

## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/2/2017
Job End Date:	10/8/2017
State:	Texas
County:	Andrews
API Number:	42-003-47488-00-00
Operator Name:	Greystone Petroleum
Well Name and Number:	University 31-2H
Latitude:	32.14716300
Longitude:	-102.61787400
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	8,000
Total Base Water Volume (gal):	4,307,982
Total Base Non Water Volume:	98,061



### 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	Supplied by Operator	Base Fluid					
			Water	7732-18-5	100.00000	89.80491	
Other Chemical (s)	Listed Above	See Trade Name (s) List					
			Water	7732-18-5	75.00000	0.06439	

			Water	7732-18-5	35.00000	0.00017	
			Water	7732-18-5	70.00000	0.01511	
			Water	7732-18-5	60.00000	0.05113	
			Water	7732-18-5	85.00000	1.33107	
			Water	7732-18-5	30.00000	0.00123	
			Water	7732-18-5	65.00000	0.00612	
			Water	7732-18-5	85.00000	0.06069	
			Water	7732-18-5	55.00000	0.01289	
			Water	7732-18-5	81.00000	0.01546	
			Water	7732-18-5	90.00000	0.00130	
			water	7732-18-5	50.00000	0.02572	
BXL-3	FTSI	Crosslinker					
				Listed Below			
B-10	FTSI	High pH buffer					
				Listed Below			
APB-1	FTSI	Gel breaker					
				Listed Below			

10.1%-15.0% HCL	FTSI	Acid					
				Listed Below			
BXL-2	FTSI	Borate crosslinker					
				Listed Below			
SHALE SURF 1000	FTSI	Surfactant					
				Listed Below			
FRW-200	FTSI	Friction reducer					
				Listed Below			
HVG-1 4.0	FTSI	Water gelling agent					
				Listed Below			
NuFlo 1000LT	FTSI	Diverting agent					
				Listed Below			
30/50 White	FTSI	Proppant					
				Listed Below			
ICI-3240	FTSI	Biocide					
				Listed Below			
FE-200L	FTSI	Iron Control					

				Listed Below			
NE-100	FTSI	Non-emulsifier					
				Listed Below			
CI-150	FTSI	Acid Corrosion Inhibitor					
				Listed Below			
Soda Ash	FTSI	pH Adjusting Agent					
				Listed Below			
CS-250 SI	FTSI	Scale Inhibitor					
				Listed Below			
Pump Kleen	FTSI	Pump and hose flush					
				Listed Below			
NuFlo 1000FF LT	FTSI	Diverting agent					
				Listed Below			
B-5	FTSI	Low pH buffer					
				Listed Below			
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Silica, Quartz	14808-60-7	100.00000	7.98343	
			Hydrogen Chloride	7647-01-0	15.00000	0.23489	
			Raffinates, Sorption Process	64741-85-1	55.00000	0.13366	

			Guar gum	9000-30-0	55.00000	0.13366	
			Petroleum Distillate	64742-47-8	55.00000	0.13366	
			Copolymer of acrylamide and sodium acrylate	25987-30-8	33.00000	0.02812	
			Petroleum distillate hydrotreated light	64742-47-8	30.00000	0.02557	
			Potassium metaborate	16481-66-6	25.00000	0.02146	
			Proprietary Emulsion	Proprietary	25.00000	0.02130	
			Acrylamide P/W acrylic acid, ammonium salt	26100-47-0	25.00000	0.02130	
			proprietary (borate) Salt	1319-33-1	40.00000	0.02058	
			potassium formate	590-29-4	35.00000	0.01800	
			Dispersant	Proprietary	20.00000	0.01704	
			Potassium hydroxide	1310-58-3	15.00000	0.01288	
			Ammonium Persulfate	7727-54-0	100.00000	0.01224	
			Suspending Agent	1302-78-9	5.00000	0.01215	
			Potassium carbonate	584-08-7	48.00000	0.01036	
			Ammonium Chloride	12125-02-9	12.00000	0.01023	
			Quartz	14808-60-7	4.00000	0.00972	
			Ethoxylated alcohol	Proprietary	13.00000	0.00928	
			Poly-(oxy-1,2-ethanediyl)-alpha-undecyl-omega	34398-01-1	11.00000	0.00785	
			White mineral oil	8042-47-5	100.00000	0.00602	
			Polybutene (Isobutylene/Butene copolymer)	9003-29-6	100.00000	0.00602	
			Raffinates (petroleum), sorption process	64741-85-1	100.00000	0.00602	
			Surfactant	Proprietary	7.00000	0.00597	
			Dazomet (Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione.	533-74-4	24.00000	0.00563	
			Sodium Hydroxide	1310-73-2	23.00000	0.00539	
			Polylactide resin	9051-89-2	100.00000	0.00517	
			Polylactide resin	9051-89-2	100.00000	0.00517	

			Isotridecanol, ethoxylated	9043-30-5	2.00000	0.00486	
			Potassium hydroxide	1310-58-3	20.00000	0.00432	
			Boric acid	10043-35-3	5.00000	0.00429	
			Hydrotreated heavy paraffinic	64742-54-7	5.00000	0.00426	
			Sorbitan, monooctadecanoate, poly(oxy-1,2-ethanediyl) Sorbitan, monooctadecanoate, poly(oxy-1,2-ethanediyl) derivs.	9005-67-8	5.00000	0.00426	
			Tetrasodium EDTA	64-02-8	41.00000	0.00386	
			Methanol	67-56-1	5.00000	0.00357	
			2-Propanol	67-63-0	5.00000	0.00357	
			2-Butoxyethanol	111-76-2	5.00000	0.00357	
			Alcohols (C12-C14), ethoxylated	68439-50-9	4.00000	0.00341	
			Alcohols (C12-C16), ethoxylated	68551-12-2	4.00000	0.00341	
			Alcohols (C10-C16), ethoxylated	68002-97-1	4.00000	0.00341	
			Calcium carbonate	1317-65-3	5.00000	0.00257	
			Hydrated aluminium-magnesium silicate (palygorskite)	12174-11-7	5.00000	0.00257	
			Polyethylene glycol monooleate	9004-96-0	3.00000	0.00256	
			Sorbitan Monooleate	1338-43-8	3.00000	0.00256	
			Ethylene glycol	107-21-1	13.00000	0.00248	
			Isopropanol	67-63-0	60.00000	0.00245	
			Sodium chloride	7647-14-5	10.00000	0.00191	
			Sodium Polyacrylate	9003-04-7	10.00000	0.00191	
			Sorbitol Tetraoleate	61723-83-9	2.00000	0.00170	
			Dewaxed heavy paraffinic	64742-65-0	1.50000	0.00128	

			Oleic Acid Diethanolamide	93-83-4	1.50000	0.00128	
			Ethoxylated fatty alcohol	Proprietary	30.00000	0.00123	
			Fatty amino compound salt	Proprietary	30.00000	0.00123	
			Alkyloxypolyethyleneoxy ethanol	84133-50-6	1.00000	0.00085	
			Cyclohexene	5989-27-5	1.00000	0.00071	
			Sodium Carbonate	497-19-8	100.00000	0.00062	
			modified polyacrylate	Trade Secret	1.00000	0.00051	
			polyanionic cellulose	9004-32-4	1.00000	0.00051	
			magnesium	16389-88-1	1.00000	0.00051	
			Acrylic Polymer	9003-04-7	0.90000	0.00046	
			Ammonium Acrylate	10604-69-0	0.50000	0.00043	
			Ethoxylated Alcohol	Proprietary	10.00000	0.00041	
			Acetic acid	64-19-7	80.00000	0.00039	
			Aromatic aldehyde	Proprietary	8.00000	0.00033	
			Isopropanol	67-63-0	0.30000	0.00026	
			Alkoxylated fatty amine	Proprietary	5.00000	0.00020	
			Sodium Hydroxide	1310-73-2	2.00000	0.00019	
			Trisodium Nitrilotriacetic acid	5064-31-3	2.00000	0.00019	
			2-Propanol	67-63-0	10.00000	0.00014	
			2-Butoxyethanol	111-76-2	10.00000	0.00014	
			Sodium glycolate	2836-32-0	1.50000	0.00014	
			undisclosed	Proprietary	2.00000	0.00010	
			undisclosed	Proprietary	2.00000	0.00010	
			Polysaccharide	11138-66-2	0.20000	0.00010	
			Acrylamide	79-06-1	0.10000	0.00009	
			Ethylenediaminetriacetic acid, trisodium salt	19019-43-3	0.80000	0.00008	
			Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00007	
			Sodium formate	141-53-7	0.60000	0.00006	

			crystalline silica, quartz	14808-60-7	0.05000	0.00003	
			Iminodiacetate disodium salt	17593-73-6	0.20000	0.00002	
			Methanol	67-56-1	0.10000	0.00000	
			sodium chloride	7647-14-5	0.00500	0.00000	
			Proprietary	Proprietary			
			Ethane-1,2-Diol	107-21-1			
			Sodium Borate	1303-96-4			

\* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

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

\*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)