

# Hydraulic Fracturing Fluid Product Component Information Disclosure

|                                |                       |
|--------------------------------|-----------------------|
| Job Start Date:                | 5/23/2015             |
| Job End Date:                  | 6/4/2015              |
| State:                         | Texas                 |
| County:                        | Crockett              |
| API Number:                    | 42-105-42183-00-00    |
| Operator Name:                 | Approach Resources    |
| Well Name and Number:          | University 42 2111 HC |
| Longitude:                     | -101.15510000         |
| Latitude:                      | 30.91140000           |
| Datum:                         | NAD27                 |
| Federal/Tribal Well:           | NO                    |
| True Vertical Depth:           | 6,430                 |
| Total Base Water Volume (gal): | 11,444,958            |
| Total Base Non Water Volume:   | 0                     |



## Hydraulic Fracturing Fluid Composition:

| Trade Name              | Supplier | Purpose                          | Ingredients                          | Chemical Abstract Service Number (CAS #) | Maximum Ingredient Concentration in Additive (% by mass)** | Maximum Ingredient Concentration in HF Fluid (% by mass)** | Comments |
|-------------------------|----------|----------------------------------|--------------------------------------|--|--|--|----------|
| Water                   | Approach | Carrier/Base Fluid               |                                      |  |  |  |          |
|                         |          |                                  | Water                                | 7732-18-5                                | 100.00000  | 86.86840   | None     |
| 100 Mesh White          | Python   | Proppant                         |                                      |  |  |  |          |
|                         |          |                                  | Silica Substrate                     | NA                                       | 100.00000  | 7.41218  | None     |
| 40/70 White             | Python   | Proppant                         |                                      |  |  |  |          |
|                         |          |                                  | Silica Substrate                     | NA                                       | 100.00000  | 4.62745  | None     |
| Hydrochloric Acid (15%) | Python   | Acidizing                        |                                      |  |  |  |          |
|                         |          |                                  | Hydrochloric Acid                    | 7647-01-0                                | 15.00000   | 0.91366  | None     |
| Clay Control            | Python   | KCL Substitute                   |                                      |  |  |  |          |
|                         |          |                                  | Potassium Chloride                   | 7447-40-7                                | 49.50000   | 0.09641  | None     |
| Greenhib 677            | Python   | Fracturing Scale Inhibitor       |                                      |  |  |  |          |
|                         |          |                                  | Salt of Phosphono-Methylated Diamine | 67-56-1                                  | 25.00000   | 0.02646  | None     |
| Plexslick 957           | Python   | Anionic Polymer in Emulsion Form |                                      |  |  |  |          |
|                         |          |                                  | Petroleum Hydro Light Distillate     | Proprietary                              | 20.00000   | 0.02642  | None     |
| Plexgel Breaker XPA     | Python   | Breaker for Slickwater Fracs     |                                      |  |  |  |          |
|                         |          |                                  | Hydrogen Peroxide                    | 7722-84-1                                | 7.00000  | 0.02372  | None     |

|  |        |                                  |                                     |         |          |         |      |
|--|--------|----------------------------------|-------------------------------------|---------|----------|---------|------|
| Plexbreak 150  | Python | Fracturing Non Emulsifier        |                                     |         |          |         |      |
|  |        |                                  | Salt of Phophono-Methylated Diamine | 67-56-1 | 45.00000 | 0.00233 | None |
| Plexhib 256  | Python | Corrosion Inhibitor for HCL Acid |                                     |         |          |         |      |
|  |        |                                  | Methyl Alcohol                      | 67-56-1 | 40.00000 | 0.00221 | None |
| The Reducer  | Python | Iron Control for HCL Acid        |                                     |         |          |         |      |
|  |        |                                  | Methyl Alcohol                      | 67-56-1 | 40.00000 | 0.00076 | None |
| Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS. |        |                                  |                                     |         |          |         |      |

\* Total Water Volume sources may include fresh water, produced water, and/or recycled water

\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)