

Sinclair Unit No. 10

Waterflood Progress Report 2018

January 1st through December 31st 2018

Prepared for:

Manitoba Industry, Economic Development and Mines

Petroleum Branch

Prepared by:

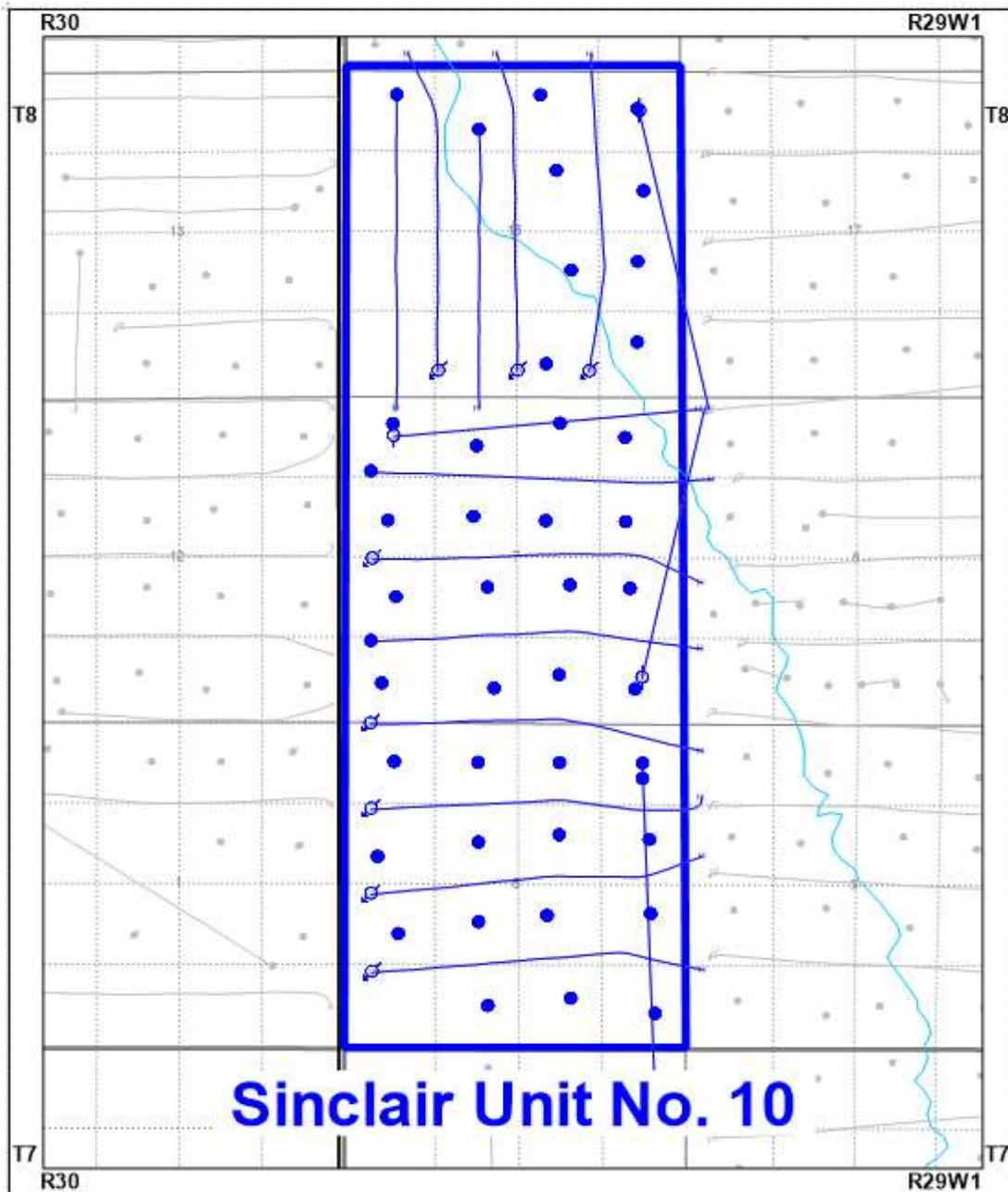
Tundra Oil and Gas

May 28, 2019

INTRODUCTION

Sinclair Unit No. 10 was approved on August 1, 2013 with Tundra Oil and Gas (Tundra) as Operator. The Unit area contains 44 producing wells, 8 injection wells and 3 wells waiting to be completed, in 48 LSDs in Township 8 Range 29 W1 as shown in the figure below.

Figure 1: Sinclair Unit No. 10 Area Outline



Sinclair Unit No.10

Tundra Oil and Gas (Tundra), as the operator of the Sinclair Unit No. 10 Enhanced Oil Recovery (EOR) project hereby submits the 2018 EOR report as per section 73 of the Drilling and Production Regulations.

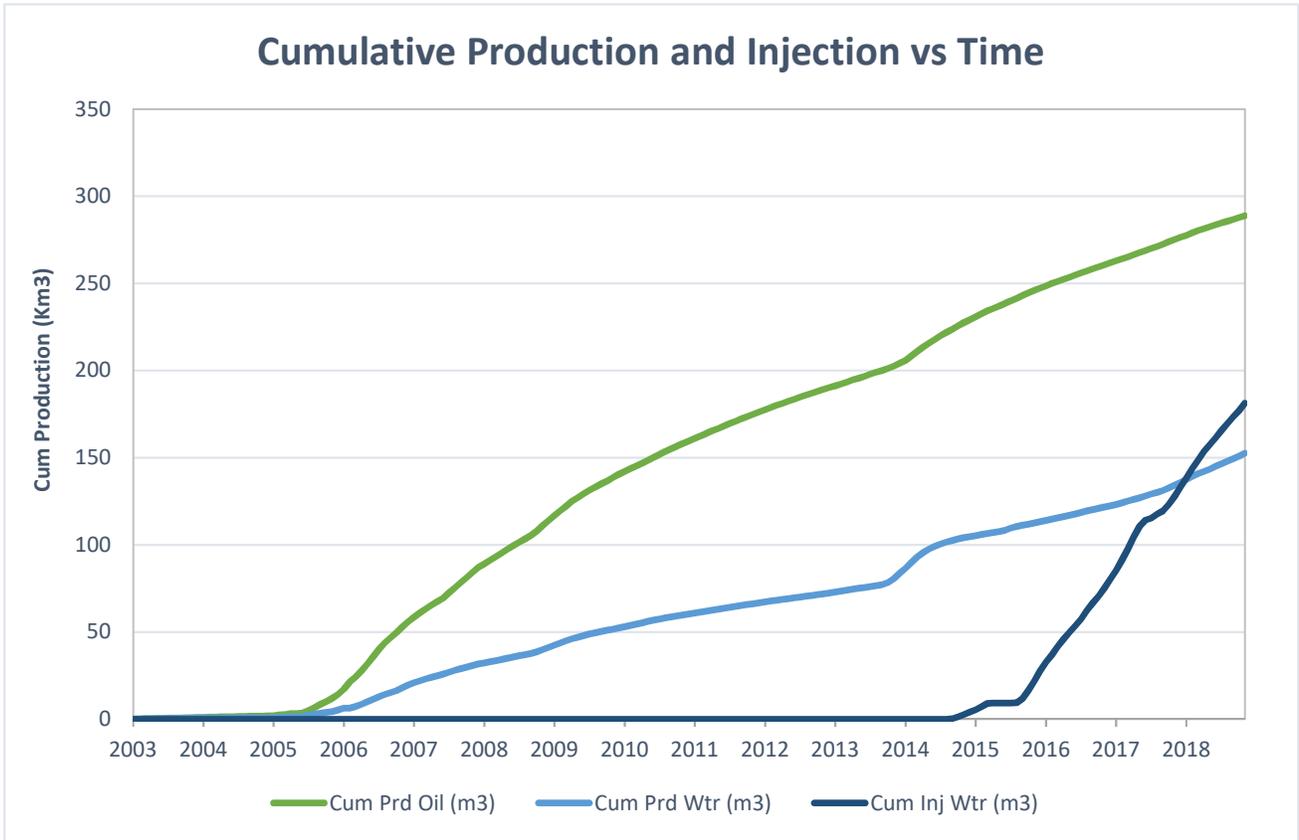
a) Monthly oil and water production rates, injection rate, GOR and WOR

| MONTH | Cal Dly Oil m ³ /day | Cal Dly Wtr m ³ /day | Cal Inj Wtr m ³ /day | WOR m ³ /m ³ | GOR m ³ /m ³ |
|----------|------------------------------------|------------------------------------|------------------------------------|---------------------------------------|---------------------------------------|
| Jan-2018 | 41.55 | 47.07 | 172.76 | 1.13 | 0 |
| Feb-2018 | 41.97 | 62.15 | 184.31 | 1.48 | 0 |
| Mar-2018 | 46.44 | 57.92 | 172.84 | 1.25 | 0 |
| Apr-2018 | 41.81 | 47.35 | 159.26 | 1.13 | 0 |
| May-2018 | 36.37 | 45.08 | 163.23 | 1.24 | 0 |
| Jun-2018 | 35.54 | 43.65 | 130.23 | 1.23 | 0 |
| Jul-2018 | 36.04 | 49.43 | 118.87 | 1.37 | 0 |
| Aug-2018 | 33.87 | 48.62 | 145.90 | 1.44 | 0 |
| Sep-2018 | 33.48 | 47.56 | 127.10 | 1.42 | 0 |
| Oct-2018 | 33.57 | 46.50 | 125.90 | 1.39 | 0 |
| Nov-2018 | 33.98 | 52.25 | 117.10 | 1.54 | 0 |
| Dec-2018 | 35.29 | 54.74 | 140.52 | 1.55 | 0 |

b) Cumulative volume of oil, gas and water produced and fluid injected

| 2018 PRODUCTION | |
|----------------------------------|---------|
| Produced Oil (m ³) | 13,676 |
| Produced Gas (m ³) | 0 |
| Produced Water (m ³) | 18,295 |
| Fluid Injected (m ³) | 53,412 |
| CUMULATIVE PRODUCTION | |
| Produced Oil (m ³) | 288,842 |
| Produced Water (m ³) | 152,677 |

Sinclair Unit No.10



c) Monthly wellhead injection pressure for each injection well

| MONTH | 00/03-18 Inj | | 00/04-06 Inj | | 02/02-18 Inj | | 02/03-18 Inj | | 02/05-06 Inj | | 02/05-07 Inj | |
|------------------|-----------------------------|-----------------|-----------------------------|-----------------|-----------------------------|-----------------|-----------------------------|-----------------|-----------------------------|-----------------|-----------------------------|-----------------|
| | Inj Water (m ³) | Avg Inj P (kPa) | Inj Water (m ³) | Avg Inj P (kPa) | Inj Water (m ³) | Avg Inj P (kPa) | Inj Water (m ³) | Avg Inj P (kPa) | Inj Water (m ³) | Avg Inj P (kPa) | Inj Water (m ³) | Avg Inj P (kPa) |
| Jan-2018 | 727.8 | 545 | 62.0 | 6025 | 653.1 | -94 | 393.3 | 2982 | 421.0 | 5823 | 386.0 | 4977 |
| Feb-2018 | 615.4 | 2683 | 57.0 | 5921 | 757.6 | -94 | 339.7 | 3694 | 361.0 | 5837 | 471.0 | 5475 |
| Mar-2018 | 559.2 | 2984 | 91.0 | 5921 | 1029.8 | -94 | 438.4 | 4559 | 391.0 | 5836 | 498.0 | 5841 |
| Apr-2018 | 477.7 | 2993 | 67.0 | 5961 | 835.7 | -88 | 392.3 | 4718 | 287.0 | 5889 | 461.0 | 5882 |
| May-2018 | 386.0 | 2993 | 67.0 | 6120 | 836.0 | 771 | 338.0 | 4979 | 388.0 | 6014 | 498.0 | 6045 |
| Jun-2018 | 386.0 | 2783 | 62.0 | 5737 | 692.0 | 1002 | 284.0 | 4701 | 261.0 | 5740 | 366.0 | 5599 |
| Jul-2018 | 0.0 | 2289 | 89.0 | 6069 | 582.0 | 2257 | 0.0 | 3730 | 433.0 | 6015 | 500.0 | 6003 |
| Aug-2018 | 336.0 | 2711 | 71.0 | 6017 | 692.0 | 2561 | 0.0 | 2118 | 359.0 | 6007 | 305.0 | 6058 |
| Sep-2018 | 384.0 | 2902 | 61.0 | 6075 | 614.0 | 2941 | 0.0 | 1233 | 316.0 | 6065 | 475.0 | 6065 |
| Oct-2018 | 346.0 | 2898 | 134.0 | 6099 | 857.0 | 3775 | 0.0 | -71 | 300.0 | 6031 | 394.0 | 5991 |
| Nov-2018 | 301.0 | 2866 | 71.0 | 2116 | 723.0 | 4602 | 8.0 | -96 | 247.0 | 5987 | 481.0 | 5995 |
| Dec-2018 | 327.0 | 2948 | 149.0 | 110 | 687.0 | 4799 | 116.0 | 332 | 339.0 | 5991 | 412.0 | 5995 |
| Total | 4846.1 | | 981.0 | | 8959.2 | | 2309.7 | | 4103.0 | | 5247.0 | |
| Avg Inj P | | 2633 | | 5181 | | 1861 | | 2740 | | 5936 | | 5827 |

| MONTH | 02/12-06 Inj | | 02/13-06 Inj | | SU10 | |
|------------------|-----------------------------|-----------------|-----------------------------|-----------------|-----------------------------|-----------------|
| | Inj Water (m ³) | Avg Inj P (kPa) | Inj Water (m ³) | Avg Inj P (kPa) | Inj Water (m ³) | Avg Inj P (kPa) |
| Jan-2018 | 441.0 | 5963 | 406.0 | 5748 | 3490.2 | 3917 |
| Feb-2018 | 399.0 | 5873 | 403.0 | 5882 | 3403.7 | 4493 |
| Mar-2018 | 376.0 | 5879 | 452.0 | 5876 | 3835.4 | 4561 |
| Apr-2018 | 371.0 | 5917 | 282.0 | 5909 | 3173.7 | 4547 |
| May-2018 | 345.0 | 6057 | 403.0 | 6056 | 3261.0 | 4899 |
| Jun-2018 | 338.0 | 5742 | 271.0 | 5673 | 2660.0 | 4612 |
| Jul-2018 | 404.0 | 6011 | 415.0 | 6026 | 2423.0 | 4973 |
| Aug-2018 | 377.0 | 6027 | 272.0 | 5991 | 2412.0 | 4719 |
| Sep-2018 | 426.0 | 6076 | 373.0 | 6049 | 2649.0 | 4799 |
| Oct-2018 | 330.0 | 6036 | 341.0 | 6003 | 2702.0 | 4621 |
| Nov-2018 | 313.0 | 6000 | 370.0 | 5957 | 2514.0 | 4340 |
| Dec-2018 | 315.0 | 5998 | 329.0 | 5994 | 2674.0 | 4370 |
| Total | 4435.0 | | 4317.0 | | 35198.0 | |
| Avg Inj P | | 5965 | | 5930 | | 4571 |

| MONTH | Jan-2018 | Feb-2018 | Mar-2018 | Apr-2018 | May-2018 | Jun-2018 | Jul-2018 | Aug-2018 | Sep-2018 | Oct-2018 | Nov-2018 | Dec-2018 |
|--------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Total m3 | 3490.2 | 3403.7 | 3835.4 | 3173.7 | 3261.0 | 2660.0 | 2423.0 | 2412.0 | 2649.0 | 2702.0 | 2514.0 | 2674.0 |
| Daily (m³/d) | 112.59 | 121.56 | 123.72 | 105.79 | 105.19 | 88.67 | 78.16 | 77.81 | 88.30 | 87.16 | 83.80 | 86.26 |

c) Monthly wellhead injection pressure for each injection well

| | |
|--|------------|
| 2018 AVG. ANNUAL DAILY INJECTION = | 96.58 m3/d |
| CUMULATIVE INJECTION TO Dec 31, 2017 = | 127,947 m3 |
| TOTAL 2018 ANNUAL INJECTION = | 35,198 m3 |
| CUMULATIVE INJECTION TO Dec 31, 2018 = | 181,359 m3 |

d) Summary of the result of any survey of reservoir pressure conducted in 2018. N/A

e) **Date and type of any well servicing.**

| Well | Service Description | Date |
|-----------------------|-----------------------------|------------|
| 100.02-07-008-29W1.00 | Pump Change/Acid Job | 6/26/2018 |
| 100.04-06-008-29W1.00 | WIW Cemented Liner Cleanout | 11/8/2018 |
| 100.08-06-008-29W1.00 | Pump Change/Acid Job | 9/25/2018 |
| 100.08-07-008-29W1.00 | Pump Change/Acid Job | 6/27/2018 |
| 100.09-07-008-29W1.00 | Pump Change/Acid Job | 9/19/2018 |
| 102.01-06-008-29W1.00 | Polish Rod Repair | 9/25/2018 |
| 102.03-07-008-29W1.00 | Cleanout to TD | 6/23/2018 |
| 102.04-07-008-29W1.00 | Bakken Open Hole Cleanout | 11/10/2018 |

f) **Calculations of voidage replacement ratio on a monthly and cumulative basis**

VOIDAGE CALCULATIONS

OIL FORMATION VOLUME FACTOR (Rm³/Sm³) = 1.071

| MONTH | Mth Oil Prod (m3) | Cum Oil Prod (Km3) | Mth Water Prod (m3) | Cum Water Prod (Km3) | Mth Water Inj (m3) | Cum Water Inj (Km3) | VRR | Cum VRR |
|----------|-------------------|--------------------|---------------------|----------------------|--------------------|---------------------|-------|---------|
| Jan-2018 | 1288.1 | 276.45 | 1459.3 | 135.84 | 5355.7 | 133.30 | 1.887 | 0.309 |
| Feb-2018 | 1175.1 | 277.63 | 1740.3 | 137.58 | 5160.6 | 138.46 | 1.721 | 0.318 |
| Mar-2018 | 1439.7 | 279.07 | 1795.4 | 139.38 | 5358.0 | 143.82 | 1.605 | 0.328 |
| Apr-2018 | 1254.3 | 280.32 | 1420.5 | 140.80 | 4777.7 | 148.60 | 1.729 | 0.337 |
| May-2018 | 1127.4 | 281.45 | 1397.5 | 142.20 | 5060.0 | 153.66 | 1.942 | 0.346 |
| Jun-2018 | 1066.1 | 282.52 | 1309.6 | 143.50 | 3907.0 | 157.57 | 1.594 | 0.353 |
| Jul-2018 | 1117.3 | 283.63 | 1532.4 | 145.04 | 3685.0 | 161.25 | 1.350 | 0.359 |
| Aug-2018 | 1049.9 | 284.68 | 1507.3 | 146.54 | 4523.0 | 165.77 | 1.719 | 0.367 |
| Sep-2018 | 1004.3 | 285.69 | 1426.7 | 147.97 | 3813.0 | 169.59 | 1.524 | 0.374 |
| Oct-2018 | 1040.6 | 286.73 | 1441.4 | 149.41 | 3903.0 | 173.49 | 1.527 | 0.380 |
| Nov-2018 | 1019.4 | 287.75 | 1567.4 | 150.98 | 3513.0 | 177.00 | 1.321 | 0.385 |
| Dec-2018 | 1094.1 | 288.84 | 1696.9 | 152.68 | 4356.0 | 181.36 | 1.518 | 0.393 |

g) **An outline of the method used for quality control and treatment of the injected fluid**

The injection water for Sinclair Unit No. 10 will be sourced from the 16-32-007-29W1 well (Lodgepole formation). The water is treated at the 03-04-008-29W1 battery where it is filtered to 0.5 microns and has scale inhibitor added. The injection water is then distributed to the injectors through the dedicated infrastructure system.

h) **A report of any unusual performance problems and remedial measures taken or being considered. N/A**

i) **Any other information necessary to evaluate the project**

| <i>UWI</i> | <i>Type</i> | <i>Status</i> | <i>Future Plans</i> |
|----------------------|-------------|-----------------|---------------------|
| 102/01-06-008-29W1/0 | Vertical | Producing | - |
| 100/02-06-008-29W1/0 | Vertical | Producing | - |
| 100/03-06-008-29W1/0 | Vertical | Producing | - |
| 100/04-06-008-29W1/0 | Horizontal | Injection | - |
| 100/05-06-008-29W1/0 | Vertical | Producing | - |
| 102/05-06-008-29W1/0 | Horizontal | Injection | - |
| 100/06-06-008-29W1/0 | Vertical | Producing | - |
| 100/07-06-008-29W1/0 | Vertical | Producing | - |
| 100/08-06-008-29W1/0 | Vertical | Producing | - |
| 100/09-06-008-29W1/0 | Vertical | Producing | - |
| 100/10-06-008-29W1/0 | Vertical | Producing | - |
| 100/11-06-008-29W1/0 | Vertical | Producing | - |
| 100/12-06-008-29W1/0 | Vertical | Producing | - |
| 102/12-06-008-29W1/0 | Horizontal | Injection | - |
| 100/13-06-008-29W1/0 | Vertical | Producing | - |
| 102/13-06-008-29W1/0 | Horizontal | Injection | - |
| 100/14-06-008-29W1/0 | Vertical | Producing | - |
| 100/15-06-008-29W1/0 | Vertical | Producing | - |
| 100/16-06-008-29W1/0 | Vertical | Producing | - |
| 102/16-06-008-29W1/0 | Horizontal | Producing | - |
| 100/01-07-008-29W1/0 | Vertical | Producing | - |
| 102/01-07-008-29W1/0 | Horizontal | Drilled & Cased | - |
| 100/02-07-008-29W1/0 | Vertical | Producing | - |
| 102/03-07-008-29W1/0 | Vertical | Producing | - |
| 100/04-07-008-29W1/0 | Vertical | Producing | - |
| 102/04-07-008-29W1/0 | Horizontal | Producing | - |
| 100/05-07-008-29W1/0 | Vertical | Producing | - |
| 102/05-07-008-29W1/0 | Horizontal | Injection | - |
| 100/06-07-008-29W1/0 | Vertical | Producing | - |
| 100/07-07-008-29W1/0 | Vertical | Producing | - |
| 100/08-07-008-29W1/0 | Vertical | Producing | - |
| 100/09-07-008-29W1/0 | Vertical | Producing | - |
| 100/10-07-008-29W1/0 | Vertical | Producing | - |
| 100/11-07-008-29W1/0 | Vertical | Producing | - |
| 100/12-07-008-29W1/0 | Vertical | Producing | - |
| 100/13-07-008-29W1/0 | Vertical | Producing | - |
| 102/13-07-008-29W1/0 | Horizontal | Producing | - |
| 103/13-07-008-29W1/0 | Horizontal | Drilled & Cased | - |
| 100/14-07-008-29W1/0 | Vertical | Producing | - |
| 100/15-07-008-29W1/0 | Vertical | Producing | - |
| 100/16-07-008-29W1/0 | Vertical | Producing | - |
| 100/01-18-008-29W1/0 | Vertical | Producing | - |
| 100/02-18-008-29W1/0 | Vertical | Producing | - |
| 102/02-18-008-29W1/0 | Horizontal | Injection | - |
| 100/03-18-008-29W1/0 | Horizontal | Injection | - |

j) Well List

Sinclair Unit No.10 Well List

| <i>UWI</i> | <i>Type</i> | <i>Status</i> | <i>Future Plans</i> |
|----------------------|-------------|-----------------|---------------------|
| 102/03-18-008-29W1/0 | Horizontal | Injection | - |
| 100/07-18-008-29W1/0 | Vertical | Producing | - |
| 100/08-18-008-29W1/0 | Vertical | Producing | - |
| 100/09-18-008-29W1/0 | Vertical | Producing | - |
| 100/10-18-008-29W1/0 | Vertical | Producing | - |
| 100/13-18-008-29W1/0 | Horizontal | Producing | - |
| 100/14-18-008-29W1/0 | Horizontal | Producing | - |
| 100/15-18-008-29W1/0 | Vertical | Producing | - |
| 100/16-18-008-29W1/0 | Vertical | Producing | - |
| 102/16-18-008-29W1/0 | Horizontal | Drilled & Cased | - |