

Gas Quality Reports

LS260 - Grabham to Saginaw at Saginaw
11/25/2019 - 2/25/2020

Gas Day	Gross Heating Value (HHV) (Btu/scf)	Net Heating Value (LHV) (Btu/scf)	Specific Gravity	Wobbe Index	Hydrocarbon Dewpoint (HCDP) (deg F)	N2 (mol%)	CO2 (mol%)	Methane (mol%)	Ethane (mol%)	Propane (mol%)	Isobutane (mol%)	N-Butane (mol%)	Isopentane (mol%)	N-Pentane (mol%)	C6 Plus (mol%)
11/25/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
11/26/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
11/27/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
11/28/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
11/29/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
11/30/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
12/01/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
12/02/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
12/03/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
12/04/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
12/05/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
12/06/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
12/07/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
12/08/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
12/09/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
12/10/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
12/11/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
12/12/2019	1,040.0	1,021.9	0.598	1,345.26	-16.78	1.696	0.533	92.130	5.269	0.259	0.012	0.022	0.003	0.003	0.071
12/13/2019	1,029.3	1,011.4	0.593	1,337.23	-147.74	2.017	0.423	92.608	4.743	0.190	0.003	0.010	0.002	0.002	0.003
12/14/2019	1,031.1	1,013.2	0.596	1,335.53	-145.15	2.140	0.493	91.935	5.214	0.199	0.003	0.009	0.002	0.002	0.003
12/15/2019	1,032.7	1,014.8	0.597	1,336.46	-143.60	2.132	0.499	91.758	5.371	0.218	0.003	0.010	0.002	0.002	0.003
12/16/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/17/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/18/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/19/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/20/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/21/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/22/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/23/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/24/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/25/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/26/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/27/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/28/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/29/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/30/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
12/31/2019	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/01/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/02/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/03/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/04/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/05/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/06/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005

Gas Quality Reports

LS260 - Grabham to Saginaw at Saginaw

11/25/2019 - 2/25/2020

Gas Day	Gross Heating Value (HHV) (Btu/scf)	Net Heating Value (LHV) (Btu/scf)	Specific Gravity	Wobbe Index	Hydrocarbon Dewpoint (HCDP) (deg F)	N2 (mol%)	CO2 (mol%)	Methane (mol%)	Ethane (mol%)	Propane (mol%)	Isobutane (mol%)	N-Butane (mol%)	Isopentane (mol%)	N-Pentane (mol%)	C6 Plus (mol%)
01/07/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/08/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/09/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/10/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/11/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/12/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/13/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/14/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/15/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/16/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/17/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/18/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/19/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/20/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/21/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/22/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/23/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/24/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/25/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/26/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/28/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/29/2020	1,030.3	1,012.4	0.595	1,335.17	-145.39	2.189	0.454	92.064	5.059	0.202	0.005	0.014	0.004	0.004	0.005
01/30/2020	1,024.4	1,006.5	0.589	1,334.71	-151.46	1.954	0.445	93.387	3.990	0.188	0.008	0.015	0.003	0.004	0.006
01/31/2020	1,026.6	1,008.7	0.590	1,336.53	-149.98	1.918	0.441	93.171	4.255	0.184	0.006	0.012	0.003	0.003	0.006
02/01/2020	1,026.3	1,008.4	0.590	1,336.04	-149.97	1.949	0.436	93.177	4.213	0.193	0.007	0.013	0.003	0.003	0.007
02/02/2020	1,027.3	1,009.4	0.590	1,337.15	-149.19	1.897	0.441	93.176	4.258	0.189	0.008	0.014	0.004	0.004	0.010
02/03/2020	1,029.4	1,011.5	0.592	1,337.99	-147.32	1.891	0.467	92.864	4.529	0.206	0.009	0.016	0.004	0.004	0.009
02/04/2020	1,027.0	1,009.1	0.590	1,336.75	-149.61	1.898	0.454	93.155	4.277	0.181	0.007	0.014	0.003	0.004	0.007
02/05/2020	1,024.5	1,006.6	0.588	1,336.03	-152.04	1.863	0.435	93.600	3.899	0.168	0.007	0.014	0.003	0.004	0.008
02/06/2020	1,025.1	1,007.3	0.590	1,334.77	-150.53	1.975	0.453	93.228	4.122	0.187	0.007	0.014	0.003	0.004	0.008
02/07/2020	1,025.9	1,008.1	0.590	1,335.43	-150.19	1.951	0.457	93.171	4.202	0.186	0.007	0.013	0.003	0.003	0.007
02/08/2020	1,027.5	1,009.7	0.591	1,336.88	-149.08	1.914	0.454	93.063	4.337	0.199	0.007	0.014	0.003	0.003	0.007
02/09/2020	1,028.2	1,010.4	0.591	1,337.59	-148.77	1.910	0.440	92.994	4.431	0.195	0.006	0.012	0.002	0.003	0.006
02/10/2020	1,027.2	1,009.4	0.590	1,336.95	-149.32	1.905	0.447	93.150	4.261	0.198	0.008	0.017	0.004	0.004	0.007
02/11/2020	1,026.0	1,008.2	0.590	1,335.72	-150.10	1.942	0.451	93.202	4.178	0.191	0.008	0.016	0.003	0.004	0.007
02/12/2020	1,024.8	1,006.9	0.589	1,334.99	-151.01	1.940	0.452	93.361	4.017	0.189	0.008	0.017	0.004	0.004	0.007
02/13/2020	1,023.6	1,005.8	0.589	1,334.19	-152.00	1.928	0.466	93.503	3.886	0.178	0.008	0.016	0.004	0.004	0.007
02/14/2020	1,024.5	1,006.6	0.589	1,335.32	-151.51	1.887	0.459	93.509	3.921	0.183	0.008	0.017	0.004	0.004	0.008
02/15/2020	1,027.6	1,009.7	0.591	1,337.16	-149.09	1.849	0.482	93.160	4.261	0.212	0.008	0.015	0.003	0.003	0.007
02/16/2020	1,029.6	1,011.6	0.592	1,338.18	-147.31	1.940	0.430	92.807	4.568	0.223	0.007	0.013	0.002	0.003	0.008
02/17/2020	1,029.2	1,011.2	0.592	1,338.09	-147.92	1.931	0.427	92.858	4.555	0.197	0.006	0.013	0.002	0.003	0.007
02/18/2020	1,029.1	1,011.2	0.591	1,338.29	-147.80	1.908	0.431	92.948	4.461	0.210	0.009	0.019	0.004	0.004	0.007
02/19/2020	1,027.8	1,009.8	0.591	1,337.10	-148.77	1.918	0.445	93.062	4.331	0.202	0.009	0.018	0.004	0.004	0.007

TSP Name: Southern Star Central Gas Pipeline, Inc.

CSI048

TSP: 007906233

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Gas Quality Reports

LS260 - Grabham to Saginaw at Saginaw
11/25/2019 - 2/25/2020

Page 3 of 3

Gas Day	Gross Heating Value (HHV) (Btu/scf)	Net Heating Value (LHV) (Btu/scf)	Specific Gravity	Wobbe Index	Hydrocarbon Dewpoint (HCDP) (deg F)	N2 (mol%)	CO2 (mol%)	Methane (mol%)	Ethane (mol%)	Propane (mol%)	Isobutane (mol%)	N-Butane (mol%)	Isopentane (mol%)	N-Pentane (mol%)	C6 Plus (mol%)
02/20/2020	1,027.2	1,009.3	0.590	1,337.04	-149.35	1.904	0.439	93.185	4.227	0.200	0.009	0.020	0.004	0.005	0.006
02/21/2020	1,026.5	1,008.6	0.590	1,336.36	-149.58	1.938	0.433	93.208	4.183	0.192	0.009	0.019	0.004	0.005	0.009
02/22/2020	1,028.1	1,010.2	0.592	1,336.55	-148.02	1.984	0.443	92.867	4.471	0.195	0.008	0.016	0.004	0.004	0.009
02/23/2020	1,030.8	1,012.9	0.593	1,338.24	-146.08	1.977	0.442	92.529	4.805	0.210	0.007	0.015	0.003	0.003	0.007

NOTES:

Wobbe Index: Interchangeability constant calculated using the Gross (or Higher) Heating Value (HHV) divided by the square root of the Specific Gravity

Hydrocarbon Dewpoint (HCDP): Theoretically determined value using the Redlich-Kwong equation of state (EOS)

Selection: Business Unit ID = 70; Analysis_Key = 53875