

**District I**  
1625 N. French Dr., Hobbs, NM 88240  
Phone:(575) 393-6161 Fax:(575) 393-0720  
**District II**  
811 S. First St., Artesia, NM 88210  
Phone:(575) 748-1283 Fax:(575) 748-9720  
**District III**  
1000 Rio Brazos Rd., Aztec, NM 87410  
Phone:(505) 334-6178 Fax:(505) 334-6170  
**District IV**  
1220 S. St Francis Dr., Santa Fe, NM 87505  
Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

Form C-101  
August 1, 2011  
Permit 356411

**APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE**

|                                                                                                |                                            |                               |
|------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------|
| 1. Operator Name and Address<br>LONGFELLOW ENERGY, LP<br>8115 Preston Road<br>Dallas, TX 75225 |                                            | 2. OGRID Number<br>372210     |
|                                                                                                |                                            | 3. API Number<br>30-015-54605 |
| 4. Property Code<br>335193                                                                     | 5. Property Name<br>Marley State Com 31 CD | 6. Well No.<br>003H           |

| 7. Surface Location |               |                 |              |         |                   |               |                   |               |                |
|---------------------|---------------|-----------------|--------------|---------|-------------------|---------------|-------------------|---------------|----------------|
| UL - Lot<br>I       | Section<br>36 | Township<br>17S | Range<br>27E | Lot Idn | Feet From<br>2360 | N/S Line<br>S | Feet From<br>1208 | E/W Line<br>E | County<br>Eddy |

| 8. Proposed Bottom Hole Location |               |                 |              |              |                   |               |                 |               |                |
|----------------------------------|---------------|-----------------|--------------|--------------|-------------------|---------------|-----------------|---------------|----------------|
| UL - Lot<br>I                    | Section<br>31 | Township<br>17S | Range<br>28E | Lot Idn<br>I | Feet From<br>1330 | N/S Line<br>S | Feet From<br>20 | E/W Line<br>E | County<br>Eddy |

| 9. Pool Information                |       |
|------------------------------------|-------|
| RED LAKE; GLORIETA-YESO, NORTHEAST | 96836 |

| Additional Well Information |                            |                                        |                         |                                    |
|-----------------------------|----------------------------|----------------------------------------|-------------------------|------------------------------------|
| 11. Work Type<br>New Well   | 12. Well Type<br>OIL       | 13. Cable/Rotary                       | 14. Lease Type<br>State | 15. Ground Level Elevation<br>3651 |
| 16. Multiple<br>N           | 17. Proposed Depth<br>9251 | 18. Formation<br>Yeso                  | 19. Contractor          | 20. Spud Date<br>2/18/2024         |
| Depth to Ground water       |                            | Distance from nearest fresh water well |                         | Distance to nearest surface water  |

☒ We will be using a closed-loop system in lieu of lined pits

| 21. Proposed Casing and Cement Program |           |             |                  |               |                 |               |
|----------------------------------------|-----------|-------------|------------------|---------------|-----------------|---------------|
| Type                                   | Hole Size | Casing Size | Casing Weight/ft | Setting Depth | Sacks of Cement | Estimated TOC |
| Surf                                   | 12.25     | 9.625       | 36               | 1300          | 650             | 0             |
| Prod                                   | 8.75      | 7           | 32               | 4250          | 750             | 1050          |
| Prod                                   | 8.75      | 5.5         | 20               | 9251          | 750             | 1050          |

| Casing/Cement Program: Additional Comments |
|--------------------------------------------|
|                                            |

| 22. Proposed Blowout Prevention Program |                  |               |              |
|-----------------------------------------|------------------|---------------|--------------|
| Type                                    | Working Pressure | Test Pressure | Manufacturer |
| Double Ram                              | 3000             | 3000          | Shaffer      |

|                                                                                                                                                                                                                                                                                                                      |                     |                                  |                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------------------|----------------------------|
| 23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.<br>I further certify I have complied with 19.15.14.9 (A) NMAC <input checked="" type="checkbox"/> and/or 19.15.14.9 (B) NMAC <input checked="" type="checkbox"/> if applicable.<br><br>Signature: |                     | <b>OIL CONSERVATION DIVISION</b> |                            |
| Printed Name: Electronically filed by David Cain                                                                                                                                                                                                                                                                     |                     | Approved By: Ward Rikala         |                            |
| Title: Engineering Technologist                                                                                                                                                                                                                                                                                      |                     | Title:                           |                            |
| Email Address: david.cain@longfellowenergy.com                                                                                                                                                                                                                                                                       |                     | Approved Date: 1/12/2024         | Expiration Date: 1/12/2026 |
| Date: 12/23/2023                                                                                                                                                                                                                                                                                                     | Phone: 214-265-4715 | Conditions of Approval Attached  |                            |

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State of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office  
☐ AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION PLAT

|                                                 |                                                             |                                                                     |
|-------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------|
| <sup>1</sup> API Number<br><b>30-015- 54605</b> | <sup>2</sup> Pool Code<br><b>96836</b>                      | <sup>3</sup> Pool Name<br><b>RED LAKE; GLORIETA-YESO, NORTHEAST</b> |
| <sup>4</sup> Property Code<br><b>335193</b>     | <sup>5</sup> Property Name<br><b>MARLEY STATE COM 31 CD</b> |                                                                     |
| <sup>7</sup> OGRID No.<br><b>372210</b>         | <sup>8</sup> Operator Name<br><b>LONGFELLOW ENERGY, LP</b>  |                                                                     |
|                                                 | <sup>6</sup> Well Number<br><b>003H</b>                     | <sup>9</sup> Elevation<br><b>3651.6</b>                             |

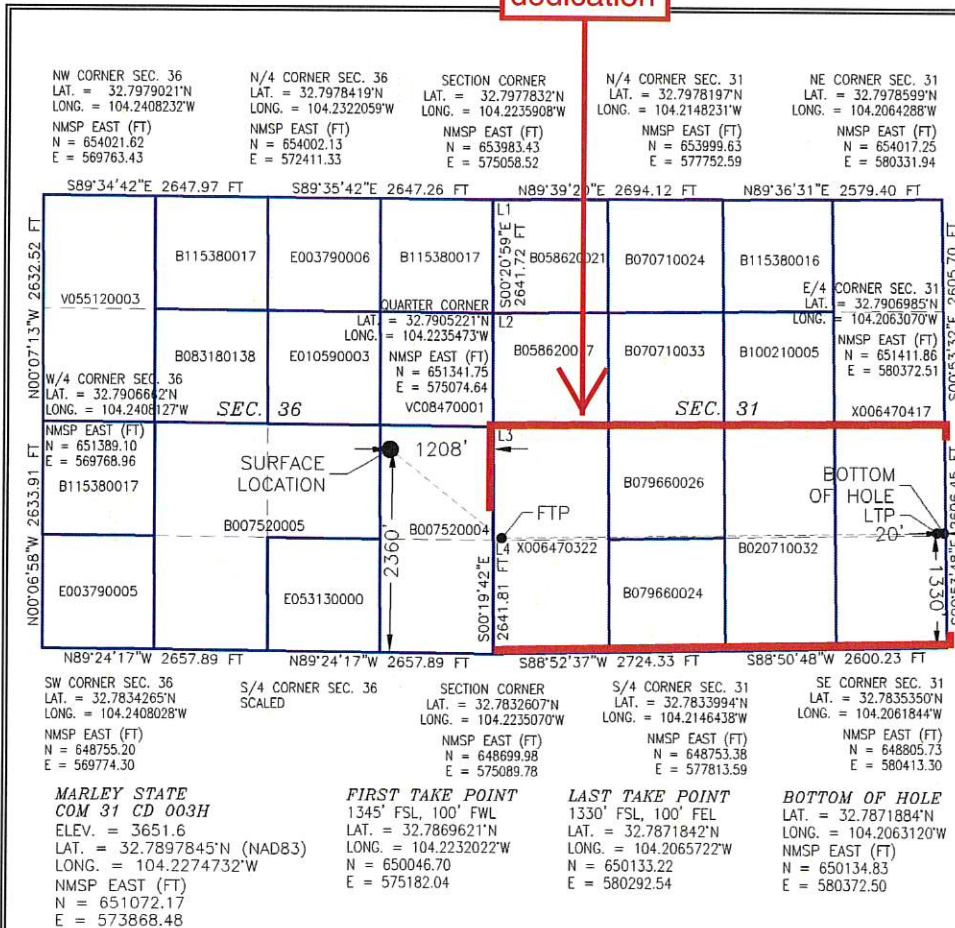
| <sup>10</sup> Surface Location |           |             |             |         |               |                  |               |                |             |
|--------------------------------|-----------|-------------|-------------|---------|---------------|------------------|---------------|----------------|-------------|
| UL or lot no.                  | Section   | Township    | Range       | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County      |
| <b>I</b>                       | <b>36</b> | <b>17 S</b> | <b>27 E</b> |         | <b>2360</b>   | <b>SOUTH</b>     | <b>1208</b>   | <b>EAST</b>    | <b>EDDY</b> |

| <sup>11</sup> Bottom Hole Location If Different From Surface |           |             |             |         |               |                  |               |                |             |
|--------------------------------------------------------------|-----------|-------------|-------------|---------|---------------|------------------|---------------|----------------|-------------|
| UL or lot no.                                                | Section   | Township    | Range       | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County      |
| <b>I</b>                                                     | <b>31</b> | <b>17 S</b> | <b>28 E</b> |         | <b>1330</b>   | <b>SOUTH</b>     | <b>20</b>     | <b>EAST</b>    | <b>EDDY</b> |

|                                                |                               |                                              |                         |
|------------------------------------------------|-------------------------------|----------------------------------------------|-------------------------|
| <sup>12</sup> Dedicated Acres<br><b>327.43</b> | <sup>13</sup> Joint or Infill | <sup>14</sup> Consolidation Code<br><b>C</b> | <sup>15</sup> Order No. |
|------------------------------------------------|-------------------------------|----------------------------------------------|-------------------------|

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

dedication



## 17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or leased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: *Brian Wood* Date: 12-22-23

Printed Name: BRIAN WOOD

E-mail Address: brian@permitswest.com

505 466-8120

## 18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

NOVEMBER 27, 2023

Date of Survey

Signature and Seal of Professional Surveyor: *William F. Jaramillo*  
Certificate Number: 12797  
NO. 9502B

Intent ☒ YES As Drilled ☐

|                                         |                                          |                     |
|-----------------------------------------|------------------------------------------|---------------------|
| API #                                   |                                          |                     |
| Operator Name:<br>LONGFELLOW ENERGY, LP | Property Name:<br>MARLEY STATE COM 31 CD | Well Number<br>003H |

## Kick Off Point (KOP)

|                        |               |                 |              |     |                          |                   |              |                  |                |
|------------------------|---------------|-----------------|--------------|-----|--------------------------|-------------------|--------------|------------------|----------------|
| UL<br>I                | Section<br>36 | Township<br>17S | Range<br>27E | Lot | Feet<br>2360             | From N/S<br>SOUTH | Feet<br>1208 | From E/W<br>EAST | County<br>EDDY |
| Latitude<br>32.7897845 |               |                 |              |     | Longitude<br>104.2274732 |                   |              | NAD<br>83        |                |

## First Take Point (FTP)

|                        |               |                 |              |          |                          |                   |             |                  |                |
|------------------------|---------------|-----------------|--------------|----------|--------------------------|-------------------|-------------|------------------|----------------|
| UL<br>I                | Section<br>31 | Township<br>17S | Range<br>28E | Lot<br>3 | Feet<br>1345             | From N/S<br>SOUTH | Feet<br>100 | From E/W<br>WEST | County<br>EDDY |
| Latitude<br>32.7869621 |               |                 |              |          | Longitude<br>104.2232022 |                   |             | NAD<br>83        |                |

## Last Take Point (LTP)

|                        |               |                 |              |     |                          |                   |             |                  |                |
|------------------------|---------------|-----------------|--------------|-----|--------------------------|-------------------|-------------|------------------|----------------|
| UL<br>I                | Section<br>31 | Township<br>17S | Range<br>28E | Lot | Feet<br>1330             | From N/S<br>SOUTH | Feet<br>100 | From E/W<br>EAST | County<br>EDDY |
| Latitude<br>32.7871842 |               |                 |              |     | Longitude<br>104.2065722 |                   |             | NAD<br>83        |                |

Is this well the defining well for the Horizontal Spacing Unit? ☒ YESIs this well an infill well? ☐ NO

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

|                |                |             |
|----------------|----------------|-------------|
| API #          |                |             |
| Operator Name: | Property Name: | Well Number |

KZ 06/29/2018

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**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

Form APD Conditions  
Permit 356411

PERMIT CONDITIONS OF APPROVAL

|                                                                                                       |                                       |
|-------------------------------------------------------------------------------------------------------|---------------------------------------|
| Operator Name and Address:<br>LONGFELLOW ENERGY, LP [372210]<br>8115 Preston Road<br>Dallas, TX 75225 | API Number:<br>30-015-54605           |
|                                                                                                       | Well:<br>Marley State Com 31 CD #003H |

|                 |                                                                                                                                                                                                                                                                      |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OCD<br>Reviewer | Condition                                                                                                                                                                                                                                                            |
| ward.rikala     | Notify OCD 24 hours prior to casing & cement                                                                                                                                                                                                                         |
| ward.rikala     | Will require a File As Drilled C-102 and a Directional Survey with the C-104                                                                                                                                                                                         |
| ward.rikala     | Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string |
| ward.rikala     | Cement is required to circulate on both surface and intermediate1 strings of casing                                                                                                                                                                                  |
| ward.rikala     | If cement does not circulate on any string, a CBL is required for that string of casing                                                                                                                                                                              |
| ward.rikala     | Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system                  |
| ward.rikala     | The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud                                                                                                                                                                   |



Company: Longfellow Energy  
Project: Eddy Co., NM (Nad-83)  
Site: MARLEY STATE COM 31 CD  
Well: 003H  
Wellbore: Wellbore #1  
Rig: TBD  
Design: PLAN #2 / 10:25, October 27 2023



WELL DETAILS: 003H

|                                    |       |           |           |           |             |
|------------------------------------|-------|-----------|-----------|-----------|-------------|
| EST KB = 26.6' @ 3681.60usft (TBD) |       |           |           |           |             |
| 3655.00                            |       |           |           |           |             |
| +N/-S                              | +E/-W | Northing  | Easting   | Latitude  | Longitude   |
| 0.00                               | 0.00  | 651072.36 | 573868.55 | 32.789785 | -104.227473 |

DESIGN TARGET DETAILS

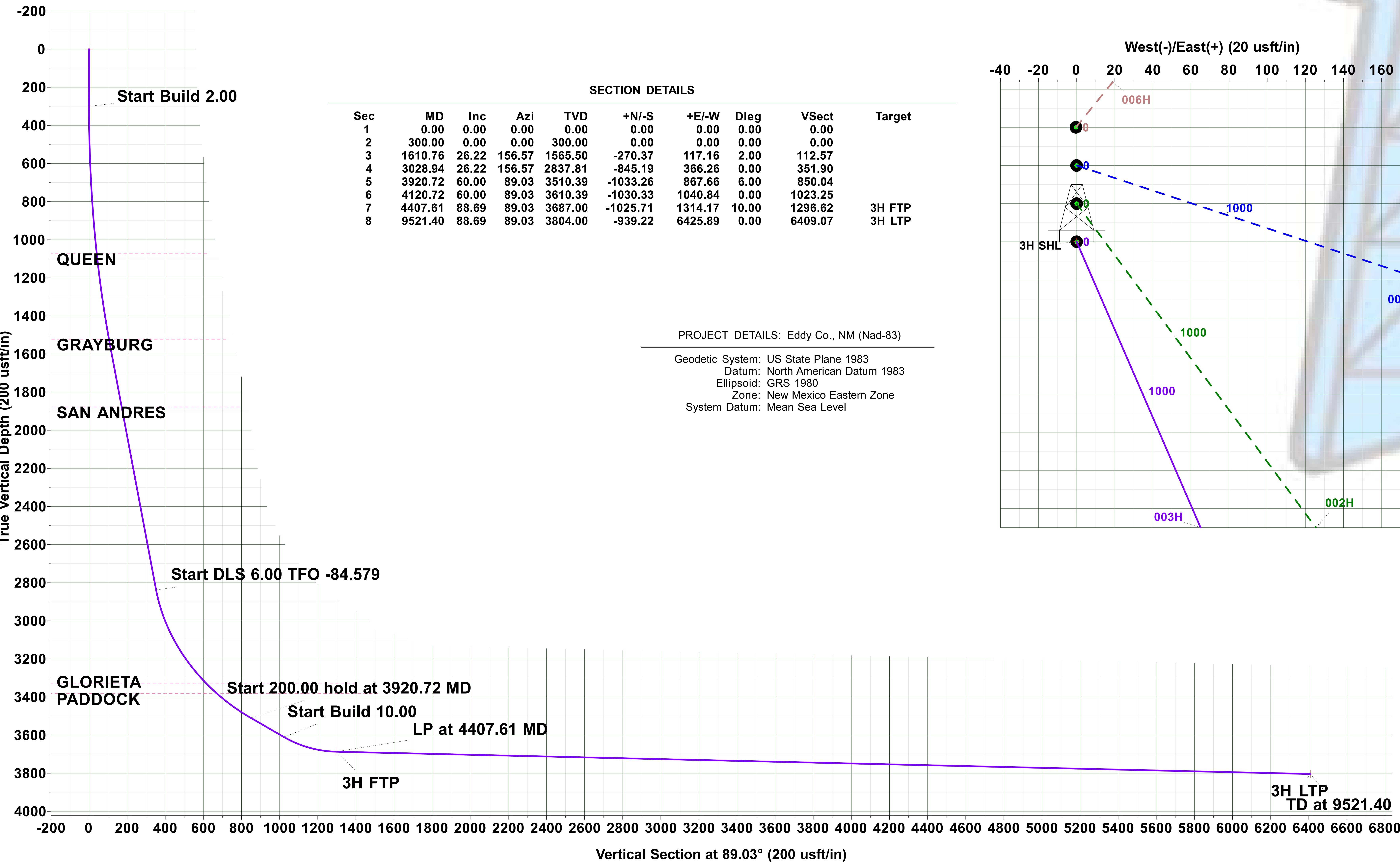
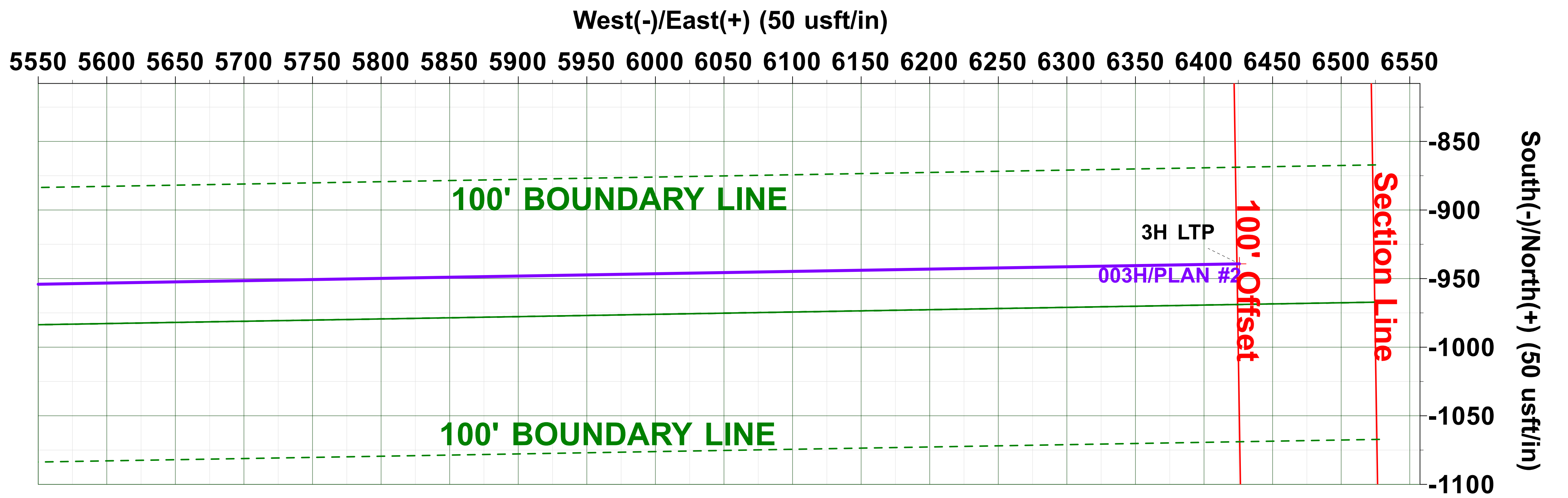
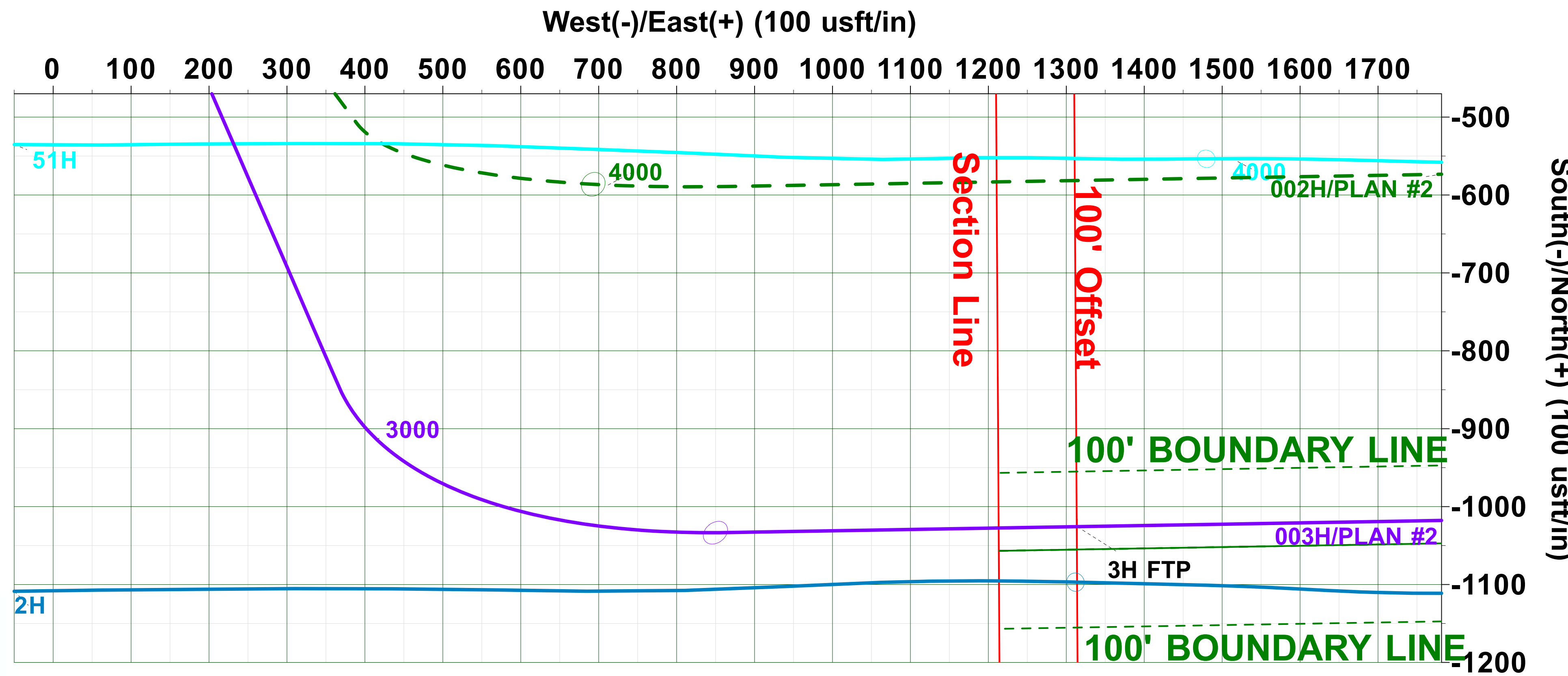
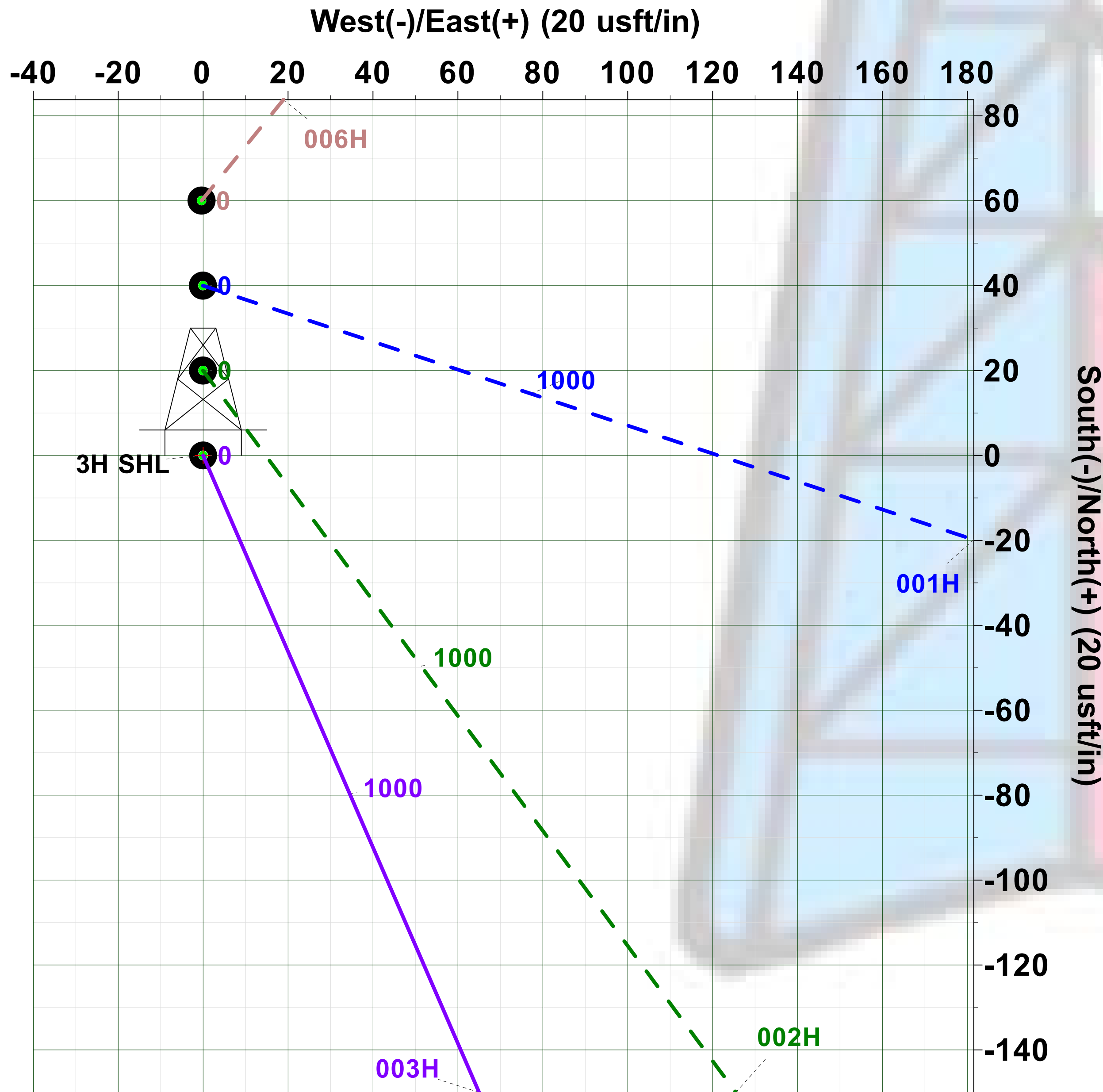
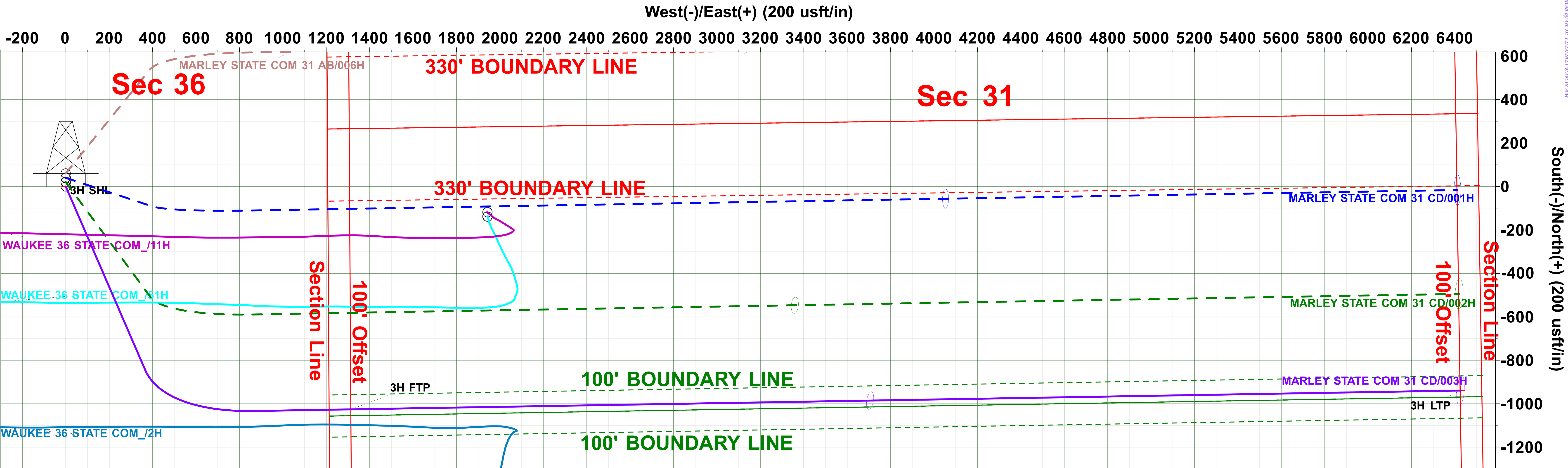
|        |         |          |         |           |           |           |             |
|--------|---------|----------|---------|-----------|-----------|-----------|-------------|
| Name   | TVD     | +N/-S    | +E/-W   | Northing  | Easting   | Latitude  | Longitude   |
| 3H SHL | 0.00    | 0.00     | 0.00    | 651072.36 | 573868.55 | 32.789785 | -104.227473 |
| 3H FTP | 3687.00 | -1025.71 | 1314.17 | 650046.65 | 575182.72 | 32.786962 | -104.223200 |
| 3H LTP | 3804.00 | -939.22  | 6425.89 | 650133.14 | 580294.44 | 32.787184 | -104.206566 |

SECTION DETAILS

|     |         |       |        |         |          |         |       |         |        |
|-----|---------|-------|--------|---------|----------|---------|-------|---------|--------|
| Sec | MD      | Inc   | Azi    | TVD     | +N/-S    | +E/-W   | Dleg  | VSect   | Target |
| 1   | 0.00    | 0.00  | 0.00   | 0.00    | 0.00     | 0.00    | 0.00  | 0.00    |        |
| 2   | 300.00  | 0.00  | 0.00   | 300.00  | 0.00     | 0.00    | 0.00  | 0.00    |        |
| 3   | 1610.76 | 26.22 | 156.57 | 1565.50 | -270.37  | 117.16  | 2.00  | 112.57  |        |
| 4   | 3028.94 | 26.22 | 156.57 | 2837.81 | -845.19  | 366.26  | 0.00  | 351.90  |        |
| 5   | 3920.72 | 60.00 | 89.03  | 3510.39 | -1033.26 | 867.66  | 6.00  | 850.04  |        |
| 6   | 4120.72 | 60.00 | 89.03  | 3610.39 | -1030.33 | 1040.84 | 0.00  | 1023.25 |        |
| 7   | 4407.61 | 88.69 | 89.03  | 3687.00 | -1025.71 | 1314.17 | 10.00 | 1296.62 | 3H FTP |
| 8   | 9521.40 | 88.69 | 89.03  | 3804.00 | -939.22  | 6425.89 | 0.00  | 6409.07 | 3H LTP |

PROJECT DETAILS: Eddy Co., NM (Nad-83)

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: New Mexico Eastern Zone  
System Datum: Mean Sea Level



Disclaimer:  
All Plan Details, boundary  
lines and offset well  
location/ survey data is  
provided by customer and  
subject to customer  
approval.



## Planning Report



|                  |                        |                                     |                                    |
|------------------|------------------------|-------------------------------------|------------------------------------|
| <b>Database:</b> | WBDS_SQL_3             | <b>Local Co-ordinate Reference:</b> | Well 003H                          |
| <b>Company:</b>  | Longfellow Energy      | <b>TVD Reference:</b>               | EST KB = 26.6' @ 3681.60usft (TBD) |
| <b>Project:</b>  | Eddy Co., NM (Nad-83)  | <b>MD Reference:</b>                | EST KB = 26.6' @ 3681.60usft (TBD) |
| <b>Site:</b>     | MARLEY STATE COM 31 CD | <b>North Reference:</b>             | Grid                               |
| <b>Well:</b>     | 003H                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                  |
| <b>Wellbore:</b> | Wellbore #1            |                                     |                                    |
| <b>Design:</b>   | PLAN #2                |                                     |                                    |

|                    |                           |                      |                |
|--------------------|---------------------------|----------------------|----------------|
| <b>Project</b>     | Eddy Co., NM (Nad-83)     |                      |                |
| <b>Map System:</b> | US State Plane 1983       | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | North American Datum 1983 |                      |                |
| <b>Map Zone:</b>   | New Mexico Eastern Zone   |                      |                |

| Site                  |           | MARLEY STATE COM 31 CD |                 |            |             |
|-----------------------|-----------|------------------------|-----------------|------------|-------------|
| Site Position:        |           | Northing:              | 651,132.39 usft | Latitude:  | 32.789950   |
| From:                 | Lat/Long  | Easting:               | 573,868.18 usft | Longitude: | -104.227474 |
| Position Uncertainty: | 0.00 usft | Slot Radius:           | 13.200 in       |            |             |

|                      |         |           |                     |                 |               |               |
|----------------------|---------|-----------|---------------------|-----------------|---------------|---------------|
| Well                 | 003H    |           |                     |                 |               |               |
| Well Position        | +N/-S   | 0.00 usft | Northing:           | 651,072.36 usft | Latitude:     | 32.789785     |
|                      | +E/-W   | 0.00 usft | Easting:            | 573,868.55 usft | Longitude:    | -104.227473   |
| Position Uncertainty |         | 0.00 usft | Wellhead Elevation: | usft            | Ground Level: | 3,655.00 usft |
| Grid Convergence:    | 0.057 ° |           |                     |                 |               |               |

|                   |                            |                 |                 |                  |
|-------------------|----------------------------|-----------------|-----------------|------------------|
| Design            | PLAN #2                    |                 |                 |                  |
| Audit Notes:      |                            |                 |                 |                  |
| Version:          | Phase:                     | PLAN            | Tie On Depth:   | 0.00             |
| Vertical Section: | Depth From (TVD)<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Direction<br>(°) |
|                   | 0.00                       | 0.00            | 0.00            | 89.03            |

|                                 |                 |                          |                       |                       |  |
|---------------------------------|-----------------|--------------------------|-----------------------|-----------------------|--|
| <b>Plan Survey Tool Program</b> | <b>Date</b>     | 10/27/23                 |                       |                       |  |
| <b>Depth From</b>               | <b>Depth To</b> | <b>Survey (Wellbore)</b> | <b>Tool Name</b>      | <b>Remarks</b>        |  |
| (usft)                          | (usft)          |                          |                       |                       |  |
| 1                               | 0.00            | 9,521.40                 | PLAN #2 (Wellbore #1) | MWD+IFR1+SAG+FDIR     |  |
|                                 |                 |                          |                       | OWSG MWD + IFR1 + Sag |  |

|                      |                    |                |                 |              |              |               |              |             |              |               |
|----------------------|--------------------|----------------|-----------------|--------------|--------------|---------------|--------------|-------------|--------------|---------------|
| <b>Plan Sections</b> |                    |                |                 |              |              |               |              |             |              |               |
| <b>Measured</b>      | <b>Inclination</b> | <b>Azimuth</b> | <b>Vertical</b> | <b>+N/-S</b> | <b>+E/-W</b> | <b>Dogleg</b> | <b>Build</b> | <b>Turn</b> | <b>TFO</b>   | <b>Target</b> |
| <b>Depth</b>         | (°)                | (°)            | <b>Depth</b>    | (usft)       | (usft)       | <b>Rate</b>   | <b>Rate</b>  | <b>Rate</b> | (°)          |               |
| (usft)               |                    |                | (usft)          |              |              | (°/100ft)     | (°/100ft)    | (°/100ft)   |              |               |
| 0.00                 | 0.00               | 0.00           | 0.00            | 0.00         | 0.00         | 0.00          | 0.00         | 0.00        | 0.000        |               |
| 300.00               | 0.00               | 0.01           | 300.00          | 0.00         | 0.00         | 0.00          | 0.00         | 0.00        | 0.005        |               |
| 1,610.76             | 26.22              | 156.57         | 1,565.50        | -270.37      | 117.16       | 2.00          | 2.00         | 0.00        | 156.571      |               |
| 3,028.94             | 26.22              | 156.57         | 2,837.81        | -845.19      | 366.26       | 0.00          | 0.00         | 0.00        | 0.000        |               |
| 3,920.72             | 60.00              | 89.03          | 3,510.39        | -1,033.26    | 867.66       | 6.00          | 3.79         | -7.57       | -84.579      |               |
| 4,120.72             | 60.00              | 89.03          | 3,610.39        | -1,030.33    | 1,040.84     | 0.00          | 0.00         | 0.00        | 0.000        |               |
| 4,407.61             | 88.69              | 89.03          | 3,687.00        | -1,025.71    | 1,314.17     | 10.00         | 10.00        | 0.00        | 0.000 3H FTP |               |
| 9,521.40             | 88.69              | 89.03          | 3,804.00        | -939.22      | 6,425.89     | 0.00          | 0.00         | 0.00        | 0.000 3H LTP |               |



## Planning Report



|                  |                        |                                     |                                    |
|------------------|------------------------|-------------------------------------|------------------------------------|
| <b>Database:</b> | WBDS_SQL_3             | <b>Local Co-ordinate Reference:</b> | Well 003H                          |
| <b>Company:</b>  | Longfellow Energy      | <b>TVD Reference:</b>               | EST KB = 26.6' @ 3681.60usft (TBD) |
| <b>Project:</b>  | Eddy Co., NM (Nad-83)  | <b>MD Reference:</b>                | EST KB = 26.6' @ 3681.60usft (TBD) |
| <b>Site:</b>     | MARLEY STATE COM 31 CD | <b>North Reference:</b>             | Grid                               |
| <b>Well:</b>     | 003H                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                  |
| <b>Wellbore:</b> | Wellbore #1            |                                     |                                    |
| <b>Design:</b>   | PLAN #2                |                                     |                                    |

| Planned Survey        |                 |             |                       |              |              |                         |                       |                      |                     |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-----------------------|----------------------|---------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
| 0.00                  | 0.00            | 0.00        | 0.00                  | 0.00         | 0.00         | 0.00                    | 0.00                  | 0.00                 | 0.00                |
| <b>3H SHL</b>         |                 |             |                       |              |              |                         |                       |                      |                     |
| 100.00                | 0.00            | 0.00        | 100.00                | 0.00         | 0.00         | 0.00                    | 0.00                  | 0.00                 | 0.00                |
| 200.00                | 0.00            | 0.00        | 200.00                | 0.00         | 0.00         | 0.00                    | 0.00                  | 0.00                 | 0.00                |
| 300.00                | 0.00            | 0.01        | 300.00                | 0.00         | 0.00         | 0.00                    | 0.00                  | 0.00                 | 0.00                |
| 400.00                | 2.00            | 156.57      | 399.98                | -1.60        | 0.69         | 0.67                    | 2.00                  | 2.00                 | 0.00                |
| 500.00                | 4.00            | 156.57      | 499.84                | -6.40        | 2.77         | 2.67                    | 2.00                  | 2.00                 | 0.00                |
| 600.00                | 6.00            | 156.57      | 599.45                | -14.40       | 6.24         | 6.00                    | 2.00                  | 2.00                 | 0.00                |
| 700.00                | 8.00            | 156.57      | 698.70                | -25.58       | 11.09        | 10.65                   | 2.00                  | 2.00                 | 0.00                |
| 800.00                | 10.00           | 156.57      | 797.47                | -39.93       | 17.31        | 16.63                   | 2.00                  | 2.00                 | 0.00                |
| 900.00                | 12.00           | 156.57      | 895.62                | -57.44       | 24.89        | 23.92                   | 2.00                  | 2.00                 | 0.00                |
| 1,000.00              | 14.00           | 156.57      | 993.06                | -78.08       | 33.84        | 32.51                   | 2.00                  | 2.00                 | 0.00                |
| 1,083.74              | 15.67           | 156.57      | 1,074.00              | -97.76       | 42.36        | 40.70                   | 2.00                  | 2.00                 | 0.00                |
| <b>QUEEN</b>          |                 |             |                       |              |              |                         |                       |                      |                     |
| 1,100.00              | 16.00           | 156.57      | 1,089.64              | -101.83      | 44.13        | 42.40                   | 2.00                  | 2.00                 | 0.00                |
| 1,200.00              | 18.00           | 156.57      | 1,185.27              | -128.65      | 55.75        | 53.57                   | 2.00                  | 2.00                 | 0.00                |
| 1,300.00              | 20.00           | 156.57      | 1,279.82              | -158.52      | 68.70        | 66.00                   | 2.00                  | 2.00                 | 0.00                |
| 1,400.00              | 22.00           | 156.57      | 1,373.17              | -191.40      | 82.94        | 79.69                   | 2.00                  | 2.00                 | 0.00                |
| 1,500.00              | 24.00           | 156.57      | 1,465.21              | -227.25      | 98.48        | 94.62                   | 2.00                  | 2.00                 | 0.00                |
| 1,562.47              | 25.25           | 156.57      | 1,522.00              | -251.14      | 108.83       | 104.56                  | 2.00                  | 2.00                 | 0.00                |
| <b>GRAYBURG</b>       |                 |             |                       |              |              |                         |                       |                      |                     |
| 1,600.00              | 26.00           | 156.57      | 1,555.84              | -266.03      | 115.28       | 110.76                  | 2.00                  | 2.00                 | 0.00                |
| 1,610.76              | 26.22           | 156.57      | 1,565.50              | -270.37      | 117.16       | 112.57                  | 2.00                  | 2.00                 | 0.00                |
| 1,700.00              | 26.22           | 156.57      | 1,645.56              | -306.55      | 132.84       | 127.63                  | 0.00                  | 0.00                 | 0.00                |
| 1,800.00              | 26.22           | 156.57      | 1,735.28              | -347.08      | 150.40       | 144.51                  | 0.00                  | 0.00                 | 0.00                |
| 1,900.00              | 26.22           | 156.57      | 1,824.99              | -387.61      | 167.97       | 161.38                  | 0.00                  | 0.00                 | 0.00                |
| 1,959.09              | 26.22           | 156.57      | 1,878.00              | -411.56      | 178.35       | 171.35                  | 0.00                  | 0.00                 | 0.00                |
| <b>SAN ANDRES</b>     |                 |             |                       |              |              |                         |                       |                      |                     |
| 2,000.00              | 26.22           | 156.57      | 1,914.71              | -428.14      | 185.53       | 178.26                  | 0.00                  | 0.00                 | 0.00                |
| 2,100.00              | 26.22           | 156.57      | 2,004.42              | -468.67      | 203.10       | 195.13                  | 0.00                  | 0.00                 | 0.00                |
| 2,200.00              | 26.22           | 156.57      | 2,094.13              | -509.21      | 220.66       | 212.01                  | 0.00                  | 0.00                 | 0.00                |
| 2,300.00              | 26.22           | 156.57      | 2,183.85              | -549.74      | 238.23       | 228.89                  | 0.00                  | 0.00                 | 0.00                |
| 2,400.00              | 26.22           | 156.57      | 2,273.56              | -590.27      | 255.79       | 245.76                  | 0.00                  | 0.00                 | 0.00                |
| 2,500.00              | 26.22           | 156.57      | 2,363.28              | -630.80      | 273.36       | 262.64                  | 0.00                  | 0.00                 | 0.00                |
| 2,600.00              | 26.22           | 156.57      | 2,452.99              | -671.34      | 290.92       | 279.51                  | 0.00                  | 0.00                 | 0.00                |
| 2,700.00              | 26.22           | 156.57      | 2,542.71              | -711.87      | 308.49       | 296.39                  | 0.00                  | 0.00                 | 0.00                |
| 2,800.00              | 26.22           | 156.57      | 2,632.42              | -752.40      | 326.05       | 313.27                  | 0.00                  | 0.00                 | 0.00                |
| 2,900.00              | 26.22           | 156.57      | 2,722.13              | -792.93      | 343.61       | 330.14                  | 0.00                  | 0.00                 | 0.00                |
| 3,000.00              | 26.22           | 156.57      | 2,811.85              | -833.46      | 361.18       | 347.02                  | 0.00                  | 0.00                 | 0.00                |
| 3,028.94              | 26.22           | 156.57      | 2,837.81              | -845.19      | 366.26       | 351.90                  | 0.00                  | 0.00                 | 0.00                |
| 3,050.00              | 26.36           | 153.74      | 2,856.69              | -853.66      | 370.18       | 355.68                  | 6.00                  | 0.70                 | -13.46              |
| 3,100.00              | 26.93           | 147.17      | 2,901.39              | -873.13      | 381.23       | 366.40                  | 6.00                  | 1.14                 | -13.14              |
| 3,150.00              | 27.79           | 140.91      | 2,945.81              | -891.69      | 394.73       | 379.58                  | 6.00                  | 1.72                 | -12.51              |
| 3,200.00              | 28.91           | 135.05      | 2,989.82              | -909.30      | 410.62       | 395.17                  | 6.00                  | 2.25                 | -11.72              |
| 3,250.00              | 30.27           | 129.63      | 3,033.30              | -925.89      | 428.87       | 413.14                  | 6.00                  | 2.72                 | -10.84              |
| 3,300.00              | 31.84           | 124.66      | 3,076.14              | -941.44      | 449.43       | 433.43                  | 6.00                  | 3.13                 | -9.93               |
| 3,350.00              | 33.58           | 120.14      | 3,118.22              | -955.88      | 472.24       | 455.99                  | 6.00                  | 3.48                 | -9.05               |
| 3,400.00              | 35.47           | 116.03      | 3,159.42              | -969.19      | 497.24       | 480.76                  | 6.00                  | 3.78                 | -8.23               |
| 3,450.00              | 37.48           | 112.29      | 3,199.63              | -981.33      | 524.35       | 507.67                  | 6.00                  | 4.03                 | -7.47               |
| 3,500.00              | 39.61           | 108.89      | 3,238.73              | -992.26      | 553.52       | 536.64                  | 6.00                  | 4.25                 | -6.80               |
| 3,550.00              | 41.82           | 105.78      | 3,276.63              | -1,001.96    | 584.65       | 567.60                  | 6.00                  | 4.43                 | -6.21               |
| 3,600.00              | 44.11           | 102.94      | 3,313.22              | -1,010.39    | 617.66       | 600.46                  | 6.00                  | 4.58                 | -5.68               |
| 3,619.34              | 45.02           | 101.91      | 3,327.00              | -1,013.31    | 630.91       | 613.67                  | 6.00                  | 4.68                 | -5.36               |
| <b>GLORIETA</b>       |                 |             |                       |              |              |                         |                       |                      |                     |



## Planning Report



|                  |                        |                                     |                                    |
|------------------|------------------------|-------------------------------------|------------------------------------|
| <b>Database:</b> | WBDS_SQL_3             | <b>Local Co-ordinate Reference:</b> | Well 003H                          |
| <b>Company:</b>  | Longfellow Energy      | <b>TVD Reference:</b>               | EST KB = 26.6' @ 3681.60usft (TBD) |
| <b>Project:</b>  | Eddy Co., NM (Nad-83)  | <b>MD Reference:</b>                | EST KB = 26.6' @ 3681.60usft (TBD) |
| <b>Site:</b>     | MARLEY STATE COM 31 CD | <b>North Reference:</b>             | Grid                               |
| <b>Well:</b>     | 003H                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                  |
| <b>Wellbore:</b> | Wellbore #1            |                                     |                                    |
| <b>Design:</b>   | PLAN #2                |                                     |                                    |

| Planned Survey        |                 |             |                       |              |              |                         |                       |                      |                     |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-----------------------|----------------------|---------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
| 3,650.00              | 46.47           | 100.33      | 3,348.40              | -1,017.54    | 652.46       | 635.14                  | 6.00                  | 4.74                 | -5.14               |
| 3,699.91              | 48.88           | 97.92       | 3,382.00              | -1,023.38    | 688.88       | 671.46                  | 6.00                  | 4.82                 | -4.83               |
| <b>PADDOCK</b>        |                 |             |                       |              |              |                         |                       |                      |                     |
| 3,700.00              | 48.88           | 97.91       | 3,382.06              | -1,023.39    | 688.95       | 671.53                  | 6.00                  | 4.87                 | -4.65               |
| 3,750.00              | 51.34           | 95.67       | 3,414.13              | -1,027.91    | 727.04       | 709.54                  | 6.00                  | 4.92                 | -4.48               |
| 3,800.00              | 53.84           | 93.58       | 3,444.50              | -1,031.10    | 766.62       | 749.06                  | 6.00                  | 5.00                 | -4.18               |
| 3,850.00              | 56.37           | 91.62       | 3,473.11              | -1,032.95    | 807.58       | 789.98                  | 6.00                  | 5.06                 | -3.92               |
| 3,900.00              | 58.93           | 89.77       | 3,499.86              | -1,033.45    | 849.81       | 832.20                  | 6.00                  | 5.12                 | -3.70               |
| 3,920.72              | 60.00           | 89.03       | 3,510.39              | -1,033.26    | 867.66       | 850.04                  | 6.00                  | 5.16                 | -3.56               |
| 4,000.00              | 60.00           | 89.03       | 3,550.03              | -1,032.10    | 936.31       | 918.70                  | 0.00                  | 0.00                 | 0.00                |
| 4,100.00              | 60.00           | 89.03       | 3,600.03              | -1,030.63    | 1,022.90     | 1,005.30                | 0.00                  | 0.00                 | 0.00                |
| 4,120.72              | 60.00           | 89.03       | 3,610.39              | -1,030.33    | 1,040.84     | 1,023.25                | 0.00                  | 0.00                 | 0.00                |
| 4,150.00              | 62.93           | 89.03       | 3,624.37              | -1,029.90    | 1,066.56     | 1,048.97                | 10.00                 | 10.00                | 0.00                |
| 4,200.00              | 67.93           | 89.03       | 3,645.16              | -1,029.13    | 1,112.01     | 1,094.43                | 10.00                 | 10.00                | 0.00                |
| 4,250.00              | 72.93           | 89.03       | 3,661.90              | -1,028.33    | 1,159.10     | 1,141.52                | 10.00                 | 10.00                | 0.00                |
| 4,300.00              | 77.93           | 89.03       | 3,674.48              | -1,027.51    | 1,207.47     | 1,189.90                | 10.00                 | 10.00                | 0.00                |
| 4,350.00              | 82.93           | 89.03       | 3,682.79              | -1,026.68    | 1,256.75     | 1,239.19                | 10.00                 | 10.00                | 0.00                |
| 4,400.00              | 87.93           | 89.03       | 3,686.78              | -1,025.83    | 1,306.56     | 1,289.01                | 10.00                 | 10.00                | 0.00                |
| 4,407.61              | 88.69           | 89.03       | 3,687.00              | -1,025.71    | 1,314.17     | 1,296.62                | 10.00                 | 10.00                | 0.00                |
| <b>3H FTP</b>         |                 |             |                       |              |              |                         |                       |                      |                     |
| 4,500.00              | 88.69           | 89.03       | 3,689.11              | -1,024.14    | 1,406.52     | 1,388.98                | 0.00                  | 0.00                 | 0.00                |
| 4,600.00              | 88.69           | 89.03       | 3,691.40              | -1,022.45    | 1,506.48     | 1,488.96                | 0.00                  | 0.00                 | 0.00                |
| 4,700.00              | 88.69           | 89.03       | 3,693.69              | -1,020.76    | 1,606.44     | 1,588.93                | 0.00                  | 0.00                 | 0.00                |
| 4,800.00              | 88.69           | 89.03       | 3,695.98              | -1,019.07    | 1,706.40     | 1,688.90                | 0.00                  | 0.00                 | 0.00                |
| 4,900.00              | 88.69           | 89.03       | 3,698.27              | -1,017.38    | 1,806.36     | 1,788.88                | 0.00                  | 0.00                 | 0.00                |
| 5,000.00              | 88.69           | 89.03       | 3,700.55              | -1,015.69    | 1,906.32     | 1,888.85                | 0.00                  | 0.00                 | 0.00                |
| 5,100.00              | 88.69           | 89.03       | 3,702.84              | -1,014.00    | 2,006.28     | 1,988.83                | 0.00                  | 0.00                 | 0.00                |
| 5,200.00              | 88.69           | 89.03       | 3,705.13              | -1,012.30    | 2,106.24     | 2,088.80                | 0.00                  | 0.00                 | 0.00                |
| 5,300.00              | 88.69           | 89.03       | 3,707.42              | -1,010.61    | 2,206.20     | 2,188.77                | 0.00                  | 0.00                 | 0.00                |
| 5,400.00              | 88.69           | 89.03       | 3,709.71              | -1,008.92    | 2,306.16     | 2,288.75                | 0.00                  | 0.00                 | 0.00                |
| 5,500.00              | 88.69           | 89.03       | 3,711.99              | -1,007.23    | 2,406.12     | 2,388.72                | 0.00                  | 0.00                 | 0.00                |
| 5,600.00              | 88.69           | 89.03       | 3,714.28              | -1,005.54    | 2,506.08     | 2,488.70                | 0.00                  | 0.00                 | 0.00                |
| 5,700.00              | 88.69           | 89.03       | 3,716.57              | -1,003.85    | 2,606.04     | 2,588.67                | 0.00                  | 0.00                 | 0.00                |
| 5,800.00              | 88.69           | 89.03       | 3,718.86              | -1,002.16    | 2,706.00     | 2,688.64                | 0.00                  | 0.00                 | 0.00                |
| 5,900.00              | 88.69           | 89.03       | 3,721.14              | -1,000.47    | 2,805.96     | 2,788.62                | 0.00                  | 0.00                 | 0.00                |
| 6,000.00              | 88.69           | 89.03       | 3,723.43              | -998.77      | 2,905.92     | 2,888.59                | 0.00                  | 0.00                 | 0.00                |
| 6,100.00              | 88.69           | 89.03       | 3,725.72              | -997.08      | 3,005.87     | 2,988.56                | 0.00                  | 0.00                 | 0.00                |
| 6,200.00              | 88.69           | 89.03       | 3,728.01              | -995.39      | 3,105.83     | 3,088.54                | 0.00                  | 0.00                 | 0.00                |
| 6,300.00              | 88.69           | 89.03       | 3,730.30              | -993.70      | 3,205.79     | 3,188.51                | 0.00                  | 0.00                 | 0.00                |
| 6,400.00              | 88.69           | 89.03       | 3,732.58              | -992.01      | 3,305.75     | 3,288.49                | 0.00                  | 0.00                 | 0.00                |
| 6,500.00              | 88.69           | 89.03       | 3,734.87              | -990.32      | 3,405.71     | 3,388.46                | 0.00                  | 0.00                 | 0.00                |
| 6,600.00              | 88.69           | 89.03       | 3,737.16              | -988.63      | 3,505.67     | 3,488.43                | 0.00                  | 0.00                 | 0.00                |
| 6,700.00              | 88.69           | 89.03       | 3,739.45              | -986.94      | 3,605.63     | 3,588.41                | 0.00                  | 0.00                 | 0.00                |
| 6,800.00              | 88.69           | 89.03       | 3,741.74              | -985.24      | 3,705.59     | 3,688.38                | 0.00                  | 0.00                 | 0.00                |
| 6,900.00              | 88.69           | 89.03       | 3,744.02              | -983.55      | 3,805.55     | 3,788.36                | 0.00                  | 0.00                 | 0.00                |
| 7,000.00              | 88.69           | 89.03       | 3,746.31              | -981.86      | 3,905.51     | 3,888.33                | 0.00                  | 0.00                 | 0.00                |
| 7,100.00              | 88.69           | 89.03       | 3,748.60              | -980.17      | 4,005.47     | 3,988.30                | 0.00                  | 0.00                 | 0.00                |
| 7,200.00              | 88.69           | 89.03       | 3,750.89              | -978.48      | 4,105.43     | 4,088.28                | 0.00                  | 0.00                 | 0.00                |
| 7,300.00              | 88.69           | 89.03       | 3,753.18              | -976.79      | 4,205.39     | 4,188.25                | 0.00                  | 0.00                 | 0.00                |
| 7,400.00              | 88.69           | 89.03       | 3,755.46              | -975.10      | 4,305.35     | 4,288.22                | 0.00                  | 0.00                 | 0.00                |
| 7,500.00              | 88.69           | 89.03       | 3,757.75              | -973.40      | 4,405.31     | 4,388.20                | 0.00                  | 0.00                 | 0.00                |
| 7,600.00              | 88.69           | 89.03       | 3,760.04              | -971.71      | 4,505.27     | 4,488.17                | 0.00                  | 0.00                 | 0.00                |
| 7,700.00              | 88.69           | 89.03       | 3,762.33              | -970.02      | 4,605.23     | 4,588.15                | 0.00                  | 0.00                 | 0.00                |



## Planning Report



|                  |                        |                                     |                                    |
|------------------|------------------------|-------------------------------------|------------------------------------|
| <b>Database:</b> | WBDS_SQL_3             | <b>Local Co-ordinate Reference:</b> | Well 003H                          |
| <b>Company:</b>  | Longfellow Energy      | <b>TVD Reference:</b>               | EST KB = 26.6' @ 3681.60usft (TBD) |
| <b>Project:</b>  | Eddy Co., NM (Nad-83)  | <b>MD Reference:</b>                | EST KB = 26.6' @ 3681.60usft (TBD) |
| <b>Site:</b>     | MARLEY STATE COM 31 CD | <b>North Reference:</b>             | Grid                               |
| <b>Well:</b>     | 003H                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                  |
| <b>Wellbore:</b> | Wellbore #1            |                                     |                                    |
| <b>Design:</b>   | PLAN #2                |                                     |                                    |

| Planned Survey        |                 |             |                       |              |              |                         |                       |                      |                     |  |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-----------------------|----------------------|---------------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |  |
| 7,800.00              | 88.69           | 89.03       | 3,764.62              | -968.33      | 4,705.19     | 4,688.12                | 0.00                  | 0.00                 | 0.00                |  |
| 7,900.00              | 88.69           | 89.03       | 3,766.90              | -966.64      | 4,805.15     | 4,788.09                | 0.00                  | 0.00                 | 0.00                |  |
| 8,000.00              | 88.69           | 89.03       | 3,769.19              | -964.95      | 4,905.11     | 4,888.07                | 0.00                  | 0.00                 | 0.00                |  |
| 8,100.00              | 88.69           | 89.03       | 3,771.48              | -963.26      | 5,005.07     | 4,988.04                | 0.00                  | 0.00                 | 0.00                |  |
| 8,200.00              | 88.69           | 89.03       | 3,773.77              | -961.57      | 5,105.02     | 5,088.01                | 0.00                  | 0.00                 | 0.00                |  |
| 8,300.00              | 88.69           | 89.03       | 3,776.06              | -959.87      | 5,204.98     | 5,187.99                | 0.00                  | 0.00                 | 0.00                |  |
| 8,400.00              | 88.69           | 89.03       | 3,778.34              | -958.18      | 5,304.94     | 5,287.96                | 0.00                  | 0.00                 | 0.00                |  |
| 8,500.00              | 88.69           | 89.03       | 3,780.63              | -956.49      | 5,404.90     | 5,387.94                | 0.00                  | 0.00                 | 0.00                |  |
| 8,600.00              | 88.69           | 89.03       | 3,782.92              | -954.80      | 5,504.86     | 5,487.91                | 0.00                  | 0.00                 | 0.00                |  |
| 8,700.00              | 88.69           | 89.03       | 3,785.21              | -953.11      | 5,604.82     | 5,587.88                | 0.00                  | 0.00                 | 0.00                |  |
| 8,800.00              | 88.69           | 89.03       | 3,787.49              | -951.42      | 5,704.78     | 5,687.86                | 0.00                  | 0.00                 | 0.00                |  |
| 8,900.00              | 88.69           | 89.03       | 3,789.78              | -949.73      | 5,804.74     | 5,787.83                | 0.00                  | 0.00                 | 0.00                |  |
| 9,000.00              | 88.69           | 89.03       | 3,792.07              | -948.04      | 5,904.70     | 5,887.81                | 0.00                  | 0.00                 | 0.00                |  |
| 9,100.00              | 88.69           | 89.03       | 3,794.36              | -946.34      | 6,004.66     | 5,987.78                | 0.00                  | 0.00                 | 0.00                |  |
| 9,200.00              | 88.69           | 89.03       | 3,796.65              | -944.65      | 6,104.62     | 6,087.75                | 0.00                  | 0.00                 | 0.00                |  |
| 9,300.00              | 88.69           | 89.03       | 3,798.93              | -942.96      | 6,204.58     | 6,187.73                | 0.00                  | 0.00                 | 0.00                |  |
| 9,400.00              | 88.69           | 89.03       | 3,801.22              | -941.27      | 6,304.54     | 6,287.70                | 0.00                  | 0.00                 | 0.00                |  |
| 9,500.00              | 88.69           | 89.03       | 3,803.51              | -939.58      | 6,404.50     | 6,387.67                | 0.00                  | 0.00                 | 0.00                |  |
| 9,521.40              | 88.69           | 89.03       | 3,804.00              | -939.22      | 6,425.89     | 6,409.07                | 0.00                  | 0.00                 | 0.00                |  |
| 3H LTP                |                 |             |                       |              |              |                         |                       |                      |                     |  |

| Design Targets                                    |               |              |            |              |              |                 |                |           |             |  |
|---------------------------------------------------|---------------|--------------|------------|--------------|--------------|-----------------|----------------|-----------|-------------|--|
| Target Name                                       | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude  | Longitude   |  |
| 3H SHL<br>- hit/miss target<br>- Shape<br>- Point | 0.00          | 0.00         | 0.00       | 0.00         | 0.00         | 651,072.36      | 573,868.55     | 32.789785 | -104.227473 |  |
| 3H FTP<br>- plan hits target center<br>- Point    | 0.00          | 0.00         | 3,687.00   | -1,025.71    | 1,314.17     | 650,046.65      | 575,182.72     | 32.786962 | -104.223200 |  |
| 3H LTP<br>- plan hits target center<br>- Point    | 0.00          | 0.00         | 3,804.00   | -939.22      | 6,425.89     | 650,133.14      | 580,294.44     | 32.787184 | -104.206566 |  |

| Formations            |                       |            |           |         |                   |  |
|-----------------------|-----------------------|------------|-----------|---------|-------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Name       | Lithology | Dip (°) | Dip Direction (°) |  |
| 1,083.74              | 1,074.00              | QUEEN      |           | 0.000   |                   |  |
| 1,562.47              | 1,522.00              | GRAYBURG   |           | 0.000   |                   |  |
| 1,959.09              | 1,878.00              | SAN ANDRES |           | 0.000   |                   |  |
| 3,619.34              | 3,327.00              | GLORIETA   |           | 0.000   |                   |  |
| 3,699.91              | 3,382.00              | PADDOCK    |           | 0.000   |                   |  |

State of New Mexico  
Energy, Minerals and Natural Resources Department

Submit Electronically  
Via E-permitting

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

## NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

### Section 1 – Plan Description

Effective May 25, 2021

**I. Operator:** Longfellow Energy, LLC      **OGRID:** 372210      **Date:** 12-21-23

**II. Type:** ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: \_\_\_\_\_

**III. Well(s):** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

| Well Name                   | API     | ULSTR        | Footages            | Anticipated Oil BBL/D | Anticipated Gas MCF/D | Anticipated Produced Water BBL/D |
|-----------------------------|---------|--------------|---------------------|-----------------------|-----------------------|----------------------------------|
| Marley State Com 31 AB 006H | 30-015- | I-36-17S-27E | 2420 FSL & 1208 FEL | 500                   | 500                   | 5000                             |
| Marley State Com 31 CD 001H | 30-015- | I-36-17S-27E | 2400 FSL & 1208 FEL | 500                   | 500                   | 5000                             |
| Marley State Com 31 CD 002H | 30-015- | I-36-17S-27E | 2380 FSL & 1208 FEL | 500                   | 500                   | 5000                             |
| Marley State Com 31 CD 003H | 30-015- | I-36-17S-27E | 2360 FSL & 1210 FEL | 500                   | 500                   | 5000                             |

**IV. Central Delivery Point Name:** DCP Midstream, LP (248749) in I-36-17s-27e [See 19.15.27.9(D)(1) NMAC]

**V. Anticipated Schedule:** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

| Well Name                   | API     | Spud Date | TD Reached Date | Completion Commencement Date | Initial Flow Back Date | First Production Date |
|-----------------------------|---------|-----------|-----------------|------------------------------|------------------------|-----------------------|
| Marley State Com 31 AB 006H | 30-015- | 1-15-24   | 1-25-24         | 3-15-24                      | 4-15-24                | 4-22-24               |
| Marley State Com 31 CD 001H | 30-015- | 1-26-24   | 2-6-24          | 3-15-24                      | 4-15-24                | 4-22-24               |
| Marley State Com 31 CD 002H | 30-015- | 2-7-24    | 2-17-24         | 3-15-24                      | 4-15-24                | 4-22-24               |
| Marley State Com 31 CD 003H | 30-015- | 2-18-24   | 2-28-24         | 3-15-24                      | 4-15-24                | 4-22-24               |

**VI. Separation Equipment:** ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

**VII. Operational Practices:** ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

**VIII. Best Management Practices:** ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

**Section 2 – Enhanced Plan**  
**EFFECTIVE APRIL 1, 2022**

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☐ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

**IX. Anticipated Natural Gas Production:**

| Well | API | Anticipated Average Natural Gas Rate MCF/D | Anticipated Volume of Natural Gas for the First Year MCF |
|------|-----|--------------------------------------------|----------------------------------------------------------|
|      |     |                                            |                                                          |
|      |     |                                            |                                                          |

**X. Natural Gas Gathering System (NGGS):**

| Operator | System | ULSTR of Tie-in | Anticipated Gathering Start Date | Available Maximum Daily Capacity of System Segment Tie-in |
|----------|--------|-----------------|----------------------------------|-----------------------------------------------------------|
|          |        |                 |                                  |                                                           |
|          |        |                 |                                  |                                                           |

**XI. Map.** ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

**XII. Line Capacity.** The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

**XIII. Line Pressure.** Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

**XIV. Confidentiality:** ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

### **Section 3 - Certifications**

**Effective May 25, 2021**

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

***If Operator checks this box, Operator will select one of the following:***

**Well Shut-In.** ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

**Venting and Flaring Plan.** ☒ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

### **Section 4 - Notices**

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature:



Printed Name: Brian Wood

Title: Consultant

E-mail Address: brian@permitswest.com

Date: 12-21-23

Phone: 505 466-8120

**OIL CONSERVATION DIVISION****(Only applicable when submitted as a standalone form)**

Approved By:

Title:

Approval Date:

Conditions of Approval:

**Attachment VI. Separation Equipment:**

Longfellow Energy (LFE) production facilities include separation equipment designed to efficiently separate gas from liquid phases to optimize gas capture based on projected and estimated volumes from the completion project. LFE will utilize flowback separation equipment and production separation equipment designed and built to industry specifications after the completion to optimize gas capture and send gas to sales or flare based on analytical composition. LFE operates facilities that are typically multi-well facilities. Production separation equipment is upgraded or installed before new wells are completed. This equipment is on-site and tied into sales gas lines prior to flowback.

**Attachment VII. Operational Practices:*****19.15.27.8 Subsection A: Venting and Flaring of Natural Gas***

Longfellow Energy (LFE) understands the requirements of NMAC 19.15.27.8 which states that the venting and flaring of natural gas during drilling, completion, or production operations that constitutes waste as defined in 19.15.2 are prohibited.

***19.15.27.8 Subsection B: Venting and flaring during drilling operations***

1. LFE shall capture or combust natural gas if technically feasible using best industry practices
2. A properly-sized flare stack shall be located at a minimum of 100 feet from the nearest surface hole location unless otherwise approved by the division.
3. In an emergency or malfunction, LFE may vent natural gas to avoid a risk of an immediate and substantial adverse impact on safety, public health, or the environment. LFE will report natural gas vented or flared during an emergency or malfunction to the NMOCD.

***19.15.27.8 Subsection C: Venting and flaring during completion or recompletion operations***

1. During initial flowback, LFE shall route flowback fluids into a completion or storage tank and, if technically feasible under the applicable well conditions, flare rather than vent and commence operation of a separator as soon as it is technically feasible for a separator to function
2. During separation flowback, LFE shall capture and route natural gas from the separation equipment:
  - a. to a gas flowline or collection system, reinject into the well, or use on-site as a fuel source or other purpose that a purchased fuel or raw material would serve; or
  - b. to a flare if routing the natural gas to a gas flowline or collection system, reinjecting it into the well, or using it on-site as a fuel source or other purpose that a purchased fuel or raw material would serve would pose a risk to safe operation or personnel safety.
3. If natural gas does not meet gathering pipeline quality specifications, LFE may flare the natural gas for 60 days or until the natural gas meets the pipeline quality specifications, whichever is sooner, provided that:

**19.15.27.8 Subsection D: Venting and flaring during production operations**

LFE shall not vent or flare natural gas except:

1. during an emergency or malfunction;
2. to unload or clean-up liquid holdup in a well to atmospheric pressure, provided
  - a. LFE does not vent after the well achieves a stabilized rate and pressure;
  - b. for liquids unloading by manual purging, LFE remains present on-site until the end of unloading or posts at the well site the contact information of the personnel conducting the liquids unloading operation and ensures that personnel remains within 30 minutes' drive time of the well being unloaded until the end of unloading, takes all reasonable actions to achieve a stabilized rate and pressure at the earliest practical time and takes reasonable actions to minimize venting to the maximum extent practicable;
  - c. during downhole well maintenance, only when LFE uses a workover rig, swabbing rig, coiled tubing unit or similar specialty equipment and minimizes the venting of natural gas to the extent that it does not pose a risk to safe operations and personnel safety
3. during the following activities unless prohibited by applicable state or federal law, rule, or regulation for the emission of hydrocarbons and volatile organic compounds:
  - a. gauging or sampling a storage tank or other low-pressure production vessel;
  - b. loading out liquids from a storage tank or other low-pressure production vessel to a transport vehicle;
  - c. repair and maintenance, including blowing down and depressurizing production equipment to perform repair and maintenance;
  - d. normal operation of a gas-activated pneumatic controller or pump;
  - e. normal operation of a storage tank or other low-pressure production vessel, but not including venting from a thief hatch that is not properly closed or maintained
  - f. normal operations of valves, flanges and connectors that is not the result of inadequate equipment design or maintenance;
  - g. a packer leakage test;
  - h. a production test lasting less than 24 hours unless the division requires or approves a longer test period;
  - i. when natural gas does not meet the gathering pipeline specifications, provided LFE analyzes natural gas samples twice per week to determine whether the specifications have been achieved, routes the natural gas into a gathering pipeline as soon as the pipeline specifications are met and provides the pipeline specifications and natural gas analyses to the division upon request; or
  - j. Commissioning of pipelines, equipment, or facilities only for as long as necessary to purge introduced impurities from the pipeline or equipment.

**19.15.27.8 Subsection E: Performance Standards**

1. LFE designed completion and production separation equipment and storage tanks for maximum anticipated throughput and pressure to minimize waste.
2. LFE permanent storage tanks associated with production operations that is routed to a flare or control device are equipped with automatic gauging system that reduces the venting of natural gas.
3. LFE shall combust natural gas in a flare stack that is properly sized and designed to ensure proper combustion efficiency.
  - a. The flare stack shall be equipped with an automatic ignitor or continuous pilot.

4. The flare stack shall be securely anchored and located at least 100 feet from the well and storage tanks unless otherwise approved by the division.
5. LFE shall conduct an AVO inspection weekly to confirm that all production equipment is operating properly and there are no leaks or releases except as allowed in Subsection D of 19.15.27.8 NMAC.
  - a. During an AVO inspection the LFE shall inspect all components, including flare stacks, thief hatches, closed vent systems, pumps, compressors, pressure relief devices, valves, lines, flanges, connectors, and associated piping to identify defects, leaks, and releases by:
    - i. a comprehensive external visual inspection;
    - ii. listening for pressure and liquid leaks; and
    - iii. smelling for unusual and strong odors.
  - b. LFE shall make and keep a record of an AVO inspection for not less than five years and make such record available for inspection by the division upon request.
6. facilities shall be designed to minimize waste;
7. LFE has an obligation to minimize waste and shall resolve emergencies as quickly and safely as is feasible.

**19.15.27.8 Subsection F: Measurement or estimation of vented and flared natural gas**

1. LFE shall measure or estimate the volume of natural gas that it vents, flares, or beneficially uses during drilling, completion, and production operations regardless of the reason or authorization for such venting or flaring.
2. LFE shall install equipment to measure the volume of natural gas flared from existing process piping or a flowline piped from equipment such as high pressure separators, heater treaters, or vapor recovery units associated with a well or facility associated with a well authorized by the APD

**Attachment VIII. Best Management Practices:**

Longfellow Energy (LFE) utilizes the following best management practices to minimize venting during active and planned maintenance

1. LFE has a closed vent capture system to route emissions from the heater treater, tanks and vapor to the VRU with a flare for backup. The system is designed such that if the VRU is taken out of service for any reason, the vapors will be routed to the flare for combustion.
2. LFE will isolate and attempt to route all vapors to the VRU or flare prior to opening any lines for maintenance to minimize venting from the equipment when technically feasible
3. LFE will shut in wells in the event of a takeaway disruption, emergency situations, or other operations where venting or flaring may occur due to equipment failures.
4. Lease operators will be visiting the location daily to check and maintain all equipment ensuring all scrubbers, flame arrestors, and the flare ignitor is functioning properly.