


United States Nuclear Regulatory Commission Official Hearing Exhibit	
In the Matter of: POWERTECH USA, INC. (Dewey-Burdock In Situ Uranium Recovery Facility)	
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APPENDIX 2.7-N

STATISTICS FOR GROUNDWATER CONSTITUENTS AT OR ABOVE PQL

Appendix 2.7-N

Statistics for Groundwater Constituents at or above PQL by Constituent

Constituent, Unit	PQL	n Analyzed	n Detected	% exceeding detection	Mean	StDev	Q1	Median	Q3
Major Cations and Anions									
Anions (meq/L)		140	140	100%	28.3	27.5	13.3	15.3	32.8
Bicarbonate as HCO ₃ (mg/L)	5	140	140	100%	233	119	171	206	248
Carbonate as CO ₃ (mg/L)	5	140	4	2.9%	21.8	21.3	7.75	13.5	44.0
Sulfate (mg/L)	36	140	140	100%	1110	1000	467	574	1420
Chloride (mg/L)	1	140	140	100%	62.8	266	9.00	12.0	15.0
Fluoride (mg/L)	0.1	140	134	95.7%	0.39	0.139	0.300	0.40	0.50
Nitrogen, Nitrate as N (mg/L)	0.1	140	29	20.7%	0.37	0.440	0.090	0.10	0.73
Cations (meq/L)		140	140	100%	31.6	43.7	13.8	15.9	33.5
Ammonia (mg/L)	1	140	83	59.3%	0.29	0.191	0.200	0.20	0.400
Sodium-Dissolved (mg/L)	0.8	140	140	100%	280	326	127	196	277
Calcium-Dissolved (mg/L)	0.5	140	139	99.3%	184	165	48.5	91.6	353
Magnesium-Dissolved (mg/L)	0.5	140	139	99.3%	86.8	115	17.5	32.7	109
Potassium-Dissolved (mg/L)	0.5	140	139	99.3%	13.0	4.92	8.70	11.5	16.2
Silica-Dissolved (mg/L)	0.5	140	138	98.6%	6.88	3.11	4.38	7.2	8.00
General Water Quality Indicators									
Alkalinity-Total as CaCO ₃ (mg/L)	5	140	140	100%	193	96.5	140	169	204
Anion/Cation Balance (± 5) (%)		140	136	97.1%	0.93	5.16	-1.76	1.36	4.17
Conductivity @ 25 C (umhos/cm)	5	140	140	100%	2357	1989	1330	1545	2530
Oxidation-Reduction Potential (mV)		118	117	99.2%	193	69.1	150	200	230
pH	0.01	140	140	100%	7.71	0.500	7.33	7.80	8.02
Sodium Adsorption Ratio (meq/L)	0.1	120	119	99.2%	5.46	3.70	2.10	5.40	7.60
Solids-Total Dissolved TDS (mg/L)	5	140	140	100%	1926	1814	890	1000	2300
Solids-Total Dissolved Calc. (mg/L)	5	140	140	100%	1840	1736	892	1005	2135
TDS Balance (0.80 - 1.20) (dec.%)		140	140	100%	1.04	0.10	0.97	1.02	1.09
Metals, Dissolved									
Aluminum-Dissolved (mg/L)	0.1	140	1	0.7%	0.60			0.60	

Constituent, Unit	PQL	n Analyzed	n Detected	% exceeding detection	Mean	StDev	Q1	Median	Q3
Arsenic-Dissolved (mg/L)	0.001	140	72	51.4%	0.00	0.0052	0.001	0.0010	0.0020
Boron-Dissolved (mg/L)	0.1	140	49	35.0%	0.44	0.402	0.20	0.40	0.50
Copper-Dissolved (mg/L)	0.01	140	2	1.4%	0.05			0.045	
Iron-Dissolved (mg/L)	0.03	140	53	37.9%	1.10	2.13	0.070	0.250	1.57
Lead-Dissolved (mg/L)	0.001	140	6	4.3%	0.00	0.0026	0.0010	0.0025	0.005
Manganese-Dissolved (mg/L)	0.01	140	135	96.4%	0.59	0.928	0.070	0.10	0.43
Molybdenum-Dissolved (mg/L)	0.1	140	2	1.4%	0.15			0.150	
Selenium-Dissolved (mg/L)	0.001	140	24	17.1%	0.01	0.0055	0.0013	0.0025	0.0115
Selenium-IV-Dissolved (mg/L)	0.001	118	2	1.7%	0.00			0.0010	
Selenium-VI-Dissolved (mg/L)	0.001	118	13	11.0%	0.01	0.01	0.001	0.0060	0.012
Uranium-Dissolved (mg/L)	0.003	140	106	75.7%	0.02	0.030	0.0024	0.0060	0.0304
Vanadium-Dissolved (mg/L)	0.1	140	4	2.9%	0.13	0.050	0.10	0.10	0.175
Zinc-Dissolved (mg/L)	0.01	140	36	25.7%	0.02	0.020	0.01	0.020	0.028
Metals, Suspended									
Uranium-Suspended (mg/L)	0.0003	138	39	28.3%	0.005	0.012	0.0007	0.0013	0.0033
Metals, Total									
Arsenic-Total (mg/L)	0.001	95	79	83.2%	0.01	0.0073	0.002	0.0030	0.005
Barium-Total (mg/L)	0.1	95	6	6.3%	0.25	0.138	0.175	0.20	0.35
Beryllium-Total (mg/L)	0.001	95	2	2.1%	0.00			0.0025	
Boron-Total (mg/L)	0.2	95	29	30.5%	0.39	0.442	0.10	0.20	0.50
Chromium-Total (mg/L)	0.05	95	1	1.1%	0.05			0.050	
Copper-Total (mg/L)	0.01	95	5	5.3%	0.05	0.047	0.015	0.030	0.10
Iron-Total (mg/L)	0.03	95	92	96.8%	3.25	8.01	0.14	0.84	3.39
Lead-Total (mg/L)	0.001	95	17	17.9%	0.02	0.017	0.002	0.013	0.025
Manganese-Total (mg/L)	0.01	95	95	100%	0.59	0.924	0.070	0.090	0.50
Mercury-Total (mg/L)	0.001	163	1	0.6%	0.00			0.00010	
Molybdenum-Total (mg/L)	0.1	95	8	8.4%	0.06	0.102	0.010	0.015	0.080
Nickel-Total (mg/L)	0.05	95	1	1.1%	0.10			0.10	
Selenium-Total (mg/L)	0.002	95	25	26.3%	0.00	0.0040	0.002	0.0030	0.0055
Strontium-Total (mg/L)	0.1	95	94	98.9%	3.59	3.10	1.10	1.70	5.85

Constituent, Unit	PQL	n Analyzed	n Detected	% exceeding detection	Mean	StDev	Q1	Median	Q3
Uranium-Total (mg/L)	0.0003	99	74	74.7%	0.02	0.033	0.0025	0.0064	0.030
Zinc-Total (mg/L)	0.01	95	34	35.8%	0.05	0.073	0.010	0.020	0.070
Radionuclides									
Gross Alpha-Dissolved (pCi/L)	1	140	140	100%	406	1084	13.2	30.1	94.7
Gross Beta-Dissolved (pCi/L)	2	140	136	97.1%	140	367	10.3	16.2	39.9
Gross Gamma-Dissolved (pCi/L)	20	140	124	88.6%	1539	6584	0.00	160	1075
Lead 210-Dissolved (pCi/L)	1	140	102	72.9%	4.20	14.5	-1.85	0.50	4.90
Lead 210-Suspended (pCi/L)	1	138	89	64.5%	3.80	9.66	-0.55	1.20	6.50
Lead 210-Total (pCi/L)	1	20	3	15.0%	27.7	25.4	12.0	14.0	57.0
Polonium 210-Dissolved (pCi/L)	1	140	105	75.0%	1.01	1.07	0.10	0.90	1.60
Polonium 210-Suspended (pCi/L)	1	138	88	63.8%	1.07	1.98	0.00	0.40	1.20
Polonium 210-Total (pCi/L)	1	20	4	20.0%	7.65	3.60	5.40	6.2	11.4
Radium 226-Dissolved (pCi/L)	0.2	134	118	88.1%	119	289	1.60	3.9	54.9
Radium 226-Suspended (pCi/L)	0.2	133	101	75.9%	2.86	5.46	-0.035	0.70	2.75
Radium 226-Total (pCi/L)	0.2	20	16	80.0%	25.5	37.6	2.43	5.15	51.4
Radon 222-Total (pCi/L)	100	120	120	100%	29875	86353	462	949	4145
Thorium 230-Dissolved (pCi/L)	0.2	140	88	62.9%	0.11	0.23	0.00	0.00	0.18
Thorium 230-Suspended (pCi/L)	0.2	138	91	65.9%	0.50	1.73	0.10	0.20	0.30
Thorium 230-Total (pCi/L)	0.2	20	1	5.0%	1.90			1.90	

PQL = Practical Quantitation Limit. The concentration that can be reliably measured within specified limits during routine laboratory operating conditions, below which results are reported as "less than PQL".

n Analyzed = The number of samples analyzed for a particular constituent.

n Detected = The number of samples where a particular constituent was detected at or above the PQL.

Mean = Arithmetic mean of those constituents detected above detection limit

StDev = Standard deviation of those constituents detected at or above PQL.

Q1 = First Quartile. The value holding ranked position $0.25 \times (n \text{ Detected} + 1)$ for each constituent. Value may be interpolated.

Q3 = Third Quartile. The value holding ranked position $0.75 \times (n \text{ Detected} + 1)$ for each constituent. Value may be interpolated.

Median = The middle value of ranked n Detected. Value may be interpolated.

APPENDIX 2.7-O

MINIMUM AND MAXIMUM RESULTS FOR SAMPLED CONSTITUENTS AT OR ABOVE PQL

Appendix 2.7-O
Minimum and Maximum Results for Sampled Constituent above PQL, Sampled Site and Date of Sampling

Constituent, Unit	Minimum at or above PQL			Maximum at or above PQL		
	Concentration	Site ID	Collection Date	Concentration	Site ID	Collection Date
Major Cations and Anions						
Anions (meq/L)	1.1	135	3/13/2008	150	677	4/29/2008
Bicarbonate as HCO ₃ (mg/L)	12	688	4/2/2008	649	677	9/28/2007
Carbonate as CO ₃ (mg/L)	7	688	6/10/2008	53.0	688	4/2/2008
Sulfate (mg/L)	39	135	3/13/2008	4590	677	11/27/2007
Chloride (mg/L)	2	135	3/13/2008	1780	677	11/27/2007
Fluoride (mg/L)	0.1	650	5/30/2008	1.00	678	4/29/2008
Nitrogen, Nitrate as N (mg/L)	0.06	695	4/22/2008	1.30	679	2/3/2008
Cations (meq/L)	0.547	135	3/13/2008	430	676	4/29/2008
Ammonia (mg/L)	0.1	697	6/24/2008	1.20	3026	3/30/2008
Sodium-Dissolved (mg/L)	12	135	3/13/2008	2140	677	4/29/2008
Calcium-Dissolved (mg/L)	11.2	622	4/1/2008	561	676	4/29/2008
Magnesium-Dissolved (mg/L)	7.1	622	4/1/2008	500	678	4/29/2008
Potassium-Dissolved (mg/L)	6.8	42	5/30/2008	28.0	675	9/28/2007
Silica-Dissolved (mg/L)	0.9	650	3/24/2008	16.3	678	2/5/2008
General Water Quality Indicators						
Alkalinity-Total as CaCO ₃ (mg/L)	12	135	3/13/2008	532	677	9/28/2007
Anion/Cation Balance (± 5) (%)	-33.6	135	3/13/2008	12.1	688	4/22/2008
Conductivity @ 25 C (umhos/cm)	131	135	3/13/2008	12100	677	4/29/2008
Oxidation-Reduction Potential (mV)	-80.2	619	3/24/2008	360	694	4/21/2008
pH	6.49	135	3/13/2008	10.3	688	4/2/2008
Sodium Adsorption Ratio (meq/L)	0.84	679	11/14/2007	17.0	677	4/29/2008
Solids-Total Dissolved TDS (mg/L)	92	135	3/13/2008	9700	677	11/27/2007
Solids-Total Dissolved Calc. (mg/L)	61	135	3/13/2008	9550	677	4/29/2008
TDS Balance (0.80 - 1.20) (dec.%)	0.78	628	2/20/2008	1.51	135	3/13/2008
Metals, Dissolved						
Aluminum-Dissolved (mg/L)	0.6	650	9/28/2007	0.600	650	9/28/2007
Arsenic-Dissolved (mg/L)	0.001	16	6/30/2008	0.0260	680	1/30/2008
Boron-Dissolved (mg/L)	0.1	650	5/30/2008	1.60	678	2/5/2008

Constituent, Unit	Minimum at or above PQL			Maximum at or above PQL		
	Concentration	Site ID	Collection Date	Concentration	Site ID	Collection Date
Copper-Dissolved (mg/L)	0.01	619	6/17/2008	0.080	619	9/27/2007
Iron-Dissolved (mg/L)	0.03	622	4/21/2008	13.2	650	9/28/2007
Lead-Dissolved (mg/L)	0.001	622	5/28/2008	0.0080	619	9/27/2007
Manganese-Dissolved (mg/L)	0.02	688	6/30/2008	3.39	675	2/5/2008
Molybdenum-Dissolved (mg/L)	0.1	3026	4/22/2008	0.200	3026	3/30/2008
Selenium-Dissolved (mg/L)	0.001	698	3/30/2008	0.0170	676	9/28/2007
Selenium-IV-Dissolved (mg/L)	0.001	2	2/12/2008	0.0010	2	2/12/2008
Selenium-VI-Dissolved (mg/L)	0.001	698	3/30/2008	0.0140	676	11/27/2007
Uranium-Dissolved (mg/L)	0.0003	8	11/27/2007	0.172	680	1/30/2008
Vanadium-Dissolved (mg/L)	0.1	3026	6/24/2008	0.200	678	4/29/2008
Zinc-Dissolved (mg/L)	0.01	622	6/25/2008	0.110	619	9/27/2007
Metals, Suspended						
Uranium-Suspended (mg/L)	0.0003	2	9/26/2007	0.070	676	2/5/2008
Metals, Total						
Arsenic-Total (mg/L)	0.001	16	6/30/2008	0.028	3026	5/28/2008
Barium-Total (mg/L)	0.1	622	6/25/2008	0.50	676	2/5/2008
Beryllium-Total (mg/L)	0.002	679	5/18/2008	0.00	676	2/5/2008
Boron-Total (mg/L)	0.1	680	6/10/2008	1.60	678	2/5/2008
Chromium-Total (mg/L)	0.05	676	2/5/2008	0.050	676	2/5/2008
Copper-Total (mg/L)	0.01	619	6/17/2008	0.12	676	2/5/2008
Iron-Total (mg/L)	0.04	681	6/25/2008	66.00	676	2/5/2008
Lead-Total (mg/L)	0.001	698	6/24/2008	0.060	676	2/5/2008
Manganese-Total (mg/L)	0.01	688	6/10/2008	3.40	675	2/5/2008
Mercury-Total (mg/L)	0.0001	688	6/30/2008	0.0001	688	6/30/2008
Molybdenum-Total (mg/L)	0.01	635	2/10/2008	0.300	3026	3/30/2008
Nickel-Total (mg/L)	0.1	676	2/5/2008	0.100	676	2/5/2008
Selenium-Total (mg/L)	0.001	689	6/25/2008	0.014	679	2/3/2008
Strontium-Total (mg/L)	0.6	18	2/12/2008	11.6	677	4/29/2008
Uranium-Total (mg/L)	0.0004	650	3/24/2008	0.12	698	3/30/2008
Zinc-Total (mg/L)	0.01	3026	6/24/2008	0.28	676	2/5/2008
Radionuclides						
Gross Alpha-Dissolved (pCi/L)	1.4	2	9/26/2007	6500	680	5/13/2008

Constituent, Unit	Minimum at or above PQL			Maximum at or above PQL		
	Concentration	Site ID	Collection Date	Concentration	Site ID	Collection Date
Gross Beta-Dissolved (pCi/L)	-30	677	4/29/2008	2320	680	3/31/2008
Gross Gamma-Dissolved (pCi/L)	0	689	6/25/2008	70000	42	11/12/2007
Lead 210-Dissolved (pCi/L)	-31	689	3/30/2008	61.8	680	5/21/2008
Lead 210-Suspended (pCi/L)	-19.2	675	4/29/2008	57.0	42	9/28/2007
Lead 210-Total (pCi/L)	12	4002	9/27/2007	57.0	42	9/28/2007
Polonium 210-Dissolved (pCi/L)	-0.6	13	5/19/2008	5.50	42	2/5/2008
Polonium 210-Suspended (pCi/L)	-0.3	679	5/18/2008	13.0	42	9/28/2007
Polonium 210-Total (pCi/L)	5.2	13	9/27/2007	13.0	42	9/28/2007
Radium 226-Dissolved (pCi/L)	-0.12	135	3/13/2008	1430	680	5/13/2008
Radium 226-Suspended (pCi/L)	-0.4	615	6/25/2008	37.0	4002	2/12/2008
Radium 226-Total (pCi/L)	1.1	13	9/27/2007	120	619	9/27/2007
Radon 222-Total (pCi/L)	123	8	11/27/2007	462000	681	5/18/2008
Thorium 230-Dissolved (pCi/L)	-0.1	698	3/30/2008	1.80	135	3/13/2008
Thorium 230-Suspended (pCi/L)	0	688	6/30/2008	15.9	688	4/22/2008
Thorium 230-Total (pCi/L)	1.9	679	9/28/2007	1.90	679	9/28/2007

Table Upgradient: Statistics for groundwater constituents at or above PQL by constituent from wells that are hydraulically upgradient from originally proposed mining activities. This analysis includes wells # 16, 615, 619, 622, 628, 631, 650, 698, 3026, 4002. Due to recent permit boundary changes, wells #615, 622, and 628 may no longer qualify as upgradient. Also, well #698 is upgradient of planned in-situ mining, but not upgradient of the proposed plant site.

Analyte	n	Mean	StDev	Q1	Median	Minimum	Maximum
Major Cations and Anions							
Anions (meq/L)	44	21.21364	9.28446	12.325	18	10.6	41.2
Bicarbonate as HCO ₃ (mg/L)	44	165.9091	38.35927	144.5	168	37	219
Carbonate as CO ₃ (mg/L)	44	2.670455	1.130668	2.5	2.5	2.5	10
Sulfate (mg/L)	44	892.1818	452.2263	450.75	813	369	1790
Chloride (mg/L)	44	13.56818	13.6013	7	10	4	82
Fluoride (mg/L)	44	0.359091	0.134801	0.3	0.4	0.05	0.6
Nitrogen, Nitrate as N (mg/L)	44	0.058409	0.025785	0.05	0.05	0.05	0.2
Nitrogen, Nitrite as N (mg/L)	44	0.047727	0.00727	0.05	0.05	0.025	0.05
Cations (meq/L)	44	21.64614	10.01718	12	17.75	9.23	42.4
Ammonia (mg/L)	44	0.227273	0.256872	0.05	0.1	0.05	1.2
Sodium-Dissolved (mg/L)	44	146.4136	81.90985	88.25	127	44	435
Calcium-Dissolved (mg/L)	44	190.1386	140.9727	70.95	119	11.2	461
Magnesium-Dissolved (mg/L)	44	64.81364	45.77509	21.625	54.65	7.1	141
Potassium-Dissolved (mg/L)	44	13.68636	4.762088	8.725	15.25	7.1	25.3
Silica-Dissolved (mg/L)	44	5.296591	2.375025	3.9	5.35	0.25	9.5
General Water Quality Indicators							
Alkalinity-Total as CaCO ₃ (mg/L)	44	136.7273	31.30671	120.5	138	30	180
A/C Balance (± 5) (%)	44	0.489023	4.812788	-2.5975	1.18	-18.5	9.13
Conductivity @ 25 C (umhos/cm)	44	1794.205	625.9235	1195	1735	925	2970
Conductivity (field, umhos/cm)	48	1703.375	666.1638	1165.5	1461.5	740	3098
Dissolved Oxygen (field, mg/L)	33	0.780455	1.406676	0.115	0.23	0.015	7.09
Oxidation-Reduction Potential (mV)	37	176.2108	82.10339	130	200	-80.2	340
pH	44	7.498182	0.459582	7.1525	7.455	6.75	8.66
pH (field)	46	7.443261	0.805128	6.9475	7.265	6.09	10.79
Sodium Adsorption Ratio (SAR) (meq/L)	37	3.257838	2.78793	1	2.3	0.93	11
Solids-Total Dissolved TDS @ 180 C (mg/L)	44	1462.273	656.4275	802.5	1350	670	2700
Solids-Total Dissolved Calculated (mg/L)	44	1389.409	618.0043	787.75	1185	686	2710

Analyte	n	Mean	StDev	Q1	Median	Minimum	Maximum
Major Cations and Anions							
Temperature (field, deg C)	43	12.72465	1.779163	11.61	12.08	8.34	15.78
TDS Balance (0.80 - 1.20) (dec.%)	44	1.047955	0.099102	0.99	1.04	0.78	1.44
Turbidity (NTU)	40	10.1925	14.27428	0.775	4.65	-0.2	70.9
Metals, Dissolved							
Aluminum-Dissolved (mg/L)	44	0.0625	0.082916	0.05	0.05	0.05	0.6
Arsenic-Dissolved (mg/L)	44	0.002943	0.005681	0.0005	0.0005	0.0005	0.02
Barium-Dissolved (mg/L)	44	0.05	0	0.05	0.05	0.05	0.05
Boron-Dissolved (mg/L)	44	0.086364	0.073424	0.05	0.05	0.05	0.4
Cadmium-Dissolved (mg/L)	44	0.002557	0.000377	0.0025	0.0025	0.0025	0.005
Chromium-Dissolved (mg/L)	44	0.025	0	0.025	0.025	0.025	0.025
Copper-Dissolved (mg/L)	44	0.006818	0.011314	0.005	0.005	0.005	0.08
Iron-Dissolved (mg/L)	44	1.022727	2.158949	0.015	0.105	0.015	13.2
Lead-Dissolved (mg/L)	44	0.001284	0.003834	0.0005	0.0005	0.0005	0.025
Manganese-Dissolved (mg/L)	44	0.715795	0.856523	0.08	0.24	0.005	2.56
Mercury-Dissolved (mg/L)	44	0.000491	6.03E-05	0.0005	0.0005	0.0001	0.0005
Molybdenum-Dissolved (mg/L)	44	0.054545	0.02367	0.05	0.05	0.05	0.2
Nickel-Dissolved (mg/L)	44	0.025	0	0.025	0.025	0.025	0.025
Selenium-Dissolved (mg/L)	44	0.00092	0.001028	0.0005	0.0005	0.0005	0.006
Selenium-IV-Dissolved (mg/L)	37	0.0005	0	0.0005	0.0005	0.0005	0.0005
Selenium-VI-Dissolved (mg/L)	37	0.000662	0.000906	0.0005	0.0005	0.0005	0.006
Silver-Dissolved (mg/L)	44	0.002557	0.000377	0.0025	0.0025	0.0025	0.005
Uranium-Dissolved (mg/L)	44	0.017915	0.035821	0.00175	0.0026	0.00015	0.11
Vanadium-Dissolved (mg/L)	44	0.051136	0.007538	0.05	0.05	0.05	0.1
Zinc-Dissolved (mg/L)	44	0.013409	0.020595	0.005	0.005	0.005	0.11
Metals, Suspended							
Uranium-Suspended (mg/L)	44	0.000795	0.001206	0.00015	0.00015	0.00015	0.0043
Metals, Total							
Antimony-Total (mg/L)	31	0.0015	0	0.0015	0.0015	0.0015	0.0015
Arsenic-Total (mg/L)	31	0.008887	0.010182	0.002	0.004	0.0005	0.028
Barium-Total (mg/L)	31	0.056452	0.028113	0.05	0.05	0.05	0.2
Beryllium-Total (mg/L)	31	0.0005	0	0.0005	0.0005	0.0005	0.0005
Boron-Total (mg/L)	31	0.072581	0.040494	0.05	0.05	0.05	0.2

Analyte	n	Mean	StDev	Q1	Median	Minimum	Maximum
Major Cations and Anions							
Cadmium-Total (mg/L)	31	0.002242	0.000682	0.0025	0.0025	0.0005	0.0025
Chromium-Total (mg/L)	31	0.025	0	0.025	0.025	0.025	0.025
Copper-Total (mg/L)	31	0.007581	0.01347	0.005	0.005	0.005	0.08
Iron-Total (mg/L)	31	4.795161	4.877881	1.35	3.99	0.25	21.8
Lead-Total (mg/L)	31	0.0055	0.011403	0.0005	0.0005	0.0005	0.05
Manganese-Total (mg/L)	31	0.788065	0.937651	0.08	0.25	0.02	2.66
Mercury-Total (mg/L)	49	0.000292	0.000215	0.000075	0.0005	0.00005	0.0005
Molybdenum-Total (mg/L)	31	0.049516	0.05137	0.05	0.05	0.005	0.3
Nickel-Total (mg/L)	31	0.025	0	0.025	0.025	0.025	0.025
Selenium-Total (mg/L)	31	0.001177	0.001441	0.0005	0.0005	0.0005	0.007
Silver-Total (mg/L)	31	0.0025	0	0.0025	0.0025	0.0025	0.0025
Strontium-Total (mg/L)	31	3.343548	2.226086	1.4	2.7	0.05	7.4
Thallium-Total (mg/L)	31	0.0005	0	0.0005	0.0005	0.0005	0.0005
Uranium-Total (mg/L)	32	0.026602	0.045477	0.00235	0.00285	0.00015	0.123
Zinc-Total (mg/L)	31	0.037903	0.065964	0.005	0.01	0.005	0.25
Radionuclides							
Gross Alpha-Dissolved (pCi/L)	44	315.0932	574.1565	24.025	61.7	2.1	2110
Gross Beta-Dissolved (pCi/L)	44	106.6909	178.9286	14.55	27.25	3.7	659
Gross Gamma-Dissolved (pCi/L)	44	683.0682	1092.877	0	170	0	4200
Lead 210-Dissolved (pCi/L)	44	0.320455	7.862912	-1.925	0.5	-27	24
Lead 210-Suspended (pCi/L)	44	2.725	5.623213	0	0.5	-8.2	27.1
Lead 210-Total (pCi/L)	7	2.142857	4.346591	0.5	0.5	0.5	12
Polonium 210-Dissolved (pCi/L)	44	0.631818	0.768802	0.2	0.5	-0.5	3.5
Polonium 210-Suspended (pCi/L)	44	0.740909	1.077965	0.125	0.5	-0.2	6.4
Polonium 210-Total (pCi/L)	7	1.342857	2.22999	0.5	0.5	0.5	6.4
Radium 226-Dissolved (pCi/L)	44	76.02045	134.7834	2.9	9.55	1.2	429
Radium 226-Suspended (pCi/L)	41	4.276341	7.5066	0.1	0.7	-0.4	37
Radium 226-Total (pCi/L)	7	43.52857	44.65194	6.8	17.4	3.2	120
Radon 222-Total (pCi/L)	37	7781.946	11030.5	1010	2990	134	40700
Thorium 230-Dissolved (pCi/L)	44	0.097727	0.150176	0	0.1	-0.1	0.6
Thorium 230-Suspended (pCi/L)	44	0.227273	0.249989	0.1	0.1	0	1
Thorium 230-Total (pCi/L)	7	0.1	0	0.1	0.1	0.1	0.1

Analyte	n	Mean	StDev	Q1	Median	Minimum	Maximum
Major Cations and Anions							
Thorium 232-Dissolved (mg/L)	44	0.002455	0.000302	0.0025	0.0025	0.0005	0.0025

Mean = Arithmetic mean of those constituents detected above detection limit

StDev = Standard deviation of those constituents detected at or above PQL.

Q1 = First Quartile. The value holding ranked position $0.25 \times (n \text{ Detected} + 1)$ for each constituent. Value may be interpolated.

Q3 = Third Quartile. The value holding ranked position $0.75 \times (n \text{ Detected} + 1)$ for each constituent. Value may be interpolated.

Median = The middle value of ranked n Detected. Value may be interpolated.

Table Within: Statistics for groundwater constituents at or above PQL by constituent from wells that are within or near known ore bodies and proposed in-situ mining operations. This analysis includes wells # 13, 49, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 691, 692.

Analyte	n	Mean	StDev	Q1	Median	Minimum	Maximum
Major Cations and Anions							
Anions (meq/L)	36	18.18333	9.024934	12.025	13.55	10.2	35.2
Bicarbonate as HCO ₃ (mg/L)	36	204.0694	81.7138	180.75	206	2.5	334
Carbonate as CO ₃ (mg/L)	36	4.888889	9.019907	2.5	2.5	2.5	53
Sulfate (mg/L)	36	659.6944	390.3787	415	465	159	1420
Chloride (mg/L)	36	14.16667	17.22706	10.25	11.5	5	113
Fluoride (mg/L)	36	0.430556	0.085589	0.4	0.4	0.3	0.6
Nitrogen, Nitrate as N (mg/L)	36	0.048611	0.011869	0.05	0.05	0.025	0.1
Nitrogen, Nitrite as N (mg/L)	36	0.048611	0.011869	0.05	0.05	0.025	0.1
Cations (meq/L)	36	19.46944	9.844123	12.225	14.65	10.8	38.1
Ammonia (mg/L)	36	0.147222	0.232362	0.05	0.05	0.05	1.2
Sodium-Dissolved (mg/L)	36	178.8333	47.41217	137.5	179.5	105	373
Calcium-Dissolved (mg/L)	36	147.9222	143.7031	49.725	63.9	25.8	421
Magnesium-Dissolved (mg/L)	36	47.65972	44.44029	19.4	25.1	0.25	134
Potassium-Dissolved (mg/L)	36	13.81944	5.35328	9.7	11.75	7.4	27.7
Silica-Dissolved (mg/L)	36	5.036111	2.121341	3.8	4.4	0.8	8.9
General Water Quality Indicators							
Alkalinity-Total as CaCO ₃ (mg/L)	36	203.5	172.4382	150	171	42	1160
A/C Balance (± 5) (%)	36	3.330556	3.91769	0.065	4.245	-4.96	12.1
Conductivity @ 25 C (umhos/cm)	36	1706.389	881.8265	1172.5	1320	1010	5360
Conductivity (field, umhos/cm)	43	1630.395	834.8651	1159	1283	740	5454
Dissolved Oxygen (field, mg/L)	23	0.498261	0.753451	0.09	0.2	0.04	3.01
Oxidation-Reduction Potential (mV)	35	198.4	76.828	160	220	0	300

Analyte	n	Mean	StDev	Q1	Median	Minimum	Maximum
Major Cations and Anions							
pH	36	8.056111	0.964955	7.57	7.88	7.08	12.4
pH (field)	43	7.819535	1.003221	7.23	7.75	6.31	12.67
Sodium Adsorption Ratio (SAR) (meq/L)	35	4.428571	1.983101	1.8	5.4	1.3	7.6
Solids-Total Dissolved TDS @ 180 C (mg/L)	36	1222.5	630.8605	772.5	915	690	2500
Solids-Total Dissolved Calculated (mg/L)	36	1194.667	574.8277	775.75	902	717	2250
Temperature (field, deg C)	42	13.55381	1.781878	12.5875	13.135	6.1	16.08
TDS Balance (0.80 - 1.20) (dec.%)	36	1.011944	0.055334	0.9825	1.01	0.89	1.14
Turbidity (NTU)	37	7.467568	10.23922	0.55	3.8	-0.4	34.2
Metals, Dissolved							
Aluminum-Dissolved (mg/L)	36	0.05	0	0.05	0.05	0.05	0.05
Arsenic-Dissolved (mg/L)	36	0.003403	0.006288	0.001	0.002	0.0005	0.03
Barium-Dissolved (mg/L)	36	0.0625	0.075	0.05	0.05	0.05	0.5
Boron-Dissolved (mg/L)	36	0.080556	0.052478	0.05	0.05	0.05	0.2
Cadmium-Dissolved (mg/L)	36	0.0025	0	0.0025	0.0025	0.0025	0.0025
Chromium-Dissolved (mg/L)	36	0.025	0	0.025	0.025	0.025	0.025
Copper-Dissolved (mg/L)	36	0.005	0	0.005	0.005	0.005	0.005
Iron-Dissolved (mg/L)	36	0.070556	0.11882	0.015	0.015	0.015	0.47
Lead-Dissolved (mg/L)	36	0.000889	0.001829	0.0005	0.0005	0.0005	0.011
Manganese-Dissolved (mg/L)	36	0.175556	0.176865	0.04	0.095	0.005	0.54
Mercury-Dissolved (mg/L)	36	0.0005	0	0.0005	0.0005	0.0005	0.0005
Molybdenum-Dissolved (mg/L)	36	0.05	0	0.05	0.05	0.05	0.05
Nickel-Dissolved (mg/L)	36	0.025	0	0.025	0.025	0.025	0.025
Selenium-Dissolved (mg/L)	36	0.001028	0.000878	0.0005	0.0005	0.0005	0.003
Selenium-IV-Dissolved (mg/L)	35	0.000571	0.000423	0.0005	0.0005	0.0005	0.003
Selenium-VI-Dissolved (mg/L)	35	0.000629	0.000426	0.0005	0.0005	0.0005	0.002
Silver-Dissolved (mg/L)	36	0.002569	0.000417	0.0025	0.0025	0.0025	0.005
Uranium-Dissolved (mg/L)	36	0.015222	0.030804	0.00015	0.005	0.00015	0.172
Vanadium-Dissolved (mg/L)	36	0.05	0	0.05	0.05	0.05	0.05
Zinc-Dissolved (mg/L)	36	0.007083	0.006367	0.005	0.005	0.005	0.04
Metals, Suspended							
Uranium-Suspended (mg/L)	36	0.005744	0.029474	0.00015	0.00015	0.00015	0.177
Metals, Total							

Analyte	n	Mean	StDev	Q1	Median	Minimum	Maximum
Major Cations and Anions							
Antimony-Total (mg/L)	32	0.0015	0	0.0015	0.0015	0.0015	0.0015
Arsenic-Total (mg/L)	32	0.004266	0.006925	0.001	0.003	0.0005	0.04
Barium-Total (mg/L)	32	0.064063	0.07955	0.05	0.05	0.05	0.5
Beryllium-Total (mg/L)	32	0.000531	0.000177	0.0005	0.0005	0.0005	0.0015
Boron-Total (mg/L)	32	0.060938	0.021001	0.05	0.05	0.05	0.1
Cadmium-Total (mg/L)	32	0.00225	0.000672	0.0025	0.0025	0.0005	0.0025
Chromium-Total (mg/L)	32	0.025	0	0.025	0.025	0.025	0.025
Copper-Total (mg/L)	32	0.005313	0.00123	0.005	0.005	0.005	0.01
Iron-Total (mg/L)	32	0.835156	1.547857	0.055	0.23	0.015	7.24
Lead-Total (mg/L)	32	0.002984	0.006924	0.0005	0.0005	0.0005	0.035
Manganese-Total (mg/L)	32	0.186719	0.193997	0.06	0.09	0.005	0.63
Mercury-Total (mg/L)	54	0.00029	0.000682	0.00005	0.0001	0.00005	0.005
Molybdenum-Total (mg/L)	32	0.042969	0.016601	0.05	0.05	0.005	0.05
Nickel-Total (mg/L)	32	0.025	0	0.025	0.025	0.025	0.025
Selenium-Total (mg/L)	32	0.001469	0.001769	0.0005	0.0005	0.0005	0.008
Silver-Total (mg/L)	32	0.0025	0	0.0025	0.0025	0.0025	0.0025
Strontium-Total (mg/L)	32	3.084375	2.827983	1.1	1.3	0.9	8.2
Thallium-Total (mg/L)	32	0.0005	0	0.0005	0.0005	0.0005	0.0005
Uranium-Total (mg/L)	32	0.020984	0.058701	0.000388	0.00825	0.00015	0.336
Zinc-Total (mg/L)	32	0.013594	0.019437	0.005	0.005	0.005	0.09
Radionuclides							
Gross Alpha-Dissolved (pCi/L)	36	1348.458	1952.519	14.225	57.3	2.9	6500
Gross Beta-Dissolved (pCi/L)	36	430.7806	648.2405	13.4	19.15	7.1	2320
Gross Gamma-Dissolved (pCi/L)	36	2208.778	4119.155	29	940	0	21000
Lead 210-Dissolved (pCi/L)	36	13.41667	19.96313	0	4.4	-31	61.8
Lead 210-Suspended (pCi/L)	36	9.002778	26.15114	-1.075	0.5	-9.2	125
Lead 210-Total (pCi/L)	1	0.5			0.5	0.5	0.5
Polonium 210-Dissolved (pCi/L)	36	1.033333	1.224045	0.125	0.7	-0.6	5.1
Polonium 210-Suspended (pCi/L)	36	2.9	9.44273	0.2	0.5	-0.1	56
Polonium 210-Total (pCi/L)	1	5.2			5.2	5.2	5.2
Radium 226-Dissolved (pCi/L)	36	357.4028	493.3701	2.225	7.8	0.3	1430
Radium 226-Suspended (pCi/L)	36	5.680556	17.34764	0.04	0.8	-0.4	96.1

Analyte	n	Mean	StDev	Q1	Median	Minimum	Maximum
Major Cations and Anions							
Radium 226-Total (pCi/L)	1	1.1			1.1	1.1	1.1
Radon 222-Total (pCi/L)	35	112072.6	166848.3	467	2520	119	590000
Thorium 230-Dissolved (pCi/L)	36	0.080556	0.16181	0	0	-0.1	0.8
Thorium 230-Suspended (pCi/L)	36	2.519444	11.18187	0.1	0.2	-0.1	65.9
Thorium 230-Total (pCi/L)	1	0.1			0.1	0.1	0.1
Thorium 232-Dissolved (mg/L)	36	0.0025	0	0.0025	0.0025	0.0025	0.0025

Mean = Arithmetic mean of those constituents detected above detection limit

StDev = Standard deviation of those constituents detected at or above PQL.

Q1 = First Quartile. The value holding ranked position $0.25 \times (n \text{ Detected} + 1)$ for each constituent. Value may be interpolated.

Q3 = Third Quartile. The value holding ranked position $0.75 \times (n \text{ Detected} + 1)$ for each constituent. Value may be interpolated.

Median = The middle value of ranked n Detected. Value may be interpolated.

Table Downgradient: Statistics for groundwater constituents at or above PQL by constituent from wells that are hydraulically downgradient from proposed mining activities. This analysis includes wells # 2, 7, 8, 18, 42, 694, 695, 696, 697, and 7002. These wells may or may not be downgradient of ore bodies. For example, due to the high concentration of radon in well #42, it is believed that a high concentration of uranium may exist near that well.

Analyte	n	Mean	StDev	Q1	Median	Minimum	Maximum
Major Cations and Anions							
Anions (meq/L)	43	16.52326	6.886939	13.9	14.7	12.1	53.3
Bicarbonate as HCO ₃ (mg/L)	43	226.2093	38.50019	207	215	107	341
Carbonate as CO ₃ (mg/L)	43	2.5		2.5	2.5	2.5	2.5
Sulfate (mg/L)	43	608.186	333.8978	476	514	409	2440
Chloride (mg/L)	43	11.46512	2.839759	10	11	8	26
Fluoride (mg/L)	43	0.367442	0.091862	0.3	0.4	0.2	0.5
Nitrogen, Nitrate as N (mg/L)	43	0.053721	0.026505	0.05	0.05	0.025	0.2
Nitrogen, Nitrite as N (mg/L)	43	0.047093	0.008109	0.05	0.05	0.025	0.05
Cations (meq/L)	43	16.9907	6.459427	14.3	15.3	12.6	50.6
Ammonia (mg/L)	43	0.232558	0.13535	0.1	0.2	0.05	0.8
Sodium-Dissolved (mg/L)	43	251.2558	84.98238	199	250	152	716
Calcium-Dissolved (mg/L)	43	71.21163	62.83926	34	50.1	28	264
Magnesium-Dissolved (mg/L)	43	26.72791	24.05322	12.2	17.7	9.4	103

Analyte	n	Mean	StDev	Q1	Median	Minimum	Maximum
Major Cations and Anions							
Potassium-Dissolved (mg/L)	43	11.15814	4.127736	8.1	9.7	6.8	22.2
Silica-Dissolved (mg/L)	43	6.327907	1.774599	4.4	7.2	3.4	10.2
General Water Quality Indicators							
Alkalinity-Total as CaCO ₃ (mg/L)	43	185.7674	31.50876	170	178	88	280
A/C Balance (± 5) (%)	43	1.714419	3.899374	-1.53	1.68	-5.62	8.11
Conductivity @ 25 C (umhos/cm)	43	1583.023	522.911	1380	1420	1230	4400
Conductivity (field, umhos/cm)	48	1402.646	263.9066	1260.25	1397.5	908	2275
Dissolved Oxygen (field, mg/L)	25	1.2216	1.696014	0.195	0.29	0.09	5.42
Oxidation-Reduction Potential (mV)	37	191.7297	66.62401	140	190	80	360
pH	43	7.969767	0.281987	7.9	7.97	7.22	8.71
pH (field)	45	7.835111	0.367093	7.515	7.86	6.99	8.81
Sodium Adsorption Ratio (SAR) (meq/L)	37	7.675676	2.949709	5.65	7.6	2.4	12
Solids-Total Dissolved TDS @ 180 C (mg/L)	43	1103.256	492.7219	930	960	790	3700
Solids-Total Dissolved Calculated (mg/L)	43	1093.721	455.4768	934	973	829	3600
Temperature (field, deg C)	43	12.22628	2.271618	11.87	12.58	0.75	14.98
TDS Balance (0.80 - 1.20) (dec.%)	43	1.003488	0.066686	0.96	0.98	0.91	1.19
Turbidity (NTU)	40	2.125	2.698694	0.1	0.7	-0.4	12.9
Metals, Dissolved							
Aluminum-Dissolved (mg/L)	43	0.05		0.05	0.05	0.05	0.05
Arsenic-Dissolved (mg/L)	43	0.000977	0.000545	0.0005	0.001	0.0005	0.002
Barium-Dissolved (mg/L)	43	0.05		0.05	0.05	0.05	0.05
Boron-Dissolved (mg/L)	43	0.068605	0.099417	0.05	0.05	0.05	0.7
Cadmium-Dissolved (mg/L)	43	0.002674	0.000644	0.0025	0.0025	0.0025	0.005
Chromium-Dissolved (mg/L)	43	0.025		0.025	0.025	0.025	0.025
Copper-Dissolved (mg/L)	43	0.005		0.005	0.005	0.005	0.005
Iron-Dissolved (mg/L)	43	0.03686	0.055453	0.015	0.015	0.015	0.28
Lead-Dissolved (mg/L)	43	0.002209	0.006315	0.0005	0.0005	0.0005	0.025
Manganese-Dissolved (mg/L)	43	0.107442	0.096538	0.06	0.08	0.03	0.41
Mercury-Dissolved (mg/L)	43	0.000472	0.000103	0.0005	0.0005	0.0001	0.0005
Molybdenum-Dissolved (mg/L)	43	0.05		0.05	0.05	0.05	0.05
Nickel-Dissolved (mg/L)	43	0.025		0.025	0.025	0.025	0.025
Selenium-Dissolved (mg/L)	43	0.00057	0.000258	0.0005	0.0005	0.0005	0.002

Analyte	n	Mean	StDev	Q1	Median	Minimum	Maximum
Major Cations and Anions							
Selenium-IV-Dissolved (mg/L)	37	0.000514	8.22E-05	0.0005	0.0005	0.0005	0.001
Selenium-VI-Dissolved (mg/L)	37	0.000541	0.000138	0.0005	0.0005	0.0005	0.001
Silver-Dissolved (mg/L)	43	0.002674	0.000644	0.0025	0.0025	0.0025	0.005
Uranium-Dissolved (mg/L)	43	0.003092	0.006324	0.00015	0.0005	0.00015	0.0324
Vanadium-Dissolved (mg/L)	43	0.052326	0.010654	0.05	0.05	0.05	0.1
Zinc-Dissolved (mg/L)	43	0.007209	0.005701	0.005	0.005	0.005	0.03
Metals, Suspended							
Uranium-Suspended (mg/L)	43	0.000266	0.000481	0.00015	0.00015	0.00015	0.0029
Metals, Total							
Antimony-Total (mg/L)	29	0.0015		0.0015	0.0015	0.0015	0.0015
Arsenic-Total (mg/L)	29	0.002207	0.001214	0.00125	0.002	0.0005	0.005
Barium-Total (mg/L)	29	0.055172	0.027854	0.05	0.05	0.05	0.2
Beryllium-Total (mg/L)	29	0.000707	0.000491	0.0005	0.0005	0.0005	0.0025
Boron-Total (mg/L)	29	0.068966	0.102132	0.05	0.05	0.05	0.6
Cadmium-Total (mg/L)	29	0.002431	0.000371	0.0025	0.0025	0.0005	0.0025
Chromium-Total (mg/L)	29	0.025		0.025	0.025	0.025	0.025
Copper-Total (mg/L)	29	0.005		0.005	0.005	0.005	0.005
Iron-Total (mg/L)	29	0.396552	0.474592	0.105	0.15	0.04	1.54
Lead-Total (mg/L)	29	0.0005		0.0005	0.0005	0.0005	0.0005
Manganese-Total (mg/L)	29	0.105862	0.087811	0.06	0.08	0.03	0.4
Mercury-Total (mg/L)	52	0.000316	0.000217	0.00005	0.0005	0.00005	0.0005
Molybdenum-Total (mg/L)	29	0.041207	0.017711	0.05	0.05	0.005	0.05
Nickel-Total (mg/L)	29	0.025		0.025	0.025	0.025	0.025
Selenium-Total (mg/L)	29	0.000776	0.000872	0.0005	0.0005	0.0005	0.005
Silver-Total (mg/L)	29	0.0025		0.0025	0.0025	0.0025	0.0025
Strontium-Total (mg/L)	29	1.924138	1.820058	0.8	1.1	0.6	7.7
Thallium-Total (mg/L)	29	0.0005		0.0005	0.0005	0.0005	0.0005
Uranium-Total (mg/L)	31	0.002124	0.004433	0.00015	0.0004	0.00015	0.0198
Zinc-Total (mg/L)	29	0.007069	0.005904	0.005	0.005	0.005	0.03
Radionuclides							
Gross Alpha-Dissolved (pCi/L)	43	59.03953	132.8379	6.1	15.5	1.4	558
Gross Beta-Dissolved (pCi/L)	43	25.36977	38.32413	9	12.5	-2.1	173

Analyte	n	Mean	StDev	Q1	Median	Minimum	Maximum
Major Cations and Anions							
Gross Gamma-Dissolved (pCi/L)	43	1941.326	10641.93		10	ND	70000
Lead 210-Dissolved (pCi/L)	43	0.816279	8.117762	-1.8	0.5	-23	24
Lead 210-Suspended (pCi/L)	43	3.374419	10.19764		0.5	-7.4	57
Lead 210-Total (pCi/L)	6	9.916667	23.06603	0.5	0.5	0.5	57
Polonium 210-Dissolved (pCi/L)	43	0.895349	1.147036	0.1	0.5	-0.3	5.5
Polonium 210-Suspended (pCi/L)	43	0.890698	2.11658	0.2	0.5	-0.2	13
Polonium 210-Total (pCi/L)	6	3.5	5.147815	0.5	0.5	0.5	13
Radium 226-Dissolved (pCi/L)	43	11.75349	28.57341	1.1	2.1	0.1	102
Radium 226-Suspended (pCi/L)	43	0.59093	1.31961	-0.2	0.1	-0.4	5.1
Radium 226-Total (pCi/L)	6	15.96667	31.28985	1.675	3.75	0.1	79.7
Radon 222-Total (pCi/L)	37	14856.3	49404.54	298.5	611	123	219000
Thorium 230-Dissolved (pCi/L)	43	0.081395	0.100607		0.1	ND	0.5
Thorium 230-Suspended (pCi/L)	43	0.109302	0.078115	0.1	0.1	ND	0.3
Thorium 230-Total (pCi/L)	6	0.1		0.1	0.1	0.1	0.1
Thorium 232-Dissolved (mg/L)	43	0.00236	0.000516	0.0025	0.0025	0.0005	0.0025

Mean = Arithmetic mean of those constituents detected above detection limit

StDev = Standard deviation of those constituents detected at or above PQL.

Q1 = First Quartile. The value holding ranked position $0.25 \times (n \text{ Detected} + 1)$ for each constituent. Value may be interpolated.

Q3 = Third Quartile. The value holding ranked position $0.75 \times (n \text{ Detected} + 1)$ for each constituent. Value may be interpolated.

Median = The middle value of ranked n Detected. Value may be interpolated.

APPENDIX 2.8-A

SUBMITTED METHODOLOGY

6.0 VEGETATION BASELINE STUDIES

6.1 INTRODUCTION

The baseline vegetation study will cover the Dewey-Burdock permit area. The project area may contain all or some of the following four native vegetation community types: upland grassland, ponderosa pine woodland, riparian, and wetland. Field work was conducted in the summer of 2007. Table 6-1 shows the mapping acreages.

Table 6-1. Vegetation Map Units and Associated Acreages

Vegetation Map Units	Proposed Permit Area Acreage
Upland Grassland	To be determined
Ponderosa Pine Woodland	
Riparian	
Wetland	
Total	9,400

Vegetation baseline study monitoring will be conducted using the procedures described in this document. Vegetation parameter sampling will be conducted by vegetation community type as specified in Table 6-2. For purposes of this methodology, "project area" will be the same as "study or permit area."

Table 6-2. Vegetation Baseline Sampling—Measured Parameters

Parameter	Upland Grassland	Ponderosa Pine Woodland	Riparian	Wetland ^(a)
% Absolute Total Ground Cover	Yes	Yes	Yes	No
First Hit % Absolute Total Vegetation Cover	Yes	Yes	Yes	No
Multiple Hit Vegetation	Yes	Yes	Yes	No
Shrub/Subshrub Density	Yes	Yes	Yes	No
Production	No	No	No	No
Tree Count and Distribution	No	Yes	No	No

(a) Wetlands will not be sampled as part of the baseline study but will be included under U.S. Army Corps of Engineers (US ACE) delineation requirements.

6.2 VEGETATION COMMUNITY CLASSIFICATION AND MAPPING

The baseline project area will be classified and mapped before commencing vegetation sampling. Preliminary mapping and classification, based on aerial photography, has identified the four following plant communities:

1. Upland grassland
2. Ponderosa pine woodland
3. Riparian
4. Wetland.

Plant communities will be further mapped using color infra-red (CIR) aerial photography and verified through field survey. Disturbed areas within the project will also be identified and mapped, if possible, based on the scale of available mapping. Disturbed areas will be excluded, however, from all vegetation parameter sampling. All areas within ½ mile of the project area will be mapped, based on a review of CIR aerial photography and known expression of photography within the project area. It will not be necessary to field verify this mapping within a ½ mile nor will vegetation sampling be conducted.

6.3 TRANSECT ORIGIN SELECTION

A computerized systematic grid (through **AutoCAD** or **ArcGIS**) will be used to randomly locate sample points within each vegetation community. These computer-generated random numbers will be uploaded to a hand-held GPS unit for actual location in the field. Sample points will be sampled in numerical order until the minimum sample size is attained and then until either sample adequacy is met or the required maximum number of samples is collected.

6.4 LINE TRANSECT LAYOUT

A 50-meter line transect will be used in the three vegetation communities to be sampled; i.e., upland grassland, ponderosa pine woodland, and riparian. Each 50-meter line transect will begin at its specified random origin point and extend in a randomly generated compass direction.

Transects that exceed the boundaries of the vegetation community being sampled will be redirected back into its vegetation community at a 90-degree angle from the original transect direction at the point of intercept. In instances where a 90-degree angle of reflection does not place the transect within the sampled community, a 45-degree angle of reflection will be used.

6.5 GROUND COVER

Line-transect point-intercept methods will be used to collect percent absolute cover data from the three vegetation communities. In the upland grassland, ponderosa pine woodland, and riparian communities, each 50-meter transect will represent a single sample point. Percent cover measurements will be taken from point-intercepts at 1-meter intervals along a 50-meter transect using a laser pointer. Should a transect run out of the vegetation community boundary or a nonvegetated feature, it will be redirected as described above. Each point-intercept will represent 2 percent toward cover measurements.

Percent cover measurements will record "first-hit" point-intercepts by live foliar vegetation species, litter, rock, or bare ground. Litter will include all organic material that is dead, including manure. Rock fragments will be recorded when they are equal to or greater than 2 centimeters in size (i.e., sheet flow, minimum nonerodible particle size). First-hit data will be recorded and tabulated to evaluate total ground cover and total vegetation cover. Multiple hits on vegetation will be recorded but used only for the purpose of constructing a plant species list for each plant community. Total ground cover is the sum of cover values for percent vegetation, percent litter, and percent rock.

6.6 TOTAL VEGETATION COVER

Vegetation cover data will be recorded by species using first-hit data. All point intercepts of living vegetation and growth produced during the current growing season will be counted toward total vegetation cover. Total vegetation cover measurements will be expressed in absolute percentages for each sample point. Relative cover values for percent species cover will be provided. Percent vegetation cover is the vertical projection of the general outline of plants to the ground surface. Total vegetation cover will include moss.

6.7 TOTAL GROUND COVER

Total ground cover data will be recorded by live vegetation, litter, rock, or bare ground. Litter will include all dead organic matter and manure that is recognizable as well as lichen and moss. Total ground cover measurements will be expressed in absolute percentages for each sample point.

6.8 SPECIES DIVERSITY

The total number of plant species within a 1×50-meter belt transect will be summarized for each vegetation type.

6.9 PRODUCTION

No production sampling will be necessary for the 2007 baseline vegetation assessment.

6.10 SHRUB DENSITY

Shrub density data will be collected in conjunction with randomly selected cover transects, wherever possible. All shrubs, full, half, or sub, will be counted within 50 centimeters on either side of the 50-meter cover transect (1-meter×50-meter belt transect). Sample adequacy will not be calculated on shrub density transects; however, shrub density data will be qualitatively evaluated. The number of belt transects will equal the number of cover transects for a given vegetation type. No shrub height measurements will be collected.

6.11 TREE DENSITY

Within the ponderosa pine woodland vegetation community, tree density will be estimated by gridding the aerial photograph for the project area and counting the number of ponderosa pine per unit area, based on a small number of randomly selected grid intervals. In addition, a range of age distribution will be determined using nondestructive techniques, such as correlating known measures of age and height, or age and diameter at breast height (DBH), or ring counts from recent timber harvest stumps and logs.

Within other vegetation communities, individual ponderosa pine or other tree species found will be directly counted for numbers. Height and DBH may be more appropriate in these vegetation types based on lack of downed timber, such as is present in the ponderosa pine woodland.

6.12 SAMPLE ADEQUACY

A minimum of 20 cover transects per vegetation type will be sampled in upland grassland, ponderosa pine woodland, and riparian communities. Sample adequacy will be calculated and an incremental number of cover transects will be sampled up to the maximum of 50.

Minimum and maximum sample sizes are listed in Table 6-3. The following sample adequacy formula will be utilized to determine the minimum required size of the sample population:

$$n_{mn} \geq \frac{2(sz)^2}{(dx)^2} \quad (6-1)$$

where:

n_{min} = minimum number of sampled line transects needed to adequately represent native vegetation types

s = sample standard deviation

z = the z statistic

d = the amount of reduction desired

\bar{x} = sample mean for cover.

Table 6-3. Vegetation Monitoring Minimum/Maximum Sample Population Requirements for Upland Grassland, Ponderosa Pine Woodland, and Riparian Communities

Vegetation Community	Parameter	Sample Size	
		Minimum	Maximum
Upland Grassland	Ground Cover	20	50
	Vegetation Cover		
	Shrub Density		
Ponderosa Pine Woodland	Ground Cover	20	50
	Vegetation Cover		
	Shrub Density		
Riparian	Ground Cover	20	50
	Vegetation Cover		
	Shrub Density		
	Vegetation Cover		
	Shrub Density		
Total		60	150

The three vegetation communities have been identified as "grassland" or "shrubland." Upland grassland is identified as grassland while the ponderosa pine woodland and riparian communities are identified as shrublands. The constant values to be used in statistical test are: $z=1.28$ and $d=0.1$ for grasslands. The shrubland values are $z=0.84$ and $d=0.2$. All sampled vegetation will be included in the sample adequacy test (i.e., "undesirable" species will not be eliminated from the equation).

6.13 PLANT SPECIES LIST

A vegetation species list by scientific name, common name, and lifeform will be developed individually for each of the three vegetation communities. This list will be compiled from species noted during all vegetation monitoring activities, including point-intercept line transect cover measurements and other opportunistic observations of the sampling area.

6.14 OTHER DATA COLLECTED

Any United States Fish and Wildlife Service (US FWS) threatened or candidate species or any state species of special concern listed in the South Dakota Natural Heritage database will be surveyed and any known location identified on the map. Table 6-4 lists the threatened and candidate species along with their habitat and flowering dates. Table 6-5 lists the species of special concern along with their habitats and flowering dates. All state-listed noxious weed will be noted and significant concentrations identified on the vegetation baseline report map.

Photographs will be taken of the vegetation communities. Photographic locations will be documented and illustrated on a map.

6.15 EXTENDED REFERENCE AREA MAPPING AND JUSTIFICATION

As noted in the Vegetation Community Classification and Mapping section (Section 6.2), all lands within the project area are to be mapped as one of three plant community types. Upland grassland, ponderosa pine woodland, and riparian areas unaffected by the mining operation will serve as an Extended Reference Area (EXREFA). Wetlands will not be sampled under baseline evaluation but included in US ACE delineation. For the purposes of this study, EXREFA means a native land unit which will be used to evaluate revegetation success for each of the same native plant communities which was affected by the mining operation. The EXREFA will be a subset of the mapped native communities and will be included as potential sample points for the cover sampling program. The EXREFA will remain unaffected over the course of the mining operation and will be as large as practical, at least 2 acres, considering land ownership patterns and land management history. The permit application will show the EXREFA on the vegetation map and will include text justifying the choice of the EXREFA.

Table 6-4. Threatened and Candidate Species to Be Sampled

Scientific Name	Common Name	Flowering Date	Habitat	Classification
<i>Botrychium campestre</i>	Prairie Moonwort	May–Early June	Dry prairies and sand dunes, as well as sandy, dry disturbed sites, such as roadsides and old fields	Not ranked (under review)
<i>Botrychium lineare</i>	Moonwort Grape-Fern	May–Early June	Meadows with tall grasses and forbs, beneath trees in wooded areas, on north-facing limestone cliff shelves, and in streamside edges	Not ranked
<i>Botrychium multisided</i>	Leathery Grape-fern	May–Early June	Savannah, prairie, meadow, field	Not ranked (under review)
<i>Carex alopecoidea</i>	Tawny Sedge	July	Seasonally saturated soils in wet meadows, openings in alluvial woods, stream banks, particularly on calcareous substrates	S2
<i>Cypripedium parviflorum</i>	Lesser Yellow Lady's Slipper	May–June	Bogs, shady swamps, wet woods	Not ranked (under review)
<i>Eleocharis elliptica</i>	Elliptic Spikerush	June–August	Very wet, calcareous (or brackish) shores, pool margins, fens, meadows, prairies	Not ranked
<i>Epipactis gigantea</i>	Stream Orchid	April–July	Ledges, stream, river banks	S1
<i>Lycopodium complanatum</i>	Ground Cedar	Unknown	Dry open coniferous or mixed forest alpine slopes	S1
<i>Platanthera orbiculata</i>	Round-Leaved Orchid	July	Moderate moisture; woods, forests; in rich soil	S2
<i>Salix candida</i>	Sage Willow	April–May	Cold, open fens, swamps and bogs	S1
<i>Salix serissima</i>	Autumn Willow	Unknown	Swamp, marsh, bog, fen, lakeshores	S1
<i>Sanguinaria canadensis</i>	Bloodroot	March–April	Rich, deciduous, upland and floodplain woods	S4
<i>Viburnum opulus var. americana</i>	American Cranberrybush	May–July	Cool woods, thickets, rocky shores, slopes	Not ranked (under review)
<i>Viola selkirkii</i>	Great-Spurred Violet	April–June	Cold areas	S1

Table 6-5. Species of Special Concern to Be Sampled

Scientific Name	Common Name	Flowering Date	Habitat	Classification
<i>Adiantum capillus-veneris</i>	Southern Maidenhair-Fern	June–August	Moist, well-drained sand, loam or limestone	S1
<i>Carex bella</i>	Elegant Sedge	June–August	Moist subalpine meadows	S1
<i>Eleocharis rostellata</i>	Beaked Spikerush	July–September	Saline or alkaline wetlands	S1
<i>Gentiana affinis</i>	Northern Gentian	Unknown	Moist	S2
<i>Listera convallarioides</i>	Broad-Lipped Twayblade	June–August	Moist woods	S1
<i>Lycopodium annotinum</i>	Bristly Clubmoss	Unknown	Swampy or moist coniferous forests, mountain forests, and exposed grassy or rocky sites	S1
<i>Oxyria digyna</i>	Mountain Sorrel	June–September	Gravel bars, mudflats, tundra, scree slopes, crevices in rock outcrops, talus slopes	S1
<i>Petasites sagittatus</i>	Sweet-Coltsfoot	May–June	Wet, forests, meadows	S1
<i>Polystichum lonchitis</i>	Northern Holly-Fern	Unknown	Woodland, rocky bluff	S1
<i>Salix lucida</i>	Shining Willow	April–May	Stream and swamp banks, fens, beaches, wet meadows, mud flats	S1

APPENDIX 2.8-B

VEGETATION SPECIES SUMMARY

			Vegetation Community				
Code	Scientific Name	Common Name	Big Sagebrush Shrubland	Cottonwood Gallery	Greasewood Shrubland	Ponderosa Pine Woodland	Upland Grassland
Cool Season Perennial Grasses							
AGRCRI	<i>Agropyron cristatum</i>	crested wheatgrass	X	X	X		X
BROINE	<i>Bromus inermis</i>	smooth brome		X	X		
CARFIL	<i>Carex filifolia</i>	threadleaf sedge	X		X	X	X
CARGEY	<i>Carex geyeri</i>	Geyer's sedge				X	
CARSTE	<i>Carex stenophylla</i>	needleleaf sedge	X		X		
ELYSAN	<i>Elymus canadensis</i>	Canada wildrye				X	
ELYCIN	<i>Elymus cinereus</i>	basin wildrye			X		
ELYELY	<i>Elymus elymoides</i>	bottlebrush squirreltail	X				
ELYHIS	<i>Elymus hispidus</i>	intermediate wheatgrass			X		
ELYLAN	<i>Elymus lanceolatus</i>	thickspike wheatgrass	X		X	X	
ELYSMI	<i>Elymus smithii</i>	western wheatgrass	X	X	X	X	X
ELYTRA	<i>Elymus trachycaulus</i>	slender wheatgrass			X		
HESCOM	<i>Hesperostipa comata</i>	needleandthread	X			X	X
HORJUB	<i>Hordeum jubatum</i>	foxtail barley			X		
KOEMAC	<i>Koeleria macrantha</i>	prairie junegrass	X			X	
NASVIR	<i>Nassella viridula</i>	green needlegrass			X	X	
SCHPAN	<i>Schedonnardus panniculatus</i>	common tumblegrass			X		
PHLALP	<i>Phleum alpinum</i>	alpine timothy			X		
POAPRA	<i>Poa pratensis</i>	Kentucky bluegrass		X	X	X	
POASEC	<i>Poa secunda</i>	Sandberg bluegrass	X		X	X	X
Warm Season Perennial Grasses							
ARISPP	<i>Aristida</i> spp.	Threeawn	X		X		
ARIPUR	<i>Aristida purpurea</i>	purple threeawn	X				X
ARIPUR	<i>Aristida purpurea</i> var. <i>fendleriana</i>	Fendler's threeawn				X	
BOUCUR	<i>Bouteloua curtipendula</i>	sideoats grama	X			X	X
BOUGRA	<i>Bouteloua gracilis</i>	blue grama	X		X	X	X
BUCDAC	<i>Buchloe dactyloides</i>	buffalograss	X		X	X	X
DISSTR	<i>Distichlis stricta</i>	inland saltgrass		X	X		
SCHSCO	<i>Schizachyrium scoparium</i>	little bluestem	X			X	
SPOAIR	<i>Sporobolus airoides</i>	alkali sacaton			X		
SPOCRY	<i>Sporobolus cryptandrus</i>	sand dropseed			X		
	Species observed but not sampled						

			Vegetation Community				
			Big Sagebrush Shrubland	Cottonwood Gallery	Greasewood Shrubland	Ponderosa Pine Woodland	Upland Grassland
Code	Scientific Name	Common Name					
Warm Season Perennial Grasses continued							
PANVIR	<i>Panicum virgatum</i>	switchgrass	X	X	X		X
Annual Grasses							
BROJAP	<i>Bromus japonicus</i>	Japanese brome	X	X	X	X	X
BROTEC	<i>Bromus tectorum</i>	cheatgrass	X	X	X	X	X
HORPUS	<i>Hordeum pusillum</i>	little barley	X		X		X
VULOCT	<i>Vulpia octoflora</i>	sixweeks fescue			X		X
Annual Forbs							
ALYDES	<i>Alyssum desertorum</i>	desert alyssum	X		X	X	X
ATRPAT	<i>Atriplex patula</i>	spear saltbush	X		X		X
BASSIE	<i>Bassia sieversiana</i>	summer cypress		X	X		
BORAGE	<i>Boraginaceae</i> spp.	borage species	X		X	X	
CAMMIC	<i>Camelina microcarpa</i>	littleseed falseflax	X		X		X
CHEALB	<i>Chenopodium album</i>	lambsquarters goosefoot	X	X	X	X	
CHEBER	<i>Chenopodium berlandieri</i>	pitseed goosefoot	X	X	X	X	
CHELEP	<i>Chenopodium leptophyllum</i>	narrowleaf goosefoot	X				
CHOTEN	<i>Chorispota tenella</i>	crossflower		X		X	
CRYSPP	<i>Cryptantha</i> spp.	cryptantha	X		X		
DESPIN	<i>Descurainia pinnata</i>	pinnate tansymustard	X	X	X	X	
DESSOP	<i>Descurainia sophia</i>	flixweed tansymustard	X	X	X	X	
DRANEM	<i>Draba nemorosa</i>	yellow draba			X	X	X
GERVIS	<i>Geranium viscosissimum</i>	sticky purple geranium				X	
HEDHIS	<i>Hedeoma hispidum</i>	rough false pennyroyal	X		X	X	X
HELANN	<i>Helianthus annuus</i>	annual sunflower				X	
LAPRED	<i>Lappula redowski</i>	beggars-tick	X	X	X	X	
LEPDEN	<i>Lepidium densiflorum</i>	prairie peppergrass	X		X	X	X
LEPPER	<i>Lepidium perfoliatum</i>	clasping peppergrass			X		X
LINAUS	<i>Linum australe</i>	southern flax	X				X
LINPUB	<i>Linum puberulum</i>	plains flax	X				
LUPUS	<i>Lupinus pusillus</i>	rusty lupine	X				
MICGRA	<i>Microsteris gracilis</i>	slender phlox				X	
	Species observed but not sampled						

			Vegetation Community				
			Big Sagebrush Shrubland	Cottonwood Gallery	Greasewood Shrubland	Ponderosa Pine Woodland	Upland Grassland
Code	Scientific Name	Common Name					
Annual Forbs continued							
MONUT	<i>Monolepis nuttalliana</i>	Nuttall's povertyweed	X		X		
OROMUL	<i>Orobanche multiflora</i>	manyflower broomrape	X				
PLAPAT	<i>Plantago patagonica</i>	Pursh's plantain	X		X	X	X
POLAVI	<i>Polygonum aviculare</i>	prostrate knotweed			X	X	
SALTRA	<i>Salsola tragus</i>	Russian thistle		X	X		
SISALT	<i>Sisymbrium altissimum</i>	tumbling hedgemustard	X	X	X		
SOLROS	<i>Solanum rostratum</i>	buffalobur nightshade					X
SOLTRI	<i>Solanum triflorum</i>	cutleaf nightshade			X		
THLARV	<i>Thlaspi arvense</i>	field pennycress	X	X	X	X	X
Biennial Forbs							
IPOAGG	<i>Ipomopsis aggregata</i>	scarlet gilia	X				
MELOFF	<i>Melilotus officinalis</i>	yellow sweetclover	X		X	X	X
TRADUB	<i>Tragopogon dubius</i>	yellow salsify	X		X	X	X
Perennial Forbs							
ACHMIL	<i>Achillea millefolium</i>	common yarrow		X			
ALLSPP	<i>Allium</i> spp.	onion	X		X		
ALLTEX	<i>Allium textile</i>	prairie onion	X		X	X	
AMBPSI	<i>Ambrosia psilostachya</i>	western ragweed			X		X
ANTMIC	<i>Antennaria microphylla</i>	little-leaf pussytoes	X			X	
ANTPAR	<i>Antennaria parvifolia</i>	small-leaf pussytoes				X	
ASCSPE	<i>Asclepias speciosa</i>	showy milkweed		X			
CALNUT	<i>Calochortus nuttallii</i>	sego mariposalily	X				
CAMROT	<i>Campanula rotundifolia</i>	harebell				X	
CERSPP	<i>Cerastium</i> spp.	chickweed	X				
CIRCAN	<i>Circaea canadensis</i>	broadleaf enchanter's nightshade			X		
CIRARV	<i>Cirsium arvense</i>	Canada thistle		X			
CIRSPP	<i>Cirsium</i> spp	thistle	X				
COMUMB	<i>Comandra umbellata</i>	common bastardtoadflax	X			X	
CONARV	<i>Convolvulus arvensis</i>	field bindweed			X		
CRESP	<i>Crepis</i> spp.	hawksbeard	X				
	Species observed but not sampled						

			Vegetation Community				
Code	Scientific Name	Common Name	Big Sagebrush Shrubland	Cottonwood Gallery	Greasewood Shrubland	Ponderosa Pine Woodland	Upland Grassland
Perennial Forbs continued							
DALCAN	<i>Dalea candida</i>	white prairie-clover					X
DALENN	<i>Dalea ennandra</i>	nineanther prairie-clover				X	
DALPUR	<i>Dalea purpurea</i>	purple prairie-clover	X				
ECHANG	<i>Echinacea angustifolia</i>	purple coneflower					X
EREHOO	<i>Eremogone hookeri</i>	Hooker sandwort	X			X	
ERISPP	<i>Erigeron</i> spp	fleabane	X			X	
GAISPP	<i>Gaillardia</i> spp.	blanketflower				X	
GAUCOC	<i>Gaura coccinea</i>	scarlet gaura	X				
GRISQU	<i>Grindelia squarrosa</i>	curlycup gumweed	X			X	
HELPAU	<i>Helianthus pauciflorus</i>	stiff sunflower					X
HELSPP	<i>Helianthus</i> spp.	sunflower	X	X			
HESPUM	<i>Hesperochiron pumilus</i>	dwarf hesperochiron	X				
HETVIL	<i>Heterotheca villosa</i>	goldenaster	X			X	
LIAPUN	<i>Liatris punctata</i>	dotted blazingstar	X			X	
MACSPP	<i>Machaeranthera</i> spp.	tansyaster	X				
PEDARG	<i>Pedimelum argophyllum</i>	silverleaf scurfpea	X				X
PENSPP	<i>Penstemon</i> spp.	penstemon	X			X	
PHLMUL	<i>Phlox multiflora</i>	flowery phlox				X	
PHLSPP	<i>Phlox</i> spp.	phlox	X		X	X	X
PSOSPP	<i>Psoralidium</i> spp.	scurfpea	X				
PSOTEN	<i>Psoralidium tenuiflorum</i>	slimflower scurfpea				X	
PTESPP	<i>Pterospora</i> spp.	pinetrops				X	
SPHCOC	<i>Sphaeralcea coccinea</i>	scarlet globemallow	X		X	X	X
THERHO	<i>Thermopsis rhombifolia</i>	prairie thermopsis	X			X	
VICAME	<i>Vicia americana</i>	American vetch	X			X	X
WOOORE	<i>Woodsia oregana</i> var. <i>cathcartiana</i>	Oregon cliff fern				X	
Perennial Half and Sub-shrubs							
ARTFRI	<i>Artemisia frigida</i>	fringed sagewort	X	X	X	X	X
ARTLUD	<i>Artemisia ludoviciana</i>	Louisiana sagewort				X	
GUTSAR	<i>Gutierrezia sarothrae</i>	broom snakeweed	X			X	X
ROSARK	<i>Rosa arkansana</i>	prairie rose				X	
	Species observed but not sampled						

Code	Scientific Name	Common Name	Vegetation Community				
			Big Sagebrush Shrubland	Cottonwood Gallery	Greasewood Shrubland	Ponderosa Pine Woodland	Upland Grassland
Perennial Half and Sub-shrubs continued							
YUCGLA	<i>Yucca glauca</i>	yucca (small soapweed)				X	
Perennial Shrubs							
ARTCAN	<i>Artemisia cana</i>	silver sagebrush		X	X	X	
ARTTRI	<i>Artemisia tridentata</i>	big sagebrush	X	X	X	X	X
CHRVIS	<i>Chrysothamnus viscidiflorus</i>	Douglas rabbitbrush				X	
ERINAU	<i>Ericameria nauseosa</i>	rubber rabbitbrush		X	X	X	
SARVER	<i>Sarcobatus vermiculatus</i>	greasewood	X	X	X		
SYMOCC	<i>Symphoricarpos occidentalis</i>	western snowberry		X			
Succulents							
CORSPP	<i>Coryphantha</i> spp.	ball cactus	X				
OPUPOL	<i>Opuntia polyacantha</i>	plains prickly pear	X		X	X	X
PEDSIM	<i>Pediocactus simpsonii</i>	mountain ball cactus	X				
Trees							
JUNSCO	<i>Juniperus scopulorum</i>	Rocky Mountain juniper				X	
PINPON	<i>Pinus ponderosa</i>	ponderosa pine				X	
POPDEL	<i>Populus deltoides</i>	plains cottonwood		X			
Lichens and Moss							
LICSPP	<i>Lichen</i> spp.	lichen	X		X	X	X
MOSSPP	<i>Moss</i> spp.	moss			X	X	
	Species observed but not sampled						

APPENDIX 2.8-C

VEGETATION COVER SUMMARIES

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Cover Summary

Site Id: BS
Name: Baseline
Comm. Type/Form: Big Sagebrush
Sample Date: 7-2-2007 to 7-12-2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 27
Report Date: 1-14-08

Species	Cover			Frequency		I.V.	Rank
	Mean Absolute	Relative (%)	Std. Dev. n-1	Absolute	Relative (%)		
Cool Season Perennial Grasses							
<i>Carex filifolia</i>	3.56	7.76	6.14	48.15	7.39	15.14	5
<i>Carex stenophylla</i>	0.07	0.15	0.38	3.70	0.57	0.72	15
<i>Elymus lanceolatus</i>	0.07	0.15	0.38	3.70	0.57	0.72	15
<i>Elymus smithii</i>	3.78	8.24	3.82	70.37	10.80	19.03	4
<i>Hesperostipa comata</i>	0.89	1.94	2.03	18.52	2.84	4.78	11
<i>Poa secunda</i>	0.96	2.09	2.03	25.93	3.98	6.07	8
Sub-total	9.33	20.33					
Warm Season Perennial Grasses							
<i>Aristida purpurea</i>	0.15	0.33	0.53	7.41	1.14	1.46	15
<i>Bouteloua curtipendula</i>	0.22	0.48	0.85	7.41	1.14	1.62	14
<i>Bouteloua gracilis</i>	11.19	24.38	7.45	88.89	13.64	38.02	1
<i>Buchloe dactyloides</i>	9.63	20.98	10.47	77.78	11.93	32.92	2
<i>Panicum virgatum</i>	0.07	0.15	0.38	3.70	0.57	0.72	15
Sub-total	21.26	46.33					
Annual Grasses							
<i>Bromus japonicus</i>	2.81	6.12	3.56	55.56	8.52	14.65	6
<i>Bromus tctorum</i>	1.85	4.03	2.98	40.74	6.25	10.28	7
Sub-total	4.66	10.15					
Annual Forbs							
<i>Alyssum desertorum</i>	0.22	0.48	0.85	7.41	1.14	1.62	14
<i>Camelina microcarpa</i>	0.07	0.15	0.38	3.70	0.57	0.72	15
<i>Hedeoma hispidum</i>	0.07	0.15	0.38	3.70	0.57	0.72	15
<i>Lappula redowski</i>	0.07	0.15	0.38	3.70	0.57	0.72	15
<i>Lepidium densiflorum</i>	0.30	0.65	0.72	11.11	1.70	2.36	13
<i>Linum australe</i>	0.07	0.15	0.38	3.70	0.57	0.72	15
<i>Plantago patagonica</i>	0.07	0.15	0.38	3.70	0.57	0.72	15
Sub-total	0.87	1.90					
Perennial Forbs							
<i>Calochortus nuttallii</i>	0.07	0.15	0.38	3.70	0.57	0.72	15
<i>Phlox spp.</i>	0.07	0.15	0.38	3.70	0.57	0.72	15
<i>Sphaeralcea coccinea</i>	0.37	0.81	1.11	11.11	1.70	2.51	12
Sub-total	0.51	1.11					
Perennial Sub-Shrubs							
<i>Artemisia frigada</i>	1.04	2.27	1.25	22.22	3.41	5.68	9
<i>Gutierrezia sarothrae</i>	0.15	0.33	0.27	7.41	1.14	1.46	15
Sub-total	1.19	2.59					
Perennial Shrubs							
<i>Artemisia tridentata</i>	7.26	15.82	5.82	92.59	14.20	30.03	3
Sub-total	7.26	15.82					
Perennial Succulants							
<i>Opuntia polyacantha</i>	0.81	1.77	0.89	22.22	3.41	5.17	10
Sub-total	0.81	1.77					
Total Vegetation							
Lichen	45.89		13.09				
Moss	1.26		2.30				
Litter/Rock	0.07		0.38				
Total Ground Cover	38.52		19.27				
Bare Soil	85.78		6.59				
Total Cover	14.07		6.50				
	99.85						
Species Abundance (No. of Species/Sample)	27						

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Cover Summary

Site Id: GW
Name: Baseline
Comm. Type/Form: Greasewood Shrubland
Sample Date: 7-2-2007 to 7-12-2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 37
Report Date: 1-14-08

Species	Cover			Frequency		I.V.	Rank
	Mean Absolute	Relative (%)	Std. Dev. n-1	Absolute	Relative (%)		
Cool Season Perennial Grasses							
<i>Agropyron cristatum</i>	0.49	1.32	2.64	5.41	0.97	2.29	15
<i>Bromus inermis</i>	0.22	0.59	0.79	8.11	1.46	2.05	17
<i>Carex filifolia</i>	0.27	0.73	1.07	8.11	1.46	2.18	16
<i>Carex stenophylla</i>	0.11	0.30	0.66	2.70	0.48	0.78	22
<i>Elymus hispidus</i>	0.05	0.13	0.33	2.70	0.48	0.62	23
<i>Elymus lanceolatus</i>	0.22	0.59	1.03	5.41	0.97	1.56	19
<i>Elymus smithii</i>	8.65	23.31	8.47	89.19	16.02	39.33	1
<i>Hordeum jubatum</i>	0.05	0.13	0.33	2.70	0.48	0.62	23
<i>Poa secunda</i>	0.16	0.43	0.73	5.41	0.97	1.40	20
<i>Schedonnardus panniculatus</i>	0.05	0.13	0.33	2.70	0.48	0.62	23
Sub-total	10.27	27.67					
Warm Season Perennial Grasses							
<i>Artistida spp.</i>	0.05	0.13	0.33	2.70	0.48	0.62	23
<i>Bouteloua gracilis</i>	3.84	10.35	6.10	43.24	7.77	18.11	3
<i>Buchloe dactyloides</i>	3.57	9.62	5.97	45.95	8.25	17.87	4
<i>Distichlis stricta</i>	0.97	2.61	3.93	10.81	1.94	4.56	11
<i>Sporobolus airoides</i>	0.54	1.46	1.68	13.51	2.43	3.88	12
<i>Sporobolus cryptandrus</i>	0.05	0.13	0.33	2.70	0.48	0.62	23
Sub-total	9.02	24.31					
Annual Grasses							
<i>Bromus japonicus</i>	0.22	0.59	0.64	10.81	1.94	2.53	14
<i>Bromus tectorum</i>	1.62	4.37	3.43	29.73	5.34	9.71	5
Sub-total	1.84	4.96					
Annual Forbs							
<i>Bassia sieveriana</i>	1.68	4.53	4.15	21.62	3.88	8.41	8
<i>Camelina microcarpa</i>	0.05	0.13	0.33	2.70	0.48	0.62	23
<i>Chenopodium album</i>	0.16	0.43	0.55	8.11	1.46	1.89	18
<i>Chenopodium berlandieri</i>	0.05	0.13	0.33	2.70	0.48	0.62	23
<i>Cryptantha spp.</i>	0.05	0.13	0.33	2.70	0.48	0.62	23
<i>Descurainia pinnata</i>	0.11	0.30	0.46	5.41	0.97	1.27	21
<i>Lappula redowski</i>	0.22	0.59	0.79	8.11	1.46	2.05	17
<i>Lepidium densiflorum</i>	0.16	0.43	0.73	5.41	0.97	1.40	20
<i>Lepidium perfoliatum</i>	0.27	0.73	0.96	8.11	1.46	2.18	16
<i>Monolepis nuttalliana</i>	0.38	1.02	1.14	13.51	2.43	3.45	13
<i>Plantago patagonica</i>	0.65	1.75	1.89	16.22	2.91	4.66	10
<i>Salsola tragus</i>	0.05	0.13	0.33	2.70	0.48	0.62	23
Sub-total	3.83	10.32					
Perennial Forbs							
<i>Ambrosia psilostachya</i>	0.05	0.13	0.33	2.70	0.48	0.62	23
<i>Convolvulus arvensis</i>	0.05	0.13	0.33	2.70	0.48	0.62	23
<i>Sphaeralcea coccinea</i>	0.05	0.13	0.33	2.70	0.48	0.62	23
Sub-total	0.15	0.40					
Perennial Shrubs							
<i>Artemisia cana</i>	0.59	1.59	1.32	18.92	3.40	4.99	9
<i>Artemisia tridentata</i>	1.57	4.23	3.66	24.32	4.37	8.60	7

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Cover Summary

Site Id: GW
Name: Baseline
Comm. Type/Form: Greasewood Shrubland
Sample Date: 7-2-2007 to 7-12-2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 37
Report Date: 1-14-08

Species	Cover			Frequency		I.V.	Rank
	Mean Absolute	Relative (%)	Std. Dev. n-1	Absolute	Relative (%)		
Perennial Shrubs continued							
<i>Sarcobatus vermiculatus</i>	8.49	22.88	8.79	86.49	15.53	38.41	2
Sub-total	10.65	28.70					
Perennial Succulants							
<i>Opuntia polyacantha</i>	1.35	3.64	1.45	29.73	5.34	8.98	6
Sub-total	1.35	3.64					
Total Vegetation	37.11		10.88				
Lichen	0.48		1.52				
Moss	0.06		0.33				
Litter/Rock	42.54		23.85				
Total Ground Cover	80.19		13.47				
Bare Soil	18.70		13.37				
Total Cover	98.89						
Species Abundance (No. of Species/Sample)	37						

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Cover Summary

Site Id: PP
Name: Baseline
Comm. Type/Form: Ponderosa Pine Woodland
Sample Date: 7-2-2007 to 7-12-2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 37
Report Date: 1-14-08

Species	Cover			Frequency		I.V.	Rank
	Mean Absolute	Relative (%)	Std. Dev. n-1	Absolute	Relative (%)		
Cool Season Perennial Grasses							
<i>Carex filifolia</i>	0.11	0.32	0.66	2.70	0.56	0.88	15
<i>Carex geyeri</i>	4.59	13.37	5.49	56.76	11.87	25.24	2
<i>Elymus lanceolatus</i>	0.05	0.15	0.33	2.70	0.56	0.71	16
<i>Elymus smithii</i>	1.24	3.61	1.96	37.84	7.91	11.52	6
<i>Hesperostipa comata</i>	0.16	0.47	0.73	2.70	0.56	1.03	14
<i>Nassella viridula</i>	0.11	0.32	0.46	5.41	1.13	1.45	13
<i>Poa secunda</i>	0.38	1.11	1.69	5.41	1.13	2.24	11
Sub-total	6.64	19.34					
Warm Season Perennial Grasses							
<i>Andropogon scoparius</i>	0.81	2.36	1.52	24.32	5.08	7.44	7
<i>Aristida purpurea</i> var. <i>fendleriana</i>	0.81	2.36	1.73	24.32	5.08	7.44	7
<i>Bouteloua curtipendula</i>	1.68	4.89	2.93	35.14	7.35	12.24	5
<i>Bouteloua gracilis</i>	4.05	11.80	4.58	62.16	12.99	24.79	3
<i>Buchloe dactyloides</i>	0.32	0.93	0.88	13.51	2.82	3.76	9
Sub-total	7.67	22.34					
Annual Grasses							
<i>Bromus japonicus</i>	0.22	0.64	0.63	10.81	2.26	2.90	10
<i>Bromus tectorum</i>	0.05	0.15	0.33	2.70	0.56	0.71	16
Sub-total	0.27	0.79					
Annual Forbs							
<i>Chenopodium berlandieri</i>	0.05	0.15	0.33	2.70	0.56	0.71	16
<i>Draba nemorosa</i>	0.05	0.15	0.33	2.70	0.56	0.71	16
<i>Lappula redowski</i>	0.05	0.15	0.33	2.70	0.56	0.71	16
Sub-total	0.15	0.44					
Biennial Forbs							
<i>Melilotus officinalis</i>	0.05	0.15	0.33	2.70	0.56	0.71	16
Sub-total	0.05	0.15					
Perennial Forbs							
<i>Antennaria parvifolia</i>	0.05	0.15	0.33	2.70	0.56	0.71	16
<i>Erigeron</i> spp.	0.11	0.32	0.66	2.70	0.56	0.88	15
<i>Liatris punctata</i>	0.05	0.15	0.33	2.70	0.56	0.71	16
<i>Thermopsis rhombifolia</i>	0.16	0.47	0.99	2.70	0.56	1.03	14
<i>Vicia americana</i>	0.05	0.15	0.33	2.70	0.56	0.71	16
Sub-total	0.42	1.22					
Perennial Sub-Shrubs							
<i>Artemisia frigada</i>	0.22	0.64	0.63	10.81	2.26	2.90	10
Sub-total	0.22	0.64					
Perennial Shrubs							
<i>Artemisia cana</i>	0.16	0.47	0.99	2.70	0.56	1.03	14
<i>Artemisia tridentata</i>	0.54	1.57	1.12	21.62	4.52	6.09	8
Sub-total	0.70	2.04					

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Cover Summary

Site Id: PP
Name: Baseline
Comm. Type/Form: Ponderosa Pine Woodland
Sample Date: 7-2-2007 to 7-12-2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 37
Report Date: 1-14-08

Species	Cover			Frequency		I.V.	Rank
	Mean Absolute	Relative (%)	Std. Dev. n-1	Absolute	Relative (%)		
Perennial Succulants							
<i>Opuntia polyacantha</i>	0.16	0.47	0.55	8.11	1.70	2.16	12
Sub-total	0.16	0.47					
Perennial Trees							
<i>Juniperus scopulorum</i>	2.59	7.54	4.52	32.43	6.78	14.32	4
<i>Pinus ponderosa</i>	15.46	45.03	10.79	91.89	19.21	64.24	1
Sub-total	18.05	52.58					
Total Vegetation	34.33		10.51				
Lichen	0.54		1.30				
Moss	0.38		1.14				
Litter/Rock	53.57		24.32				
Total Ground Cover	88.82		7.68				
Bare Soil	10.54		7.74				
Total Cover	99.36						
Species Abundance (No. of Species/Sample)	29						

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Cover Summary

Site Id: UG
Name: Baseline
Comm. Type/Form: Upland Grassland
Sample Date: 7-2-2007 to 7-12-2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 30
Report Date: 1-14-08

Species	Cover			Frequency		I.V.	Rank
	Mean Absolute	Relative (%)	Std. Dev. n-1	Absolute	Relative (%)		
Cool Season Perennial Grasses							
<i>Agropyron cristatum</i>	0.47	1.02	1.63	10.00	2.04	3.06	9
<i>Carex filifolia</i>	3.33	7.24	5.57	50.00	10.20	17.44	5
<i>Elymus smithii</i>	8.53	18.54	7.82	80.00	16.33	34.86	3
<i>Hesperostipa comata</i>	0.33	0.72	1.30	6.67	1.36	2.08	11
<i>Poa secunda</i>	0.07	0.15	0.37	3.33	0.68	0.83	13
Sub-total	12.73	27.66					
Warm Season Perennial Grasses							
<i>Bouteloua gracilis</i>	12.47	27.10	9.82	90.00	18.37	45.46	2
<i>Buchloe dactyloides</i>	12.80	27.81	9.88	90.00	18.37	46.18	1
Sub-total	25.27	54.91					
Annual Grasses							
<i>Bromus japonicus</i>	0.07	0.15	0.37	3.33	0.68	0.83	13
<i>Bromus tectorum</i>	4.07	8.84	5.26	53.33	10.88	19.73	4
Sub-total	4.14	9.00					
Annual Forbs							
<i>Alyssum desertorum</i>	0.67	1.46	1.60	16.67	3.40	4.86	7
<i>Lepidium densiflorum</i>	0.20	0.43	0.81	6.67	1.36	1.80	12
<i>Thlaspi arvense</i>	0.67	1.46	2.31	13.33	2.72	4.18	8
Sub-total	1.54	3.35					
Perennial Forbs							
<i>Sphaeralcea coccinea</i>	0.20	0.43	0.61	10.00	2.04	2.48	10
Sub-total	0.20	0.43					
Perennial Sub-Shrubs							
<i>Artemisia frigada</i>	0.07	0.15	0.37	3.33	0.68	0.83	13
Sub-total	0.07	0.15					
Perennial Succulants							
<i>Opuntia polyacantha</i>	2.07	4.50	2.49	53.33	10.88	15.38	6
Sub-total	2.07	4.50					
Total Vegetation	46.02		13.76				
Lichen	1.80		4.11				
Litter/Rock	41.13		20.69				
Total Ground Cover	88.95		6.07				
Bare Soil	11.07		5.94				
Total Cover	100.02						
Species Abundance (No. of Species/Sample)	15						

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Cover Summary

Site Id: CG
Name: Baseline
Comm. Type/Form: Cottonwood Gallery
Sample Date: 7-2-2007 to 7-12-2007

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 26
Report Date: 1-14-08

Species	Cover			Frequency		I.V.	Rank
	Mean Absolute	Relative (%)	Std. Dev. n-1	Absolute	Relative (%)		
Cool Season Perennial Grasses							
<i>Bromus inermis</i>	18.23	29.12	16.76	92.31	24.49	53.61	1
<i>Elymus smithii</i>	16.46	26.29	15.60	88.46	23.47	49.76	2
Sub-total	34.69	55.41					
Warm Season Perennial Grasses							
<i>Distichlis stricta</i>	0.23	0.37	1.18	3.85	1.02	1.39	10
Sub-total	0.23	0.37					
Annual Grasses							
<i>Bromus japonicus</i>	0.08	0.13	0.39	3.85	1.02	1.15	11
<i>Bromus tectorum</i>	0.69	1.10	1.95	15.38	4.08	5.18	6
Sub-total	0.77	1.23					
Annual Forbs							
<i>Bassia sieveriana</i>	9.77	15.60	15.98	53.85	14.29	29.89	4
<i>Chenopodium album</i>	1.38	2.20	2.76	26.92	7.14	9.35	5
<i>Descurainia sophia</i>	0.08	0.13	0.39	3.85	1.02	1.15	11
<i>Lappula redowski</i>	0.08	0.13	0.39	3.85	1.02	1.15	11
Sub-total	11.31	18.06					
Perennial Forbs							
<i>Achillea millefolium</i>	0.08	0.13	0.39	3.85	1.02	1.15	11
<i>Cirsium arvense</i>	1.38	2.20	6.66	7.69	2.04	4.24	7
Sub-total	1.46	2.33					
Perennial Shrubs							
<i>Artemisia cana</i>	0.15	0.24	0.54	7.69	2.04	2.28	8
<i>Sarcobatus vermiculatus</i>	0.08	0.13	0.39	3.85	1.02	1.15	11
<i>Symphoricarpos occidentalis</i>	0.54	0.86	2.75	3.85	1.02	1.88	9
Sub-total	0.77	1.23					
Perennial Trees							
<i>Populus deltoides</i>	13.38	21.37	20.28	57.69	15.30	36.68	3
Sub-total	13.38	21.37					
Total Vegetation	62.61		15.29				
Lichen	0.00		0.00				
Litter/Rock	35.00		12.83				
Total Ground Cover	97.62		4.16				
Bare Soil	2.38		4.16				
Total Cover	100.00						
Species Abundance (No. of Species/Sample)	15						

APPENDIX 2.8-D

VEGETATION DENSITY SUMMARIES

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Density Summary

Site Id: BS
Name: Baseline
Comm. Type/Form: Big Sagebrush
Sample Date: 7-2-2007 to 7-12-2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 27
Report Date: 1-14-08

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
<i>Artemisia tridentata</i>	24.26	53.65	14.83	0.49	1,964.33
Sub-Total	24.26	53.65		0.49	1,964.33
Sub-Shrubs & Half-Shrubs					
<i>Artemisia frigida</i>	20.52	45.38	40.21	0.41	1,661.50
<i>Gutierrezia sarothrae</i>	0.44	0.97	1.15	0.01	35.63
Sub-Total	20.96	46.35		0.42	1,697.13
Total	45.22	100.00		0.90	3,661.46

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Density Summary

Site Id: GW
Name: Baseline
Comm. Type/Form: Greasewood Shrubland
Sample Date: 7-2-2007 to 7-12-2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 37
Report Date: 1-14-08

	Mean	Relative	Std. Dev.	Mean	Mean
	(Number/Plot)	Density	n-1 (Number/Plot)	(Number/sq.m.)	(Number/Acre)
Full Shrubs					
<i>Artemisia cana</i>	3.81	11.91	9.89	0.08	308.50
<i>Artemisia tridentata</i>	5.59	17.48	12.13	0.11	452.62
<i>Ericameria nauseosa</i>	0.22	0.69	1.32	0.00	17.81
<i>Sarcobatus vermiculatus</i>	22.22	69.48	20.88	0.44	1,799.15
Sub-Total	31.84	99.56		0.64	2,578.08
Sub-Shrubs & Half-Shrubs					
<i>Artemisia frigida</i>	0.14	0.44	0.48	0.003	11.34
Sub-Total	0.14	0.44		0.003	11.34
Total	31.98	100.00		0.64	2,589.42

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Density Summary

Site Id: PP
Name: Baseline
Comm. Type/Form: Ponderosa Pine Woodland
Sample Date: 7-2-2007 to 7-12-2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 37
Report Date: 1-14-2008

	Mean	Relative	Std. Dev.	Mean	Mean
	(Number/Plot)	Density	n-1 (Number/Plot)	(Number/sq.m.)	(Number/Acre)
Full Shrubs					
<i>Artemisia cana</i>	2.11	13.96	12.82	0.04	170.85
<i>Artemisia tridentata</i>	4.14	27.38	7.05	0.08	335.22
<i>Chrysothamnus viscidiflorus</i>	0.22	1.46	0.67	0.004	17.81
<i>Ericameria nauseosa</i>	0.14	0.93	0.54	0.003	11.34
Sub-Total	6.61	43.72		0.13	535.21
Sub-Shrubs & Half-Shrubs					
<i>Artemisia frigida</i>	6.92	45.77	16.08	0.14	560.31
<i>Gutierrezia sarothrae</i>	1.51	9.99	5.86	0.03	122.26
<i>Rosa arkansana</i>	0.03	0.20	0.33	0.001	2.43
<i>Yucca glauca</i>	0.05	0.33	0.16	0.001	4.05
Sub-Total	8.51	56.28		0.17	689.05
Total	15.12	100.00		0.30	1,224.27

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Density Summary

Site Id: UG
Name: Baseline
Comm. Type/Form: Upland Grassland
Sample Date: 7-2-2007 to 7-12-2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 30
Report Date: 1-14-08

	Mean (Number/Plot)	Relative Density	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
<i>Artemisia tridentata</i>	0.13	20.63	0.43	0.003	10.53
Sub-Total	0.13	20.63		0.003	10.53
Sub-Shrubs & Half-Shrubs					
<i>Artemisia frigida</i>	0.47	74.60	2.56	0.01	38.06
<i>Gutierrezia sarothrae</i>	0.03	4.76	0.18	0.00	2.43
Sub-Total	0.50	79.37		0.01	40.49
Total	0.63	100.00		0.01	51.01

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Density Summary

Site Id: CG
Name: Baseline
Comm. Type/Form: Cottonwood Gallery
Sample Date: 7-2-2007 to 7-12-2007

Sample Method: Transect
Sample Size: 50 Meter Transect
Number of Samples: 26
Report Date: 1-14-08

	Mean	Relative	Std. Dev.	Mean	Mean
	(Number/Plot)	Density	n-1 (Number/Plot)	(Number/sq.m.)	(Number/Acre)
Full Shrubs					
<i>Artemisa cana</i>	0.5	7.13	1.12	0.01	40.49
<i>Artemisia tridentata</i>	0.04	0.57	0.19	0.00	3.24
<i>Ericameria nauseosa</i>	0.04	0.57	0.19	0.00	3.24
<i>Sarcobatus vermiculatus</i>	0.08	1.14	0.27	0.00	6.48
<i>Symphoricarpos occidentalis</i>	6.35	90.58	31.73	0.13	514.16
Sub-Total	7.01	100.00		0.14	567.60
Total	7.01	100.00		0.14	567.60

APPENDIX 2.8-E

PONDEROSA PINE WOODLAND TREE DENSITY

SUMMARY

POWERTECH (USA) INC
DEWEY-BURDOCK PROJECT
Report: Density Summary

Site Id: PP	Sample Method: Transect
Name: Baseline	Sample Size: 50 Meter Transect
Comm. Type/Form: Ponderosa Pine Woodland	Number of Samples: 37
Sample Date: 7-2-2007 to 7-12-2007	Report Date: 1-14-2008

	Std. Dev. n-1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Trees			
<i>Pinus ponderosa</i>	15.10	0.019	75.88
Sub-Total		0.019	75.88
Total		0.019	75.88

APPENDIX 2.8-F

WETLAND PHOTOGRAPHS



W1, R1 P1: Depression, non-wetland



W3, R1 P12: Upstream, non-wetland



W3, R1 P13: Downstream, non-wetland



W4, R1 P2: Upstream, wetland



W4, R1 P3: Downstream, wetland



W4, R1 P4: Tributary



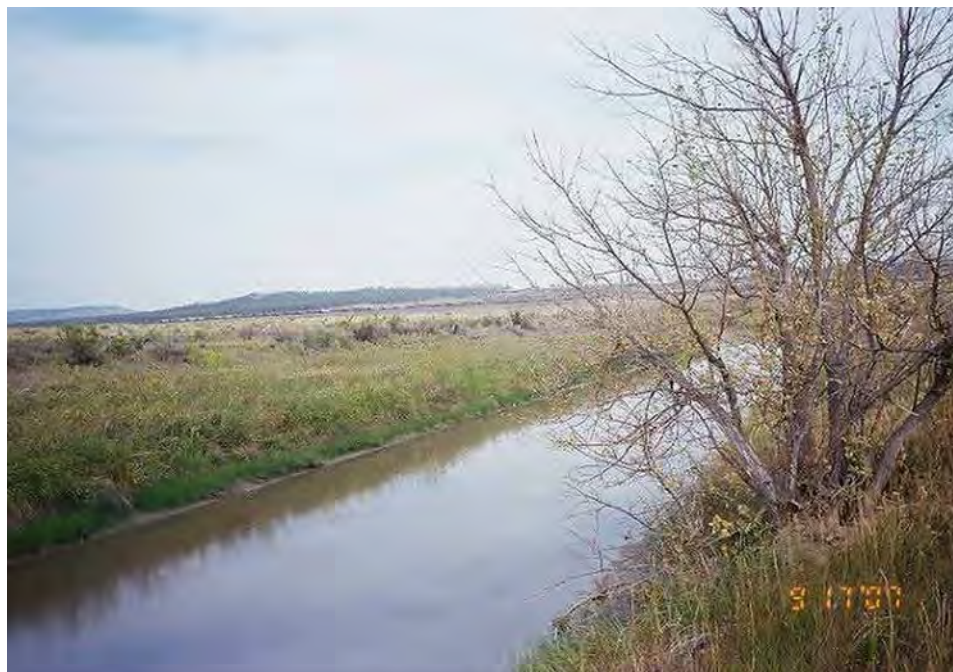
Wpt. 3, R1 P6: Upstream, wetland



Wpt. 3, R1 P7: Downstream, wetland



Wpt. 4, R1 P8: Upstream, wetland



Wpt. 4, R1 P9: Downstream, wetland



W5, R1 P5: Upland, non-wetland



W6, R1 P16: View of the drainage



W7, R1 P17: Upstream, wetland



W7, R1 P18: Downstream



W8, R1 P19: Upstream, wetland



W8, R1 P20: Downstream, wetland



W9, R1 P23: Upstream depression, wetland



W9, R1 P24: Downstream depression, wetland



W10, R2 P1: Downstream, wetland



W10, R2 P2: Upstream, wetland



W11, R2 P3: West



W11, R2 P4: East



W12, R2 P5: West, non-wetland



W12, R2 P6: East, non-wetland



W14, R2 P7: Upstream, wetland



W14, R2 P8: Downstream, wetland



W14, R2 P9: General area of PEMC



W15, R2 P12: Upstream, wetland



W15, R2 P13: Downstream, wetland



Wpt. 22, R2, P14: Upstream wetland



Wpt. 22, R2, P15: Downstream, wetland



W16, R2 P18: Upstream, wetland



W16, R2 P19: Downstream, wetland



W17, R2 P22: Upstream, non-wetland



W17, R2 P23: Downstream, non-wetland



Wpt. 26, R2 P24: Similar to W18, wetland



W18, R3 P1: Upstream, wetland



W18, R3 P2: Downstream, wetland



W19, R3 P3: Northwest, non-wetland



W19, R3 P4: East, non-wetland



Wpt. 27, R3 P5: Drainage, non-wetland



Wpt. 29, R3 P6: Depression, non-wetland



Wpt. 29, R3 P7: Depression, non-wetland



W20, R3 P8: Upstream, wetland



W20, R3 P9: Downstream, wetland



W21, R3 P10: Upstream, wetland



W21, R3 P11: Downstream, wetland



W21, R3 P12: Bridge



W22, R3 P13: Upstream, wetland



W22, R3 P14: Downstream, wetland



W23, R3 P17: Upstream, wetland



W23, R3 P18, Downstream, wetland



Wpt. 35, R4 P23: Upstream, non-wetland



Wpt. 35, R4 P24: downstream, non-wetland



W25, R4 P1: Upstream, non-wetland



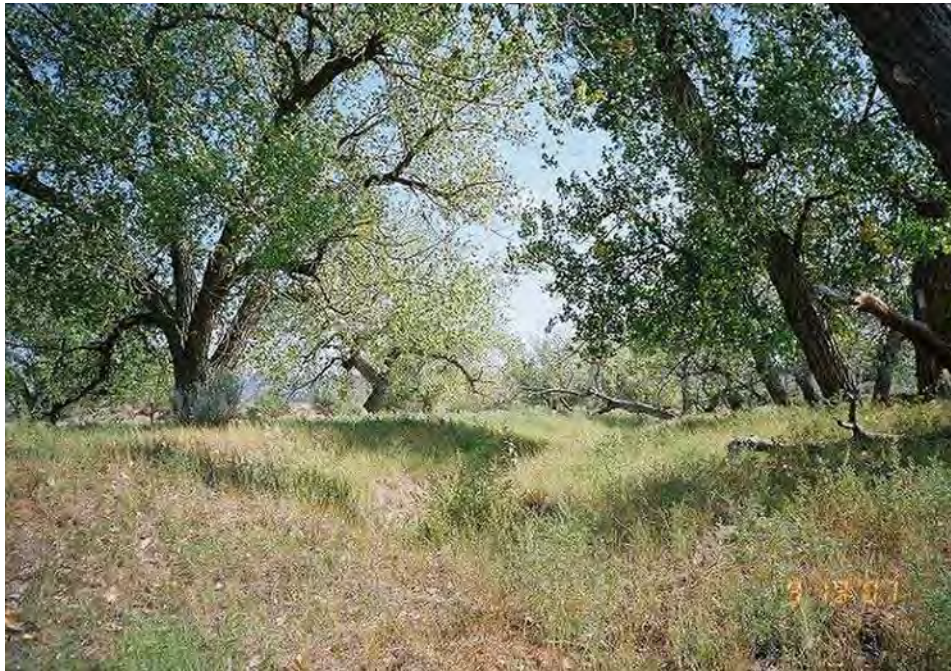
W25, R4 P2: Downstream, non-wetland



W26, R4 P3: Upstream, non-wetland



W26, R4 P4: Downstream, non-wetland



W27, R4 P11: Upstream, non-wetland



W27, R4 P12: Downstream, non-wetland



W28, R4 P13: Upstream, non-wetland



W28, R4 P14: Downstream, non-wetland



W29, R4 P17: Upstream, non-wetland



W29, R4 P18: Downstream, non-wetland



W30, R4 P19: East, non-wetland



W30, R4 P20: West, non-wetland



W31, R4 P21: Northeast, wetland



W31, R4 P22: East-southeast, wetland



W32, R4 P24: Previously mapped PEM wetland, wetland



W32, R4 P25: from the berm, wetland



W33, R5 P1: Upstream, wetland



W33, R5 P2: Downstream, wetland



Wpt. 56, R5 P3: Depression, non-wetland



Wpt. 56, R5 P4: Depression, non-wetland



Wpt. 57, R5 P5: Depression, non-wetland



Wpt. 58, R5 P8: Surface water ends



W34, R5 P9: Upstream, non-wetland



W34, R5 P10: Downstream, non-wetland



W35, R5 P11: Facing East, wetland



W35, R5 P12: Facing south, wetland



Wpt. 60 and 61, R5 P13: Depression, non-wetland



Wpt. 60 and 61, R5 P14: Depression, non-wetland



Wpt. 60 and 61, R5 P15: Depression w/ salt crusts, non-wetland



Wpt. 62, R5 P16: Depression, non-wetland



Wpt. 62, R5 P17: Depression, non-wetland



Wpt. 68, R5 P18: Upstream



Wpt. 68, R5 P19: Downstream



W36, R5 P20: Downstream, wetland



W36, R5 P21: Upstream to stock tank, wetland



Wpt. 74, R6 P1: Depression, non-wetland



Wpt. 74, R6 P2: Depression, non-wetland



Wpt. 78, R6 P5: Depression, non-wetland



W37, R6 P6: Panoramic east to west of old mine pit, non-wetland



W37, R6 P7: Panoramic east to west of old mine pit, non-wetland



W37, R6 P8: Panoramic east to west of old mine pit, non-wetland



W37, R6 P9: Panoramic east to west of old mine pit, non-wetland



W37, R6 P10: Panoramic east to west of old mine pit, non-wetland



W38, R6 P13: East, wetland



W38, R6 P14: West, wetland



Wpt. 83, R6 P15: *Hordeum jubatum* depression, wetland



W39, R6 P16: Depression, wetland



W39, R6 P17: Drainage to the East, wetland



W40, R6 P18: Pond, wetland



W41, R6 P19: Wetland



W41, R6 P20: General area, wetland



W42, R6 P22: Panoramic East to West, wetland



W42, R6 P23: Panoramic East to West, wetland



W42, R6 P24: Panoramic East to West, wetland



Wpt. 88 and 89, R7 P1: Mine Pit, non-wetland



Wpt. 88 and 89, R7 P2: Mine Pit, non-wetland



Wpt. 92, R7 P5: Mine Pit, non-wetland



Wpt. 92, R7 P6: Mine Pit, non-wetland



Wpt. 92, R7 P7: Mine Pit, non-wetland



Wpt. 94, R7 P9: Mine Pit, non-wetland



Wpt. 97, R7 P14: Depression, non-wetland



Wpt. 102, R7 P18: Depression, wetland



Wpt. 102, R7 P19: Depression, wetland



Wpt. 103, R7 P20: Mine Pit, wetland



Wpt. 104, R7 P21: Depression, wetland



Wpt. 104, R7 P22: Depression, wetland



Wpt. 104, R7 P23: Depression, wetland



W44, R7 P24: Northwest, wetland



W44, R8 P1: North, wetland



W44, R8 P2: East, wetland



W45, R8 P4: Upstream, wetland



W45, R8 P5: Downstream, wetland

APPENDIX 2.8-G

WETLAND DETERMINATION DATA FORMS- GREAT PLAINS REGION

Note: At the time of field sampling, data forms were currently in draft form as provided by the US Army Corps of Engineers.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W1
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
Landform (hillslope, terrace, etc.): Depression into tributary Local relief (concave, convex, none): Convex Slope (%): 0%
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: PEMC
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes		No	<u>X</u>	
Remarks: R1 P1 - Depression ~10' x 15'					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>75</u> x1= <u>75</u> FACW species <u>15</u> x2= <u>30</u> FAC species _____ x3= _____ FACU species <u>110</u> x4= <u>440</u> UPL species _____ x5= _____ Column Totals: <u>200</u> (A) <u>545</u> (B) Prevalence Index = B/A = <u>2.75</u>
Sapling/Shrub Stratum 1. <u>Rosa woodsii</u> <u>100</u> <u>X</u> <u>FACU</u> 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: <u>100</u>				
Herb Stratum 1. <u>Hordeum jubatum</u> <u>15</u> <u>FACW</u> 2. <u>Elymus smithii</u> <u>5</u> <u>FACU</u> 3. <u>Polygonum aviculare</u> <u>5</u> <u>FACU</u> 4. <u>Eleocharis palustris</u> <u>75</u> <u>X</u> <u>OBL</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Remarks:				

SOIL

Sampling Point W1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	2.5Y 3/1	90	10YR 4/8	10	C	RC	SiCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (**LRR F**)
☐ 1 cm Muck (A9) (**LRR F, G, H**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☒ Redox Depressions (F8)
☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

☐ 1 cm Muck (A9) (**LRR C**)
☐ Coast Prairie Redox (A16) (LRR F, G, H)
☐ Dark Surface (S7) (**LRR G**)
☐ High Plains Depressions (F16)
☐ (**LRR H outside MLRA 72 & 73**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

 Hydric Soils Present? Yes ☒ No ☐
Remarks:
HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water Stained Leaves (B9)
☐ Salt Crusts (B11)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Oder (C1)
☐ Dry-Season Water Table (C2)
☐ Presence of Reduced Iron (C4)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remark)

Secondary Indicators (2 or more required)

☐ Surface Soil Cracks (B6)
☐ Sparsely Vegetated Concave Surfaces (B8)
☐ Drainage Patterns (B10)
☐ Oxidized Rhizospheres on Living Roots (C3)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Frost-Heave Hummocks (C11) (**LRR F**)
☐ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)
☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
 Water Table Present? Yes ☐ No ☒ Depth (inches): _____
 Saturation Present? Yes ☐ No ☒ Depth (inches): _____
 (includes capillary fringe)

 Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W2
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Convex Slope (%): 3
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: R2EM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: Isolated wetland					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																								
1. _____	_____	_____	_____																									
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
4. _____	_____	_____	_____																									
Total Cover:	_____																											
Sapling/Shrub Stratum																												
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ <table border="0"> <tr> <td>OBL species</td> <td><u>0</u></td> <td>x1=</td> <td><u>0</u></td> </tr> <tr> <td>FACW species</td> <td><u>70</u></td> <td>x2=</td> <td><u>140</u></td> </tr> <tr> <td>FAC species</td> <td><u>2</u></td> <td>x3=</td> <td><u>6</u></td> </tr> <tr> <td>FACU species</td> <td><u>28</u></td> <td>x4=</td> <td><u>112</u></td> </tr> <tr> <td>UPL species</td> <td><u>0</u></td> <td>x5=</td> <td><u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>100</u> (A)</td> <td></td> <td><u>258</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.58</u>	OBL species	<u>0</u>	x1=	<u>0</u>	FACW species	<u>70</u>	x2=	<u>140</u>	FAC species	<u>2</u>	x3=	<u>6</u>	FACU species	<u>28</u>	x4=	<u>112</u>	UPL species	<u>0</u>	x5=	<u>0</u>	Column Totals:	<u>100</u> (A)		<u>258</u> (B)
OBL species	<u>0</u>	x1=	<u>0</u>																									
FACW species	<u>70</u>	x2=	<u>140</u>																									
FAC species	<u>2</u>	x3=	<u>6</u>																									
FACU species	<u>28</u>	x4=	<u>112</u>																									
UPL species	<u>0</u>	x5=	<u>0</u>																									
Column Totals:	<u>100</u> (A)		<u>258</u> (B)																									
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
4. _____	_____	_____	_____																									
5. _____	_____	_____	_____																									
Total Cover:	_____																											
Herb Stratum																												
1. <u>Hordeum jubatum</u>	<u>10</u>	_____	FACW	Hydrophytic Vegetation Indicators <u>X</u> Dominance Test is > 50% <u>X</u> Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present																								
2. <u>Elymus smithii</u>	<u>15</u>	_____	FACU																									
3. <u>Spartina pectinata</u>	<u>60</u>	<u>X</u>	FACW																									
4. <u>Bromus japonicus</u>	<u>5</u>	_____	FACU																									
5. <u>Xanthium strumarium</u>	<u>2</u>	_____	FAC																									
6. <u>Poa pratensis</u>	<u>3</u>	_____	FACU																									
7. <u>Melilotus officinalis</u>	<u>5</u>	_____	FACU																									
8. _____	_____	_____	_____																									
9. _____	_____	_____	_____																									
10. _____	_____	_____	_____																									
Total Cover:	<u>100</u>																											
Woody Vine Stratum																												
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No _____																								
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
Total Cover:	_____																											
% Bare Ground in Herb Stratum	<u>10</u>	% Cover of Biotic Crust	_____																									
Remarks:																												

SOIL

Sampling Point W2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 3/1	95	7.5YR 3/3	5	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16)
- ☐ (**LRR H outside MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Salt Crusts (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Oder (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remark)

Secondary Indicators (2 or more required)

- ☒ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☒ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (**LRR F**)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 5
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

Soil is moist but not saturated. A definable channel is present.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W3
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Convex Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present	Yes <u>X</u> No _____	
Remarks: R1 P 12: Upstream R1 P13: Downstream		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover:	_____			
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: (A) _____ (B) _____ Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover:	_____			
Herb Stratum				
1. <u>Elymus smithii</u>	<u>40</u>	<u>X</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
2. <u>Xanthium strumarium</u>	<u>1</u>		<u>FAC</u>	
3. <u>Bromus japonicus</u>	<u>20</u>	<u>X</u>	<u>FACU</u>	
4. <u>Polygonum aviculare</u>	<u>5</u>		<u>FACU</u>	
5. <u>Lepidium densiflorum</u>	<u>15</u>		<u>FACU</u>	
6. <u>Poa pratensis</u>	<u>6</u>		<u>FACU</u>	
7. <u>Melilotus officinalis</u>	<u>10</u>		<u>FACU-</u>	
8. <u>Symphoricarpos sp.</u>	<u>3</u>		<u>NI</u>	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover:	<u>100</u>			
Woody Vine Stratum				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover:	_____			
% Bare Ground in Herb Stratum	<u>50</u>	% Cover of Biotic Crust		
Remarks:				

SOIL

Sampling Point W3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/1	100					SiCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16)
- ☐ (**LRR H outside MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--------------------------------------------------------------------|--------------------------------------------------------|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crusts (B11) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Oder (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Other (Explain in Remark) |
| <input type="checkbox"/> Iron Deposits (B5) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Water Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☒ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☒ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (**LRR F**)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): _____
Water Table Present? Yes _____ No X Depth (inches): _____
Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

Definable channel is present.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W4
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Convex Slope (%): 3
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: R2EM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R2 P2: Upstream R2 P3: Downstream R2 P4: Tributary Channel width is approximately 17 feet R2 P6: Upstream at waypoint 3 R2 P7: Downstream at waypoint 3 R2 P8 Upstream at waypoint 4 R2 P9: Downstream at waypoint 4					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Spartina pectinata</u> 35 X FACW 2. <u>Cirsium arvense</u> 10 _____ FACU 3. <u>Schoenoplectus pungens</u> 20 X OBL 4. <u>Eleocharis palustris</u> 35 X OBL 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____ Remarks: _____				

Hydrophytic Vegetation Indicators
 X Dominance Test is > 50%
 _____ Prevalence Index is ≤ 3.0¹
 _____ Morphological Adaptations¹ (Providing supporting data in Remarks or on a separate sheet)
 _____ Problematic Hydrophytic Vegetation (Explain)

¹Indicators of hydric soils and wetland hydrology must be present

Hydrophytic Vegetation Present? Yes X No _____

SOIL

Sampling Point W4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	Gley1 2.5/N	100					SCL	
2-10	Gley1 3/N	100					SCL	
10-14	Gley1 4/5GY	95	7.5YR 4/6	5			SC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/>	Histosol (A1)	<input checked="" type="checkbox"/>	Sandy Gleyed Matrix (S4)
<input type="checkbox"/>	Histic Epipedon (A2)	<input type="checkbox"/>	Sandy Redox (S5)
<input type="checkbox"/>	Black Histic (A3)	<input type="checkbox"/>	Stripped Matrix (S6)
<input checked="" type="checkbox"/>	Hydrogen Sulfide (A4)	<input type="checkbox"/>	Loamy Mucky Mineral (F1)
<input type="checkbox"/>	Stratified Layers (A5) (LRR F)	<input type="checkbox"/>	Loamy Gleyed Matrix (F2)
<input checked="" type="checkbox"/>	1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/>	Depleted Matrix (F3)
<input type="checkbox"/>	Depleted Below Dark Surface (A11)	<input type="checkbox"/>	Redox Dark Surface (F6)
<input type="checkbox"/>	Thick Dark Surface (A12)	<input type="checkbox"/>	Depleted Dark Surface (F7)
<input type="checkbox"/>	Sandy Mucky Mineral (S1)	<input type="checkbox"/>	Redox Depressions (F8)
<input checked="" type="checkbox"/>	2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/>	High Plains Depressions (F16)
<input type="checkbox"/>	5 cm Mucky Peat or Peat (S3) (LRR F)		

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/>	1 cm Muck (A9) (LRR C)
<input type="checkbox"/>	Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/>	Dark Surface (S7) (LRR G)
<input type="checkbox"/>	High Plains Depressions (F16)
<input type="checkbox"/>	(LRR H outside MLRA 72 & 73)
<input type="checkbox"/>	Reduced Vertic (F18)
<input type="checkbox"/>	Red Parent Material (TF2)
<input type="checkbox"/>	Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____

 Hydric Soils Present? Yes ☒ No ☐
Remarks:

Faint hydrogen sulfide odor was present.

HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input checked="" type="checkbox"/>	Surface Water (A1)	<input type="checkbox"/>	Salt Crusts (B11)
<input checked="" type="checkbox"/>	High Water Table (A2)	<input type="checkbox"/>	Aquatic Invertebrates (B13)
<input type="checkbox"/>	Saturation (A3)	<input type="checkbox"/>	Hydrogen Sulfide Oder (C1)
<input type="checkbox"/>	Water Marks (B1)	<input type="checkbox"/>	Dry-Season Water Table (C2)
<input type="checkbox"/>	Sediment Deposits (B2)	<input type="checkbox"/>	Presence of Reduced Iron (C4)
<input checked="" type="checkbox"/>	Drift Deposits (B3)	<input type="checkbox"/>	Thin Muck Surface (C7)
<input type="checkbox"/>	Algal Mat or Crust (B4)	<input type="checkbox"/>	Other (Explain in Remark)
<input type="checkbox"/>	Iron Deposits (B5)		
<input type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/>	Water Stained Leaves (B9)		

Secondary Indicators (2 or more required)

<input type="checkbox"/>	Surface Soil Cracks (B6)
<input type="checkbox"/>	Sparsely Vegetated Concave Surfaces (B8)
<input checked="" type="checkbox"/>	Drainage Patterns (B10)
<input type="checkbox"/>	Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/>	Crayfish Burrows (C8)
<input type="checkbox"/>	Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/>	Frost-Heave Hummocks (C11) (LRR F)
<input checked="" type="checkbox"/>	Geomorphic Position (D2)
<input type="checkbox"/>	FAC-Neutral Test (D5)
<input type="checkbox"/>	Local Soil Survey Data (D8)

Field Observations:

 Surface Water Present? Yes ☒ No ☐ Depth (inches): _____
 Water Table Present? Yes ☒ No ☐ Depth (inches): 2
 Saturation Present? Yes ☒ No ☐ Depth (inches): 2
 (includes capillary fringe)

 Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W5
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
 Landform (hillslope, terrace, etc.): Uplands Local relief (concave, convex, none): None Slope (%): 2
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present Yes _____ No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Remarks: R1 P5: Upland area near Beaver Creek	

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species <u>25</u> x3= <u>75</u> FACU species <u>75</u> x4= <u>300</u> UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>375</u> (B) Prevalence Index = B/A = <u>3.75</u>
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Poa pratensis</u> <u>45</u> <u>X</u> <u>FACU</u> 2. <u>Cirsium arvense</u> <u>15</u> <u>FACU</u> 3. <u>Chenopodium album</u> <u>25</u> <u>X</u> <u>FAC</u> 4. <u>Helianthus annuus</u> <u>15</u> <u>FACU</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum <u>40</u> % Cover of Biotic Crust _____				
Remarks:				

Hydrophytic Vegetation Indicators

_____ Dominance Test is > 50%
 _____ Prevalence Index is ≤ 3.0¹
 _____ Morphological Adaptations¹ (Providing supporting data in Remarks or on a separate sheet)
 _____ Problematic Hydrophytic Vegetation (Explain)

¹Indicators of hydric soils and wetland hydrology must be present

Hydrophytic Vegetation Present? Yes _____ No X

SOIL

Sampling Point W5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/2	100					SCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16)
- ☐ (**LRR H outside MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Salt Crusts (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Oder (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remark)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (**LRR F**)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
Water Table Present? Yes _____ No X Depth (inches): _____
Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W6
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): convex Slope (%): 2
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: _____
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present	Yes _____ No <u>X</u>	
Remarks: R1 P 17: Upstream R1 P18: Downstream		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover:	_____			
Sapling/Shrub Stratum				
1. <u>Rosa woodsii</u>	100	X	FACU	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species <u>85</u> x4= <u>340</u> UPL species <u>5</u> x5= <u>25</u> Column Totals: <u>90</u> (A) <u>365</u> (B) Prevalence Index = B/A = <u>4.05</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover:	100			
Herb Stratum				
1. <u>Elymus smithii</u>	85	X	FACU	Hydrophytic Vegetation Indicators ____ Dominance Test is > 50% ____ Prevalence Index is ≤ 3.0 ¹ ____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) ____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. <u>Astragalus sp.</u>	5		UPL	
3. <u>Nassella viridula</u>	5		NI	
4. <u>Ratibida columnifera</u>	5		NI	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover:	100			
Woody Vine Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover:	_____			
% Bare Ground in Herb Stratum	30	% Cover of Biotic Crust		
Remarks:				

SOIL

Sampling Point W6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> X Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

Surface Water Present?	Yes	<u> </u>	No	<u> X </u>	Depth (inches):	<u> </u>
Water Table Present?	Yes	<u> </u>	No	<u> X </u>	Depth (inches):	<u> </u>
Saturation Present?	Yes	<u> </u>	No	<u> X </u>	Depth (inches):	<u> </u>
(includes capillary fringe)						

Wetland Hydrology Present? Yes No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W7
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Convex Slope (%): 2
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: R4SB7
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Remarks: R1 P17 Upstream R1 P18 Downstream	

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: (A) _____ (B) _____ Prevalence Index = B/A = _____
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Elymus smithii</u> 5 _____ FACU 2. <u>Cirsium arvense</u> 5 _____ FACU 3. <u>Spartina pectinata</u> 75 X FACW 4. <u>Helianthus annuus</u> 10 _____ FACU 5. <u>Cynoglossum officinale</u> 5 _____ NI 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: 100				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust _____				
Remarks:				

SOIL

Sampling Point W7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 3/1	70	7.5 YR 4/6	30	C	RC	SiC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)
Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____

 Hydric Soils Present? Yes ☒ No ☐
Remarks:
HYDROLOGY
Wetland Hydrology Indicators:
Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

 Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
 Water Table Present? Yes ☐ No ☒ Depth (inches): _____
 Saturation Present? Yes ☐ No ☒ Depth (inches): _____
 (includes capillary fringe)

 Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W8
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 31, T6S, R1E
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Convex Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: R2EM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R1 P19 Upstream R1 P20 Downstream Similar to W4 and all in between					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover:	_____			
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: (A) _____ (B) _____ Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover:	_____			
Herb Stratum				
1. <u>Spartina pectinata</u>	<u>15</u>		<u>FACW</u>	Hydrophytic Vegetation Indicators <u>X</u> Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
2. <u>Eleocharis palustris</u>	<u>35</u>	<u>X</u>	<u>OBL</u>	
3. <u>Schoenoplectus pungens</u>	<u>25</u>	<u>X</u>	<u>OBL</u>	
4. <u>Eleocharis acicularis</u>	<u>25</u>	<u>X</u>	<u>OBL</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover:	<u>100</u>			
Woody Vine Stratum				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover:	_____			
% Bare Ground in Herb Stratum	<u>40</u>	% Cover of Biotic Crust		
Remarks:				

SOIL

Sampling Point W8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	Gley 1 3/10Y	70	7.5YR 4/4	20	C	M, RC	SC	
			2.5N	10	D	M	SC	
5+	Rock							

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input checked="" type="checkbox"/> Histosol (A1)	<input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____

Hydric Soils Present? Yes ☒ No ☐
Remarks:
HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

Surface Water Present?	Yes	<input checked="" type="checkbox"/>	No	_____	Depth (inches):	<u>5</u>
Water Table Present?	Yes	<input checked="" type="checkbox"/>	No	_____	Depth (inches):	<u>5</u>
Saturation Present?	Yes	<input checked="" type="checkbox"/>	No	_____	Depth (inches):	<u>5</u>
(includes capillary fringe)						

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W9
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 30-31, T6S R1E
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Convex Slope (%): _____
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PABJH
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R1 P23 Upstream R1 P24 Downstream					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: (A) _____ (B) _____ Prevalence Index = B/A = _____
Total Cover: _____				
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Xanthium strumarium</u> 40 <u>X</u> FAC 2. <u>Suckleya suckleyana</u> 60 <u>X</u> OBL 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				Hydrophytic Vegetation Indicators <u>X</u> Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
% Bare Ground in Herb Stratum <u>50</u> % Cover of Biotic Crust _____ Remarks: _____				
Hydrophytic Vegetation Present? Yes <u>X</u> No _____				



Sampling Point W9

[illegible]²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Indicators for Problematic Hydric Soils³:

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes ☒ No ☐

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Surface Water (A1)	Salt Crusts (B11)
High Water Table (A2)	Aquatic Invertebrates (B13)
Saturation (A3)	Hydrogen Sulfide Oder (C1)
Water Marks (B1)	Dry-Season Water Table (C2)
Sediment Deposits (B2)	Presence of Reduced Iron (C4)
Drift Deposits (B3)	Thin Muck Surface (C7)
Algal Mat or Crust (B4)	Other (Explain in Remark)
Iron Deposits (B5)	
Inundation Visible on Aerial Imagery (B7)	
Water Stained Leaves (B9)	

	Surface Soil Cracks (B6)
	Sparsely Vegetated Concave Surfaces (B8)
	Drainage Patterns (B10)
X	Oxidized Rhizospheres on Living Roots (C3)
	Crayfish Burrows (C8)
	Saturation Visible on Aerial Imagery (C9)
	Frost-Heave Hummocks (C11) (LRR F)
X	Geomorphic Position (D2)
	FAC-Neutral Test (D5)
	Local Soil Survey Data (D8)

Surface Water Present?	Yes	_____	No	<u> X </u>	Depth (inches):	_____
Water Table Present?	Yes	_____	No	<u> X </u>	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes	_____	No	<u> X </u>	Depth (inches):	_____

Wetland Hydrology Present? Yes ☒ No ☐

Slight soil cracks were present.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/17/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W10
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
Landform (hillslope, terrace, etc.): Drainage/ Depression Local relief (concave, convex, none): Convex Slope (%):
Subregion (LRP): Black Hills MLRA62 Lat: Long: Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: NWI Classification: PUSA
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation , Soil , or Hydrology Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u> No <u>X</u>	Is the Sampled Area Within a Wetland Yes <u>X</u> No <u> </u>
Hydric Soil Present?	Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present	Yes <u>X</u> No <u> </u>	
Remarks: NWI previously mapped: PEMF R2 P1: Downstream R2 P2: Upstream Transitioning area changing to an upland area.		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
Total Cover: <u> </u>				Prevalence Index Worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x1= <u> </u> FACW species <u>20</u> x2= <u>40</u> FAC species <u> </u> x3= <u> </u> FACU species <u> </u> x4= <u> </u> UPL species <u>80</u> x5= <u>400</u> Column Totals: <u>100</u> (A) <u>440</u> (B) Prevalence Index = B/A = <u>4.40</u>
Sapling/Shrub Stratum 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> Total Cover: <u> </u>				
Herb Stratum 1. <u>Carex filifolia</u> <u>80</u> <u>X</u> <u>UPL</u> 2. <u>Hordeum jubatum</u> <u>20</u> <u>X</u> <u>FACW</u> 3. <u> </u> 4. <u> </u> 5. <u> </u> 6. <u> </u> 7. <u> </u> 8. <u> </u> 9. <u> </u> 10. <u> </u> Total Cover: <u>100</u>				
Woody Vine Stratum 1. <u> </u> 2. <u> </u> 3. <u> </u> Total Cover: <u> </u>				
Hydrophytic Vegetation Indicators <u> </u> Dominance Test is > 50% <u> </u> Prevalence Index is ≤ 3.0 ¹ <u> </u> Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present				
Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>				
% Bare Ground in Herb Stratum <u>10</u> % Cover of Biotic Crust <u> </u> Remarks: <u> </u>				

SOIL

Sampling Point W10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 4/1	75	5YR 5/8	25	C	RC	C	
5-9	10YR 4/1	93	10YR 5/8	7	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (**LRR F**)
☐ 1 cm Muck (A9) (**LRR F, G, H**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☒ Redox Depressions (F8)
☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

☐ 1 cm Muck (A9) (**LRR C**)
☐ Coast Prairie Redox (A16) (LRR F, G, H)
☐ Dark Surface (S7) (**LRR G**)
☐ High Plains Depressions (F16)
☐ (**LRR H outside MLRA 72 & 73**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

 Hydric Soils Present? Yes ☒ No ☐
Remarks:

A few oxidized root channels existed, with a greater percentage in the top five inches.

HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water Stained Leaves (B9)
☐ Salt Crusts (B11)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Oder (C1)
☐ Dry-Season Water Table (C2)
☐ Presence of Reduced Iron (C4)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remark)

Secondary Indicators (2 or more required)

☐ Surface Soil Cracks (B6)
☐ Sparsely Vegetated Concave Surfaces (B8)
☐ Drainage Patterns (B10)
☒ Oxidized Rhizospheres on Living Roots (C3)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Frost-Heave Hummocks (C11) (**LRR F**)
☒ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)
☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
 Water Table Present? Yes ☐ No ☒ Depth (inches): _____
 Saturation Present? Yes ☐ No ☒ Depth (inches): _____
 (includes capillary fringe)

 Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W11
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Convex Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: _____
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present	Yes _____ No <u>X</u>	
Remarks: NWI previously mapped: PEMF Cottonwoods in area but not in five foot radius R2 P3: West R2 P4: East		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species <u>5</u> x2= <u>10</u> FAC species <u>15</u> x3= <u>45</u> FACU species <u>80</u> x4= <u>320</u> UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>375</u> (B) Prevalence Index = B/A = <u>3.75</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover: _____				
Herb Stratum				
1. <u>Bassia sieveriana</u>	<u>70</u>	<u>X</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. <u>Hordeum jubatum</u>	<u>5</u>	_____	<u>FACW</u>	
3. <u>Chenopodium album</u>	<u>15</u>	_____	<u>FAC</u>	
4. <u>Cirsium arvense</u>	<u>5</u>	_____	<u>FACU</u>	
5. <u>Thlaspi arvense</u>	<u>5</u>	_____	<u>FACU</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>100</u>				
Woody Vine Stratum				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover: _____				
% Bare Ground in Herb Stratum	<u>40</u>	% Cover of Biotic Crust		
Remarks:				

SOIL

Sampling Point W11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 4/1	100					SiC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16)
- ☐ (**LRR H outside MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Salt Crusts (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Oder (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remark)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (**LRR F**)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
Water Table Present? Yes _____ No X Depth (inches): _____
Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W12
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Convex Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present	Yes _____ No <u>X</u>	
Remarks: NWI previously mapped: PEMF R2 P5: West R2 P6: East		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species <u>5</u> x2= <u>10</u> FAC species <u>50</u> x3= <u>150</u> FACU species <u>45</u> x4= <u>180</u> UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>340</u> (B) Prevalence Index = B/A = <u>3.40</u>
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Spartina pectinata</u> <u>5</u> _____ FACW 2. <u>Chenopodium album</u> <u>50</u> _____ X _____ FAC 3. <u>Cirsium arvense</u> <u>15</u> _____ _____ FACU 4. <u>Thlaspi arvense</u> <u>30</u> _____ X _____ FACU 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum <u>30</u> % Cover of Biotic Crust _____				
Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain)				
¹ Indicators of hydric soils and wetland hydrology must be present				
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>				
Remarks:				

SOIL

Sampling Point W12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 4/1	75	10YR 5/8	25	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR F)
- ☐ 1 cm Muck (A9) (LRR F, G, H)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR F)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (LRR G)
- ☐ High Plains Depressions (F16)
- ☐ (LRR H outside MLRA 72 & 73)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Salt Crusts (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Oder (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remark)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (LRR F)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W13
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Convex Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: R4US
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	_____	No	<u>X</u>	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: Just North of the area little bluestem is creeping into the drainage but it is still dominated by <i>Spartina pectinata</i> .					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Total Cover: _____				
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u><i>Spartina pectinata</i></u> 90 X FACW 2. <u><i>Andropogon scoparius</i></u> 5 NI 3. <u><i>Chenopodium album</i></u> 5 FAC 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				Hydrophytic Vegetation Indicators X Dominance Test is > 50% Prevalence Index is ≤ 3.0 ¹ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
% Bare Ground in Herb Stratum <u>10</u> % Cover of Biotic Crust _____				
Remarks:				

SOIL

Sampling Point W13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/1	50	7.5YR 5/8	50	C	M	SiCL	
4-10	10YR 4/1	100					SiCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (**LRR F**)
☐ 1 cm Muck (A9) (**LRR F, G, H**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

☐ 1 cm Muck (A9) (**LRR C**)
☐ Coast Prairie Redox (A16) (LRR F, G, H)
☐ Dark Surface (S7) (**LRR G**)
☐ High Plains Depressions (F16)
☐ (**LRR H outside MLRA 72 & 73**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

 Hydric Soils Present? Yes _____ No X
Remarks:

There were small inclusions of mottles present in depths 4-10 in the matrix.

HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water Stained Leaves (B9)
☐ Salt Crusts (B11)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Oder (C1)
☐ Dry-Season Water Table (C2)
☐ Presence of Reduced Iron (C4)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remark)

Secondary Indicators (2 or more required)

☐ Surface Soil Cracks (B6)
☐ Sparsely Vegetated Concave Surfaces (B8)
☒ Drainage Patterns (B10)
☐ Oxidized Rhizospheres on Living Roots (C3)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Frost-Heave Hummocks (C11) (**LRR F**)
☒ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)
☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

 Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W14
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 32, T6S, R1E
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Convex Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: R4US
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R2 P7: Upstream area extends from waypoints 015-019 R2P8: Downstream R2 P9: General area of PEMC					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>20</u> x1= <u>20</u> FACW species <u>80</u> x2= <u>160</u> FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>180</u> (B) Prevalence Index = B/A = <u>1.80</u>
Total Cover: _____				
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Spartina pectinata</u> <u>40</u> <u>X</u> <u>FACW</u> 2. <u>Typha latifolia</u> <u>20</u> <u>X</u> <u>OBL</u> 3. <u>Juncus balticus</u> <u>40</u> <u>X</u> <u>FACW</u> 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				Hydrophytic Vegetation Indicators <u>X</u> Dominance Test is > 50% <u>X</u> Prevalence Index is ≤ 3.0 ¹ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
% Bare Ground in Herb Stratum <u>10</u> % Cover of Biotic Crust _____ Remarks:				
Hydrophytic Vegetation Present? Yes <u>X</u> No _____				

SOIL

Sampling Point W14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	Gley1 4/N	55	7.5YR 5/8	45	C	RC	SiCL	
4-14	Gley1 4/N	80	7.5YR 4/6	20	C	M	SiCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (**LRR F**)
☐ 1 cm Muck (A9) (**LRR F, G, H**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☒ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

☐ 1 cm Muck (A9) (**LRR C**)
☐ Coast Prairie Redox (A16) (LRR F, G, H)
☐ Dark Surface (S7) (**LRR G**)
☐ High Plains Depressions (F16)
☐ (**LRR H outside MLRA 72 & 73**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

 Hydric Soils Present? Yes ☒ No ☐
Remarks:

There were small inclusions of mottles present in depths 4-10 in the matrix.

HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water Stained Leaves (B9)
☐ Salt Crusts (B11)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Oder (C1)
☐ Dry-Season Water Table (C2)
☐ Presence of Reduced Iron (C4)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remark)

Secondary Indicators (2 or more required)

☐ Surface Soil Cracks (B6)
☐ Sparsely Vegetated Concave Surfaces (B8)
☒ Drainage Patterns (B10)
☒ Oxidized Rhizospheres on Living Roots (C3)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Frost-Heave Hummocks (C11) (**LRR F**)
☒ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)
☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
 Water Table Present? Yes ☐ No ☒ Depth (inches): _____
 Saturation Present? Yes ☐ No ☒ Depth (inches): _____
 (includes capillary fringe)

 Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W15
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 30, T6S, R1E
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: R2EM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R2 P12: Upstream R2 P13: Downstream Wetland is upstream and the channel width is about 8 feet wide.					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____	_____	_____	_____	
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: (A) _____ (B) _____ Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover: _____	_____	_____	_____	
Herb Stratum				
1. <u>Spartina pectinata</u>	<u>55</u>	<u>X</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators <u>X</u> Dominance Test is > 50% Prevalence Index is ≤ 3.0 ¹ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
2. <u>Eleocharis palustris</u>	<u>15</u>	_____	<u>OBL</u>	
3. <u>Juncus balticus</u>	<u>10</u>	_____	<u>FACW</u>	
4. <u>Kochia scoparia</u>	<u>10</u>	_____	<u>FAC</u>	
5. <u>Bassia sieveriana</u>	<u>10</u>	_____	<u>FACU</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>100</u>	_____	_____	_____	
Woody Vine Stratum				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover: _____	_____	_____	_____	
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Remarks: _____				

SOIL

Sampling Point W15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	2.5Y 4/1	90	7.5YR 4/6	10	C	RC, M	CL	
8-10	Gley1 3/N	70	7.5YR 5/8	30	C	M	SiC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☒ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16)
- ☐ (LRR H outside MLRA 72 & 73)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--------------------------------------------------------------------|--------------------------------------------------------|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crusts (B11) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Oder (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Other (Explain in Remark) |
| <input type="checkbox"/> Iron Deposits (B5) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Water Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☒ Drainage Patterns (B10)
- ☒ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (**LRR F**)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 10
Water Table Present? Yes ☐ No ☒ Depth (inches):
Saturation Present? Yes ☐ No ☒ Depth (inches):
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W16
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 31, T6S, R1E
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: R2EM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R2 P18: Upstream R2 P19: Downstream Aquatic animals present					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover:	_____			
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: (A) _____ (B) _____ Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover:	_____			
Herb Stratum				
1. <u>Spartina pectinata</u>	<u>30</u>	<u>X</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators <u>X</u> Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
2. <u>Cirsium arvense</u>	<u>5</u>		<u>FACU</u>	
3. <u>Eleocharis palustris</u>	<u>40</u>	<u>X</u>	<u>OBL</u>	
4. <u>Juncus balticus</u>	<u>15</u>		<u>FACW</u>	
5. <u>Xanthium strumarium</u>	<u>5</u>		<u>FAC</u>	
6. <u>Chenopodium album</u>	<u>3</u>		<u>FAC</u>	
7. <u>Schoenoplectus pungens</u>	<u>2</u>		<u>OBL</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover:	<u>100</u>			
Woody Vine Stratum				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover:	_____			
% Bare Ground in Herb Stratum	<u>5</u>	% Cover of Biotic Crust		
Remarks:				

SOIL

Sampling Point W16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	2.5Y 4/1	37	7.5YR 4/6	3	C	RC	C	
			Gley1 2.5/N	60	D	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (**LRR F**)
☐ 1 cm Muck (A9) (**LRR F, G, H**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

☐ 1 cm Muck (A9) (**LRR C**)
☐ Coast Prairie Redox (A16) (LRR F, G, H)
☐ Dark Surface (S7) (**LRR G**)
☐ High Plains Depressions (F16)
☐ (**LRR H outside MLRA 72 & 73**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

 Hydric Soils Present? Yes ☒ No ☐
Remarks:
HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☒ Surface Water (A1)
☒ High Water Table (A2)
☒ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water Stained Leaves (B9)
☐ Salt Crusts (B11)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Oder (C1)
☐ Dry-Season Water Table (C2)
☐ Presence of Reduced Iron (C4)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remark)

Secondary Indicators (2 or more required)

☐ Surface Soil Cracks (B6)
☐ Sparsely Vegetated Concave Surfaces (B8)
☒ Drainage Patterns (B10)
☐ Oxidized Rhizospheres on Living Roots (C3)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Frost-Heave Hummocks (C11) (**LRR F**)
☒ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)
☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 5
 Water Table Present? Yes ☒ No ☐ Depth (inches): 5
 Saturation Present? Yes ☒ No ☐ Depth (inches): 5
 (includes capillary fringe)

 Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W17
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 31, T6S, R1E
 Landform (hillslope, terrace, etc.): Ditch around agricultural area Local relief (concave, convex, none): convex Slope (%): 2
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present	Yes _____ No <u>X</u>	
Remarks: R2 P22: Upstream R2 P23: Downstream Previously mapped as PEMA		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover:	_____			
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species <u>3</u> x3= <u>9</u> FACU species <u>97</u> x4= <u>388</u> UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>397</u> (B) Prevalence Index = B/A = <u>3.97</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover:	_____			
Herb Stratum				
1. <u>Bromus inermis</u>	<u>95</u>	<u>X</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
2. <u>Cirsium arvense</u>	<u>2</u>		<u>FACU</u>	
3. <u>Chenopodium album</u>	<u>3</u>		<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover:	<u>100</u>			
Woody Vine Stratum				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover:	_____			
% Bare Ground in Herb Stratum		% Cover of Biotic Crust		
Remarks:				

SOIL

Sampling Point W17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	2.5Y 2.5/1	100					C	
2-8	2.5Y 4/3	100					C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16)
- ☐ (**LRR H outside MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--------------------------------------------------------------------|--------------------------------------------------------|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crusts (B11) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Oder (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Other (Explain in Remark) |
| <input type="checkbox"/> Iron Deposits (B5) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Water Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (**LRR F**)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
Water Table Present? Yes _____ No X Depth (inches): _____
Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W18
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 31, T6S, R1E
 Landform (hillslope, terrace, etc.): Drainage bank Local relief (concave, convex, none): Concave Slope (%): 5
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: R2EM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R3 P1: Upstream R3 P2: Downstream Wpt 026 is similar to W18, R2 P24: Upstream Width of wetland is about 17', width of channel is about 12'					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Spartina pectinata</u> 80 <u>X</u> FACW 2. <u>Xanthium strumarium</u> 5 FAC 3. <u>Schoenoplectus pungens</u> 10 OBL 4. <u>Juncus balticus</u> 5 FACW 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum <u>5</u> % Cover of Biotic Crust _____ Remarks: _____				

SOIL

Sampling Point W18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	Gley1 4/5GY	97	2.5YR 7/8	3	C	M	CL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)
Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> High Plains Depressions (F16)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

 Hydric Soils Present? Yes ☒ No ☐

Remarks:

HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):	<input type="checkbox"/>
Water Table Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (inches):	8
Saturation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):	<input type="checkbox"/>

(includes capillary fringe)

 Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

The water table was present within 8" of the surface.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W19
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 31, T6S, R1E
 Landform (hillslope, terrace, etc.) Low area Local relief (concave, convex, none): Concave Slope (%): _____
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present	Yes _____ No <u>X</u>	
Remarks: Low vegetation cover, Normal circumstances present within an active prairie dog community. Previously NWI mapped as PEMF. R3 P3: Northwest R3 P4: East		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species <u>99</u> x3= <u>297</u> FACU species <u>1</u> x4= <u>4</u> UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>301</u> (B) Prevalence Index = B/A = <u>3.01</u>
Total Cover: _____				
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Chenopodium berlandieri</u> <u>99</u> <u>X</u> <u>FAC</u> 2. <u>Bassia sieveriana</u> <u>1</u> <u>FACU</u> 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
% Bare Ground in Herb Stratum <u>65</u> % Cover of Biotic Crust _____ Remarks: _____				
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>				

SOIL

Sampling Point W19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 4/1	95	7.5YR 5/8	5	C	M	SiCL	
2-4	10YR 4/1	100					SiCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR F)
- ☐ 1 cm Muck (A9) (LRR F, G, H)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR F)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (LRR G)
- ☐ High Plains Depressions (F16)
- ☐ (LRR H outside MLRA 72 & 73)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)

- ☐ Salt Crusts (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Oder (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remark)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (LRR F)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W20
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 9, T7S, R1E
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Remarks: R2 P12: Upstream R2 P13: Downstream Wetland is upstream and the channel width is about 8 feet wide.	

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: (A) _____ (B) _____ Prevalence Index = B/A = _____
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Schoenoplectus pungens</u> 90 X OBL 2. <u>Cirsium arvense</u> 5 FACU 3. <u>Bassia sieveriana</u> 5 FACU 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Remarks:				

SOIL

Sampling Point W20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 3/1	98	5YR 5/8	2	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (**LRR F**)
☐ 1 cm Muck (A9) (**LRR F, G, H**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

☐ 1 cm Muck (A9) (**LRR C**)
☐ Coast Prairie Redox (A16) (LRR F, G, H)
☐ Dark Surface (S7) (**LRR G**)
☐ High Plains Depressions (F16)
☐ (**LRR H outside MLRA 72 & 73**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

 Hydric Soils Present? Yes _____ No X
Remarks:
HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (2 or more required)

☐ Surface Soil Cracks (B6)
☐ Sparsely Vegetated Concave Surfaces (B8)
☐ Drainage Patterns (B10)
☐ Oxidized Rhizospheres on Living Roots (C3)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Frost-Heave Hummocks (C11) (**LRR F**)
☒ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)
☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 5
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

 Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W21
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 9, T7S, R1E
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 2
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R3 P10: Upstream R3 P11: Downstream R3 P12: Bridge Channel crosses the boundary and extends to the road					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Typha latifolia</u> <u>55</u> <u>X</u> <u>OBL</u> 2. <u>Asclepias speciosa</u> <u>10</u> _____ <u>FAC</u> 3. <u>Glycyrrhiza lepidota</u> <u>15</u> _____ <u>FACU</u> 4. <u>Spartina pectinata</u> <u>5</u> _____ <u>FACW</u> 5. <u>Helianthus annuus</u> <u>5</u> _____ <u>FACU</u> 6. <u>Melilotus sp.</u> <u>5</u> _____ <u>FACU</u> 7. <u>Schoenoplectus pungens</u> <u>5</u> _____ <u>OBL</u> 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Remarks:				

SOIL

Sampling Point W21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Color (moist)	Redox Features %	Type ¹	Loc ²	Texture	Remarks
0-3	5YR 3/4	100					SCL	
3-5	10YR 2/2	50	5YR 4/6	50	C	M	SCL	water filled the hole

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16)
- ☐ (**LRR H outside MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--------------------------------------------------------------------|--------------------------------------------------------|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crusts (B11) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Oder (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Other (Explain in Remark) |
| <input type="checkbox"/> Iron Deposits (B5) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Water Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (**LRR F**)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 0
 Water Table Present? Yes ☒ No ☐ Depth (inches): _____
 Saturation Present? Yes ☒ No ☐ Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W22
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 9, T7S, R1E
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	_____	No	<u>X</u>	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R3 P13: Upstream R3 P14: Downstream					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species <u>81</u> x2= <u>162</u> FAC species _____ x3= _____ FACU species <u>19</u> x4= <u>76</u> UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>238</u> (B) Prevalence Index = B/A = <u>2.38</u>
Total Cover: _____				
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Spartina pectinata</u> <u>81</u> <u>X</u> <u>FACW</u> 2. <u>Cirsium arvense</u> <u>19</u> _____ <u>FACU</u> 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				Hydrophytic Vegetation Indicators <u>X</u> Dominance Test is > 50% Prevalence Index is ≤ 3.0 ¹ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation (Explain) _____ ¹ Indicators of hydric soils and wetland hydrology must be present
% Bare Ground in Herb Stratum <u>15</u> % Cover of Biotic Crust _____				
Remarks:				

SOIL

Sampling Point W22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR 4/6	100					SC	
1-4	2.5YR 3/2	100					SC	Hit rock at 4 inches

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR F)
- ☐ 1 cm Muck (A9) (LRR F, G, H)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR F)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (LRR G)
- ☐ High Plains Depressions (F16) (LRR H outside MLRA 72 & 73)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Salt Crusts (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Oder (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remark)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☒ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (LRR F)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
Water Table Present? Yes _____ No X Depth (inches): _____
Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

Dry throughout the area and there was encroachment of upland species.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/18/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W23
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 10, T7S, R1E
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes		No	<u>X</u>	
Remarks: R3 P17: Upstream R3 P18: Downstream Possible low spot that collects water, dying cattails present.					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)																								
1. _____	_____	_____	_____																									
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
4. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ <table border="0"> <tr> <td>OBL species</td> <td><u>60</u></td> <td>x1=</td> <td><u>60</u></td> </tr> <tr> <td>FACW species</td> <td><u>9</u></td> <td>x2=</td> <td><u>18</u></td> </tr> <tr> <td>FAC species</td> <td><u>1</u></td> <td>x3=</td> <td><u>3</u></td> </tr> <tr> <td>FACU species</td> <td><u>30</u></td> <td>x4=</td> <td><u>120</u></td> </tr> <tr> <td>UPL species</td> <td>_____</td> <td>x5=</td> <td>_____</td> </tr> <tr> <td>Column Totals:</td> <td><u>100</u></td> <td>(A)</td> <td><u>201</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.01</u>	OBL species	<u>60</u>	x1=	<u>60</u>	FACW species	<u>9</u>	x2=	<u>18</u>	FAC species	<u>1</u>	x3=	<u>3</u>	FACU species	<u>30</u>	x4=	<u>120</u>	UPL species	_____	x5=	_____	Column Totals:	<u>100</u>	(A)	<u>201</u> (B)
OBL species	<u>60</u>	x1=	<u>60</u>																									
FACW species	<u>9</u>	x2=	<u>18</u>																									
FAC species	<u>1</u>	x3=	<u>3</u>																									
FACU species	<u>30</u>	x4=	<u>120</u>																									
UPL species	_____	x5=	_____																									
Column Totals:	<u>100</u>	(A)	<u>201</u> (B)																									
Total Cover: _____																												
Sapling/Shrub Stratum																												
1. _____	_____	_____	_____																									
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
4. _____	_____	_____	_____																									
5. _____	_____	_____	_____																									
Total Cover: _____																												
Herb Stratum																												
1. <u>Spartina pectinata</u>	<u>9</u>	_____	<u>FACW</u>																									
2. <u>Cirsium arvense</u>	<u>20</u>	<u>X</u>	<u>FACU</u>																									
3. <u>Bassia sieveriana</u>	<u>10</u>	_____	<u>FACU</u>																									
4. <u>Typha latifolia</u>	<u>60</u>	<u>X</u>	<u>OBL</u>																									
5. <u>Chenopodium album</u>	<u>1</u>	_____	<u>FAC</u>																									
6. _____	_____	_____	_____																									
7. _____	_____	_____	_____																									
8. _____	_____	_____	_____																									
9. _____	_____	_____	_____																									
10. _____	_____	_____	_____																									
Total Cover: <u>100</u>																												
Woody Vine Stratum																												
1. _____	_____	_____	_____																									
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
Total Cover: _____																												
% Bare Ground in Herb Stratum	<u>0</u>	% Cover of Biotic Crust																										
Remarks:																												

Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% <u>X</u> Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain)	
¹ Indicators of hydric soils and wetland hydrology must be present	
Hydrophytic Vegetation Present?	Yes <u>X</u> No _____

SOIL

Sampling Point W23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 3/1	100					SiC	
2-6	5YR 4/6	95	7.5YR 5/8	5	C	RC	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16)
- ☐ (LRR H outside MLRA 72 & 73)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: _____
Depth (inches): _____

Hydric Soils Present? Yes ☒ No ☐
Remarks:

Orange coloration due to parent material

HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--------------------------------------------------------------------|--------------------------------------------------------|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crusts (B11) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Oder (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Other (Explain in Remark) |
| <input type="checkbox"/> Iron Deposits (B5) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Water Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (**LRR F**)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	_____
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	_____
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	_____

 (includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W25
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 34, T6S, R1E
Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: _____
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present	Yes _____ No <u>X</u>	
Remarks: R4 P1: Upstream R4 P2: Downstream		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. <u>Populus deltoides</u>	<u>100</u>	<u>X</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: <u>100</u>				
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species <u>105</u> x3= <u>315</u> FACU species <u>95</u> x4= <u>380</u> UPL species _____ x5= _____ Column Totals: <u>200</u> (A) <u>695</u> (B) Prevalence Index = B/A = <u>3.48</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover: _____				
Herb Stratum				
1. <u>Elymus smithii</u>	<u>95</u>	<u>X</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. <u>Chenopodium album</u>	<u>5</u>	_____	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>100</u>				
Woody Vine Stratum				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover: _____				
% Bare Ground in Herb Stratum <u>0</u>		% Cover of Biotic Crust		
Remarks: Upland species in drainage and banks, there were two living <i>Populus deltoids</i> present.				

SOIL

Sampling Point W25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix Color (moist)	%	Redox Features			Texture	Remarks	
			Color (moist)	%	Type ¹			
0-4	5YR 2.5/1	60				SiCL		
Parent material	5YR 4/4	40						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input checked="" type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		³ Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes _____ No ☒ X

Remarks:
Orange coloration due to parent material

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes _____ No ☒ X Depth (inches): _____

Water Table Present? Yes _____ No ☒ X Depth (inches): _____

Saturation Present? Yes _____ No ☒ X Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒ X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W26
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 34, T6S, R1E
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Remarks: R4 P3: Upstream R4 P4: Downstream Upland vegetation has moved down the banks and in the area of the drainage on either side.	

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species <u>15</u> x2= <u>30</u> FAC species <u>10</u> x3= <u>30</u> FACU species <u>75</u> x4= <u>300</u> UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>360</u> (B) Prevalence Index = B/A = <u>3.60</u>
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Elymus smithii</u> <u>30</u> <u>X</u> <u>FACU</u> 2. <u>Elymus canadensis</u> <u>25</u> <u>X</u> <u>FACU</u> 3. <u>Thlaspi arvense</u> <u>5</u> <u>FACU</u> 4. <u>Bassia sieveriana</u> <u>10</u> <u>FACU</u> 5. <u>Phalaris arundinacea</u> <u>15</u> <u>FACW</u> 6. <u>Chenopodium album</u> <u>5</u> <u>FAC</u> 7. <u>Xanthium strumarium</u> <u>5</u> <u>FAC</u> 8. <u>Helianthus annuus</u> <u>5</u> <u>FACU</u> 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum <u>10</u> % Cover of Biotic Crust _____ Remarks: _____				Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present Hydrophytic Vegetation Present? Yes _____ No <u>X</u>

SOIL

Sampling Point W26

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-1	2.5YR 4/8	100					C	
1-7	7.5YR 4/2	100					C	
7-9	Gley2 2.5/10B	100					C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☒ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16)
- ☐ (**LRR H outside MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☒ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____

 Hydric Soils Present? Yes ☒ No ☐
Remarks:

Orange coloration due to parent material

HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Salt Crusts (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Oder (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remark)

Secondary Indicators (2 or more required)

- ☒ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (**LRR F**)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

 Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
 Water Table Present? Yes ☐ No ☒ Depth (inches): _____
 Saturation Present? Yes ☐ No ☒ Depth (inches): _____
 (includes capillary fringe)

 Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W27
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 34, T6S, R1E
Landform (hillslope, terrace, etc.) Drainage Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: _____
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present	Yes <u>X</u> No _____	
Remarks: R4 P1: Upstream R4 P2: Downstream		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species <u>20</u> x3= <u>60</u> FACU species <u>80</u> x4= <u>320</u> UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>380</u> (B) Prevalence Index = B/A = <u>3.80</u>
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Elymus smithii</u> <u>40</u> <u>X</u> <u>FACU</u> 2. <u>Elymus canadensis</u> <u>30</u> <u>X</u> <u>FACU</u> 3. <u>Chenopodium album</u> <u>10</u> <u>FAC</u> 4. <u>Xanthium strumarium</u> <u>10</u> <u>FAC</u> 5. <u>Helianthus annuus</u> <u>10</u> <u>FACU</u> 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum <u>98</u> % Cover of Biotic Crust _____				
Remarks: The vegetation is only on the banks and not in the drainage; the percent bare ground in channel is 98%.				

SOIL

Sampling Point W27

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	2.5Y 5/3	100					C	
0.75	2.5YR 4/8	100					C	
1-8	2.5Y 5/3	100					C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> Reduced Vertic (F18)
<input checked="" type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

 Hydric Soils Present? Yes ☐ No ☒
Remarks:

One inch to the red layer (red layer is about 2 cm thick). The black layer is organic.

HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (2 or more required)

<input checked="" type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

 Surface Water Present? Yes ☐ No ☒ Depth (inches):
 Water Table Present? Yes ☐ No ☒ Depth (inches):
 Saturation Present? Yes ☐ No ☒ Depth (inches):
 (includes capillary fringe)

 Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

Soil is moist but not saturated.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W28
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 34, T6S, R1E
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present	Yes _____ No <u>X</u>	
Remarks: R4 P13: Upstream R4 P14: Downstream		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25</u> (A/B)
1. <u>Populus deltoides</u>	100	X	FAC	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover:	100			
Sapling/Shrub Stratum				
1. <u>Symphoricarpos albus</u>	100	X	FACU-	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species <u>119</u> x3= <u>357</u> FACU species <u>158</u> x4= <u>632</u> UPL species <u>2</u> x5= <u>10</u> Column Totals: <u>279</u> (A) <u>999</u> (B) Prevalence Index = B/A = <u>3.58</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover:	100			
Herb Stratum				
1. <u>Elymus smithii</u>	35	X	FACU	Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
2. <u>Bassia sieveriana</u>	20	X	FACU	
3. <u>Calamovilfa longifolia</u>	12		NI	
4. <u>Descurainia pinnata</u>	1		NI	
5. <u>Thlaspi arvense</u>	3		FACU	
6. <u>Chenopodium album</u>	17		FAC	
7. <u>Asclepias speciosa</u>	2		FAC	
8. <u>Elymus cinerius</u>	15		NI	
9. <u>Sisymbrium altissimum</u>	2		UPL	
10. <u>Camelina microcarpa</u>	1		NI	
Total Cover:	100			
Woody Vine Stratum				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover:	_____			
% Bare Ground in Herb Stratum	20	% Cover of Biotic Crust		
Remarks:				

SOIL

Sampling Point W28

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	5YR 4/6	100					SC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR F)
- ☐ 1 cm Muck (A9) (LRR F, G, H)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR F)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (LRR G)
- ☐ High Plains Depressions (F16)
- ☐ (LRR H outside MLRA 72 & 73)
- ☐ Reduced Vertic (F18)
- ☒ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:

Orange coloration due to parent material

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--------------------------------------------------------------------|--------------------------------------------------------|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crusts (B11) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Oder (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Other (Explain in Remark) |
| <input type="checkbox"/> Iron Deposits (B5) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Water Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (LRR F)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
Water Table Present? Yes _____ No X Depth (inches): _____
Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W29
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 3, T7S, R1E
 Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: _____
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present	Yes _____ No <u>X</u>	
Remarks: R4 P17: Upstream R4 P18: Downstream Area is similar through the drainage; the upland species are dominant in the drainage. The Drainage is about 3' across on average.		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.33</u> (A/B)
1. <u>Populus deltoides</u>	<u>100</u>	<u>X</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover:	<u>100</u>			
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species <u>102</u> x3= <u>306</u> FACU species <u>83</u> x4= <u>332</u> UPL species <u>5</u> x5= <u>25</u> Column Totals: <u>190</u> (A) <u>663</u> (B) Prevalence Index = B/A = <u>3.49</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover:	_____			
Herb Stratum				
1. <u>Elymus smithii</u>	<u>10</u>	_____	<u>FACU</u>	Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
2. <u>Bassia sieveriana</u>	<u>5</u>	_____	<u>FACU</u>	
3. <u>Elymus canadensis</u>	<u>40</u>	<u>X</u>	<u>FACU</u>	
4. <u>Helianthus annuus</u>	<u>5</u>	_____	<u>FACU</u>	
5. <u>Nassella viridula</u>	<u>10</u>	_____	<u>NI</u>	
6. <u>Chenopodium album</u>	<u>3</u>	_____	<u>FACU</u>	
7. <u>Asclepias speciosa</u>	<u>2</u>	_____	<u>FAC</u>	
8. <u>Bromus inermis</u>	<u>20</u>	<u>X</u>	<u>FACU</u>	
9. <u>Sisymbrium altissimum</u>	<u>5</u>	_____	<u>UPL</u>	
10. _____	_____	_____	_____	
Total Cover:	<u>100</u>			
Woody Vine Stratum				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover:	_____			
% Bare Ground in Herb Stratum	<u>50</u>	% Cover of Biotic Crust		
Remarks:				

SOIL

Sampling Point W29

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	5YR 4/6	100					C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)
<input type="checkbox"/> Histic Epipedon (A2)
<input type="checkbox"/> Black Histic (A3)
<input type="checkbox"/> Hydrogen Sulfide (A4)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)
<input type="checkbox"/> Depleted Below Dark Surface (A11)
<input type="checkbox"/> Thick Dark Surface (A12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)

<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> Reduced Vertic (F18)
<input checked="" type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

 Hydric Soils Present? Yes _____ No X
Remarks:

Hard to dig soil.

HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

Surface Water Present?	Yes _____ No <u> X </u>	Depth (inches): _____
Water Table Present?	Yes _____ No <u> X </u>	Depth (inches): _____
Saturation Present?	Yes _____ No <u> X </u>	Depth (inches): _____
(includes capillary fringe)		

 Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W30
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 10, T7S, R1E
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: _____
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present	Yes _____ No <u>X</u>	
Remarks: R4 P19: East R4 P20: West Waypoints 46-49 mark the boundary		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover:	_____			
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species <u>85</u> x4= <u>340</u> UPL species <u>15</u> x5= <u>75</u> Column Totals: <u>100</u> (A) <u>415</u> (B) Prevalence Index = B/A = <u>4.15</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover:	_____			
Herb Stratum				
1. <u>Elymus smithii</u>	<u>85</u>	<u>X</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
2. <u>Carex filifolia</u>	<u>15</u>		<u>UPL</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover:	<u>100</u>			
Woody Vine Stratum				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover:	_____			
% Bare Ground in Herb Stratum	<u>30</u>	% Cover of Biotic Crust		
Remarks:				

SOIL

Sampling Point W30

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	7.5YR 4/1	70	7.5YR 4/6	30	C	M	SiC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input checked="" type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

 Hydric Soils Present? Yes ☒ No ☐
Remarks:

Orange coloration due to parent material

HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>
Water Table Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>
Saturation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>
(includes capillary fringe)				

 Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W31
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 10, T7S, R1E
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PUB
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	_____	No	<u>X</u>	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R4 P21: Northeast R4 P22: East- southeast					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.67</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species <u>35</u> x2= <u>70</u> FAC species <u>20</u> x3= <u>60</u> FACU species <u>45</u> x4= <u>180</u> UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>310</u> (B) Prevalence Index = B/A = <u>3.10</u>
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Distichlis stricta</u> <u>35</u> <u>X</u> <u>FACW</u> 2. <u>Sporobolus airoides</u> <u>20</u> <u>X</u> <u>FAC</u> 3. <u>Salsola tragus</u> <u>45</u> <u>X</u> <u>FACU-</u> 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum <u>70</u> % Cover of Biotic Crust _____ Remarks: _____				

Hydrophytic Vegetation Indicators
☒ Dominance Test is > 50%
☐ Prevalence Index is ≤ 3.0¹
☐ Morphological Adaptations¹ (Providing supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation (Explain)

¹Indicators of hydric soils and wetland hydrology must be present

Hydrophytic Vegetation Present? Yes X No _____

SOIL

Sampling Point W31

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features				Texture	Remarks
			Color (moist)	%	Type ¹	Loc ²		
0-0.5	White salt crust							
0.5-14	10YR 4/3	100					C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR F)
☐ 1 cm Muck (A9) (LRR F, G, H)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)
☐ 5 cm Mucky Peat or Peat (S3) (LRR F)

☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

☐ 1 cm Muck (A9) (LRR C)
☐ Coast Prairie Redox (A16) (LRR F, G, H)
☐ Dark Surface (S7) (LRR G)
☐ High Plains Depressions (F16)
☐ (LRR H outside MLRA 72 & 73)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

☐ Surface Water (A1) X
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water Stained Leaves (B9)
☐ Salt Crusts (B11)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Oder (C1)
☐ Dry-Season Water Table (C2)
☐ Presence of Reduced Iron (C4)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remark)

Secondary Indicators (2 or more required)

☐ Surface Soil Cracks (B6)
☐ Sparsely Vegetated Concave Surfaces (B8)
☐ Drainage Patterns (B10)
☐ Oxidized Rhizospheres on Living Roots (C3)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Frost-Heave Hummocks (C11) (LRR F)
☐ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)
☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? Yes _____ No X Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W32
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 10, T7S R1E
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: PUS
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes		No	<u>X</u>	
Remarks: R4 P24: Of the previously mapped PEM wetland R4 P25: from the berm					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Total Cover: _____				
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Echinochloa muricata</u> 100 X OBL 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				Hydrophytic Vegetation Indicators <u>X</u> Dominance Test is > 50% Prevalence Index is ≤ 3.0 ¹ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Hydrophytic Vegetation Present? Yes <u>X</u> No _____				
Remarks:				

SOIL

Sampling Point W32

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	5YR 4/1	50	7.5YR 4/6	50	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16)
- ☐ (**LRR H outside MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____

 Hydric Soils Present? Yes ☒ No ☐
Remarks:
HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Salt Crusts (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Oder (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remark)

Secondary Indicators (2 or more required)

- ☒ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (**LRR F**)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

 Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
 Water Table Present? Yes ☐ No ☒ Depth (inches): _____
 Saturation Present? Yes ☐ No ☒ Depth (inches): _____
 (includes capillary fringe)

 Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W33
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 14, T7S, R1E
 Landform (hillslope, terrace, etc.): Pond Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R4 P1: Upstream R4 P2: Downstream					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Juncus balticus</u> 20 <u>X</u> FACW 2. <u>Distichlis stricta</u> 50 <u>X</u> FACW 3. <u>Schoenoplectus tabernaemontani</u> 30 <u>X</u> OBL 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust _____				
Remarks: <u>Schoenoplectus tabernaemontani</u> dominant on the fringe of the pond.				

SOIL

Sampling Point W33

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/6	90	Gley1 2.5/N	10	D	M	C	
4-8	Gley1 3/N	100					C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)
Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	(LRR H outside MLRA 72 & 73)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> High Plains Depressions (F16)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):
Hydric Soils Present? Yes ☒ No ☐
Remarks:

Orange coloration due to parent material

HYDROLOGY
Wetland Hydrology Indicators:
Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)			Secondary Indicators (any one indicator is sufficient)		
<input checked="" type="checkbox"/>	Surface Water (A1)	<input type="checkbox"/>	Salt Crusts (B11)	<input type="checkbox"/>	Surface Soil Cracks (B6)
<input checked="" type="checkbox"/>	High Water Table (A2)	<input type="checkbox"/>	Aquatic Invertebrates (B13)	<input type="checkbox"/>	Sparsely Vegetated Concave Surfaces (B8)
<input checked="" type="checkbox"/>	Saturation (A3)	<input type="checkbox"/>	Hydrogen Sulfide Oder (C1)	<input type="checkbox"/>	Drainage Patterns (B10)
<input type="checkbox"/>	Water Marks (B1)	<input type="checkbox"/>	Dry-Season Water Table (C2)	<input type="checkbox"/>	Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/>	Sediment Deposits (B2)	<input type="checkbox"/>	Presence of Reduced Iron (C4)	<input type="checkbox"/>	Crayfish Burrows (C8)
<input type="checkbox"/>	Drift Deposits (B3)	<input type="checkbox"/>	Thin Muck Surface (C7)	<input type="checkbox"/>	Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/>	Algal Mat or Crust (B4)	<input type="checkbox"/>	Other (Explain in Remark)	<input type="checkbox"/>	Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/>	Iron Deposits (B5)	<input type="checkbox"/>		<input type="checkbox"/>	Geomorphic Position (D2)
<input type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/>		<input type="checkbox"/>	FAC-Neutral Test (D5)
<input type="checkbox"/>	Water Stained Leaves (B9)	<input type="checkbox"/>		<input type="checkbox"/>	Local Soil Survey Data (D8)

Field Observations:

 Surface Water Present? Yes ☒ No ☐ Depth (inches):
 Water Table Present? Yes ☒ No ☐ Depth (inches): 2
 Saturation Present? Yes ☒ No ☐ Depth (inches): 4
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W34
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 14, T7S, R1E
Landform (hillslope, terrace, etc.): Drainage Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: _____
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present	Yes _____ No <u>X</u>	
Remarks: R5 P9: Upstream R5 P10: Downstream Waypoint 58 indicates the end of surface water (R5 P8)		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.33</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover:	_____			
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species <u>15</u> x2= <u>30</u> FAC species <u>10</u> x3= <u>30</u> FACU species <u>60</u> x4= <u>240</u> UPL species <u>15</u> x5= <u>75</u> Column Totals: <u>100</u> (A) <u>375</u> (B) Prevalence Index = B/A = <u>3.75</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover:	_____			
Herb Stratum				
1. <u>Hordeum jubatum</u>	<u>15</u>	<u>X</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators ____ Dominance Test is > 50% ____ Prevalence Index is ≤ 3.0 ¹ ____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) ____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. <u>Xanthium strumarium</u>	<u>10</u>		<u>FAC</u>	
3. <u>Chenopodium album</u>	<u>10</u>		<u>FACU</u>	
4. <u>Grindelia squarrosa</u>	<u>15</u>	<u>X</u>	<u>UPL</u>	
5. <u>Cirsium arvense</u>	<u>10</u>		<u>FACU</u>	
6. <u>Polygonum aviculare</u>	<u>35</u>	<u>X</u>	<u>FACU</u>	
7. <u>Elymus smithii</u>	<u>5</u>		<u>FACU</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover:	<u>100</u>			
Woody Vine Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover:	_____			
% Bare Ground in Herb Stratum	<u>0</u>	% Cover of Biotic Crust		
Remarks:				

SOIL

Sampling Point W34

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	Gley1 2.5/N	95	2.5YR 4/8	5	C	M, RC	CL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____

Hydric Soils Present? Yes ☐ No ☒
Remarks:
HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

 Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
 Water Table Present? Yes ☐ No ☒ Depth (inches): _____
 Saturation Present? Yes ☐ No ☒ Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W35
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 14, T7S, R1E
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PUB
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Remarks: R5 P11: Facing east R5 P12: Facing south Possible stock dam	

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species <u>80</u> x2= <u>160</u> FAC species _____ x3= _____ FACU species <u>20</u> x4= <u>80</u> UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>240</u> (B) Prevalence Index = B/A = <u>2.40</u>
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Distichlis stricta</u> <u>80</u> <u>X</u> <u>FACW</u> 2. <u>Melilotus sp.</u> <u>20</u> _____ <u>FACU</u> 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum <u>80</u> % Cover of Biotic Crust _____				
Hydrophytic Vegetation Indicators _____ Dominance Test is > 50% <u>X</u> Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present Hydrophytic Vegetation Present? Yes <u>X</u> No _____				
Remarks:				

SOIL

Sampling Point W35

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	7.5YR 2.5/1	80	2.5YR 4/8	20	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):		
Type: _____		
Depth (inches): _____	Hydric Soils Present? Yes _____ No <u> X </u>	
Remarks:		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		<input checked="" type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Local Soil Survey Data (D8)
<input type="checkbox"/> Water Stained Leaves (B9)		

Field Observations:		
Surface Water Present? Yes _____ No <u> X </u>	Depth (inches): _____	
Water Table Present? Yes _____ No <u> X </u>	Depth (inches): _____	
Saturation Present? Yes _____ No <u> X </u>	Depth (inches): _____	
(includes capillary fringe)		Wetland Hydrology Present? Yes <u> X </u> No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:	
Remarks:	
Soil is moist but not saturated.	

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/19/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W36
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 10, T7S, R1E
Landform (hillslope, terrace, etc.): Outfall Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R5 P20: Downstream R5 P21: Upstream to stock tank Stock tank overflow -waypoint 60- end of N -waypoint 68, R5 P18: Upstream, R5 P19: Downstream -waypoint 67 end of W, further SW there is <i>Hordeum jubatum</i> was dominant in channel and water disappears.					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u><i>Hordeum jubatum</i></u> <u>20</u> <u>X</u> <u>FACW</u> 2. <u><i>Juncus balticus</i></u> <u>65</u> <u>X</u> <u>FACW</u> 3. <u><i>Melilotus alba</i></u> <u>10</u> <u>_____</u> <u>FACU-</u> 4. <u><i>Rumex occidentalis</i></u> <u>5</u> <u>_____</u> <u>OBL</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum <u>2</u> % Cover of Biotic Crust _____ Remarks: Overflow area from stockpond.				

SOIL

Sampling Point W36

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR 4/1	70	10YR 5/8	30	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16)
- ☐ (LRR H outside MLRA 72 & 73)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____

 Hydric Soils Present? Yes ☒ No ☐
Remarks:
HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--------------------------------------------------------------------|--------------------------------------------------------|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crusts (B11) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Oder (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Other (Explain in Remark) |
| <input type="checkbox"/> Iron Deposits (B5) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Water Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (**LRR F**)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>4</u>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____

 (includes capillary fringe)

 Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

Soil is moist, but not saturated.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W37
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 34, T6S R1E
Landform (hillslope, terrace, etc.): Outfall Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: Open water
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area Within a Wetland Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present	Yes <u>X</u> No _____	
Remarks: R6 P6 - P10 Panoramic east to west Approximately 30 feet across Previously NWI mapped as PUBGx		

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>25</u> x1= <u>25</u> FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species <u>75</u> x4= <u>300</u> UPL species _____ x5= _____ Column Totals: <u>100</u> (A) <u>325</u> (B) Prevalence Index = B/A = <u>3.25</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover: _____				
Herb Stratum				
1. <u>Typha latifolia</u>	<u>25</u>	<u>X</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators ____ Dominance Test is > 50% ____ Prevalence Index is ≤ 3.0 ¹ ____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) ____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. <u>Cirsium arvense</u>	<u>75</u>	<u>X</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>100</u>				
Woody Vine Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover: _____				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Remarks: Cattails dominate on water edge. <i>Cirsium arvense</i> dominate from water edge to 3 feet out. Rabbitbrush on upland bank.				



SOIL

Sampling Point W37

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

Restrictive Layer (if present):

Type:

Depth (inches): _____

Hydric Soils Present? Yes No X

Remarks:

Soils likely hydric where cattails are- across unavailable due to steep drop in to pit
Soils are moist not saturated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

Secondary Indicators (2 or more required)

X	Surface Water (A1)	Salt Crusts (B11)	Sparsely Vegetated Concave Surfaces (B8)
	High Water Table (A2)	Aquatic Invertebrates (B13)	Drainage Patterns (B10)
	Saturation (A3)	Hydrogen Sulfide Oder (C1)	Oxidized Rhizospheres on Living Roots (C3)
	Water Marks (B1)	Dry-Season Water Table (C2)	Crayfish Burrows (C8)
	Sediment Deposits (B2)	Presence of Reduced Iron (C4)	Saturation Visible on Aerial Imagery (C9)
	Drift Deposits (B3)	Thin Muck Surface (C7)	Frost-Heave Hummocks (C11) (LRR F)
	Algal Mat or Crust (B4)	Other (Explain in Remark)	Geomorphic Position (D2)
	Iron Deposits (B5)		FAC-Neutral Test (D5)
	Inundation Visible on Aerial Imagery (B7)		Local Soil Survey Data (D8)
	Water Stained Leaves (B9)		

Field Observations:

Surface Water Present?	Yes	<u>X</u>	No	<u> </u>	Depth (inches):	<u> </u>
Water Table Present?	Yes	<u> </u>	No	<u>X</u>	Depth (inches):	<u> </u>
Saturation Present? (includes capillary fringe)	Yes	<u> </u>	No	<u>X</u>	Depth (inches):	<u> </u>

Wetland Hydrology Present? Yes X No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

Soil is moist, but not saturated.
Duck swimming in pond

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W38
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 2, T7S, R1E
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PUS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Remarks: R6 P13: East R6 P14: North 300-500 feet across and 80 or 81 feet long	

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u>Populus deltoides</u>	100	X	FAC	Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____				
3. _____				
4. _____				
Total Cover:	100			
Sapling/Shrub Stratum				
1. _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____				
3. _____				
4. _____				
5. _____				
Total Cover:				
Herb Stratum				
1. <u>Juncus balticus</u>	50	X	FACW	Hydrophytic Vegetation Indicators <input checked="" type="checkbox"/> Dominance Test is > 50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
2. <u>Distichlis stricta</u>	50	X	FACW	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
Total Cover:	100			
Woody Vine Stratum				
1. _____				Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____				
3. _____				
Total Cover:				
% Bare Ground in Herb Stratum		% Cover of Biotic Crust		
Remarks:				

SOIL

Sampling Point W38

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

Hydric Soil Indicators ³ (Applicable to all LRRs, unless otherwise noted)		Indicators for Wetland Hydric Soils ³	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> X Redox Depressions (F8)		
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches): _____

Hydric Soils Present? Yes X No

Remarks:

Soils likely hydric where cattails are- across unavailable due to steep drop in to pit
Soils are moist not saturated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)			
<input type="checkbox"/>	Surface Water (A1)	<input type="checkbox"/>	Salt Crusts (B11)
<input type="checkbox"/>	High Water Table (A2)	<input type="checkbox"/>	Aquatic Invertebrates (B13)
<input type="checkbox"/>	Saturation (A3)	<input type="checkbox"/>	Hydrogen Sulfide Oder (C1)
<input type="checkbox"/>	Water Marks (B1)	<input type="checkbox"/>	Dry-Season Water Table (C2)
<input type="checkbox"/>	Sediment Deposits (B2)	<input type="checkbox"/>	Presence of Reduced Iron (C4)
<input type="checkbox"/>	Drift Deposits (B3)	<input type="checkbox"/>	Thin Muck Surface (C7)
<input type="checkbox"/>	Algal Mat or Crust (B4)	<input type="checkbox"/>	Other (Explain in Remark)
<input type="checkbox"/>	Iron Deposits (B5)		
<input type="checkbox"/>	Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/>	Water Stained Leaves (B9)		
		X	Surface Soil Cracks (B6)
		X	Sparsely Vegetated Concave Surfaces (B8)
			Drainage Patterns (B10)
			Oxidized Rhizospheres on Living Roots (C3)
			Crayfish Burrows (C8)
			Saturation Visible on Aerial Imagery (C9)
			Frost-Heave Hummocks (C11) (LRR F)
		X	Geomorphic Position (D2)
			FAC-Neutral Test (D5)
			Local Soil Survey Data (D8)

Field Observations:

Surface Water Present?	Yes	_____	No	<u> X </u>	Depth (inches):	_____
Water Table Present?	Yes	_____	No	<u> X </u>	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes	_____	No	<u> X </u>	Depth (inches):	_____

Wetland Hydrology Present? Yes X No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W39
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression w/ manmade berm Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PUS
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Remarks: R6 P16: of depression R6 P17: of drainage to East Waypoint 83, <i>Hordeum jubatum</i> depression with like soils as W39. R6 P15 Down the drainage there is HORJUB on banks and in bottom with same soil and hydrology	

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____	_____	_____	_____	
<u>Sapling/Shrub Stratum</u>				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	Hydrophytic Vegetation Indicators X Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present Hydrophytic Vegetation Present? Yes <u>X</u> No _____
Total Cover: _____				
<u>Herb Stratum</u>				
1. <i>Hordeum jubatum</i>	95	X	FACW	
2. <i>Melilotus officinalis</i>	5		FACU-	
3. <i>Descurainia pinnata</i>	5		NI	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>100</u>				
<u>Woody Vine Stratum</u>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover: _____				
% Bare Ground in Herb Stratum _____		% Cover of Biotic Crust _____		
Remarks: _____				

SOIL

Sampling Point W39

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	5YR 4/1	55	2.5YR 4/6	45	C	M, RC	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)
Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):
Hydric Soils Present? Yes ☒ No ☐
Remarks:
HYDROLOGY
Wetland Hydrology Indicators:
Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

 Surface Water Present? Yes ☐ No ☒ Depth (inches):
 Water Table Present? Yes ☐ No ☒ Depth (inches):
 Saturation Present? Yes ☐ No ☒ Depth (inches):
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W40
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 1, T7S, R1E
Landform (hillslope, terrace, etc.): Pond Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R6 P18: Pond					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Total Cover: _____				
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Spartina pectinata</u> <u>100</u> <u>X</u> <u>FACW</u> 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				Hydrophytic Vegetation Indicators <u>X</u> Dominance Test is > 50% Prevalence Index is ≤ 3.0 ¹ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Hydrophytic Vegetation Present? Yes <u>X</u> No _____				
Remarks:				

SOIL

Sampling Point W40

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-11	2.5Y 5/2	65	Gley1 5/N	15	D	RC	SiC	
			10YR 5/8	20	C	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> High Plains Depressions (F16)
(LRR H outside MLRA 72 & 73)
<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____

 Hydric Soils Present? Yes ☒ No ☐
Remarks:

Soil is moist but not saturated.

HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

 Surface Water Present? Yes ☒ No ☐ Depth (inches): 3
 Water Table Present? Yes ☐ No ☒ Depth (inches): _____
 Saturation Present? Yes ☐ No ☒ Depth (inches): _____
 (includes capillary fringe)

 Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W41
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 1, T7S, R1E
Landform (hillslope, terrace, etc.): Mine pit Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: PUB
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes		No	<u>X</u>	
Remarks: R6 P19: Wetland R6 P20: General area Wetland has about a 20' circumference. This area may be a problematic wetland as some of the vegetation was dead.					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: (A) _____ (B) _____ Prevalence Index = B/A = _____
Total Cover: _____				
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Typha latifolia</u> 20 <u>X</u> OBL 2. <u>Grindelia squarrosa</u> 15 _____ UPL 3. <u>Symphyotrichum ericoides</u> 15 _____ FACU 4. <u>Distichlis stricta</u> 50 <u>X</u> FACW 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				Hydrophytic Vegetation Indicators <u>X</u> Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Remarks: <u>Grindelia squarrosa, Symphyotrichum ericoides, and rabbit brush are encroaching into the depression.</u>				

SOIL

Sampling Point W41

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	Gley1 5/10Y	95	10YR 6/8	5	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):
Hydric Soils Present? Yes ☒ No ☐
Remarks:

Soil is moist but not saturated.

HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)
<input type="checkbox"/> Iron Deposits (B5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (2 or more required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):	<input type="text"/>
(includes capillary fringe)			

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

Other pits within the area are filled with water.

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W42
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 1, T7S, R1E
 Landform (hillslope, terrace, etc.): Mine Pit Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PUB
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	_____	No	<u>X</u>	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R6 P22- 24: Panoramic west to east.					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Spartina pectinata</u> 40 <u>X</u> FACW 2. <u>Distichlis stricta</u> 60 <u>X</u> FACW 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Remarks: Little bluestem dominates the upper banks.				

SOIL

Sampling Point W42

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 5/1	45	Gley1 4/N	5	D		SC	
			10YR 5/6	50	C			

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)
Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type:
Depth (inches):
Hydric Soils Present? Yes ☐ No ☒
Remarks:

Soil is moist but not saturated.

HYDROLOGY
Wetland Hydrology Indicators:
Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crusts (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surfaces (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Oder (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remark)	<input type="checkbox"/> Frost-Heave Hummocks (C11) (LRR F)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Local Soil Survey Data (D8)

Field Observations:

 Surface Water Present? Yes ☒ No ☐ Depth (inches): 6
 Water Table Present? Yes ☐ No ☒ Depth (inches):
 Saturation Present? Yes ☐ No ☒ Depth (inches):
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W43
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 36, T6S, R1E (Outside of Project Boundary)
 Landform (hillslope, terrace, etc.) Depression, ponded area due to berm Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland	Yes	<u>X</u>	No	_____
Hydric Soil Present?	Yes	_____	No	<u>X</u>		Yes	<u>X</u>	No	_____
Wetland Hydrology Present	Yes	<u>X</u>	No	_____					
Remarks: R7 P15: West R7 P17: East of pond R7 P16: Middle Cattle grazed here. On the other side of the berm there are <i>Pinus ponderosa</i> .									

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Total Cover: _____				
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Juncus balticus</u> 60 X FACW 2. <u>Typha latifolia</u> 40 X OBL 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				Hydrophytic Vegetation Indicators X Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
% Bare Ground in Herb Stratum <u>90</u> % Cover of Biotic Crust _____ Remarks: Moss is present. <i>Distichlis stricta</i> present in the middle of the pond.				

SOIL

Sampling Point W43

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 5/3	75	Gley1 3/N	20	D	M	C	
			5YR 5/8	5	C	M	C	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16)
- ☐ (**LRR H outside MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: _____
Depth (inches): _____

Hydric Soils Present? Yes _____ No X
Remarks:

Soil is moist but not saturated.

HYDROLOGY
Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--------------------------------------------------------------------|--------------------------------------------------------|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crusts (B11) |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Oder (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Other (Explain in Remark) |
| <input type="checkbox"/> Iron Deposits (B5) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Water Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (**LRR F**)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present?	Yes	<u> X </u>	No	_____	Depth (inches):	<u> 4 </u>
Water Table Present?	Yes	<u> X </u>	No	_____	Depth (inches):	<u> 3 </u>
Saturation Present?	Yes	<u> X </u>	No	_____	Depth (inches):	<u> 3 </u>

 (includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W44
Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 2, T7S, R1E
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
Soil Map Unit Name: _____ NWI Classification: PEM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R7 P24: Northwest R8 P1: North R8 P2: East					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: (A) _____ (B) _____ Prevalence Index = B/A = _____
Total Cover: _____				
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____				
Herb Stratum 1. <u>Juncus balticus</u> 85 X FACW 2. <u>Distichlis stricta</u> 15 FACW 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ Total Cover: <u>100</u>				
Woody Vine Stratum 1. _____ 2. _____ 3. _____ Total Cover: _____				Hydrophytic Vegetation Indicators <u>X</u> Dominance Test is > 50% Prevalence Index is ≤ 3.0 ¹ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust _____				
Remarks:				
Hydrophytic Vegetation Present? Yes <u>X</u> No _____				

SOIL

Sampling Point W44

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	2.5Y 5/2	68	7.5YR 5/8	30	C	M	SiC	
			Gley1 3/N	2	D	M	SiC	
6-8	10YR 3/1	98	7.5YR 5/8	2	C	M	SiC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR F)
- ☐ 1 cm Muck (A9) (LRR F, G, H)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (LFF G, H)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR F)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ Coast Prairie Redox (A16) (LRR F, G, H)
- ☐ Dark Surface (S7) (LRR G)
- ☐ High Plains Depressions (F16)
- ☐ (LRR H outside MLRA 72 & 73)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes ☒ No ☐

Remarks:

Soil is moist, concentrations sparse in the 6-8 inches layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--------------------------------------------------------------------|--------------------------------------------------------|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crusts (B11) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Oder (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Other (Explain in Remark) |
| <input type="checkbox"/> Iron Deposits (B5) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Water Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (LRR F)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 3
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM-Great Plains Region (DRAFT)

Project/Site: Dewey Burdock City/County: Custer County Sampling Date: 9/20/07
 Applicant/Owner: Knight Piesold, Powertech State: South Dakota Sampling Point: W45
 Investigator(s): C. Robinson and J. Eberly Section, Township, Range: Section 1, T7S, R1E
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRP): Black Hills MLRA62 Lat: _____ Long: _____ Datum: NAD 1983, UTM Zone 13
 Soil Map Unit Name: _____ NWI Classification: PEM
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	_____	Is the Sampled Area Within a Wetland Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present	Yes	<u>X</u>	No	_____	
Remarks: R8 P4: Upstream R8 P5: Downstream Stockwater pond (20' wide by 50' long)					

VEGETATION

Tree Stratum (Use scientific names)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Total Cover: _____				
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1= _____ FACW species _____ x2= _____ FAC species _____ x3= _____ FACU species _____ x4= _____ UPL species _____ x5= _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover: _____				
Herb Stratum				
1. <u>Mimulus guttatus</u>	<u>70</u>	<u>X</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators <u>X</u> Dominance Test is > 50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Providing supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soils and wetland hydrology must be present
2. <u>Distichlis stricta</u>	<u>30</u>	<u>X</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Total Cover: <u>100</u>				
Woody Vine Stratum				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
Total Cover: _____				
% Bare Ground in Herb Stratum		% Cover of Biotic Crust		
Remarks:				

SOIL

Sampling Point W45

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	Gley1 5/10Y	60	7.5Y 5/6	35	C	M, RC	C	
			Gley1 4/N	5	D	M		
8-10	2.5Y 5/4	90	5YR 5/6	10	C	M	SC	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LFF G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☒ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☐ High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16)
- ☐ (LRR H outside MLRA 72 & 73)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soils Present? Yes ☒ No ☐

Remarks:

Soil is moist but not saturated.
Black parent material in 8-10 inch layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--------------------------------------------------------------------|--------------------------------------------------------|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crusts (B11) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Oder (C1) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Presence of Reduced Iron (C4) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Other (Explain in Remark) |
| <input type="checkbox"/> Iron Deposits (B5) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | |
| <input type="checkbox"/> Water Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surfaces (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Frost-Heave Hummocks (C11) (**LRR F**)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Local Soil Survey Data (D8)

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 3-5
 Water Table Present? Yes ☐ No ☒ Depth (inches):
 Saturation Present? Yes ☐ No ☒ Depth (inches):
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

APPENDIX 2.8-H

LAB RESULTS – ENERGY LABORATORIES, INC.



ANALYTICAL SUMMARY REPORT

June 19, 2008

Jones and Stokes
1901 Energy Ct Ste 115
Gillette, WY 82718

Fish identifications corrected as
marked.
A. Wones - ICF Jones & Stokes

Workorder No.: C08040910

Project Name: Dewey-Burdock 010996.07

Energy Laboratories, Inc. received the following 15 samples from Jones and Stokes on 4/18/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C08040910-001	BVC01-Green Sunfish	04/16/08 00:00	04/18/08	Fish	Uranium, Total Digestion For RadioChemistry Lead 210 Polonium 210 Radium 226 Thorium, Isotopic Services Provided by Lab
C08040910-002	BVC01-Plains Killfish	04/16/08 00:00	04/18/08	Fish	Same As Above
C08040910-003	BVC01-Longnose Dace	04/16/08 00:00	04/18/08	Fish	Same As Above
C08040910-004	BVC01- Emerald Shiner	04/16/08 00:00	04/18/08	Fish	Same As Above Fathead Minnow
C08040910-005	BVC04-Plains Killfish	04/16/08 00:00	04/18/08	Fish	Same As Above
C08040910-006	BVC04- Quill Back	04/16/08 00:00	04/18/08	Fish	Same As Above River Carpsucker
C08040910-007	BVC04-Green Sunfish	04/16/08 00:00	04/18/08	Fish	Same As Above
C08040910-008	BVC04- Emerald Shiner	04/16/08 00:00	04/18/08	Fish	Same As Above Fathead Minnow
C08040910-009	BVC04-Channel Catfish	04/16/08 00:00	04/18/08	Fish	Same As Above
C08040910-010	CHR05- Quill Back	04/15/08 00:00	04/18/08	Fish	Same As Above River Carpsucker
C08040910-011	CHR05-Green Sunfish	04/15/08 00:00	04/18/08	Fish	Same As Above
C08040910-012	CHR05- Mottled Sucker	04/15/08 00:00	04/18/08	Fish	Same As Above Shorthead Redhorse Sucker
C08040910-013	CHR05- Fine Scale Dace	04/15/08 00:00	04/18/08	Fish	Same As Above Creek Chub
C08040910-014	CHR05-Plains Killfish	04/15/08 00:00	04/18/08	Fish	Same As Above
C08040910-015	CHR05- Shiner	04/15/08 00:00	04/18/08	Fish	Same As Above Sand Shiner

As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call.

Report Approved By:

STEVE CARLSTON



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-001
Client Sample ID: BVC01-Green Sunfish

Report Date: 06/19/08
Collection Date: 04/16/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg		0.02		SW6020	05/11/08 01:09 / ts
Uranium, Activity	ND	uCi/kg	D	2.0E-05		SW6020	05/11/08 01:09 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	0.0E+00	uCi/kg	U	5.0E-05		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	6.0E-05	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	U	5.0E-05		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	2.0E-04	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	0.0E+00	uCi/kg	U	1.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	2.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	3.0E-04	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 precision (±)	9.0E-05	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 MDC	1.0E-04	uCi/kg				E903.0	05/15/08 15:31 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-002
Client Sample ID: BVC01-Plains Killfish

Report Date: 06/19/08
Collection Date: 04/16/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.3		SW6020	05/11/08 01:18 / ts
Uranium, Activity	ND	uCi/kg	D	2.0E-04		SW6020	05/11/08 01:18 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	0.0E+00	uCi/kg	UD	5.0E-04		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	8.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	2.0E-02	uCi/kg	D	5.0E-04		E909.0M	06/09/08 08:30 / dm
Lead 210 precision (±)	2.0E-02	uCi/kg				E909.0M	06/09/08 08:30 / dm
Thorium 230	2.0E-04	uCi/kg	D	1.0E-04		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	3.0E-04	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	4.0E-04	uCi/kg	U			E903.0	05/16/08 15:11 / trs
Radium 226 precision (±)	4.0E-04	uCi/kg				E903.0	05/16/08 15:11 / trs
Radium 226 MDC	9.0E-04	uCi/kg				E903.0	05/16/08 15:11 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-003
Client Sample ID: BVC01-Longnose Dace

Report Date: 06/19/08
Collection Date: 04/16/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.9		SW6020	05/11/08 01:22 / ts
Uranium, Activity	ND	uCi/kg	D	6.0E-04		SW6020	05/11/08 01:22 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	2.0E-03	uCi/kg	D	1.0E-03		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	3.0E-03	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	1.0E-03		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	7.0E-03	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	1.0E-03	uCi/kg	D	3.0E-04		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	1.0E-03	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-2.0E-03	uCi/kg	U			E903.0	05/16/08 15:11 / trs
Radium 226 precision (±)	1.0E-03	uCi/kg				E903.0	05/16/08 15:11 / trs
Radium 226 MDC	3.0E-03	uCi/kg				E903.0	05/16/08 15:11 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-004
Client Sample ID: BVC01-Emerald Shiner

Fathead Minnow

Report Date: 06/19/08
Collection Date: 04/16/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.1		SW6020	05/11/08 01:42 / ts
Uranium, Activity	ND	uCi/kg	D	1.0E-04		SW6020	05/11/08 01:42 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	4.0E-04	uCi/kg	D	2.0E-04		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	5.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	2.0E-04		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	1.0E-03	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	0.0E+00	uCi/kg	UD	5.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	7.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-1.0E-04	uCi/kg	U			E903.0	05/16/08 15:11 / trs
Radium 226 precision (±)	2.0E-04	uCi/kg				E903.0	05/16/08 15:11 / trs
Radium 226 MDC	5.0E-04	uCi/kg				E903.0	05/16/08 15:11 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-005
Client Sample ID: BVC04-Plains Killfish

Report Date: 06/19/08
Collection Date: 04/16/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.8		SW6020	05/11/08 01:46 / ts
Uranium, Activity	ND	uCi/kg	D	5.0E-04		SW6020	05/11/08 01:46 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	0.0E+00	uCi/kg	U	1.0E-03		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	1.0E-03	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	1.0E-03		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	8.0E-03	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	0.0E+00	uCi/kg	UD	3.0E-04		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	4.0E-04	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-1.0E-03	uCi/kg	U			E903.0	05/15/08 15:31 / trs
Radium 226 precision (±)	1.0E-03	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 MDC	2.0E-03	uCi/kg				E903.0	05/15/08 15:31 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-006
Client Sample ID: BVC04-Quill Back

River Carpsucker

Report Date: 06/19/08
Collection Date: 04/16/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.03		SW6020	05/11/08 01:51 / ts
Uranium, Activity	ND	uCi/kg	D	2.0E-05		SW6020	05/11/08 01:51 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	4.0E-04	uCi/kg		5.0E-05		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	2.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	U	5.0E-05		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	3.0E-04	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	2.0E-05	uCi/kg		1.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	3.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-2.0E-05	uCi/kg	U			E903.0	05/15/08 15:31 / trs
Radium 226 precision (±)	6.0E-05	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 MDC	1.0E-04	uCi/kg				E903.0	05/15/08 15:31 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-007
Client Sample ID: BVC04-Green Sunfish

Report Date: 06/19/08
Collection Date: 04/16/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.3		SW6020	05/11/08 01:55 / ts
Uranium, Activity	ND	uCi/kg	D	2.0E-04		SW6020	05/11/08 01:55 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	6.0E-04	uCi/kg	D	4.0E-04		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	7.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	4.0E-04		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	3.0E-03	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	8.0E-04	uCi/kg	D	9.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	6.0E-04	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-3.0E-04	uCi/kg	U			E903.0	05/15/08 15:31 / trs
Radium 226 precision (±)	4.0E-04	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 MDC	9.0E-04	uCi/kg				E903.0	05/15/08 15:31 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-008
Client Sample ID: BVC04-Emerald Shiner

Fathead Minnow

Report Date: 06/19/08
Collection Date: 04/16/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg		0.02		SW6020	05/11/08 01:59 / ts
Uranium, Activity	ND	uCi/kg		1.0E-05		SW6020	05/11/08 01:59 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	0.0E+00	uCi/kg	U	5.0E-05		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	2.0E-05	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	U	5.0E-05		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	9.0E-05	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	1.0E-05	uCi/kg		1.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	1.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	1.0E-04	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 precision (±)	3.0E-05	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 MDC	3.0E-05	uCi/kg				E903.0	05/15/08 15:31 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-009
Client Sample ID: BVC04-Channel Catfish

Report Date: 06/19/08
Collection Date: 04/16/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.05	mg/kg	D	0.05		SW6020	05/11/08 02:03 / ts
Uranium, Activity	3.0E-05	uCi/kg	D	3.0E-05		SW6020	05/11/08 02:03 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	9.0E-04	uCi/kg	D	8.0E-05		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	3.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	8.0E-05		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	5.0E-04	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	2.0E-05	uCi/kg	D	2.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	3.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-8.0E-05	uCi/kg	U			E903.0	05/15/08 15:31 / trs
Radium 226 precision (±)	6.0E-05	uCi/kg				E903.0	05/15/08 15:31 / trs
Radium 226 MDC	1.0E-04	uCi/kg				E903.0	05/15/08 15:31 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-010
Client Sample ID: CHR05-Quill Back

Report Date: 06/19/08
Collection Date: 04/15/08
Date Received: 04/18/08
Matrix: Fish

River Carpsucker

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.04		SW6020	05/11/08 02:07 / ts
Uranium, Activity	ND	uCi/kg	D	3.0E-05		SW6020	05/11/08 02:07 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	8.0E-04	uCi/kg	D	7.0E-05		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	3.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	7.0E-05		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	4.0E-04	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	0.0E+00	uCi/kg	U	1.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	5.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-9.0E-05	uCi/kg	U			E903.0	05/15/08 17:06 / trs
Radium 226 precision (±)	5.0E-05	uCi/kg				E903.0	05/15/08 17:06 / trs
Radium 226 MDC	1.0E-04	uCi/kg				E903.0	05/15/08 17:06 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-011
Client Sample ID: CHR05-Green Sunfish

Report Date: 06/19/08
Collection Date: 04/15/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.04		SW6020	05/11/08 02:11 / ts
Uranium, Activity	ND	uCi/kg	D	3.0E-05		SW6020	05/11/08 02:11 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	8.0E-05	uCi/kg	UD	7.0E-05		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	1.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	7.0E-05		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	4.0E-04	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	1.0E-05	uCi/kg	U	1.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	5.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	6.0E-05	uCi/kg	U			E903.0	05/15/08 17:06 / trs
Radium 226 precision (±)	7.0E-05	uCi/kg				E903.0	05/15/08 17:06 / trs
Radium 226 MDC	1.0E-04	uCi/kg				E903.0	05/15/08 17:06 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-012
Client Sample ID: CHR05-Mottled Sucker

Report Date: 06/19/08
Collection Date: 04/15/08
Date Received: 04/18/08
Matrix: Fish

Shorthead Redhorse Sucker

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg		0.02		SW6020	05/11/08 02:15 / ts
Uranium, Activity	ND	uCi/kg		1.0E-05		SW6020	05/11/08 02:15 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	2.0E-04	uCi/kg		5.0E-05		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	1.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	U	5.0E-05		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	1.0E-04	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	2.0E-05	uCi/kg		1.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	2.0E-05	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-1.0E-05	uCi/kg	U			E903.0	05/16/08 15:11 / trs
Radium 226 precision (±)	2.0E-05	uCi/kg				E903.0	05/16/08 15:11 / trs
Radium 226 MDC	3.0E-05	uCi/kg				E903.0	05/16/08 15:11 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-013
Client Sample ID: CHR05-Fine Scale Data

Creek Chub

Report Date: 06/19/08
Collection Date: 04/15/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.2		SW6020	05/11/08 02:36 / ts
Uranium, Activity	ND	uCi/kg	D	1.0E-04		SW6020	05/11/08 02:36 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	0.0E+00	uCi/kg	UD	3.0E-04		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	3.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	3.0E-04		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	2.0E-03	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	0.0E+00	uCi/kg	UD	7.0E-05		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	2.0E-04	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-2.0E-04	uCi/kg	U			E903.0	05/16/08 15:11 / trs
Radium 226 precision (±)	3.0E-04	uCi/kg				E903.0	05/16/08 15:11 / trs
Radium 226 MDC	6.0E-04	uCi/kg				E903.0	05/16/08 15:11 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-014
Client Sample ID: CHR05-Plains Killfish

Report Date: 06/19/08
Collection Date: 04/15/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.4		SW6020	05/11/08 02:40 / ts
Uranium, Activity	ND	uCi/kg	D	3.0E-04		SW6020	05/11/08 02:40 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	0.0E+00	uCi/kg	UD	6.0E-04		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	1.0E-03	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	6.0E-04		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	3.0E-03	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	1.0E-03	uCi/kg	D	1.0E-04		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	8.0E-04	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-5.0E-04	uCi/kg	U			E903.0	05/16/08 15:11 / trs
Radium 226 precision (±)	5.0E-04	uCi/kg				E903.0	05/16/08 15:11 / trs
Radium 226 MDC	1.0E-03	uCi/kg				E903.0	05/16/08 15:11 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07
Lab ID: C08040910-015
Client Sample ID: CHR05-Shiner

Sand Shiner

Report Date: 06/19/08
Collection Date: 04/15/08
Date Received: 04/18/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg	D	0.4		SW6020	05/11/08 02:44 / ts
Uranium, Activity	ND	uCi/kg	D	3.0E-04		SW6020	05/11/08 02:44 / ts
RADIONUCLIDES - TOTAL							
Polonium 210	0.0E+00	uCi/kg	UD	6.0E-04		RMO-3008	06/02/08 11:15 / plj
Polonium 210 precision (±)	5.0E-04	uCi/kg				RMO-3008	06/02/08 11:15 / plj
Lead 210	0.0E+00	uCi/kg	UD	6.0E-04		E909.0M	05/21/08 09:00 / dm
Lead 210 precision (±)	3.0E-03	uCi/kg				E909.0M	05/21/08 09:00 / dm
Thorium 230	1.0E-03	uCi/kg	D	1.0E-04		E907.0	05/09/08 14:00 / dmf
Thorium 230 precision (±)	7.0E-04	uCi/kg				E907.0	05/09/08 14:00 / dmf
Radium 226	-3.0E-04	uCi/kg	U			E903.0	05/15/08 17:06 / trs
Radium 226 precision (±)	6.0E-04	uCi/kg				E903.0	05/15/08 17:06 / trs
Radium 226 MDC	1.0E-03	uCi/kg				E903.0	05/15/08 17:06 / trs

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix interference.



QA/QC Summary Report

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07

Report Date: 06/19/08
Work Order: C08040910

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0							Batch: 18521		
Sample ID: C08041154-001AMS Radium 226	Sample Matrix Spike 0.14pCi/L			84	70	130			05/15/08 17:06
Run: BERTHOLD 770_080508E									
Sample ID: C08041154-001AMSD Radium 226	Sample Matrix Spike Duplicate 0.14pCi/L			87	70	130	0.4	23.7	05/15/08 17:06
Run: BERTHOLD 770_080508E									
Sample ID: MB-18521 Radium 226	Method Blank -0.7 pCi/L								05/16/08 15:11 U
Run: BERTHOLD 770_080508E									
Sample ID: LCS-18521 Radium 226	Laboratory Control Sample 15 pCi/L			97	70	130			05/16/08 08:10
Run: BERTHOLD 770_080508E									
Method: E907.0							Batch: 18521		
Sample ID: C08041154-001AMS Thorium 230	Sample Matrix Spike 0.23 pCi/g-dry		0.10	113	70	130			05/09/08 14:00
Run: EGG-ORTEC_080509A									
Sample ID: C08041154-001AMSD Thorium 230	Sample Matrix Spike Duplicate 0.15 pCi/g-dry		0.10	81	70	130	41	30	05/09/08 14:00 R
- The RPD for the MSD is high. The individual spike recoveries are within range, the MB is acceptable, and the LCS is within range, therefore the batch is approved.									
Sample ID: LCS-18521 Thorium 230	Laboratory Control Sample 0.0431 pCi/g-dry		0.10	93	70	130			05/09/08 14:00
Run: EGG-ORTEC_080509A									
Sample ID: MB-18521 Thorium 230	Method Blank -0.0006 pCi/g-dry								05/09/08 14:00
Run: EGG-ORTEC_080509A									
Method: E909.0M							Batch: 18521		
Sample ID: C08041154-001AMS Lead 210	Sample Matrix Spike 3.5 pCi/g-dry		0.10	130	70	130			05/21/08 09:00
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the MSD are acceptable the batch is approved.									
Sample ID: C08041154-001AMSD Lead 210	Sample Matrix Spike Duplicate 2.5 pCi/g-dry		0.10	91	70	130	36	30	05/21/08 09:00 R
Run: PACKARD 3100TR_080521A									
Sample ID: MB-R101975 Lead 210	Method Blank ND pCi/g-dry								05/21/08 09:00
Run: PACKARD 3100TR_080521A									
Sample ID: LCS-R101975 Lead 210	Laboratory Control Sample 0.0528 pCi/g-dry		0.10	76	70	130			05/21/08 09:00
Run: PACKARD 3100TR_080521A									

Qualifiers:

RL - Analyte reporting limit.
R - RPD exceeds advisory limit.

ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



QA/QC Summary Report

Client: Jones and Stokes
Project: Dewey-Burdock 010996.07

Report Date: 06/19/08
Work Order: C08040910

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E909.0M									Batch: R102568
Sample ID: C08050798-003AMS	Sample Matrix Spike				Run: PACKARD 3100TR_080609A				06/09/08 08:30
Lead 210	648	pCi/Filter		48	70	130			S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the MSD are acceptable the batch is approved.									
Sample ID: C08050798-003AMSD	Sample Matrix Spike Duplicate				Run: PACKARD 3100TR_080609A				06/09/08 08:30
Lead 210	1350	pCi/Filter		108	70	130	70	30	R
Sample ID: MB-R102568	Method Blank				Run: PACKARD 3100TR_080609A				06/09/08 08:30
Lead 210	10	pCi/L							
Sample ID: LCS-R102568	Laboratory Control Sample				Run: PACKARD 3100TR_080609A				06/09/08 08:30
Lead 210	110	pCi/L		84	70	130			
Method: RMO-3008									Batch: 18521
Sample ID: C08040910-015AMS	Sample Matrix Spike				Run: EGG-ORTEC_080602A				06/02/08 11:15
Polonium 210	105	pCi/g-dry	0.10	96	70	130			
Sample ID: C08040910-015AMSD	Sample Matrix Spike Duplicate				Run: EGG-ORTEC_080602A				06/02/08 11:15
Polonium 210	117	pCi/g-dry	0.10	107	70	130	11	30	
Sample ID: LCS-18521	Laboratory Control Sample				Run: EGG-ORTEC_080602A				06/02/08 11:15
Polonium 210	79.2	pCi/g-dry	0.10	91	70	130			
Sample ID: MB-18521	Method Blank				Run: EGG-ORTEC_080602A				06/02/08 11:15
Polonium 210	-0.3	pCi/g-dry							
Method: SW6020									Batch: 18521
Sample ID: MB-18521	Method Blank				Run: ICPMS2-C_080510B				05/11/08 01:01
Uranium	8E-05	mg/kg-dry	6E-05						
Sample ID: LCS1-18521	Laboratory Control Sample				Run: ICPMS2-C_080510B				05/11/08 01:05
Uranium	0.515	mg/kg-dry	0.015	103	75	125			
Sample ID: C08040910-015AMS	Sample Matrix Spike				Run: ICPMS2-C_080510B				05/11/08 02:48
Uranium	316	mg/kg-dry	0.38	100	75	125			
Sample ID: C08040910-015AMSD	Sample Matrix Spike Duplicate				Run: ICPMS2-C_080510B				05/11/08 02:52
Uranium	316	mg/kg-dry	0.38	101	75	125	0.2	20	

Qualifiers:

RL - Analyte reporting limit.
R - RPD exceeds advisory limit.

ND - Not detected at the reporting limit.
S - Spike recovery outside of advisory limits.



Date: 19-Jun-08

CLIENT: Jones and Stokes
Project: Dewey-Burdock 010996.07
Sample Delivery Group: C08040910

CASE NARRATIVE

THIS IS THE FINAL PAGE OF THE LABORATORY ANALYTICAL REPORT

ORIGINAL SAMPLE SUBMITTAL(S)

All original sample submittals have been returned with the data package.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)

Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

GROSS ALPHA ANALYSIS

Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

RADON IN AIR ANALYSIS

The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

SOIL/SOLID SAMPLES

All samples reported on an as received basis unless otherwise indicated.

ATRAZINE, SIMAZINE AND PCB ANALYSIS USING EPA 505

Data for Atrazine and Simazine are reported from EPA 525.2, not from EPA 505. Data reported by ELI using EPA method 505 reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

SUBCONTRACTING ANALYSIS

Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

BRANCH LABORATORY LOCATIONS

eli-b - Energy Laboratories, Inc. - Billings, MT
eli-g - Energy Laboratories, Inc. - Gillette, WY
eli-h - Energy Laboratories, Inc. - Helena, MT
eli-r - Energy Laboratories, Inc. - Rapid City, SD
eli-t - Energy Laboratories, Inc. - College Station, TX

CERTIFICATIONS:

USEPA: WY00002; FL-DOH NELAC: E87641; Arizona: AZ0699; California: 02118CA
Oregon: WY200001; Utah: 3072350515; Virginia: 00057; Washington: C1903

ISO 17025 DISCLAIMER:

The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER, WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.



ANALYTICAL SUMMARY REPORT

August 22, 2008

Jones and Stokes
1901 Energy Ct Ste 115
Gillette, WY 82718

Workorder No.: C08070647

Project Name: Dewey Burdock 00996.07

Sample ID species corrected.
A. Wones ICF Jones &
Stokes

Energy Laboratories, Inc. received the following 17 samples from Jones and Stokes on 7/15/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C08070647-001	BVC01-ICF JSA-FHM	07/10/08 00:00	07/15/08	Fish	Uranium, Total Digestion For RadioChemistry Lead 210 Polonium 210 Radium 226 Thorium, Isotopic
C08070647-002	BVC01-Plains Top Minow	07/10/08 00:00	07/15/08	Fish	Same As Above
C08070647-003	BVC01-Plains Kill Fish	07/10/08 00:00	07/15/08	Fish	Same As Above
C08070647-004	BVC01- Common Shiner	07/10/08 00:00	07/15/08	Fish	Same As Above Sand Shiner
C08070647-005	BVC01-ICF JSA- CAP Carp	07/10/08 00:00	07/15/08	Fish	Same As Above
C08070647-006	BVC04- Common Shiner	07/10/08 00:00	07/15/08	Fish	Same As Above Sand Shiner
C08070647-007	BVC04-Short Head Red Horse Sucker	07/10/08 00:00	07/15/08	Fish	Same As Above
C08070647-008	BVC04-Fathead Minow	07/10/08 00:00	07/15/08	Fish	Same As Above
C08070647-009	BVC04-PLK	07/10/08 00:00	07/15/08	Fish	Same As Above
C08070647-010	BVC04-Carp (Cap)	07/10/08 00:00	07/15/08	Fish	Same As Above
C08070647-011	CHR04- WSM	07/09/08 00:00	07/15/08	Fish	Same As Above Sand Shiner
C08070647-012	CHR04-FHM	07/09/08 00:00	07/15/08	Fish	Same As Above
C08070647-013	CHR04-PLK	07/09/08 00:00	07/15/08	Fish	Same As Above
C08070647-014	CHR04-SRS	07/09/08 00:00	07/15/08	Fish	Same As Above
C08070647-015	CHR04-Carp	07/09/08 00:00	07/15/08	Fish	Same As Above
C08070647-016	CHR04-CHC	07/09/08 00:00	07/15/08	Fish	Same As Above
C08070647-017	CHR04-RCS	07/09/08 00:00	07/15/08	Fish	Composite of two or more samples Uranium, Total Digestion For RadioChemistry Lead 210 Polonium 210 Radium 226 Thorium, Isotopic



ENERGY LABORATORIES, INC. • 2393 Salt Creek Highway (82601) • P.O. Box 3258 • Casper, WY 82602
Toll Free 888.235.0515 • 307.235.0515 • Fax 307.234.1639 • casper@energylab.com • www.energylab.com

As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call.

Report Approved By:

A handwritten signature in black ink, appearing to read "Steve Carlston", written over a horizontal line.

STEVE CARLSTON



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-001
Client Sample ID: BVC01-ICF JSA-FHM

Report Date: 08/22/08
Collection Date: 07/10/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.026	mg/kg-dry		0.0050		SW6020	07/27/08 05:51 / sml
Uranium, Activity	1.8E-05	uCi/kg		3.4E-06		SW6020	07/27/08 05:51 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	4.0E-04	uCi/kg		9.3E-05		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	2.3E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	1.4E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	3.6E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	6.0E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.2E-04	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	1.2E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	2.9E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	-1.2E-05	uCi/kg	U	1.9E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	6.2E-05	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-002
Client Sample ID: BVC01-Plains Top Minow

Report Date: 08/22/08
Collection Date: 07/10/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.021	mg/kg-dry		0.0050		SW6020	07/27/08 06:12 / sml
Uranium, Activity	1.4E-05	uCi/kg		3.4E-06		SW6020	07/27/08 06:12 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	3.5E-04	uCi/kg		1.1E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	2.8E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	-2.0E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	4.2E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	7.1E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.0E-04	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	1.1E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	2.7E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	1.0E-04	uCi/kg		2.2E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	1.0E-04	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-003
Client Sample ID: BVC01-Plains Kill Fish

Report Date: 08/22/08
Collection Date: 07/10/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.035	mg/kg-dry		0.0050		SW6020	07/27/08 06:16 / sml
Uranium, Activity	2.4E-05	uCi/kg		3.4E-06		SW6020	07/27/08 06:16 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	4.7E-04	uCi/kg		1.1E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	3.1E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	1.2E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	4.2E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	7.1E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.0E-04	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	1.1E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	2.8E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	5.7E-06	uCi/kg	U	2.2E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	1.0E-04	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-004
Client Sample ID: BVC01-Common Shiner

SAS sand shiner

Report Date: 08/22/08
Collection Date: 07/10/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.031	mg/kg-dry		0.0050		SW6020	07/27/08 06:20 / sml
Uranium, Activity	2.1E-05	uCi/kg		3.4E-06		SW6020	07/27/08 06:20 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	2.3E-04	uCi/kg		1.6E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	2.6E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	3.8E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	6.1E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	1.0E-02	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-3.0E-04	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	1.6E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	4.0E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	9.8E-05	uCi/kg		3.2E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	1.6E-04	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-005
Client Sample ID: BVC01-ICF JSA- CAP Carp

Report Date: 08/22/08
Collection Date: 07/10/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.0098	mg/kg-dry		0.0050		SW6020	07/27/08 06:24 / sml
Uranium, Activity	6.7E-06	uCi/kg		3.4E-06		SW6020	07/27/08 06:24 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	7.8E-04	uCi/kg		5.0E-05		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	1.9E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	7.6E-05	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	5.0E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	8.4E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.3E-05	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	1.6E-05	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	3.6E-05	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	-7.4E-07	uCi/kg	U	2.6E-06		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	9.2E-06	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-006
Client Sample ID: BVC04-Common Shiner

Sand Shiner

Report Date: 08/22/08
Collection Date: 07/10/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.024	mg/kg-dry		0.0050		SW6020	07/27/08 06:28 / sml
Uranium, Activity	1.6E-05	uCi/kg		3.4E-06		SW6020	07/27/08 06:28 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	5.4E-04	uCi/kg		1.1E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	5.4E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	6.4E-04	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	4.4E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	7.3E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-7.7E-05	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	1.3E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	2.5E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	2.7E-05	uCi/kg		2.3E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	1.0E-04	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-007
Client Sample ID: BVC04-Short Head Red Horse Sucker

Report Date: 08/22/08
Collection Date: 07/10/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.0072	mg/kg-dry		0.0050		SW6020	07/27/08 06:32 / smf
Uranium, Activity	4.9E-06	uCi/kg		3.4E-06		SW6020	07/27/08 06:32 / smf
RADIONUCLIDES - TOTAL							
Polonium 210	1.7E-04	uCi/kg		5.0E-05		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	1.0E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	1.2E-04	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	1.2E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	2.0E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-3.7E-05	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	3.2E-05	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	6.9E-05	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	1.9E-06	uCi/kg	U	6.3E-06		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	2.3E-05	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-008
Client Sample ID: BVC04-Fathead Minow

Report Date: 08/22/08
Collection Date: 07/10/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.031	mg/kg-dry		0.0050		SW6020	07/27/08 06:36 / smi
Uranium, Activity	2.1E-05	uCi/kg		3.4E-06		SW6020	07/27/08 06:36 / smi
RADIONUCLIDES - TOTAL							
Polonium 210	1.8E-04	uCi/kg		1.2E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	3.1E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	7.9E-04	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	4.7E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	7.9E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-1.2E-04	uCi/kg	U			E903.0	08/07/08 10:33 / dm
Radium 226 precision (±)	1.6E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Radium 226 MDC	3.2E-04	uCi/kg				E903.0	08/07/08 10:33 / dm
Thorium 230	-1.2E-05	uCi/kg	U	2.5E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	6.9E-05	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-009
Client Sample ID: BVC04-PLK

Report Date: 08/22/08
Collection Date: 07/10/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.019	mg/kg-dry		0.0050		SW6020	07/27/08 06:40 / sml
Uranium, Activity	1.3E-05	uCi/kg		3.4E-06		SW6020	07/27/08 06:40 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	8.5E-05	uCi/kg	U	1.2E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	1.3E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	3.2E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	4.7E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	7.8E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.1E-04	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	1.1E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	2.8E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	9.4E-05	uCi/kg		2.4E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	9.1E-05	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-010
Client Sample ID: BVC04-Carp (Cap)

Report Date: 08/22/08
Collection Date: 07/10/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.014	mg/kg-dry		0.0050		SW6020	07/27/08 06:44 / smf
Uranium, Activity	9.4E-06	uCi/kg		3.4E-06		SW6020	07/27/08 06:44 / smf
RADIONUCLIDES - TOTAL							
Polonium 210	1.5E-04	uCi/kg		4.0E-06		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	7.1E-05	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	9.2E-05	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	1.5E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	2.6E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	4.8E-06	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	4.2E-06	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	9.1E-06	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	2.3E-06	uCi/kg		8.0E-07		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	3.7E-06	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-011
Client Sample ID: CHR04-WSM

Report Date: 08/22/08
Collection Date: 07/09/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.040	mg/kg-dry		0.0050		SW6020	07/27/08 07:00 / smi
Uranium, Activity	2.7E-05	uCi/kg		3.4E-06		SW6020	07/27/08 07:00 / smi
RADIONUCLIDES - TOTAL							
Polonium 210	4.9E-04	uCi/kg		1.4E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	3.2E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	4.5E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	5.3E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	8.8E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.8E-04	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	1.5E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	3.8E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	1.4E-04	uCi/kg		2.7E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	1.1E-04	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-012
Client Sample ID: CHR04-FHM

Report Date: 08/22/08
Collection Date: 07/09/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.024	mg/kg-dry		0.0050		SW6020	07/27/08 07:04 / sml
Uranium, Activity	1.6E-05	uCi/kg		3.4E-06		SW6020	07/27/08 07:04 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	4.2E-04	uCi/kg		1.1E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	2.8E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	1.5E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	4.3E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	7.2E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.1E-04	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	1.3E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	3.0E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	1.3E-05	uCi/kg	U	2.2E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	4.5E-05	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-013
Client Sample ID: CHR04-PLK

Report Date: 08/22/08
Collection Date: 07/09/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.017	mg/kg-dry		0.0050		SW6020	07/27/08 07:09 / sml
Uranium, Activity	1.2E-05	uCi/kg		3.4E-06		SW6020	07/27/08 07:09 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	4.7E-04	uCi/kg		1.7E-04		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	3.5E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	-1.8E-03	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	6.5E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	1.1E-02	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-2.2E-04	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	1.9E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	4.1E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	1.6E-05	uCi/kg	U	3.4E-05		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	8.9E-05	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-014
Client Sample ID: CHR04-SRS

Report Date: 08/22/08
Collection Date: 07/09/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.0066	mg/kg-dry		0.0050		SW6020	07/27/08 07:13 / smj
Uranium, Activity	4.4E-06	uCi/kg		3.4E-06		SW6020	07/27/08 07:13 / smj
RADIONUCLIDES - TOTAL							
Polonium 210	5.0E-04	uCi/kg		1.3E-05		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	1.3E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	2.3E-04	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	4.9E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	8.1E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-8.7E-06	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	1.8E-05	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	3.4E-05	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	3.2E-06	uCi/kg		2.5E-06		E907.0	08/08/08 00:16 / dmf
Thorium 230 precision (±)	5.3E-06	uCi/kg				E907.0	08/08/08 00:16 / dmf

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-015
Client Sample ID: CHR04-Carp

Report Date: 08/22/08
Collection Date: 07/09/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.010	mg/kg-dry		0.0050		SW6020	07/27/08 07:17 / sml
Uranium, Activity	6.9E-06	uCi/kg		3.4E-06		SW6020	07/27/08 07:17 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	7.4E-04	uCi/kg		3.1E-05		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	2.2E-04	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	1.5E-04	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	1.2E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	2.0E-03	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-6.4E-05	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	4.4E-05	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	1.0E-04	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	1.7E-05	uCi/kg		6.1E-06		E907.0	08/08/08 11:00 / dmf
Thorium 230 precision (±)	2.7E-05	uCi/kg				E907.0	08/08/08 11:00 / dmf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-016
Client Sample ID: CHR04-CHC

Report Date: 08/22/08
Collection Date: 07/09/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.017	mg/kg-dry		0.0050		SW6020	07/27/08 07:21 / sml
Uranium, Activity	1.2E-05	uCi/kg		3.4E-06		SW6020	07/27/08 07:21 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	1.6E-04	uCi/kg		3.5E-06		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	5.2E-05	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	3.2E-05	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	1.4E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	2.3E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	-1.6E-06	uCi/kg	U			E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	4.4E-06	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	8.4E-06	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	9.0E-06	uCi/kg		7.0E-07		E907.0	08/08/08 11:00 / dmf
Thorium 230 precision (±)	2.6E-05	uCi/kg				E907.0	08/08/08 11:00 / dmf

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Client: Jones and Stokes
Project: Dewey Burdock 00996.07
Lab ID: C08070647-017
Client Sample ID: CHR04-RCS

Report Date: 08/22/08
Collection Date: 07/09/08
Date Received: 07/15/08
Matrix: Fish

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	0.031	mg/kg-dry		0.0050		SW6020	07/27/08 07:25 / sml
Uranium, Activity	2.1E-05	uCi/kg		3.4E-06		SW6020	07/27/08 07:25 / sml
RADIONUCLIDES - TOTAL							
Polonium 210	6.6E-07	uCi/kg	U	2.7E-06		RMO-3008	07/31/08 14:15 / plj
Polonium 210 precision (±)	3.2E-06	uCi/kg				RMO-3008	07/31/08 14:15 / plj
Lead 210	1.1E-05	uCi/kg	U			E909.0M	07/28/08 11:15 / dm
Lead 210 precision (±)	1.0E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Lead 210 MDC	1.7E-04	uCi/kg				E909.0M	07/28/08 11:15 / dm
Radium 226	8.0E-06	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 precision (±)	5.4E-06	uCi/kg				E903.0	08/07/08 10:34 / dm
Radium 226 MDC	7.3E-06	uCi/kg				E903.0	08/07/08 10:34 / dm
Thorium 230	-1.3E-05	uCi/kg	U	5.3E-07		E907.0	08/08/08 11:00 / dmf
Thorium 230 precision (±)	2.3E-05	uCi/kg				E907.0	08/08/08 11:00 / dmf
FIELD PARAMETERS							
Total Mass	4160	g				FIELD	07/22/08 17:12 / ***

*** Performed by Sampler

Report Definitions: RL - Analyte reporting limit.
QCL - Quality control limit.
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
U - Not detected at minimum detectable concentration



QA/QC Summary Report

Client: Jones and Stokes
Project: Dewey Burdock 00996.07

Report Date: 08/22/08
Work Order: C08070647

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0									Batch: 19208
Sample ID: C08070647-008AMS	Sample Matrix Spike				Run: BERTHOLD 770_080731C				08/07/08 10:33
Radium 226	23	pCi/g-dry	117		70	130			
Sample ID: C08070647-008AMSD	Sample Matrix Spike Duplicate				Run: BERTHOLD 770_080731C				08/07/08 10:34
Radium 226	20	pCi/g-dry	103		70	130	13	25.9	
Sample ID: MB-19208	Method Blank				Run: BERTHOLD 770_080731C				08/07/08 16:17
Radium 226	-0.002	pCi/g-dry							U
Sample ID: LCS-19208	Laboratory Control Sample				Run: BERTHOLD 770_080731C				08/07/08 16:17
Radium 226	0.077	pCi/g-dry	102		70	130			
Method: E907.0									Batch: 19208
Sample ID: C08070647-013AMS	Sample Matrix Spike				Run: EGG-ORTEC_080731C				08/11/08 09:23
Thorium 230	15.1	pCi/g-dry	0.10	90	70	130			
Sample ID: C08070647-013AMSD	Sample Matrix Spike Duplicate				Run: EGG-ORTEC_080731C				08/11/08 09:41
Thorium 230	18.0	pCi/g-dry	0.10	108	70	130	17	30	
Sample ID: LCS-19208	Laboratory Control Sample				Run: EGG-ORTEC_080731C				08/08/08 11:00
Thorium 230	0.0398	pCi/g-dry	0.10	90	70	130			
Sample ID: MB-19208	Method Blank				Run: EGG-ORTEC_080731C				08/08/08 11:00
Thorium 230	-0.0003	pCi/g-dry							U
Method: E909.0M									Batch: 19208
Sample ID: C08070647-006AMS	Sample Matrix Spike				Run: PACKARD 3100TR_080728D				07/28/08 11:15
Lead 210	150	pCi/g-dry	111		70	130			
Sample ID: C08070647-006AMSD	Sample Matrix Spike Duplicate				Run: PACKARD 3100TR_080728D				07/28/08 11:15
Lead 210	197	pCi/g-dry	146		70	130	27	30	S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the RPD for the MS MSD pair are acceptable, the response is considered to be matrix related. The batch is approved.									
Sample ID: MB-R106080	Method Blank				Run: PACKARD 3100TR_080728D				07/28/08 11:15
Lead 210	0.0001	pCi/g-dry							U
Sample ID: LCS-R106080	Laboratory Control Sample				Run: PACKARD 3100TR_080728D				07/28/08 11:15
Lead 210	0.103	pCi/g-dry	88		70	130			

Qualifiers:

RL - Analyte reporting limit.

S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



QA/QC Summary Report

Client: Jones and Stokes
Project: Dewey Burdock 00996.07

Report Date: 08/22/08
Work Order: C08070647

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RMO-3008									Batch: 19208
Sample ID: C08070647-017AMS	Sample Matrix Spike		Run: EGG-ORTEC_080731B			07/31/08 14:15			
Polonium 210	0.371	pCi/g-dry	0.10	161	70	130			S
- Spike response is outside of the acceptance range for this analysis. Since the MB, LCS and the MSD are acceptable the batch is approved.									
Sample ID: C08070647-017AMSD	Sample Matrix Spike Duplicate		Run: EGG-ORTEC_080731B			07/31/08 14:15			
Polonium 210	0.229	pCi/g-dry	0.10	100	70	130	47	30	R
Sample ID: LCS-R105592	Laboratory Control Sample		Run: EGG-ORTEC_080731B			07/31/08 14:15			
Polonium 210	0.0918	pCi/g-dry	0.10	106	70	130			
Sample ID: MB-R105592	Method Blank		Run: EGG-ORTEC_080731B			07/31/08 14:15			
Polonium 210	7E-05	pCi/g-dry							U
Method: SW6020									Batch: 19208
Sample ID: MB-19208	Method Blank		Run: ICPMS4-C_080726A			07/27/08 05:43			
Uranium	9E-06	mg/kg-dry	2E-06						
Sample ID: LCS1-19208	Laboratory Control Sample		Run: ICPMS4-C_080726A			07/27/08 05:47			
Uranium	0.0485	mg/kg-dry	0.015	97	75	125			
Sample ID: C08070647-017AMS	Sample Matrix Spike		Run: ICPMS4-C_080726A			07/27/08 07:29			
Uranium	1.41	mg/kg-dry	0.015	121	75	125			
Sample ID: C08070647-017AMSD	Sample Matrix Spike Duplicate		Run: ICPMS4-C_080726A			07/27/08 07:33			
Uranium	1.41	mg/kg-dry	0.015	120	75	125	0.6	20	

Qualifiers:

RL - Analyte reporting limit.

R - RPD exceeds advisory limit.

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.