proposed well. A routine well location in Florida must be 920' from the nearest unit line. In order to avoid possible wetlands we have located the well slightly outside of the routine buffer area.

The National Wetlands Inventory "decodes" this classification as follows. Note that in the description of "water regime," this wetland is described as "semi-permanently flooded" - and will generally have either surface water or a water table just below the surface. It is also one of the lowest wetlands in the area. Note also that all of the wetlands surrounding OG 1370 – including Tenmile Swamp as the shore area of Stonemill Creek - are described as "P" or "PALUSTRINE" wetlands.

Description of code PFO6F:

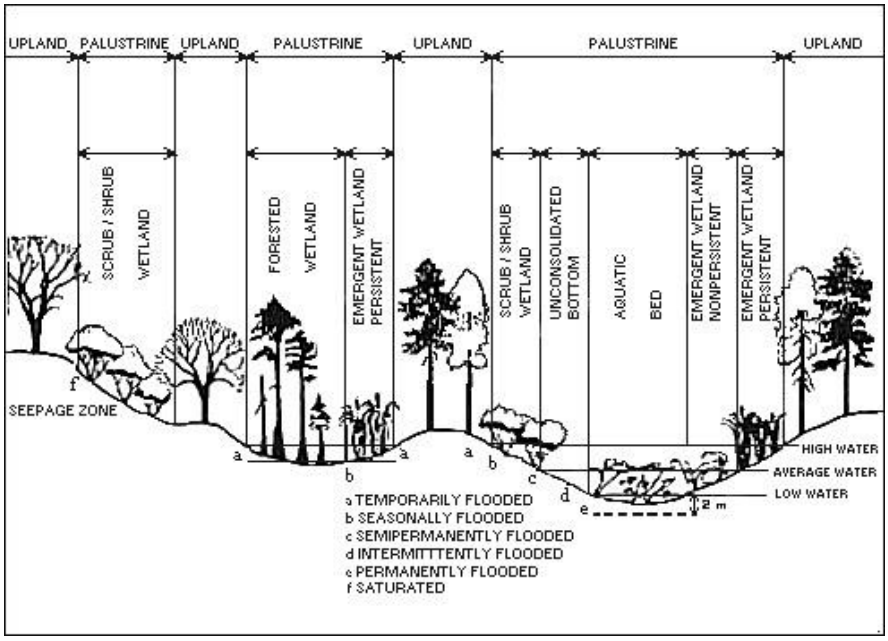
P System PALUSTRINE: The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 ppt. Wetlands lacking such vegetation are also included if they exhibit all of the following characteristics: 1. are less than 8 hectares (20 acres); 2. do not have an active wave-formed or bedrock shoreline feature; 3. have at low water a depth less than 2 meters (6.6 feet) in the deepest part of the basin; 4. have a salinity due to ocean-derived salts of less than 0.5 ppt.
Subsystem:
FO Class FORESTED: Characterized by woody vegetation that is 6 m tall or taller.
6 Subclass Deciduous: A plant community where deciduous trees or shrubs represent more than 50% of the areal coverage of trees and shrubs. The canopy is normally leafless some time during the year.

Modifier(s):
F WATER REGIME Semipermanently Flooded: Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land's surface.

See a more complete description of the Palustrine System of wetlands from the FWS's "Classification of Wetlands and Deepwater Habitats of the United States." [8]

The graphic below is drawn from the above source and provides a schematic representation of the Palustrine System of wetlands. It also shows the relationship to nearby "uplands" - such as those where the drill site in this particular application would be located – and how water, oil, and/or other fluids would move from the drill pad to the wetlands in the event of a mishap.

[8] Cowardin, et. al. Classification of Wetlands and Deepwater Habitats of the United States. Retrieved from https://www.fws.gov/wetlands/documents/classwet/palustri.htm



Depending on rainfall during any particular season, these wetlands, illustrative of the actual wetlands surrounding the OG 1370 site, could hold water year-round. Spooner's contingency plan for spills in the vicinity of their proposed oil well makes no mention of cleanup to Palustrine System wetlands – but simply assumes no oil will reach them. That is not a reasonable or realistic assumption. We would add that damage to the wetlands themselves and the significant habitat they provide for local flora and fauna is another consideration outside of their connection to Stone Mill Creek, 'underground water supplies, and the larger waterbodies downstream.

As noted above, how these thickly vegetated, long hydroperiod wetlands – which are currently pristine and completely roadless – could be cleaned of oil or other liquid spills before the fluids reach Stonemill Creek and other critical waterbodies downstream is a completely unanswered question in Spooner Petroleum's application. It is insufficient to say that all fluids will be kept on the drilling pad by virtue of its construction, liner, and berm. The access road which will be used by tanker trucks carrying numerous and significant quantities of fluid (e.g. produced water, oil, drilling fluids and cuttings, fracking fluids, diesel fuel, etc.) is adjacent to the Tenmile Swamp. Rollovers and other types of accidents can unfortunately happen anywhere along the route. Furthermore, as we show below, the area of OG 1370 has been hit numerous times by hurricanes, tropical storms and tropical depressions coming ashore from the Gulf. In that scenario, it is entirely likely that oil and other toxic fluids will be washed into the Tenmile Swamp, Bear Bay, and other wetlands, and into Stonemill Creek and Right Prong Stonemill Creek from a completely inundated drilling pad in this low and swampy area.

We also note that Google Earth street views of the private access road (just west of "2 Pen Ridge") were obtained. This access road will offer virtually no resistance to sheetflow in the area during times of heavy rainfall or inundation – or liquid oil or chemical spills moving from the upland oil pad to the Palustrine wetlands adjacent to the pad. Matt Godwin, a kayak and eco-tourism guide in Wewahitchka and the Dead Lakes region, has described frequently seeing water flowing unobstructed (sheetflow) across the even larger 2 Pen Ridge during heavy rainfalls (personal communication to the Apalachicola Riverkeeper).

See "Google Streetview" photos below. First shows the Tenmile Road (described in the

application as the access road to OG 1370) looking north from 2 Pen Ridge. Second shows entrance to Tenmile Road looking west (in the direction of OG 1370) from the turnoff on the west side of 2 Pen Ridge. None of the roads in this area – especially this small access road - would offer resistance to the flow of brine, oil, or chemicals coming from the OG 1370 site.

The difficulty (or near impossibility) of cleaning up freshwater wetlands once contaminated with oil is underscored by this review produced by the U.S. Environmental Protection Agency (EPA). The article is not long and, given the enormous risk an oil spill in the wetlands surrounding OG 1370 poses to wildlife habitat, significant public lands and waters that these swamps and wetlands serve as headwaters for, and the incredible biodiversity of the lower Apalachicola River Basin and Estuary, we are reproducing it here in its entirety. Both "standing water" and "moving water" referenced in the article will be put at risk from numerous activities and possible accidents, equipment failure, or human error associated with the construction and operations of the OG 1370 exploratory oil well.

In the article, the EPA views spills into standing water (e.g. Ten Mile Swamp, Bear Bay, and numerous smaller and unnamed wetlands in the vicinity of the well) as more damaging than that which enters a moving body of water – in this instance Stonemill Creek or Right Prong Stonemill Creek – due to the speed at which the contamination is distributed and diluted as it spreads over a wider area. However, in this case the extremely important and near pristine downstream waterbodies, shorelines, and freshwater and estuarine habitats already mentioned (for which these wetlands serve as headwaters) would also likely to be severely and negatively impacted. Again – the OG 1370 application contains no mention of any contingencies for cleanup of oil, produced water, or toxic chemicals once released into this fragile environment dominated by freshwater swamps and wetlands and moving streams with swampy shorelines across the flat coastal plain which characterizes the landscape in which OG 1370 will operate.

Full EPA reference here.[9]

Sensitivity of Freshwater Habitats

Oil spills occurring in freshwater bodies are less publicized than spills into the ocean even though freshwater oil spills are more frequent and often more destructive to the environment. Freshwater bodies are highly sensitive to oil spills and are important to human health and the environment. They are often used for drinking water and frequently serve as nesting grounds and food sources for various freshwater organisms. All types of freshwater organisms are susceptible to the deadly effects of spilled oil, including mammals, aquatic birds, fish, insects, microorganisms, and vegetation. In addition, the effects of spilled oil on freshwater microorganisms, invertebrates, and algae tend to move up the food chain and affect other species.

Freshwater is divided into two types: standing water (lakes, marshes, and swamps) and flowing water (rivers and streams). The effects of an oil spill on freshwater habitats varies according to the rate of water flow and the habitat's specific characteristics.

Standing water such as marshes or swamps with little water movement are likely to incur more severe impacts than flowing water because spilled oil tends to "pool" in the water and can remain there for long periods of time. In calm water conditions, the affected habitat may take years to restore. The variety of life in and around lakes has different sensitivities to oil spills.

- *The bottoms of standing water bodies, which are often muddy, serve as homes to many worms, insects, and shellfish. Lake bottoms also serve has a breeding ground and food source for these organisms and higher animals. Oil in sediments may be very harmful because sediment traps the oil and affects the organisms that live in or feed off the sediments.*
- *In the open water, oil can be toxic to the frogs, reptiles, fish, waterfowl, and other animals that make the water their home. "Oiling" of plants and grasses that are rooted or float in the water also can occur, harming both the plants and the animals that depend on them for food and shelter. Fisheries located in freshwater also are subject to the toxic effects of oil.*
- *On the surface of the water, water bugs that skim the water surface and floating plants*

[9] Sensitivity of Freshwater Habitats. Retrieved from https://archive.epa.gov/emergencies/content/learning/web/html/freshwat.html

such as water lilies are threatened by oil slicks that spread across the surface.

- *In the shoreline habitats of lakes and other bodies of standing water, cattails and other weeds and grasses provide many important functions for life in and around the water. They serve as food sources, nesting grounds for many types of animals, and shelter for small animals. Oil spills can coat these areas, affecting the plants and the organisms that depend on them.*
- *Marsh environments are among the most sensitive freshwater habitat to oil spills due to the minimal water flow. Oil spills have a widespread impact on a host of interconnected species. For example, lush marsh vegetation is used as nurseries for shellfish and fish, as a food source for many organisms, and a home for fish, birds, and mammals.*

Oil spills impact flowing water less severely than standing water because the currents provide a natural cleaning mechanism. Although the effects of oil spills on river habitats may be less severe or last for a shorter amount of time than standing waters, the sensitivity of river and stream habitats is similar to that of standing water, with a few special features:

- *Oil spilled into most rivers often collects along the banks, where the oil clings to plants and grasses. The animals that ingest these contaminated plants may also be affected.*
- *Rocks found in and around flowing water serve as homes for mosses, which are an important basic element in a freshwater habitat's food chain. Spilled oil can cover these rocks, killing the mosses and disrupting the local ecology.*

In addition to the above, both the Deepwater Horizon Oil Spill in the Gulf of Mexico and the Exxon Valdez Oil Spill in Prince William Sound of the Gulf of Alaska have been extensively studied in the scientific literature. The difficulty of cleanup, the far-reaching ecological impacts through entire food chains and ecosystems, and the extreme length of time those impacts have persisted speaks to the long-term dangers of opening up oilfields in this section of the Gulf Coast where similar coastlines can be impacted – and accidents and hurricane-related damage to infrastructure are very likely to take place. A few representative articles are below:

http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0132324 [10]

http://pubs.acs.org/doi/pdf/10.1021/acs.est.5b04371 [11]

https://link.springer.com/article/10.1007/s12237-016-0072-6 [12]

http://www.sciencedirect.com/science/article/pii/S0967064517300036 [13]

[10] Zengel S, Bernik BM, Rutherford N, Nixon Z, Michel J (2015) Heavily Oiled Salt Marsh following the Deepwater Horizon Oil Spill, Ecological Comparisons of Shoreline Cleanup Treatments and Recovery. PLoS ONE 10(7): e0132324. https://doi.org/10.1371/journal.pone.0132324

[11] Zengel, S., Montague, C. L., Pennings, S. C., Powers, S. P., Steinhoff, M., Fricano, G., ... & Rouhani, S. (2016). Impacts of the Deepwater Horizon oil spill on salt marsh periwinkles (Littoraria irrorata). Environmental science & technology, 50(2), 643-652.

[12] Zengel, S., Pennings, S. C., Silliman, B., Montague, C., Weaver, J., Deis, D. R., ... & Nixon, Z. (2016). Deepwater Horizon Oil Spill Impacts on Salt Marsh Fiddler Crabs (Uca. Estuaries and Coasts, 39(4), 1154-1163.

[13] Nixon, Z., & Michel, J. (2017). A Review of Distribution and Quantity of Lingering Subsurface Oil from the Exxon Valdez Oil Spill. Deep Sea Research Part II: Topical Studies in Oceanography.

IV. Outstanding Florida Waters

It should also be noted that many waters within the drainage area for OG 1370 have been designated as Outstanding Florida Waters (OFW) by the Florida Department of Environmental Protection. These are described specifically in the Florida Administrative Code (F.A.C. 62-302.700 – Special Protection, Outstanding Florida Waters, Outstanding National Resource Waters) – and specifically include the Chipola and Apalachicola Rivers and the Dead Lakes State Recreation Area. As already discussed, there is a direct hydrological connection between the Tenmile Swamp, Bear Bay and other nearby wetlands and West Arm of Dead Lakes (also designated by the National Wetlands Inventory and Google Maps as the eastern end of Stone Mill Creek before it enters Dead Lakes proper). Tenmile Swamp and other interconnected wetlands in its vicinity which serve as the headwaters of Stone Mill Creek begin less than 800 feet from the OG 1370 drill site. Thus any spills from tanker trucks, the access road, or the drilling pad containing drilling, fracking, or acidizing fluids, or produced oil or brine have strong potential to negatively impact these Outstanding Florida Waters should they travel only a short distance to the Tenmile Swamp, Bear Bay or other associated wetlands.

The DEP discusses the "Regulatory Significance" of the Outstanding Florida Water designation in their "Factsheet about Outstanding Florida Waters"[14] (see link and excerpt below). Notice that both "direct" and "indirect" discharges are noted by DEP within its regulatory parameters. Given the possibility of spillage from an oil drilling operation in this area and the close proximity of OG 1370 to wetlands and streams which drain into OFW's, impacts to these waters are very much at play here. And although finding commercially viable oil in this location is extremely remote (see discussion below), that is in fact the purpose of the OG 1370 application – exploration of an oil play.

> *Projects regulated by the Department or a Water Management District (WMD) that are proposed within an OFW must not lower existing ambient water quality, which is defined for purposes of an OFW designation as the water quality at the time of OFW designation or the year before applying for a permit, whichever water quality is better. In general, DEP cannot issue permits for* ***direct*** *discharges to OFWs that would lower ambient (existing) water quality. In most cases, this deters new wastewater discharges directly into an OFW, and requires increased treatment for stormwater discharging directly into an OFW. DEP also may not issue permits for* ***indirect*** *discharges that would significantly degrade a nearby waterbody designated as an OFW.*
>
> *In addition, activities or discharges within an OFW, or which significantly degrade an OFW, must meet a more stringent public interest test. The activity or discharge must be "clearly in the public interest." For example, activities requiring an Environmental Resource Permit (ERP), such as dredging or filling within a wetland or other surface water or construction/operation of a stormwater system, must be clearly in the public interest instead of not contrary to the public interest.*
>
> *In determining whether an activity or discharge that requires an ERP permit is not contrary to the public interest or is clearly in the public interest, DEP or the WMD must consider and balance the following factors:*

[14] Factsheet about Outstanding Florida Waters. Retrieved from http://www.dep.state.fl.us/water/wqssp/ofwfs.htm

1.Whether the activity will adversely affect the public health, safety, welfare or the property of others;

2. Whether the activity will adversely affect the conservation of fish and wildlife, including endangered or threatened species, or their habitats;

3. Whether the activity will adversely affect navigation or the flow of water or cause harmful erosion or shoaling;

4. Whether the activity will adversely affect the fishing or recreational values or marine productivity in the vicinity of the activity;

5. Whether the activity will be of a temporary or permanent nature;

6. Whether the activity will adversely affect or will enhance significant historical and archaeological resources under the provisions of S. 267.061; and

7. The current condition and relative value of functions being performed by areas affected by the proposed activity.

See § 373.414(1)(a), Fla. Stat. (2010).

Given the "nature, character and location of the lands involved" in this application, the risk of even small spills entering wetlands and streams which drain directly into the Outstanding Florida Waters referenced above is quite high. Coupled with the exceedingly low likelihood that oil in commercial quantities would be found in this location (see below) clearly puts this risk to extremely important state water resources "contrary to the public interest."

V. **Aquifers and the Drinking Water Supply in Calhoun County**

The Floridan Aquifer System is briefly described by the United States Geological Survey (USGS).[15] The USGS description is as follows:

The Floridan aquifer system (FAS) covers an area of approximately 100,000 square miles in Florida and parts of Georgia, South Carolina, Alabama, and Mississippi. Groundwater wells for water supply were first drilled in the late 1800s and by the year 2000, the FAS was the primary source of drinking water for about 10 million people.

In addition to covering an enormous geographic range and serving as a sole source aquifer for millions of Floridians, the FAS is also considered one of the most productive aquifers on the planet – with a great deal of variation based on changes in the underlying karst geology:

The transmissivity values in the dataset range from 8 to 9,000,000 feet squared per day (ft^2/d) with the majority of the values ranging from 10,000 to 100,000 ft^2/d. The wide range in transmissivity (6 orders of magnitude) is typical of carbonate rock aquifers, which are characterized by a wide range in karstification.

[15] Kuniansky, E.L., Bellino, J.C., and Dixon, J.F., 2012, Transmissivity of the Upper Floridan aquifer in Florida and parts of Georgia, South Carolina, and Alabama: U.S. Geological Survey Scientific Investigations Map 3204, 1 sheet, scale 1:100,000, available at https://pubs.usgs.gov/sim/3204

As the map below shows – the Floridan Aquifer system underlies all of Calhoun County.

According to the open file report prepared by the Florida Geological Survey and cited previously (OPEN FILE REPORT 32 - THE GEOMORPHOLOGY AND GEOLOGY OF CALHOUN COUNTY, FLORIDA, Frank Rupert, 1990):

The Floridan aquifer system is comprised of hundreds of feet of Eocene through Miocene age marine limestones, including the Ocala Group, the Suwannee Limestone, and where present, the Chattahoochee Formation and Bruce Creek Limestone. It is the principle source of municipal drinking water in Calhoun County. The Floridan aquifer system occurs as an artesian aquifer under the entire county.

While the Floridan aquifer is stated to be the main source of drinking water for all of Calhoun County (and lies directly beneath the OG 1370 drill site), the survey describes two other aquifers which are also present in the county and through much of the surrounding area: 1) an unconfined surficial aquifer whose surface is the actual water table of Calhoun County; and 2) an intermediate aquifer which ranges from 20 to 70 feet beneath the surface.

Although not a significant source of drinking water, these upper aquifers – especially the surficial which is found exposed throughout much of the year in the wetlands surrounding OG 1370 – could be immediately impacted by spills in the vicinity of this project. The surficial aquifer would also be capable of transporting oil, brine, and chemicals found in spills to the surface bodies we discussed previously - with potentially catastrophic consequences for the ecosystem. In areas where there is greater permeability between the surficial aquifer system and the intermediate or Floridan aquifer, the possibility also exists for direct contamination of aquifers – either through surface spills, problems with the bore hole, or through breaks in the pipes and/or concrete seals. If workover operations are utilized to open up the well – e.g. matrix acidizing or hydraulic fracturing (fracking) of oil-bearing rock – other conduits outside of and far from the well's bore hole could be opened up which would provide a means for contamination of the Floridan and other upper aquifers.

According to U.S. Geological Survey "Circular 1278", withdrawals from the Floridan Aquifer in Calhoun County total 4.25 million gallons per day[16]. This breaks down to 0.75 million gallons per day (MGPD) for the public water supply, 0.84 MGPD for domestic self-supplied (well water) and 2.66 MGPD for agricultural irrigation. This is a total of 127.5 million gallons per month.

A table prepared by the Northwest Florida Water Management District, provides detailed information on all water wells drilled in Calhoun County from 1975 to the present. Over 80 water wells are shown in the OG 1370 Township and Range (T3S-R10W) with depths ranging from approximately 25 to 200 feet. The 160 foot depth appears common, although numerous wells are shallower. This relatively shallow underground source of drinking water – the Floridan Aquifer in Calhoun County and beyond – could be contaminated by surface spills as already noted. However, as workover operations such as fracking and/or matrix acidizing using pressure and chemicals are also contemplated by the application and lease description, the various aquifers – including the drinking water supply - could also be impacted by oil, brine, drilling fluids, fracking and matrix acidizing fluids in the vicinity of the well bore.

The data set for water wells in Calhoun County from the Northwest Florida Water Management District can be viewed at the link below.[17]

http://www.nwfwater.com/Permits/Well-Permits/Data-Setbacks-Fees-Maps/Well-Data-from-Submitted-Completion-Reports

Aside from direct risks to the Upper Floridan Aquifer – the part of the aquifer commonly used as a drinking water supply, USGS Circular 1278 noted above also discusses links between the Lower Floridan Aquifer (apparently a much poorer quality water) and the upper. As OG 1375 will drill down to a target depth of 12,900 feet – completely penetrating both the Lower and Upper FAS, the possibility does exist that drinking water in the Upper FAS could be contaminated by the Lower FAS in the process. The connection between the two aquifers – and the poorly understood nature of that connection - is considered here. The section also raises a flag regarding contamination of the Lower Floridan Aquifer which in the future could become an additional water supply for the region.

Because it is deeply buried and in many places contains poor-quality water, the Lower Floridan aquifer has not been intensively drilled or tested, so its geologic character is not well known. Ground-water flow in the Lower Floridan aquifer is considered sluggish except where it is directly connected to the Upper Floridan aquifer (Miller, 1986). Some of the thick, low- and high-permeability units within the Lower Floridan aquifer are used in southern Florida for wastewater disposal, whereas some units in central and northern Florida are used as a potable water source. The Lower Floridan aquifer is being developed as a possible water source in many other areas of Florida and Georgia.

In the above section, we have described possible contamination of the drinking water supply for Calhoun County (and beyond) as of great concern from this application. This contamination can

[16] Marella, R. L., & Berndt, M. P. (2005). Water withdrawals and trends from the Floridan aquifer system in the southeastern United States, 1950-2000. US Department of the Interior, US Geological Survey. https://pubs.usgs.gov/circ/2005/1278/pdf/cir1278.pdf

[17] Northwest Florida Water Management District. Retrieved from http://www.nwfwater.com/Permits/Well-Permits/Data-Setbacks-Fees-Maps/Well-Data-from-Submitted-Completion-Reports

come from numerous sources and includes: surface spills (from tanker truck accidents; breaks or leaks in gathering lines, ruptured holding tanks or oil separation tanks, ruptured lines carrying drilling fluids or fluids for workover operations, spills from diesel fuel used to power generators, spills from drill rig blowouts etc.), cross-contamination of aquifers (surficial, intermediate, Upper Floridan, Lower Floridan) while drilling; lateral escape of fluids in areas of the bore hole through breaks in the pipe or cement casing - or in (currently unknown) low pressure areas where a loss of drilling fluid circulation can take place while drilling. With thousands of spills – large and small - occurring in this industry per year (see below) and a sole source aquifer at risk, the dangers of permitting OG 1370 are great.

In our review of this application, we have also considered the safeguards that Spooner Petroleum has put in place to protect the multiple aquifers that the company will drill through in the process of exploring for oil at more than 12,000 below the surface. How the proposed drilling procedure will safeguard underground sources of drinking water as well as non-potable upper aquifers is summarized by Spooner on page 22 of their application. We are reproducing it here. We note immediately that the geology and hydrology of the "intermediate aquifer" (located between the surficial aquifer and Upper Floridian Aquifer) noted in the "Open File Report" by the Florida Geological Survey is not considered in this application.

Aquifer Protection During Drilling

Surficial Aquifer System

The surficial aquifer is the uppermost water bearing unit in southern Calhoun County, consisting mostly of sand, gravel, and sandy limestone above bedrock which is located approximately 100-130 feet below land surface. The surficial aquifer will be protected by the 20-inch diameter casing set into bedrock.

Floridan Aquifer System

The Floridan Aquifer System is a hydrogeologic classification of several thousand feet of water-bearing rock formations beneath several southeastern states including Florida. The upper Floridan Aquifer supplies drinking water in the Calhoun, Gulf and Bay County area while intermediate and lower Floridan zones contain increasing concentrations of saltwater. The Floridan Aquifer System will be protected in this area by the procedures described in the Casing Program and Cementing Program.

Underground Source of Drinking Water (USDW)

As defined by the Federal Safe Drinking Water Act (SDWA 1974), an Underground Source of Drinking Water (USDW) is defined as an aquifer containing water with concentrations of total dissolved solids (TDS) less than 10,000 milligrams per liter (mg/L). The Florida oil and gas rules require a fresh water protection casing string to be set (nominally 100 feet) below the base of the USDW.

Based on discussions with USGS staff, evaluation of well records for deep disposal wells (Class I UIC wells) in the area, oil and gas wells, and maps from the USGS report on the Floridan Aquifer System14 the depth of the USDW at the proposed well location is approximately 1,500 feet below land surface (Figure 12).

The 20-inch diameter casing referred to above will be pounded into the ground in sections to a depth of 200 feet. Spooner Petroleum asserts that this will isolate the surficial aquifer from subsequent drilling, casing, and cementing operations as well as a wide array of drilling fluids of varying toxicity. However, according to Appendix 15 *("Drilling Procedure for the Hunt 7-3 Well")* between a depth of 200 feet and 3,400 feet, the bore hole will be initially uncased and all drilling fluids will be in direct contact with the formation throughout the drilling process. Thus Spooner Petroleum will be drilling directly through the Floridan Aquifer and the drinking water supply for all of Calhoun County and surrounding areas.

Although there are many possibilities for contamination of the Floridan Aquifer during the drilling of this well, the issue of fissures, faults, and even caverns in the formation which will allow for the entrance of toxic drilling fluids into the water bearing formation (and "produce no returns to the surface" of those drilling fluids) is of great concern. Spooner indicates in their application that the discussion of that issue is handled by the Newpark Drilling Fluids Program, submitted to DEP with the OG 1370 application as Attachment 19. We reproduce Newpark's discussion below. Note that zones of lost circulation can occur as a result of drilling through naturally permeable materials, natural fractures in the formation, fractures that are "mechanically induced" by the hydrostatic pressure of the drilling fluid, or natural caverns in the formation – which Newpark states are typically "encountered along coastal or formerly coastal areas where carbonate formations have been leached by water". This would be an apt description of the underlying karst geology of southern Calhoun County and underlying geology underlying OG 1370.

While we note that Spooner claims in their application that the "Spooner drilling contractor is not likely to encounter such zones" – Newpark makes no such assertion in their discussion. This is a wildcat well - the nearest well having been drilled by Hunt Oil in 1974 in northwest Gulf County 6.5 miles away (Permit # 746). Lost circulation and the release of toxic drilling fluids into the Floridan Aquifer is absolutely a possibility in the drilling of OG 1370. And, according to Newpark, this lost circulation will likely only be known by the non-return of drilling fluids and cuttings to the surface.

Newpark's discussion of lost circulation is from Attachment 19 of the OG 1370 application is reproduced below. All variations of lost circulation zones Newpark describes are possible in the drilling of OG 1370. All of these scenarios carry risk of contamination to the Floridan Aquifer beneath the drill site.

TYPES OF WHOLE MUD LOSS ZONES OR FORMATIONS

Unconsolidated or highly permeable formations
The most common unconsolidated formations are gravel beds and highly permeability sands. For permeable sands the permeability must usually exceed several darcies before whole mud is imbedded. An old rule of thumb state those formation openings had to be three times larger than the diameter of the maximum particle size found in quantity in the mud. Even for shallow gravel beds, this is a bit hard to swallow, since one often winds up "drilling blind", that is, without returns of any fluid or cuttings to the surface.

Naturally fractured formations
While the unconsolidated formations tend to be found at shallower depths, the naturally fractured formations more frequently occur at greater depths. These fractures may exist but be essentially

impermeable. However, when some critical hydrostatic pressure is reached in the mud column, these "open" fractures may be extended and then take substantial quantities of mud. There really is a gray area between natural and induced fractures, at least in terms of their ability to take mud. Natural fractures usually take only modest amounts of mud, although the rate of loss may increase with time.

Mechanically induced fractures
Whether a closed fracture already exist, or a brand new crack is made in the formation by the hydrostatic pressure of the mud column, the effect of a too thick mud on the equivalent circulating density, or a pressure surge from a careless operation, the net result are the same; a mud loss. Severe complete losses appear to occur more frequently in induced fractures than in the usual natural fractures.

Cavernous formations
Unlike the above types of lost circulation formations, losses are continuous to the caverns or vugs, but are fixed with volume. There is usually one quick loss, unless the cavern is extremely large.

Well Control and other risks during drilling

We also note Spooner Petroleum's discussion of "Well Control" – treated in depth in the application in "Attachment 22 - Well Control Program for the Hunt 7-3 Well."

Here the focus is on maintaining the proper pressure between the bore hole and the formation itself. As Attachment 22 explains in the introduction to this topic:

Well Control is one of the most important single functions performed in the drilling of a well. Primarily control is maintained through having a drilling mud of sufficient density to create a bottom hole hydrostatic pressure great enough to overbalance any pressure zone encountered, but not so great as to rupture that formation. Loss of control may be:

(a) a loss of circulation
(b) a "kick" or "blowout"
with the latter usually being more serious.

Either scenario – loss of circulation (fluids lost to the formation) or a blowout could greatly impact underground sources of water. Although the term "blowout" usually indicates in the public mind a major uncontrolled release of oil and other liquids to the surface (which could happen and which would obviously be a catastrophic outcome in this sensitive location), "underground blowouts" also occur in the industry. Here the blowout preventer (BOP) functions as intended as pressure builds up, but fluids move from zones of high pressure to those of low pressure within the formation – and without ever reaching the surface. The zones of lower pressure in this case could well be the parts of the formation where the Upper Floridan Aquifer (the sole source of drinking water for Calhoun County and surrounding area) is found.

This type of blowout is explained in Schlumberger's Oilfield Glossary.[18]

[18] Underground Blowout. Retrieved from http://www.glossary.oilfield.slb.com/Terms/u/underground_blowout.aspx

underground blowout
1. n. [Drilling]
The uncontrolled flow of reservoir fluids from one reservoir into the wellbore, along the wellbore, and into another reservoir. This crossflow from one zone to another can occur when a high-pressure zone is encountered, the well flows, and the drilling crew reacts properly and closes the blowout preventers (BOPs). Pressure in the annulus then builds up to the point at which a weak zone fractures. Depending on the pressure at which the fracturing occurs, the flowing formation can continue to flow and losses continue to occur in the fractured zone. Underground blowouts are historically the most expensive problem in the drilling arena, eclipsing the costs of even surface blowouts. It may prove necessary to drill a second kill well in order to remedy an underground blowout.

An underground blowout in this location – where fluids (e.g.brine, drilling fluids) at lower depths flow uncontrolled into portions of the Floridan Aquifer which are under less pressure – even where the surface is unaffected - would be an extremely dangerous and damaging outcome. A surface blowout would also carry its own extremely negative consequences for the surrounding wetlands, aquifers, and the waterbodies which drain and receive water from these wetlands.

As Attachment 22 explains, much of the risk here is due to the fact that OG 1370 is a "wildcat well" where the underlying formation down to the 12,900-foot depth has not been drilled in this location before - and is largely unknown. The section on "mud weight" covers some of the many possible scenarios where pressure in the well bore is either too low or too high - largely as a result of drilling through subterranean zones of unknown pressures and material. Due to its importance and relevance, we reproduce this section in its entirety but incorporate by reference the entire attachment and discussion of well control. Note that the section emphasizes greater risk of either lost circulation or blowout when dealing with a wildcat oil well (see below).

B. Mud Weight
Hydrostatic head and, therefore, mud weight, is theoretically sufficient if it is equal to or greater than the formation pressure. As a practical matter, it is desirable for hydrostatic head to be approximately 0.5 lb/gal or up to 500 psi in excess of formation pressure because hydrostatic head will normally be reduced by several hundred pounds per square inch by swabbing or failure to keep the hole full on trips. If hydrostatic head is allowed to become less than the pressure in any permeable formation open to the well bore, formation fluids (gas, oil or water) may enter the well bore and be circulated to the surface. If not contained, a blowout occurs.

On the other hand, excessive hydrostatic head leads to results no less dire. Whole mud is lost to the formation, and the loss can be very difficult or even impossible to stop without reducing the head. Materials used to seal off the formation – lost circulation material, cement, gel slurries, etc., - often lead to stuck drill pipe and the loss of the hole. It becomes difficult to keep the hole full, which may in turn lead to a blowout.

Thus, if hydrostatic head is only a few hundred psi greater than the formation pressure, that formation can be drilled without the loss of whole mud, since solids in the mud act to seal off the formation by forming a filter cake. The accepted practice then, is to attempt to maintain hydrostatic head at approximately 0.5 lb/gal or up to 500 psi greater than formation pressure.

To determine the necessary hydrostatic head requires the determination or estimation of formation pressures to be encountered. The problem is not too difficult in development drilling

areas. In rank wildcat wells, however, little or nothing is known of formation pressures to be encountered, and it is sometime necessary to drill until the well kicks or returns are lost before proper mud weight can be determined. (emphasis ours). *Several reasons for drilling with low-weight muds in wildcat wells (prior to establishing definite formation pressures by DST, etc.) are as follows:*

1. The dangers presented by penetrating a low pressure formation with heavy mud are about as great as those created by penetrating a high pressure formation with light mud.
2. Penetration rates are much higher with lighter muds.
3. Daily mud maintenance is cheaper with lighter muds.
4. If mud is too light and the well kicks, formation pressure can be readily determined by adding shut-in drill pipe pressure to the existing hydrostatic head. Adequate mud weight can then be determined. If mud it too heavy, however, determination of formation pressure and proper mud weight is strictly guess work. When returns are lost, the supervisor knows only that mud is too heavy; he does not know by how much.

As noted above, the wildcat nature of this well makes much of the drilling and preparation of the drilling mud in this location guesswork as well as dangerous – with potentially catastrophic results for the surficial environment and water supply for this region. Those outcomes could be the result of faulty preparation of drilling fluids, human error, equipment failure, bad casing and cementing (see below), working too fast, or completely unknown characteristics of the formation that is being drilled, cased, and cemented. Kicks, blowouts, and lost circulation zones occurring during the drilling are all possibilities given the unknown nature of this formation and the other factors mentioned.

Casing and Cementing

Another issue of concern regarding potential impacts to the Floridan Aquifer deals with the integrity of the casing and cementing of the casing that will occur after the drilling of the initial well bore through the formation where the aquifer exists.

As in the 20-inch conductor pipe, the 9-5/8" surface casing and the 5-1/2" production casing which would be utilized in the OG 1370 well are meant to isolate fluids passing through the well bore from the surrounding Floridan Aquifer – and to maintain the integrity of the drilling operation. In the highly unlikely event that OG 1370 actually became the first producing oil well in this section of the Florida Panhandle, produced fluids – oil, brine, and possibly natural gas – would also be, in theory, isolated by the casing and cementing. Spooner asserts that the "*Floridan Aquifer System will be protected in this area by the procedures described in the Casing Program and Cementing Program."*

Attachments 16 ("Casing Program for the Hunt 7-3 Well"), 17 ("Cementing Proposal for 9-5/8 Surface Casing for the Hunt 7-3 Well"), and 18 ("Cementing Proposal for 5-1/2 "Production Casing for the Hunt 7-3 Well") from the OG 1370 application simply provide a summary of standard industry practices for casing and cementing this well.

Yet numerous studies have shown that when oil or gas wells do leak (and they do), the cause is frequently found in failure of the casing and cementing – and that failure can occur for a variety of reasons.

This 2014 study published by the National Academy of Sciences (NAS) emphasizes the problem. See excerpt below from the NAS review laying out the causes of well leakage[19]. Note also the high incidences of such casing and cementing failures found by the National Academy - "from 2 to >50%" of wells drilled in the studied locations.

*Leaking oil and gas wells have long been recognized as a potential mechanism of subsurface migration of thermogenic and biogenic methane, as well as heavier n-alkanes, to the surface (*7⇓⇓⇓–11*). A leaking well, in this context, is one in which zonal isolation along the wellbore is compromised due to a structural integrity failure of one or more of the cement and/or casing barriers. Such loss of integrity can lead to direct emissions to the atmosphere through one or more leaking annuli and/or subsurface migration of fluids (gas and/or liquid) to groundwater, surface waters, or the atmosphere. Cement barriers may fail at any time over the life of a well for a number of reasons, including hydrostatic imbalances caused by inappropriate cement density, inadequately cleaned bore holes, premature gelation of the cement, excessive fluid loss in the cement, high permeability in the cement slurry, cement shrinkage, radial cracking due to pressure fluctuations in the casings, poor interfacial bonding, and normal deterioration with age (*12*). Casing may fail due to failed casing joints, casing collapse, and corrosion (*13*). Loss of zonal isolation creates pressure differentials between the formations intersected by the wellbore and the open barrier(s). The pressure gradient thus created allows for the flow of gases or other formation fluids between geological zones (i.e., interzonal migration) and possibly to the surface (*14⇓–16*), where it might manifest as sustained casing pressure (SCP) or sustained casing vent flow.*

*Although not every instance of loss of zonal isolation will lead to such events, the incidence rate of cement/casing impairments and failures can provide some insight into the scale of current and future problems. However, the structural integrity failure rate of oil and gas well barriers continues to be a subject of debate. The rates most commonly cited (from 2 to >50%) are based upon industry reporting for offshore wells in the Gulf of Mexico (*13, 14*) and Canadian onshore (mostly conventional) wells (*16*). Watson and Bachu (*16*) note that wells drilled during periods of rapid development activity and/or wellbores deviated from vertical (e.g., horizontal wellbores) may be more prone to casing vent flow and/or gas migration away from the wellhead.*

Another article from the Denton-Record Chronicle in 2014 summarizes research that reached the same conclusion as the NAS review – failures to isolate surface and production casings from the surrounding environment, including drinking water aquifers, are frequently due to problems with casings and the cementing of those casings. Though the study deals with natural gas wells, the drilling procedures as well as casing and cementing would apply equally to an oil well. See excerpt from the source below.[20]

Researchers from Dartmouth College, Duke University, Ohio State University, Stanford University and University of Rochester conducted the study, sampling 113 domestic groundwater wells overlying the Marcellus Shale in Pennsylvania and 20 groundwater wells overlying the Barnett Shale in North Texas.

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[19] Ingraffea, A. R., Wells, M. T., Santoro, R. L., & Shonkoff, S. B. (2014). Assessment and risk analysis of casing and cement impairment in oil and gas wells in Pennsylvania, 2000–2012. *Proceedings of the National Academy of Sciences*, *111*(30), 10955-10960. Retrieved from http://www.pnas.org/content/111/30/10955.full

[20] McPhate, Christian (2014, September). Study: Casing, Cement at Fault. Retrieved from http://www.dentonrc.com/news/news/2014/09/19/study-casing-cement-at-fault

Researchers identified eight "discrete clusters" of gas contamination, seven in Pennsylvania and one in North Texas, that showed groundwater contamination increasing over time. They linked four of the clusters to gas leakage from failures of cementing or faulty production casings in wells.

And since OG 1370 contemplates workover operations - possibly involving fracking and matrix acidizing where pressures can be far greater than in conventional drilling putting even greater stress on casings and cement – we are especially concerned about the possibility of leaks occurring in either the surface or production casing below the conductor pipe but still squarely within the zone of the Floridan Aquifer.

Apparently, the quality of cement utilized in the bottom of the production casing that "did not meet industry standards" was also responsible for the now famous blowout at the BP oil rig in the Gulf of Mexico in April of 2010 which led to the largest oil spill in American history. See New York Times summary article.[21]

Still another research project found similar problems with the casings and cementing in oil and gas wells at various locations around the United States. See summary article below.[22]

"We have found a number of homes near active wells with very high levels of natural gas in the tap water," said Jackson, a senior fellow at the Stanford Woods Institute for the Environment and at the Precourt Institute for Energy. "Where the chemistry suggests contamination, the problem usually lies with the integrity of the well, either the cementing used to isolate it from the surrounding rock and water or the steel casing that allows gas and oil to flow upwards."

We conclude on the basis of the above research that, in addition to the impacts of surface spills making their way down into the various aquifers, the Floridan Aquifer in this location can also be contaminated through what the industry refers to as a "troublesome formation" – e.g. one where drilling fluid enters the aquifer through a zone of lost circulation (unknown until it is reached) – or through the failure of the casing and cementing procedures meant to isolate the aquifer from drilling, workover, or produced fluids. Blowouts – on the surface or underground – are also possible. It is not a question of intent – but of human error, equipment failure, or other factors. In any case, the wildcat well OG 1370 does in fact put the Floridan Aquifer at risk.

VI. Likelihood of Commercial Quantities of Oil at OG 1370

As previously mentioned, F.S. 377.241 describes the criteria for issuing a permit to drill for oil in the State of Florida. In addition to taking into consideration the "nature, character and location of the lands involved," F.S. 377.241(3) also requires that the Oil and Gas Division of the Florida DEP "shall give consideration to and be guided by:"

(3) The proven or indicated likelihood of the presence of oil, gas or related minerals in such quantities as to warrant the exploration and extraction of such products on a commercially profitable basis.

[21] Broder, John M. (2010, October 28). Panel Says Firms Knew of Cement Flaws Before Spill. Retrieved from http://www.nytimes.com/2010/10/29/us/29spill.html?mcubz=2

[22] Shwartz, Mark (2016, February 18). Stanford scientist weighs the risk of groundwater contamination from oil and gas wells. Retrieved from http://news.stanford.edu/2016/02/18/aaas-jackson-water-021816/

The application for OG 1370 describes the geological objective of their exploratory well as the "Apalachicola Embayment." See Figure 4 from the OG 1370 application below for a map showing this feature. Although offshore sections of this hypothesized oil play have not been drilled due to Florida's ban on offshore drilling in state waters, onshore locations have certainly been drilled over the years.

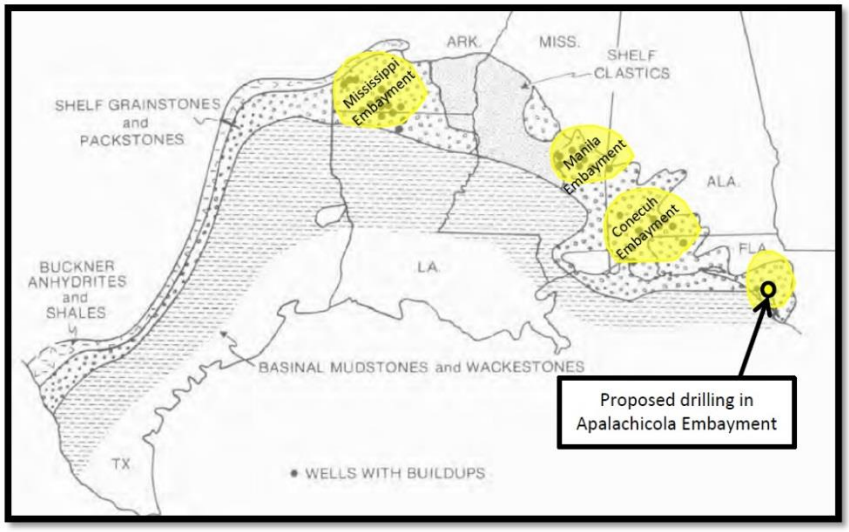

Figure 4: Smackover Formation as identified in Gulf Coast region[7]

The table which follows was a part of the OG 1370 application and included all oil wells drilled within a 10 mile radius of the proposed OG 1370 well. We note that of the nine wells previously drilled, four were of similar depth (or deeper) than that proposed in the OG 1370 application.

Table 3: Summary of exploration wells within a 10-mile radius of the proposed Hunt 7-3 Well

Permit No	County	Exploration Company	Well Name	Status	Plug Date	Total Depth (ft)
25	Calhoun	Pure Oil Co.	IPC #1	Dry Hole	1945	3,460
26	Calhoun	Pure Oil Co.	IPC #2	Dry Hole	1945	5,096
48	Gulf	Pure Oil Co.	E L McMillan #1	Dry Hole	1947	5,069
195	Calhoun	A R Temple-A W Williams Co.	IPC #1	Dry Hole	1954	4,680
216	Calhoun	A R Temple-A W Williams Co.	IPC #3	Dry Hole	1954	4,520
746	Gulf	Hunt Oil Co.	IPC #30-4	Dry Hole	1974	13,284
777	Calhoun	Mallard Exploration Inc.	IPC #31-2	Dry Hole	1975	12,140
846	Gulf	Exxon	Neal Lumber Co. Inc. #20-3	Dry Hole	1976	13,606
1010	Bay	Houston Oil & Minerals Corp.	Southwest Forest Ind. #13-3	Dry Hole	1980	12,486

The next table (see below) is based on additional data provided by the "Florida Department of Environmental Protection Geospatial Open Data" website.[23]

Our table omits well permits which were "denied," "not issued," or "never drilled" and includes only drilling which actually took place in Calhoun County and all surrounding counties (i.e. Calhoun, Holmes, Jackson, Gadsden, Liberty, Franklin, Gulf, Bay, and Washington Counties). See map of Florida counties below for the area covered by the table:

As the table below shows, a total of 91 oil wells have actually been drilled onshore in Calhoun and surrounding counties. All were considered "wildcat wells" and all resulted in "dry holes."

[23] Permitted Oil and Gas Wells. Retrieved from http://geodata.dep.state.fl.us/datasets/b63958cdd6ff4c679a2086d6994ef183_0/data?where=UPPER(COUNTY)%20like%20%27%25CALHOUN%25%27

COUNTY	NUMBER OF WELLS ACTUALLY DRILLED
Calhoun	14
Holmes	13
Jackson	7
Gadsden	8
Liberty	8
Franklin	12
Gulf	9
Bay	10
Washington	10
TOTAL	**91**

DEP has provided a "Fact Sheet" on oil and gas drilling which can be seen at the website.[24]

The fact sheet defines a "wildcat well" as follows:

Wildcat wells are exploratory wells drilled in areas or at depths where commercial-scale oil or gas hasn't previously been discovered.

The factsheet also claims: *Historically in Florida, 97% of all wildcat wells have been dry holes.*

We believe these results from previous drilling in the vicinity of OG 1370 hardly support the chances for a "commercially profitable" oil well at this location. That fact coupled with enormous risk to irreplaceable wetlands, sensitive wildlife habitat, as well as surficial and underground aquifers which provide drinking water to Calhoun County and beyond, strongly supports DEP's denial of the OG 1370 application.

VII. Risks of oil spills

Spills of oil, produced water, drilling and fracking fluids are a regular part of the oil industry. As this introductory paragraph from NOAA's office of Respone and Restoration puts it:

[24] Oil and Gas Drilling Exploration Retrieved from https://www.dep.state.fl.us/water/mines/oil_gas/docs/OilGasDrillingExplorationFactSheet.pdf

Oil spills—some large, more often small—happen along the coasts, Great Lakes, and major rivers of the United States nearly every day.[25]

While dramatic offshore spills such as the Deepwater Horizon spill in the Gulf in April of 2010 receive enormous media attention, smaller spills from the onshore oil industry could be categorized as more or less "routine." Drawing on state-reporting from major oil producing states, Energy Wire published 2013 data in the report referenced below. The data did not include oil and oil liquid pipeline spills. It also did not include data from Louisiana and Pennsylvania, two major oil producing states which did not provide spill data. See full article.[26]

The number of spills reported at oil and gas production sites shot up slightly more than 17 percent last year, even as the rate of drilling activity leveled off.

There were at least 7,662 spills, blowouts, leaks and other mishaps in 2013 in 15 top states for onshore oil and gas activity, according to an EnergyWire analysis of state records. That's up from 6,546 in the states where comparisons could be made (EnergyWire, July 8, 2013).

That adds up to more than 20 spills a day.

Many of the spills were small. But their combined volume totaled more than 26 million gallons of oil, hydraulic fracturing fluid, "fracking" wastewater and other substances. That's the same volume as what gushed four years ago from BP PLC's ruptured Gulf of Mexico oil well in 11 days." [27]

Conducting the same type of report based on state-reported data from the following year (2014) Energy Wire's state based research revealed a significant increase in spills.[28]

Onshore production sites leaked oil, produced water and other material at least 9,728 times last year, releasing 716,844 barrels of fluid, according to an EnergyWire *analysis of spill records in 18 states. In states where comparisons could be made, the number of spills jumped 20 percent between 2013 and 2014 (*Soraghan, M., *2014).*

Ironically, a web search for recent oil spills uncovered a major spill from June of 2017 in Calhoun County – but Calhoun County, Michigan as opposed to Florida. Michigan's Department of Environmental Quality (DEQ) estimates that approximately 4,000 gallons of crude oil and 20,000 gallons of brine leaked from a gathering line which takes oil and brine from a producing well head to a separating tank. This is the same process used for the separation of oil and brine in Florida. Discovered on June 12, 2017 when workers noticed a drop in production from a producing well, DEQ found the spilled oil and brine eventually ended up in a wetland – which the National Wetlands Inventory shows are prevalent in the area. This is similar to the topography of Calhoun County, Florida – and a very good indication of where any spills of oil, brine, drilling fluids or fracking fluids from the site of OG 1370 will end up. The cleanup of the

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[25] Looking For Information About Oil Spills? Retrieved from http://response.restoration.noaa.gov/about/media/looking-information-about-oil-spills.html

[26] Soraghan, M. (2014, May 12). OIL AND GAS: Spills up 17 percent in U.S. in 2013. Retrieved from https://www.eenews.net/energywire/stories/1059999364

[27] Soraghan, M. (2014, May 12). OIL AND GAS: Spills up 17 percent in U.S. in 2013. Retrieved from https://www.eenews.net/energywire/stories/1059999364

[28] King, P., & Soraghan, M. (2015, September 29). OIL: U.S. spill count rose 20% in 2014. Retrieved from https://www.eenews.net/stories/1060025432%20-%20says%20716,844

Calhoun County, Michigan site was ongoing as of this writing.[29]

In another news report on this same recent spill, Kristy Shimko, Calhoun County Field Geologist for the Michigan Department of Environmental Quality, told the a local newspaper, the Battle Creek Enquirer, that "It has been going on for weeks...We are still trying to determine how long."[30] She also provided data on the well stating that the well responsible for the leak was pumping 1,200 barrels of brine for every 17 barrels of oil produced. Dead vegetation was the indicator of where the toxic liquid had ended up and where cleanup is ongoing.
The same type of gathering lines are a component of oil field operations in Florida. This is also in ballpark for the ratio of oil to brine extracted from the oil fields in Jay, Florida, where 3,547,312 barrels of brine accompanied the 115,188 barrels of oil extracted for April of 2017 according to the Florida DEP records.[31]

This large quantity (and likelihood) of onsite spills is extremely distressing when we consider a spill occurring in the vicinity of OG 1370 – from either drilling fluids, fracking or matrix acidizing fluids, or oil and produced brine. While gravity will surely lead the toxic oil and brine mix to nearby wetlands, just as it did in Michigan, the nearby wetlands in this case are thickly vegetated, roadless and have no normal access as we have previously noted. And in the case of a leak in a gathering line or in the well bore itself, it could take weeks to even know that a small but steady spill of fluids is occurring – in the exploration phase of this operation or in possible future production. Again, the "nature, character and location of the lands involved" should surely preclude drilling in a site which drains into wetlands which themselves drain into Outstanding Florida Waters critical to wildlife, tourism, and commercial fishing.

The most recent release of oil spill data from state reporting tallied by Energy Wire, covering the year 2016, found that oil spills were still occurring at high rates and numbers – in spite of a downturn in drilling.[32]

A 2016 E&E News review found at least 8,519 spills in 14 producing states. That's an average of about 23 spills a day across the United States.

VIII. Hurricanes, Tropical Storms and Tropical Depressions

Added to the above risks, are risks connected to this site as a part of the Gulf Coastal Lowlands and the numerous hurricanes, tropical storms, and tropical depressions which have regularly passed through or near to the proposed OG 1370 operation.

From 1851 to 2010, the National Oceanic and Atmospheric Administration maps and lists 72 storms which have passed through Calhoun County, Florida.[33]

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29 Associated Press (2017, June 27). Cleanup Continues at Oil Leak in Rural Calhoun County. Retrieved from https://www.usnews.com/news/best-states/michigan/articles/2017-06-27/cleanup-continues-at-oil-leak-in-rural-calhoun-county

30 Christenson, T. (2017, June 22). New Oil Spill Clean-up Continues. Retrieved from http://www.battlecreekenquirer.com/story/news/local/2017/06/22/new-oil-spill-clean-up-continues/419610001/

31 Oil and Gas Annual Production Reports--Monthly Production Reports. Retrieved from http://www.dep.state.fl.us/water/mines/oil_gas/production.htm#mpr

32 https://www.eenews.net/stories/1060057966

NOAA map below shows the occurrences and tracks.

It should also be noted that one of the most damaging hurricanes to ever hit the eastern U.S. was Hurricane Agnes in 1972. As can be seen in the map below, Hurricane Agnes made landfall on the Florida Panhandle near Panama City on June 19, 1972 as a Category 1 hurricane. It remained at hurricane strength through the southern end of Calhoun County before weakening to a tropical storm as it moved northeast and made contact with highlands in the northern part of the county. The powerful, fast moving, right side of the storm passed directly over the site of the proposed oil well.

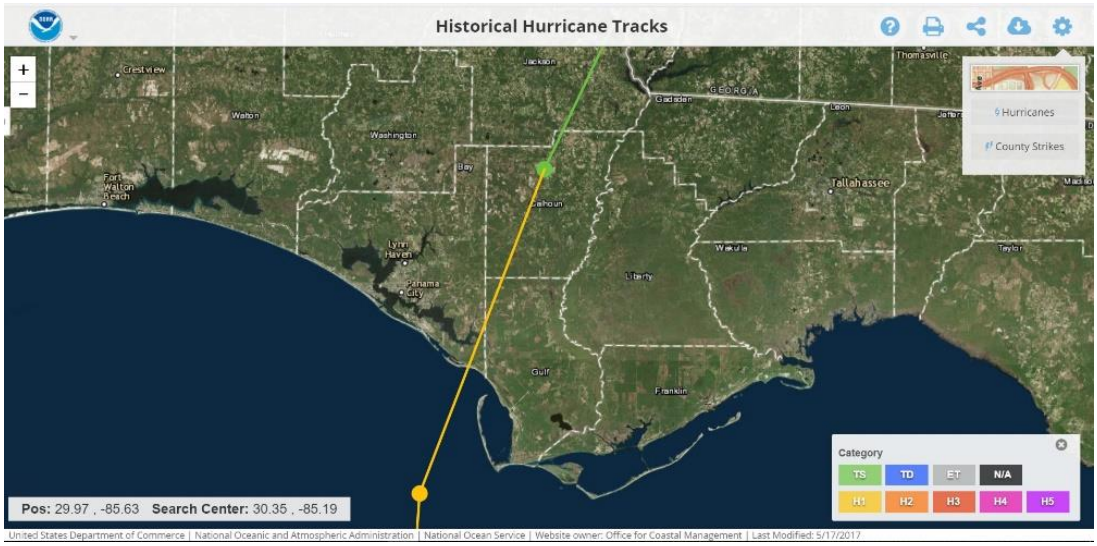
Summary of Hurricane Agnes's impacts on Florida is below:

Though it moved slowly across the Yucatán Peninsula, damage in Mexico is unknown. Although the storm bypassed the tip of Cuba, heavy rainfall occurred, killing seven people. In Florida, Agnes caused a significant tornado outbreak, with at least 26 confirmed twisters, two of which were spawned in Georgia. The tornadoes and two initially unconfirmed tornadoes in Florida alone resulted in over $4.5 million (1972 USD) in damage and six fatalities. At least 2,082 structures in Florida suffered either major damage or were destroyed. About 1,355 other dwellings experienced minor losses. [34]

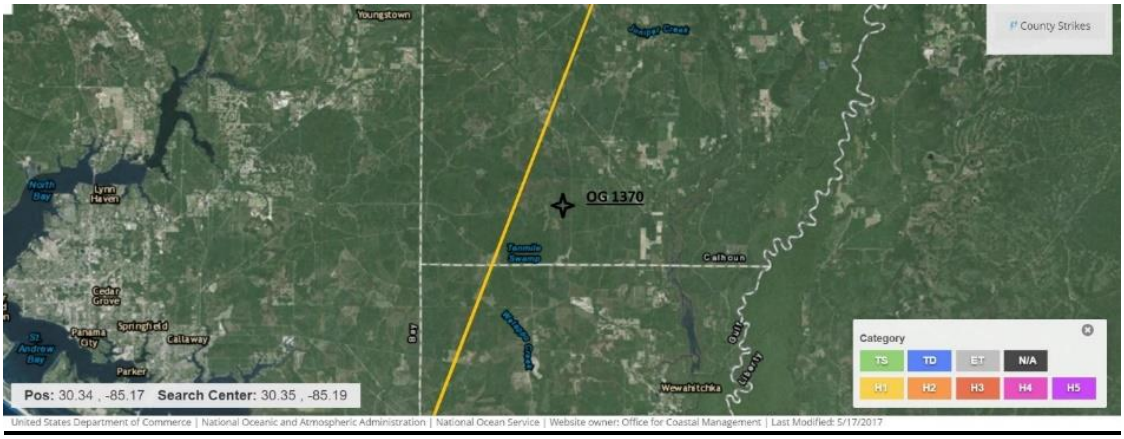
Track of Hurricane Agnes across the Florida Panhandle is below:

33 https://coast.noaa.gov/hurricanes/

34 https://en.wikipedia.org/wiki/Hurricane_Agnes



The map below shows the proximity of the track of Hurricane Agnes to the OG 1370 well site:



Headline from the Tallahassee Democrat from June 19, 1972 describes the extent of flooding.


Tallahassee Democrat
Monday Afternoon
Florida's Capital Newspaper
Islands, Towns Isolated
Hurricane Agnes Floods Coast
Rain, High Tides Inundate Roads
Trident
I Declare!
Of 'Subversives'
Wiretap Ruled Illegal In Court
Ahepa Merges Two Cultures
St. Marks Residents Remained to Check Flood Damage

A hurricane of this force passing through this site - as happened in 1972 - could cause extensive damage to the drill site including all tanks, retention ponds, and containers holding drilling fluid, oil dispersants, diesel fuel, oil, brine, fracking fluids, fluids used in matrix acidizing, and other liquids. The risk of the drill pad being inundated and of spills (or even fluids on the oil pad liner or captured in the retention areas) being washed into surrounding wetlands and streams emptying into Dead Lakes, the Chipola River, and other water bodies of the Apalachicola River Basin is enormous. Physical damage to structures from winds and possibly tornados would have been expected had this well been operating at this location at the time Hurricane Agnes passed through. Roads – including the unpaved access roads used to reach this well site - would likely have been impassable in the period after the hurricane. Assessment and mitigation of damage would have been difficult at best in the period during and immediately following the storm.

Other storms and hurricanes have also passed near this site. Even the more frequent tropical storms and depressions which regularly pass through this flat swampy coastal area would pose enormous risks for the many toxic fluids kept on site in a variety of containment vessels. Inundation of the drill site could cause discharge of onsite chemicals into wetlands and then to streams – or the flushing of previous spills on access roadways and other locations to and from this industrialized site into these same wetlands and streams. In the event of large hurricane floods, the two nearby streams noted above - Stonemill Creek and Right Prong Stonemill Creek - would overflow their swampy shorelines and expand into the swamps and wetlands which they drain - and which surround this particular oil well in all directions. Given its proximity to surrounding swamps, inundation could cover the drill pad itself. The area surrounding OG 1370 could well be covered by a single, connected sheet of water moving in the seaward direction dictated by the flat swampy local topography. In the event of hurricane flooding, that sheetflow would certainly carry this water – likely to be loaded with numerous contaminants from the OG 1370 oil well site - through interconnected wetlands, streams and coastal plain to Dead Lakes, the Chipola River, the Apalachicola River, and Apalachicola Bay. Quite simply, if the OG 1370 well is approved at this location, we would have a potential catastrophe in the making for some of the most pristine and biodiverse wetlands, swamps, and waterbodies in our state.

Table 8 from Spooner Petroleum's application describes the large quantities of oil, produced water, and hydrochloric acid which will be stored onsite. The table omits the numerous chemicals which are also noted in the application and which will be used in the production of drilling fluids on the drilling pad. If the company decides to stimulate the well bore utilizing hydraulic fracturing or matrix acidizing techniques, those chemicals will also be present on the OG 1370 pad – and subject to direct release into the environment in the event of a major storm, tornado, or hurricane coming through the area.

Table 8 : Summary of Fluid Handling during Testing

Product	Primary Constituents	Storage Method	Disposal Method
Near wellbore clean up fluid (15% HCl acid / 85% water solution)	Neutralized acid Formation water	7,000-gallon tanker	Hauled by contractor to an approved UIC Disposal Well in Alabama
Crude oil	Crude oil	Separation tank/vessel	Hauled by contractor to an approved facility in Alabama
Natural gas (associated with crude oil)	Natural gas	Separation tank/vessel	Flared at site under FDEP air permit with duration limited to minor source requirements
Formation fluid	Formation water	Separation tank/vessel	Hauled by contractor to an approved UIC Disposal Well in Alabama

IX. Flora and Fauna

In addition to summary descriptions we have already provided of freshwater wildlife in the Greater Apalachicola River Basin, other research exists on plants and animals likely to be found in the vicinity of OG 1370. As a sparsely developed section of the Apalachicola River Basin containing a mosaic of pine, pastures, and numerous large and small, roadless wetlands of different types, the area where the OG 1370 project will potentially take place supports a wide variety of rare plants and animals. The Florida Natural Areas Inventory (FNAI) has prepared an "Element Occurrence Report" for the one mile square area which contains the drill site – as well as reports on adjacent sectors.

The FNAI report on the sector where OG 1370 is located (FNAI sector 8016) lists 43 state or federally listed plant and animal species as potentially present – in addition to the Florida black bear (an iconic Florida sub-species subject to its own special state management plan) for which there was an element occurrence.

According to a chart (see chart on following page) by Lampl-Herbert Consulting prepared on behalf of Spooner Petroleum, the following protected wildlife species are potentially utilizing the project area:

Table 2: Summary of protected species[4]

Class	Common Name	Scientific Name	Federal Status	State Status	Habitat
Amphibian	Reticulated Flatwoods Salamander	*Ambystoma bishopi*	LE	FE	Pine flatwoods
Reptile	Eastern Indigo Snake	*Drymarchon couperi*	LT	FT	Broad range of habitats
Reptile	Gopher Tortoise	*Gopherus polyphemus*	C	ST	Sandy uplands
Reptile	Florida Pine Snake	*Pituophis melanoleucus mugitus*	-	ST	Dry, sandy areas; associated with gopher tortoises
Bird	Florida Burrowing Owl	*Athene cunicularia floridana*	-	ST	Open, dry areas
Bird	Bald Eagle	*Haliaeetus leucocephalus*	Protected		Near water
Bird	Wood Stork	*Mycteria americana*	LT	FT	Near freshwater
Bird	Red Cockaded Woodpecker	*Picoides borealis*	LE	FE	Mature pine trees
Bird	Wading Birds	*Various species*	-	Protected	Near water

Lampl-Herbert also reported that two biological surveys were conducted on April 4, and April 10, 2017 and that none of the above species were observed. This is to be expected in a simple site visit. Much more sophisticated methods are carried out during normal biological research on site occupancy by endangered and threatened species. These methods include trail cameras, infrared cameras, electronic collars and microchips, hair traps, and audio recordings.

It should also be noted that the concerns we have with regard to listed species as well as the full range of biodiversity in proximity to this project go beyond the immediate drill site. In their summary of habitat and species protection, Lampl-Herbert emphasize the proposed "pad and road will replace +/- 4 acres of recently timbered land." However, oil drilling utilizes many toxic fluids – and there is a reasonable likelihood of these fluids leaving the site and moving by gravity to lower-lying surrounding wetlands. The material safety data sheets (MSDS) submitted as part of the OG 1370 application for many of the chemicals which will be utilized in this well indicate toxicity. We believe species and habitat protection for this site did not provide an adequate survey of the species which may be present. Nor are there sufficient protections for the release of toxic chemicals into surrounding habitat for rare endangered or threatened species as a result of accident, equipment failure, human error, or inundation by hurricanes, tropical storms, and tropical depressions, which frequent the area. Tornados and wind damage are another possibility – especially during hurricanes. Damage or destruction of any tanks or storage areas holding oil, brine, diesel fuel or other chemicals could be catastrophic for nearby swamps and the flora and fauna they support in addition to important water bodies downstream.

Another point that should be raised is that the applicant, Spooner Petroleum, will be operating in this environment without an Incidental Take Permit (ITP) for the federally listed species present. Although this is private land, any "take" of federally listed species which occurs as a result of the applicant's activity would be illegal without this permit.

See definition of "take" and summary statement from the U.S. Department of Agriculture and Forest Service below:

The Federal ESA prohibits "taking" of an endangered or threatened animal. This means that you cannot "harm harass, pursue, hunt, shoot, wound, kill, trap, capture, or collect any threatened or endangered species." "Taking" can also mean habitat alternation resulting in harm to the species. Whether on private or Federal land, whether intentional or unintentional, the "taking"

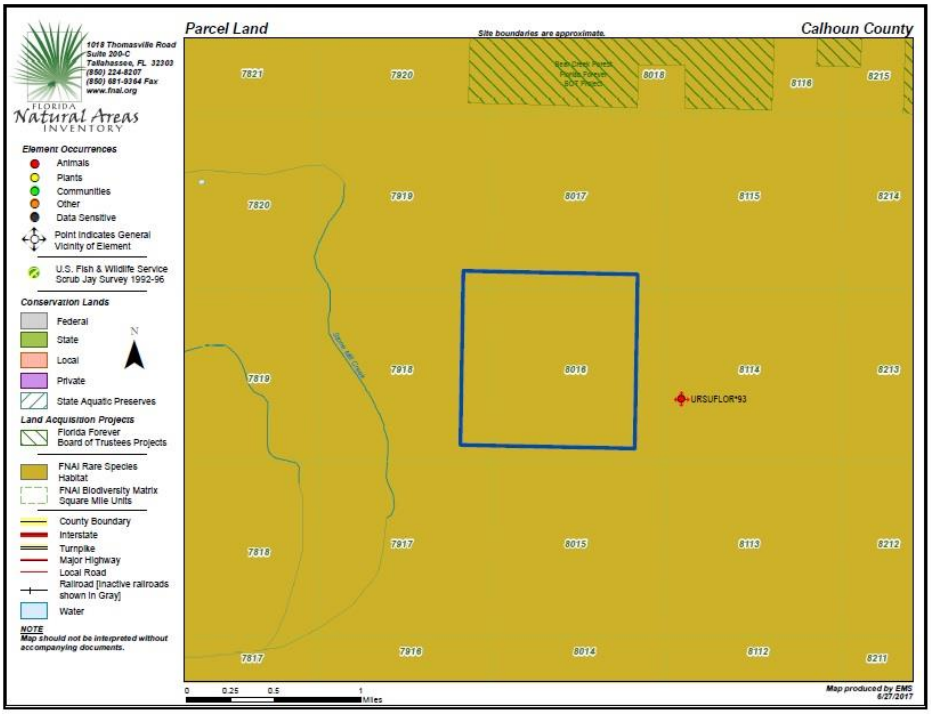
of a listed animal is illegal. Protection in addition to this may be afforded through your State's Endangered Species Act. [35]

Seeking an ITP for work at this site which would allow the applicant a certain degree of take of federally listed wildlife species present is a voluntary process. It is summarized and can be explored in more detail on the FWS website below:

Anyone who believes that their otherwise-lawful activities will result in the "incidental take" of a listed wildlife species needs a permit. The U.S. Fish and Wildlife Service (FWS) can help you determine whether your proposed project or action is likely to result in "take" and whether a HCP is an option to consider.[36]

We have no indication from this application that the U.S. Fish and Wildlife Service has provided (or was asked to provide) any consultation on this project with regard to the presence of federally listed wildlife present or potential impacts.

The FNAI location map provided in their report is provided below:



This map also indicates the presence of a Florida Forever project only one mile to the north of the sector analyzed for OG 1370. The "Bear Creek Forest Critical Natural Lands" has been slated for acquisition by the State of Florida since 2004. It is similar in topography and biodiversity to the lands surrounding OG 1370 and underscores the interest the State of Florida

35 U.S Department of Agriculture and Forest Service. Threatened and Endangered Species and the Private Landowner. Retrieved from https://www.na.fs.fed.us/spfo/pubs/wildlife/endangered/endangered.htm

36 U.S Fish and Wildlife Service. Habitat Conservation Plans Section 10 of the Endangered Species Act. Retrieved from https://www.fws.gov/midwest/endangered/permits/hcp/hcp_wofactsheet.html

has in these lands as well as providing additional support for their ecological importance. The lands involved in the Bear Creek project are described by DEP as follows:

The Bear Creek project consists of approximately 100,425 acres in Calhoun, Bay and Gulf Counties, Florida. This landscape consists of numerous pine plantations that are interspersed with disturbed wet prairies and forested wetlands including baygalls, dome swamps, basin swamps and floodplain swamps. The boundaries also contain upland forest types that are represented by sandhill, scrubby and mesic flatwoods. The Bear Creek Florida Forever project is 6 miles southeast of the Econfina Creek Water Management Area (Northwest Florida Water Management District), 6 miles north of Tyndall Air Force Base, and 2.3 miles southwest of the Middle Chipola River Florida Forever project. The Patton tract, a small 940-acre area recently acquired by the U.S. Forest Service, is adjacent to the project on its northwest side near SR 20.

DEP provides the following chart of federal and state listed species in the vicinity[37]:

Bear Creek Forest FNAI Elements	
Reticulated Flatwoods Salamander	G2/S2
Florida Black Bear	G5T2/S2
Gopher Tortoise	G3/S3
Dark-headed Hatpins	G1/S1
Pine-woods Aster	G1/S1
Godfrey's Butterwort	G2/S2
Mock Pennyroyal	G2G3/S2S3
Giant Water-dropwort	G3/S3
Bachman's Sparrow	G3/S3
Primrose-flowered Butterwort	G3G4/S3
Southeastern Weasel	G5T4/S3?
13 rare species are associated with the project	

The Reticulated Flatwoods Salamander (*Ambystoma bishop*), a federally endangered species, is potentially present near or possibly on the OG 1370 drill site. This endangered species, which currently lacks critical habitat, could well be expected to use the nearby wetlands – indicated on previous maps - for breeding and other activities.

The FWC describes the species' habitat and threats to its persistence as follows:

Habitat & Distribution: The reticulated flatwoods salamander inhabits slash and longleaf pine flatwoods that have a wiregrass floor and scattered wetlands (Florida Natural Areas Inventory 2001). This species occurs in Florida counties west of the Apalachicola River (Map Data from: Krysko et al. 2011).

Threats: The main threat to the reticulated flatwoods salamander is loss of habitat. Pine flatwoods wiregrass habitats have suffered rapid loss in the southeast due to agriculture and silviculture (Ashton 1992). Continued loss of habitat could cause extensive population loss for the reticulated flatwoods salamander. An extensive drop of the water table could prevent the necessary inundation of water that eggs require (Palis and Hammerson 2008).

[37] Florida Department of Environmental Protection (2016, February 4). Bear Creek Forest. Retrieved from https://www.dep.state.fl.us/lands/FFAnnual/Bear_Creek_Forest.pdf

While critical habitat has not been established for the salamander, the map below from the FWC document we referenced shows its potential range throughout Calhoun County – and especially in a part of the county full of "scattered wetlands." [38]

Clearly, we are very concerned about any spills in this area for this endangered species – especially as the salamander's use of inundated wetlands for laying and development of its eggs makes it especially vulnerable to pollution of the type often found around oil operations. In addition to the likely drawdown of the water table due to the onsite water well which will provide liquid for the drilling fluids (and which would create problems for egg-laying since the salamanders' eggs need to be submerged), we are also concerned about the impact of even minute amounts of oil, brine, and chemicals ending up in the surrounding wetlands. Like frogs and toads, salamanders are extremely sensitive to chemical exposure and are an excellent indicator species for gauging the health of an ecosystem - specially the purity of its waters.

Ecologists and environmental scientists use a wide range of plants and animals as "indicator species" to get an idea about ecosystem health of streams and forests. Some of these species are tolerant of pollution — such as certain bacteria or algae — so their presence indicates the presence of pollutants like sewage. Other species are intolerant of pollution or environmental disturbance — such as mayflies or many fish species — so their presence is an indicator of a healthy ecosystem, while their absence can indicate problems. One group of organisms most sensitive to environmental change appears to be amphibians, which includes frogs, toads and salamanders.[39]

Spooner Petroleum's species chart for the area also lists the Wood Stork (*Mycteria americana* - a federally listed threatened species) and a variety of wading birds (e.g. egrets, ibises, various herons) which also potentially utilize the nearby wetlands. These birds travel far in search of food and lack of observation during only two site visits which likely did not pentrate the nearby thickly vegetated wetlands does not answer the question of whether these wetlands are utilized by wood storks or other wading birds. Given what we know about these species and this particular area, in all probability they are present. In addition, the State of Florida has listed six

[38] Florida Fish and Wildlife Conservation Commission. Reticulated flatwood salamander. Retrieved from http://myfwc.com/media/2211313/Reticulated-Flatwoods-Salamander.pdf

[39] Marshall, J. (2013, July/August). Indicator Species: Using Frogs and Salamanders to Gauge Ecosystem Health. Retrieved from http://www.grit.com/departments/indicator-species-zm0z13jazgou

species of wading bird likely to be utilizing these wetlands as "imperiled" and subject to a special management and action plan. Those are the Little Blue Heron (*Egretta caerulea*), Reddish Egret (*Egretta rufescens*), Roseate Spoonbill (*Platalea ajaja*), Snowy Egret (*Egretta thula*), Tricolored Heron (*Egretta tricolor*), and White Ibis (*Eudocimus albus*).

The FWC map of wood stork distribution in Florida shows that the entirety of Calhoun County is included in the species' range. See FWC description of the wood stork and distribution map.[40]

The Gulf Coastal Lowlands – including southern Calhoun County where OG 1370 is located - is also a hotspot for wading bird populations including the species state listed as "imperiled." The area is seen on this FWC map from the FWC's imperiled wading bird action plan described in more detail below:

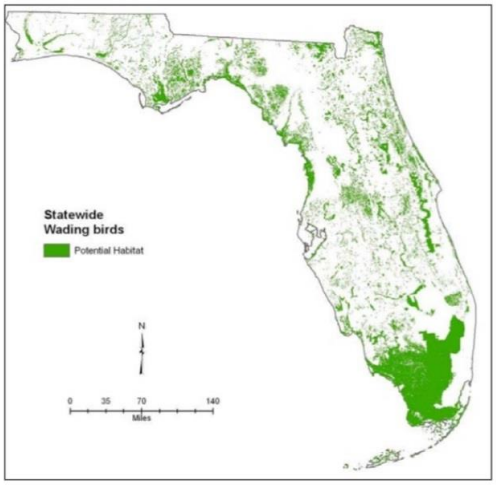


Figure 1. Statewide potential habitat map.

Obviously, any spillage of petroleum, produced water, acids, drilling fluids, fracking fluids, or other chemicals from OG 1370 into surrounding wetlands could be catastrophic for the ecosystems and the birds which utilize these local wetlands for foraging, resting, mating, and/or

[40] Florida Fish and Wildlife Conservation Commission. Wood Stork. Retrieved from http://myfwc.com/wildlifehabitats/imperiled/profiles/birds/wood-stork/

nesting. Other species of terrestrial and aquatic wildlife including mammals and numerous species of reptile and amphibian would also be impacted.

See the special consideration given to chemical exposure for wading birds by the FWC in their "Species Action Plan for Six Imperiled Wading Birds." The same risks from chemical exposure apply to the federally threatened wood stork as well.

See plan below.[41]

Wading birds are also vulnerable to pesticides, heavy metals, and other environmental contaminants. As top predators in an aquatic food web, these species have high exposure to biomagnified chemicals. The effects of most substances at low, chronic levels or as cocktails of multiple chemicals are largely unknown but may be significant. For example, chronic exposure of white ibises to levels of methylmercury typical in the Everglades resulted in nearly a 50% decrease in reproductive success and caused half of the males to pair with other males (Frederick and Jayasena 2010, Jayasena et al. 2011).

A DEP review of the "nature, character and location of the lands involved" must include the full scope of state and federally protected species present in the vicinity of this oil well – and anticipated impacts should oil be released. The safeguards of a lined pad, retention ponds, and a limestone berm will prove woefully insufficient in the face of hurricane force winds and inundation. Biodiversity in the lands and water surround OG 1370 is enormous. Coupled with vulnerability of the larger landscape (and hydroscape) due to the low-lying and seaward tilting topography, the interconnected wetlands and aquifers beneath them, the streams which drain these wetlands into "Outstanding Florida Waters", and the hurricanes and tropical storms which frequent the area (and make release of chemicals a strong possibility), make these lands - which have never produced commercially viable oil in spite of numerous wells - a very poor candidate for another round of exploratory oil drilling in the form of a wildcat oil well.

X. Tourism and the Special Importance of the Area

The special importance, natural beauty and biodiversity of the lands and waters adjacent to and downstream of the OG 1370 drill site are highlighted by videos produced by "Visit Florida" – described by their website as follows[42]:

VISIT FLORIDA, the state's official tourism marketing corporation, serves as Florida's official source for travel planning to visitors across the globe. VISIT FLORIDA is not a government agency, but rather a not-for-profit corporation created as a public/private partnership by the Florida Legislature in 1996.

These videos below explain the vital contribution the region downstream from OG 1370 makes to Florida's 109 billion dollar tourism industry.

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[41] Florida Fish and Wildlife Conservation Commission. A Species Action Plan for Six Imperiled Wading Birds (2013, November 1). Retrieved from http://myfwc.com/media/2738289/Wading-Birds-Species-Action-Plan-Final-Draft.pdf

[42] Visit Florida. Retrieved from http://www.visitflorida.com/en-us/about-us.html

Apalachicola Bay as the source of ten percent of all oysters harvested in the United States:

https://www.youtube.com/watch?v=pC3ScbBowEA

A beautiful 45 second film provides an aerial view of Dead Lakes (as noted – directly connected to OG 1370 through Stonemill Creek and its headwaters in the Tenmile Swamp and Bear Bay):

https://www.youtube.com/watch?v=y5DswTrlkQc

The video below - "Dead Lakes State Recreation Area Teems with Life, Natural Beauty" - characterizes the beauty and biodiversity of Dead Lakes and touches on the world-famous tupelo honey produced by the white gum tupelo tree (*Nyssa ogeche*) which grows in swamps and waterways of the Dead Lakes area.

https://www.youtube.com/watch?v=6m089d4OUcU

Gulf County produced its own webpage on the production of tupelo honey in this promotional piece on Dead Lakes. It also features a video documentary produced by WFSU containing interviews with the Gulf County Tourist Development Council and the Apalachicola Riverkeeper.[43]

The FWC's online description of "things to do" in the Apalachicola River and Basin includes hunting, wildlife viewing, camping, fishing, hiking, bicycling, horseback riding, paddling and wildflower viewing in "a profusion of habitat types, from estuaries to uplands."

All of this – as well as a major source of tourism for our state and region – is placed at risk from this oil well and the possible expansion of oil fields in this ecologically critical section of the Gulf Coastal Lowlands. Even small spills involving the types of chemicals involved here could prove catastrophic.

See more on ecotourism in this region from the FWC website.[44]

In highlighting the ecological importance of the area, we also note DEP's own review of the Apalachicola National Estuarine Research Reserve.[45] Ecological considerations apply to much of the area downstream from OG 1370.

Quick Facts About Apalachicola National Estuarine Research Reserve

Apalachicola National Estuarine Research Reserves (ANERR) is the second largest National Estuarine Research Reserve (NERR) with 246,766 acres (behind only Kachemak Bay NERR of Alaska).

Apalachicola Bay is one of the most productive estuarine systems in the Northern hemisphere as a result of the overall good water quality.

Apalachicola Bay is a major forage area for such offshore fish species as gag grouper and gray snapper.

The area is a major forage area for migratory birds, in particular for trans-gulf migrants in the spring.

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[43] Gulf County, Florida. Dead Lakes, Wewahitchka. Retrieved from https://www.visitgulf.com/dead-lakes-wewahitchka

[44] Florida Fish and Wildlife Conservation Commission. Apalachicola River—Things to Do. Retrieved from http://myfwc.com/viewing/recreation/wmas/lead/apalachicola-river/things-to-do/

[45] Florida Department of Environmental Protection. Quick Facts About Apalachicola National Estuarine Research Reserve. Retrieved from http://www.dep.state.fl.us/coastal/sites/apalachicola/quick_facts.htm

Ninety percent of Florida's oysters and ten percent of the nation's oysters are harvested in Apalachicola Bay.
The Apalachicola River is the only river in Florida which has its origins in the Piedmont and Southern Appalachians.
The Apalachicola River basin is one of six biodiversity hotspots in the United States and contains overlapping ranges of species native to the Appalachian mountains and subtropical Florida.

These areas – Dead Lakes, Apalachicola National Estuarine Research Reserve, and others mentioned above – are world-famous biological treasures and make a significant financial contribution to the local counties, the region, and our state. They also contribute to the quality of life of the people who live in this special part of Florida. The risk of spills and ecological degradation to nearby wetlands and the outstanding waterbodies they feed is simply too high for a new exploratory oil well in this location, carrying numerous risks of pollution, to go forward.

XI. Calhoun County Comprehensive Plan.

Mindful of the necessity of protecting important natural resources and aquifers within its boundaries, Calhoun County has laid out numerous planning objectives and goals in its Comprehensive Plan – including its Future Land Use Objectives and Policies. These regulate, limit, or prohibit activities which can prove damaging to environmentally sensitive lands, wetlands, aquifer recharge areas, and aquifers within Calhoun County. Many of these restrictions and limitations would seem to apply to OG 1370 and the site development it entails.

The full plan can found at the website.[46]
Future Land Use Element Objective 4

OBJECTIVE 4: Calhoun County shall implement land development regulations (LDRs) to conserve unique and environmentally sensitive lands and resources from adverse impacts of development. These Conservation Areas include, at a minimum, all wetlands, floodplains and other environmentally sensitive resources identified in other sections of this Plan. Only low density single family residential development is allowed in these areas, at a maximum development density of 1 unit per 20 acres.

Policy 4.6: The County shall limit development activities which have the potential to contaminate water resources, soil or crops, including requiring developers to use appropriate soil erosion mitigation measures during construction.

OBJECTIVE 5: The County shall protect potable water wellfields and aquifer recharge areas from adverse impacts of development by implementing the following policies:

Policy 5.1: The County shall require that all public water well locations comply with the Regional and State rules regarding water well locations. Working in conjunction with the

[46] Calhoun Clerk. Calhoun County 2010-2025. Retrieved from http://www.calhounclerk.com/Resources/documents/ADOPTEDREVISED2012-2025CalhounComprehensivePlan-Cleanversion.pdf

Northwest Florida Water Management District, the County shall review development proposals as they relate to:
(a) point and non-point pollution sources relative to the well/wellfield location;
(b) aquifer vulnerability to contamination.

Policy 5.2: The County shall protect waterwells and waterwell cones of influence by creating well head protection areas and well head zones of exclusion. Zones of exclusion shall consist of all land within a two hundred (200) foot radius of the wellhead wherein no development shall be permitted. Well head protection areas shall extend for an additional radius of three hundred (300) feet from the well head creating a minimum 500 foot radius protection zone. Within these areas, the following will be prohibited: 1) landfills; 2) facilities for the bulk storage, handling, or processing of material on the Florida Substance List; 3) Activities that require the storage, use production, or transportation of restricted substances, agricultural chemicals, petroleum products, hazardous toxic waste, medical waste, and like; 4) feedlots or other commercial animal facilities; 5) wastewater treatment plants, percolation ponds, and similar facilities; 6) excavation of waterways or drainage facilities which intersect the water table. All development adjacent to well heads shall be consistent with provisions of Chapter 40A-3, F.A.C., regarding the regulation of wells.

Objective 6: The County's wetlands shall be conserved and protected from functional alterations.
Policy 6.2: Upon adoption of this Comprehensive Plan, the County shall require:

g) Permit development only if natural ground water storage areas will be protected from contamination by percolation or direct drainage of effluent. All development shall be required to dispose of sewage in a manner consistent with the provisions of Florida Administrative Code 64E-6.

Infrastructure Element, Aquifer Recharge Protection

GOAL STATEMENT: THE FUNCTIONS OF THE NATURAL GROUNDWATER AQUIFER RECHARGE AREAS WITHIN THE COUNTY WILL BE PROTECTED AND MAINTAINED.

OBJECTIVE 1: The County shall prohibit new development which will contaminate ground water supplies as a result of improper site development activities within areas of high aquifer recharge.

XII. Conclusion

The OG 1370 drill site is located on the flat, swampy, seaward tilting "Gulf Coastal Lowlands" of the Florida Panhandle in Calhoun County and will be drilled thru the Floridan Aquifer. The development of the well site poses a high risk of pollution to ecologically significant Outstanding Florida Waters that would result in harm to the public interest as generally summarized below:

1. The drill site is surrounded by thickly vegetated, roadless and virtually inaccessible Palustrine System wetlands – many of long hydroperiod – in all directions. These wetlands are the headwaters of Stone Mill Creek and Right Prong of Stonemill Creek – located east and west of the well site and each less than one mile away. These streams

drain nearby wetlands (in close proximity to the OG 1370 oil well) directly into Dead Lakes, the Chipola River, and ultimately, the Apalachicola River and Apalachicola Bay.

2. The area of the well site has historically been hit by hurricanes, tropical storms, and tropical depressions of varying intensity – one of which was one of the most damaging storms in the history of the east coast of the United States. There is a risk of a catastrophic release of oil, brine, diesel fuel, dispersants, drilling fluids, and fracking and matrix acidizing fluids into nearby wetlands, streams, and downstream waterbodies from a future storm occurrence.
3. The drill site is underlain by three aquifers – the surficial, intermediate, and Upper Floridan – of critical importance to the fauna, flora, and human population of the areas – including touristic and economic resources of critical importance to the State of Florida and this region.
4. The significance of the high biodiversity and ecological and economic productivity in the area is illustrated by the numerous state, federal and international designations given to protected lands and waters in this vicinity. There is a likelihood of a wide variety of wildlife and plant species which receive special protection by the federal government and the State of Florida in this area.
5. The potential damage to habitat, species, water supplies and an extremely important eco-tourism industry, heavily dependent on the Outstanding Florida Waters which are part of it, make these lands and drill site a very poor candidate for a new exploratory wildcat oil well.
6. The release of oil and fluids used in the drilling process have been reported around the country, reaching thousands of spills per year, are frequent and occur daily, cause significant degradation of wildlife habitats and surface and ground waters, and are often difficult or impossible to clean up or contain without additional serious impacts.
7. A total of 91 wildcat oil wells have already been drilled in Calhoun and surrounding counties – and Spooner's application itself notes that wildcat wells carry increased risk of damaging blowouts and encountering zones of lost circulation when the underlying formation is not well known. No matter what the depth, all previously drilled oil wells in this vicinity have come up as "dry holes."

We believe, weighing all of these factors in light of FL Statutes § 377.241 - Criteria for issuance of permits - and a careful examination of the nature, character and location of the lands and environment involved in this application – denial of the OG 1370 application by the Department of Environmental Protection is reasonable and prudent.