

**RAILROAD COMMISSION OF TEXAS
OIL & GAS DIVISION**

PERMIT TO DRILL, DEEPEN, PLUG BACK, OR RE-ENTER ON A REGULAR OR ADMINISTRATIVE EXCEPTION LOCATION

| | | | | |
|--|--|--|-----------|-----------|
| PERMIT NUMBER 830904 | DATE PERMIT ISSUED OR AMENDED (AMENDED) Oct 18, 2017 | DISTRICT * 08 | | |
| API NUMBER 42-003-47645 | FORM W-1 RECEIVED Oct 12, 2017 | COUNTY ANDREWS | | |
| TYPE OF OPERATION NEW DRILL | WELLBORE PROFILE(S) Vertical | ACRES 330.75 | | |
| OPERATOR LIME ROCK RESOURCES IV-A, L.P. 1111 BAGBY STREET SUITE 4600 HOUSTON, TX 77002-0000 | | NOTICE This permit and any allowable assigned may be revoked if payment for fee(s) submitted to the Commission is not honored. District Office Telephone No: (432) 684-5581 | | |
| LEASE NAME UL 10 HARMON | | WELL NUMBER 3W | | |
| LOCATION 14.2 miles SW direction from ANDREWS | | TOTAL DEPTH 15000 | | |
| Section, Block and/or Survey SECTION ← 34 BLOCK ← 10 ABSTRACT ← U318 SURVEY ← UL | | | | |
| DISTANCE TO SURVEY LINES 330 ft. N 800 ft. E | | DISTANCE TO NEAREST LEASE LINE 330 ft. | | |
| DISTANCE TO LEASE LINES 330 ft. N 800 ft. E | | DISTANCE TO NEAREST WELL ON LEASE See FIELD(s) Below | | |
| FIELD(s) and LIMITATIONS: <p align="center">* SEE FIELD DISTRICT FOR REPORTING PURPOSES *</p> | | | | |
| FIELD NAME LEASE NAME | ACRES NEAREST LEASE | DEPTH NEAREST LEASE | | |
| | WELL # NEAREST WE | DIST | | |
| EMMA (ELLENBURGER) | 330.75 | 12,500 | 3W | 08 |
| UL 10 HARMON | 330 | 0 | | |
| RESTRICTIONS: Do not use this well for injection/disposal/hydrocarbon storage purposes without approval by the Environmental Services section of the Railroad Commission, Austin, Texas office. This is a hydrogen sulfide field. Hydrogen Sulfide Fields with perforations must be isolated and tested per State Wide Rule 36 and a Form H-9 filed with the district office. Fields with SWR 10 authority to downhole commingle must be isolated and tested individually prior to commingling production. | | | | |
| SHAFTER LAKE, N. (SAN ANDRES) | 330.75 | 4,500 | 3W | 08 |
| UL 10 HARMON | 330 | 0 | | |
| RESTRICTIONS: Do not use this well for injection/disposal/hydrocarbon storage purposes without approval by the Environmental Services section of the Railroad Commission, Austin, Texas office. This is a hydrogen sulfide field. Hydrogen Sulfide Fields with perforations must be isolated and tested per State Wide Rule 36 and a Form H-9 filed with the district office. Fields with SWR 10 authority to downhole commingle must be isolated and tested individually prior to commingling production. | | | | |
| FUHRMAN-MASCHO | 330.75 | 4,350 | 3W | 08 |
| UL 10 HARMON | 330 | 0 | | |

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| <p align="center">THE FOLLOWING RESTRICTIONS APPLY TO ALL FIELDS</p> <p>This well shall be completed and produced in compliance with applicable special field or statewide spacing and density rules. If this well is to be used for brine mining, underground storage of liquid hydrocarbons in salt formations, or underground storage of gas in salt formations, a permit for that specific purpose must be obtained from Environmental Services prior to construction, including drilling, of the well in accordance with Statewide Rules 81, 95, and 97.</p> <p>This well must comply to the new SWR 3.13 requirements concerning the isolation of any potential flow zones and zones with corrosive formation fluids. See approved permit for those formations that have been identified for the county in which you are drilling the well in.</p> | | |

**RAILROAD COMMISSION OF TEXAS
OIL & GAS DIVISION
SWR #13 Formation Data**

ANDREWS (003) County

| Formation | Shallow Top | Deep Top | Remarks | Geological Order | Effective Date |
|---------------------|-------------|----------|---------------------------------------|------------------|----------------|
| YATES | 2,500 | 3,200 | | 1 | 12/17/2013 |
| SEVEN RIVERS | 3,000 | 3,000 | | 2 | 12/17/2013 |
| QUEEN | 3,600 | 4,800 | | 3 | 12/17/2013 |
| GRAYBURG | 3,100 | 5,000 | | 4 | 12/17/2013 |
| SAN ANDRES | 3,700 | 5,300 | CO2 flood, high flows, H2S, corrosive | 5 | 12/17/2013 |
| HOLT | 5,000 | 5,500 | | 6 | 12/17/2013 |
| GLORIETA | 5,100 | 6,000 | | 7 | 12/17/2013 |
| TUBB | 6,100 | 6,300 | | 8 | 12/17/2013 |
| CLEARFORK | 5,600 | 7,600 | | 9 | 12/17/2013 |
| PERMIAN DETRITAL | 7,800 | 7,900 | | 10 | 12/17/2013 |
| LEON | 7,900 | 7,900 | | 11 | 12/17/2013 |
| WICHITA ALBANY | 6,500 | 8,100 | | 12 | 12/17/2013 |
| SPRABERRY | 7,300 | 8,600 | | 13 | 12/17/2013 |
| DEAN | 9,200 | 9,500 | | 14 | 12/17/2013 |
| WOLFCAMP | 7,500 | 9,900 | | 15 | 12/17/2013 |
| CANYON | 8,600 | 10,200 | | 16 | 12/17/2013 |
| PENNSYLVANIAN | 8,700 | 10,200 | | 17 | 12/17/2013 |
| MCKEE | 8,300 | 10,600 | | 18 | 12/17/2013 |
| STRAWN | 8,800 | 11,000 | | 19 | 12/17/2013 |
| FUSSELMAN | 8,400 | 11,900 | | 20 | 12/17/2013 |
| DEVONIAN | 7,600 | 12,500 | | 21 | 12/17/2013 |
| SILURIAN | 8,000 | 12,500 | | 22 | 12/17/2013 |
| ELLENBURGER | 7,900 | 13,900 | | 23 | 12/17/2013 |

The above list may not be all inclusive, and may also include formations that do not intersect all wellbores. Formation "TOP" information listed reflects an estimated range based on geologic variances across the county. To clarify, the "Deep Top" is not the bottom of the formation; it is the deepest depth at which the "TOP" of the formation has been or might be encountered. This is a dynamic list subject to updates and revisions. It is the operator's responsibility to make sure that at the time of spudding the well the most current list is being referenced. Refer to the RRC website at the following address for the most recent information.
<http://www.rrc.texas.gov/oil-gas/compliance-enforcement/rule-13-geologic-formation-info>

GROUNDWATER PROTECTION DETERMINATION

Form GW-2



Groundwater Advisory Unit

Date Issued: 14 September 2017 **GAU Number:** 180077

| | | | |
|----------------------|---|------------------------------|--------------|
| Attention: | LIME ROCK RESOURCES IV-A, 1111 BAGBY STREET SUITE HOUSTON, TX 77002 | API Number: | |
| Operator No.: | 500794 | County: | ANDREWS |
| | | Lease Name: | UL 10 Harmon |
| | | Lease Number: | |
| | | Well Number: | 3W |
| | | Total Vertical Depth: | 6000 |
| | | Latitude: | 32.135992 |
| | | Longitude: | -102.661723 |
| | | Datum: | NAD27 |

Purpose: New Drill
Location: Survey-UL; Block-10; Section-34

To protect usable-quality groundwater at this location, the Groundwater Advisory Unit of the Railroad Commission of Texas recommends:

The interval from the land surface to a depth of 250 feet, and the zone from 1000 to 1550 feet must be protected.

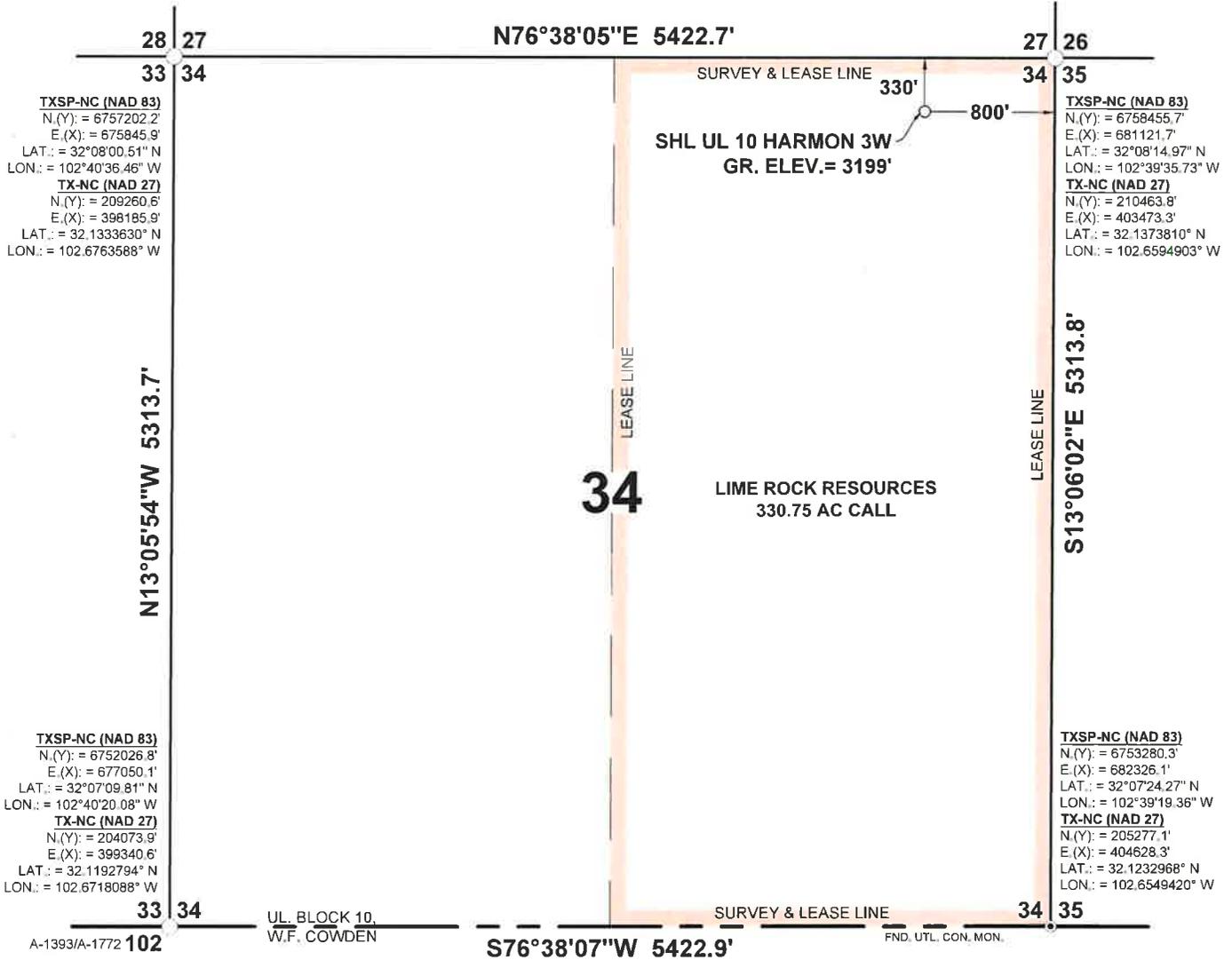
Note: Unless stated otherwise, this recommendation is intended to apply only to the subject well and not for area-wide use. This recommendation is for normal drilling, production, and plugging operations only. It does not apply to saltwater disposal operation into a nonproductive zone (RRC Form W-14).

This determination is based on information provided when the application was submitted on 09/13/2017. If the location information has changed, you must contact the Groundwater Advisory Unit, and submit a new application if necessary. If you have questions, please contact us at 512-463-2741 or gau@rrc.texas.gov.

Groundwater Advisory Unit, Oil and Gas Division

Form GW-2 P.O. Box 12967 Austin, Texas 78771-2967 512-463-2741 Internet address: www.rrc.texas.gov
Rev. 02/2014

PERMIT PLAT
SECTION 34, BLOCK 10, UNIVERSITY LAND SURVEY,
ANDREWS COUNTY, TEXAS



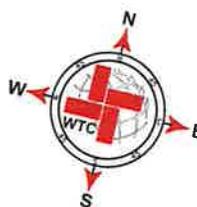
| SURFACE HOLE LOCATION | COORDINATES |
|--|---|
| NAD 83, TX-NC, N(Y) = 6757949.4', E(X) = 680418.2' - | LAT. = 32°08'09.69\" N, LON. = 102°39'43.67\" W |
| NAD 27, TX-NC, N(Y) = 209964.2', E(X) = 402765.0' - | LAT. = 32.1359138\" N, LON. = 102.6616965\" W |

DRIVING DIRECTIONS:

BEGINNING AT THE INTERSECTION OF U.S. HWY. 385 AND SW 8000 RD. IN ANDREWS COUNTY, TEXAS; HEAD SOUTH/SOUTHWEST ON SW 8000 RD. ±8.7 MILES TO A BEND IN THE ROAD. CONTINUE AROUND BEND, HEADING NORTH/NORTHWEST ON SW 4001 RD. FOR ±1.8 MILES TO SW 7000 RD. TURN LEFT INTO SWD 7000 RD. AND HEAD SOUTH/SOUTHWEST ±2.7 MILES TO A LEASE ROAD ON RIGHT. TURN RIGHT ONTO LEASE ROAD AND HEAD NORTH/NORTHWEST ±0.4 MILES TO A TEE IN THE ROAD. TURN RIGHT AT TEE AND HEAD NORTH/NORTHEAST ±0.1 MILES TO A TEE ON THE ROAD. TURN RIGHT AT TEE AND HEAD EAST ±0.1 MILES TO A FORK IN THE ROAD. TURN LEFT AT FORK AND HEAD NORTH/NORTHWEST ±0.3 MILES. THE FLAGGED LOCATION IS ±658 FEET NORTH/NORTHEAST FROM LEASE ROAD.

SURVEYOR'S NOTES:

- ALL DOWNHOLE, POINT OF PENETRATION AND BOTTOM HOLE INFORMATION AND THEIR LOCATIONS WERE PROVIDED BY LIME ROCK RESOURCES, AND ARE NOT GUARANTEED BY THIS SURVEYOR.
- SEE DOCUMENTS FILED IN THIS OFFICE WHICH DESCRIBE IN DETAIL THE RECONSTRUCTION OF THESE SECTION AND/OR BLOCKS, USING FOUND MONUMENTATION, GLO AND COURTHOUSE DOCUMENTATION.
- NO SURFACE OWNERSHIP WAS PROVIDED OR REQUESTED BY LIME ROCK RESOURCES AND NONE WAS RESEARCHED OR PROVIDED BY WTC, INC.
- BASIS OF BEARING IS GEODETIC, WGS84 (TRUE NORTH). COORDINATES, AND DISTANCES ARE A LAMBERT CONICAL PROJECTION OF THE TEXAS COORDINATE SYSTEM, STATE PLANE GRID, NAD 83, TEXAS NORTH CENTRAL (4202), WITH A CONVERGENCE ANGLE OF -02°16'18.66\" AND COMBINED SCALE FACTOR OF 0.999845571, BASED ON AN OPUS SOLUTION ON CONTROL POINT CRUD AT N=6762813.132' - E=679561.581'
- THIS LOCATION IS APPROXIMATELY S31°W 14.2 MILES FROM ANDREWS, TEXAS.



LEGEND

- DENOTES PROPOSED/ PERMITTED SHL WELL LOCATION
- DENOTES EXISTING WELL
- DENOTES POINT OF PENETRATION
- DENOTES BOTTOM HOLE/ TERMINUS LOCATION
- DENOTES FIRST/ LAST TAKE
- DENOTES FOUND SECTION CORNER
- DENOTES CALCULATED CORNER
- DENOTES LEASE AREA



I, THE UNDERSIGNED, DO HEREBY CERTIFY THAT THE SURVEY INFORMATION FOUND ON THIS PERMIT PLAT WAS DERIVED FROM FIELD NOTES OR ELECTRONIC DATA OF AN ACTUAL ON-THE-GROUND SURVEY MADE BY ME OR UNDER MY SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. NO WARRANTY IS MADE OR INTENDED FOR THE LOCATION OF ANY OR ALL EASEMENTS THAT MAY EXIST WITHIN THE BOUNDS OF THIS SURVEY. THE INFORMATION PRESENTED HEREON IS FOR TEXAS RAILROAD COMMISSION PERMITTING ONLY, AND DOES NOT CONSTITUTE OR REPRESENT A COMPLETE BOUNDARY SURVEY AS DEFINED BY THE T.B.P.L.S., "PROFESSIONAL LAND SURVEYING PRACTICES ACT." IF THERE ARE ANY ALTERATIONS MADE, (HAND DRAWN OR HANDWRITTEN ADDITIONS) THIS SURVEYOR IS NO LONGER RESPONSIBLE FOR THE VALIDITY OF THIS PLAT.

Gregory W. Shoultz 10/12/2017
DATE
GREGORY W. SHOULTS RPLS #5356 DRAFT: M.Y.
SURVEY DATE: 09/08/2017 SHEET: 1 OF 1
JOB NO.: WTC52095



LIME ROCK RESOURCES

UL 10 HARMON 3W
SHL 330' FNL & 800' FEL
SECTION 34, BLOCK 10, U.T.L. SURVEY,
ANDREWS COUNTY, TEXAS



WTC, INC.
405 S.W. 1st STREET
ANDREWS, TEXAS 79714
(432) 523-2181
TEXAS REGISTERED ENGINEERING FIRM F-2745
TEXAS REGISTERED SURVEYOR FIRM #100792-00