

APPENDIX M – SURVEY DATA

CPT/LIF Survey Data
 Supplemental Investigation
 Former Amoco Refinery
 Neodesha, Kansas

Monitoring Well No.	Kansas State Plane		Geographic		Ground Surface	Surveyor Information
	Northing (feet)	Easting (feet)	Latitude	Longitude	Elevation (ft amsl)	
CPT/LIF Boring Locations						
LIF-1	1602411.90	2128620.72	37.42951248	-95.6884103	813.26	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-2	1602211.54	2128624.04	37.42896219	-95.68841968	812.93	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-3	1602058.67	2128618.02	37.42854304	-95.68845627	812.57	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-4	1602143.50	2128527.88	37.42878338	-95.68875775	811.24	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-5	1602323.13	2128523.40	37.42927686	-95.68875452	812.26	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-6	1602280.39	2128304.87	37.42917762	-95.68951119	813.80	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-7	1602038.59	2128276.84	37.42851617	-95.68963278	814.28	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-8	1602027.67	2128047.21	37.4285052	-95.69042435	817.34	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-9	1602020.05	2127733.98	37.42851019	-95.69150335	818.48	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-10	1601864.42	2127609.65	37.42809325	-95.69194746	816.69	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-11	1602015.61	2127467.56	37.42852004	-95.69242089	818.34	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-12	1602320.52	2127394.89	37.42936306	-95.69263942	820.38	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-13	1602447.31	2127784.14	37.42967893	-95.69128637	819.15	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-14	1602321.62	2128072.27	37.42931005	-95.69030758	817.44	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-15	1602665.98	2128602.98	37.43021144	-95.68844498	815.15	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-16	1602798.29	2128482.00	37.43058466	-95.6888477	816.33	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-17	1602926.03	2128612.62	37.43092451	-95.6883848	817.79	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-18	1603280.60	2128550.53	37.43190299	-95.68856172	820.07	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-19	1603275.52	2128136.34	37.43192334	-95.68998804	823.64	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-20	1603264.50	2127772.77	37.43192317	-95.69124074	825.81	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-21	1603242.32	2127372.52	37.43189538	-95.69262085	825.19	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-22	1602835.91	2127387.69	37.43077848	-95.69261077	822.19	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-23	1602973.36	2127703.42	37.43112968	-95.69150967	824.10	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-24	1602637.03	2127944.06	37.43018651	-95.69071619	820.60	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-25	1602651.59	2128335.35	37.43019409	-95.68936774	815.84	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-26	1602967.29	2128193.66	37.43107246	-95.68982272	820.21	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-27	1601455.19	2127062.57	37.42701509	-95.69387304	805.15	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-28	1601172.20	2127159.88	37.4262302	-95.69356741	807.39	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-29	1600972.80	2127314.06	37.42567007	-95.69305737	806.71	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-30	1601031.08	2127682.65	37.42579958	-95.6917826	814.11	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-31	1601007.78	2128202.54	37.42569261	-95.68999551	811.40	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-32	1601152.04	2128431.66	37.42606965	-95.68919188	808.80	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-33	1601404.70	2128368.85	37.42676844	-95.68938185	810.59	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-34	1601211.00	2127982.09	37.42626871	-95.69073323	812.18	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-35	1601407.97	2127682.68	37.42683419	-95.69174341	813.63	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-36	1601354.50	2127421.19	37.42670903	-95.69264905	811.28	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-37	1602089.54	2128774.55	37.42861482	95.68791425	815.33	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-38	1602209.21	2128768.96	37.4289438	-95.68792107	815.95	Garber Surveying Service, P.A. (Hutchinson, KS)

CPT/LIF Survey Data
 Supplemental Investigation
 Former Amoco Refinery
 Neodesha, Kansas

Monitoring Well No.	Kansas State Plane		Geographic		Ground Surface	Surveyor Information
	Northing (feet)	Easting (feet)	Latitude	Longitude	Elevation (ft amsl)	
CPT/LIF Boring Locations						
LIF-39	1602338.19	2128764.28	37.42929825	-95.68792378	816.47	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-40	1602665.59	2128795.34	37.43019444	-95.68778286	816.29	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-41	1602600.03	2129092.28	37.42998987	-95.68676752	819.22	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-42	1602398.01	2129098.85	37.42943475	-95.68676589	818.52	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-43	1602217.07	2129103.99	37.42893762	-95.68676699	817.80	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-44	1602386.40	2129627.20	37.42935909	-95.68494837	813.39	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-45	1602526.72	2129487.74	37.42975585	-95.68541385	816.17	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-46	1601032.79	2129075.32	37.42568899	-95.68698872	810.10	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-47	1601044.84	2129377.43	37.42569704	-95.68594757	812.85	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-48	1601071.19	2129716.79	37.42574124	-95.68477672	812.11	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-49	1601078.74	2129984.16	37.42573979	-95.68385563	805.27	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-50	1600697.60	2129492.06	37.42473432	-95.6855891	813.22	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-51	1600703.88	2129717.70	37.42473285	-95.68481178	814.67	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-52	1600691.10	2130008.45	37.42467365	-95.68381233	809.45	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-53	1600317.74	2129893.46	37.42365827	-95.68424696	814.50	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-54	1600321.35	2130009.23	37.42365858	-95.6838481	812.53	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-55	1600127.12	2130229.89	37.42310709	-95.68310879	814.20	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-56	1601882.06	2126921.60	37.42819855	-95.69431405	810.37	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-57	1601583.16	2126811.59	37.42738712	-95.69472369	806.41	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-58	1601415.50	2126944.37	37.4269159	-95.69428401	804.95	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-59	1601622.34	2126951.26	37.42748313	-95.69423887	807.22	Garber Surveying Service, P.A. (Hutchinson, KS)
LIF-60	1601288.66	2126982.55	37.42656455	-95.69416574	805.00	Garber Surveying Service, P.A. (Hutchinson, KS)

Notes:

- (1) UTM Northing and Eastings are reported in Kansas State Plane (South Zone) using North American Datum 1983 (NAD83).
- (2) Latitude and Longitude locations are reported in Geographic NAD 83.
- (3) Elevation datum is reported in North American Vertical Datum 1988 (NAD88).
- (4) Top of Casing Elevations are reported from the inside pipe on the north side (as marked).

Main Office
 2908 North Plum Street
 Hutchinson, KS 67502
 Office: (620) 665-7032
 Fax: (620) 663-7401



Garber Surveying Service, P.A.

Branch Offices
 511 North Poplar Street
 Newton, KS 67114
 Office: (316) 283-5033
 Fax: (316) 283-5073

115 East Marlin, Suite 102
 McPherson, KS 67460
 Office: (620) 241-4441
 Fax: (620) 241-4458

LIF/CPT BORINGS BURNS & MCDONNELL ENGINEERS NEODESHA, KS			
BORING	NORTHING	EASTING	ELEVATION
LIF-1	1602411.90	2128620.72	813.26 (Dirt)
LIF-2	1602211.54	2128624.04	812.93 (Dirt)
LIF-3	1602058.67	2128618.02	812.57 (Dirt)
LIF-4	1602143.50	2128527.88	811.24 (Dirt)
LIF-5	1602323.13	2128523.40	812.26 (Dirt)
LIF-6	1602280.39	2128304.87	813.80 (Dirt)
LIF-7	1602038.59	2128276.84	814.28 (Dirt)
LIF-8	1602027.67	2128047.21	817.34 (Dirt)
LIF-9	1602020.05	2127733.98	818.48 (Dirt)
LIF-10	1601864.42	2127609.65	816.69 (Dirt)
LIF-11	1602015.61	2127467.56	818.34 (Dirt)
LIF-12	1602320.52	2127394.89	820.38 (Dirt)
LIF-13	1602447.31	2127784.14	819.15 (Dirt)
LIF-14	1602321.62	2128072.27	817.44 (Dirt)
LIF-15	1602665.98	2128602.98	815.15 (Dirt)
LIF-16	1602798.29	2128482.00	816.33 (Dirt)
LIF-17	1602926.03	2128612.62	817.79 (Dirt)
LIF-18	1603280.60	2128550.53	820.07 (Dirt)
LIF-19	1603275.52	2128136.34	823.64 (Dirt)
LIF-20	1603264.50	2127772.77	825.81 (Dirt)
LIF-21	1603242.32	2127372.52	825.19 (Dirt)
LIF-22	1602835.91	2127387.69	822.19 (Dirt)
LIF-23	1602973.36	2127703.42	824.10 (Dirt)
LIF-24	1602637.03	2127944.06	820.60 (Dirt)
LIF-25	1602651.59	2128335.35	815.84 (Dirt)
LIF-26	1602967.29	2128193.66	820.21 (Dirt)
LIF-27	1601455.19	2127062.57	805.15 (Dirt)
LIF-28	1601172.20	2127159.88	807.39 (Dirt)
LIF-29	1600972.80	2127314.06	806.71 (Dirt)
LIF-30	1601031.08	2127682.65	814.11 (Dirt)
LIF-31	1601007.78	2128202.54	811.40 (Dirt)
LIF-32	1601152.04	2128431.66	808.80 (Dirt)
LIF-33	1601404.70	2128368.85	810.59 (Dirt)

Daniel E. Garber – Registered Land Surveyor
Members: Kansas Society of Land Surveyors
National Society of Professional Surveyors

BORING	NORTHING	EASTING	ELEVATION
LIF-34	1601211.00	2127982.09	812.18 (Dirt)
LIF-35	1601407.97	2127682.68	813.63 (Dirt)
LIF-36	1601354.50	2127421.19	811.28 (Dirt)
LIF-37	1602089.54	2128774.55	815.33 (Asphalt)
LIF-38	1602209.21	2128768.96	815.95 (Asphalt)
LIF-39	1602338.19	2128764.28	816.47 (Asphalt)
LIF-40	1602665.59	2128795.34	816.29 (Asphalt)
LIF-41	1602600.03	2129092.28	819.22 (Asphalt)
LIF-42	1602398.01	2129098.85	818.52 (Asphalt)
LIF-43	1602217.07	2129103.99	817.80 (Asphalt)
LIF-44	1602386.40	2129627.20	813.39 (Asphalt)
LIF-45	1602526.72	2129487.74	816.17 (Asphalt)
LIF-46	1601032.79	2129075.32	810.10 (Asphalt)
LIF-47	1601044.84	2129377.43	812.85 (Asphalt)
LIF-48	1601071.19	2129716.79	812.11 (Asphalt)
LIF-49	1601078.74	2129984.16	805.27 (Asphalt)
LIF-50	1600697.60	2129492.06	813.22 (Asphalt)
LIF-51	1600703.88	2129717.70	814.67 (Asphalt)
LIF-52	1600691.10	2130008.45	809.45 (Asphalt)
LIF-53	1600317.74	2129893.46	814.50 (Asphalt)
LIF-54	1600321.35	2130009.23	812.53 (Asphalt)
LIF-55	1600127.12	2130229.89	814.20 (Asphalt)
LIF-56	1601882.06	2126921.60	810.37 (Dirt)
LIF-57	1601583.16	2126811.59	806.41 (Dirt)
LIF-58	1601415.50	2126944.37	804.95 (Dirt)
LIF-59	1601622.34	2126951.26	807.22 (Dirt)
LIF-60	1601288.66	2126982.55	805.00 (Dirt)

PRIMARY BENCHMARK HELD FOR ALL ELEVATIONS:

Brass NGS Monument near North corner of concrete footing for the NW leg of The Municipal Water Tank SW of 4th & Indiana Street. Stamped "Neodesha 1933".

NAVD 88 Elevation = 819.34

CP#1: 5/8" x 24" rebar with red GSS cap ±300' West of 12th & Tank Avenue ±40.5' South of Tank Avenue 13.2' NE of fire hydrant 21.5' NNW of Monitor Well.

OPUS #1

NAVD 88 Elevation = 811.41

CP#2: 5/8" x 24" rebar with red GSS cap $\pm 1200'$ North of US 75 & Waterplant Road 78.0' East of centerline Waterplant Road 46.0' North of gravel entrance.

CP#2 = OPUS #2

NAVD 88 Elevation = 804.14

CP#6: 5/8" x 24" rebar with red GSS cap SW of 14th Street & Granby Road 52.0' North to centerline Granby Road 59.0' East to centerline 14th Street.

CP#6 = OPUS #3

NAVD 88 Elevation = 825.71

BM #1: North bolt on fire hydrant @ NE corner 8th Street & Granby Road.

Elevation = 823.61

BM #2: Left North bolt on fire hydrant @ NW corner 10th Street & Granby Road.

Elevation = 824.935

BM #3: "M" in Mueller on fire hydrant @ NW corner 10th Street & Elm Street.

Elevation = 822.11

BM #4: Top nail head on double spike in power pole North 11th Street & Elm Street.

Elevation = 817.02

BM #5: North bolt on fire hydrant @ NE corner 8th Street & Elm Street.

Elevation = 817.90

BM #6: Top nail head on spike step in power pole @ SE corner 8th Street & Walnut Street.

Elevation = 811.53

BM #7: North bolt on fire hydrant @ SE corner 8th Street & Tank Street.

Elevation = 808.04

BM #8: "M" in Mueller on fire hydrant @ SW corner 8th Street & Idaho.

Elevation = 810.59

BM #9: Square cut on top of curb @ South end SW curb return @ 8th Street & Carolina Street.

Elevation = 805.24

BM #10: Square cut on top of curb @ South end SW curb return @ 8th Street & Lincoln Street.

Elevation = 812.265

BM #11: Square cut on top of curb @ South end SE curb return @ 8th Street & Illinois Street.

Elevation = 813.705

BM #12: NE bolt on fire hydrant @ 8th Street & Osage Street.
Elevation = 815.925

BM #13: Square cut on top of curb South end SE curb return @ 8th Street & Iowa Street.
Elevation = 813.53

BM #14: North bolt on fire hydrant @ NW corner 9th Street & Iowa Street.
Elevation = 813.98

BM #15: Square cut on top of curb @ South end NE curb return @ 10th Street & Iowa Street.
Elevation = 808.33

BM #16: "X" on North rim manhole on 10th Street @ alley between Osage Street & Illinois Street.
Elevation = 810.12

BM #17: "M" in Mueller on fire hydrant @ NW corner 10th Street & Church Street.
Elevation = 813.45

BM #18: Square cut on top of curb @ South end NW curb return @ 10th Street & Lincoln Street.
Elevation = 811.12

BM #19: Top nail head on spike step in 2nd power pole North of 11th Street & Tank Avenue - West side Tank Avenue.
Elevation = 817.89

BM #20: Square cut on NW corner fuel containment concrete wall North of rail entrance to building $\pm 91'$ SW of MW-169.
Elevation = 806.50

BM #21: Railroad spike in power pole South of driveway @ house #3410 Waterplant Road.
Elevation = 800.70

BM #22: Railroad spike in power pole $\pm 1575'$ North of US 75 @ curve in Waterplant Road - East side Waterplant Road.
Elevation = 800.12

BM #23: "X" on North rim manhole on 11th Street @ alley between Osage Street & Illinois Street.
Elevation = 808.13

BM #24: Square cut on NE corner concrete pad of Twin Rivers Industrial Park sign.
Elevation = 810.765

BM #25: "M" in Mueller on fire hydrant West of Illinois Street & Klayder Drive.
Elevation = 809.525

BM #26: "M" in Mueller on fire hydrant West side Klayder Drive - East of Building #16.
Elevation = 812.64

BM #27: Railroad spike in power pole East side Klayder Drive SW of Building #10.
Elevation = 810.80

BM #28: Railroad spike in power pole @ SW corner Neodesha Quality Machining building.
Elevation = 809.015

BM #29: Railroad spike in power pole on West side Head Drive @ Pingrey Drive ext. East - North of NE corner warehouse (large tan building).
Elevation = 809.005

BM #30: "M" in Mueller on fire hydrant South of Opus #1 North of Sands Level & Tool Div. parking lot.
Elevation = 813.175

BM #31: Railroad spike in 5th power pole East of 14th Street & Tank Avenue - North side Tank Avenue.
Elevation = 819.38

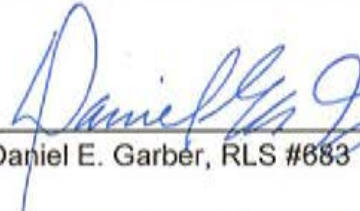
BM #32: "M" in Mueller on fire hydrant @ SW corner 14th Street & Tank Avenue.
Elevation = 818.43

BM #33: Square cut on North side concrete pad of manhole ENE of North Lagoon ±20' West of access road ±30' West of railroad bridge 60' North of South railroad bridge abutment.
Elevation = 793.61

BM #34: Square cut on concrete catch basin East of NE corner South lagoon 10' West of access road 105' South of South railroad bridge abutment.
Elevation = 7936.36

SURVEYOR'S CERTIFICATE:

I hereby certify the above data to be a true, correct and complete representation of said survey made under my supervision, this 24th day of December, 2014.


Daniel E. Garber, RLS #683



Monitoring Well Survey Data
 Supplemental Investigation
 Former Amoco Refinery
 Neodesha, Kansas

Monitoring Well No.	Kansas State Plane		Geographic		Ground Surface	Top of Casing	Surveyor Information
	Northing (feet)	Easting (feet)	Latitude	Longitude	Elevation (ft amsl)	Elevation (ft amsl)	
Groundwater Monitoring Wells							
MW-144	1596714.32	2128546.85	37.41387798	-95.68925602	792.74	795.41	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-145	1595045.85	2128698.93	37.40928521	-95.68890581	792.74	795.74	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-146	1595032.48	2128039.32	37.40930310	-95.69117714	793.39	795.40	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-147	1595011.33	2127609.41	37.40928060	-95.69265880	794.05	795.60	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-148	1603384.13	2127540.18	37.43227081	-95.69202900	828.80	832.09	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-149	1603314.67	2129303.19	37.43193417	-95.68596723	822.84	822.49	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-150	1603128.13	2129635.30	37.43139456	-95.68484338	818.78	818.41	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-151	1602683.13	2129317.88	37.43019929	-95.68598230	820.41	819.89	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-152	1602490.74	2128753.63	37.42971790	-95.68794460	815.18	814.83	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-153	1599679.19	2130544.62	37.42185135	-95.68207211	800.42	799.96	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-154	1600338.14	2128947.40	37.42379268	-95.68750118	807.68	807.16	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-155	1599930.63	2129311.72	37.42264383	-95.68628953	811.33	810.94	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-156	1599368.46	2129162.02	37.42111300	-95.68686319	809.09	808.49	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-157	1599177.53	2129698.38	37.42054442	-95.68503695	812.51	811.96	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-158	1598826.72	2129781.80	37.41957448	-95.68478630	812.28	811.80	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-159	1598814.68	2129352.21	37.41957704	-95.68626612	808.10	807.65	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-160	1598912.02	2128718.54	37.41989675	-95.68843699	808.03	810.39	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-161	1598881.18	2128401.78	37.41983831	-95.68953042	807.80	809.83	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-162	1598727.70	2127975.12	37.41945229	-95.69101483	805.48	805.09	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-163	1599252.92	2127834.53	37.42090572	-95.69144425	805.19	804.96	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-164	1599402.21	2127970.41	37.42130431	-95.69096108	807.54	809.91	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-165	1599519.99	2128281.04	37.42160192	-95.68987970	810.26	812.42	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-166	1599838.91	2128697.82	37.42244290	-95.68841207	809.17	808.69	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-167	1600139.58	2128331.80	37.42329858	-95.68964069	804.28	806.80	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-168	1600440.99	2128675.71	37.42409752	-95.68842566	806.08	805.74	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-169	1600451.58	2127363.22	37.42423519	-95.69294219	803.95	803.60	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-170	1600749.11	2127113.86	37.42507256	-95.69376966	805.06	807.63	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-171	1601416.87	2126950.22	37.42691918	-95.69426374	804.82	807.02	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-172	1603030.74	2127351.24	37.43131633	-95.69271604	821.40	821.10	Garber Surveying Service, P.A. (Hutchinson, KS)
MW-173	1598642.78	2128586.23	37.41916860	-95.68892032	806.60	809.06	Garber Surveying Service, P.A. (Hutchinson, KS)

Notes:

- (1) UTM Northing and Eastings are reported in Kansas State Plane (South Zone) using North American Datum 1983 (NAD83).
- (2) Latitude and Longitude locations are reported in Geographic NAD 83.
- (3) Elevation datum is reported in North American Vertical Datum 1988 (NAD88).
- (4) Top of Casing Elevations are reported from the inside pipe on the north side (as marked).

Main Office
 2908 North Plum Street
 Hutchinson, KS 67502
 Office: (620) 665-7032
 Fax: (620) 663-7401



Garber Surveying Service, P.A.

Branch Offices
 511 North Poplar Street
 Newton, KS 67114
 Office: (316) 283-5053
 Fax: (316) 283-5073

115 East Marlin, Suite 102
 McPherson, KS 67460
 Office: (620) 241-4441
 Fax: (620) 241-4458

MONITORING WELLS				
BURNS & MCDONNELL ENGINEERS				
NEODESHA, KS				
WELL	NORTHING	EASTING	CASING ELEVATION	GROUND ELEVATION
MW-144 NORTH EDGE	1596714.32	2128546.85	795.41	792.74 (Dirt)
MW-145 NORTH EDGE	1595045.85	2128698.93	795.74	792.74 (Dirt)
MW-146 NORTH EDGE	1595032.48	2128039.32	795.40	793.39 (Dirt)
MW-147 NORTH EDGE	1595011.33	2127609.41	795.60	794.05 (Dirt)
MW-148 NORTH EDGE	1603384.13	2127540.18	832.09	828.80 (Dirt)
MW-149 NORTH EDGE	1603314.67	2129303.19	822.49	822.84 (Asphalt)
MW-150 NORTH EDGE	1603128.13	2129635.30	818.41	818.78 (Dirt)
MW-151 NORTH EDGE	1602683.13	2129317.88	819.89	820.41 (Asphalt)
MW-152 NORTH EDGE	1602490.74	2128753.63	814.83	815.18 (Dirt)
MW-153 NORTH EDGE	1599679.19	2130544.62	799.96	800.42 (Asphalt)
MW-154 NORTH EDGE	1600338.14	2128947.40	807.16	807.68 (Dirt)
MW-155 NORTH EDGE	1599930.63	2129311.72	810.94	811.33 (Asphalt)
MW-156 NORTH EDGE	1599368.46	2129162.02	808.49	809.09 (Dirt)
MW-157 NORTH EDGE	1599177.53	2129698.38	811.96	812.51 (Asphalt)
MW-158 NORTH EDGE	1598826.72	2129781.80	811.80	812.28 (Asphalt)
MW-159 NORTH EDGE	1598814.68	2129352.21	807.65	808.10 (Asphalt)
MW-160 NORTH EDGE	1598912.02	2128718.54	810.39	808.03 (Dirt)
MW-161 NORTH EDGE	1598881.18	2128401.78	809.83	807.80 (Dirt)
MW-162 NORTH EDGE	1598727.70	2127975.12	805.09	805.48 (Dirt)
MW-163 NORTH EDGE	1599252.92	2127834.53	804.96	805.19 (Dirt)
MW-164 NORTH EDGE	1599402.21	2127970.41	809.91	807.54 (Dirt)
MW-165 NORTH EDGE	1599519.99	2128281.04	812.42	810.26 (Dirt)
MW-166 NORTH EDGE	1599838.91	2128697.82	808.69	809.17 (Dirt)
MW-167 NORTH EDGE	1600139.58	2128331.80	806.80	804.28 (Dirt)
MW-168 NORTH EDGE	1600440.99	2128675.71	805.74	806.08 (Dirt)
MW-169 NORTH EDGE	1600451.58	2127363.22	803.60	803.95 (Dirt)
MW-170 NORTH EDGE	1600749.11	2127113.86	807.63	805.06 (Dirt)
MW-171 NORTH EDGE	1601416.87	2126950.22	807.02	804.82 (Dirt)
MW-172 NORTH EDGE	1603030.74	2127351.24	821.10	821.40 (Dirt)
MW-173 NORTH EDGE	1598642.78	2128586.23	809.06	806.60 (Dirt)

Daniel E. Garber – Registered Land Surveyor
Members: Kansas Society of Land Surveyors
National Society of Professional Surveyors

PRIMARY BENCHMARK HELD FOR ALL ELEVATIONS:

Brass NGS Monument near North corner of concrete footing for the NW leg of The Municipal Water Tank SW of 4th & Indiana Street. Stamped "Neodesha 1933".

NAVD 88 Elevation = 819.34

CP#1: 5/8" x 24" rebar with red GSS cap ±300' West of 12th & Tank Avenue ±40.5' South of Tank Avenue 13.2' NE of fire hydrant 21.5' NNW of Monitor Well.

CP#1 = OPUS #1

NAVD 88 Elevation = 811.41

CP#2: 5/8" x 24" rebar with red GSS cap ±1200' North of US 75 & Waterplant Road 78.0' East of centerline Waterplant Road 46.0' North of gravel entrance.

CP#2 = OPUS #2

NAVD 88 Elevation = 804.14

CP#6: 5/8" x 24" rebar with red GSS cap SW of 14th Street & Granby Road 52.0' North to centerline Granby Road 59.0' East to centerline 14th Street.

CP#6 = OPUS #3

NAVD 88 Elevation = 825.71

BM #1: North bolt on fire hydrant @ NE corner 8th Street & Granby Road.

Elevation = 823.61

BM #2: Left North bolt on fire hydrant @ NW corner 10th Street & Granby Road.

Elevation = 824.935

BM #3: "M" in Mueller on fire hydrant @ NW corner 10th Street & Elm Street.

Elevation = 822.11

BM #4: Top nail head on double spike in power pole North 11th Street & Elm Street.

Elevation = 817.02

BM #5: North bolt on fire hydrant @ NE corner 8th Street & Elm Street.

Elevation = 817.90

BM #6: Top nail head on spike step in power pole @ SE corner 8th Street & Walnut Street.

Elevation = 811.53

BM #7: North bolt on fire hydrant @ SE corner 8th Street & Tank Street.

Elevation = 808.04

BM #8: "M" in Mueller on fire hydrant @ SW corner 8th Street & Idaho.

Elevation = 810.59

BM #9: Square cut on top of curb @ South end SW curb return @ 8th Street & Carolina Street.
Elevation = 805.24

BM #10: Square cut on top of curb @ South end SW curb return @ 8th Street & Lincoln Street.
Elevation = 812.265

BM #11: Square cut on top of curb @ South end SE curb return @ 8th Street & Illinois Street.
Elevation = 813.705

BM #12: NE bolt on fire hydrant @ 8th Street & Osage Street.
Elevation = 815.925

BM #13: Square cut on top of curb South end SE curb return @ 8th Street & Iowa Street.
Elevation = 813.53

BM #14: North bolt on fire hydrant @ NW corner 9th Street & Iowa Street.
Elevation = 813.98

BM #15: Square cut on top of curb @ South end NE curb return @ 10th Street & Iowa Street.
Elevation = 808.33

BM #16: "X" on North rim manhole on 10th Street @ alley between Osage Street & Illinois Street.
Elevation = 810.12

BM #17: "M" in Mueller on fire hydrant @ NW corner 10th Street & Church Street.
Elevation = 813.45

BM #18: Square cut on top of curb @ South end NW curb return @ 10th Street & Lincoln Street.
Elevation = 811.12

BM #19: Top nail head on spike step in 2nd power pole North of 11th Street & Tank Avenue - West side Tank Avenue.
Elevation = 817.89

BM #20: Square cut on NW corner fuel containment concrete wall North of rail entrance to building ±91' SW of MW-169.
Elevation = 806.50

BM #21: Railroad spike in power pole South of driveway @ house #3410 Waterplant Road.
Elevation = 800.70

BM #22: Railroad spike in power pole ±1575' North of US 75 @ curve in Waterplant Road - East side Waterplant Road.
Elevation = 800.12

BM #23: "X" on North rim manhole on 11th Street @ alley between Osage Street & Illinois Street.
Elevation = 808.13

BM #24: Square cut on NE corner concrete pad of Twin Rivers Industrial Park sign.
Elevation = 810.765

BM #25: "M" in Mueller on fire hydrant West of Illinois Street & Klayder Drive.
Elevation = 809.525

BM #26: "M" in Mueller on fire hydrant West side Klayder Drive - East of Building #16.
Elevation = 812.64

BM #27: Railroad spike in power pole East side Klayder Drive SW of Building #10.
Elevation = 810.80

BM #28: Railroad spike in power pole @ SW corner Neodesha Quality Machining building.
Elevation = 809.015

BM #29: Railroad spike in power pole on West side Head Drive @ Pingrey Drive ext. East - North of NE corner warehouse (large tan building).
Elevation = 809.005

BM #30: "M" in Mueller on fire hydrant South of Opus #1 North of Sands Level & Tool Div. parking lot.
Elevation = 813.175

BM #31: Railroad spike in 5th power pole East of 14th Street & Tank Avenue - North side Tank Avenue.
Elevation = 819.38


BM #32: "M" in Mueller on fire hydrant @ SW corner 14th Street & Tank Avenue.
Elevation = 818.43

BM #33: Square cut on North side concrete pad of manhole ENE of North Lagoon ±20' West of access road ±30' West of railroad bridge 60' North of South railroad bridge abutment.
Elevation = 793.61

BM #34: Square cut on concrete catch basin East of NE corner South lagoon 10' West of access road 105' South of South railroad bridge abutment.
Elevation = 7936.36

SURVEYOR'S CERTIFICATE:

I hereby certify the above data to be a true, correct and complete representation of said survey made under my supervision, this 12th day of December, 2014.



Daniel E. Garber, RLS #683 12.12.2014

