EXHIBITS PRESENTED

By Helis Oil and Gas

November 12, 2014

Helis Hearing – St Tammany Parish, LA
Engineering Docket No. 14-626

5 p.m. November 12, 2014
Lakeshore High School Gymnasium

Helis Oil Drilling Permit Application
Eads Poitevent et al No. 1 Well

HELIS EXHIBITS (from Hearing)

W. H. ROBBINS & ASSOCIATES, LLC
CONSULTING GEOLOGISTS
Lafayette, Louisiana

Wilton R. "Bill" Dale, Jr.

- **Education:**

  B.S., Lousiana State Univeristy, 1978

- **Experience:**

  35 Years of Exploration and Consulting Experience in the Oil and Gas Industry.

  Previously Testified as an Expert Witness in Petroleum Geology Before the Office of Conservation.

HELIS OIL & GAS, LLC

Helis Oil & Gas is a privately owned oil & gas exploration company based in New Orleans since 1934.

Helis has owned and operated wells throughout the nation and has had extensive operations on private, federal and state lands, as well as in federal offshore waters and inland state waters in Louisiana.

In recent years, Helis has drilled and hydraulically fractured approximately 60 horizontal wells such as planned for the Lacombe Bayou field.

Helis employs best practices in the industry and strives to meet or exceed all applicable safety standards..

HELIS EXHIBITS (from Hearing)

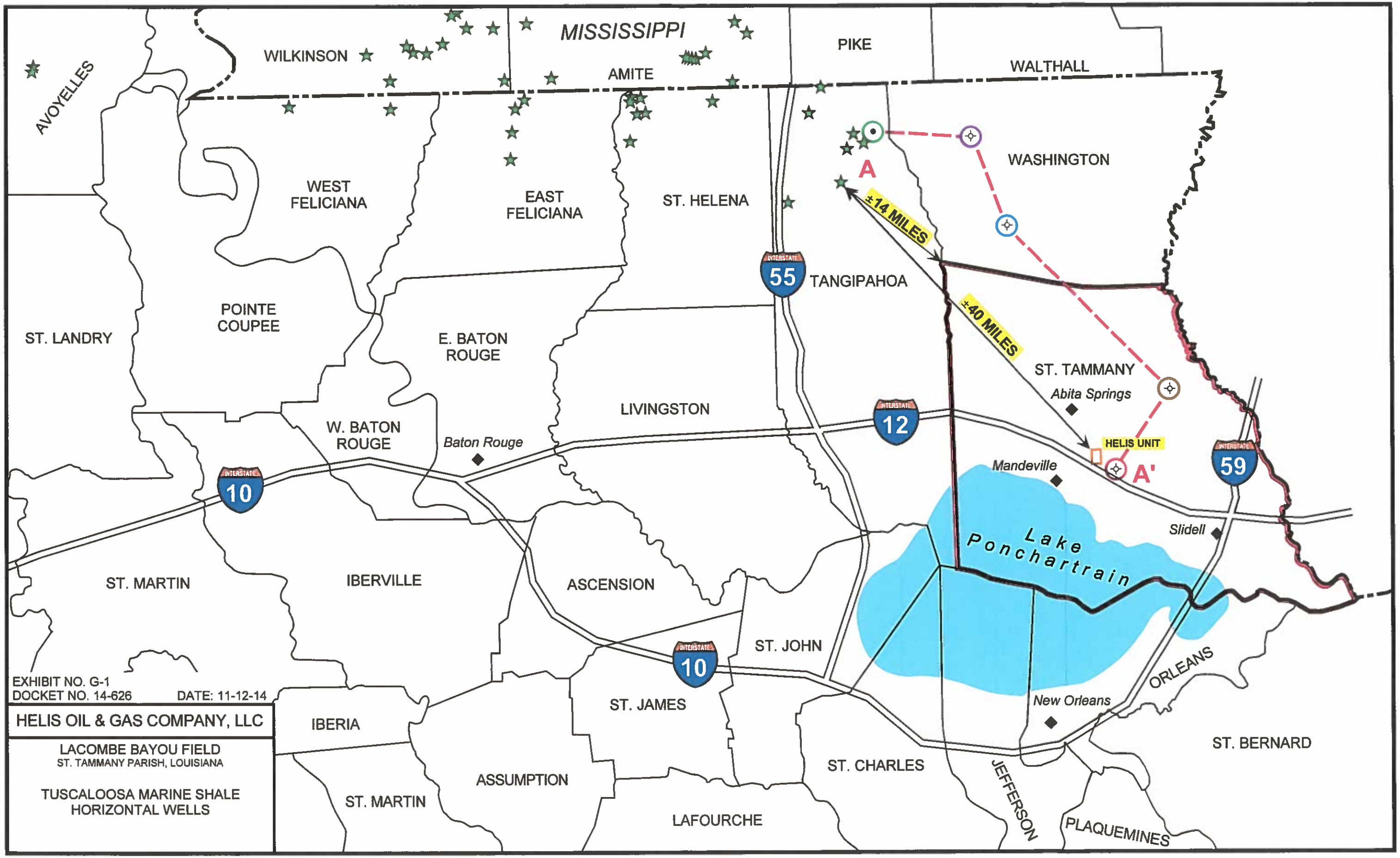
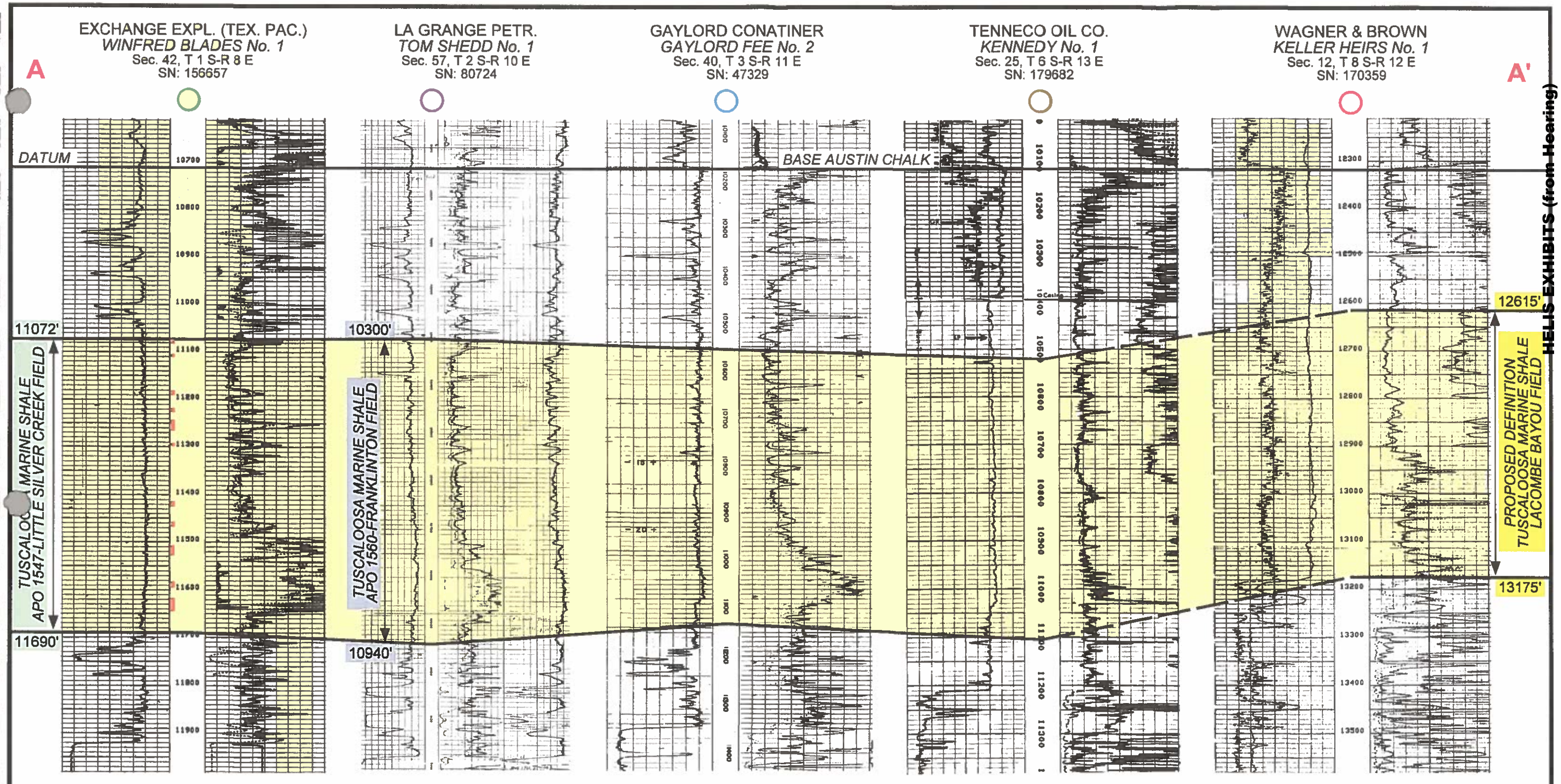


EXHIBIT NO. G-1
DOCKET NO. 14-626 DATE: 11-12-14

HELIS OIL & GAS COMPANY, LLC

LACOMBE BAYOU FIELD
ST. TAMMANY PARISH, LOUISIANA

TUSCALOOSA MARINE SHALE
HORIZONTAL WELLS



Spud: 10/18/77
Comp. 2/11/78
Perfs: 11,072'-82'; 11,104'-10'; 11,180'-90';
11,218'-26'; 11,242-66'; 11,292'-98';
11,423'-34'; 11,458'-68'; 11,508'-28';
11,582'-96'; 11,618'-44'

IP: 5/26/78
6 BOPD, 1 MCFD, 0 BWPD
FTP 20 PSIG, SITP 1900 PSIG;
GOR 167 CF/BBL, GTY 37.2°

STATUS: PRODUCING
CUM: 26,295 BO

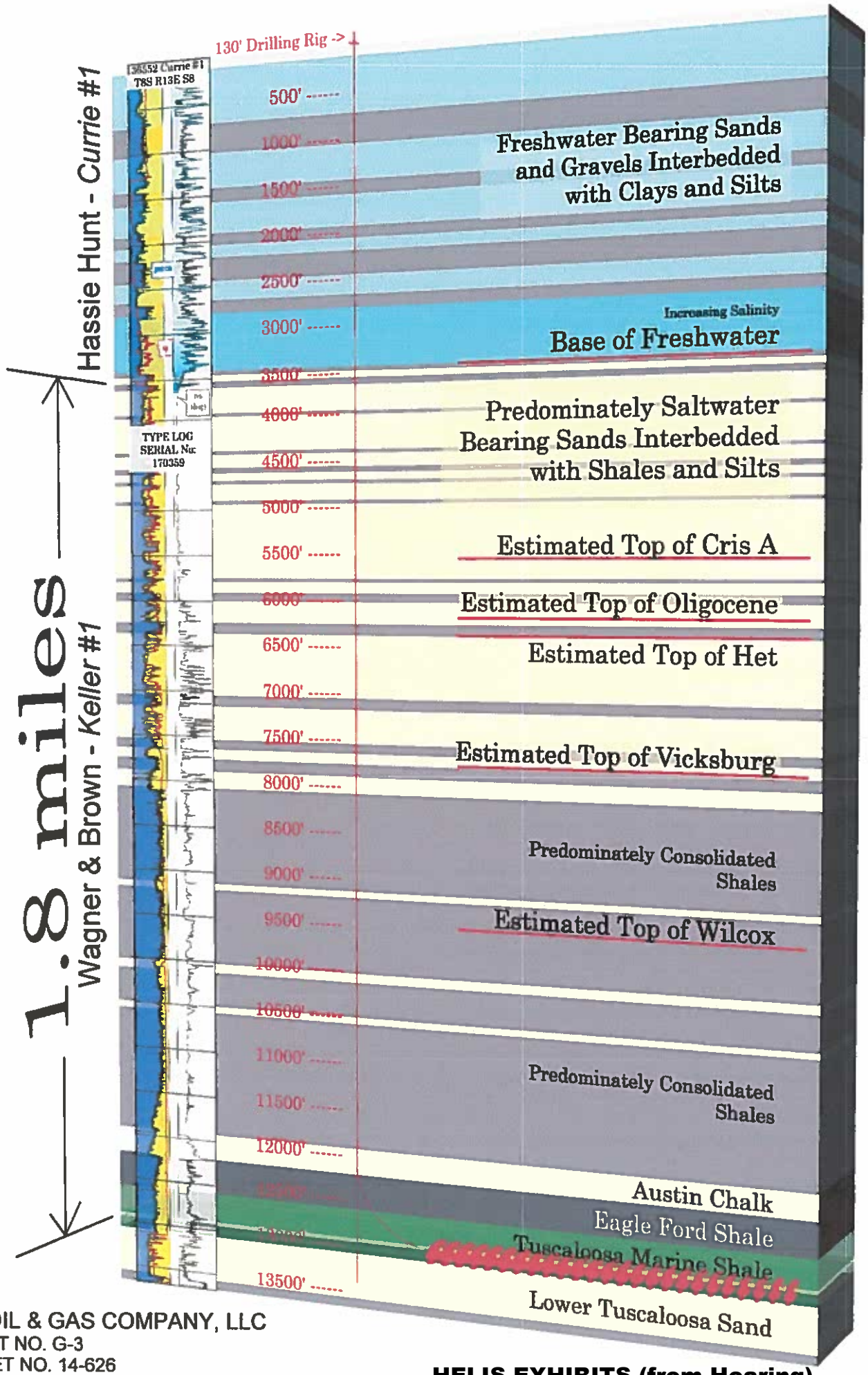
EXHIBIT NO. G-2
DOCKET NO. 14-626 DATE: 11-12-14

HELIS OIL & GAS COMPANY, LLC

LACOMBE BAYOU FIELD
ST. TAMMANY PARISH, LOUISIANA

CORRELATION SECTION
A-A'

W. H. ROBBINS & ASSOCIATES LLC
CONSULTING GEOLOGISTS
Lafayette, Louisiana (337) 232-5004

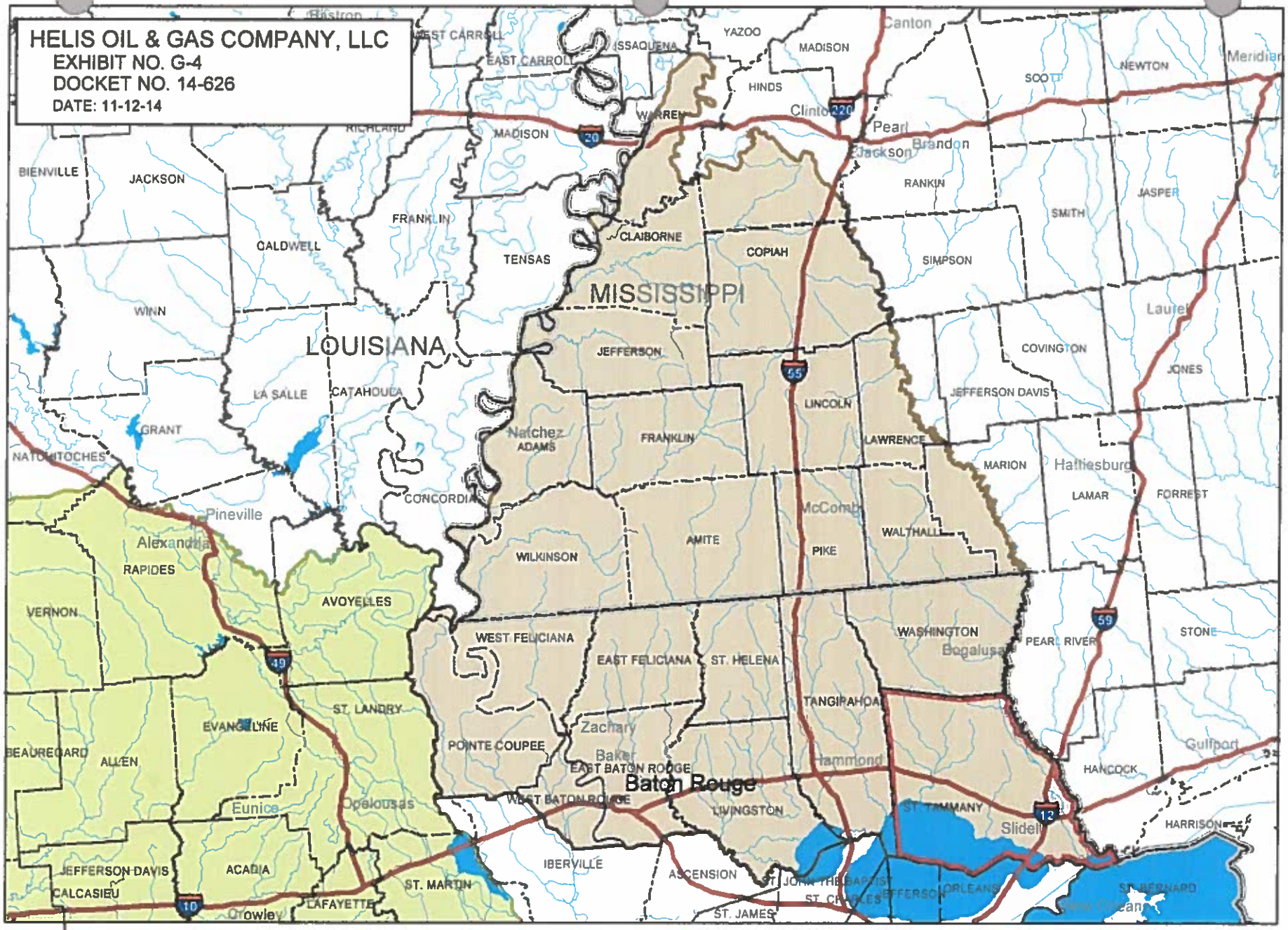


HELIS OIL & GAS COMPANY, LLC
EXHIBIT NO. G-3
DOCKET NO. 14-626
DATE: 11-12-14

HELIS EXHIBITS (from Hearing)

HELIS OIL & GAS COMPANY, LLC
EXHIBIT NO. G-4
DOCKET NO. 14-626
DATE: 11-12-14

HELIS EXHIBITS (from Hearing)



STATE
COUNTY OR PARISH
CHICOT AQUIFER SYSTEM
SOUTHERN HILLS AQUIFER SYSTEM

Southern Hills Aquifer System

N
W E
S

0 10 20 40
Miles

EPA Region 6
GIS Support
01/30/2008

20080130ML04

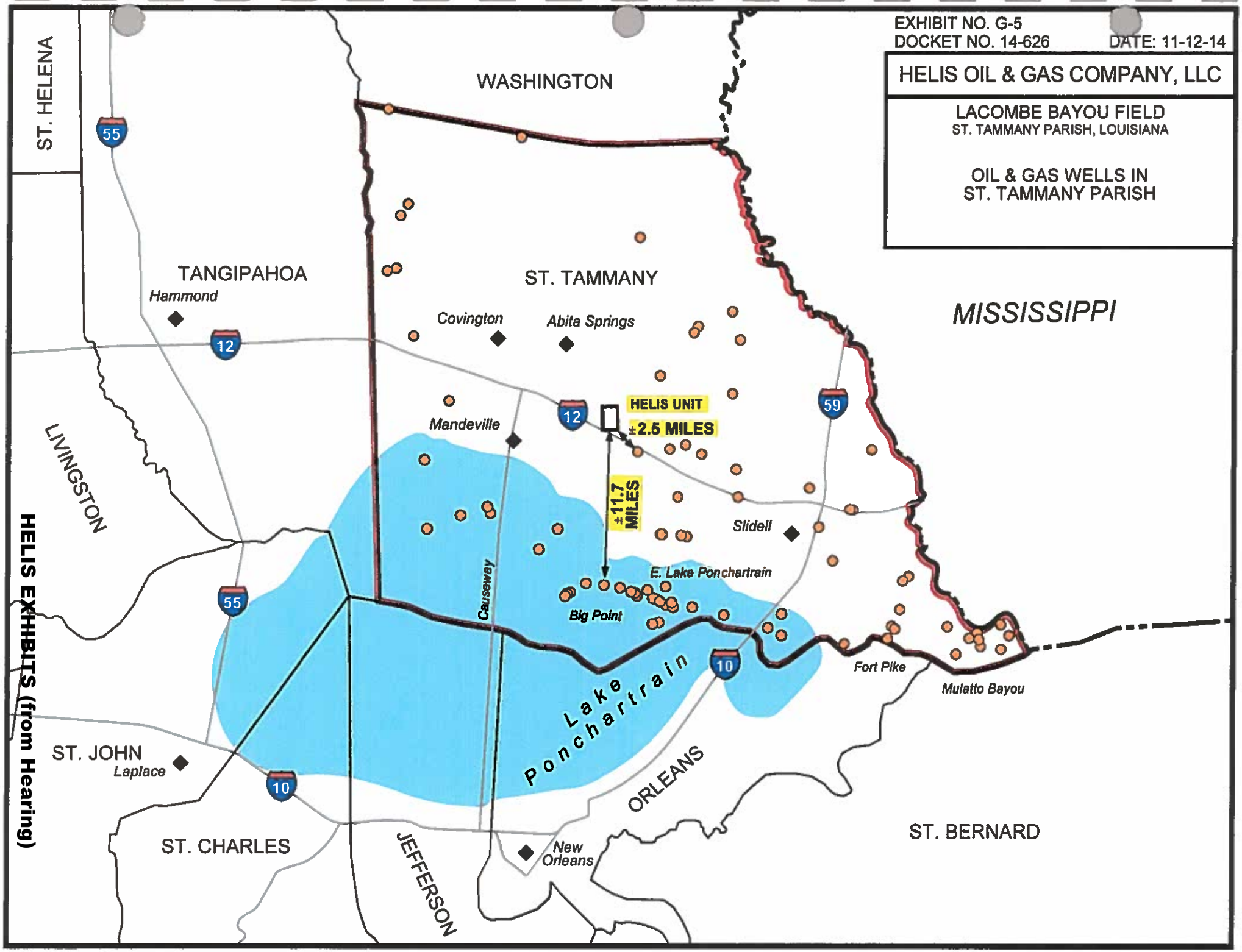
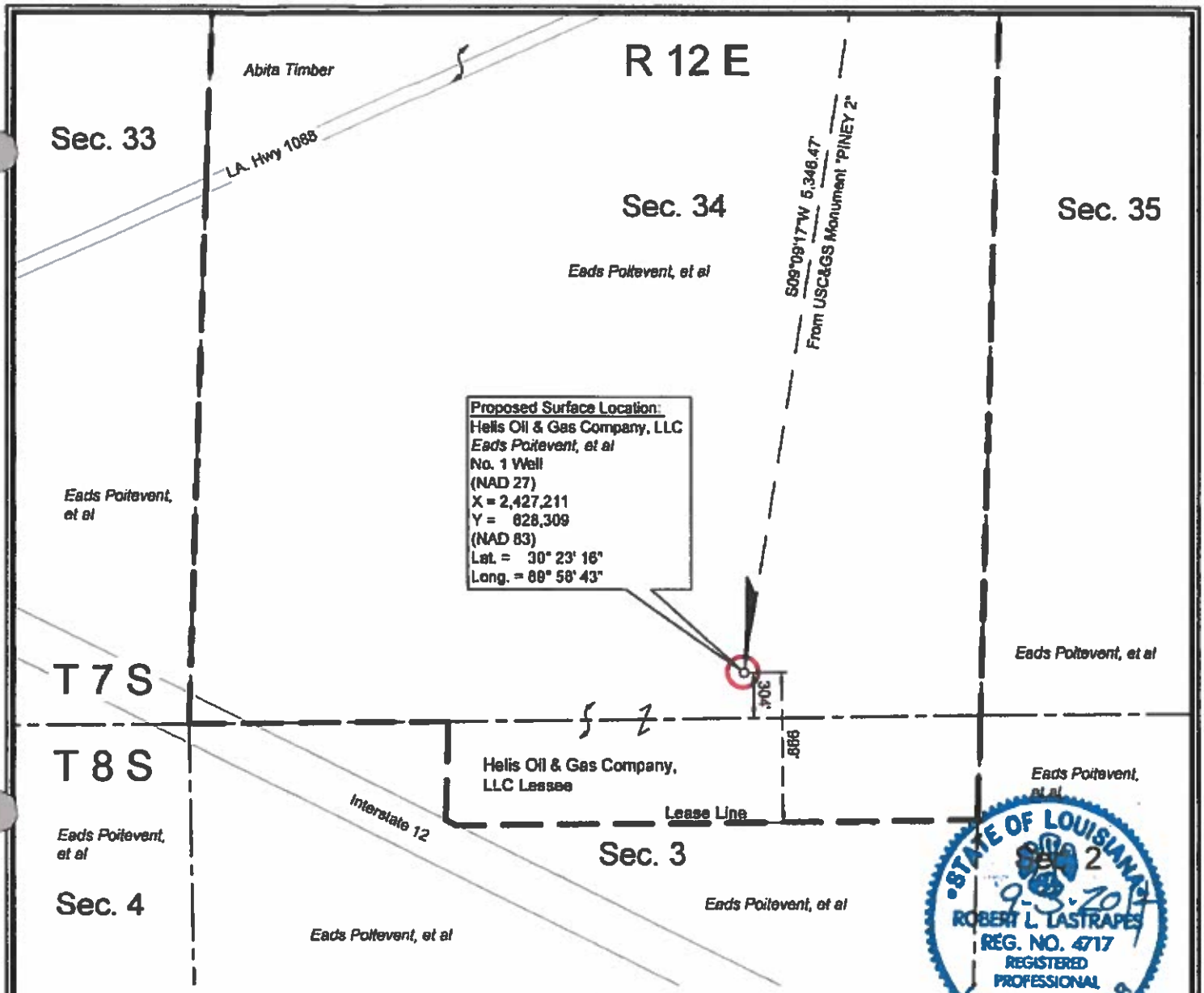


EXHIBIT NO. G-5
DOCKET NO. 14-626
DATE: 11-12-14
HELIS OIL & GAS COMPANY, LLC
LACOMBE BAYOU FIELD
ST. TAMMANY PARISH, LOUISIANA
OIL & GAS WELLS IN
ST. TAMMANY PARISH
HELIS EXHIBITS (from Hearing)
ST. HELENA
WASHINGTON
TANGIPAHOA
Hammond
ST. TAMMANY
Covington
Abita Springs
MISSISSIPPI
HELIS UNIT
±2.5 MILES
±11.7 MILES
Mandeville
LIVINGSTON
Slidell
E. Lake Ponchartrain
Causeway
Big Point
Fort Pike
Mulatto Bayou
Lake Ponchartrain
ST. JOHN
Laplace
ORLEANS
ST. CHARLES
JEFFERSON
New Orleans
ST. BERNARD
55
12
59
10



Helis Oil & Gas Company, LLC - *Eads Poitevent, et al* No. 1 Well
Prepared September 3, 2014 as follows:
Location being S09°09'17"W 5,346.47' from USC&GS Monument "PINEY 2", located in Section 34 T7S-R12E St. Tammany Parish, Louisiana.

Elevation of ground at location ±29'

NOTE: This plat is not a property boundary survey and as such does not comply with the "Standards of Practice for Property Boundary Surveys" as adopted by the Louisiana Professional Engineering Land Surveying Board.

There are no residential or commercial structures, not owned by the applicant, his lessor, or other predecessor in interest, within a 500' radius of the proposed location as of 06/03/2014

Robert L. Lastrapes
Professional Land Surveyor
Registration No. 4717

HELIS OIL & GAS COMPANY, LLC

Eads Poitevent, et al No. 1 Well
SECTION 34 T7S-R12E
St. Tammany Parish, Louisiana

FENSTERMAKER
135 Regency Sq. Lafayette, LA 70508
Ph 337-237-2200 Fax. 337-232-3299
www.fenstermaker.com

DRAWN BY: TSM	REVISIONS	
PROJ. MGR.: TSM		
DATE: 09/03/2014		
FILENAME: T:\2013\2130980\DWG\Eads Poitevent No.1 Well.dwg		

HELIS OIL & GAS COMPANY, LLC
EXHIBIT NO. G-6
DOCKET NO. 14-626
HELIS EXHIBITS (from Hearing)

HELIS EXHIBITS (from Hearing)

NAD 27 Louisiana South Zone

SCALE
2,000' 0 1,000' 2,000'

EXHIBIT NO. G-7A
DOCKET NO. 14-626
DATE: 11-12-14

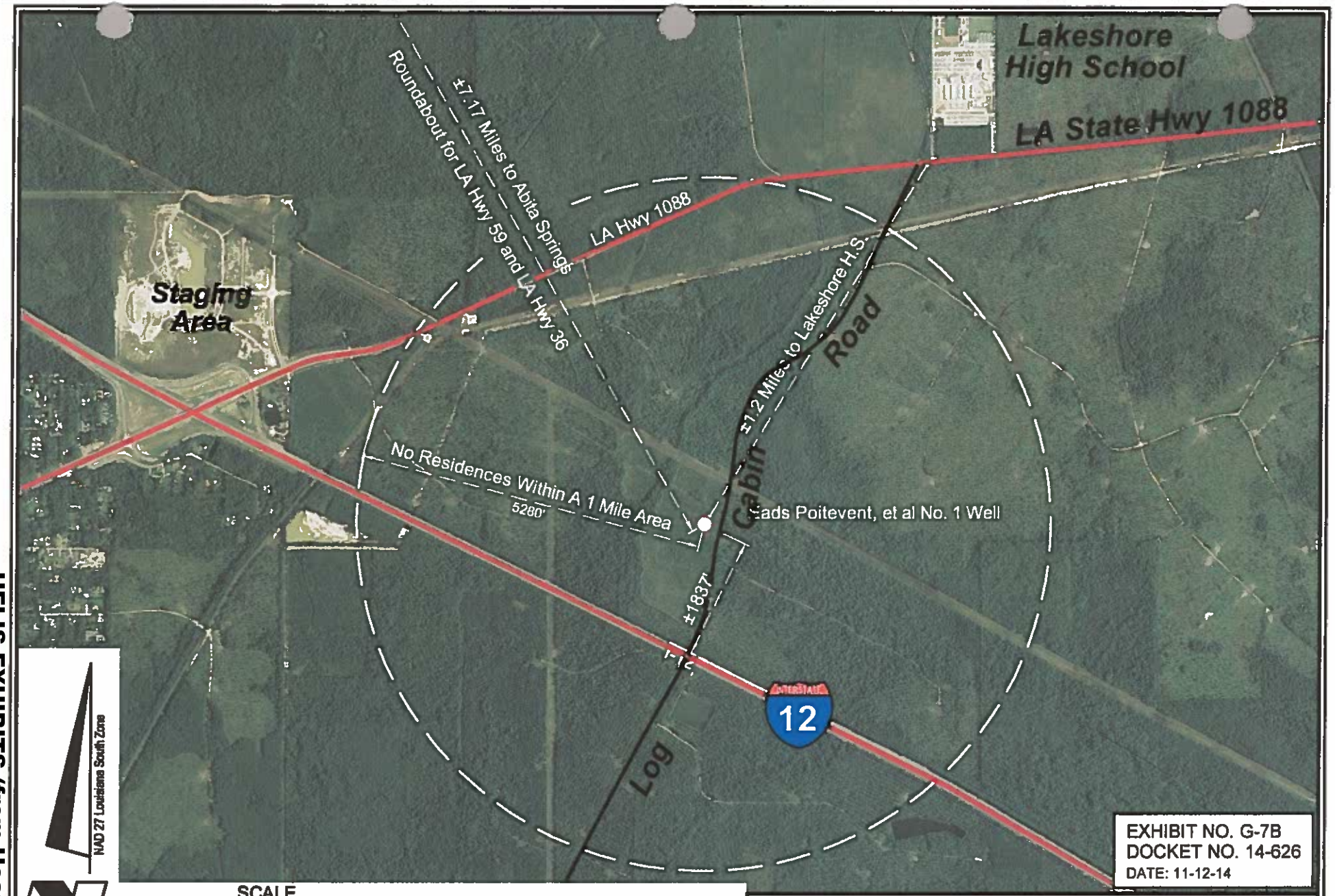
HELIS OIL & GAS COMPANY, LLC

Eads Poitevent, et al No. 1 Well
Section 34 T7S-R12E
Saint Tammany Parish, Louisiana

DRAWN BY: TSM	DATE: 10/15/2014	PROJ. MGR.: TSM	
FILENAME: T:\2013\2130980\DWG\Historical Aerials.dwg			

FENSTERMAKER
135 Regency Sq. Lafayette, LA 70508
Ph. 337-237-2200 Fax. 337-232-3299
www.fenstermaker.com

Aerial Photography
USDA-FSA-APFO NAIP Mosaic
Date: 2013



HELIS EXHIBITS (from Hearing)

EXHIBIT NO. G-7B
DOCKET NO. 14-626
DATE: 11-12-14

FENSTERMAKER
135 Regency Sq. Lafayette, LA 70508
Ph. 337-237-2200 Fax. 337-232-3299
www.fenstermaker.com

Aerial Photography
USDA-FSA-APFO NAIP Mosaic
Date: 2013

HELIS OIL & GAS COMPANY, LLC

Eads Poitevent, et al No. 1 Well
Section 34 T7S-R12E
Saint Tammany Parish, Louisiana

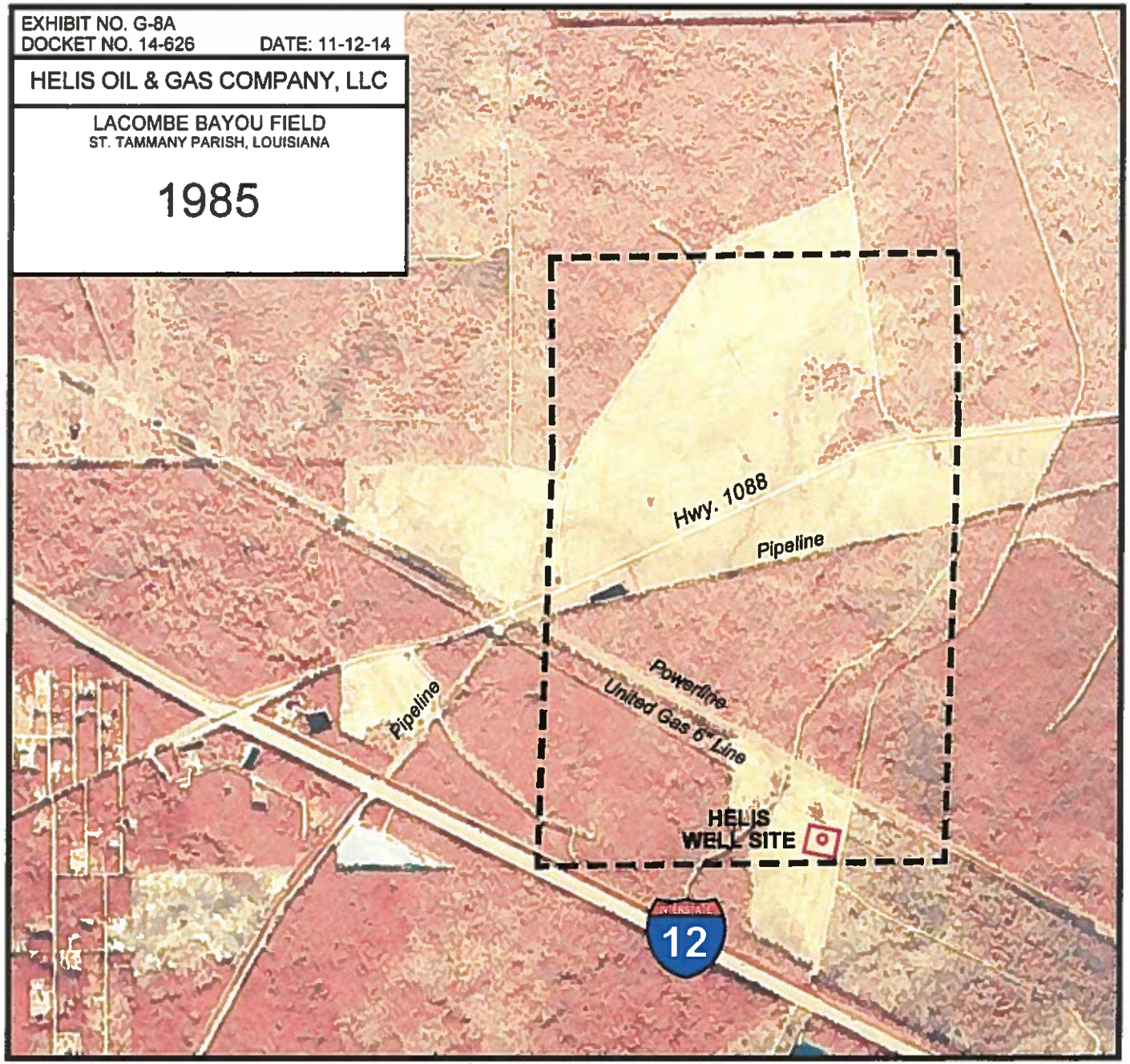
DRAWN BY: TSM	DATE: 10/15/2014	PROJ. MGR.: TSM	
FILENAME: T:\2013\2130980\DWG\Historical Aerials.dwg			

EXHIBIT NO. G-8A
DOCKET NO. 14-626 DATE: 11-12-14

HELIS OIL & GAS COMPANY, LLC

LACOMBE BAYOU FIELD
ST. TAMMANY PARISH, LOUISIANA

1985



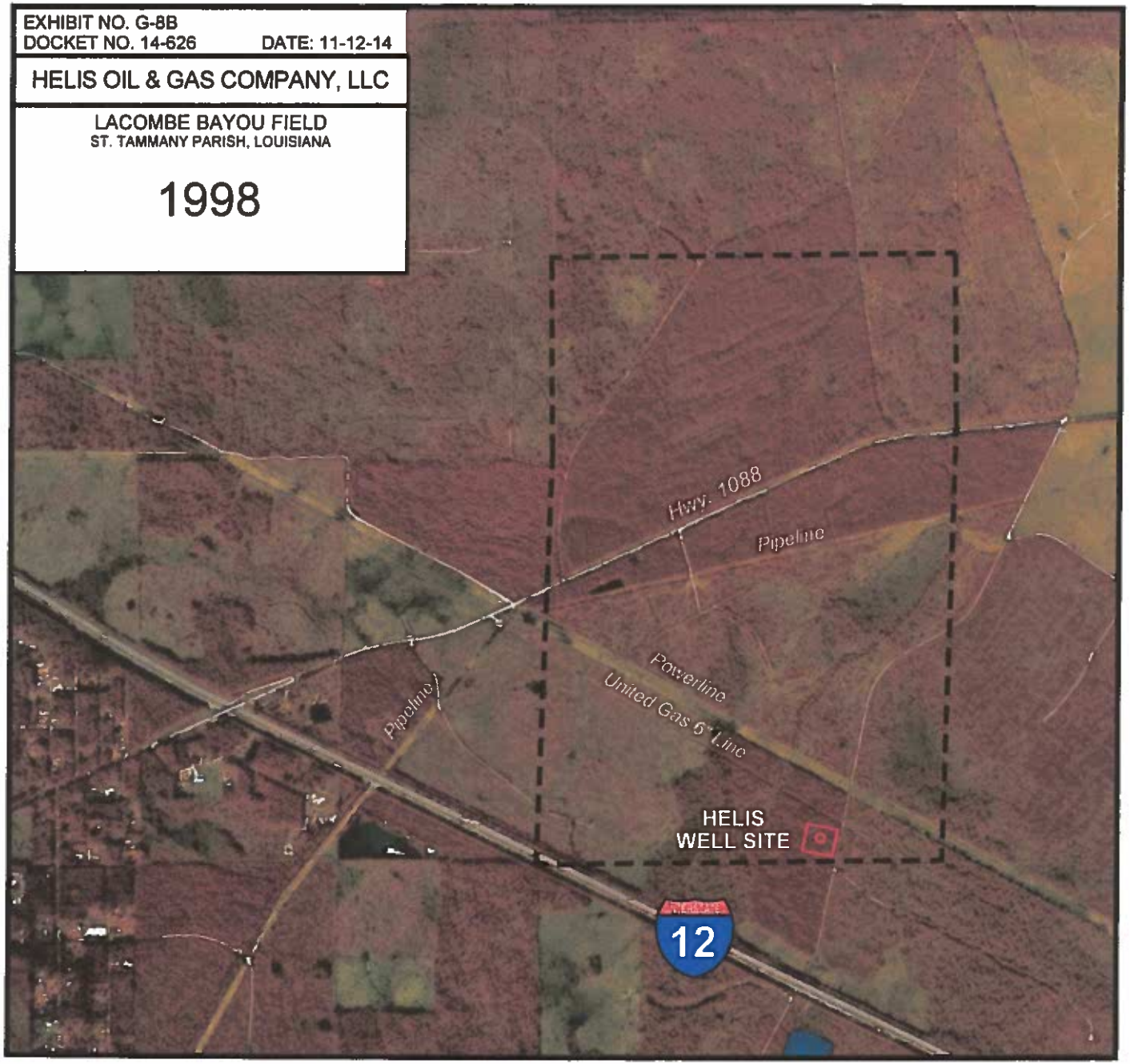
HELIS EXHIBITS (from Hearing)

EXHIBIT NO. G-8B
DOCKET NO. 14-626 DATE: 11-12-14

HELIS OIL & GAS COMPANY, LLC

LACOMBE BAYOU FIELD
ST. TAMMANY PARISH, LOUISIANA

1998



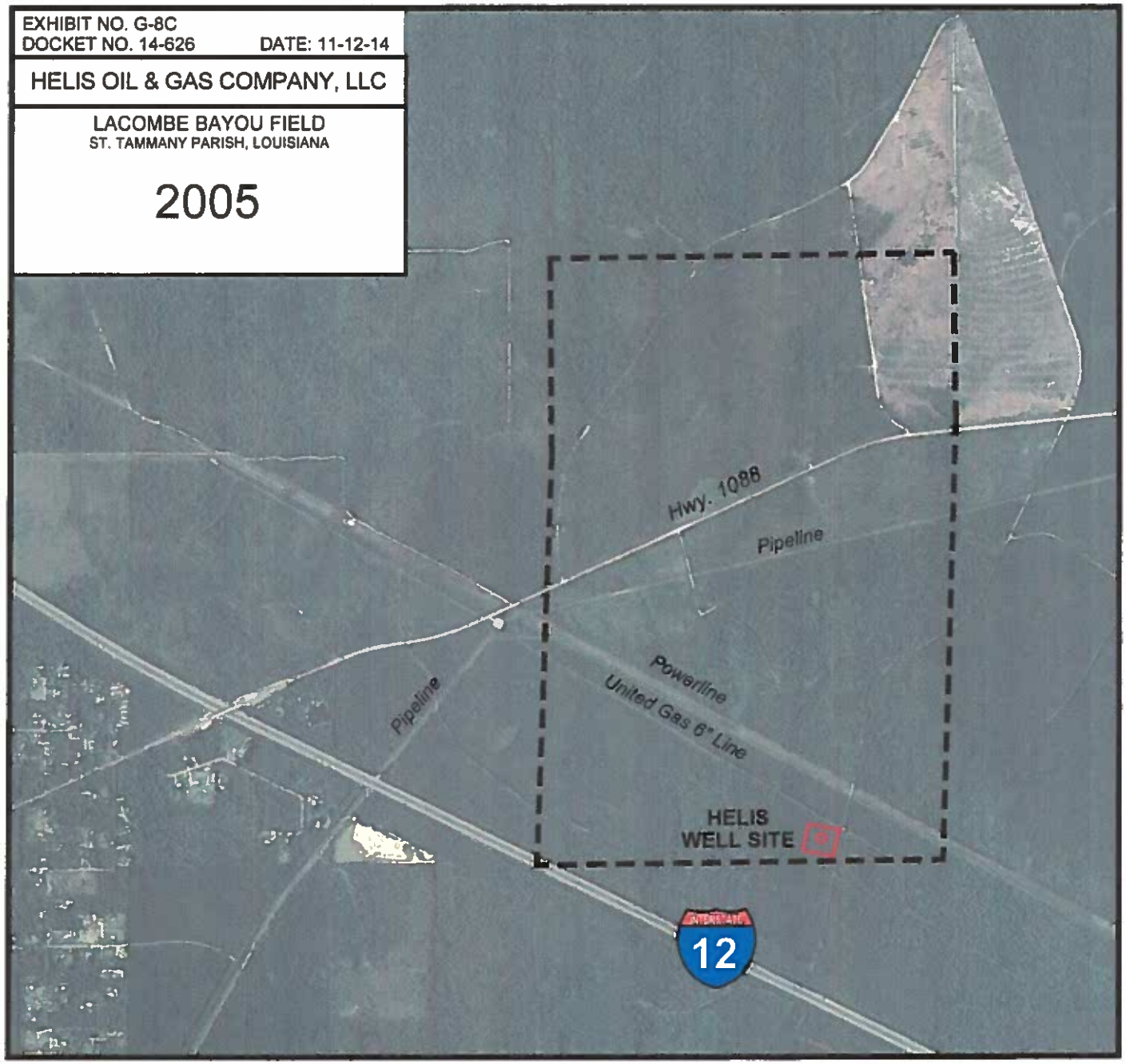
HELIS EXHIBITS (from Hearing)

EXHIBIT NO. G-8C
DOCKET NO. 14-626 DATE: 11-12-14

HELIS OIL & GAS COMPANY, LLC

LACOMBE BAYOU FIELD
ST. TAMMANY PARISH, LOUISIANA

2005



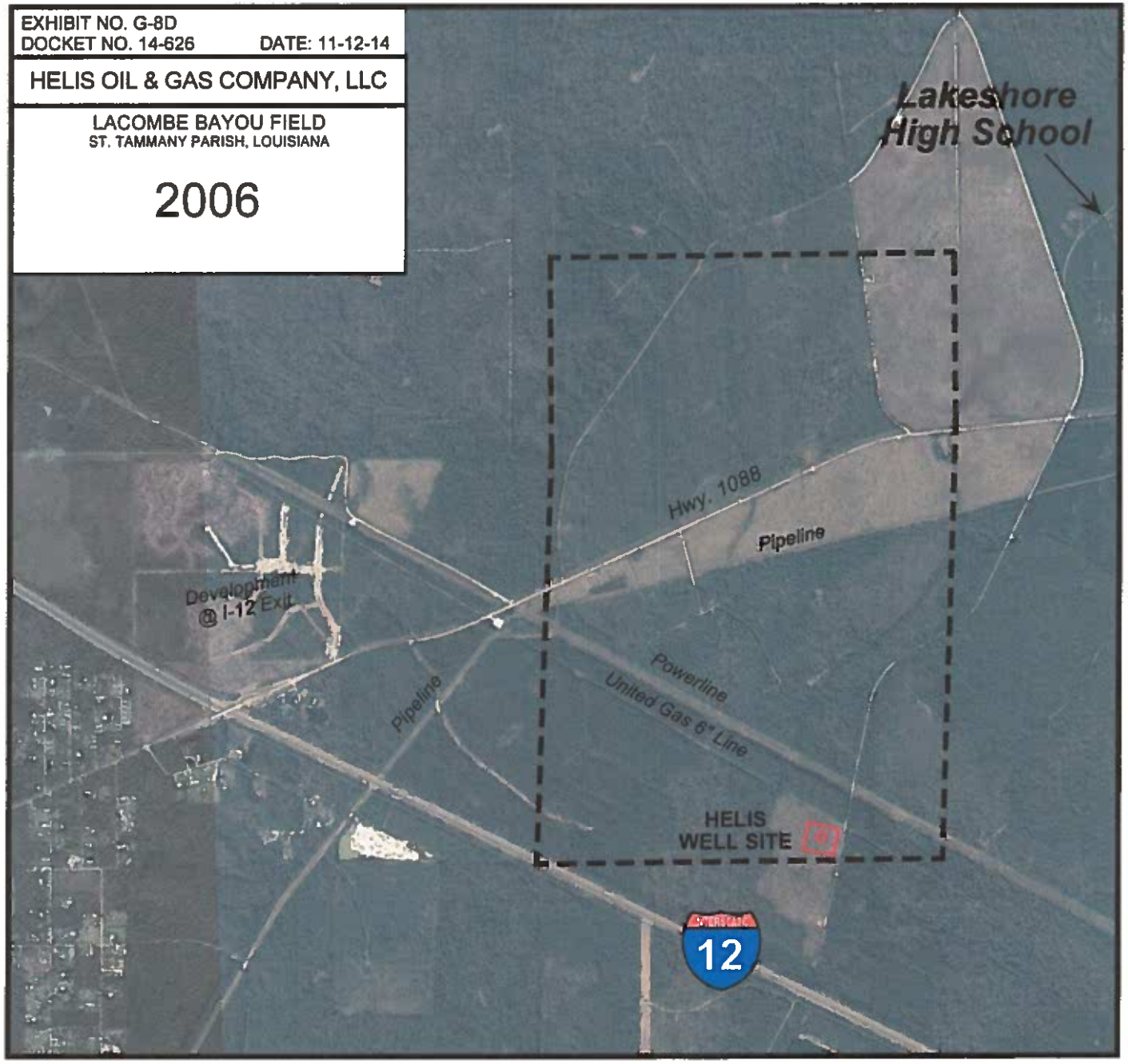
HELIS EXHIBITS (from Hearing)

EXHIBIT NO. G-8D
DOCKET NO. 14-626 DATE: 11-12-14

HELIS OIL & GAS COMPANY, LLC

LACOMBE BAYOU FIELD
ST. TAMMANY PARISH, LOUISIANA

2006



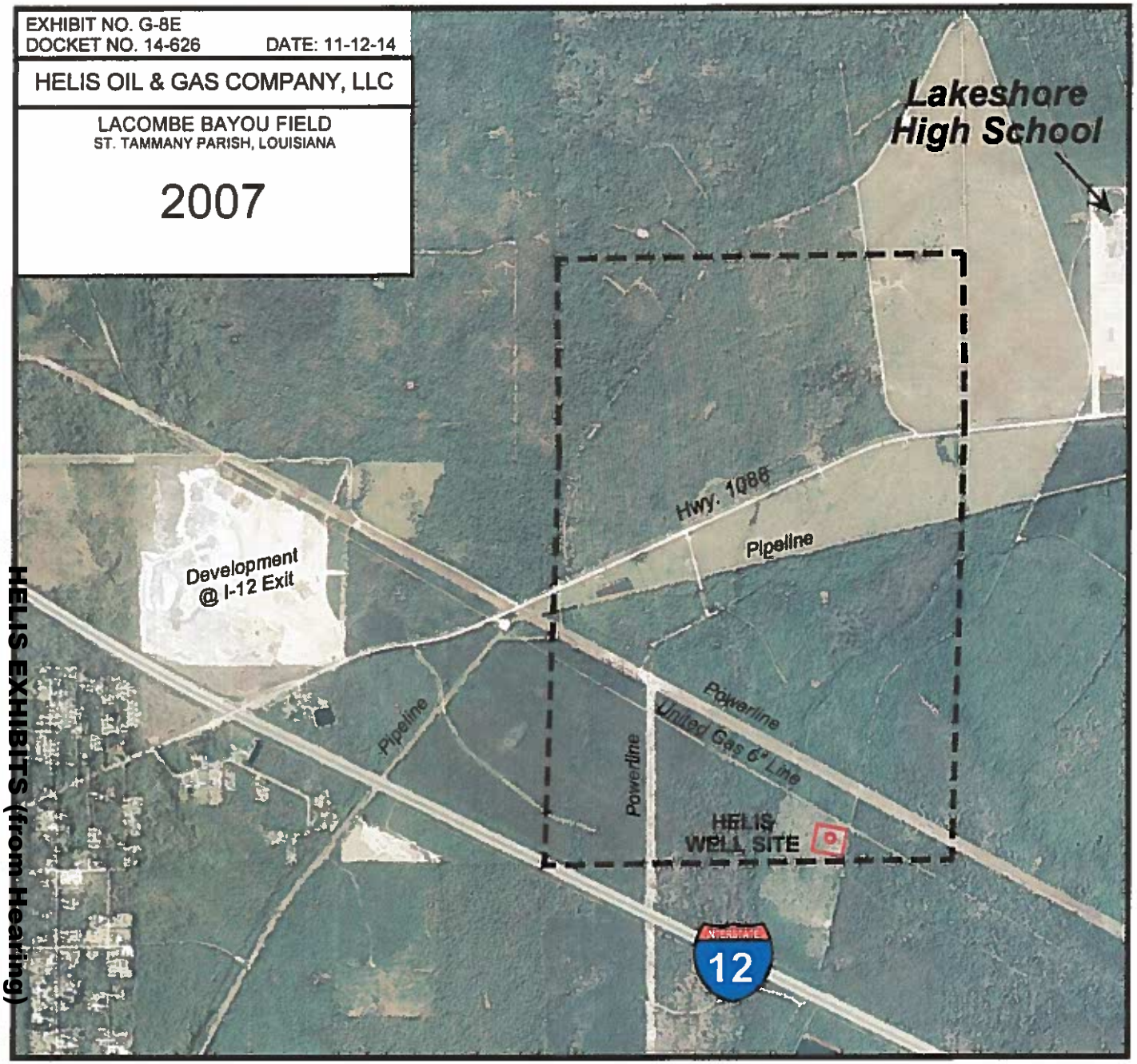
HELIS EXHIBITS (from Hearing)

EXHIBIT NO. G-8E
DOCKET NO. 14-626 DATE: 11-12-14

HELIS OIL & GAS COMPANY, LLC

LACOMBE BAYOU FIELD
ST. TAMMANY PARISH, LOUISIANA

2007



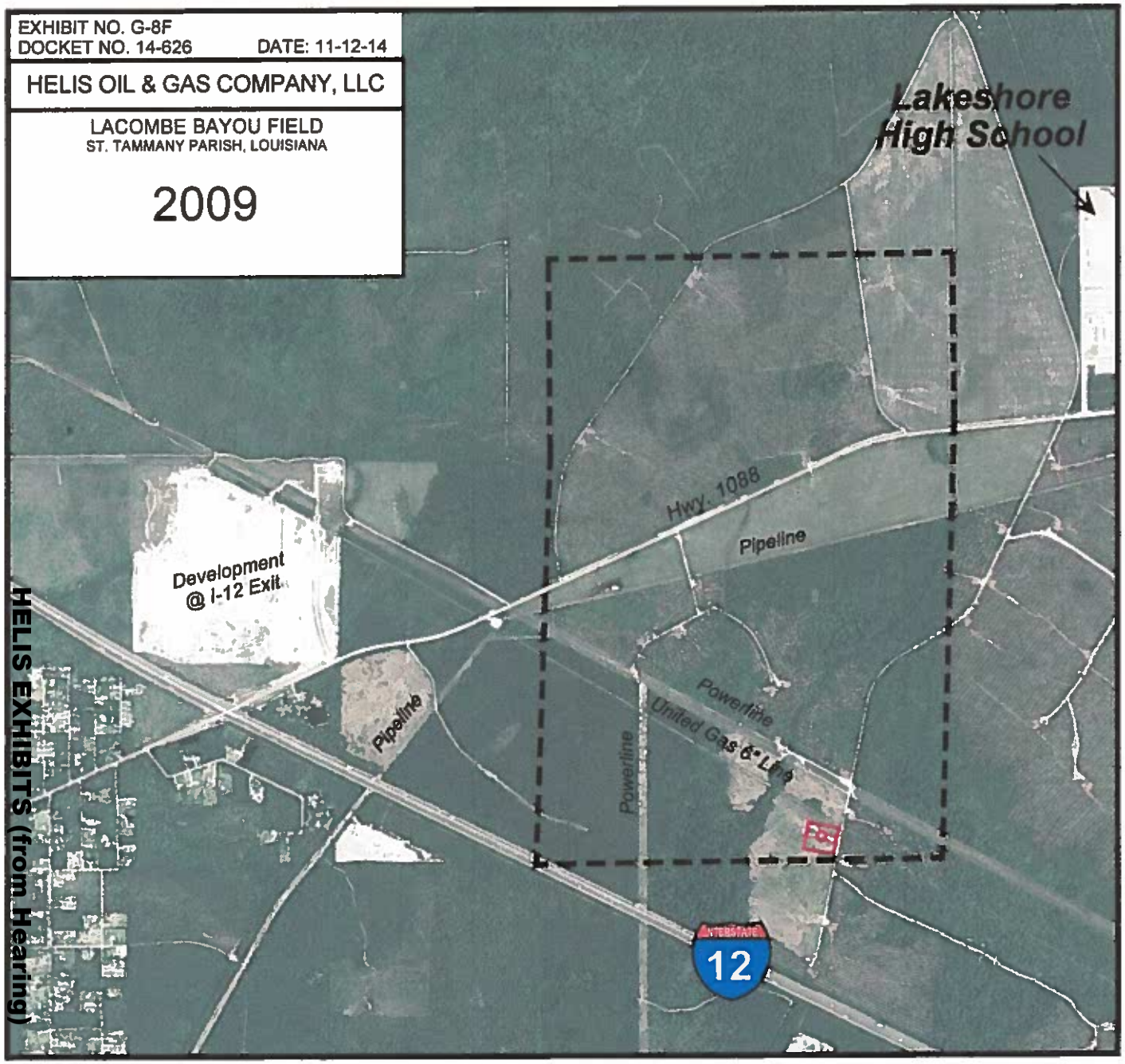
HELIS EXHIBITS (from Hearing)

EXHIBIT NO. G-8F
DOCKET NO. 14-626 DATE: 11-12-14

HELIS OIL & GAS COMPANY, LLC

LACOMBE BAYOU FIELD
ST. TAMMANY PARISH, LOUISIANA

2009



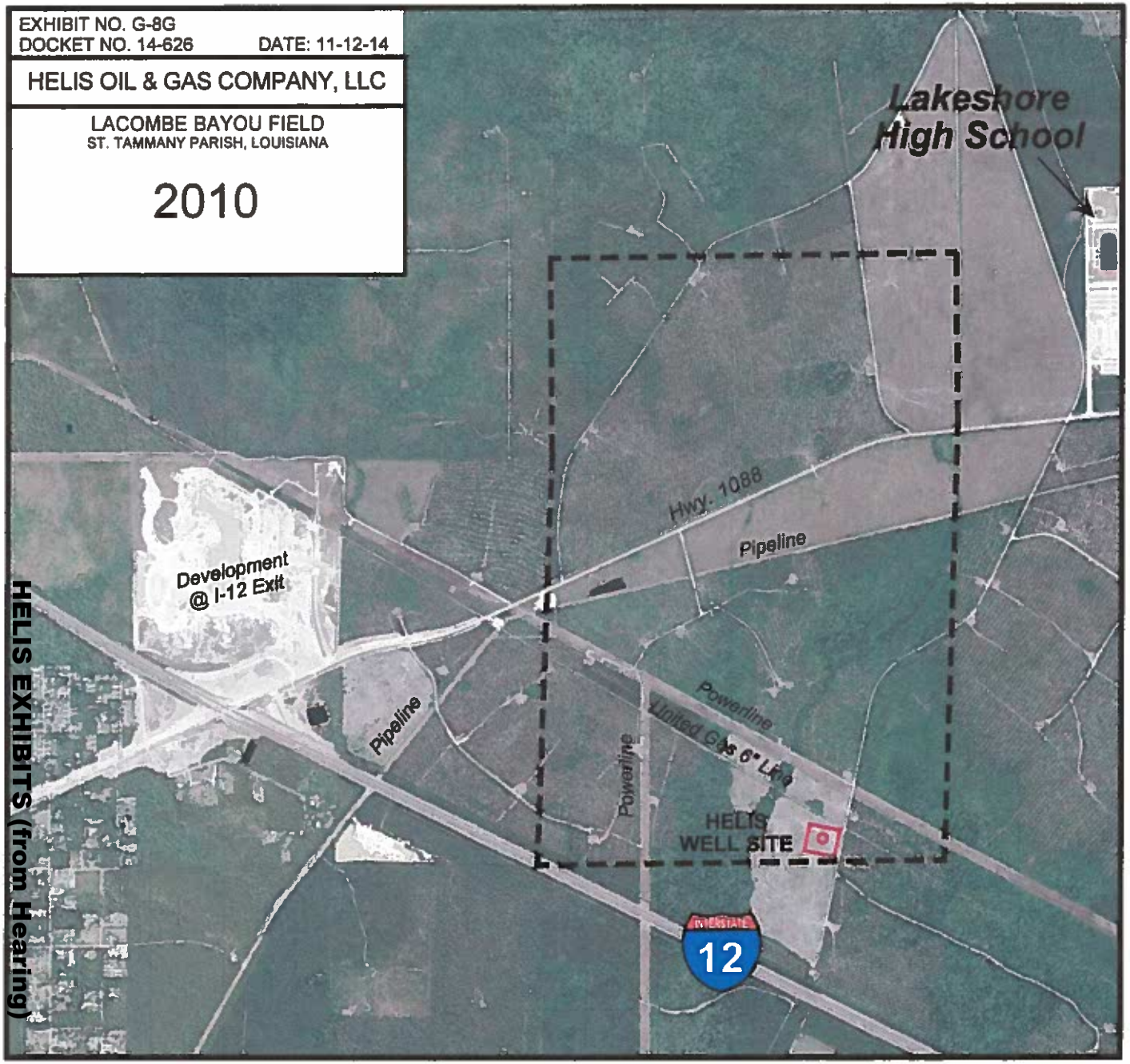
HELIS EXHIBITS (from Hearing)

EXHIBIT NO. G-8G
DOCKET NO. 14-626 DATE: 11-12-14

HELIS OIL & GAS COMPANY, LLC

LACOMBE BAYOU FIELD
ST. TAMMANY PARISH, LOUISIANA

2010



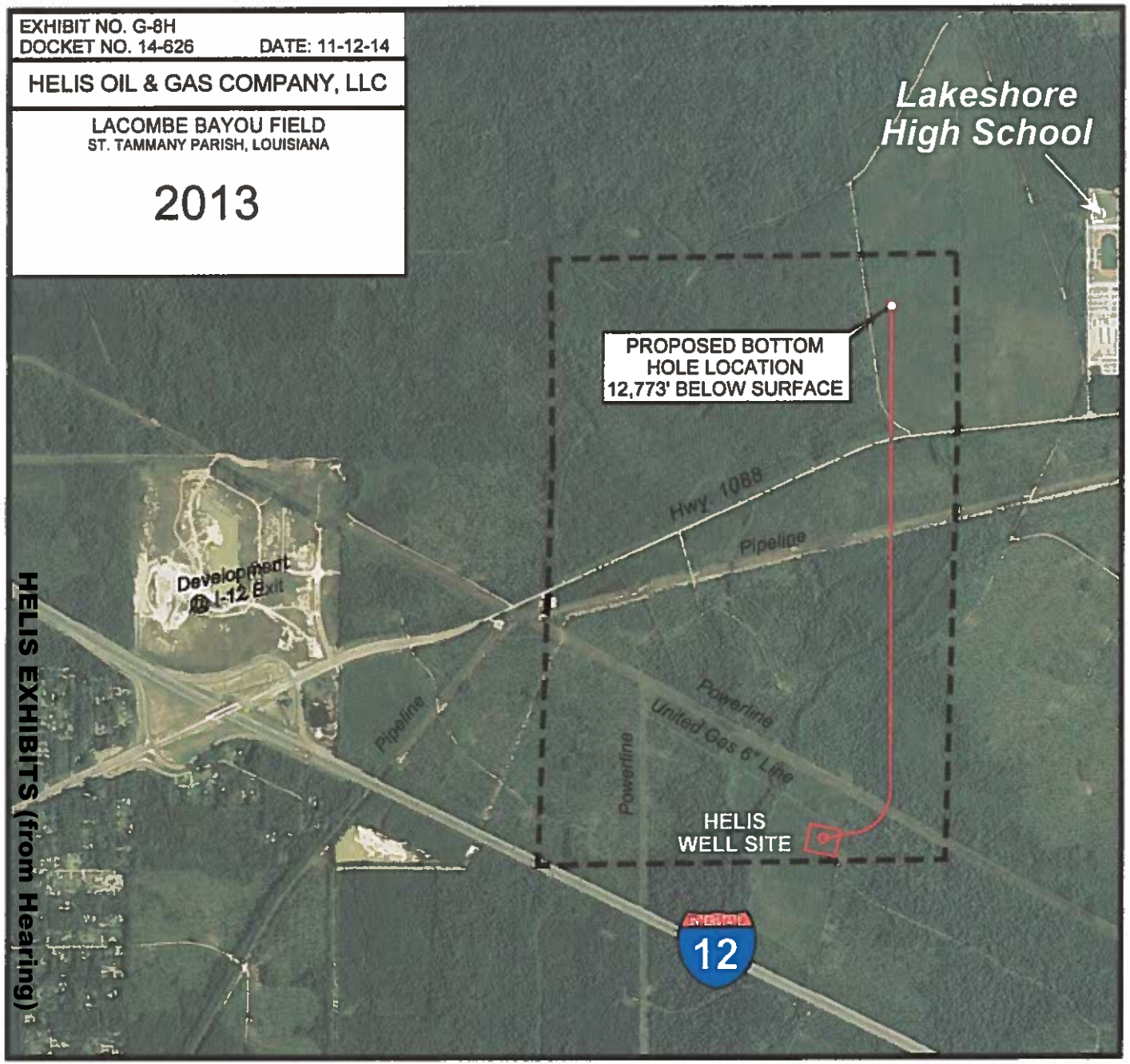
HELIS EXHIBITS (from Hearing)

EXHIBIT NO. G-8H
DOCKET NO. 14-626 DATE: 11-12-14

HELIS OIL & GAS COMPANY, LLC

LACOMBE BAYOU FIELD
ST. TAMMANY PARISH, LOUISIANA

2013



HELIS EXHIBITS (from Hearing)

Adam T. (Ted) Bourgoyne Jr, P.E.

- BS (1966) & MS (1967) - LSU
- Ph.D. (1969) - University of Texas
- 45 Years Experience
- 29 Years at LSU
- Retired LSU - Dean of Engineering
- 12 Years – Tuscaloosa Trend Wells

Drilling Engineering Review

- Regulatory Requirements for Drilling Permit
- Public Data Available for Wells near Geologic Prospect
- Helis Drilling Permit Application
- Proposed Unit Hearing (Docket No. 14-232) Exhibits
- Helis Drilling Program prepared by Seidel Technologies

Regulatory Requirements for Drilling Permit

- LA Revised Statue 30:28
- Statewide Order 29-B:103

LA Revised Statue 30:28

- Pay Drilling Permit Fee(s)
- Well Location Plat
- Hearing if Structure within 500'
- Commissioner issues Permit
- Commissioner promulgates regulations
  - Surface water quality
  - Ground water aquifer
  - 30 day "Pre-Entry Notice"

Conservation Order 29-B:103

- Application on Form MD-10-R
- Location Plat Requirements
- Pre-Entry Notice
- Affidavit on Form AFLN-1
- Financial Security Requirement

Onshore Oil & Gas Permits, 2014

Month	Permits	TMS Permits
January	165	0
February	119	2
March	94	0
April	100	1
May	122	0
June	159	2
July	121	0
August	89	1

2 TMS Permits issued in September and 2 in October, 2014.

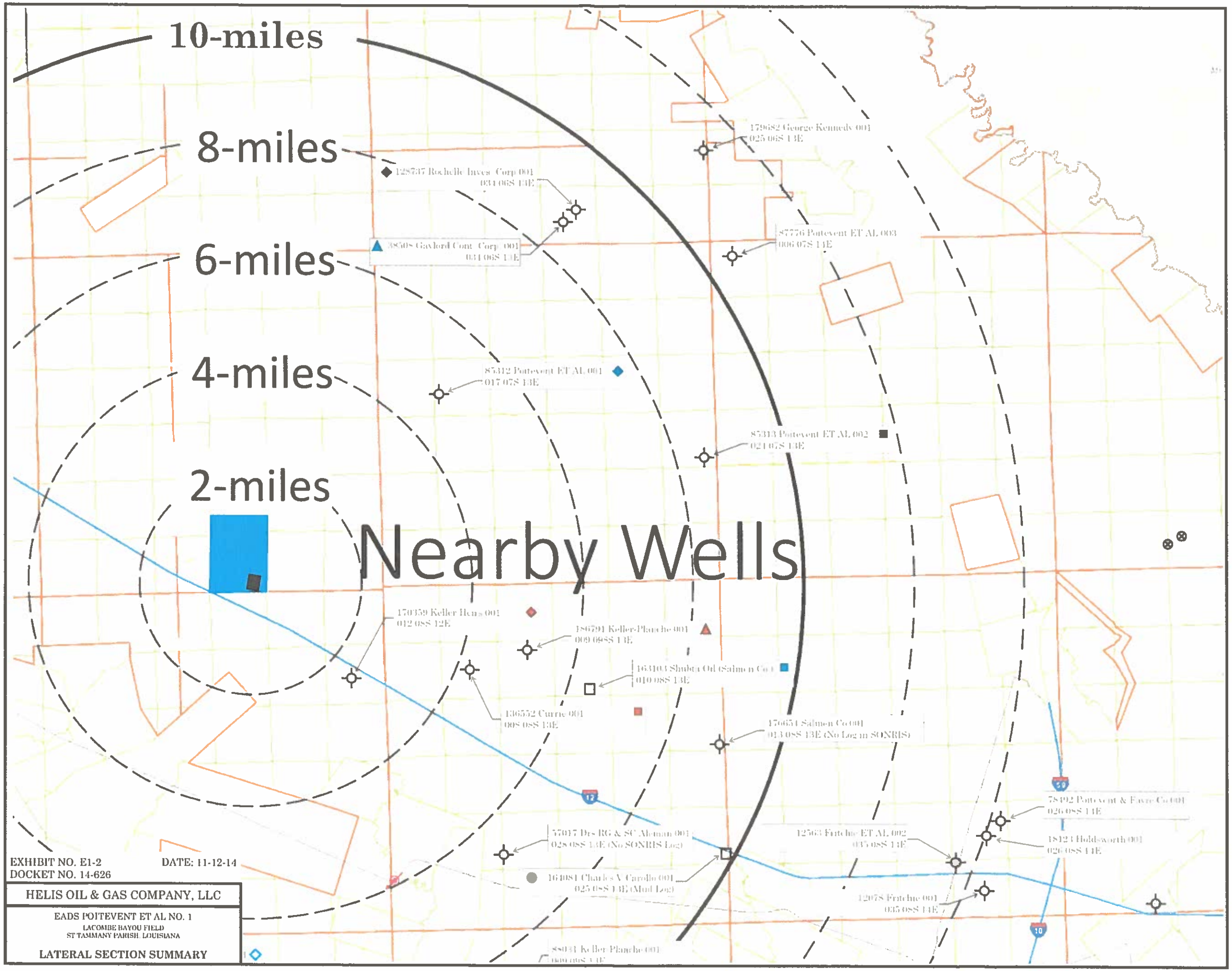
HELIS EXHIBITS (from Hearing)

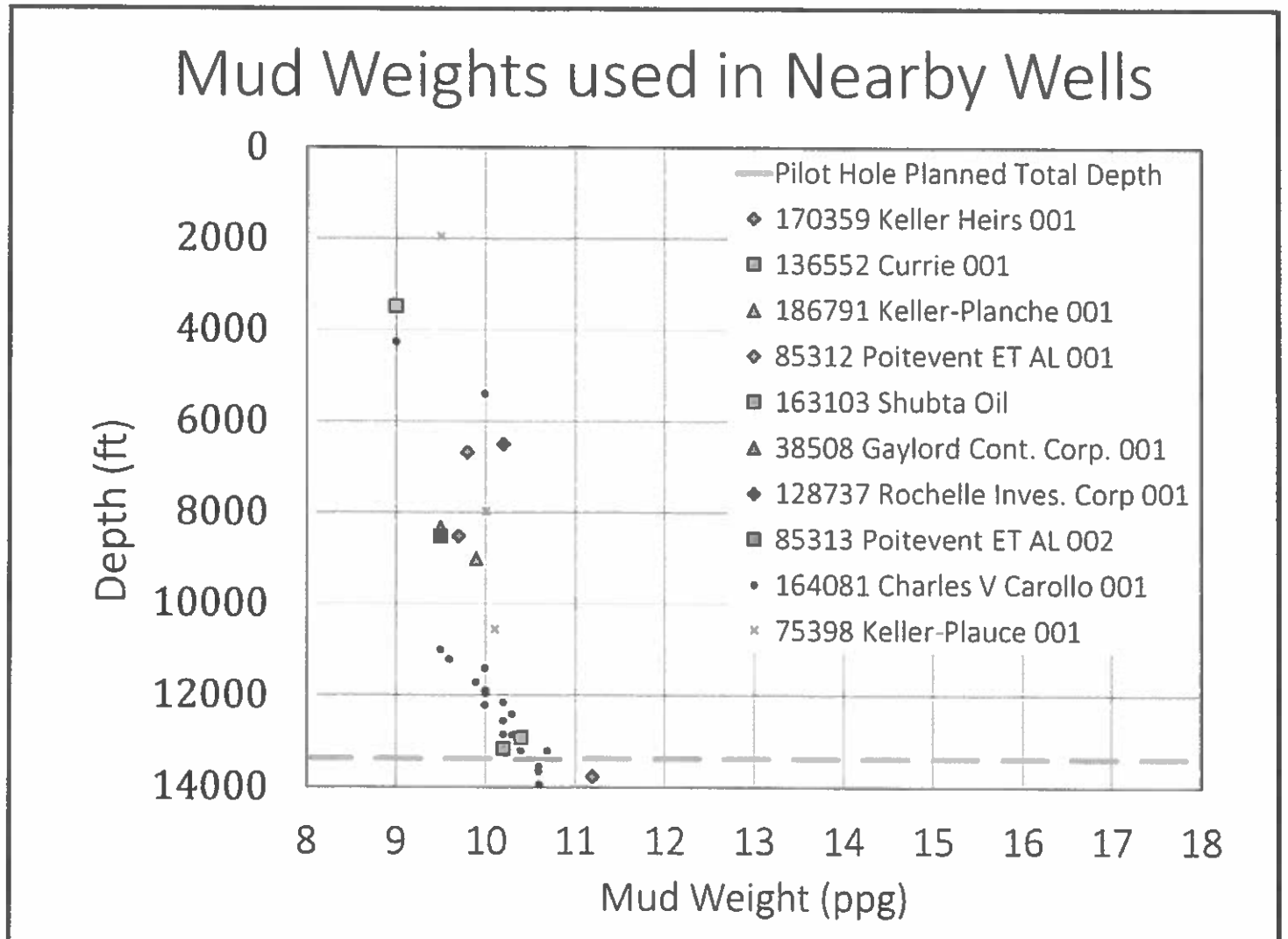
EXHIBIT NO. E1-1 DATE: 11-12-14
DOCKET NO. 14-626

HELIS OIL & GAS COMPANY, LLC

EADS POITEVENT ET AL NO. 1
LACOMBE BAYOU FIELD
ST TAMMANY PARISH, LOUISIANA

BACKGROUND


10-miles
8-miles
6-miles
4-miles
2-miles
Nearby Wells
179682 George Kennedy 001
025 06S 13E
128737 Rochelle Inves Corp 001
031 06S 13E
38508 Gaylord Cont Corp 001
031 06S 13E
87776 Poitevent ET AL 003
006 07S 14E
85312 Poitevent ET AL 001
017 07S 13E
85313 Poitevent ET AL 002
021 07S 13E
170359 Keller Hens 001
012 08S 12E
186791 Keller-Planche 001
009 08S 13E
163104 Shubea Oil (Salmen Co)
010 08S 13E
136552 Currie 001
008 08S 13E
176654 Salmen Co 001
013 08S 13E (No Log in SONRIS)
57017 Drs RG & SC Aleman 001
028 08S 13E (No SONRIS Log)
164081 Charles V Carollo 001
025 08S 13E (Mud Log)
12563 Fritche ET AL 002
035 08S 13E
78492 Poitevent & Favre Co 001
026 08S 14E
18324 Holdsworth 001
026 08S 14E
12078 Fritche 001
035 08S 14E
88041 Keller Planche 001
EXHIBIT NO. E1-2
DOCKET NO. 14-626
DATE: 11-12-14
HELIS OIL & GAS COMPANY, LLC
EADS POITEVENT ET AL NO. 1
LACOMBE BAYOU FIELD
ST TAMMANY PARISH, LOUISIANA
LATERAL SECTION SUMMARY



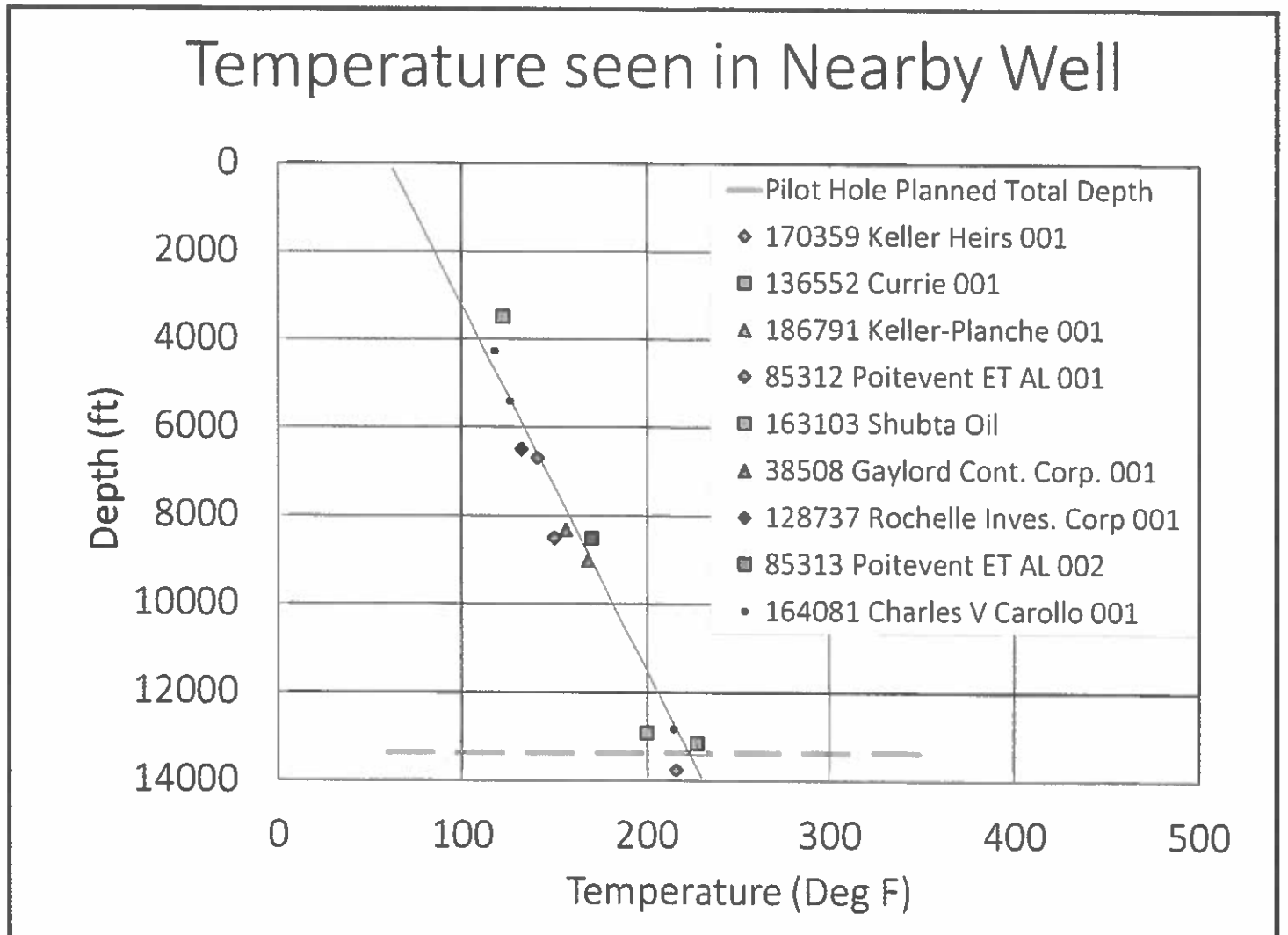
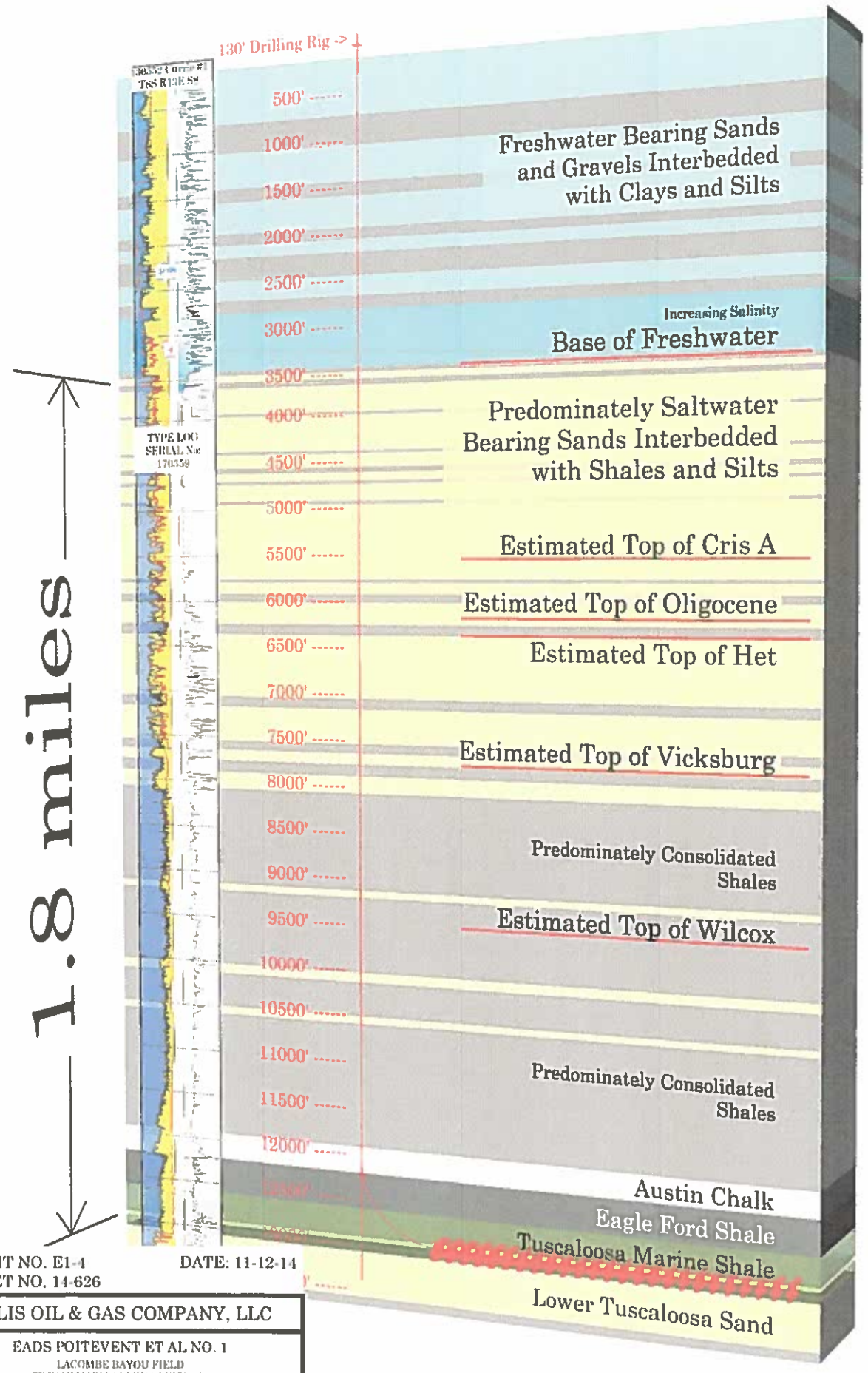


EXHIBIT NO. E-3 DATE: 11-12-14
DOCKET NO. 14-626

HELIS OIL & GAS COMPANY, LLC

EADS POITEVENT ET AL NO. 1
LACOMBE BAYOU FIELD
ST TAMMANY PARISH, LOUISIANA

OFFSET MUD WEIGHT AND TEMP DATA



TMS Prospect

- Not High Pressure
- Not High Temperature
- Low Permeability Target
- No Indication of H_2S
- Aquifer protected by 3 Casing Strings
- Target within TMS at 12894'
- 1.8 miles below Aquifers
- About 5000' Lateral
- About 25 Fracture Stages
- Upward Frac Growth easy to detect, easy to stop

EXHIBIT NO. E1-4 DATE: 11-12-14
DOCKET NO. 14-626

HELIS OIL & GAS COMPANY, LLC

EADS POITEVENT ET AL NO. 1
LACOMBE BAYOU FIELD
ST TAMMANY PARISH, LOUISIANA

TMS PROSPECT SLIDE

HELIS EXHIBITS (from Hearing)

TYPE LOG	LITH-OLOGY	DESCRIPTION	EST. PORE PRESS GRADIENT (PPGE)	MUD WEIGHT (PPG)	TVD (ft)
					0
		Freshwater Bearing Sands and Gravels Interbedded with Clays and Silts	8.3	8.6 to 9.0	500
					1000
					1500
					2000
					2500
		Increasing Salinity			3000
		Base of Freshwater			3500
		Predominately Saltwater Bearing Sands Interbedded with Shales and Silts	8.6	9.0 to 9.5	4000
		Est Top of Cris A			4500
					5000
		Est Top of Oligocene			5500
		Est Top of Het			6000
					6500
					7000
		Est Top of Vicksburg			7500
		Predominately Consolidated Shales	9.0	9.5 to 9.7	8000
		Est Top of Wilcox			8500
					9000
		Predominately Consolidated Shales		9.7 to 10.0	9500
					10000
					10500
					11000
			9.5	9.8 to 10.5	11500
		Austin Chalk			12000
		Eagle Ford Shale			12500
		Tuscaloosa Marine Shale	10.2	10.5 to 11.3	13000
		Lower Tuscaloosa Sand	10.2		13500

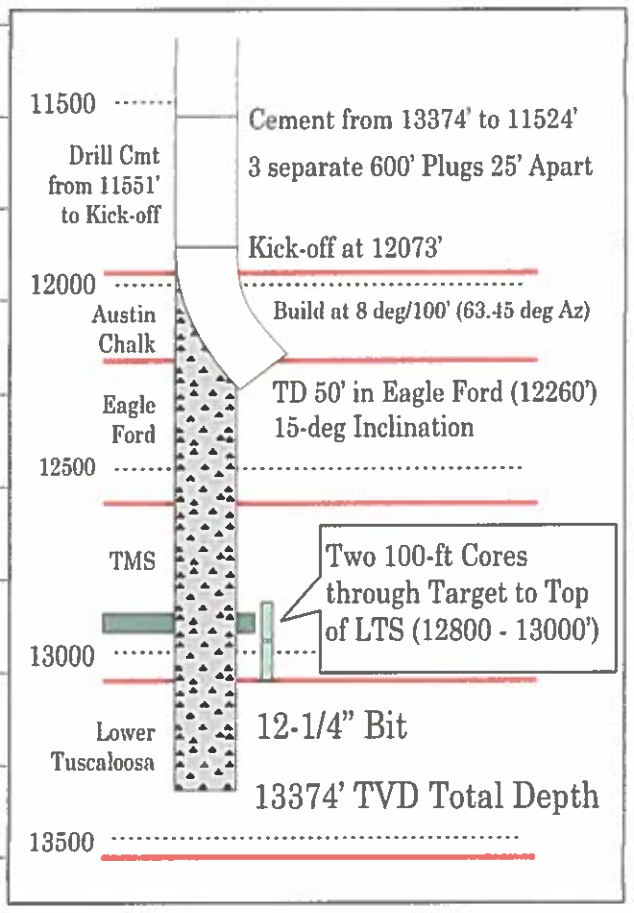
WELL SCHEMATIC

20" Driven to Refusal
110' TVD
Diverter System Used

17-1/2" Bit
Water Base Spud Mud
Newpark NewGel/ New PHPA Mud System
Smith XR+C Bit
Closed Loop Solids Control.
Will Control Drill Surface Hole
No Trucks - School Zone Hours

13-3/8" Casing
J-55, 68 lb/ft, BTC
Cemented back to Surface
4000' TVD / 12.0 ppge FIT
RSRRA Blowout Preventer

12-1/4" Bit
Water Base Mud
Newpark Evolution Mud System
Smith MSi616BPX Bit down to 12800'
Optional Diverter Collar at 7000'



9-5/8" Casing
P-110, 53.5 lb/ft, BTC
12260' TVD / Cemented back to Surface

Tuscaloosa Marine Shale Target at 12894'

EXHIBIT NO. E1-5 DATE: 11-12-14
DOCKET NO. 14-626

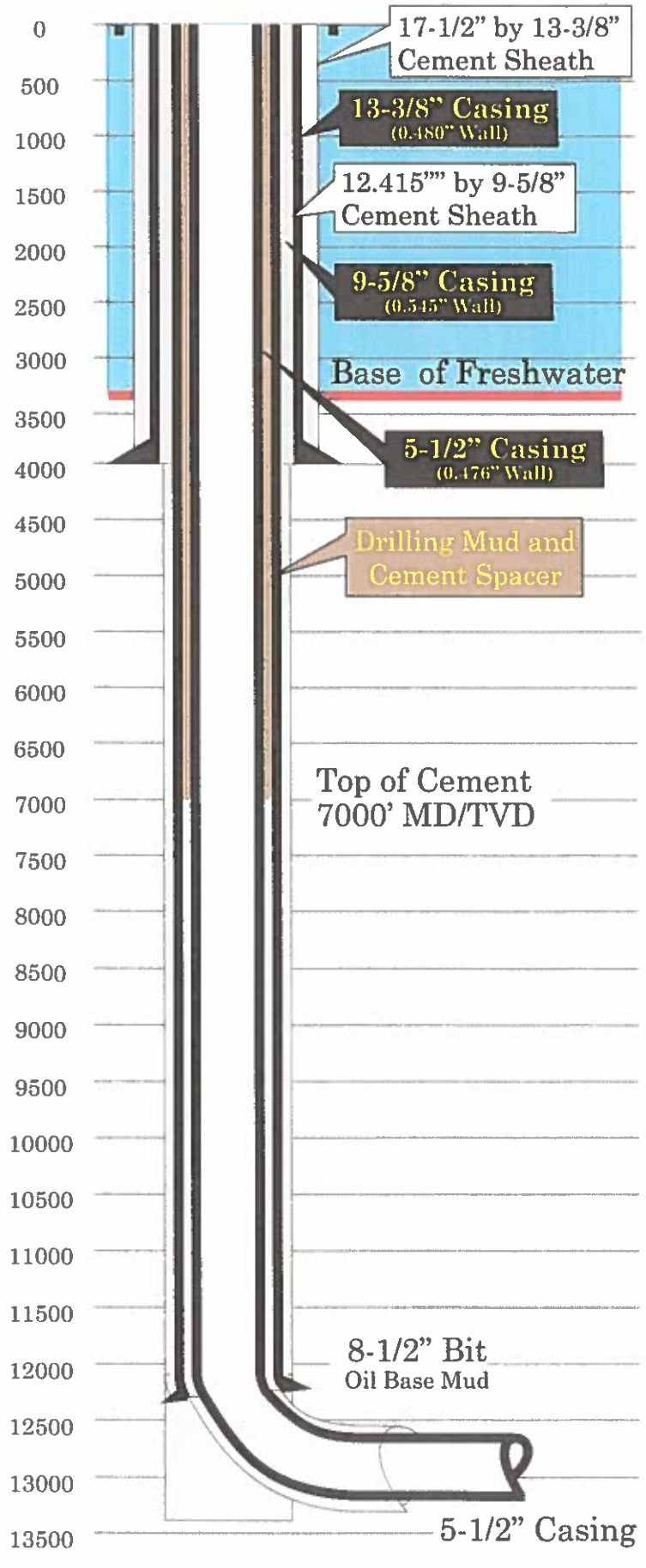
Log Sources:
From 00190' to 03418': Serial No. 136552 / Currie No. 1
From 03418' to 13500': Serial No. 170359 / Keller Heirs No. 1 (TYPE LOG)

HELIS OIL & GAS COMPANY, LLC

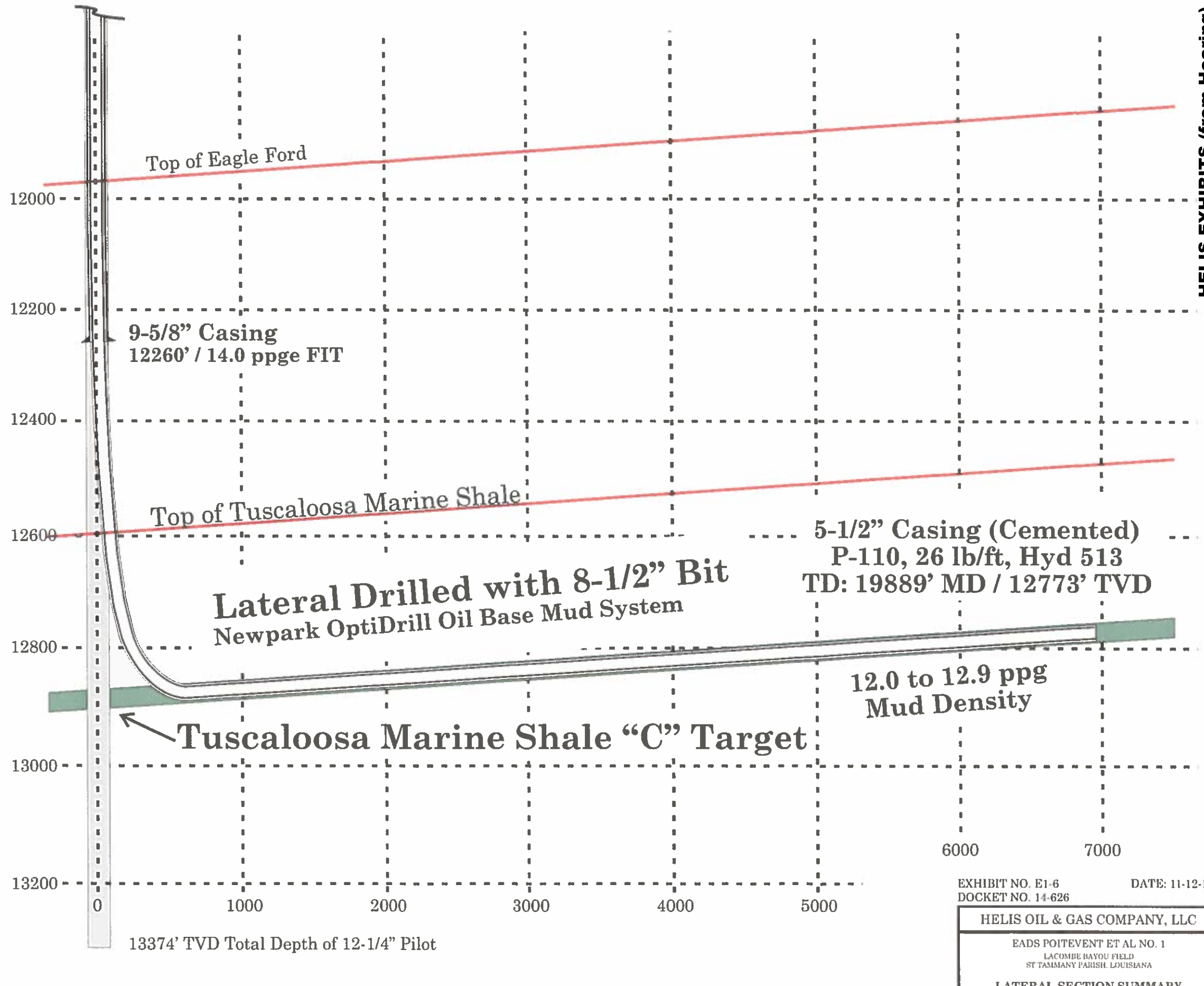
EADS POITEVENT ET AL NO. 1
LACOMBE BAYOU FIELD
ST TAMMANY PARISH, LOUISIANA

WELL PLAN SUMMARY

VERTICAL HOLE SECTION



LATERAL HOLE SECTION



HELIS EXHIBITS (from Hearing)

EXHIBIT NO. E1-6 DATE: 11-12-14
DOCKET NO. 14-626

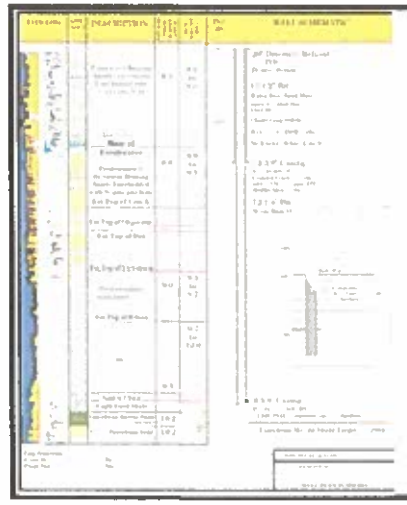
HELIS OIL & GAS COMPANY, LLC

EADS POITEVENT ET AL NO. 1
LACOMBE BAYOU FIELD
ST TAMMANY PARISH, LOUISIANA

LATERAL SECTION SUMMARY

Conclusions

- Helis has met Permit Requirements of 29B.
- Helis has operated in Louisiana for over 80 Years.
- Well Plan is based on Safe, Time-tested Drilling Practices and Best Available Technology for Protecting the Environment.
- Helis Well Planning and H-INC Contractor Audit Safety and Environmental Management System (SEMS) is designed to meet or exceed Requirements for Federal Leases.
- Helis has considerable Drilling Experience and has drilled similar Shale Prospect Wells in U.S.



Well Plan

- Preparations
- Surface Hole
- Pilot Hole
- Data Collection
- Set Plugs
- Intermediate Casing
- Release Rig

Preparations to Drill

- Prepare 3.21 Acre Surface Location
- Drive 20", 106.5 lb/ft Conductor to ~110'.
- Move in Rig Equipment
- Install & Inspect 20" Diverter System
- Pre-Spud Meetings
  - Drilling Program
  - Emergency Plan
  - Hurricane Plan
  - Trucking Plan
  - Well Control Training Refresher Plan

Surface Hole

- Control Drill 17.5" hole to ~4000'.
- Run ~4000' of 13.375" Surface Casing.
- Cement Surface Casing to Surface.
- Wait on Cement 8 hrs.
- Nipple up & Test 13.625" BOP System.
- P/U 12.25" Bit & RIH & tag Cement.
- Drill out Cement to Float Collar.
- Pressure Test Casing to 1500 psi.

Drilling Fluid for Surface Hole ~ 95% Fresh Water

Product name	Product Description	Concentration
NewGel	Wyoming Bentonite	10 - 20 ppb
NewBar	Barium Sulfate	As needed for slugs
NewPHPA	Partially Hydrolyzed Polyacrylamide	0.25-0.75 ppb
DynaDet	Drilling Detergent	As needed
SAPP	Sodium Acid Pyrophosphate	As needed
DynaFiber	Micro Cellulose Fiber	As needed for sweeps
NewBridge	Granular and Fibrous Blend	As needed for sweeps
NewPlug	Ground Walnut Hull	As needed for sweeps

Pilot Hole to Evaluate TMS

- Drill Casing Shoe & 10' New Formation.
- Perform FIT to 12.0 ppg EMW.
- Drill ahead; Start Mud Log at ~5000.'
- Drill to Core Point (~12,800').
- Take two 100' Cores.
- P/U 12.25" Bit and BHA.
- RIH and drill to TD at ~13,374.'

Gather Petrophysical Data

- Make Wiper Trip; Condition hole.
- Run 1: Quad Combo.
- Run 2: FMI and Sonic Scanner.
- Make Wiper Trip; Condition hole.
- Run 3: MDT for Pressure & Fluid.
- Run 4: Take 60 Sidewall Cores.

Plug Pilot Hole

- Pick up Tubing Stinger; RIH to 13,374'.
- Set 600' Balanced 16.4 ppg Cement Plug.
- Pull Stinger 25' above Cement; Circulate 1.5 hole volumes.
- Set 600' Balanced 17.2 ppg Cement Plug.
- Pull Stinger 25' above Cement; Circulate 1.5 hole volumes.
- Set 600' Balanced 17.2 ppg Cement Plug.
- Pull Stinger 300' above Cement. Circulate 1.5 hole volumes.
- Wait on Cement 24 hrs.; POOH to Surface.

Review Results of Preliminary Petrophysical Analysis

- If Prospect not Viable, Submit Plan & Obtain Approval to Plug and Abandon Well.
- If Prospect Warrants further Analysis, Run Intermediate Casing.

HELIS EXHIBITS (from Hearing)

EXHIBIT NO. E1-7 DATE: 11-12-14
DOCKET NO. 14-626

HELIS OIL & GAS COMPANY, LLC

EADS POITEVENT ET AL NO. 1
LACOMBE BAYOU FIELD
ST TAMMANY PARISH, LOUISIANA

CONCLUSIONS & ADDITIONAL MATERIAL

Run Intermediate Casing

- Pick up 12-1/4" Bit and BHA.
- Dress off cement to KOP at ~12,073.'
- Pick up 12-1/4" directional BHA and RIH.
- Kick off at 8°/100' to TD at 15° Inclination & 63.45°Azimuth; Be 50' into the Eagle Ford Shale at ~12,260'MD/12,258' TVD.
- Make Wiper Trip; Condition Hole; POOH.
- Run 12,260' of 9-5/8" Casing.

Cement Casing & Release Rig

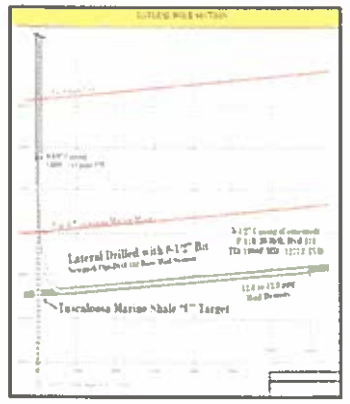
- Cement Casing to Surface.
- Wait on Cement 24 Hours.
- Nipple down Blowout Preventer and Nipple up Temporary Abandonment Tree.
- Release and Move out Rig.

Detailed Prospect Evaluation

- Well Log Analyses
- Lab Analyses of Rock Samples
- Lab Analyses of Fluid Samples
- Detailed design of Frac Job
- Future Production Estimates
- Finalize Phase 2 Well Plan

Prepare to Drill Lateral

- Move in Rig
- ND Tree; NU & Test BOP Stack
- PU 8.5"Bit & BHA; Drill cement to FC
- Displace WBM with Oil Base Mud
- Pressure test Casing to 2700 psi
- Run Cement Bond Log
- Drill out Shoe & 10' New Formation
- Perform FIT to 14 ppg EMW



Drill Lateral & Run Casing

- Drill Lateral as per Directional Plan.
- Drill to 19,889' MD/12,773'TVD.
- Clean and Condition Hole.
- Run 5-1/2" Production Casing to TD.
- Cement Casing with TOC at 7000.'
- Run Cement Bond Log.
- ND BOP; NU Tree; Release Rig

Perform Fracture Stimulation

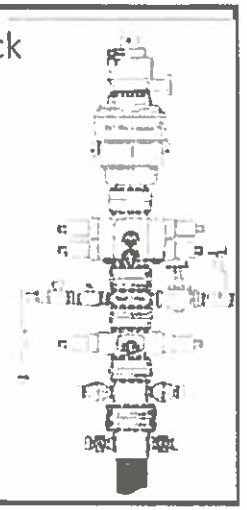
- Move in and Rig up Frac Equipment
- Pressure Test Lines and Equipment.
- Perform 25 Stage Frac Treatment.
  - Perforate
  - Pump Frac Fluid & Proppant for Stage
  - Set Plug
  - Repeat 25 times
- RD & Release Frac Equipment

Perform Flowback Test

- Move in and RU Coil Tubing.
- Move in & Rig up Well Test Service.
- Drill out Plugs.
- Release Coil Tubing.
- Test Well.
- Release Well Test Service.

BOP Stack

1) 13 5/8" slip on / welded x 13 5/8" 10,000 psi casing head
2) One (1) 13 5/8" 10000 psi WP drilling spacer spool with 2 side outlets for 3" kill line and minimum 3" choke line
3) One (1) 13 5/8" x 10,000 psi WP Type "U" single-ram preventer with Preventer with 3 ½" x 5" Flex Rams(variable) installed in bottom pipe rams
4) 13 5/8" 10M x 13 5/8" 5M Mud Cross with outlets for kill and choke lines
   a) 10M Kill Line, consisting of two (2) each 10M manual gate valves (3" minimum bore) on inside, next to Mud Cross, plus one (1) each 10M check valve (3" minimum bore) installed on outside of manual gate valves
   b) 10M Choke Line, consisting of one (1) each 10M manual gate valve (3" minimum bore) on inside, next to Mud Cross, with one (1) each 10M hydraulic operated (HCR) gate valve (3" minimum bore) installed outside of the 10M manual gate valve, with 10M flanged choke line (3" minimum bore) extending from HCR valve to inlet flow cross of 5M choke manifold.
   c) 10M Choke Manifold, 4 1/16" 10M x 3 1/16" 10M, configured to conform with both requirements
5) One 13 5/8" 10,000 psi WP double ram preventer with one (1) set of blind rams on bottom with (1) set of variable pipe rams on top, complete with hand wheels and extension arms.
6) One 13-3/8" x 5,000 psi WP HydriL GK (or equivalent) annular preventer.
7) Williams Model 9000 Low pressure rotating head



Auxiliary Equipment to be Used (10,000 psi System)

1) Upper & Lower Kelly cock valves with handles available.
2) Safety valve and subs to fit drill pipe on rig floor.
3) Choke manifold for 10,000 psi system with 2 chokes. (pressure gauges on manifold)
4) Two (2) kill lines (3" minimum, one remote to end of Substructure) both with 3" kill line full open valve, plus a check valve for each line.
5) Minimum 3" choke line
6) Two (2) choke line gate valves, 3" minimum, with one choke line gate valve being hydraulically operated manual.
7) Two (2) chokes (1 remote, 1 manual) on choke manifold.
8) Fill-up Line above uppermost preventer.
9) Wear Bushing or Bowl Protector in casing head
10) Inside BOP or (float Sub) available
11) All BOPE connections subject to well pressure shall be flanged, welded or clamped.
12) Choke line shall be straight lines unless turns use a tee blocks or are targeted with running tees, and shall be anchored to prevent whip and reduce vibration

Blowout Preventer Equipment Testing

- The wellhead BOP equipment will be nippled-up on the 13 5/8" – 10,000 psi WP casing head prior to drilling out from under surface casing.
- All ram preventers and related equipment will be tested to 10,000 psi for 10 minutes.
- Annular preventers will be tested to 70% of rated working pressure for 10 minutes.
- Surface casing will be tested to 1500psi for 30 min with no more than 10% pressure loss in 10 minutes.
- All preventers and surface casing will be tested before drilling out of surface casing.
- BOP equipment will be visually inspected daily and tested within 14 days of previous test, and after any repairs are made to the BOP equipment.
- Annular preventers will be functionally operated at least once per week. Pipe rams will be activated daily and blind rams shall be activated each trip or at least weekly.
- Notified regulatory agency 24 hours in advance of testing of BOPE
- Record name of government personnel contacted and time & date of notification on reports.

HELIS EXHIBITS (from Hearing)

EXHIBIT NO. E1-8 DATE: 11-12-14
DOCKET NO. 14-626

HELIS OIL & GAS COMPANY, LLC

EADS POITEVENT ET AL NO. 1
LACOMBE BAYOU FIELD
ST TAMMANY PARISH, LOUISIANA

ADDITIONAL MATERIALS

GSI Environmental Inc. Expert

John A. Connor, P.E., P.G., B.C.E.E.

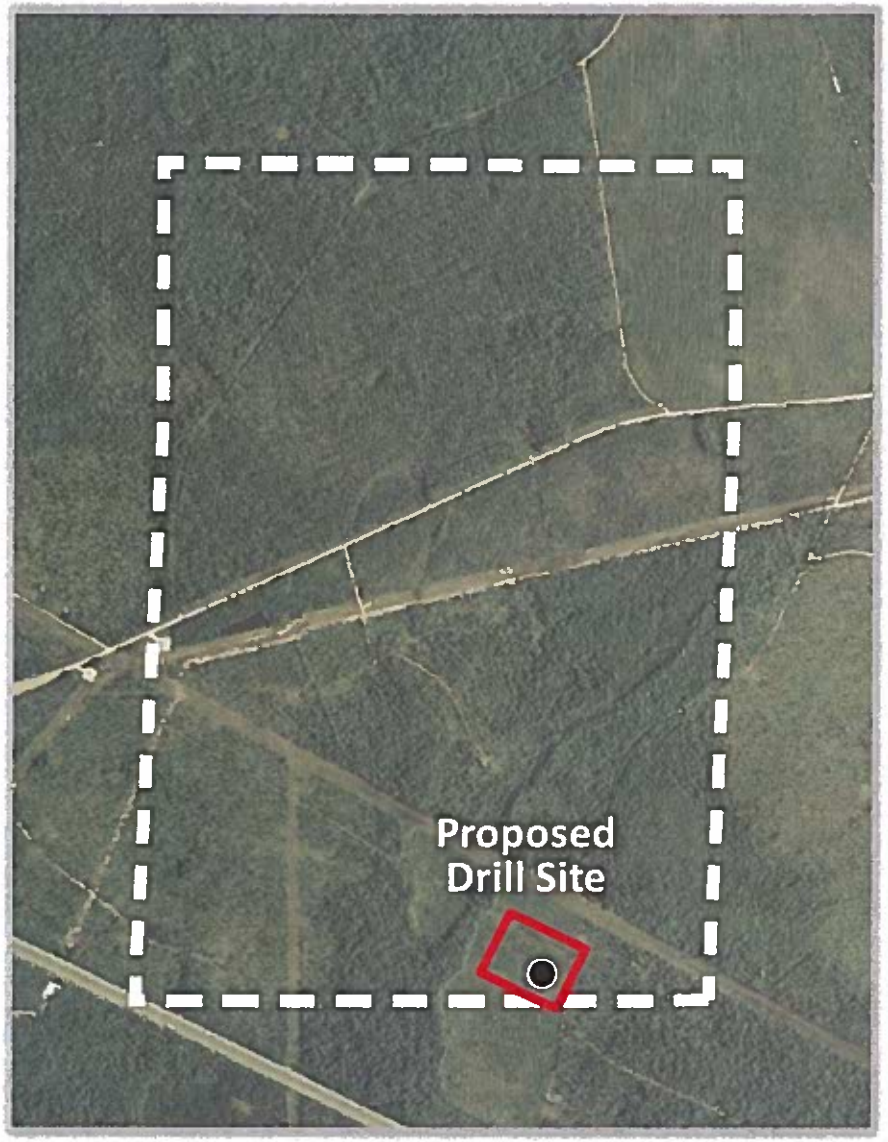
- **Education:**
  B.A., Stanford University
  M.S., Stanford University

- **General Experience:**
  34 years, focus in environmental investigation, groundwater protection, risk assessment, remediation, oil and gas operations.

- **Oilfield Experience:**
  Environmental audits, risk assessment, technical guidance documents, environmental research and development studies, remediation methods and costs.

HELIS EXHIBITS (from Hearing)

Environmental Issues Reviewed

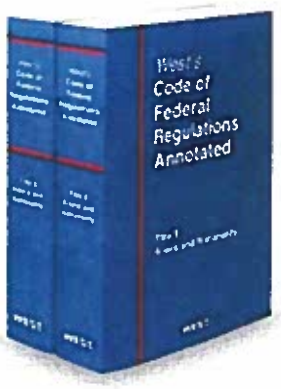


- Considerations for site selection
- Groundwater protection
- Water use
- Spill prevention/stormwater management
- Ecology and wetlands
- Air monitoring
- Emergency response
- Miscellaneous: noise, traffic, etc.

HELIS EXHIBITS (from Hearing)

Relevant Regulations and Technical Guidelines

- **Louisiana Administrative Code**
  - Title 33, 43 (29-B)



- **Code of Federal Regulations**
  - Title 29, 33, 40

- **American Petroleum Institute Guidance on Hydraulic Fracturing**

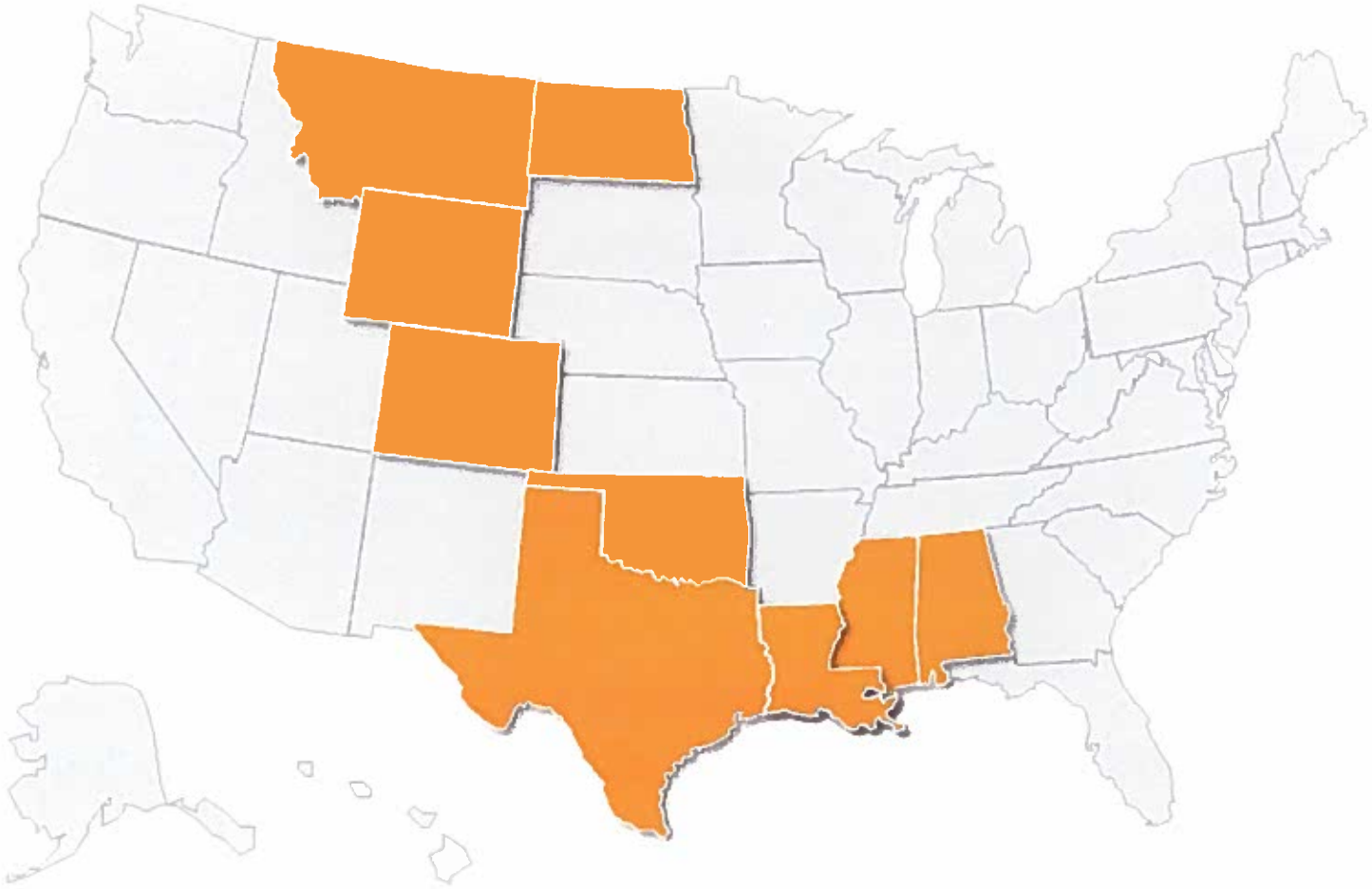
HELIS EXHIBITS (from Hearing)

Environmental Engineering Review

- Helis' Operational History
- Water Supply
- Chemical Disclosure
- Groundwater Protection
- Waste Management and Other Environmental Issues

HELIS EXHIBITS (from Hearing)

Helis' Operational History



Helis has drilled over 650 wells in the U.S.

HELIS EXHIBITS (from Hearing)

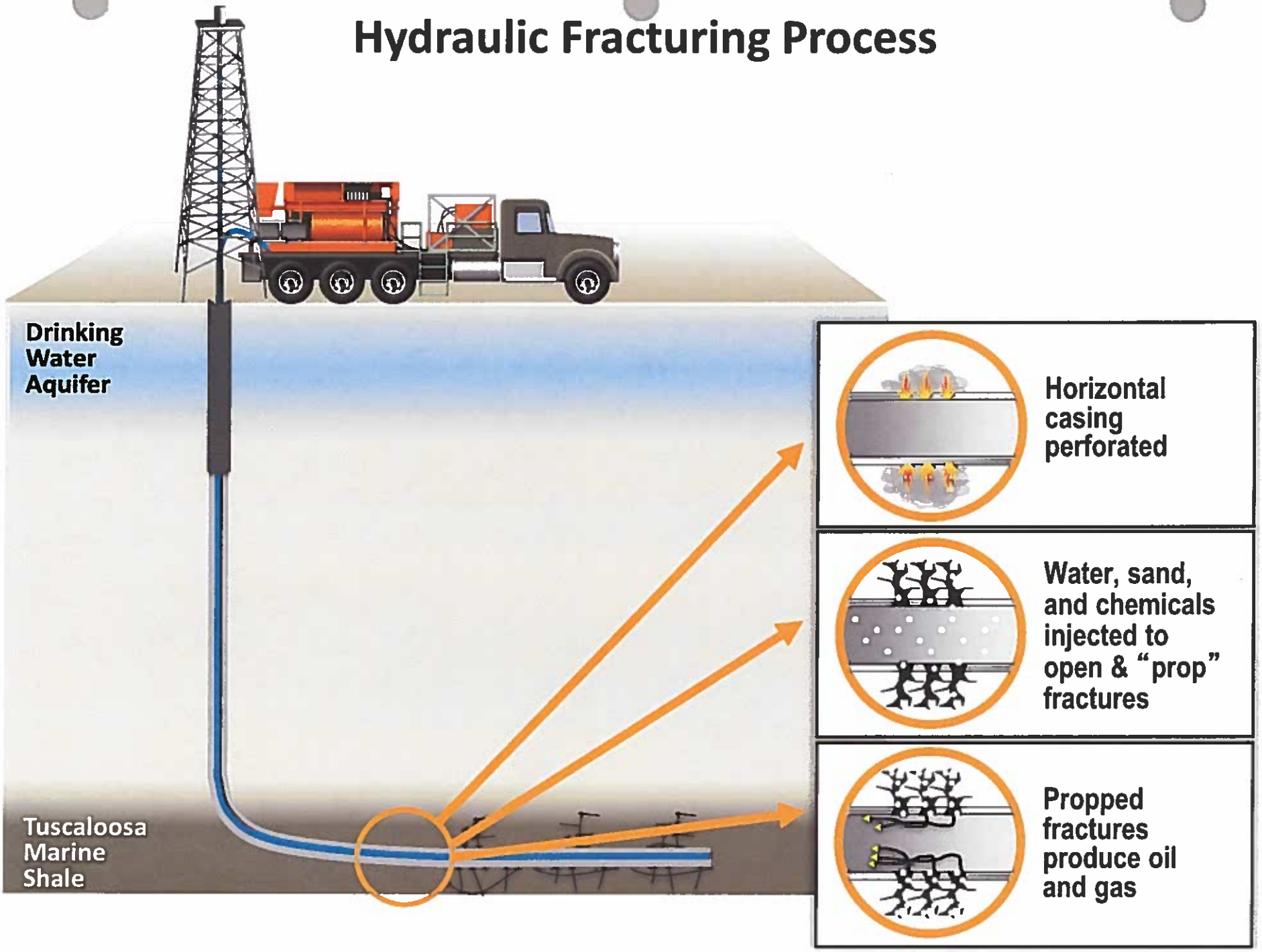
Helis' Operational History

- Louisiana company, founded **80** years ago
- Helis currently operates over **100** wells in Louisiana
- Over **900** regulatory inspections, since 2006 alone
- Only 11 issues, none environmental - all resolved

Helis has drilled over 650 wells in the U.S.

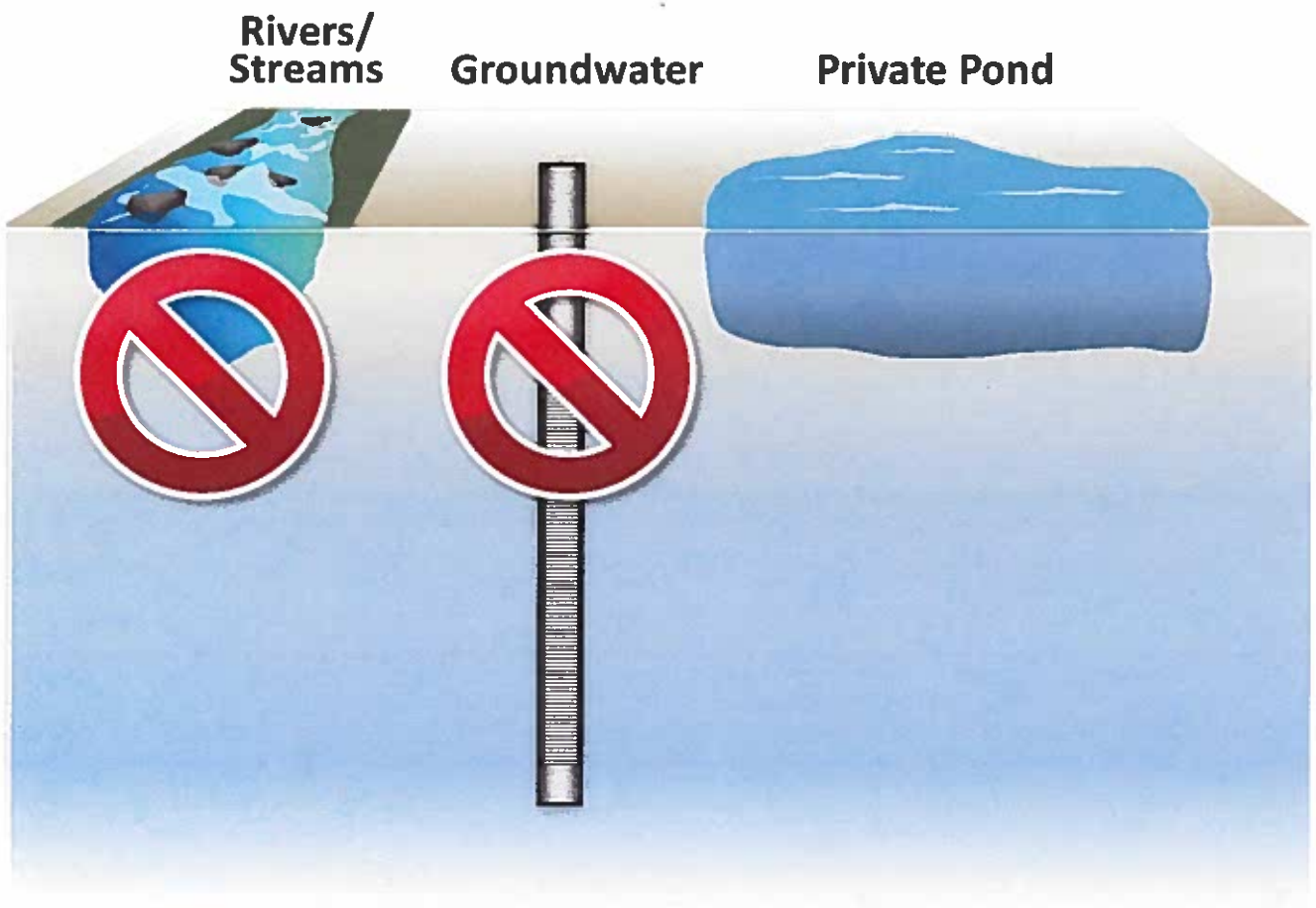
HELIS EXHIBITS (from Hearing)

Hydraulic Fracturing Process



HELIS EXHIBITS (from Hearing)

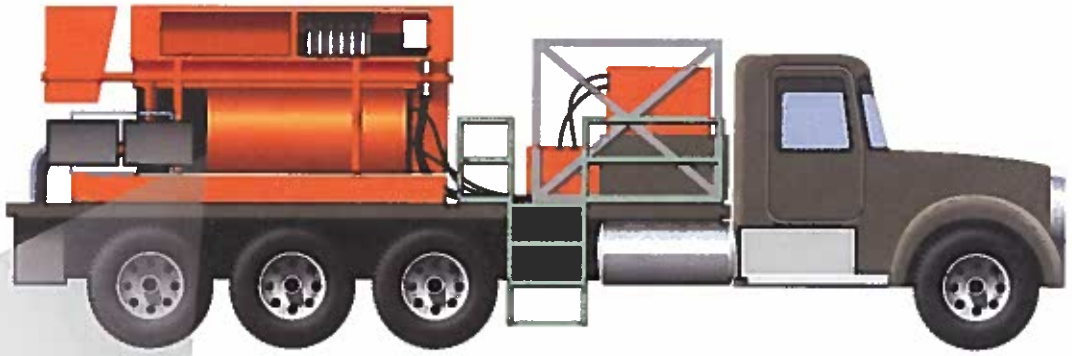
Where Will Helis Get Their Water For This Site?

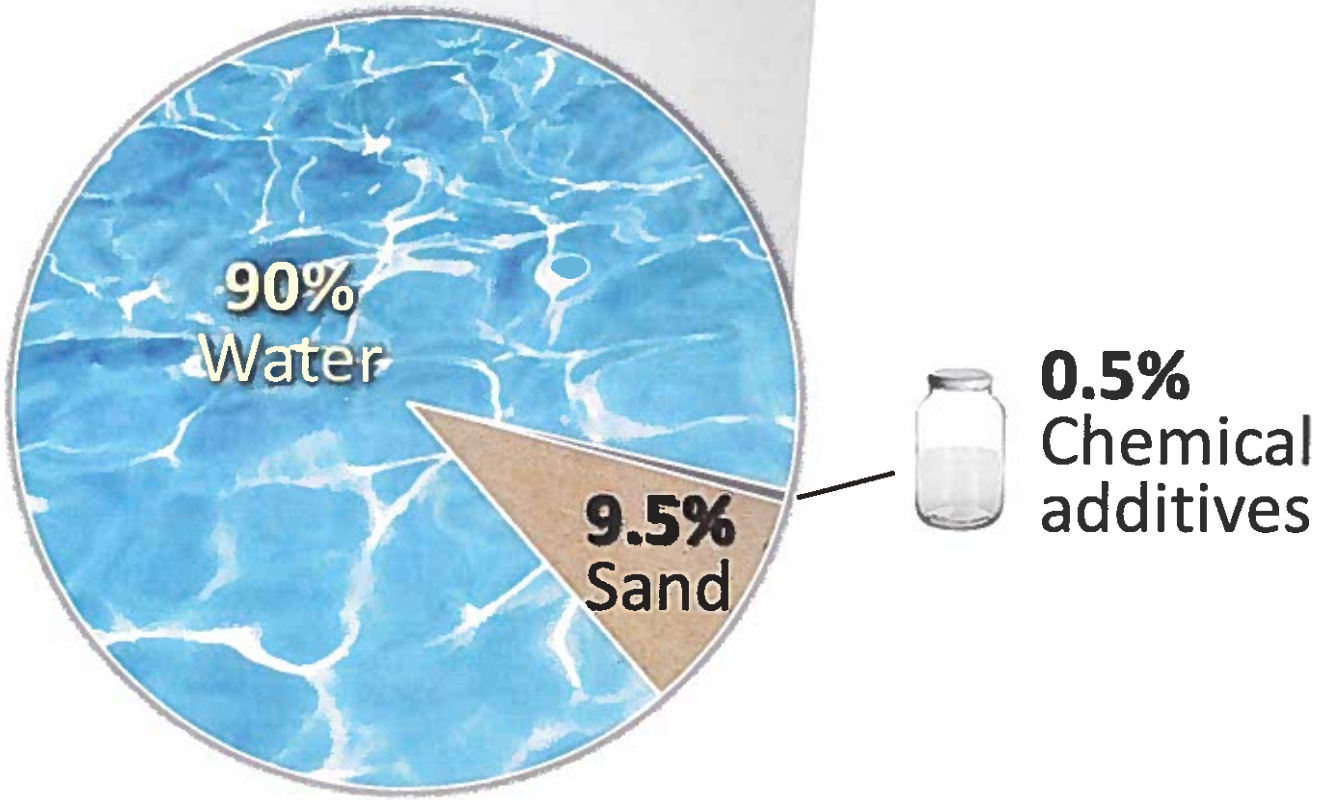


- For this well, Helis will use water from private ponds
- Nearest scenic stream (Cane Bayou) is approximately 0.9 miles away – will not be used

HELIS EXHIBITS (from Hearing)

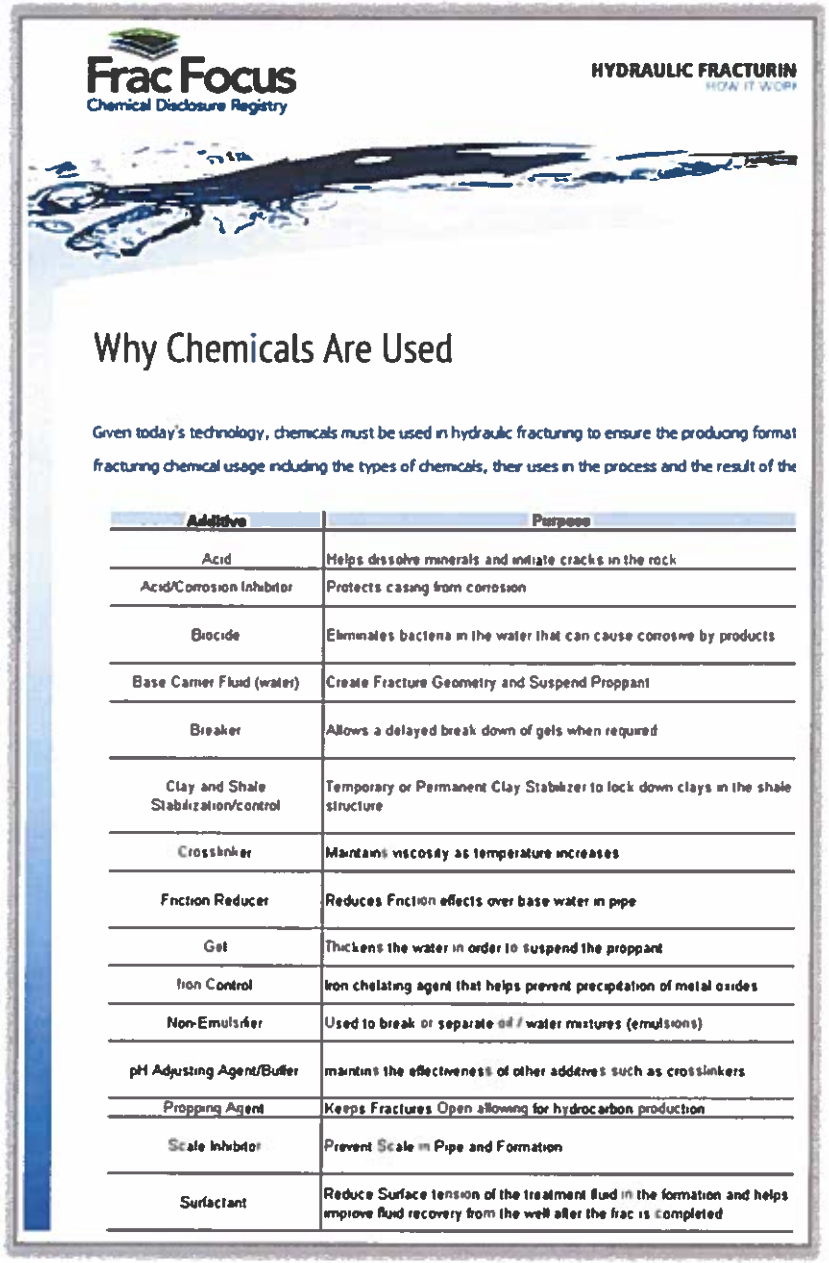
What Is In The Hydraulic Fracturing Mixture?





Source: API, 2014. Hydraulic Fracturing: Unlocking America's Natural Gas Resources

What Are These Chemical Additives?



Frac Focus
Chemical Disclosure Registry

HYDRAULIC FRACTURIN

Why Chemicals Are Used

Given today's technology, chemicals must be used in hydraulic fracturing to ensure the producing format
fracturing chemical usage including the types of chemicals, their uses in the process and the result of the

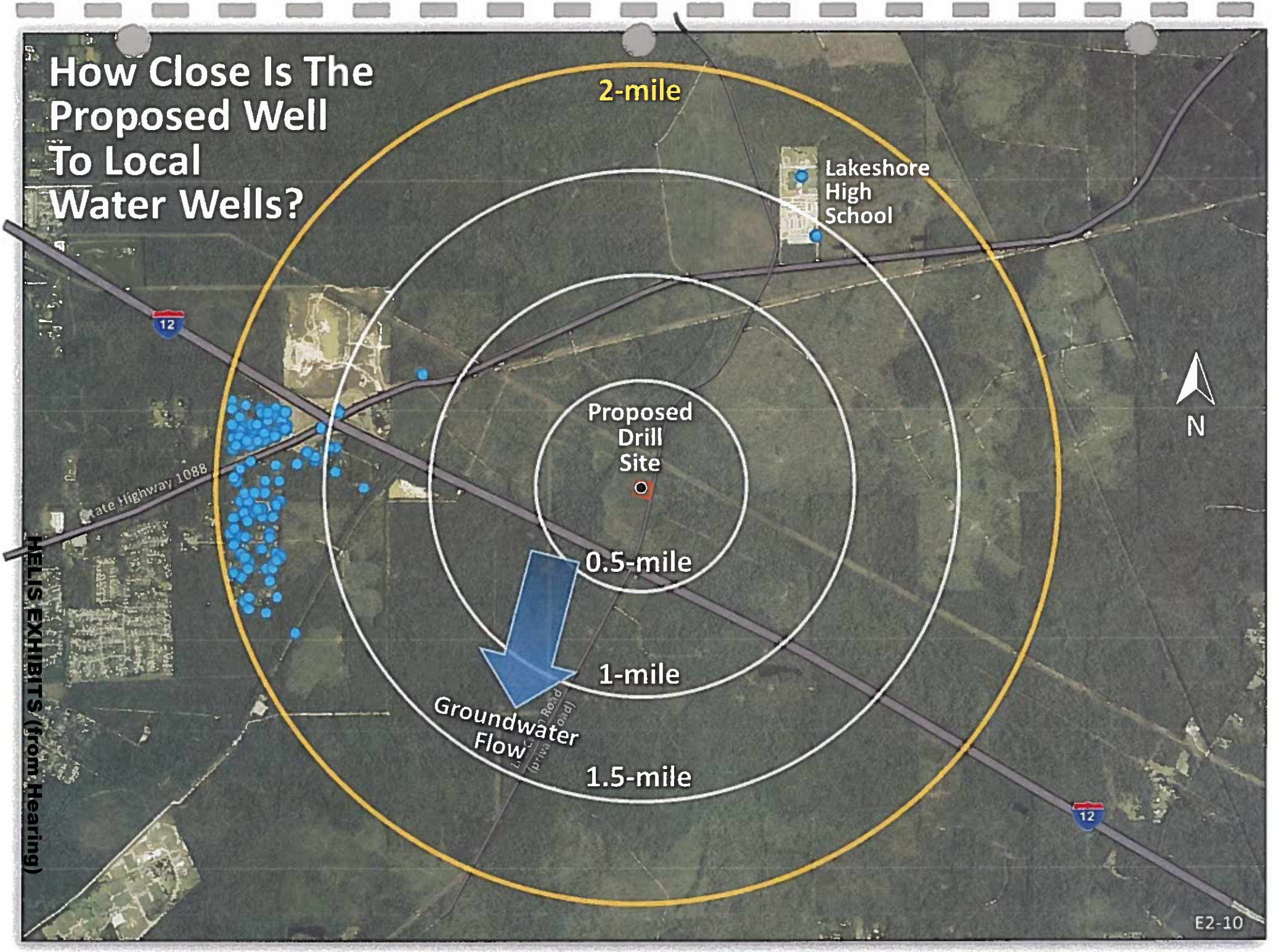
Additive	Purpose
Acid	Helps dissolve minerals and initiate cracks in the rock
Acid/Corrosion Inhibitor	Protects casing from corrosion
Biocide	Eliminates bacteria in the water that can cause corrosive by products
Base Carrier Fluid (water)	Create Fracture Geometry and Suspend Proppant
Breaker	Allows a delayed break down of gels when required
Clay and Shale Stabilization/control	Temporary or Permanent Clay Stabilizer to lock down clays in the shale structure
Crosslinker	Maintains viscosity as temperature increases
Friction Reducer	Reduces Friction effects over base water in pipe
Gel	Thickens the water in order to suspend the proppant
Iron Control	Iron chelating agent that helps prevent precipitation of metal oxides
Non-Emulsifier	Used to break or separate oil / water mixtures (emulsions)
pH Adjusting Agent/Buffer	maintins the effectiveness of other additives such as crosslinkers
Propping Agent	Keeps Fractures Open allowing for hydrocarbon production
Scale Inhibitor	Prevent Scale in Pipe and Formation
Surfactant	Reduce Surface tension of the treatment fluid in the formation and helps improve fluid recovery from the well after the frac is completed

- Chemicals used at each site vary.
- Helis will disclose chemicals used at this site on **Frac Focus**.
- Helis' chemical disclosure policy: *Full disclosure without trade secrets.*

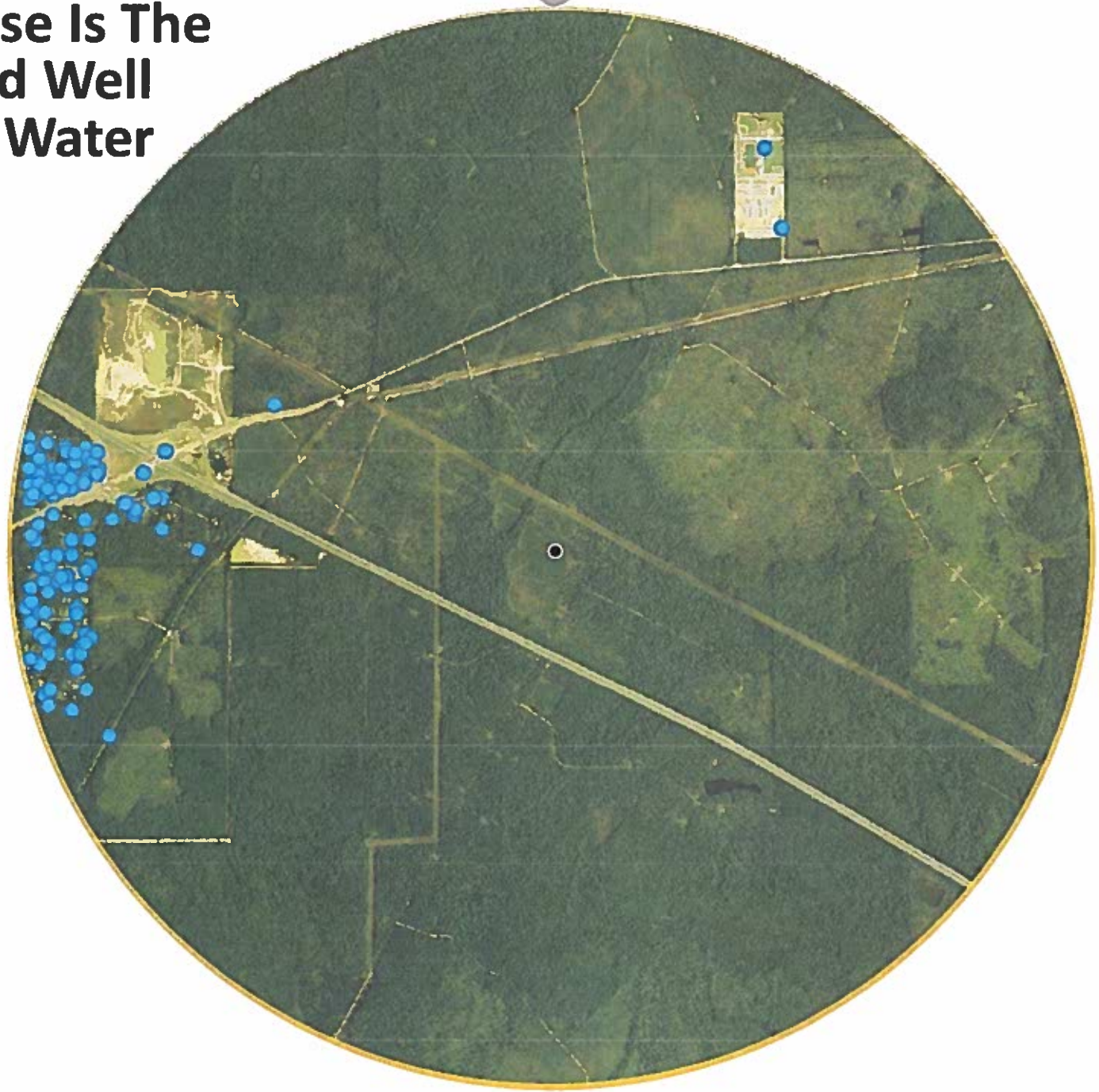
Frac Focus
Chemical Disclosure Registry

http://fracfocus.org/

HELIS EXHIBITS (from Hearing)


How Close Is The Proposed Well To Local Water Wells?
2-mile
Lakeshore High School
Proposed Drill Site
0.5-mile
1-mile
1.5-mile
Groundwater Flow
12
12
N
HELIS EXHIBITS (from Hearing)
E2-10

How Close Is The Proposed Well To Local Water Wells?



HELIS EXHIBITS (from Hearing)

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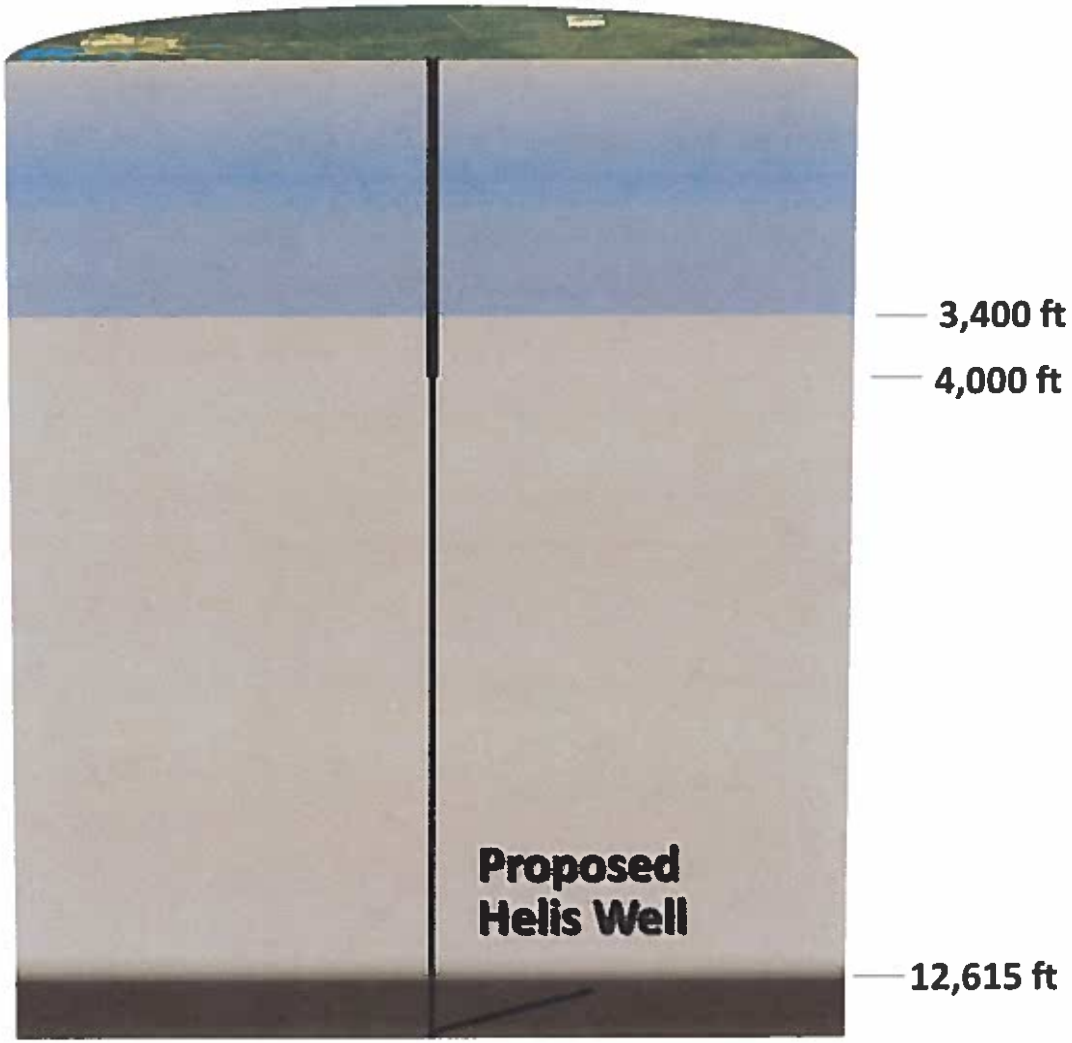
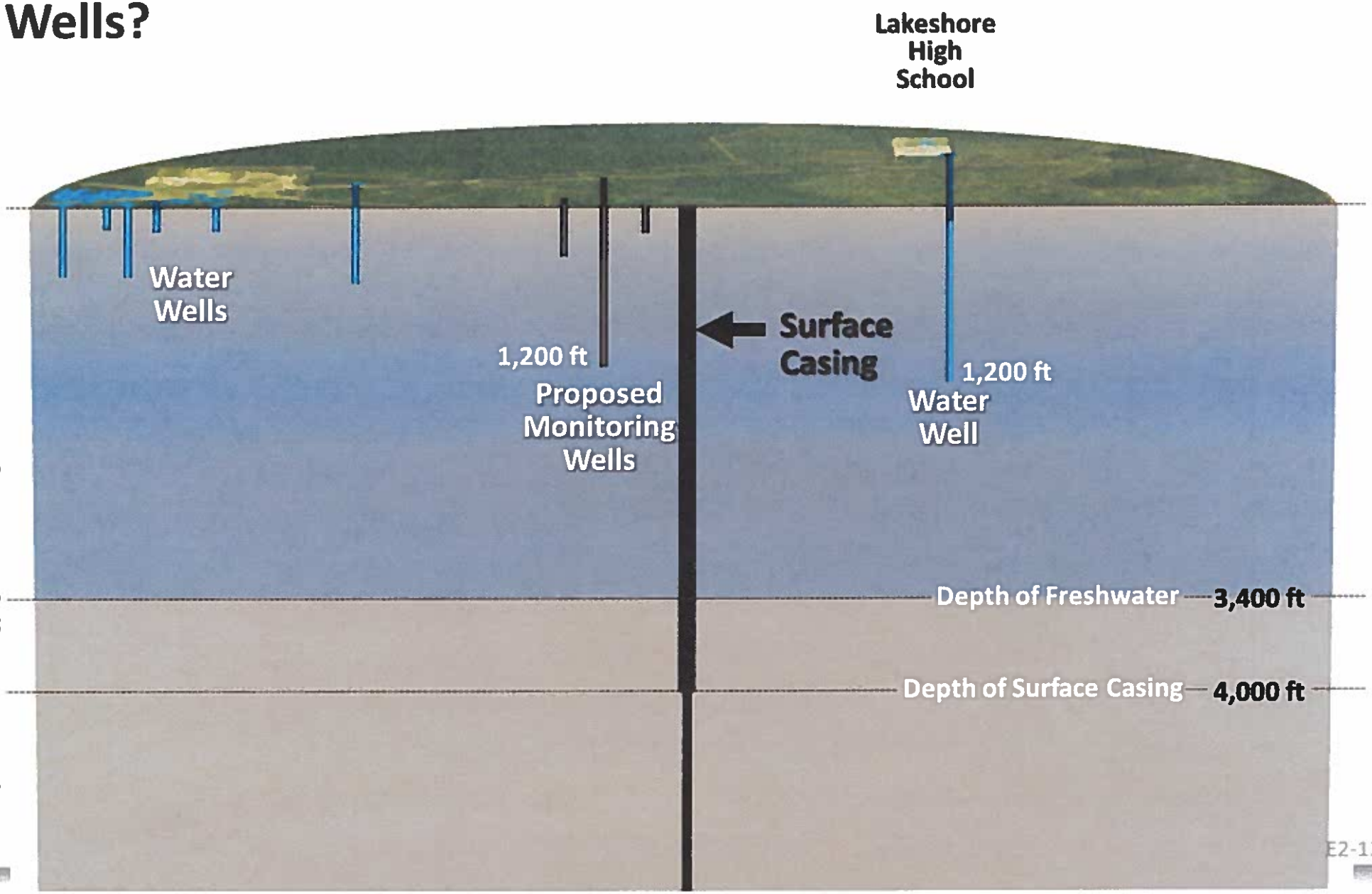


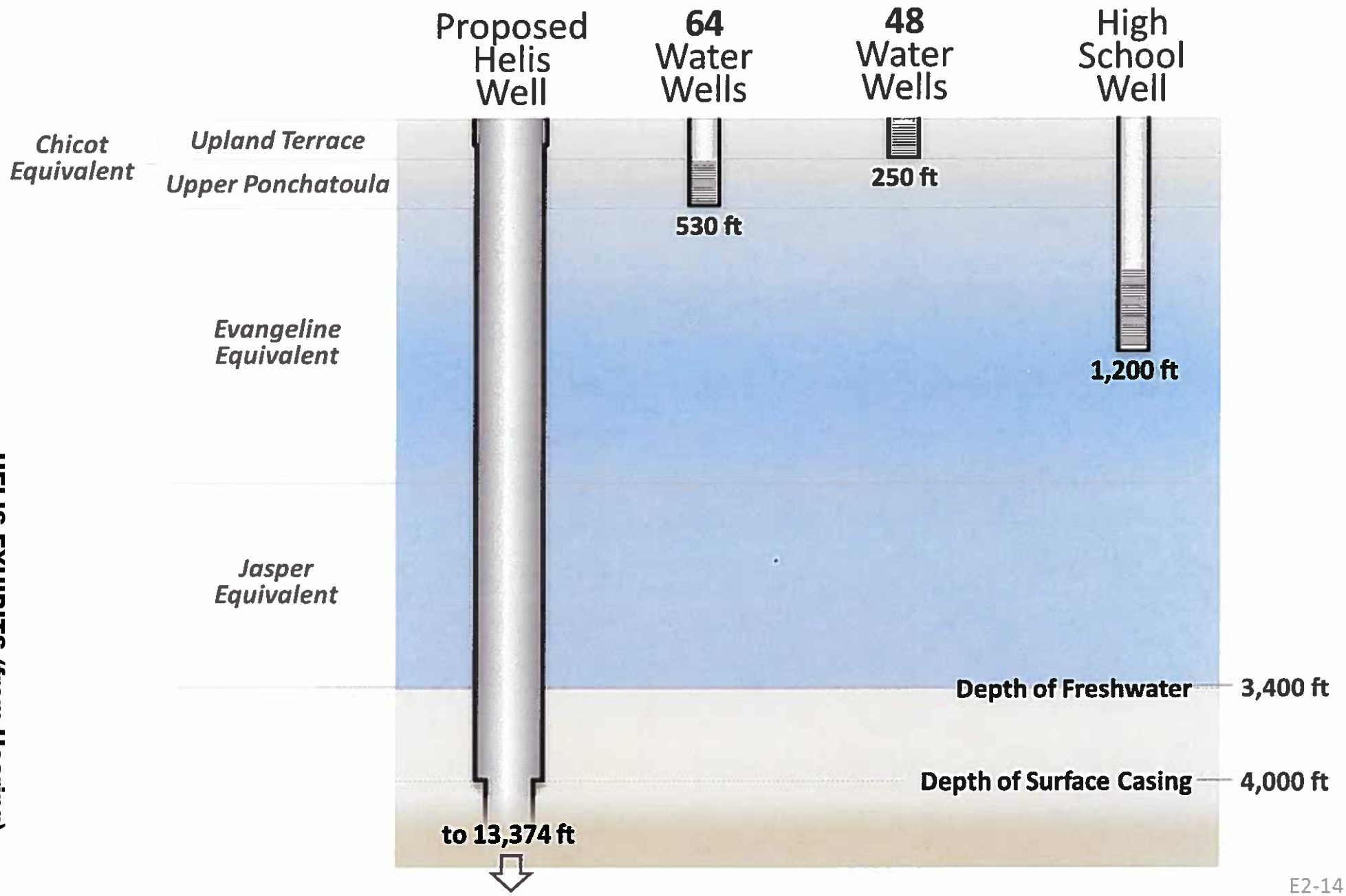
HELIS EXHIBITS (from Hearing)

How Close Is The Proposed Well To Local Water Wells?



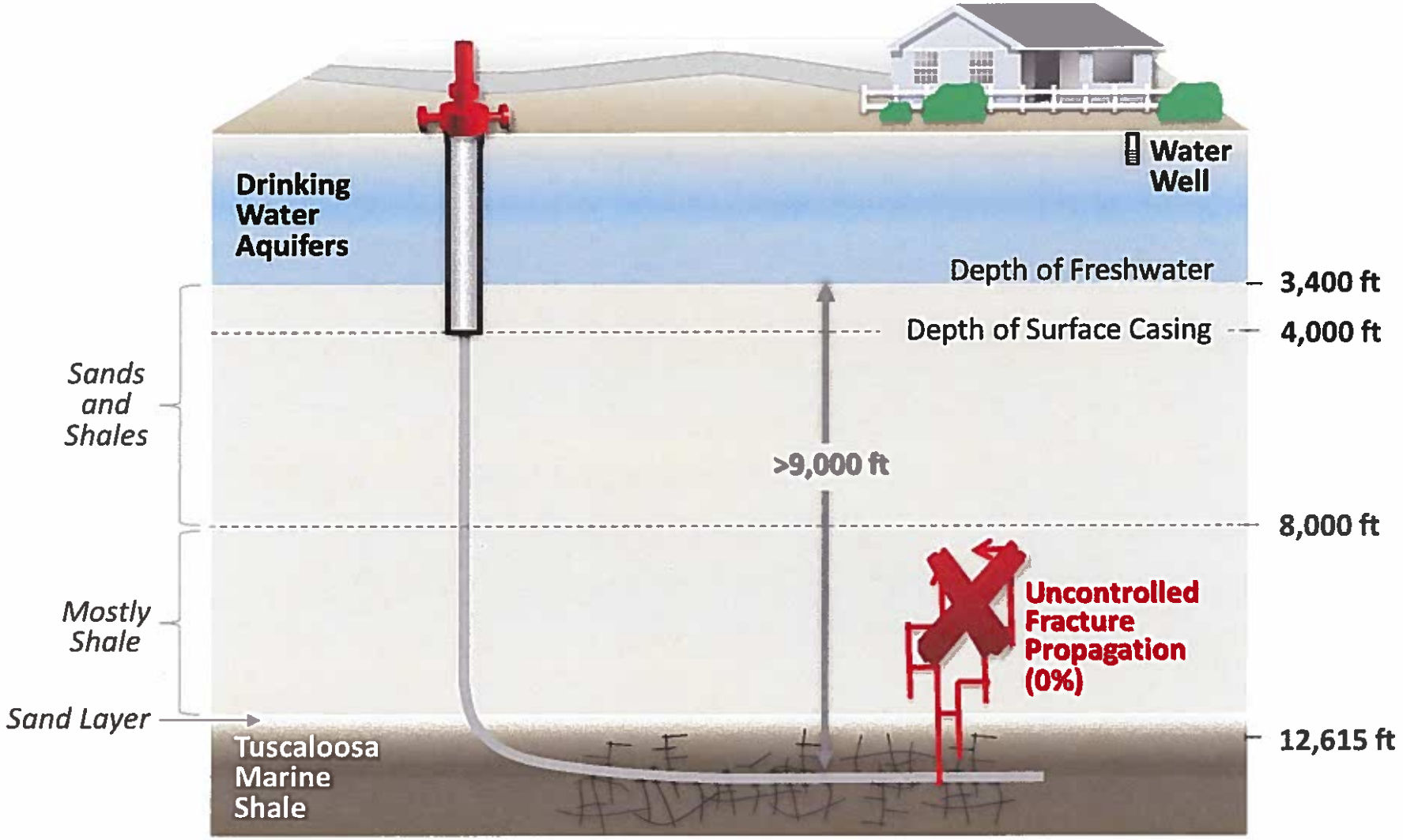
HELIS EXHIBITS (from Hearing)

Depths of Water Wells Within a 2-mile Radius



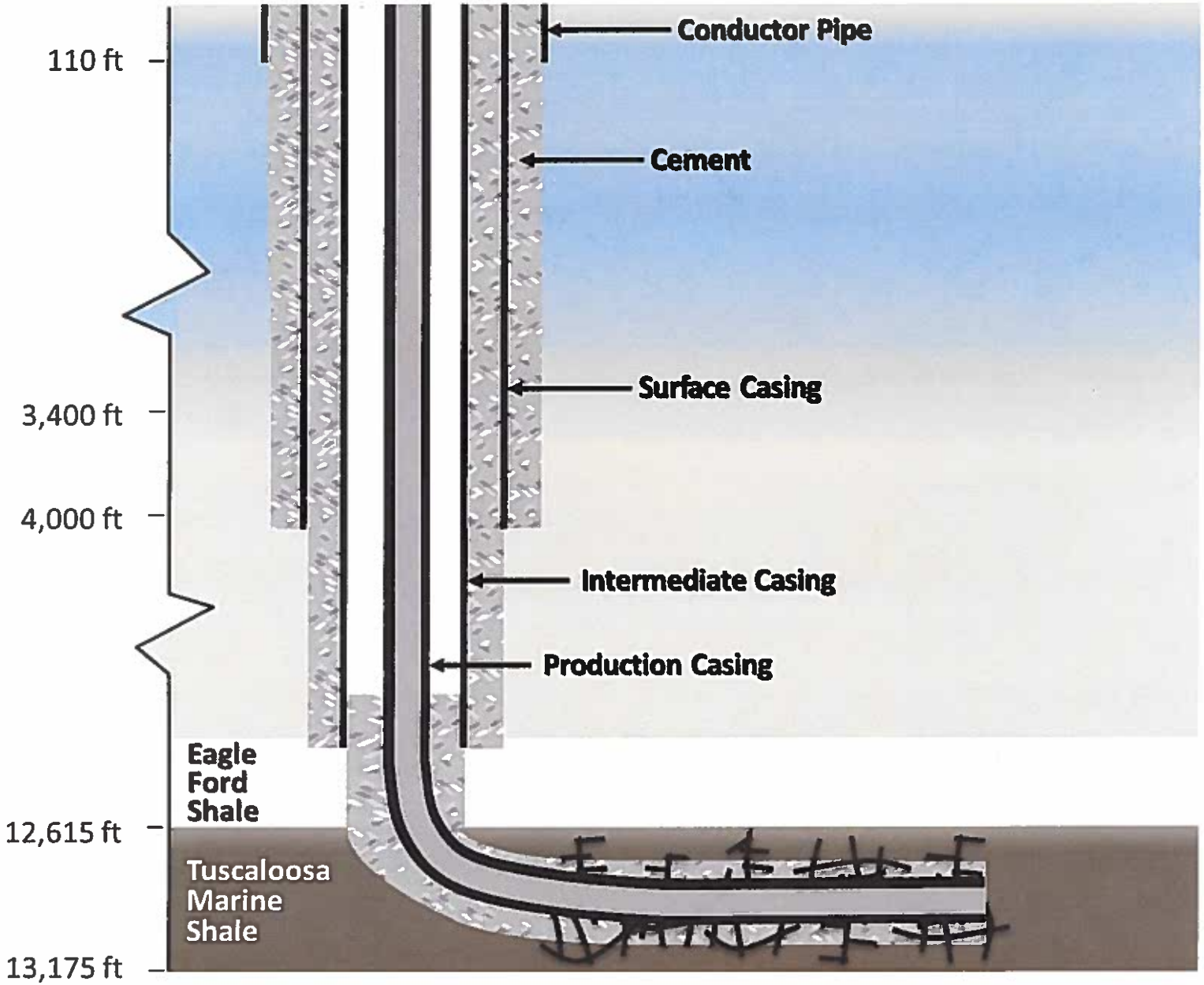
HELIS EXHIBITS (from Hearing)

Concerns Regarding Soil/Groundwater Impacts: Uncontrolled Fracture Propagation



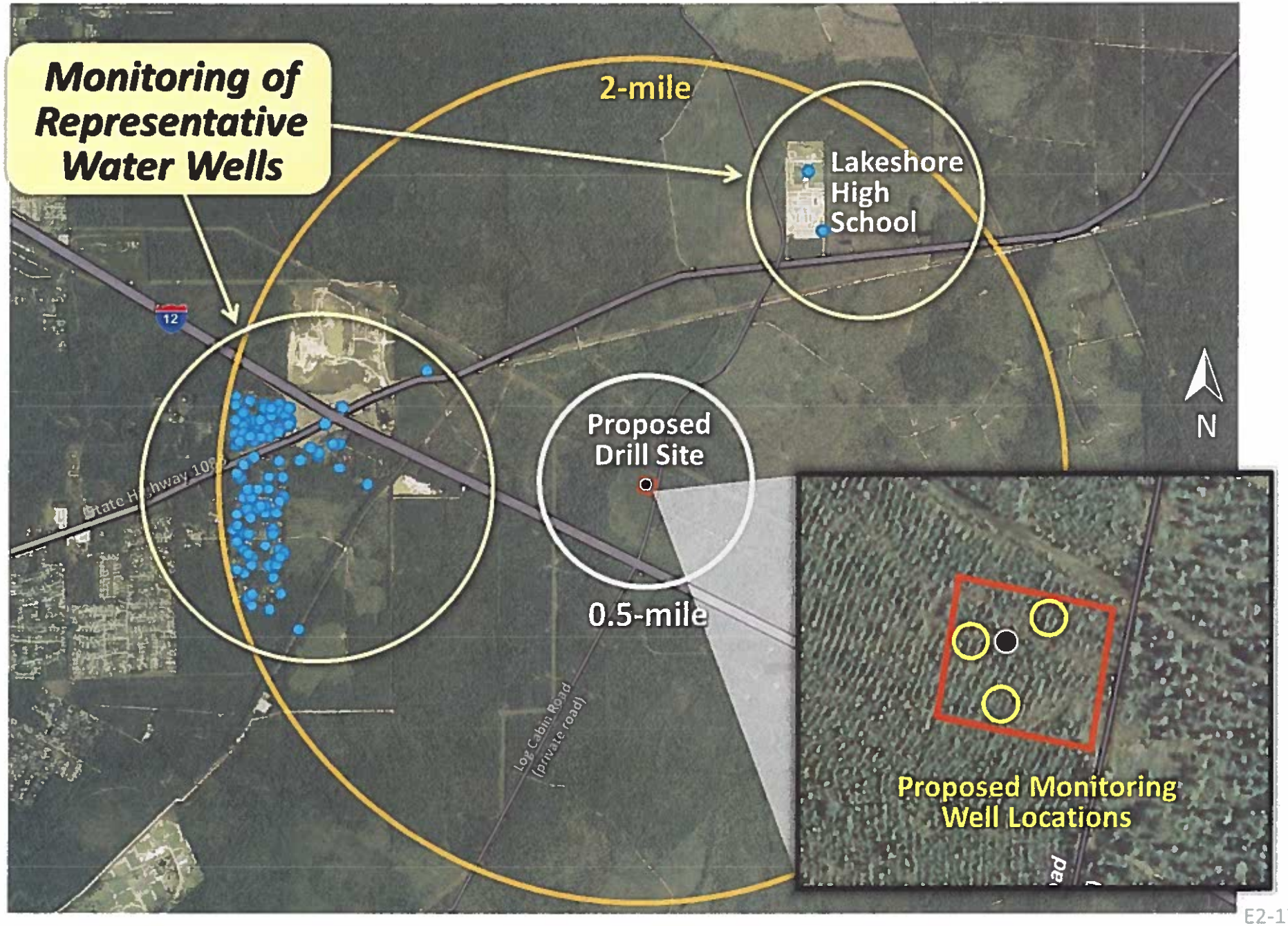
HELIS EXHIBITS (from Hearing)

How Will Helis Construct This Well to Protect Groundwater?



HELIS EXHIBITS (from Hearing)

Groundwater Monitoring Plan

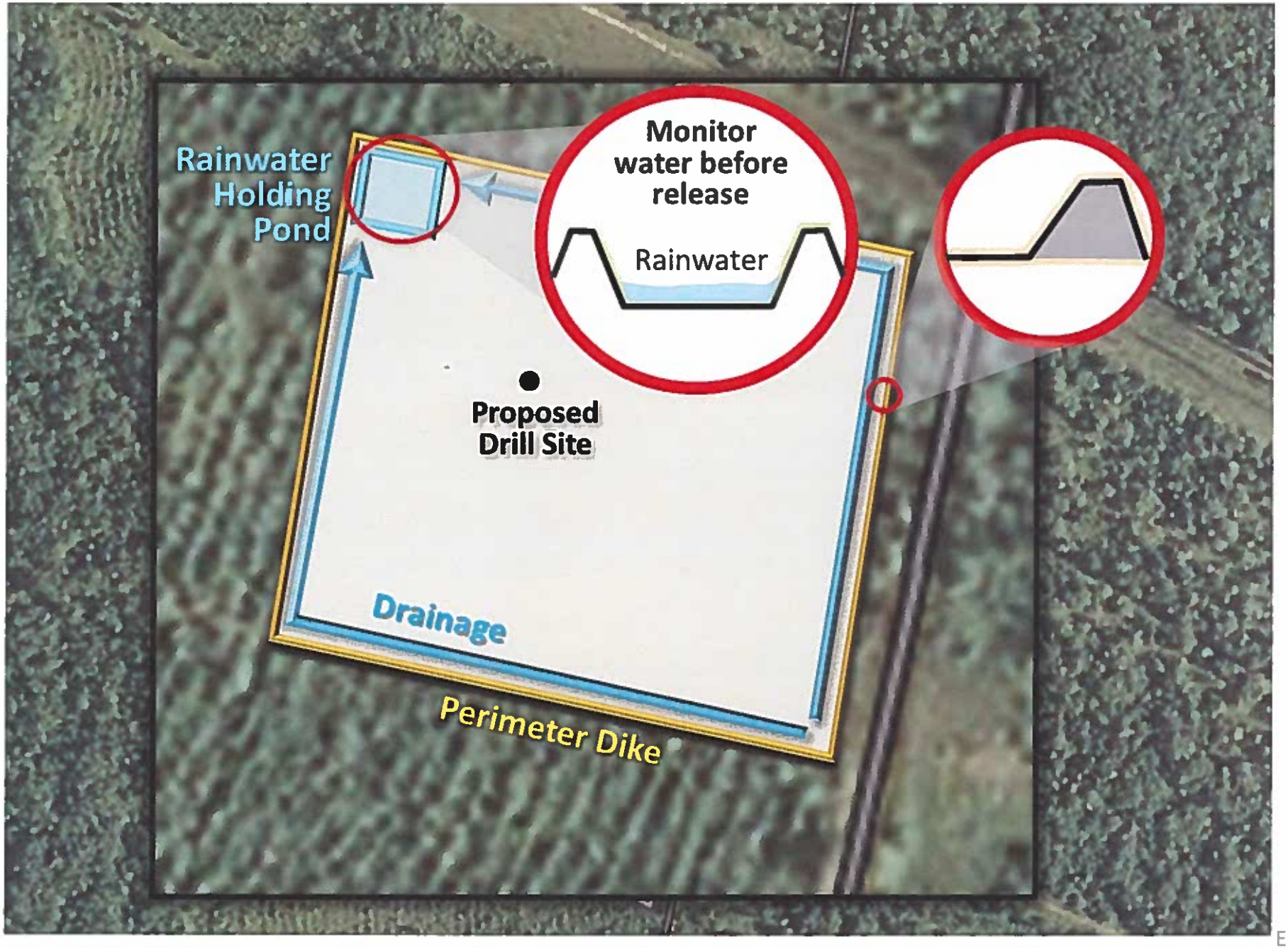


HELIS EXHIBITS (from Hearing)

Stormwater Management

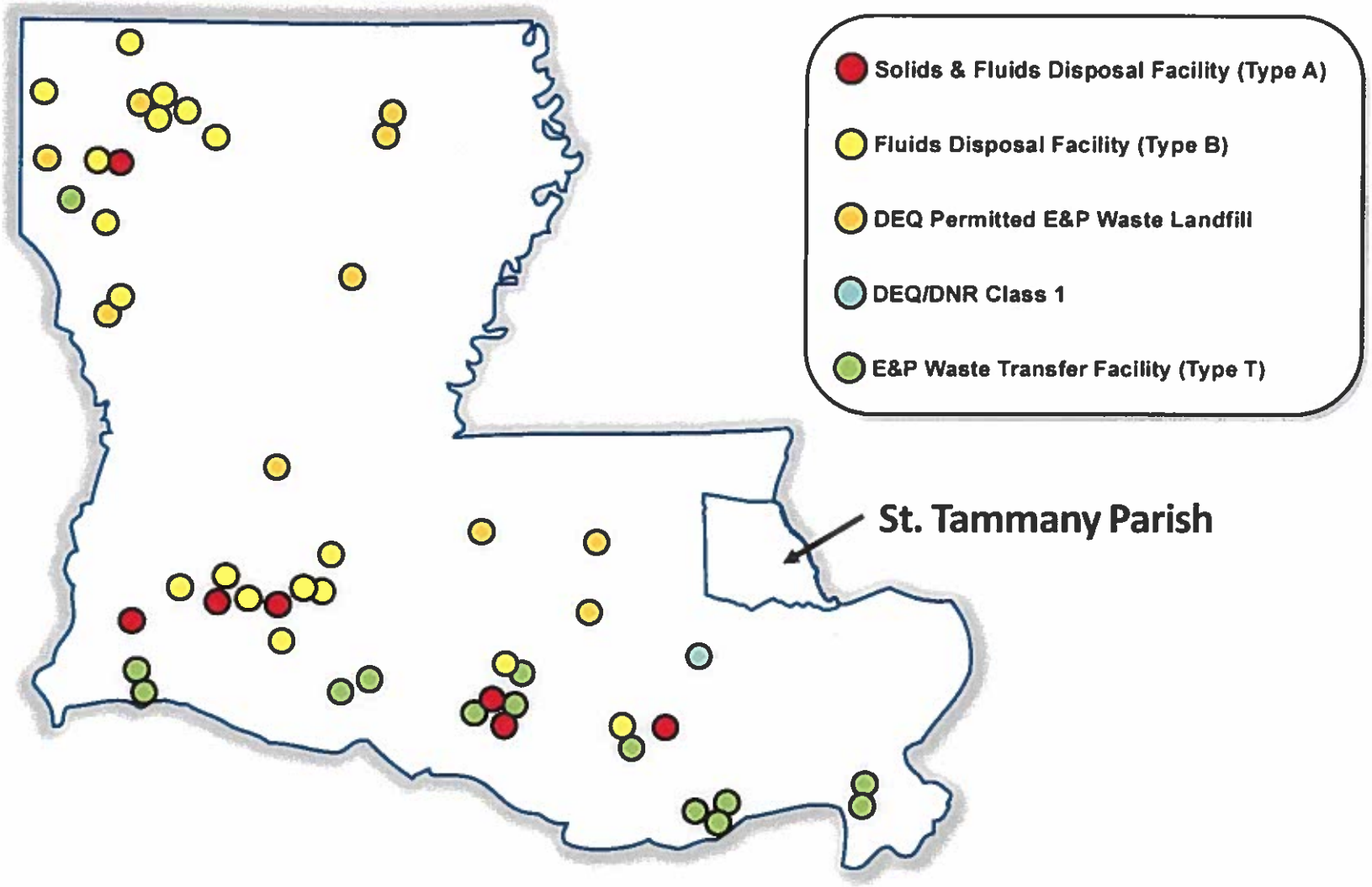
HELIS EXHIBITS (from Hearing)

Stormwater Management



HELIS EXHIBITS (from Hearing)

Disposal Sites in Louisiana



Solids and liquids will be transported out of St. Tammany Parish

SOURCE: LDNR, Office of Conservation, Geological Division. July 2, 2014.

HELIS EXHIBITS (from Hearing)

Wetlands – Permit & Siting Considerations

- Minimize impact to wetlands and critical habitats
- Minimize construction
- Maximize distance from local population
- Outside of Coastal Zone
- Target geological formation

Reviewed by LDEQ, USACE, LWF, and USEPA.
LA Geological Survey: *no less damaging feasible alternatives*.

SOURCE: Louisiana Geological Survey, 2014. Geological Review Recommendation.

HELIS EXHIBITS (from Hearing)

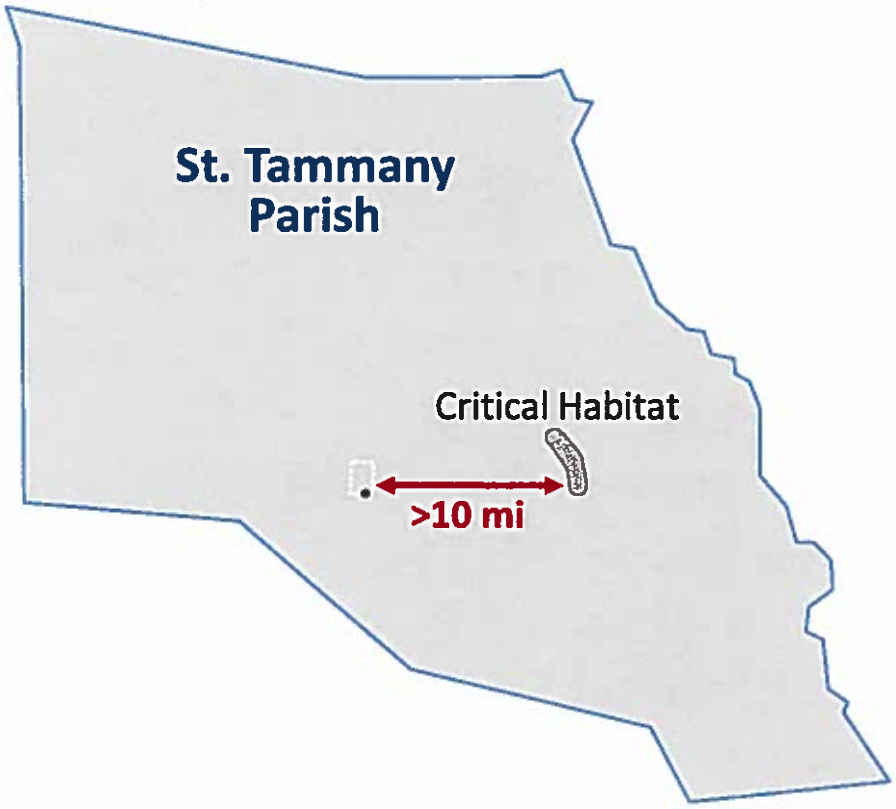
Threatened & Endangered Species
Dusky Gopher Frog

- This species has **not been in Louisiana since 1967**
- Today, **entire population living in 3 ponds** in Mississippi
- Ponds are over **60 miles** from Proposed site.

HELIS EXHIBITS (from Hearing)

SOURCE: Federal Register Vol. 77, No. 113. Tuesday, June 12, 2012, Rules and Regulations.
The Nature Conservancy, 2014, Dusky Gopher Frog Profile.

Threatened & Endangered Species
Dusky Gopher Frog



- **Critical habitat designated in St. Tammany Parish is over 10 miles from proposed site.**

SOURCE: Federal Register Vol. 77, No. 113. Tuesday, June 12, 2012, Rules and Regulations.
The Nature Conservancy, 2014, Dusky Gopher Frog Profile.

Additional Issues/Proposed Plans

Issues	Considered in Helis' Plans?
• Considerations for site selection	✓
• Groundwater protection	✓
• Water use	✓
• Spill prevention/stormwater management	✓
• Ecology and wetlands	✓
• Air Monitoring	✓
• Emergency response	✓
• Miscellaneous: noise, traffic, etc.	✓

HELIS EXHIBITS (from Hearing)