

Appendix T-2
Addendum to Section 106
Geophysical Survey Review

Addendum to:

**Section 106 Geophysical Survey Review
for Icebreaker Wind**

Prepared for:

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This addendum provides a more detailed description of the data analysis performed in the “Section 106 Geophysical Survey Review for Icebreaker Wind” report prepared for Icebreaker Windpower Inc. and the Department of Energy, January 2017. All results and conclusions from the previous report remain unchanged.

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April 10, 2018

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5.0 DATA ANALYSIS

The geophysical survey conducted by Canadian Seabed Research Ltd. (CSR) from mid-August to early September 2016 of the Icebreaker Wind Project APE's provided four sets of remote sensing data to analyze for the potential presence of artifacts or properties of historical significance that would impact the construction of the Project. The remote sensing devices that provided these data sets were: Sidescan sonar, Magnetometer, Sub-bottom profiler, and multibeam bathymetry. Each of the sensors' data sets will be addressed independently, as well as in combination, to determine the possible presence of artifacts or properties of historical significance.

5.1 Sidescan Sonar Data Analysis

The sidescan sonar data was acquired using Klein SonarPro software in XTF file format. The data was post-processed and analyzed by CSR and VanZandt Engineering using SonarWiz software.

A total of 271 line km of sidescan data was analyzed within the turbine (Figure 1) and export cable (Figure 2) APEs. (Note: For full size images see appendices)



Figure 1 Turbine Survey Area Sidescan Mosaic. (CSR)

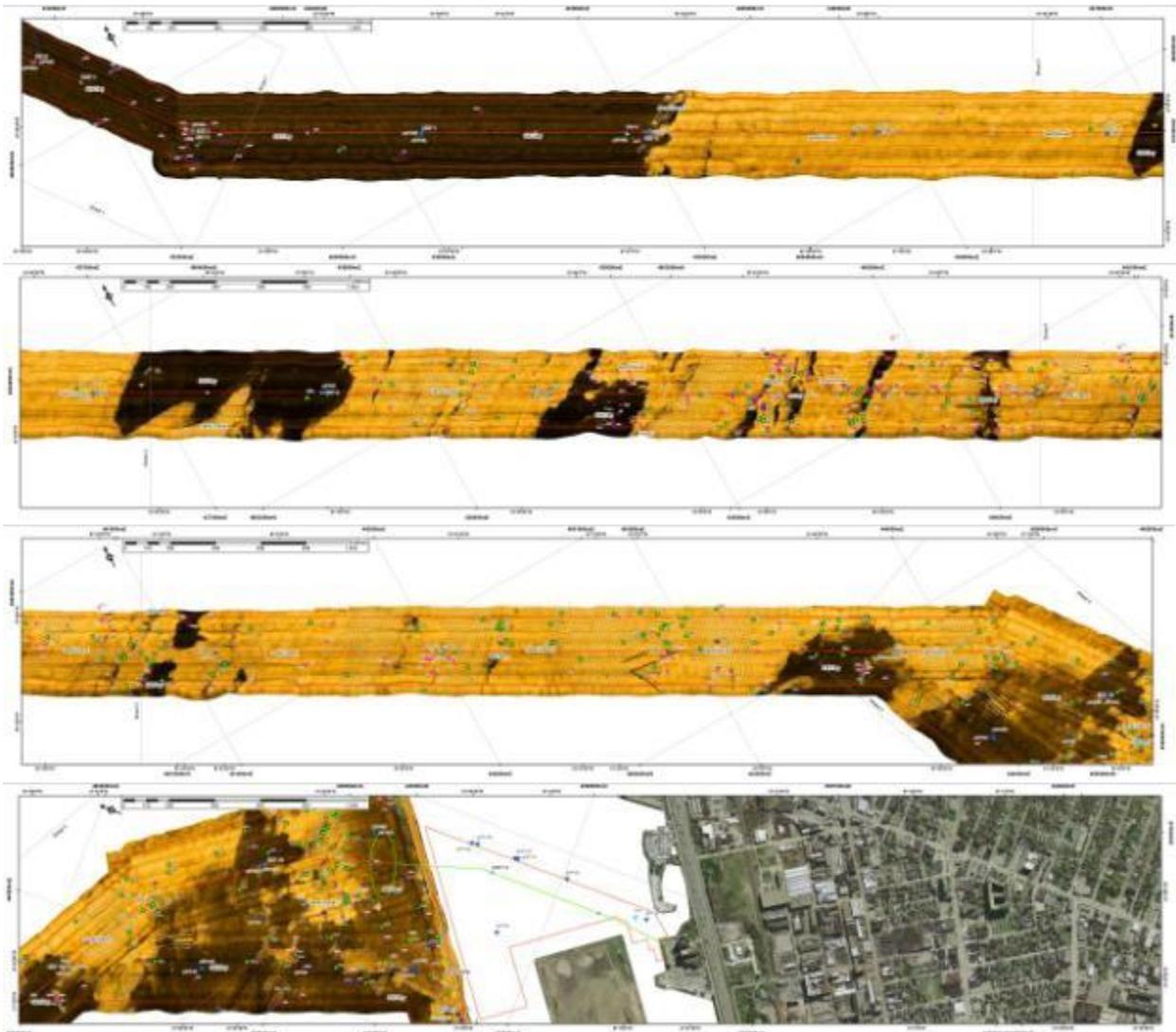


Figure 2 Export Cable Survey Area Sidescan Mosaic (CSR)

The Side Scan Sonar data showed a generally uniform and smooth lake bottom. Some evidence of ripples or other sedimentary features were observed along the survey route (Figure 3) and some areas of the bottom revealed enhanced reflectivity denoting a change in geological structure (Figure 4). These locations were assigned a contact number, and corresponding imagery and information can be found in Appendix A.

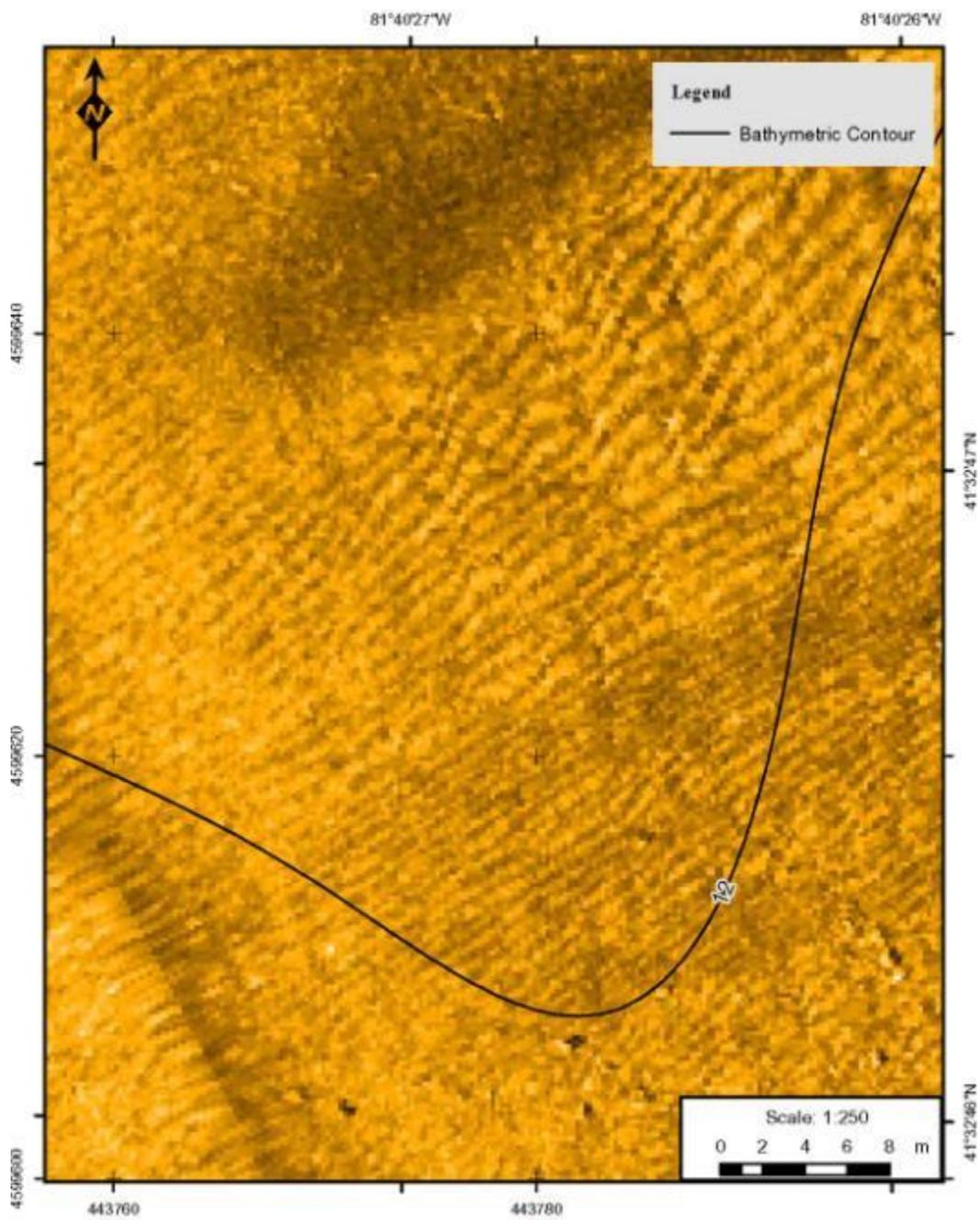


Figure 3 Sediment Rippling along Export Cable Route (CSR)

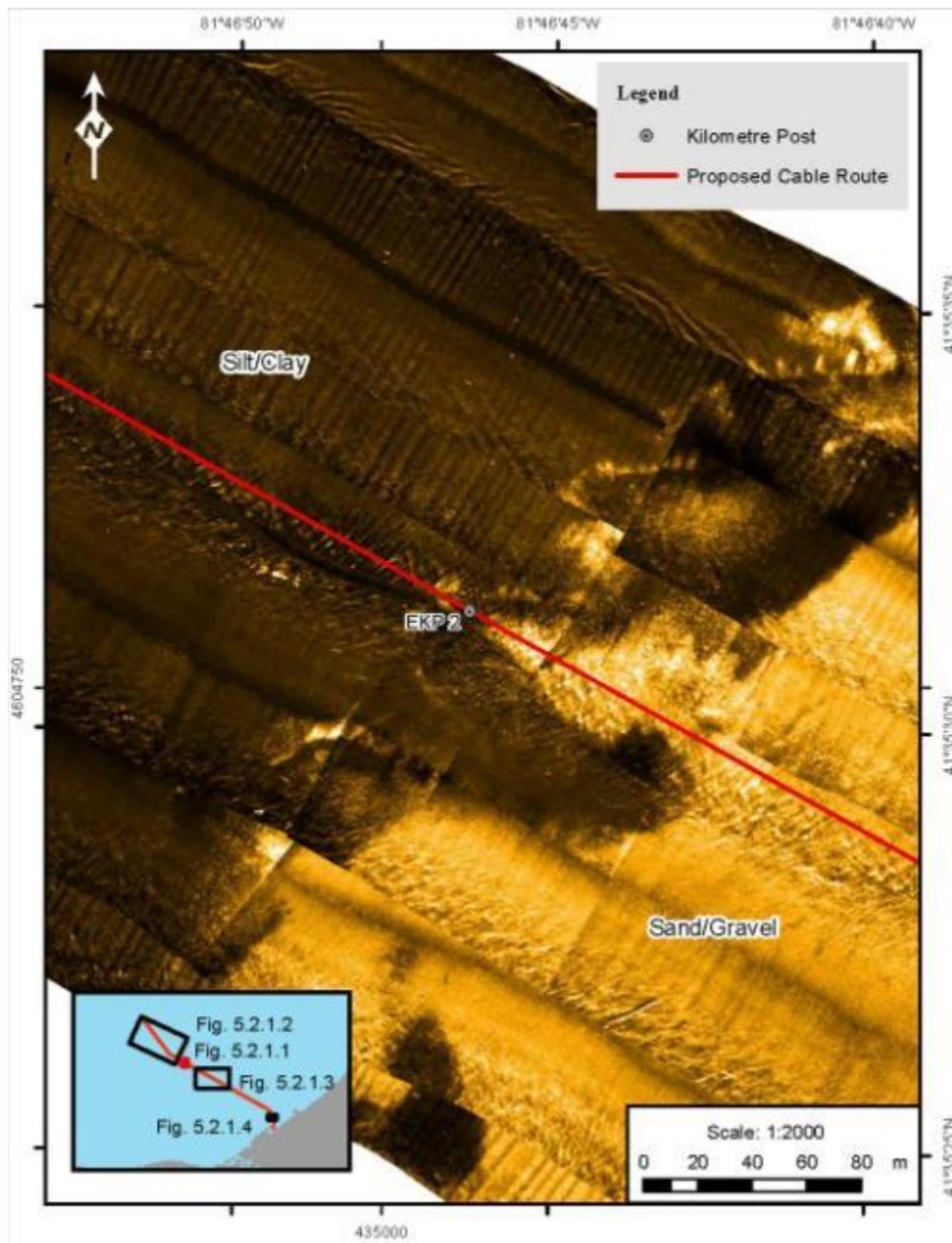


Figure 4 Sidescan Sonar Data Illustrating the Surficial Boundary between the Cleveland Ridge Sand/Gravel and Post Glacial Silt/Clay, EKP 2. (CSR)

The majority of identified contacts were geological in nature, while some possible historic contacts were the result of old trash dumpings (rectangular, circular, and linear contacts) and dredge spoil (circular contacts) in the survey areas (Figure 5). The analysis of these contacts will be discussed in detail below. A total of 455 identified contacts were analyzed and the detailed description of the contacts can be found in Table 1 (Locational data in NAD83

Geographic, NAD83, Zone 17, M, and NAD83, Ohio State Plane North, US Survey Feet). See Appendix A for complete contact data with images.

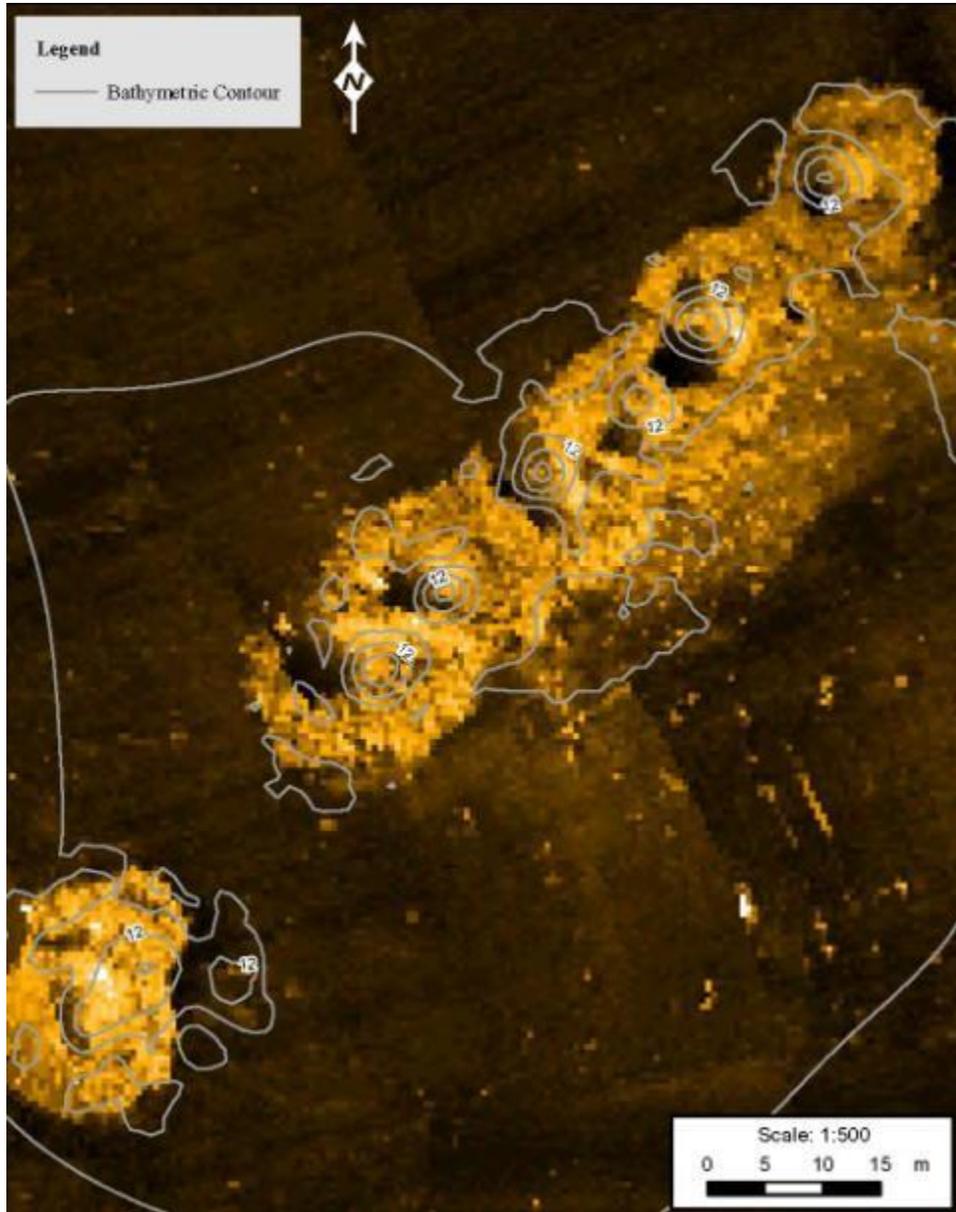


Figure 5 Sidescan Sonar Record of Dredge Spoil. Center of Data Example is Located 150 m E of EKP 12. (CSR)

Table 1 Sidescan Sonar Contacts Table

ID	HADBS Geographic			HADBS UTM Zone 17			HADBS Ohio State Plane North			Sidescan Sonar Contacts									
	Latitude	Longitude	East (m)	North (m)	East (US survey feet)	North (US survey feet)	Bathymetry (m)	Distance from Proposed Route (m)	Length (m)	Width (m)	Height (m)	Sonar Filename (.nrf)	Survey Line (L-EDT)	Description	Associated Mag Anomaly ID				
C1	41.6176298	-81.8181120	431841.5	4607646.7	2154951.3	711527.0	17.8	35.5	2.6	0.5	0.2	360826130100	005_1301	Linear Contact	-				
C2	41.6170757	-81.8170325	4319248.0	4607584.3	2155248.0	711327.6	17.7	0.9	30.0	0.2	-	360827115000	004_1150	Linear Contact	-				
C3	41.6172124	-81.8118483	432358.2	4607095.8	2156678.1	709748.8	17.6	51.6	7.5	1.0	-	360828124200	003_1241	Point Source (Probable Buoy Mooring)	-				
C4	41.6114662	-81.8115384	430067.2	4606957.2	2156769.2	709295.5	17.5	10.8	7.4	7.0	-	360827131700	006_1317	Circular Contact (Probable Buoy Mooring)	-				
C5	41.6061141	-81.8060036	432838.4	4606358.7	2158295.7	707357.3	17.3	1.6	3.9	3.5	-	360826140900	005_1408	Circular Contact	-				
C6	41.6044110	-81.8026033	433120.1	4606167.0	2159230.9	706744.1	17.2	130.5	2.2	1.2	0.6	360828112100	002_1121	Point Source	M84				
C7	41.6043767	-81.8025480	433124.5	4606163.1	2159245.5	706731.8	17.2	131.8	1.8	0.8	0.6	360828114200	003_1141	Point Source	-				
C8	41.6066765	-81.8006100	433282.2	4605750.8	2159786.4	705387.8	17.1	7.2	5.5	5.5	-	360826140900	005_1408	Circular Contact (Probable Buoy Mooring)	M40, M50				
C9	41.6002432	-81.8004922	433291.6	4605702.6	2159819.9	705230.1	17.1	44.3	3.0	1.5	0.1	360831093600	029_0936	Rectangular Contact	-				
C10	41.5973261	-81.7942784	433806.4	4605374.0	2161527.9	704180.9	16.9	79.4	3.0	1.8	-	360831093600	029_0936	Linear Contact	-				
C11	41.5905543	-81.7802254	434970.8	4604611.5	2165992.0	701744.9	16.8	175.5	3.2	0.3	0.2	360827152200	033_1522	Linear Contact	-				
C12	41.5902561	-81.7793918	435138.1	4604351.2	2167268.2	700623.0	16.0	126.3	3.5	2.4	-	360827154200	033_1542	Rectangular Contact	-				
C13	41.5838214	-81.7932129	436723.1	4603848.3	2171185.5	699340.0	15.8	15.1	5.7	0.9	0.2	360830130800	027_1307	Linear Contact	-				
C14	41.5831114	-81.7952133	437048.2	4603766.6	2172256.9	699090.4	16.4	102.8	19.5	8.6	-	360826110600	024_1106	Circular Contact (Possible Dredge Spoil)	-				
C15	41.5801051	-81.7400655	437807.9	4603436.2	2174769.0	698016.5	15.9	177.1	5.9	2.4	-	360827093700	023_0937	Low Reflectivity Patch (Possible Slag)	-				
C16	41.5785477	-81.7451360	437881.9	4603252.6	2175028.2	697451.3	15.9	62.8	8.1	1.4	0.6	360830132800	027_1307	Low Reflectivity Patch (Possible Slag)	-				
C17	41.5794295	-81.7450774	437889.6	4603350.5	2175041.4	697772.6	15.9	150.9	11.0	0.4	0.0	360826110600	024_1106	Linear Contact	-				
C18	41.5787247	-81.7440977	437869.6	4603222.2	2175071.8	697952.2	15.8	42.5	6.7	1.5	0.5	360826151400	028_1514	Low Reflectivity Patch (Possible Slag)	-				
C19	41.5780199	-81.7445240	437934.4	4603193.6	2175197.3	697280.4	15.8	36.0	6.3	0.3	-	360826151400	028_1514	Linear Contact	-				
C20	41.5761775	-81.7444257	437940.8	4602989.0	2175230.0	696589.3	15.7	39.4	3.2	0.2	-	360827160200	033_1602	Linear Contact	-				
C21	41.5753894	-81.7432666	438036.7	4602800.7	2175549.6	696304.9	15.0	169.6	0.8	0.5	0.1	360827160200	033_1602	Circular Contact (Probable Tire)	-				
C22	41.5749765	-81.7419717	438144.3	4602853.9	2175905.2	696157.6	15.7	157.8	2.7	0.7	0.5	360830113600	032_1136	Point Source	-				
C23	41.5763451	-81.7416041	438176.2	4603005.6	2176001.5	696457.1	15.8	9.9	3.9	0.3	-	360831084100	029_0838	Linear Contact	-				
C24	41.5767852	-81.7412561	438205.6	4603048.7	2176095.4	696800.4	15.8	42.1	9.2	0.2	0.1	360826151400	028_1514	Linear Contact	-				
C25	41.5776437	-81.7410623	438222.6	4603149.4	2176145.6	697131.6	15.7	138.2	2.6	0.5	0.1	360827093700	023_0937	Linear Contact	-				
C26	41.5764126	-81.7407087	438250.9	4603012.4	2176246.2	696683.8	15.8	32.6	2.0	0.8	0.4	360826151400	028_1514	Low Reflectivity Patch (Possible Slag)	-				
C27	41.5769110	-81.7405391	438265.5	4603067.6	2176291.0	696865.8	15.8	87.9	8.1	0.4	-	360828140200	026_1401	Linear Contact	-				
C28	41.5748567	-81.7404957	438267.2	4602837.3	2176304.5	696110.1	15.7	112.2	2.8	0.6	0.1	360827160200	033_1602	Linear Contact	-				
C29	41.5771813	-81.7402203	438291.5	4603097.4	2176374.7	696965.1	15.7	126.6	7.7	0.4	0.2	360826110600	024_1106	Linear Contact	-				
C30	41.5759815	-81.7397394	438415.2	4602963.2	2176788.0	696531.5	15.7	69.9	9.4	0.8	-	360828140200	026_1401	Linear Contact	-				
C31	41.5764743	-81.7382422	438456.6	4603017.5	2176920.9	696712.2	15.7	137.6	11.1	0.3	0.1	360826110600	024_1106	Linear Contact	-				
C32	41.5756555	-81.7376941	438501.5	4602927.3	2177073.4	696418.8	15.7	80.8	2.2	1.1	-	360828140200	026_1401	Low Reflectivity Patch (Possible Slag)	-				
C33	41.5726019	-81.7357889	438607.4	4602585.9	2177604.4	695307.1	15.4	140.8	4.9	1.4	-	360827160200	033_1602	Circular Contact	-				
C34	41.5727777	-81.7355758	438675.4	4602605.2	2177662.2	695371.7	15.4	115.2	2.4	2.2	0.7	360827160200	033_1602	Circular Contact (Probable Dredge Spoil)	-				
C35	41.5731210	-81.7352714	438701.3	4602643.1	2177744.4	695497.5	15.4	69.6	6.0	3.4	-	360831038000	030_1037	Rectangular Contact	-				
C36	41.5746537	-81.7353299	438714.3	4602811.2	2177778.2	696045.7	15.6	83.5	1.9	1.1	-	360828101800	025_1018	Low Reflectivity Patch (Possible Slag)	-				
C37	41.5742500	-81.7353027	438716.2	4602768.3	2177786.9	695909.3	15.6	47.1	2.1	1.5	-	360828140200	026_1401	Circular Contact	-				
C38	41.5745852	-81.7350109	438774.2	4602805.5	2177811.0	696031.6	15.6	83.4	4.5	2.9	-	360828101800	025_1018	Low Reflectivity Patch (Possible Slag)	-				
C39	41.5732856	-81.7349705	438726.3	4602661.2	2177826.2	695558.2	15.4	41.5	4.5	3.1	-	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-				
C40	41.5720940	-81.7341911	438790.2	4602528.3	2178043.2	695125.9	15.3	120.2	7.0	5.6	-	360830113600	032_1136	Low Reflectivity Patch (Possible Slag)	-				
C41	41.5748022	-81.7342169	438796.1	4603818.9	2178052.1	696112.8	15.6	140.0	2.6	1.3	0.8	360826104600	024_1046	Point Source (Probable Boulder)	-				
C42	41.5717875	-81.7340750	438799.7	4602494.2	2178076.5	695014.5	15.2	151.3	7.3	3.1	-	360830113600	032_1136	Low Reflectivity Patch (Possible Slag)	-				
C43	41.5719459	-81.7340639	438800.7	4602511.8	2178078.5	695072.2	15.3	135.5	3.7	3.1	-	360830113600	032_1136	Low Reflectivity Patch (Possible Slag)	-				
C44	41.5721798	-81.7336485	438835.5	4602537.5	2178191.4	695158.5	15.3	96.8	17.9	17.4	-	360831038000	030_1037	Low Reflectivity Patch (Possible Slag)	-				
C45	41.5722820	-81.7332420	438869.6	4602548.5	2178302.6	695196.7	15.2	69.7	4.0	0.4	0.1	360831084100	029_0838	Linear Contact	-				
C46	41.5729976	-81.7330702	438864.5	4602627.9	2178347.0	695457.8	15.4	6.8	2.0	0.4	0.3	360826151400	028_1514	Point Source (Probable Boulder)	-				

ID	NAD83 Geographic			NAD83 UTM Zone 17			NAD83 Ohio State Plane North			Sidercan Sonar Contacts					Description	Associated Mag Anomaly ID
	Latitude	Longitude	East (m)	North (m)	East (US survey feet)	North (US survey feet)	Bathymetry (m)	Distance from Proposed Route (m)	Length (m)	Width (m)	Height (m)	Sonar Filename (.url)	Survey Line (L_EDT)			
C47	41.5727958	-81.7340514	438885.9	4602605.4	21783572.8	695384.3	15.3	12.1	1.3	1.0	0.5	360826151400	028_1514	Point Source (Probable Boulder)	-	
C48	41.5726638	-81.7341082	438964.4	4602590.1	2178611.3	695338.5	15.3	12.9	0.9	0.7	0.7	360826151400	028_1514	Point Source (Probable Boulder)	-	
C49	41.5720909	-81.7312021	439035.8	4603592.5	2178845.5	695350.5	15.3	49.9	2.8	1.2	0.3	360830134500	027_1345	Low Reflectivity Patch (Possible Slag)	-	
C50	41.5719908	-81.7311854	439040.7	4602514.7	2178066.0	695095.6	15.2	15.6	4.4	2.2	0.5	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-	
C51	41.5717612	-81.7305695	439093.2	4602488.8	2179035.2	695013.4	15.2	13.2	3.9	0.5	0.3	360831084100	029_0838	Linear Contact	-	
C52	41.5702958	-81.7305075	439099.6	4602326.1	2179056.9	69479.6	15.3	15.3	3.6	0.5	0.0	360830114600	032_1136	Linear Contact	-	
C53	41.5703116	-81.7305963	439129.9	4602327.0	2179169.4	69486.3	15.3	13.3	3.6	0.6	-	360827160200	033_1602	Unknown Contact	-	
C54	41.5697973	-81.7300883	439130.1	4602270.4	2179173.2	694298.9	-	185.0	13.8	6.7	-	360827160200	033_1602	Unknown Contact	-	
C55	41.5711445	-81.7291570	439205.0	4602415.4	2179423.7	694792.1	15.3	16.5	4.0	1.7	-	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-	
C56	41.5711069	-81.7291492	439209.6	4602415.2	2179426.0	694778.4	15.3	16.9	2.5	1.6	-	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-	
C57	41.5711870	-81.7291298	439211.3	4602434.1	2179431.2	694807.6	15.3	11.3	1.7	2.3	-	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-	
C58	41.5710575	-81.7291073	439211.9	4602409.6	2179440.3	694760.5	15.3	22.6	2.1	1.7	-	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-	
C59	41.5712076	-81.7290976	439215.9	4602426.3	2179448.0	694815.3	15.3	6.8	6.1	3.6	-	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-	
C60	41.5711550	-81.7287978	439289.8	4602420.3	2179624.7	694796.8	15.3	0.7	3.1	0.6	0.2	360831084100	029_0838	Linear Contact	-	
C61	41.5682625	-81.7284158	439269.6	4602272.5	2179630.8	694313.6	15.2	115.0	4.1	0.4	0.1	360827160200	033_1602	Linear Contact	-	
C62	41.5705782	-81.7284075	439271.0	4602367.1	2179630.3	694674.0	15.2	31.8	4.2	1.2	0.4	36083103800	030_1077	Linear Contact	-	
C63	41.5693022	-81.7283231	439276.8	4602214.2	2179657.8	694122.8	15.2	162.4	3.3	0.6	0.3	360827160200	033_1602	Linear Contact	M92	
C64	41.5696733	-81.7283218	439277.2	4602255.4	2179657.0	694258.0	15.2	175.6	1.5	0.5	0.1	360827160200	033_1602	Linear Contact	-	
C65	41.5706118	-81.7282603	439281.3	4602359.8	2179670.8	694600.9	15.2	34.2	3.4	1.0	-	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-	
C66	41.5698118	-81.7282402	439284.2	4602270.8	2179678.9	694308.7	15.2	109.4	1.9	0.5	-	360827160200	033_1602	Linear Contact	-	
C67	41.5711946	-81.7282328	439286.2	4602424.3	2179676.7	694812.6	15.3	25.5	3.3	0.8	0.4	360826151400	028_1514	Linear Contact	-	
C68	41.5707463	-81.7282010	439288.3	4602373.4	2179686.6	694645.6	15.2	17.9	5.2	1.5	-	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-	
C69	41.5706172	-81.7281394	439291.3	4602360.1	2179703.8	694602.4	15.2	27.0	8.5	3.5	-	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-	
C70	41.5705275	-81.7280796	439298.2	4602349.5	2179720.5	694568.0	15.2	31.8	3.8	0.7	-	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-	
C71	41.5704074	-81.7280231	439302.6	4602303.4	2179737.3	694416.9	15.2	72.0	4.2	2.8	0.1	360831084100	029_0838	Circular Contact	-	
C72	41.5705831	-81.7280035	439304.8	4602356.2	2179741.7	694590.3	15.2	24.8	2.6	2.1	-	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-	
C73	41.5701562	-81.7279966	439304.8	4602308.8	2179744.4	694314.8	15.2	66.1	4.2	1.8	-	360831084100	029_0838	Circular Contact	-	
C74	41.5702992	-81.7279354	439310.0	4602324.7	2179760.7	694487.7	15.2	49.8	2.5	1.6	-	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-	
C75	41.5703650	-81.7278972	439316.6	4602325.2	2179782.1	694489.3	15.2	46.1	3.0	1.3	-	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-	
C76	41.5702668	-81.7278261	439319.1	4602311.0	2179790.7	694475.5	15.2	48.5	4.2	1.8	-	360831084100	029_0838	Low Reflectivity Patch (Possible Slag)	-	
C77	41.5723950	-81.7277941	439323.8	4602557.2	2179792.6	695251.0	15.2	159.9	2.8	1.6	-	360827093700	023_0937	Low Reflectivity Patch (Possible Slag)	-	
C78	41.5691421	-81.7270113	439386.0	4601195.5	2180017.3	694067.7	15.1	125.3	3.3	0.4	0.0	360827160200	033_1602	Linear Contact	-	
C79	41.5694892	-81.7267036	439407.0	4602233.9	2180083.9	694194.7	15.1	81.6	1.8	1.1	-	36083103800	030_1077	Circular Contact	-	
C80	41.5719450	-81.7264907	439432.0	4602506.4	2180150.7	695090.2	-	168.4	3.1	3.0	-	360827093700	023_0937	Circular Contact	-	
C81	41.5719742	-81.7263764	439441.5	4602486.4	2180182.2	695064.7	15.3	166.1	7.2	4.1	-	360827093700	023_0937	Low Reflectivity Patch (Possible Slag)	-	
C82	41.5710858	-81.7263525	439442.7	4602410.9	2180191.3	694777.5	15.3	90.3	3.0	0.6	0.1	360828140200	026_1401	Linear Contact	M113, M214	
C83	41.5711668	-81.7262596	439451.2	4602488.5	2180214.5	694932.7	15.3	162.2	9.1	2.5	-	360827093700	023_0937	Low Reflectivity Patch (Possible Slag)	M82	
C84	41.5707443	-81.7263001	439461.3	4602372.8	2180261.4	694653.7	15.2	67.2	2.8	1.8	0.6	36083095800	025_0958	Point Source (Probable Boulder)	M215	
C85	41.5714122	-81.7260088	439471.7	4602446.9	2180284.3	694897.2	15.2	135.9	13.6	4.2	-	360827093700	023_0937	Low Reflectivity Patch (Possible Slag)	M215	
C86	41.5714945	-81.7259543	439476.4	4602456.0	2180298.9	694927.4	15.2	146.1	6.7	4.9	-	360827093700	023_0937	Low Reflectivity Patch (Possible Slag)	M216	
C87	41.5709615	-81.7259081	439479.7	4602396.8	2180313.3	694773.3	15.2	96.1	10.1	0.5	0.1	360828140200	026_1401	Linear Contact	M112	
C88	41.5705741	-81.7254051	439521.3	4602353.4	2180452.2	694593.3	15.2	76.5	9.5	0.5	0.2	360828095800	025_0958	Linear Contact	-	
C89	41.5702816	-81.7252589	439531.2	4602240.8	2180493.1	694487.1	15.1	56.0	11.2	4.0	-	360828095800	025_0958	Low Reflectivity Patch (Possible Slag)	-	
C90	41.5704508	-81.7251787	439540.0	4602319.5	2180514.5	694549.0	15.1	75.6	13.0	5.1	-	360828095800	025_0958	Low Reflectivity Patch (Possible Slag)	-	
C91	41.5703843	-81.7251217	439544.7	4602312.1	2180530.3	694514.9	15.1	71.5	4.9	2.1	-	360828095800	025_0958	Low Reflectivity Patch (Possible Slag)	-	
C92	41.5701703	-81.7245087	439556.8	4602307.9	2180608.7	694448.4	15.0	75.2	13.4	7.5	-	360828142200	026_1421	Low Reflectivity Patch (Possible Slag)	-	

ID	NADES Geographic			NADES UTM Zone 17			NADES Ohio State Plane North			Sidercan Sonar Contacts					Description	Associated Mag Anomaly ID
	Latitude	Longitude	East (m)	North (m)	East (US survey feet)	North (US survey feet)	Bathymetry (m)	Distance from Proposed Route (m)	Length (m)	Width (m)	Height (m)	Sonar Filename (.url)	Survey Line (L EDT)			
C93	41.5697446	-81.7244667	439558.7	4601260.6	2180711.6	694293.4	14.9	31.5	6.1	2.5	0.6	360826151400	028_1514	Low Reflectivity Patch (Possible Slag)	-	
C94	41.5695610	-81.7244511	439599.5	4601240.3	2180715.4	694261.5	14.9	18.1	6.2	2.8	-	360826151400	028_1514	Low Reflectivity Patch (Possible Slag)	-	
C95	41.5680934	-81.7244120	439601.9	4602077.3	2180731.9	693691.9	15.1	123.0	1.5	1.4	0.6	360827160200	033_1602	Point Source (Probable Boulder)	-	
C96	41.5679608	-81.7243562	439606.1	4602063.5	2180747.0	693647.0	15.1	132.9	5.4	0.5	0.1	360827160200	033_1602	Linear Contact	-	
C97	41.5679357	-81.7242984	439611.1	4602059.1	2180763.5	693634.5	15.1	133.8	4.9	0.5	0.2	360830113600	032_1136	Linear Contact	-	
C98	41.5679795	-81.7240165	439633.9	4602064.3	2180835.0	693615.1	15.1	119.1	2.2	0.4	0.1	360827160200	033_1602	Linear Contact	-	
C99	41.5691417	-81.7239599	439639.6	4601193.4	2180849.5	694074.9	14.9	3.3	6.6	3.9	-	360831082100	029_0818	Linear Contact	-	
C100	41.5691421	-81.7270113	439386.0	4601193.5	2180017.3	694067.7	15.1	125.3	3.5	0.9	0.4	360831082100	029_0818	Linear Contact	-	
C101	41.5679510	-81.7237505	439656.5	4602032.1	2180914.2	693546.9	15.0	135.6	2.5	0.4	-	360830113600	032_1136	Linear Contact	-	
C102	41.5694327	-81.7237330	439659.6	4602225.5	2180913.4	694181.5	14.9	34.6	2.9	3.5	0.3	360826151400	028_1514	Low Reflectivity Patch (Possible Slag)	M155	
C103	41.5679406	-81.7236402	439660.0	4602059.8	2180948.8	693638.1	15.0	106.9	4.2	0.3	-	360830113600	032_1136	Linear Contact	-	
C104	41.5691801	-81.7235985	439670.6	4601197.4	2180951.0	694080.8	14.9	15.4	4.9	3.2	-	360826151400	028_1514	Low Reflectivity Patch (Possible Slag)	-	
C105	41.5692913	-81.7235862	439671.7	4602209.7	2180954.0	694130.3	14.9	26.7	2.8	0.9	0.7	360826151400	028_1514	Point Source (Probable Boulder)	-	
C106	41.5692138	-81.7214697	439678.9	4602200.8	2180977.9	694101.6	14.9	32.5	1.8	1.0	0.5	360826151400	028_1514	Point Source (Probable Boulder)	-	
C107	41.5691607	-81.7234616	439682.0	4601158.1	2180988.5	694083.1	14.9	15.0	3.3	2.2	0.3	360830113600	028_1514	Low Reflectivity Patch (Possible Slag)	-	
C108	41.5688738	-81.7233361	439692.2	4601153.0	2181023.8	693978.1	15.0	4.1	4.0	0.5	0.1	360831082100	029_0818	Linear Contact	-	
C109	41.5694729	-81.7232421	439700.6	4602229.6	2181047.6	694197.4	14.9	38.2	2.1	1.0	0.2	360826095800	025_0958	Point Source (Probable Boulder)	-	
C110	41.5684564	-81.7231088	439710.7	4602116.7	2181087.3	693827.3	15.0	35.4	3.8	0.7	0.1	360831031800	030_1037	Linear Contact	-	
C111	41.5689413	-81.7231011	439711.8	4601170.5	2181087.9	694004.1	15.0	12.1	2.3	0.4	0.3	360830113600	028_1514	Linear Contact	-	
C112	41.5675586	-81.7224835	439761.0	4602016.6	2181261.4	693501.7	14.8	97.6	4.6	3.0	-	360830113600	032_1136	Low Reflectivity Patch (Possible Slag)	-	
C113	41.5686835	-81.7224107	439769.2	4602141.4	2181277.6	693911.8	15.0	14.8	1.7	1.7	-	360826151400	028_1534	Low Reflectivity Patch (Possible Slag)	-	
C114	41.5687263	-81.7223635	439773.2	4601146.1	2181190.7	693927.5	15.0	20.9	3.8	1.1	-	360826151400	028_1534	Low Reflectivity Patch (Possible Slag)	-	
C115	41.5681043	-81.7222909	439778.6	4602077.0	2181123.3	693701.0	14.8	36.8	2.8	0.7	1.0	360831082100	029_0818	Point Source (Probable Boulder)	-	
C116	41.5685281	-81.7222826	439779.7	4601124.1	2181133.2	693855.4	14.9	4.8	4.6	1.9	-	360826151400	028_1534	Low Reflectivity Patch (Possible Slag)	-	
C117	41.5687008	-81.7222544	439782.2	4602143.2	2181320.3	693918.4	14.9	22.7	7.4	3.5	0.2	360826151400	028_1534	Low Reflectivity Patch (Possible Slag)	-	
C118	41.5687772	-81.7222051	439785.9	4602096.2	2181335.2	693794.2	14.8	16.5	3.6	1.5	0.3	360826151400	028_1534	Low Reflectivity Patch (Possible Slag)	-	
C119	41.5683570	-81.7221252	439792.7	4601105.0	2181156.8	693791.5	14.9	5.6	9.1	3.4	-	360826151400	028_1534	Low Reflectivity Patch (Possible Slag)	-	
C120	41.5682688	-81.7220727	439797.0	4602095.1	2181371.5	693761.5	14.8	12.0	4.1	0.6	0.2	360826151400	028_1534	Linear Contact	-	
C121	41.5689328	-81.7220719	439797.4	4601135.5	2181370.5	693894.0	14.9	23.4	4.0	2.5	-	360826151400	028_1534	Low Reflectivity Patch (Possible Slag)	M156	
C122	41.5696807	-81.7219585	439807.8	4602251.8	2181368.1	694276.2	14.9	129.9	12.2	30.8	-	360830113600	032_1136	Low Reflectivity Patch (Possible Slag)	-	
C123	41.5683659	-81.7219348	439808.5	4601105.8	2181408.9	693797.2	14.8	3.0	3.2	3.3	-	360826151400	028_1534	Low Reflectivity Patch (Possible Slag)	-	
C125	41.5684611	-81.7217073	439827.6	4602116.2	2181470.8	693832.4	14.8	21.3	1.2	1.0	1.0	360826151400	028_1534	Point Source (Probable Boulder)	M211	
C126	41.5664987	-81.7215501	439838.9	4601898.2	2181520.2	693117.8	-	163.3	2.8	1.2	1.1	360827160200	033_1622	Rectangular Contact	-	
C127	41.5688773	-81.7215392	439841.6	4601117.9	2181536.8	693838.7	14.8	29.7	1.5	1.5	0.5	360826151400	028_1534	Point Source (Probable Boulder)	-	
C128	41.5679129	-81.7215161	439841.3	4602044.1	2181519.8	693596.7	14.7	34.9	1.6	1.0	0.5	360831082100	029_0818	Point Source (Probable Boulder)	-	
C129	41.5682537	-81.7212608	439864.6	4602092.9	2181593.7	693758.0	14.8	19.1	1.3	0.4	0.5	360826151400	028_1534	Point Source (Probable Boulder)	M157	
C130	41.5677109	-81.7207627	439905.7	4602036.7	2181731.6	693576.0	14.8	9.8	3.7	0.5	0.1	360831082100	029_0818	Linear Contact	-	
C131	41.5661169	-81.7203661	439951.9	4601854.9	2181900.2	693262.1	14.6	144.9	4.4	2.8	-	360830113600	032_1136	Low Reflectivity Patch (Possible Slag)	-	
C132	41.5659769	-81.7201452	439955.5	4601859.3	2181906.4	693931.1	14.6	157.7	8.2	5.7	-	360830113600	032_1136	Low Reflectivity Patch (Possible Slag)	-	
C133	41.5686979	-81.7201278	439959.5	4602141.4	2181902.3	693922.6	14.8	107.8	2.4	1.2	1.0	360830113600	032_1136	Rectangular Contact	-	
C134	41.5676314	-81.7200550	439964.5	4602033.0	2181925.6	693534.2	14.8	7.0	2.0	0.6	0.5	360826151400	028_1534	Point Source (Probable Boulder)	-	
C135	41.5679087	-81.7197246	439992.2	4602030.2	2182015.8	693559.5	14.9	26.8	3.7	2.1	-	360826151400	028_1534	Low Reflectivity Patch (Possible Slag)	-	
C136	41.5675313	-81.7196271	440000.2	4602071.5	2182043.1	693488.7	14.8	14.4	2.1	1.1	0.6	360826151400	028_1534	Point Source (Probable Boulder)	-	
C137	41.5667830	-81.7196209	440000.0	4601928.5	2182047.2	693226.1	14.6	36.2	3.7	0.9	-	360831082100	029_0818	Linear Contact	M192	
C138	41.5676191	-81.7195825	440004.0	4602011.3	2182055.0	693510.8	14.8	24.7	6.3	4.5	-	360826151400	028_1534	Low Reflectivity Patch (Possible Slag)	M158	
C139	41.5674205	-81.7195334	440007.9	4601999.2	2182069.1	693458.6	14.8	7.4	2.5	1.7	-	360831082100	029_0818	Low Reflectivity Patch (Possible Slag)	-	

ID	NAD83 Geographic			NAD83 UTM Zone 17			NAD83 Ohio State Plane North			Bathymetry (m)	Distance from Proposed Route (m)	Length (m)	Width (m)	Height (m)	Sonar Filename (.url)	Survey Line (L_EDT)	Description	Associated Mag Anomaly ID
	Latitude	Longitude	East (m)	North (m)	East (US survey feet)	North (US survey feet)	East (US survey feet)	North (US survey feet)										
C140	41.5689558	-81.7194864	440013.2	4601165.6	2182076.9	694018.2	14.8	158.7	3.6	0.5	160826104600	024_1046	Linear Contact	-				
C141	41.5688873	-81.7193049	440026.4	4601939.8	2182133.3	694018.2	14.7	35.4	2.6	0.4	160826104600	028_1534	Linear Contact	-				
C142	41.5684296	-81.7191049	440044.5	460110.9	2182183.0	693827.3	14.9	122.8	3.5	0.4	160826104600	024_1046	Linear Contact	-				
C143	41.5673780	-81.7189203	440059.0	460598.0	2182237.0	693444.6	14.8	27.8	3.4	0.6	160826104600	028_1534	Linear Contact	-				
C144	41.5667951	-81.7183361	440106.5	460184.9	2182401.1	692971.7	14.8	75.4	4.0	0.4	160831105800	030_1057	Linear Contact	-				
C145	41.5665241	-81.7182043	440112.9	4601898.8	2182419.3	693133.5	14.8	28.9	3.0	0.3	160831105800	029_0818	Linear Contact	-				
C146	41.5665197	-81.7181509	440122.3	4601898.2	2182450.3	693133.5	14.8	34.8	1.0	0.8	160831105800	029_0818	Linear Contact (Probable Boulder)	-				
C147	41.5643673	-81.7171889	440200.3	4601658.6	2182720.8	692351.9	-	195.6	5.7	0.3	160827162200	033_1622	Linear Contact	-				
C148	41.5665584	-81.7147141	440408.7	4601877.9	2183191.3	693083.4	14.5	97.5	5.7	0.5	160826102600	026_1421	Linear Contact	-				
C149	41.5663363	-81.7131913	440470.0	4601874.9	2183608.8	693077.4	14.4	127.2	6.8	0.2	160826102600	024_1026	Linear Contact	-				
C150	41.5642634	-81.7135349	440505.1	4601644.4	2183720.8	693322.6	14.2	59.1	4.0	0.9	160831082100	029_0818	Linear Contact (Probable Boulder)	-				
C151	41.5654100	-81.7132571	440529.3	4601771.6	2183795.1	692741.5	14.3	63.7	2.9	0.6	160826105800	025_0958	Linear Contact	-				
C152	41.5654492	-81.7130950	440528.8	4601775.2	2184119.2	692758.7	14.4	115.4	10.6	3.1	160826105800	025_0958	Low Reflectivity Patch (Possible Slag)	-				
C153	41.5652728	-81.7130208	440632.3	4601755.5	2184132.0	692694.4	14.4	100.0	1.6	1.5	0.9	160826142200	026_1421	Linear Contact (Probable Boulder)	-			
C154	41.5650956	-81.7129448	440633.6	4601755.5	2184150.3	692630.1	14.4	85.4	1.4	0.8	0.7	160826142200	026_1421	Linear Contact (Probable Boulder)	-			
C155	41.5622040	-81.7113199	440687.9	4601414.4	2184333.8	691578.1	-	170.5	2.4	0.6	0.2	160827162200	033_1622	Linear Contact	-			
C156	41.5636074	-81.7112257	440697.1	4601570.1	2184354.9	692089.7	14.5	30.1	3.8	0.3	160831082100	029_0818	Linear Contact	-				
C157	41.5645572	-81.7111407	440705.0	4601675.5	2184375.0	692436.0	14.5	65.7	8.0	0.5	0.1	160830140500	027_1405	Linear Contact	-			
C158	41.5621913	-81.7108161	440729.9	4601412.6	2184471.7	691574.7	14.4	151.5	17.8	0.4	0.3	160830111600	032_1116	Linear Contact	-			
C159	41.5633610	-81.7104062	440765.2	4601542.2	2184580.0	692001.9	14.4	21.2	4.9	0.5	0.1	160826153400	028_1534	Linear Contact	-			
C160	41.5632394	-81.7102922	440774.6	4601528.6	2184611.6	691957.9	14.4	28.5	5.2	0.4	0.1	160826153400	028_1534	Linear Contact	-			
C161	41.5632590	-81.7101770	440784.2	4601525.2	2184643.2	691947.1	14.4	26.8	2.9	0.4	0.4	160826153400	028_1534	Linear Contact	-			
C162	41.5641429	-81.7101760	440785.1	4601618.8	2184640.4	692287.4	14.5	64.1	8.3	4.0	0.3	160826105800	025_0958	Low Reflectivity Patch (Possible Slag)	-			
C163	41.5639117	-81.7101548	440786.4	4601569.8	2184648.0	692093.9	14.4	13.3	1.2	1.1	0.6	160826153400	028_1534	Linear Contact (Probable Boulder)	-			
C164	41.5643838	-81.7101338	440791.3	4601655.3	2184659.4	692374.6	14.5	90.3	12.4	6.4	-	160826102600	024_1026	Low Reflectivity Patch (Possible Slag)	-			
C165	41.5645763	-81.7100824	440793.0	4601676.9	2184664.6	692445.6	14.5	110.1	4.8	2.8	-	160826102600	024_1026	Low Reflectivity Patch (Possible Slag)	-			
C166	41.5647895	-81.7099927	440801.0	4601700.5	2184688.4	692523.5	14.5	134.4	10.4	4.3	-	160826102600	024_1026	Low Reflectivity Patch (Possible Slag)	-			
C167	41.5620329	-81.7098601	440809.5	4601394.4	2184733.8	691519.4	14.4	126.5	1.8	1.0	0.6	160827162200	033_1622	Linear Contact	-			
C168	41.5630947	-81.7096064	440832.1	4601560.7	2184798.1	692009.1	14.4	93.7	2.7	0.6	0.1	160826153400	028_1534	Linear Contact	M144			
C169	41.5630841	-81.7095832	440831.9	4601530.7	2184866.3	691903.6	14.4	6.3	5.0	0.5	0.6	160826153400	028_1534	Linear Contact	-			
C170	41.5625297	-81.7095747	440875.4	4601449.0	2184947.1	691702.4	14.4	48.6	7.2	0.4	-	160831082100	029_0818	Linear Contact	-			
C171	41.5617026	-81.7095049	440876.3	4601357.1	2184955.2	691401.0	14.3	128.3	7.2	1.0	-	160827162200	033_1622	Linear Contact	-			
C172	41.5627621	-81.7087721	440900.9	4601474.6	2185029.1	691787.8	14.4	13.9	7.3	0.6	0.2	160831082100	029_0818	Linear Contact	-			
C173	41.5628261	-81.7082814	440943.3	4601481.3	2185163.2	691812.3	14.4	12.1	7.7	0.6	0.1	160826153400	028_1534	Linear Contact	-			
C174	41.5634166	-81.7078989	440974.3	4601546.6	2185265.9	692028.8	14.4	84.9	4.0	0.6	-	160826153400	028_1534	Linear Contact	-			
C175	41.5629433	-81.7065854	441081.6	4601271.2	2185633.6	691330.5	14.1	103.0	4.4	0.5	0.2	160830111600	032_1116	Linear Contact	-			
C176	41.5607966	-81.7061521	441117.6	4601254.6	2185752.6	691078.1	14.1	99.9	1.1	0.8	0.5	160830111600	032_1116	Linear Contact	-			
C177	41.5610431	-81.7058256	441145.0	4601281.7	2185841.2	691168.8	14.0	62.8	1.8	0.4	0.1	160831082100	029_0818	Linear Contact	-			
C178	41.5610523	-81.7057367	441152.6	4601282.7	2185866.0	691172.4	14.0	58.3	4.0	0.5	-	160831082100	029_0818	Linear Contact	-			
C179	41.5611467	-81.7055942	441164.4	4601293.1	2185904.1	69207.1	14.0	43.4	2.3	0.7	0.8	160831082100	029_0818	Linear Contact (Probable Boulder)	-			
C180	41.5605036	-81.7047237	441256.4	4601221.1	2186144.5	690975.0	14.0	71.0	1.4	0.9	0.6	160831105800	030_1057	Linear Contact (Probable Boulder)	-			
C181	41.5604539	-81.7046736	441240.7	4601215.5	2186158.9	690957.0	13.9	73.8	2.2	1.1	0.4	160831082100	029_0818	Linear Contact (Probable Boulder)	-			
C182	41.5600491	-81.7045812	441247.9	4601170.5	2186185.0	690809.7	13.9	109.5	1.1	0.7	0.5	160827162200	033_1622	Linear Contact (Probable Boulder)	-			
C183	41.5597743	-81.7044097	441261.9	4601139.9	2186232.9	690710.0	13.9	129.4	0.9	0.6	0.5	160827162200	033_1622	Linear Contact (Probable Boulder)	-			
C184	41.5608965	-81.7036724	441324.4	4601264.0	2186430.9	691120.7	13.9	9.4	1.0	0.6	0.6	160826153400	028_1534	Linear Contact (Probable Boulder)	-			
C185	41.5613126	-81.7036052	441330.9	4601365.6	2186463.2	691434.7	13.9	101.3	3.0	0.7	0.8	160826102600	024_1026	Linear Contact	-			

ID	NAD83 Geographic			NAD83 UTM Zone 17			NAD83 Ohio State Plane North			Bathymetry (m)	Distance from Proposed Route (m)	Length (m)	Width (m)	Height (m)	Sonar Filename (.url)	Survey Line (L EDT)	Description	Associated Mag Anomaly ID
	Latitude	Longitude	East (m)	North (m)	East (US survey feet)	North (US survey feet)												
C186	41.5617898	-81.7085322	441336.9	4601283.0	2186466.3	691446.4	13.9	101.9	1.8	0.8	0.5	360828142700	026_1421	Point Source (Probable Boulder)	-			
C187	41.5614265	-81.7033929	441348.2	4601322.6	2186505.6	691314.5	13.9	72.2	2.2	0.7	0.5	360828093800	025_0938	Point Source (Probable Boulder)	-			
C188	41.5614262	-81.7031472	441354.6	4601332.4	2186526.6	691314.3	13.8	75.2	1.6	0.9	0.6	360828093800	025_0938	Point Source (Probable Boulder)	-			
C189	41.5592603	-81.7031466	441353.8	4601082.7	2186534.2	690527.6	13.6	134.8	1.1	0.7	0.6	360827162200	013_1622	Point Source (Probable Boulder)	-			
C190	41.5608771	-81.7006744	441574.4	4601259.8	2187251.4	691123.2	13.3	127.9	2.3	0.4	0.2	360826102600	024_1026	Linear Contact	-			
C191	41.5683372	-81.7003013	441601.2	4600977.6	2187162.0	690196.7	13.2	104.2	4.0	0.5	-	360827162200	013_1622	Linear Contact	-			
C192	41.5590858	-81.6991500	441699.9	4601059.9	2187074.6	690472.3	13.2	14.9	0.7	0.4	0.6	360826153400	028_1534	Point Source (Probable Boulder)	-			
C193	41.5590139	-81.6989471	441716.8	4601051.8	2187770.3	690446.6	13.3	16.0	1.2	0.7	0.6	360826153400	028_1534	Point Source (Probable Boulder)	-			
C194	41.5591477	-81.6983757	441764.5	4601066.2	2187886.3	690496.8	13.4	52.0	1.4	0.9	0.6	360830140500	027_1405	Point Source (Probable Boulder)	-			
C195	41.5582608	-81.6979033	441803.1	4600967.4	2188018.5	690174.7	13.5	15.4	1.9	0.7	0.5	360826153400	028_1534	Point Source (Probable Boulder)	-			
C196	41.5563200	-81.6971195	441866.7	4600751.5	2188239.5	689469.7	-	172.7	2.5	0.7	0.2	360827162200	013_1622	Linear Contact	-			
C197	41.5645798	-81.6964073	441919.6	4600796.3	2188412.1	689521.5	13.2	131.9	2.1	1.4	0.6	360827162200	013_1622	Point Source (Probable Boulder)	M143			
C198	41.5583034	-81.6962844	441938.2	4600971.1	2188461.4	690194.5	13.5	93.9	1.0	0.9	0.6	360830140500	027_1405	Point Source (Probable Boulder)	-			
C199	41.5579418	-81.6960717	441955.6	4600930.8	2188520.8	690063.2	13.4	27.2	1.2	0.6	0.6	360830140500	027_1405	Point Source (Probable Boulder)	-			
C200	41.5586616	-81.6959283	441968.1	4601010.6	2188537.4	690325.9	13.5	103.0	3.6	0.7	0.7	360830140500	027_1405	Point Source (Probable Boulder)	-			
C201	41.5584658	-81.6958023	441978.7	4601011.0	2188592.1	690327.7	13.5	108.5	3.4	0.6	0.4	360826100600	024_1006	Linear Contact	-			
C202	41.5568203	-81.6949755	442046.0	4600805.6	2188824.6	689657.4	13.1	37.9	7.2	1.7	0.2	360831105800	030_1057	Low Reflectivity Patch (Possible Slag)	-			
C203	41.5570760	-81.6947107	442068.2	4600829.3	2188896.4	689736.6	13.2	6.2	4.6	0.4	-	360826155400	028_1554	Linear Contact	-			
C204	41.5558011	-81.6946811	442080.6	4600692.2	2188908.8	689286.8	13.2	125.2	1.0	0.7	0.3	360827162200	013_1622	Point Source (Probable Boulder)	-			
C205	41.5645701	-81.6945018	442085.0	4600741.9	2188956.2	689450.8	13.2	74.3	6.6	0.4	0.2	360831105800	030_1057	Linear Contact	-			
C206	41.5576692	-81.6942614	442248.0	4600898.2	2189482.4	689972.8	13.3	141.7	4.1	0.4	0.1	360826100600	024_1006	Linear Contact	-			
C207	41.5553327	-81.6931853	442277.5	4600660.8	2189692.6	689195.7	13.1	50.9	1.1	0.6	0.5	360831075800	029_0758	Point Source (Probable Boulder)	-			
C208	41.5571151	-81.6931246	442284.0	4600836.4	2189603.9	689772.0	13.3	105.3	3.9	0.3	-	360826100600	024_1006	Linear Contact	-			
C209	41.5565012	-81.6919940	442294.3	4600758.1	2189641.7	689548.7	13.2	50.9	4.6	0.4	-	360828144200	026_1441	Linear Contact	-			
C210	41.5569952	-81.6919808	442295.9	4600823.0	2189643.6	689728.7	13.2	96.5	4.1	0.5	-	360826100600	024_1006	Linear Contact	-			
C211	41.5572323	-81.6919185	442301.3	4600849.3	2189659.9	689815.2	13.2	125.0	3.2	0.2	-	360826100600	024_1006	Linear Contact	-			
C212	41.5562346	-81.6919059	442301.4	4600738.5	2189666.7	689451.7	13.2	26.5	4.1	0.5	0.2	360826155400	028_1554	Linear Contact	-			
C213	41.5570168	-81.6918770	442304.5	4600825.3	2189672.0	689736.6	13.2	105.7	2.6	0.5	0.3	360826100600	024_1006	Linear Contact	-			
C214	41.5572423	-81.6917929	442315.1	4600850.3	2189706.2	689819.3	13.2	132.7	4.1	0.3	0.1	360826100600	024_1006	Linear Contact	-			
C215	41.5555306	-81.6899598	442464.8	4600659.0	2190007.2	689200.2	12.9	39.0	2.3	1.8	0.3	360826155400	028_1554	Linear Contact	-			
C216	41.5555181	-81.6898221	442474.6	4600657.5	2190239.4	689196.0	12.9	42.5	13.5	9.4	-	360826155400	028_1554	Linear Contact	-			
C217	41.5552677	-81.6897696	442478.7	4600629.7	2190254.6	689104.9	12.9	20.2	14.5	7.4	0.7	360826155400	028_1554	Low Reflectivity Patch (Possible Slag)	-			
C218	41.5526196	-81.6895995	442491.5	4600448.8	2190306.7	688512.1	12.8	131.3	1.1	0.5	0.5	360827164200	013_1642	Point Source (Probable Boulder)	-			
C219	41.5562301	-81.6895567	442497.3	4600736.4	2190309.6	689456.1	12.9	122.4	7.3	0.3	0.1	360827085700	023_0857	Linear Contact	-			
C220	41.5547942	-81.6894021	442536.9	4600512.3	2190451.2	689788.4	12.8	36.3	2.6	0.4	-	360831075800	029_0758	Linear Contact	-			
C221	41.5564882	-81.6887626	442563.7	4600753.4	2190526.4	689515.7	-	169.7	4.5	0.4	0.3	360827085700	023_0857	Linear Contact	-			
C222	41.5532781	-81.6883019	442599.4	4600407.8	2190649.3	689383.7	-	134.4	1.8	0.7	0.6	360827164200	013_1642	Point Source (Probable Boulder)	-			
C223	41.5526391	-81.6880705	442731.5	4600335.8	2191100.8	688154.9	12.6	114.6	8.9	0.7	0.2	360827164200	013_1642	Linear Contact	-			
C224	41.5541710	-81.6886219	442760.2	4600505.9	2191119.8	688713.3	12.7	40.0	7.4	0.4	0.1	360826155400	028_1554	Linear Contact	-			
C225	41.5534069	-81.6884658	442762.6	4600420.9	2191165.1	688435.3	12.6	28.1	1.1	0.7	0.5	360831118000	030_1117	Point Source (Probable Boulder)	-			
C226	41.5553586	-81.6883724	442762.1	4600637.5	2191184.1	689146.6	12.7	165.6	19.6	0.9	0.2	360827085700	023_0857	Linear Contact	M75			
C227	41.5517972	-81.6885913	442792.4	4600235.2	2191306.2	687628.2	-	170.6	1.8	0.9	0.5	360827164200	013_1642	Point Source (Probable Boulder)	-			
C228	41.5541670	-81.6885933	442797.7	4600505.0	2191308.3	688713.6	12.7	67.3	1.5	1.7	0.6	360828144200	026_1441	Point Source (Probable Boulder)	-			
C229	41.5541536	-81.6885827	442801.9	4600503.2	2191322.2	688708.1	12.7	67.8	1.5	1.5	0.6	360828093800	025_0938	Point Source (Probable Boulder)	-			
C230	41.5527375	-81.6885830	442807.3	4600446.2	2191348.8	688193.1	12.6	66.5	6.0	0.3	-	360831118000	030_1117	Linear Contact	-			
C231	41.5539001	-81.6887192	442815.3	4600475.2	2191367.8	688616.9	12.7	48.9	2.1	0.8	0.7	360826155400	028_1554	Point Source (Probable Boulder)	-			

ID	NADES Geographic			NADES UTM Zone 17			NADES Ohio State Plane North			Siderscan Sonar Contacts					Description	Survey Line (L EDT)	Associated Mag Anomaly ID
	Latitude	Longitude	East (m)	North (m)	East (US survey feet)	North (US survey feet)	Bathymetry (m)	Distance from Proposed Route (m)	Length (m)	Width (m)	Height (m)	Sonar Filename (.url)					
C232	41.55388888	-81.6856907	442817.7	4600473.9	2191375.6	688612.9	12.7	50.0	1.5	0.8	0.6	360830142500	027_1425	Point Source (Probable Boulder)	-		
C233	41.5540599	-81.6855265	442817.6	4600492.8	2191420.0	688675.6	12.7	73.2	3.6	0.2	0.1	360828093800	025_0938	Linear Contact	-		
C234	41.5540713	-81.6854649	442836.6	4600494.0	2191436.6	688679.9	12.7	76.8	2.4	0.5	0.1	360828093800	025_0938	Linear Contact	-		
C235	41.55409007	-81.6850773	442868.0	4600586.7	2191534.6	688696.0	-	173.0	4.3	0.5	0.2	360827085700	023_0857	Linear Contact	-		
C236	41.5537789	-81.6848326	442889.1	4600465.1	2191610.9	688575.0	12.6	73.8	2.6	0.5	0.1	360828093800	025_0938	Linear Contact	-		
C237	41.5537787	-81.6846538	442900.3	4600416.6	2191660.6	688479.6	12.6	41.9	2.9	0.5	0.1	360826155400	028_1554	Linear Contact	-		
C238	41.5532757	-81.6845677	442910.8	4600405.1	2191668.3	688392.3	12.5	35.4	4.5	0.5	0.2	360826155400	028_1554	Linear Contact	-		
C239	41.5539354	-81.6845295	442914.3	4600478.3	2191693.1	688632.8	12.6	101.2	2.3	0.6	0.1	360826100600	024_1006	Linear Contact	-		
C240	41.5545356	-81.6843472	442930.3	4600448.8	2191741.1	688522.0	-	166.9	2.5	0.5	0.1	360827085700	023_0857	Linear Contact	-		
C241	41.5540052	-81.6843075	442933.1	4600485.9	2191753.8	688658.8	12.6	156.9	4.8	0.4	-	360827085700	023_0857	Linear Contact	-		
C242	41.5539578	-81.6843799	442942.2	4600480.6	2191784.0	688641.8	12.6	136.7	2.3	0.3	0.0	360828093800	025_0938	Linear Contact	-		
C243	41.5508531	-81.6818111	442971.7	4600135.6	2191900.4	687511.6	12.4	169.8	13.2	11.9	1.3	360827164200	033_1642	Circular Contact (Probable Dridge Spoil)	M102		
C244	41.5539348	-81.6833425	443013.5	4600477.1	2192038.2	688634.5	12.5	39.4	2.4	0.9	0.5	360831075800	029_0758	Point Source (Probable Boulder)	-		
C245	41.5564578	-81.6964873	441919.6	4600766.3	2188412.1	689621.5	13.2	133.9	16.7	-	-	360827164200	033_1642	Circular Contact (Probable Dridge Spoil)	-		
C246	41.5531868	-81.6815536	442999.3	4600395.7	2191962.9	688366.2	12.4	68.3	2.4	0.5	0.3	360828144200	026_1441	Linear Contact	-		
C247	41.5538321	-81.6834705	443002.6	4600443.9	2191984.2	688525.0	12.5	114.2	4.5	0.8	0.2	360828093800	025_0938	Linear Contact	-		
C248	41.5539348	-81.6833425	443013.5	4600477.1	2192038.2	688634.5	12.5	147.5	3.0	0.5	0.3	360831075800	029_0758	Circular Contact (Probable Dridge Spoil)	M12		
C249	41.5531868	-81.6815536	442999.3	4600395.7	2191962.9	688366.2	12.4	147.3	5.6	0.5	0.5	360828144200	026_1441	Linear Contact	-		
C250	41.5524949	-81.6832299	443021.6	4600317.5	2192053.9	688111.3	12.4	13.2	6.0	0.2	-	360830142500	027_1425	Linear Contact	-		
C251	41.5538304	-81.6812028	443031.4	4600465.7	2192084.1	688598.2	12.4	147.3	3.0	0.5	0.3	360831075800	029_0758	Circular Contact (Probable Dridge Spoil)	M12		
C252	41.5514445	-81.6829157	443046.9	4600200.7	2192143.5	687729.4	12.2	76.3	5.0	1.5	0.5	360831075800	029_0758	Circular Contact (Probable Dridge Spoil)	-		
C253	41.5514725	-81.6828723	443050.6	4600203.8	2192155.3	687739.7	12.2	71.8	4.6	5.1	0.5	360831075800	029_0758	Circular Contact (Probable Dridge Spoil)	-		
C254	41.5504814	-81.6827315	443061.4	4600093.7	2192197.2	687378.9	12.5	174.8	14.5	15.8	1.0	360827164200	033_1642	Circular Contact (Probable Dridge Spoil)	-		
C255	41.5529157	-81.6825446	443077.2	4600159.6	2192247.5	687464.8	12.4	132.3	1.8	0.9	0.5	360827085700	023_0857	Point Source (Probable Boulder)	-		
C256	41.5520508	-81.6823615	443092.8	4600157.6	2192296.5	687500.6	12.3	91.5	17.1	14.3	1.1	360831118000	030_1117	Circular Contact (Probable Dridge Spoil)	M140		
C257	41.5511747	-81.6823186	443096.5	4600170.4	2192307.8	687632.0	12.4	76.6	14.0	13.7	0.8	360831118000	030_1117	Circular Contact (Probable Dridge Spoil)	M13		
C258	41.5524078	-81.6822863	443101.9	4600307.2	2192317.9	688082.0	12.4	43.5	1.5	1.5	0.2	360826155400	028_1554	Circular Contact (Probable Dridge Spoil)	-		
C259	41.5501032	-81.6818880	443131.5	4600091.1	2192429.4	687483.3	-	164.9	3.8	1.6	0.3	360827164200	033_1642	Linear Contact	-		
C260	41.5521021	-81.6818519	443136.2	4600273.0	2192432.4	687971.7	12.5	30.4	1.9	0.7	0.6	360826155400	028_1554	Point Source (Probable Boulder)	-		
C261	41.5535624	-81.6814695	443169.4	4600434.9	2192531.1	688504.7	-	187.8	8.5	0.7	0.0	360827085700	023_0857	Linear Contact	-		
C262	41.5499504	-81.6812669	443183.1	4600333.7	2192591.9	687189.2	12.4	155.4	7.7	0.4	0.1	360827164200	033_1642	Linear Contact	M103		
C263	41.5516304	-81.6809026	443207.5	4600220.1	2192669.2	687802.0	12.5	19.0	1.4	0.7	0.8	360826155400	028_1554	Point Source (Probable Boulder)	-		
C264	41.5516517	-81.6805545	443244.0	4600222.2	2192789.0	687810.9	12.6	36.7	3.7	0.5	0.1	360826155400	028_1554	Linear Contact	-		
C265	41.5524868	-81.6799907	443291.0	4600314.5	2192938.0	687116.6	12.5	142.3	3.3	0.3	0.4	360826100600	024_1006	Linear Contact	-		
C266	41.5493483	-81.6798299	443302.5	4599970.4	2192995.1	686988.1	12.4	152.3	2.0	1.5	-	360827164200	033_1642	Rectangular Contact	-		
C267	41.5509126	-81.6796207	443321.3	4600141.7	2193047.1	687951.3	12.4	6.3	1.6	0.7	0.8	360826155400	028_1554	Point Source (Probable Boulder)	-		
C268	41.5510782	-81.6795035	443331.7	4600224.4	2193076.6	687823.3	12.4	83.5	3.2	0.3	0.1	36083144200	026_1441	Linear Contact	-		
C269	41.5510860	-81.6794736	443337.0	4600280.8	2193093.9	688008.5	12.5	135.8	1.2	1.2	0.7	360826100600	024_1006	Point Source (Probable Boulder)	-		
C270	41.5510860	-81.6794736	443337.0	4600155.3	2193194.9	687600.1	12.6	35.1	1.7	0.6	0.6	360828093800	025_0938	Point Source (Probable Boulder)	-		
C271	41.5515349	-81.6782774	443433.8	4600207.7	2193412.7	687774.2	12.5	119.9	1.7	0.6	0.6	360828093800	025_0938	Point Source (Probable Boulder)	-		
C272	41.5510319	-81.6781159	443446.9	4600154.2	2193458.5	687599.4	12.6	76.6	12.2	0.9	0.2	360828144200	026_1441	Linear Contact	-		
C273	41.5500291	-81.6779915	443456.4	4600040.3	2193496.1	687226.3	12.4	16.1	4.1	0.7	0.6	360831075800	029_0758	Linear Contact	-		
C274	41.5511723	-81.6779343	443462.1	4600167.2	2193507.8	687643.0	12.6	97.4	1.0	0.7	0.6	360830100600	024_1006	Point Source (Probable Boulder)	-		
C275	41.5514635	-81.6776764	443489.4	4600243.8	2193589.7	687895.6	-	177.0	1.3	1.0	0.7	360827085700	023_0857	Point Source (Probable Boulder)	-		
C276	41.5519197	-81.6775816	443492.2	4600250.0	2193601.8	687916.2	-	184.3	1.4	1.2	0.6	360827085700	023_0857	Point Source (Probable Boulder)	-		

ID	NAD83 Geographic			NAD83 UTM Zone 17			NAD83 Ohio State Plane North			Bathymetry (m)	Distance from Proposed Route (m)	Length (m)	Width (m)	Height (m)	Sonar Filename (.url)	Survey Line (L_EDT)	Description	Associated Mag Anomaly ID
	Latitude	Longitude	East (m)	North (m)	East (US survey feet)	North (US survey feet)	North (US survey feet)											
C276	41.5507812	-81.6770972	443551.6	4600123.2	2193738.3	687502.6	12.5	95.0	3.3	0.2	0.1	360826100600	024_1006	Linear Contact	-			
C279	41.5510166	-81.6769191	443546.7	4600149.3	2193786.2	687588.9	12.6	123.0	7.4	0.2	-	360826100600	024_1006	Linear Contact	-			
C280	41.5510285	-81.6768459	443552.8	4600150.5	2193806.2	687593.4	12.6	171.1	3.3	0.7	0.5	360826100600	024_1006	Linear Contact	-			
C281	41.5481126	-81.6766111	443560.9	4599817.8	2193801.2	686568.0	11.9	137.4	16.4	15.9	0.8	360827164200	073_1642	Circular Contact (Probable Drudge Spoil)	-			
C282	41.5484896	-81.6763950	443598.6	4599866.4	2193945.5	686669.6	11.8	98.9	13.0	35.1	0.4	360824151600	074_1516	Circular Contact (Probable Drudge Spoil)	-			
C283	41.5484909	-81.6763200	443591.7	4599868.5	2193956.4	686670.1	12.5	107.0	19.6	17.3	1.5	360828091800	025_0918	Circular Contact (Probable Drudge Spoil)	-			
C284	41.5506066	-81.6763271	443596.7	4600103.4	2193949.7	687441.0	12.3	91.3	4.2	0.5	0.2	360830105600	032_1056	Linear Contact	-			
C285	41.5485524	-81.6762871	443597.2	4599875.3	2193967.7	686692.7	12.5	136.0	11.9	15.9	0.6	360827083700	023_0837	Circular Contact (Probable Drudge Spoil)	M14, M19			
C286	41.5508125	-81.6760986	443614.9	4600126.1	2194011.5	687516.6	11.9	70.4	5.7	0.3	-	360824151600	074_1516	Linear Contact	-			
C287	41.5486795	-81.6760747	443615.1	4599869.2	2194025.4	686739.5	11.5	60.5	14.4	16.8	0.7	360824151600	074_1516	Circular Contact (Probable Drudge Spoil)	M165			
C288	41.5487472	-81.6759931	443621.9	4599896.7	2194047.5	686764.4	11.6	48.6	17.3	18.4	1.3	360824151600	074_1516	Circular Contact (Probable Drudge Spoil)	M200			
C289	41.5488684	-81.6758657	443632.6	4599910.1	2194081.9	686808.9	12.0	245.8	14.7	10.8	0.7	360824151600	074_1516	Circular Contact (Probable Drudge Spoil)	-			
C290	41.5463369	-81.6747615	443722.5	4599628.3	2194192.9	685889.4	12.4	155.2	0.9	0.7	0.7	360827083700	023_0837	Circular Contact (Probable Drudge Spoil)	-			
C291	41.5504215	-81.6746781	443731.0	4600081.7	2194401.7	687377.8	11.9	236.3	4.4	0.3	-	360826170200	075_1702	Linear Contact	-			
C292	41.5465075	-81.6744406	443745.3	4599647.0	2194480.2	685952.4	12.1	229.3	13.3	1.1	0.4	360831512300	077_1735	Linear Contact	-			
C293	41.5461014	-81.6737796	443804.7	4599601.5	2194664.1	685806.1	12.4	123.3	1.3	0.8	0.5	360827083700	023_0837	Point Source (Probable Boulder)	-			
C294	41.5497804	-81.6736843	443815.4	4600009.9	2194675.9	687146.8	-	544.0	1.0	0.8	0.6	360824151600	074_1516	Point Source (Probable Boulder)	-			
C295	41.5425973	-81.6735177	443822.7	4599212.3	2194745.2	684510.0	12.2	208.7	1.1	0.6	1.9	360828155601	079_1556	Point Source	-			
C296	41.5462036	-81.6735082	443827.0	4599612.7	2194786.4	685844.0	12.0	224.8	1.8	1.3	0.9	360831703000	081_1703	Point Source (Probable Boulder)	-			
C297	41.5465141	-81.6734721	443912.9	4599546.6	2195022.1	685631.9	12.0	226.7	3.5	0.9	0.2	3608281703000	081_1703	Linear Contact	-			
C298	41.5455854	-81.6724016	443914.5	4599543.4	2195027.8	685621.5	12.2	111.3	3.0	0.6	0.2	360827164200	033_1642	Linear Contact	-			
C299	41.5466707	-81.6722948	443945.7	4599663.7	2195090.2	684017.6	12.2	10.8	3.4	0.3	0.4	360828161500	083_1615	Linear Contact	-			
C300	41.5470349	-81.6719941	443954.6	4599792.8	2195145.2	684442.4	12.2	128.3	1.9	0.8	0.6	360827083700	023_0837	Point Source (Probable Boulder)	-			
C301	41.5490411	-81.6719892	443956.1	4599926.7	2195142.4	685881.9	12.7	59.0	2.9	1.0	0.5	360828161500	083_1615	Linear Contact	-			
C302	41.5469226	-81.6715162	443993.7	4599691.2	2195279.2	686111.2	12.1	66.1	3.9	0.3	0.5	360828164800	084_1648	Linear Contact	-			
C303	41.5466584	-81.6713224	444026.3	4599661.6	2195387.9	685016.0	11.2	533.2	1.8	0.9	0.5	360828152300	076_1720	Point Source (Probable Boulder)	-			
C304	41.5403643	-81.6710955	444021.1	4599062.8	2195417.1	684722.7	11.3	385.6	2.6	4.1	0.9	360828155601	079_1556	Point Source	-			
C305	41.5421899	-81.6707211	444056.0	4599165.3	2195513.2	684388.9	12.1	32.3	3.5	1.9	-	360826155400	028_1554	Linear Contact	-			
C306	41.5473276	-81.6707287	444061.9	4599719.7	2196499.2	686333.7	12.1	25.5	1.1	0.9	0.7	360826155400	028_1554	Point Source (Probable Boulder)	-			
C307	41.5469167	-81.6706619	444065.0	4599680.0	2195513.1	686111.3	-	711.7	1.9	0.6	0.6	360826170200	075_1702	Point Source (Probable Boulder)	-			
C308	41.5331604	-81.6702272	444089.4	4598162.5	2196799.7	681100.2	12.0	23.9	12.7	0.5	0.2	360826155400	028_1554	Linear Contact	-			
C309	41.5467378	-81.6701856	444104.5	4599669.9	2196644.0	686047.3	11.5	435.5	2.5	0.4	0.2	360828163100	080_1631	Linear Contact	-			
C310	41.5408811	-81.6701475	444102.7	4599019.6	2196674.8	683913.5	11.7	164.0	2.7	0.7	0.7	360827164200	033_1642	Linear Contact	-			
C311	41.5405263	-81.6700519	444113.8	4599424.2	2196680.3	685241.9	12.1	71.7	21.8	14.2	-	360830152500	030_1525	Low Reflectivity Patch (Possible Slag)	-			
C312	41.5461150	-81.6699685	444122.1	4599600.6	2196705.6	685021.0	10.6	541.4	2.6	0.3	-	360828152300	077_1715	Linear Contact	-			
C313	41.5380676	-81.6698780	444122.1	4594707.1	2195758.3	68389.1	12.0	85.1	5.0	3.2	-	360828155000	026_1505	Low Reflectivity Patch (Possible Slag)	-			
C314	41.5477103	-81.6698694	444135.1	4599777.6	2196738.2	684022.6	12.1	32.7	10.4	0.4	0.2	360826155400	028_1554	Linear Contact	-			
C315	41.5464878	-81.6697987	444136.8	4599641.8	2195751.4	683957.2	12.1	31.1	4.5	0.7	0.1	360826155400	028_1554	Linear Contact	-			
C316	41.5464516	-81.6697780	444142.5	4599637.8	2195770.3	683944.2	10.3	569.0	3.1	0.3	0.1	360826172000	076_1720	Linear Contact	-			
C317	41.5466635	-81.6697150	444134.9	4599573.3	2195806.0	684450.8	10.6	528.1	33.1	14.8	-	360828152300	078_1523	Low Reflectivity Patch (Possible Slag)	-			
C318	41.5380069	-81.6696852	444138.8	4598700.2	2195811.3	683867.5	10.0	654.7	3.0	1.8	-	360826170200	075_1702	Circular Contact	M71			
C319	41.5334407	-81.6695453	444146.5	45981193.2	2195865.4	681204.1	0.7	0.6	0.7	0.6	0.2	360828152300	078_1523	Circular Contact	-			
C320	41.5375060	-81.6695359	444150.8	4598644.5	2195853.9	683685.3	10.5	414.2	10.8	2.1	-	360828163100	080_1631	Linear Contact	-			
C321	41.5400298	-81.6694702	444159.9	4598980.2	2195861.4	683767.3	11.5	413.4	2.8	0.5	0.3	360828163100	080_1631	Linear Contact	M139			
C322	41.5404999	-81.6694588	444159.8	4598976.0	2195864.6	683776.4	11.0	475.0	2.9	0.8	0.3	360831512300	078_1523	Linear Contact	-			
C323	41.5388177	-81.6693340	444168.7	4598793.8	2195904.6	683163.8	12.0	17.0	4.9	0.8	0.1	360830152500	030_1525	Linear Contact	-			

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	Latitude	Longitude	East (m)	North (m)	East (US survey feet)	North (US survey feet)	East (US survey feet)	North (US survey feet)										
C324	41.5462797	-81.6693122	444177.0	4599618.4	2196884.7	685882.7	9.8	634.5	11.9	3.9	-	360826170200	075_1702	Linear Contact	-			
C325	41.5336581	-81.6693049	444166.7	4599618.2	2196884.7	685882.7	12.0	133.0	1.0	0.8	-	360826170200	075_1702	Circular Contact	-			
C326	41.5479867	-81.6693047	444179.1	4599807.9	2196880.8	68604.7	11.5	108.6	7.6	1.1	0.7	360830150100	092_1501	Point Source (Probable Boulder)	-			
C327	41.5410807	-81.6690645	444193.7	4599108.7	2196968.4	684214.2	11.9	129.0	7.6	1.2	-	360826094600	024_0946	Linear Contact	-			
C328	41.5477951	-81.6690945	444209.2	4599786.2	2196982.8	684315.1	12.0	16.3	3.3	0.9	0.7	360830152500	030_1525	Linear Contact	-			
C329	41.5459050	-81.6689218	444209.2	4599786.2	2196982.8	684315.1	11.9	127.1	9.7	0.3	-	360827081700	023_0837	Linear Contact	-			
C330	41.5477580	-81.6688946	444213.1	4599782.3	2196981.9	68422.4	11.9	137.4	1.5	1.0	0.8	360830145000	095_1450	Point Source (Probable Boulder)	-			
C331	41.5482128	-81.6761111	443569.9	4599837.8	2193800.2	686568.0	12.3	100.7	5.6	1.8	-	360827164200	033_1642	Linear Contact	-			
C332	41.5343228	-81.6683087	444250.4	4598290.3	2196100.9	681528.7	9.9	341.8	3.2	0.3	0.1	360825160900	070_1609	Linear Contact	-			
C333	41.5397880	-81.6681239	444270.5	4598896.9	2196232.5	683520.5	11.4	344.3	3.4	1.5	0.8	360828154100	082_1541	Point Source (Probable Boulder)	-			
C334	41.5391443	-81.6680857	444273.2	4598815.5	2196245.2	683286.0	11.1	365.8	1.6	1.2	0.6	360838154100	082_1541	Point Source (Probable Boulder)	-			
C335	41.5368898	-81.6680146	444272.2	4598575.1	2196272.5	683464.8	10.0	432.5	5.8	0.7	-	360824151800	064_1537	Linear Contact	-			
C337	41.5394141	-81.6679282	444286.5	4598855.3	2196287.4	683384.8	11.2	341.3	12.9	0.5	0.2	360830163000	089_1630	Linear Contact	-			
C338	41.5352453	-81.6678937	444285.8	4598392.5	2196311.3	681865.9	9.7	477.9	7.1	0.5	-	360825160900	070_1609	Linear Contact	-			
C339	41.5463260	-81.6678415	444299.7	4599612.6	2196287.4	683903.4	11.9	83.7	3.1	0.4	0.1	360828091800	075_0918	Linear Contact	-			
C340	41.5434690	-81.6676743	444305.6	4598292.5	2196381.9	681538.9	9.7	488.4	1.7	1.9	1.4	360826162700	071_1627	Point Source (Probable Boulder)	-			
C341	41.5388769	-81.6676224	444311.6	4598795.5	2196373.0	683189.8	11.1	334.9	1.5	0.9	0.5	360828161500	083_1615	Point Source (Probable Boulder)	-			
C342	41.5466206	-81.6674368	444333.5	4599612.9	2196307.5	685038.9	11.9	116.9	5.8	0.5	0.3	360828091800	025_0918	Linear Contact	-			
C343	41.5434978	-81.6673347	444339.3	4599308.3	2196435.7	684874.2	11.5	72.8	3.5	0.8	0.3	360830152500	030_1525	Linear Contact	-			
C344	41.5433712	-81.6673183	444340.8	4599294.2	2196440.6	684828.2	11.5	80.3	2.2	1.3	0.6	360824132000	031_1321	Point Source (Probable Boulder)	-			
C345	41.5428351	-81.6672239	444348.2	4599234.7	2196468.3	684633.1	11.4	130.0	2.0	1.5	0.6	360827164200	033_1642	Point Source (Probable Boulder)	-			
C346	41.5400398	-81.6670194	444362.0	4598815.5	2196537.4	684258.4	11.1	280.8	6.9	0.8	-	360830162200	090_1622	Linear Contact	-			
C347	41.5400398	-81.6668459	444377.3	4598924.1	2196581.5	683015.6	11.3	234.2	4.6	1.1	-	360830160400	094_1603	Circular Contact	-			
C348	41.5448288	-81.6667617	444388.5	4599455.7	2196587.9	683960.7	11.6	54.7	1.4	0.6	0.6	360830142500	027_1425	Point Source (Probable Boulder)	-			
C349	41.5364343	-81.6666675	444389.1	4598523.7	2196642.9	683302.3	10.0	340.6	4.5	0.3	0.1	360826090700	066_0906	Linear Contact	-			
C350	41.5377070	-81.6664678	444405.9	4598664.8	2196609.1	683766.6	10.3	282.2	3.9	0.6	0.1	360830161000	089_1610	Linear Contact	-			
C351	41.5359200	-81.6664224	444408.9	4598430.0	2196712.9	681996.1	10.1	349.3	3.2	2.6	-	360828154100	082_1541	Circular Contact	-			
C352	41.5355430	-81.6663866	444411.8	4598424.5	2196722.9	681978.3	10.1	349.8	2.7	2.1	0.5	360828154100	082_1541	Circular Contact	M34			
C353	41.5357122	-81.6664035	444410.5	4598443.3	2196717.7	682039.9	10.1	348.1	3.1	2.4	0.4	360828152300	078_1523	Rectangular Contact	-			
C354	41.5354592	-81.6661312	444423.0	4598415.1	2196791.1	681848.5	10.1	330.5	6.9	0.4	-	360826162700	071_1627	Linear Contact	-			
C355	41.5359835	-81.6660122	444443.4	4598473.2	2196823.9	682139.8	10.0	305.6	2.0	2.0	0.4	360828164800	084_1648	Rectangular Contact	-			
C356	41.5404358	-81.6659966	444448.5	4598967.5	2196812.6	683762.1	11.3	153.5	1.7	1.0	0.5	360830145000	095_1450	Point Source (Probable Boulder)	-			
C357	41.5448531	-81.6659764	444454.0	4599457.9	2196802.8	685371.6	11.5	108.4	2.2	0.4	0.2	360826094600	024_0946	Linear Contact	-			
C358	41.5394163	-81.6659338	444453.9	4598854.3	2196833.4	683900.8	11.1	182.5	3.2	0.5	0.2	360830150100	092_1501	Linear Contact	-			
C359	41.5391806	-81.6659024	444455.5	4598854.3	2196842.1	683777.9	11.1	181.2	3.8	0.4	0.1	360830150900	094_1509	Linear Contact	-			
C360	41.5355404	-81.6658774	444454.3	4598423.9	2196862.3	681978.7	10.1	307.6	10.6	1.2	-	360825160900	070_1609	Linear Contact	-			
C362	41.5393153	-81.6657848	444465.2	4598843.0	2196874.5	68354.4	11.0	174.1	2.6	0.5	0.1	360830150900	094_1509	Linear Contact	-			
C363	41.5394764	-81.6655826	444452.2	4598862.7	2196929.3	683413.6	11.0	152.6	9.1	0.5	-	360830150100	092_1501	Linear Contact	M164			
C364	41.5405661	-81.6653921	444499.1	4598981.8	2196977.6	683811.9	11.3	100.9	1.7	0.9	0.8	360827170200	033_1702	Point Source (Probable Boulder)	-			
C365	41.5388879	-81.6653599	444499.9	4598735.7	2196994.1	683017.6	10.4	171.3	3.8	0.4	-	360824153800	064_1537	Linear Contact	M166			
C366	41.5411167	-81.6653200	444505.7	4599064.9	2196994.8	68408.8	11.4	70.2	6.1	0.5	-	360830152500	030_1525	Linear Contact	-			
C367	41.5369690	-81.6652979	444503.7	4598548.7	2197017.0	681391.1	10.0	228.8	10.7	2.8	-	360830161000	089_1610	Point Source (Probable Boulder)	-			
C368	41.5412080	-81.6652677	444510.0	4599052.8	2197009.5	684045.3	11.4	69.7	6.0	0.3	0.1	360830105600	032_1056	Linear Contact	-			
C369	41.5400365	-81.6652022	444510.8	4598989.5	2197015.7	683837.9	11.3	87.5	13.5	0.7	0.2	360827170200	033_1702	Linear Contact	-			
C370	41.5436988	-81.6651532	444521.7	4599379.2	2197031.1	684953.2	11.5	86.5	3.4	2.4	-	360828091800	025_0918	Circular Contact	-			
C371	41.5429487	-81.6649808	444535.4	4599245.8	2197081.9	684680.3	11.3	46.5	2.8	0.9	-	360826161400	028_1614	Linear Contact	-			

ID	NAD83 Geographic			NAD83 UTM Zone 17			NAD83 Ohio State Plane North			Siderscan Sonar Contacts					Description	Associated Mag Anomaly ID
	Latitude	Longitude	East (m)	North (m)	East (US survey feet)	North (US survey feet)	Bathymetry (m)	Distance from Proposed Route (m)	Length (m)	Width (m)	Height (m)	Sonar Filename (.url)	Survey Line (L_EDT)			
C372	41.5366356	-81.5648749	444538.3	4598544.9	2197132.9	687380.4	10.0	191.3	6.7	2.2	0.1	360830161000	089_1610	Rectangular Contact	-	
C373	41.5404384	-81.5646158	444623.7	4598966.9	2197190.6	687706.6	11.2	43.5	2.7	0.5	0.1	360827170200	033_1702	Linear Contact	-	
C374	41.5441247	-81.5643217	444591.4	4599376.0	2197258.2	685110.5	11.5	169.3	5.5	0.5	-	360827083700	023_0837	Linear Contact	-	
C375	41.5398762	-81.5642473	444559.3	4598904.2	2197280.4	681562.8	10.9	31.0	5.0	0.4	0.1	360827170200	033_1702	Linear Contact	-	
C376	41.5402326	-81.5642375	444559.3	4598943.8	2197294.9	683692.2	11.0	20.3	5.3	0.4	-	360830152500	030_1525	Linear Contact	-	
C377	41.5439576	-81.5642185	444599.8	4599357.3	2197287.1	685049.9	11.5	164.9	10.4	3.2	-	360827083700	023_0837	Low Reflectivity Patch (Possible Flag)	-	
C378	41.5398028	-81.5642158	444596.5	4598896.6	2197302.3	683537.9	10.9	32.8	9.5	0.6	-	360827170200	033_1702	Linear Contact	-	
C379	41.5413479	-81.5639784	444617.8	4599067.5	2197361.9	684099.7	11.3	37.6	1.2	0.0	0.6	360830144500	027_1445	Point Source (Probable Boulder)	-	
C380	41.5419327	-81.5639231	444622.7	4599132.4	2197375.0	684312.9	11.3	61.5	5.8	0.7	0.3	360830144500	027_1445	Linear Contact	-	
C381	41.5416010	-81.5637215	444629.3	4599095.4	2197431.3	684192.6	11.2	66.5	2.9	2.7	0.6	360828150500	026_1505	Point Source (Probable Boulder)	-	
C382	41.5407071	-81.5635943	444609.1	4598996.1	2197469.3	683867.2	11.1	46.7	3.3	0.5	0.1	360826151400	038_1614	Linear Contact	-	
C383	41.5367471	-81.5635780	444647.5	4598556.4	2197489.0	683474.4	9.8	84.0	4.9	2.5	-	360826162700	071_1627	Rectangular Contact	-	
C384	41.5379005	-81.5634548	444659.8	4598651.1	2197523.8	683735.7	10.1	44.5	3.1	2.1	-	360830150900	094_1509	Rectangular Contact	-	
C385	41.5411380	-81.5634186	444664.1	4599043.8	2197515.8	684024.7	11.2	76.1	11.0	0.5	0.1	360830144500	027_1445	Linear Contact	-	
C386	41.5402331	-81.5633750	444667.0	4598943.3	2197531.0	683665.5	10.9	48.3	10.9	0.4	0.2	360830161400	028_1614	Linear Contact	M29	
C387	41.5412524	-81.5633317	444671.5	4599056.4	2197539.3	684066.6	11.2	85.8	6.9	0.4	0.1	360826151400	028_1614	Linear Contact	-	
C388	41.5426937	-81.5633252	444687.7	4599216.3	2197583.3	684592.2	11.3	151.9	19.3	0.6	0.4	360826094600	024_0946	Linear Contact	-	
C389	41.5402948	-81.5631281	444688.3	4599027.7	2197595.9	683973.3	11.2	93.4	1.2	0.7	0.6	360826151400	028_1614	Point Source (Probable Boulder)	-	
C390	41.5372013	-81.5629816	444697.1	4598606.5	2197649.3	683591.5	10.0	21.8	1.7	1.0	1.4	360830162700	071_1627	Point Source (Probable Boulder)	-	
C391	41.5412620	-81.5629108	444704.9	4599057.3	2197649.3	684071.2	11.1	138.0	16.5	0.5	0.2	360830144500	027_1445	Linear Contact	-	
C392	41.5412085	-81.5629104	444704.9	4599057.3	2197649.3	684051.7	11.1	136.3	5.1	0.7	0.0	360828091800	025_0918	Linear Contact	-	
C393	41.5412500	-81.5627034	444723.9	4599033.0	2197711.4	684058.3	11.0	134.9	6.9	0.4	0.1	360828091800	025_0918	Linear Contact	-	
C394	41.5401107	-81.5625952	444732.0	4598929.2	2197744.9	683652.5	10.5	106.2	5.0	0.4	-	360821518000	064_1337	Linear Contact	-	
C395	41.5401331	-81.5625764	444732.0	4598931.7	2197749.9	683660.8	10.6	108.5	5.0	0.8	-	360821518000	064_1337	Linear Contact	-	
C396	41.5410908	-81.5625411	444737.3	4599038.0	2197756.3	684009.8	11.0	143.3	6.0	0.6	-	360826150500	026_1505	Linear Contact	-	
C397	41.5402982	-81.5624951	444760.5	4598950.0	2197771.6	683721.1	10.6	120.5	4.4	0.3	-	360826151400	038_1614	Linear Contact	-	
C398	41.5421296	-81.5622073	444766.0	4599152.5	2197844.0	684387.0	11.1	204.4	7.0	0.5	-	360827083700	023_0837	Linear Contact	-	
C399	41.5378287	-81.5621331	444768.6	4598675.6	2197879.4	683822.3	10.2	96.7	2.5	3.7	1.1	360826162700	071_1627	Point Source (Probable Boulder)	-	
C400	41.5378276	-81.5621031	444771.1	4598675.4	2197887.6	683822.0	10.2	99.1	1.8	1.2	0.6	360826162700	071_1627	Point Source (Probable Boulder)	-	
C401	41.5411157	-81.5621063	444774.6	4599062.7	2197877.2	684092.9	11.0	186.2	13.8	0.3	-	360826094600	024_0946	Linear Contact	-	
C402	41.5379308	-81.5620264	444777.5	4598968.6	2197908.2	683859.8	10.2	78.6	2.0	1.5	1.2	360830105600	032_1056	Point Source (Probable Boulder)	-	
C403	41.5418485	-81.5620173	444781.5	4599121.8	2197897.0	684287.2	11.1	210.3	1.2	0.7	0.5	360827083700	023_0837	Point Source (Probable Boulder)	-	
C404	41.5409520	-81.5619165	444789.3	4599022.2	2197927.7	683960.9	10.8	188.3	4.0	0.3	0.1	360827083700	023_0837	Linear Contact	-	
C405	41.5411253	-81.5618759	444792.8	4599041.4	2197938.2	684024.1	10.9	197.4	9.2	0.4	-	360827083700	023_0837	Linear Contact	-	
C406	41.5419096	-81.5618484	444795.8	4599128.5	2197943.0	684110.0	11.1	225.8	1.5	0.8	0.6	360827083700	023_0837	Point Source (Probable Boulder)	-	
C407	41.5409861	-81.5616859	444808.6	4599026.9	2197990.7	683977.5	10.8	208.2	5.6	0.5	0.1	360827083700	023_0837	Linear Contact	-	
C408	41.5401226	-81.5616176	444811.7	4598695.7	2198019.8	683890.7	10.1	133.9	1.9	0.5	0.6	360826162700	071_1627	Point Source (Probable Boulder)	-	
C409	41.5412277	-81.5614278	444830.3	4599052.5	2198060.5	684062.6	10.8	236.4	5.7	0.4	0.1	360827083700	023_0837	Linear Contact	-	
C410	41.5383226	-81.5612910	444839.2	4598729.9	2198108.2	683004.5	10.2	159.2	1.6	0.7	1.6	360826162700	071_1627	Point Source (Probable Boulder)	-	
C411	41.5485523	-81.5613642	444849.8	4599733.1	2198142.8	683015.6	10.1	161.3	2.5	1.0	0.5	360826162700	071_1627	Point Source (Probable Boulder)	-	
C412	41.5381756	-81.5613077	444854.6	4598735.6	2198158.2	683024.3	10.2	166.6	3.1	2.2	0.9	360826162700	071_1627	Point Source (Probable Boulder)	-	
C413	41.5384757	-81.5610147	444862.4	4598746.7	2198183.3	683061.0	10.3	177.3	3.2	0.7	0.4	360826162700	071_1627	Point Source (Probable Boulder)	-	
C414	41.5385863	-81.5606008	444897.0	4598758.7	2198296.2	683102.4	10.5	213.9	3.1	1.0	1.0	360825509000	070_1609	Point Source (Probable Boulder)	-	
C415	41.5386604	-81.5605011	444898.7	4598766.9	2198301.3	683129.4	10.5	238.0	2.2	1.3	0.7	360826162700	071_1627	Point Source (Probable Boulder)	-	
C416	41.5387020	-81.5605765	444899.1	4598771.5	2198302.4	683144.6	10.5	229.7	2.5	1.2	0.7	360826162700	071_1627	Point Source (Probable Boulder)	-	
C417	41.5380708	-81.5605402	444902.1	4598768.1	2198312.5	683133.4	10.6	221.6	2.5	0.7	0.7	360826162700	071_1627	Point Source (Probable Boulder)	-	

ID	NADES Geographic			NADES UTM Zone 17			NADES Ohio State Plane North			Bathymetry (m)	Distance from Proposed Route (m)	Length (m)	Width (m)	Height (m)	Sonar Filename (.url)	Survey Line (L EDT)	Description	Associated Mag Anomaly ID
	Latitude	Longitude	East (m)	North (m)	East (US survey feet)	North (US survey feet)												
C418	41.5391258	-81.6604032	444914.0	4598818.5	2198348.4	683299.5	10.5	247.7	3.4	1.8	0.6	160825154400	069_1543	Rectangular Contact		M106		
C419	41.5397776	-81.6604102	444913.1	4598779.8	2198347.7	683172.6	10.5	235.5	2.6	1.3	0.7	160826162700	071_1627	Point Source (Probable Boulder)		-		
C420	41.5385383	-81.6603481	444918.1	4598753.2	2198365.5	683085.5	10.5	231.4	1.7	0.7	0.5	160826162700	071_1627	Point Source (Probable Boulder)		-		
C421	41.5387808	-81.6602889	444922.2	4598774.6	2198381.1	683155.9	10.7	243.6	4.0	2.2	0.7	160826091800	025_0918	Point Source (Probable Boulder)		-		
C422	41.5388188	-81.6602872	444931.4	4598784.3	2198381.2	683187.9	10.5	246.5	1.9	2.2	0.8	160826091800	025_0918	Point Source (Probable Boulder)		-		
C423	41.5399666	-81.6603601	444934.9	4598911.7	2198412.0	683606.5	10.4	299.1	6.0	0.7	0.2	160827083700	023_0837	Linear Contact		-		
C424	41.5386927	-81.6603564	444941.0	4598770.2	2198412.3	683142.3	10.6	252.7	2.3	1.1	0.8	160826162700	071_1627	Point Source (Probable Boulder)		-		
C425	41.5389034	-81.6601138	444937.9	4598793.6	2198428.4	683219.2	10.5	263.3	1.9	1.0	0.7	160826091800	025_0918	Point Source (Probable Boulder)		-		
C426	41.5407736	-81.6601047	444942.8	4599001.2	2198432.5	683320.7	10.5	328.9	2.1	1.7	0.6	160826091800	066_0905	Circular Contact		M 25		
C427	41.5389287	-81.6600659	444941.9	4598796.4	2198441.4	683228.5	10.5	267.9	1.6	1.0	0.9	160826091800	025_0918	Point Source (Probable Boulder)		-		
C428	41.5396366	-81.6599485	444952.7	4598874.9	2198472.4	683486.8	10.5	301.8	2.2	2.0	0.6	160827083700	023_0837	Rectangular Contact		-		
C429	41.5389778	-81.6599406	444952.4	4598801.7	2198475.5	683246.6	10.6	279.5	2.9	1.2	0.4	160826162700	071_1627	Point Source (Probable Boulder)		-		
C430	41.5390395	-81.6599005	444952.8	4598808.6	2198486.3	683269.3	10.5	284.8	3.8	1.2	0.7	160826091800	025_0918	Linear Contact		-		
C431	41.5391901	-81.6599528	444983.6	4598825.1	2198570.0	683325.0	10.4	314.3	2.2	2.3	0.7	160827083700	023_0837	Point Source (Probable Boulder)		M62		
C432	41.5395029	-81.6594879	444992.3	4598860.1	2198603.1	683440.4	10.6	334.8	2.1	1.6	-	160826091800	025_0918	Rectangular Contact		M36		
C434	41.5412463	-81.6593833	445017.7	4599053.1	2198675.4	684075.4	0.0	415.7	2.2	1.6	1.2	160826091800	066_0905	Point Source (Probable Boulder)		-		
C435	41.5394486	-81.6593395	445019.6	4598842.4	2198693.5	683384.0	10.6	355.6	2.2	1.0	1.3	160827083700	023_0837	Point Source (Probable Boulder)		-		
C436	41.5394088	-81.6590536	445026.8	4598849.0	2198716.8	683406.1	10.6	364.5	2.3	1.4	0.7	160827083700	023_0837	Point Source (Probable Boulder)		-		
C437	41.5394321	-81.6590459	445027.5	4598853.8	2198718.8	683421.9	10.6	360.5	2.7	1.0	0.9	160827083700	023_0837	Point Source (Probable Boulder)		-		
C438	41.5397920	-81.6590282	445029.2	4598891.6	2198722.5	683545.8	10.7	379.3	3.2	2.3	0.5	160826091800	025_0918	Rectangular Contact		-		
C439	41.5394321	-81.6590259	445029.1	4598851.6	2198724.3	683414.7	10.6	367.5	2.2	0.9	0.6	160827083700	023_0837	Point Source (Probable Boulder)		-		
C440	41.5394747	-81.6589949	445031.8	4598856.3	2198724.0	683430.3	10.6	371.4	2.7	1.2	1.2	160827083700	023_0837	Point Source (Probable Boulder)		-		
C441	41.5398044	-81.6590029	445031.3	4598922.9	2198729.3	683550.4	-	380.2	2.9	2.4	-	160827083700	023_0837	Rectangular Contact		-		
C442	41.5395829	-81.6589984	445033.6	4598868.3	2198756.0	683470.0	10.7	381.8	1.3	0.5	1.0	160826162700	071_1627	Point Source (Probable Boulder)		-		
C443	41.5394061	-81.6587317	445053.6	4598848.5	2198805.0	683406.0	10.7	390.0	1.5	1.4	0.7	160826091800	025_0918	Point Source (Probable Boulder)		-		
C444	41.5398521	-81.6586779	445062.7	4598898.0	2198831.8	683568.8	-	413.2	3.5	1.8	0.6	160827083700	023_0837	Rectangular Contact		-		
C445	41.5395078	-81.6586650	445064.3	4598859.7	2198839.3	683443.4	-	403.5	3.3	0.8	0.6	160827083700	023_0837	Point Source (Probable Boulder)		-		
C446	41.5396563	-81.6585672	445067.5	4598876.2	2198849.1	683447.6	-	411.4	1.4	1.0	0.5	160827083700	023_0837	Point Source (Probable Boulder)		-		
C447	41.5394272	-81.6584060	445081.1	4598895.1	2198902.7	683560.3	-	430.0	1.6	0.8	1.0	160827083700	023_0837	Point Source (Probable Boulder)		-		
C448	41.5397886	-81.6583821	445083.1	4598900.8	2198899.3	683546.3	-	430.6	2.3	1.0	0.6	160827083700	023_0837	Point Source (Probable Boulder)		-		
C449	41.5399923	-81.6582954	445090.5	4598913.3	2198922.4	683620.7	-	444.3	2.5	2.6	0.7	160826162700	071_1627	Point Source (Probable Boulder)		-		
C450	41.5398630	-81.6582472	445094.4	4598898.9	2198936.0	683573.8	-	443.8	2.4	2.2	0.8	160827083700	023_0837	Point Source (Probable Boulder)		-		
C451	41.5399502	-81.6582051	445098.0	4598908.6	2198947.2	683605.6	-	450.1	1.3	0.7	0.9	160826162700	071_1627	Point Source (Probable Boulder)		-		
C452	41.5400100	-81.6581874	445099.5	4598915.2	2198951.9	683627.5	-	453.5	2.1	1.0	1.0	160826162700	071_1627	Point Source (Probable Boulder)		-		
C453	41.5402440	-81.6577455	445136.6	4598940.9	2199072.0	683713.9	-	496.5	2.1	1.7	0.9	160827083700	023_0837	Point Source (Probable Boulder)		-		
C454	41.5402700	-81.6575067	445156.5	4598943.7	2199137.3	683724.0	-	516.3	1.7	0.8	0.6	160827083700	023_0837	Point Source (Probable Boulder)		-		
C455	41.5402653	-81.6572468	445178.2	4598943.0	2199208.4	683723.0	-	536.8	3.2	1.4	-	160827083700	023_0837	Circular Contact		-		

5.2 Magnetometer Results

The magnetometer data was acquired using Hypack/Hysweep Survey Acquisition Software in MAG file format, while post-processing was performed by CSR using Hypack Magnetometer software. The data used for this archeological analysis was provided to VanZandt Engineering in the form of spreadsheets and post-processed and corrected magnetometer traces (See CSR Report Appendix A).

A total of 271 line km of magnetometer data were analyzed within the turbine and export cable APEs with a total of 178 magnetic anomalies identified and mapped. The anomaly location, type, magnitude, associated sidescan sonar contact, and survey line for each anomaly are listed in Table 2.

Table 2 Magnetic Anomalies Contact Table

ID	NAD83 Geographic			NAD83 UTM Zone 17			Marine Magnetometer Anomalies				Polarity	Amplitude (nT)	Associated Sidercan Contact ID	Magnetometer Height Above Labeled (m)	Survey Line (EDT)
	Latitude	Longitude	Easting (m)	Northing (m)	East (US survey feet)	North (US survey feet)	Bathymetry (m)	Distance from Proposed							
M1	41.5960349	-81.7914838	434038.0	460528.5	2162296.1	703716.7	16.9	93.1	Monopole	66.9		2.7	031_1141		
M2	41.5727049	-81.7348227	438738.1	4602596.6	2177868.5	695347.0	15.4	92.1	Dipole	63.9		3.2	031_1221		
M3	41.5707487	-81.7299932	439138.9	4602376.0	2179596.2	694645.8	15.3	88.6	Monopole	43.4		2.8	031_1221		
M4	41.5684997	-81.7245598	439589.8	4602122.5	2180990.2	694839.5	15.0	89.4	Monopole	78.5		2.8	031_1241		
M5	41.5649388	-81.7160081	440299.5	4601720.1	2181041.8	692559.4	14.3	93.6	Dipole	37.0		1.8	031_1241		
M6	41.5629714	-81.7112339	440695.8	4601499.5	2184354.8	691857.9	14.5	92.4	Dipole	23.3		4.4	031_1241		
M7	41.5621961	-81.7094469	440844.6	4601412.2	2184848.0	691579.9	14.4	95.8	Dipole	76.8		4.3	031_1241		
M8	41.5568402	-81.6963557	441930.9	4600808.7	2188448.8	689661.1	13.2	91.4	Monopole	68.6		3.2	031_1301		
M9	41.5567475	-81.6961940	441944.3	4600798.3	2188491.4	689627.8	13.2	93.9	Dipole	26.7		3.1	031_1301		
M10	41.5540823	-81.6897585	442478.6	4600498.1	2190261.7	688673.0	12.8	94.6	Monopole	59.6		2.7	031_1301		
M11	41.5527990	-81.6853676	442843.2	4600297.2	2191469.5	688034.4	12.5	91.7	Monopole	30.7		4.4	031_1301		
M12	41.5513733	-81.6810568	443015.1	4600192.9	2192105.1	687703.0	12.4	88.9	Dipole	21.3	C262	4.2	031_1301		
M13	41.5510943	-81.6824088	443088.9	4600161.5	2192281.4	687603.1	12.4	90.0	Dipole	52.6	C257	3.9	031_1301		
M14	41.5485383	-81.6762752	443598.2	4599873.7	2193571.0	686687.5	11.9	92.2	Monopole	187.5	C285	3.8	031_1321		
M15	41.5397510	-81.6714626	443992.0	4598895.0	2195114.7	683498.3	11.3	98.8	Monopole	10.8		5	061_1414		
M18	41.5438464	-81.6725876	443901.7	4599350.4	2194996.6	684987.6	11.6	98.0	Monopole	15.6		3	058_1452		
M19	41.5486196	-81.6762341	443601.7	4599882.2	2193587.0	686717.3	12.3	82.6	Dipole	107.7	C285	4.1	074_1516		
M20	41.5404086	-81.6720712	443941.8	4598968.4	2195149.8	683736.3	11.3	94.9	Dipole	29.2		2.8	074_1516		
M24	41.5369037	-81.6676089	444311.0	4598576.4	2196381.5	682470.9	10.3	399.8	Monopole	26.3		4	064_1537		
M25	41.5315404	-81.6747700	443709.0	4597985.6	2194441.6	680498.1	0.0	1091.5	Dipole	145.1		4.3	068_1551		
M26	41.5407863	-81.6600479	444945.0	4599002.6	2198439.8	683905.4	10.5	331.4	Dipole	108.9	C426	1.9	065_1528		
M27	41.5389450	-81.6635191	444653.9	4598800.4	2197496.0	683275.4	10.3	6.2	Monopole	32.5		2.2	065_1528		
M28	41.5348691	-81.6682138	444258.8	4598350.9	2196225.0	681728.0	9.7	515.9	Monopole	54.7		3.6	069_1543		
M29	41.5376216	-81.6634084	444662.0	4598653.4	2197531.0	682743.5	10.1	41.7	Dipole	27.6	C384	4	069_1543		
M30	41.5394153	-81.6600664	444942.3	4598850.4	2198439.6	683405.8	10.4	284.1	Monopole	23.8		4.3	069_1543		
M32	41.5410904	-81.6590152	445031.4	4599035.7	2198721.5	684018.9	0.0	423.7	Monopole	57.5		4.3	066_1555		
M33	41.5408670	-81.6593186	445005.9	4599011.1	2198639.2	683936.7	0.0	392.1	Dipole	136.6		4.3	066_1555		
M34	41.5355832	-81.6663726	444413.0	4598429.0	2196726.6	681993.0	10.3	345.6	Monopole	22.3	C352	4.6	070_1609		
M35	41.5362778	-81.6651042	444519.4	4598505.3	2197071.4	682249.4	10.0	221.5	Dipole	68.7		4.7	070_1609		
M36	41.5395686	-81.6594086	444997.3	4598867.0	2198619.1	683463.4	10.6	341.6	Monopole	38.6	C432	5.2	070_1609		
M40	41.5394539	-81.6602418	444927.7	4598854.8	2198391.4	683419.4	10.4	271.5	Monopole	42.6		2.3	074_0946		
M41	41.5604476	-81.6996252	441661.5	4601211.4	2187540.0	690967.3	13.3	128.3	Monopole	15.0		3.5	074_1016		
M42	41.5631635	-81.7063681	441101.7	4601517.5	2185685.7	691940.0	14.2	121.7	Dipole	23.9		1.3	074_1016		
M43	41.5600867	-81.7134617	440512.9	4601846.9	2183734.9	692987.5	14.3	121.3	Dipole	18.4		2.1	074_1016		
M44	41.5676671	-81.7128559	440195.5	4602025.0	2182683.3	693554.0	14.9	121.6	Dipole	69.5		2.5	074_1046		
M45	41.5682266	-81.7187086	440077.4	4602088.1	2182291.1	693754.3	14.9	118.9	Dipole	24.7		2.2	074_1046		
M46	41.5690775	-81.7205561	439924.1	4602178.3	2181784.0	694041.6	14.9	122.7	Monopole	88.5		2.1	074_1046		
M47	41.5713855	-81.7263001	439447.4	4602444.1	2180204.6	694886.8	15.3	121.6	Monopole	122.2		2	074_1046		
M48	41.6028184	-81.8026381	433115.4	4605990.2	2159225.4	7065163.8	17.2	1.5	Monopole	10.1		3.6	065_1408		
M49	41.6008315	-81.8006887	433275.8	4605768.1	2159764.4	705444.1	17.1	1.9	Monopole	61.0	CB	3.4	065_1408		
M50	41.6007495	-81.8008125	433265.4	4605759.1	2159730.8	705413.9	17.1	15.6	Monopole	49.1	CB	3.4	028_1434		
M51	41.6001685	-81.7991386	433404.3	4605693.3	2160790.3	705205.9	17.1	2.7	Monopole	17.0		2.9	028_1434		
M52	41.5984615	-81.7950101	433746.6	4605500.6	2161324.5	704593.0	17.0	1.8	Monopole	30.2		3.3	028_1434		

Leedsboro Offshore Wind Demonstration Project – 2016 Marine Geophysical Survey Results

Canadian Seabed Research Ltd. 2016

ID	NADE3 Geographic			NADE3 UTM Zone 17		NADE3 Ohio State Plane North			Marine Magnetometer Anomalies			Survey Line (.EDT)	
	Latitude	Longitude	Easting (m)	Northing (m)	East (US survey feet)	North (US survey feet)	Bathymetry (m)	Distance from Proposed	Polarity	Amplitude (nT)	Associated Sidescan Contact ID		Magnetometer Height Above Labeled (m)
M53	41.5733222	-81.7339397	438812.3	4602664.5	2178108.1	695574.0	15.5	3.5	Monopole	98.0		4.1	028_1514
M54	41.5710419	-81.7284984	439263.8	4602407.5	2179604.2	694756.3	15.3	0.1	Monopole	16.4		3.9	028_1514
M55	41.5705945	-81.7274535	439350.5	4602357.1	2179891.6	694595.8	15.2	3.7	Dipole	28.8		3.9	028_1514
M56	41.5679312	-81.7210021	439885.9	4602056.9	2181665.5	693641.1	14.7	1.9	Dipole	16.6		3.3	028_1534
M57	41.5661370	-81.7166729	440245.2	4601854.7	2182856.0	692998.0	14.8	2.7	Dipole	155.3		3.2	028_1534
M58	41.5658378	-81.7159728	440303.3	4601821.0	2183048.6	692890.7	14.6	3.7	Dipole	84.8		3	028_1534
M59	41.5656580	-81.7154803	440344.2	4601800.7	2183183.9	692876.4	14.4	3.4	Monopole	134.0		2.8	028_1534
M60	41.5576602	-81.6960083	441960.6	4600899.5	2188539.1	689960.8	13.3	2.4	Monopole	9.6		5.2	028_1554
M61	41.5512867	-81.6806541	443235.4	4600181.7	2192763.0	687677.7	12.6	0.8	Monopole	9.7		4.4	028_1554
M62	41.5391598	-81.6595351	444986.4	4598821.7	2198585.9	683314.1	10.4	317.9	Monopole	41.5	C431	4.3	071_1627
M65	41.5410308	-81.6583996	445082.7	4599028.7	2198890.2	683998.8	0.0	470.7	Monopole	125.3		4.3	067_1650
M66	41.5409427	-81.6583305	445071.7	4599019.0	2198854.7	683966.4	0.0	457.4	Monopole	233.1		4.5	067_1650
M67	41.5335442	-81.6687649	444195.0	4598204.3	2196024.0	681243.3	9.6	606.2	Monopole	25.0		3.5	075_1702
M69	41.5479070	-81.6751860	443688.5	4599802.9	2194271.3	686460.3	12.1	109.8	Monopole	29.1		4.4	076_1720
M70	41.5407007	-81.6714029	443997.8	4599000.4	2195331.7	683844.5	11.3	530.9	Dipole	60.0		3.6	076_1720
M71	41.5378505	-81.6694039	444145.4	4598682.8	2195834.1	682810.7	10.5	526.8	Monopole	31.2	C318	4.4	077_1735
M74	41.5531703	-81.6813766	443176.8	4600391.3	2195558.8	688362.1	12.4	153.4	Dipole	23.2		2.8	023_0857
M75	41.5551099	-81.6862229	442774.4	4600616.5	2191225.6	689078.3	12.7	153.2	Monopole	29.0	C226	3.1	023_0857
M76	41.5695982	-81.7051321	441204.6	4601497.3	2186024.5	69179.6	14.1	154.4	Monopole	16.4		2.3	023_0917
M77	41.5634985	-81.7063778	441101.2	4601554.7	2185681.9	692062.1	14.2	153.9	Monopole	47.1		2.3	023_0917
M78	41.5649951	-81.7102511	44079.6	4603723.5	2184637.0	692597.7	14.5	344.0	Monopole	15.9		2.9	023_0917
M79	41.5671708	-81.7152571	440364.2	4603968.5	2183240.0	693378.1	14.7	154.7	Monopole	13.3		2.9	023_0917
M80	41.5675736	-81.7162534	440281.5	4603113.9	2182986.1	693522.4	14.8	153.9	Monopole	18.0		3.2	023_0917
M81	41.5725777	-81.7210491	439883.5	4602238.9	2181647.3	694238.2	15.0	155.7	Monopole	27.9		3.4	023_0917
M82	41.5717140	-81.7161910	439456.8	4602480.5	2180233.4	695006.8	15.3	157.9	monopole	19.3	C83	3.7	023_0937
M83	41.5797575	-81.7457494	437833.9	4603387.4	2174856.6	697890.6	16.0	155.9	Monopole	13.1		1.8	023_0937
M84	41.6046681	-81.8025638	433123.3	4606173.3	2159241.0	706765.0	17.2	116.9	Monopole	123.9	C6	3	001_1043
M86	41.6028804	-81.8045865	432953.1	4605998.6	2158692.4	706182.1	17.2	123.9	Monopole	130.4		3.5	009_1213
M87	41.6081027	-81.8084546	432636.2	4606581.4	2157619.4	708076.5	17.4	31.5	Monopole	20.7		2.2	006_1317
M89	41.6010727	-81.8019985	433166.9	4605795.9	2159405.5	705529.1	17.1	72.8	Dipole	50.2		2.4	007_1458
M90	41.5994800	-81.8011672	433226.2	4605618.5	2159610.1	704950.4	17.1	149.6	Monopole	26.3		4.9	033_1522
M91	41.5725777	-81.7353154	438696.7	4602558.4	2177734.8	695219.3	15.4	145.6	Monopole	142.0		3.2	033_1602
M92	41.5694125	-81.7283886	439275.6	4602276.6	2179653.2	694163.3	15.2	152.1	Dipole	79.6	C63	3.4	033_1602
M93	41.5681926	-81.7257617	439531.0	4602088.9	2180499.1	693725.9	15.0	147.4	Dipole	17.1		2.8	033_1602
M94	41.5647188	-81.7247241	439612.9	4602035.6	2180270.9	693555.7	15.1	153.9	Dipole	16.7		3.2	033_1602
M95	41.5658153	-81.7197201	439990.5	4601822.1	2181022.1	692873.3	14.6	156.5	Dipole	33.5		2.4	033_1622
M96	41.5654690	-81.7187908	440068.0	4601782.0	2182278.6	692749.4	14.8	152.7	Dipole	18.6		3	033_1622
M97	41.5649433	-81.7172223	440156.6	4601722.9	2182572.9	692560.4	14.7	161.0	Monopole	44.1		2.9	033_1622
M98	41.5646618	-81.7170716	440210.6	4601691.2	2182751.7	692459.5	14.5	162.3	Dipole	20.2		2.7	033_1622
M99	41.5644116	-81.7160350	440296.8	4601662.7	2183036.7	692370.9	14.3	145.0	Monopole	79.4		2.1	033_1622
M100	41.5598377	-81.7048125	441228.4	4601347.2	2186122.4	690732.1	13.9	139.4	Monopole	22.4		4.8	033_1622
M101	41.5589784	-81.7028964	441387.4	4601050.5	2186649.6	690423.8	13.4	146.0	Monopole	48.4		4.3	033_1622
M102	41.5510265	-81.6834647	442984.1	4600154.8	2191939.9	687575.1	12.4	147.1	Dipole	71.5	C243	3.3	033_1642

ID	NADE3 Geographic			NADE3 UTM Zone 17			NADE3 Ohio State Plane North			Distance from Proposed	Polarity	Amplitude (nT)	Associated SioScan Contact ID	Magnetometer Height Above Labeled (m)	Survey Line (EDT)
	Latitude	Longitude	Easting (m)	Northing (m)	East (US survey feet)	North (US survey feet)	Bathymetry (m)								
M103	41.5500740	-81.6818081	443179.8	4600047.5	2192588.2	682734.1	12.5	145.0	Dipole	65.3	C263	3.4	033_1642		
M106	41.5391328	-81.6603260	444920.4	4598819.2	2198309.5	683302.2	10.5	254.0	Monopole	17.8	C418	2.4	025_0918		
M107	41.5401512	-81.6850092	442874.6	4600487.5	2191561.7	688660.6	12.6	89.7	Dipole	30.2		1.6	025_0938		
M108	41.5676584	-81.7179539	440139.8	4601024.5	2181500.5	693549.1	14.9	93.9	Dipole	75.2		4.3	025_0958		
M109	41.5691766	-81.7217620	439823.7	4602195.7	2181453.5	694093.0	15.0	84.8	monopole	85.5		1.8	025_0958		
M110	41.5700593	-81.7329224	439644.4	4602295.2	2180859.5	694409.4	14.9	88.0	Dipole	20.9		1.9	025_0958		
M112	41.5708789	-81.7259358	439477.3	4603387.6	2180306.0	694703.1	15.2	86.9	Dipole	20.4	C87	2.3	025_0958		
M113	41.5710823	-81.7263759	439440.8	4602410.5	2180184.9	694776.1	15.3	89.0	Dipole	25.6	C82	2.3	025_0958		
M115	41.5739316	-81.7332821	438867.7	4602731.7	2178286.1	695797.6	15.6	89.2	Monopole	23.9		2.6	025_1018		
M116	41.5744240	-81.7344688	438769.4	4602787.2	2177960.4	695974.2	15.6	89.5	Dipole	14.8		2.4	025_1018		
M117	41.5872063	-81.7656452	436182.7	4604228.9	2169390.5	700558.3	15.7	83.0	Monopole	11.8		2.5	025_1038		
M118	41.5960000	-81.7865206	434434.1	4605221.0	2165996.3	703714.5	16.9	93.9	Monopole	21.9		2.1	025_1058		
M120	41.6024963	-81.8010345	433248.7	4605953.2	2159665.0	706049.9	17.1	86.5	Monopole	20.2		2.4	002_1121		
M121	41.6053231	-81.8038296	433018.7	4606269.2	2158892.3	707073.8	17.3	89.9	Monopole	22.3		2.7	002_1121		
M122	41.5732627	-81.7333638	438860.6	4602697.9	2178264.7	695686.3	15.5	56.2	Monopole	74.9		4.9	026_1401		
M123	41.5669524	-81.7170705	440212.8	4601945.5	2182744.5	693294.1	14.9	60.7	Dipole	26.2		4.3	026_1421		
M124	41.5657431	-81.7141164	440458.0	4601809.2	2183556.9	692860.7	14.3	61.6	Monopole	88.1		3.7	026_1421		
M127	41.5364138	-81.6698817	444362.9	4598521.6	2196556.9	682294.1	10.0	366.3	Monopole	20.1		3.9	082_1541		
M128	41.5354060	-81.6674209	444325.4	4598410.0	2196440.2	681925.7	9.8	434.9	Dipole	35.6		2.9	079_1556		
M129	41.5360893	-81.6679494	444281.9	4598486.2	2196293.2	682173.3	9.9	454.1	Monopole	37.5		3.2	079_1556		
M131	41.5373226	-81.6683387	444233.8	4598623.5	2196127.5	682623.1	10.3	459.8	monopole	39.7		3.2	079_1556		
M133	41.5400208	-81.6698860	444115.4	4598924.0	2195722.0	683600.5	11.4	482.6	Monopole	21.6		4.8	079_1556		
M134	41.5408592	-81.6687921	444215.7	4599016.3	2196045.9	683909.0	11.5	347.0	Monopole	31.6		4.6	083_1615		
M135	41.5374646	-81.6703659	444359.2	4598638.3	2196538.2	682676.8	10.2	335.5	Monopole	21.6		3.1	083_1615		
M138	41.5389967	-81.6686015	444230.0	4598809.4	2196104.5	683230.9	11.0	408.8	Monopole	20.2		4.1	081_1703		
M139	41.5405997	-81.6694249	444162.7	4598987.9	2195873.6	683812.8	11.5	406.4	Dipole	5.8	C321	4.6	081_1703		
M140	41.5508761	-81.6824508	443085.2	4600337.3	2192272.7	687533.4	12.5	112.9	Monopole	15.3	C296	2.3	032_1056		
M141	41.5517989	-81.6836088	442985.0	4600185.0	2191954.3	687674.5	12.4	118.3	Monopole	14.3		2.3	032_1056		
M142	41.5524452	-81.6863740	442759.4	4600334.1	2191193.5	688085.1	12.6	117.9	Dipole	72.3		2.5	032_1116		
M143	41.5565323	-81.6963428	441931.7	4600774.5	2188451.4	689549.0	13.2	120.8	Monopole	17.2	C197	3.1	032_1116		
M144	41.5620845	-81.7094618	440699.4	4601400.1	2184733.2	691538.2	14.4	123.5	Monopole	10.6	C167	4.5	032_1116		
M147	41.5653679	-81.7178134	440149.4	4601770.1	2182546.4	692714.9	14.8	123.3	Dipole	128.2		4.8	032_1136		
M148	41.5725375	-81.7352346	438703.6	4602578.3	2177756.3	695285.0	15.4	124.9	Dipole	256.8		5.4	032_1136		
M149	41.5990424	-81.7993035	433389.4	4605568.4	2160148.5	704795.2	17.1	113.6	Monopole	19.0		3.9	032_1236		
M150	41.5999644	-81.8015504	433203.1	4605672.5	2159531.2	705126.2	17.1	118.5	Monopole	30.2		3.4	032_1236		
M151	41.6010881	-81.8005671	433286.2	4605796.5	2159796.9	705337.8	17.1	23.4	Monopole	23.5		3.9	027_1247		
M153	41.6006404	-81.7995452	433370.9	4605746.0	2160077.7	705377.0	17.1	32.3	Monopole	18.5		3.9	027_1247		
M154	41.5735256	-81.7336781	438834.3	4602686.9	2178179.0	695648.7	15.5	33.7	Monopole	101.9		3.3	027_1345		
M155	41.5732256	-81.7237252	439660.2	4602218.5	2180915.7	694158.6	14.9	28.8	Monopole	13.7	C102	3.3	027_1345		
M156	41.5686945	-81.7219413	439808.3	4602142.3	2181406.0	694916.9	14.9	34.7	Dipole	36.7	C121	3.1	027_1345		
M157	41.5683751	-81.7213093	439860.7	4602206.4	2181580.0	693802.1	14.8	29.0	Monopole	11.5	C129	3.2	027_1345		
M158	41.5675903	-81.7194811	440012.4	4602018.0	2182082.6	693520.6	14.8	26.0	Monopole	25.1	C138	3.2	027_1345		
M159	41.5663746	-81.7165652	440254.4	4601881.0	2182884.7	693084.8	14.8	24.7	Dipole	58.7		3.2	027_1345		

ID	NADE3 Geographic			NADE3 UTM Zone 17			NADE3 Ohio State Plane North			Distance from Proposed	Polarity	Amplitude (nT)	Associated SioScan Contact ID	Magnetometer Height Above Lakebed (m)	Survey Line (EDT)
	Latitude	Longitude	Easting (m)	Northing (m)	East (US survey feet)	North (US survey feet)	Bathymetry (m)								
M161	41.5653242	-81.7139834	440468.7	4601762.6	2181594.6	692708.4	14.2	26.2	Dipole	28.0		2.6	027_1405		
M163	41.5652091	-81.7135192	440507.3	4601749.5	2181322.0	692667.6	14.2	33.9	Dipole	91.4		2.6	027_1405		
M164	41.5396470	-81.6654948	444489.7	4598879.6	2196952.7	683476.0	11.0	139.9	Dipole	8.9	C363	5.6	094_1509		
M165	41.5487229	-81.6761189	443611.4	4599894.1	2194031.1	686755.2	12.3	67.9	Dipole	108.8	C287	6.8	030_1525		
M166	41.5382546	-81.6654769	444090.0	4598725.0	2196787.5	683045.8	10.6	185.0	Dipole	25.8	C365	4.9	091_1609		
M167	41.5384707	-81.6661133	444437.1	4598749.4	2196787.5	683045.8	10.6	228.4	Dipole	144.4		5.1	090_1622		
M169	41.5526855	-81.6847601	442894.2	4600339.7	2191634.4	688176.8	12.5	29.7	Monopole	11.0		4.3	029_0758		
M170	41.5529418	-81.6852665	442852.2	4600368.5	2191495.0	688268.9	12.6	25.1	Dipole	26.6		1	029_0758		
M171	41.5569863	-81.6951401	442032.4	4600824.1	2188779.0	689171.4	13.1	28.3	Monopole	52.0		1.5	029_0758		
M172	41.5572905	-81.6960727	441954.9	4600836.5	2188522.8	689225.9	13.2	36.2	Monopole	21.4		1.6	029_0758		
M173	41.5573735	-81.6962019	441944.2	4600867.8	2188487.1	689855.8	13.3	33.3	Monopole	7.4		1.9	029_0758		
M174	41.5572903	-81.6952600	441964.3	4600858.4	2188553.6	689876.1	13.2	31.7	Dipole	75.1		1.4	029_0818		
M175	41.5573982	-81.6961362	441949.7	4600870.5	2188505.0	689865.0	13.2	28.3	Monopole	12.3		1.6	029_0818		
M176	41.5587030	-81.6981451	441782.9	4600961.2	2187952.5	690153.2	13.5	30.7	Monopole	17.5		2.4	029_0818		
M177	41.5647373	-81.7140549	440462.2	4601697.5	2183577.0	692494.4	14.2	33.8	Dipole	58.7		3.2	029_0818		
M179	41.5718504	-81.7112471	439035.4	4602499.2	2178849.6	695044.2	15.2	31.7	Dipole	32.0	C50	2	029_0838		
M181	41.5784412	-81.7415576	438179.6	4602949.6	2176015.8	696473.6	15.7	57.1	Monopole	9.3		1.1	029_0856		
M182	41.5920046	-81.7800926	434983.3	4604772.4	2165423.9	702273.7	16.8	29.0	Monopole	11.3		3.1	029_0916		
M184	41.6004022	-81.8011538	433236.6	4605720.8	2159438.4	705286.6	17.1	61.6	Monopole	15.8		5.5	030_0957		
M185	41.5992251	-81.7985377	433453.4	4605588.1	2160357.4	704863.5	17.0	65.1	Monopole	19.8		5.4	030_0957		
M186	41.572457	-81.7451496	437881.5	4603108.1	2175028.6	696976.8	15.6	64.5	Monopole	11.1		4	030_1037		
M187	41.5729492	-81.7345112	438764.3	4602623.5	2177952.9	695436.7	15.4	55.8	Monopole	11.6		3.8	030_1037		
M188	41.5716811	-81.7313903	439023.3	4602480.5	2178810.9	694982.2	15.2	53.9	Dipole	9.7		3.6	030_1037		
M189	41.5703497	-81.7282867	439280.8	4602330.5	2179664.4	694504.6	15.2	59.0	Dipole	11.2		3.6	030_1037		
M190	41.5685808	-81.7238886	439637.5	4602331.1	2180846.2	694870.5	15.0	58.6	Monopole	8.7		3.4	030_1037		
M191	41.5679971	-81.7225513	439756.8	4602065.3	2181241.4	693663.3	14.9	57.7	Dipole	9.5		3.3	030_1037		
M192	41.5668192	-81.7197856	439986.3	4601932.6	2180002.0	693238.9	14.6	61.3	Dipole	24.8		3	030_1037		
M193	41.5594978	-81.7020637	441457.3	4601107.6	2186875.8	690615.1	13.3	67.1	Dipole	20.6	C137	4.2	030_1057		
M194	41.5594349	-81.7018892	441471.8	4601100.5	2186923.8	690592.6	13.3	61.2	Monopole	13.9		4.2	030_1057		
M195	41.5579714	-81.6983177	441768.3	4600935.6	2187906.1	690068.4	13.5	60.1	Monopole	8.2		4.4	030_1057		
M196	41.5571836	-81.6964709	441921.6	4600846.9	2188414.1	689786.0	13.3	62.6	Monopole	6.7		4.2	030_1057		
M197	41.5566534	-81.6950753	442037.5	4600787.1	2188797.9	689596.3	13.1	58.1	Monopole	16.8		4	030_1057		
M198	41.5526142	-81.6852246	442855.4	4600332.1	2191507.6	688149.6	12.5	55.3	Dipole	50.7		6.1	030_1117		
M199	41.5506155	-81.6805272	443745.4	4600107.1	2192800.1	687433.4	12.5	61.0	Dipole	85.2		6.1	030_1117		
M200	41.5487343	-81.6760171	443619.9	4599895.3	2194041.0	686759.6	11.9	62.7	Dipole	163.8	C288	5.5	030_1117		
M201	41.5516852	-81.6790551	443369.1	4600224.9	2193199.3	687827.0	12.4	102.2	Dipole	27.6		5.8	056_1138		
M202	41.5518646	-81.6788879	443383.2	4600244.7	2193244.5	687892.8	12.4	126.4	Monopole	7.9		5.3	056_1138		
M203	41.5599115	-81.7003941	441596.9	4601152.4	2187331.3	690770.0	13.1	45.2	Monopole	8.4		2.5	052_0822		
M204	41.5604475	-81.7068566	441058.5	4601216.3	2185561.0	690949.2	14.1	162.2	Monopole	4.8		3.3	051_0830		
M205	41.5654662	-81.7100979	440793.8	4601775.7	2184657.4	692769.8	0.0	196.0	Dipole	61.2		4.5	050_0839		
M206	41.5649531	-81.7103442	440771.8	4601718.9	2184591.7	692582.2	14.5	136.2	Dipole	20.4		3.7	050_0839		
M208	41.5663045	-81.7162442	440281.1	4601873.0	2182972.0	693060.0	14.7	30.8	Monopole	68.6		4.1	049_0847		
M209	41.5700883	-81.7203077	439945.8	4602295.9	2181848.5	694428.7	0.0	235.9	Monopole	71.7		4.5	048_0856		

ID	NAD83 Geographic		NAD83 UTM Zone 17		NAD83 Ohio State Plane North		Bathymetry (m)	Distance from Proposed	Polarity	Amplitude (nT)	Associated SioScan Contact ID	Magnetometer Height Above Lakebed (m)	Survey Line (_EDT)
	Latitude	Longitude	Easting (m)	Northing (m)	East (US survey feet)	North (US survey feet)							
M211	41.5683874	-81.7216561	439831.8	4602108.0	2181485.1	693805.7	14.8	16.2	Monopole	22.7	C125	1.2	048_0856
M214	41.5711257	-81.7763560	439447.5	4602415.3	2180190.2	694792.0	15.3	94.1	Monopole	14.1	C82	3.7	047_0911
M215	41.5713403	-81.7261749	439457.8	4602439.0	2180239.0	694870.6	15.3	122.2	Monopole	61.7	C85	3.7	047_0911
M216	41.5715103	-81.7260774	439466.5	4602457.8	2180266.5	694932.8	15.3	142.9	Monopole	14.0	C86	3.7	047_0911
M217	41.6001150	-81.8016471	433195.2	4605689.3	2159504.4	705180.9	17.1	113.6	Monopole	32.9		3.9	022_1108
M218	41.6028241	-81.8045222	432958.4	4605992.3	2158710.1	706161.7	17.2	123.4	Dipole	79.7		6.6	021_1118

While some of the magnetic anomalies were correlated to known sidescan contacts (targets), the remaining magnetic anomalies were not correlated to a sidescan contact or a known lakebed installation such as a pipe or cable. In one instance, a number of anomalies mapped on adjacent survey lines may indicate the presence of a linear ferrous feature perpendicular to the proposed route at EKP 6.3 (Figure 6). This feature could not be identified from the sidescan or sub-bottom profiler data acquired over this area. Further analysis of the magnetic data shows that the feature is most likely a buried steel or iron buoy block or anchor at the southwest contact with associated cable running to the northeast. Detailed analysis of all magnetometer data are discussed below.

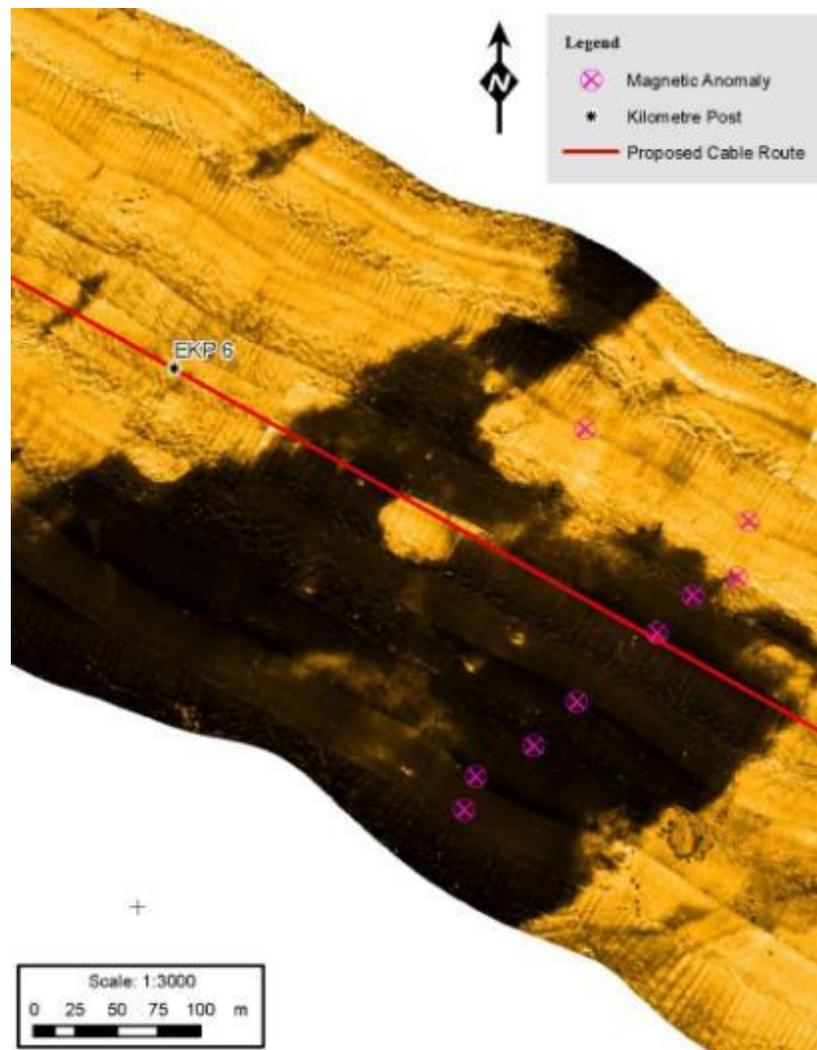


Figure 6 Location of linearly-aligned magnetic anomalies between EKP 6 and EKP 6.5. (CSR)

Prior magnetic surveys in this area of the lake have also indicated no correlation between the magnetic data and sidescan sonar imagery, with most of the magnetic hits having very small pole-to-pole distances indicating small or thin objects (Alpine, 2010)(VanZandt, 2015). This is primarily due to the proximity of the area being close to shore and used as a dumping ground for the past 200 years. Even today, there are 5 dumping grounds identified on the latest Moss Point to Vermilion NOAA chart 14826 (Figure 7).

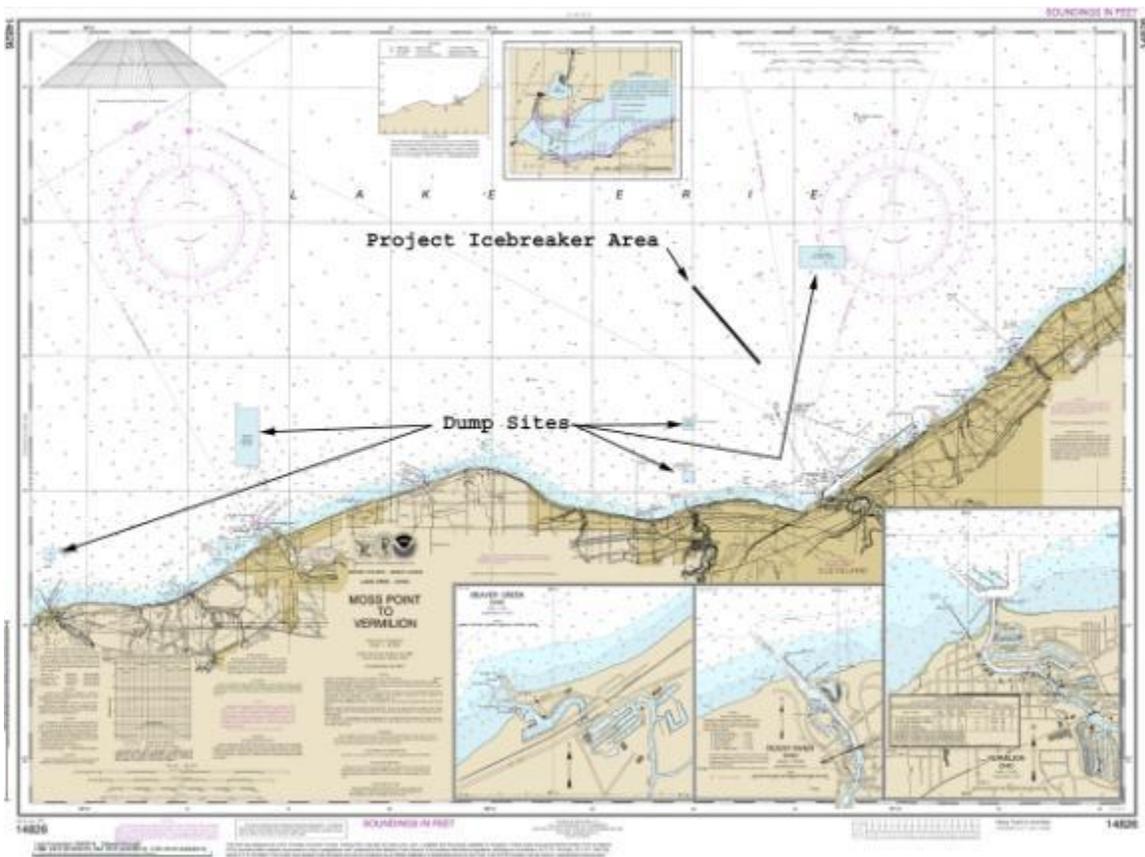


Figure 7 Current Dump Sites in Survey Areas (NOAA, VanZandt Engineering)

It is possible that while some of the more magnetically intense anomalies are manmade, they are disarticulated with no archaeological context, therefore, they do not represent potentially significant historical resources. The less magnetically intense objects are most likely a function of geology, perhaps representing small pockets of glacial till or other magnetic rocks/sediment near the surface. In both cases, the Sidescan sonar imagery did not show any objects that would

correlate with these anomalies. The lack of correlation is likely due to the magnetic objects being masked by overlying sediment. A full discussion of the magnetic contacts follows below.

5.3 Sub-bottom Data Analysis

The sub-bottom data was acquired using Klein SonarPro Acquisition Software in SEG-Y file format, with the post-processing by CSR using Coda Survey software. The data used for analysis was provided to VanZandt Engineering as scaled images on an as requested basis. A total of 271 line km of magnetometer data were analyzed within the turbine and export cable APEs.

The presence of gas charged sediments within the Icebreaker survey area was interpreted from chirp sub-bottom profiler and boomer seismic data. These gas charged sediments can accentuate sub-bottom reflectors causing “bright spots” as well as prevent the penetration of the acoustic energy from the profiling system, thereby masking the acoustic signal.

The origin of the near surface gas in the survey area cannot be determined from the data collected in this survey. This gas may originate from shallow decomposed organic material (biogenic) or from deep underlying bedrock formations (petrogenic). In this area, the biogenic source is plausible since vegetation has been buried during the numerous lake transgressions. This burial and subsequent decomposition could account for the presence of sub-surface gas.

Small localized erosional depressions or channels have been identified near the proposed WTG ICE1 turbine location (Figure 8) and over the near shore survey area. These features are infilled and were likely formed by glacial fluvial processes.

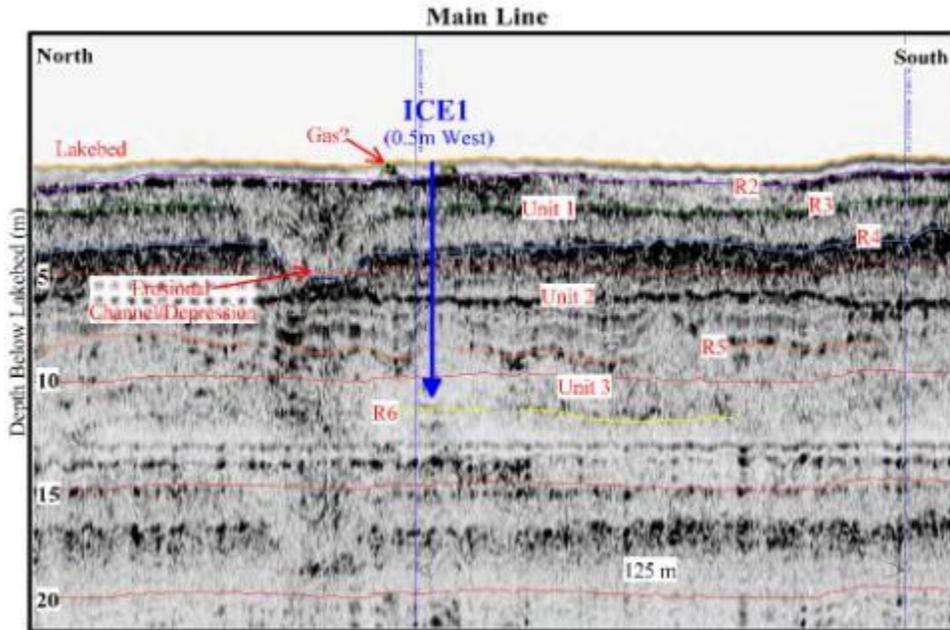


Figure 8 ICE 1 Erosional Depression or Channel (CSR)

Further detailed analysis of the sub-bottom data interpretation is provided below.

5.4 Multibeam Bathymetry

The multibeam bathymetry data was acquired using Hypack Acquisition Software in XTF file format with post-processing by CSR using Caris & Hypack software, and gridded using Surfer software. The data used for analysis was provided to VanZandt Engineering as scaled images on an as requested basis.

A total of 271 line km of magnetometer data were analyzed within the turbine and export cable APEs.

Further detailed analysis of the multibeam data interpretation is provided below.

5.5 Integrated Detailed Contact Analysis

Detailed contact analysis of the remote sensing data requires an integrated analysis when possible. There were four remote sensing data sets provided for analysis: side scan sonar, magnetometer, sub-bottom profiler, and multibeam bathymetry. Of these four data sets only two were suitable for contact analysis, side scan sonar and magnetometer. Sub-bottom profiling and multibeam bathymetry do not possess adequate spatial resolution to allow for any detailed image interpretation. These limitations will be discussed in the following analysis of selected contact sets.

The contacts were broken down into four sets for analyses: Groupings, Side scan only, Side scan with associated magnetometer anomalies, and Magnetometer anomalies only. Groupings were selected as the first set for analysis because it readily shows the limitations of some remote sensing systems.

5.5.1 Groupings

One contact grouping was analyzed to show the limitations of the use of sub-bottom profiler and multibeam bathymetry systems for the detection of small objects. The contact grouping consisted of contacts: C99, C102, C104, C105, C106, C107, C109, and M155 (Figure 9 and Figure 10).

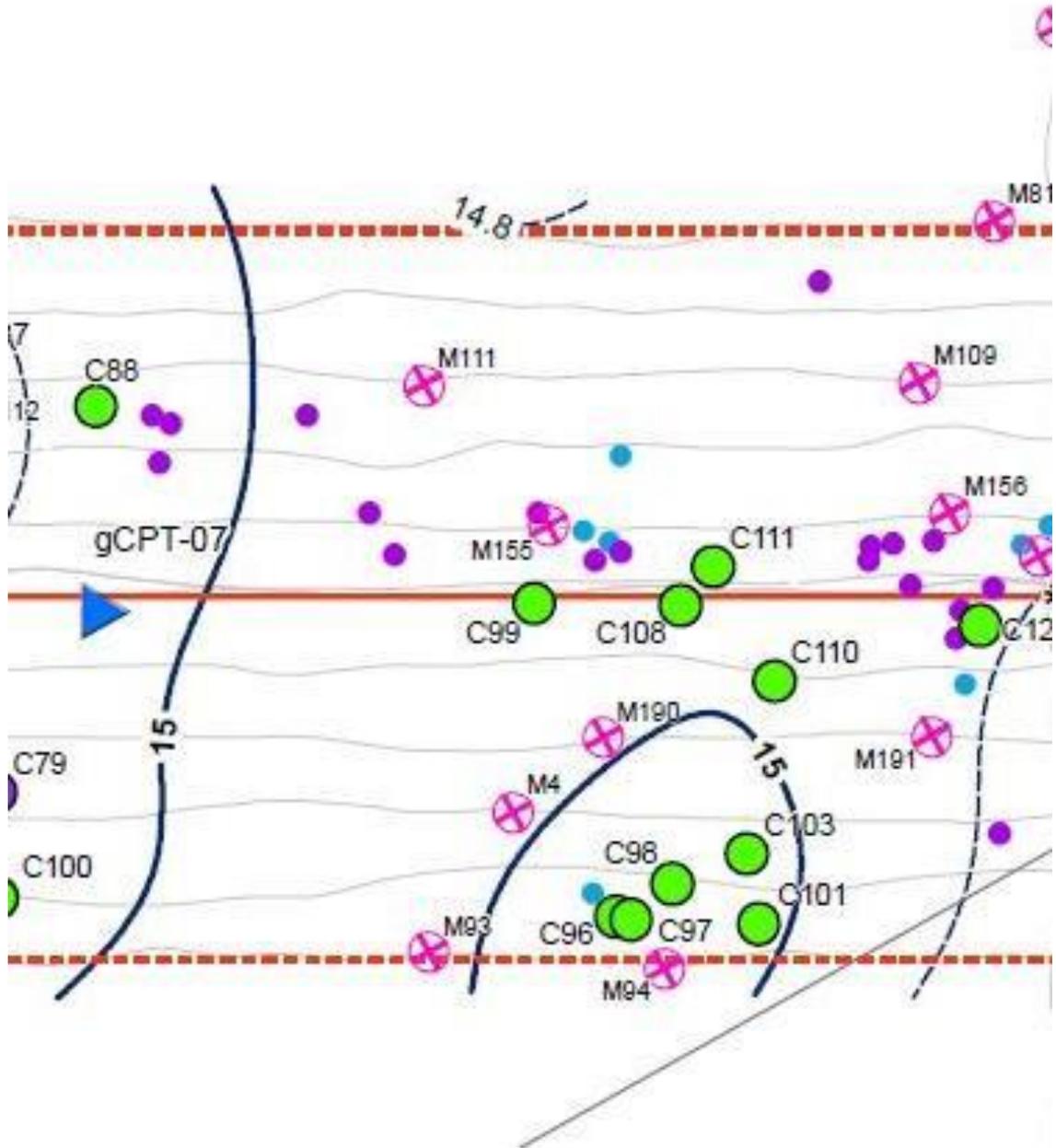


Figure 9 Contact Grouping 1 (CSR)

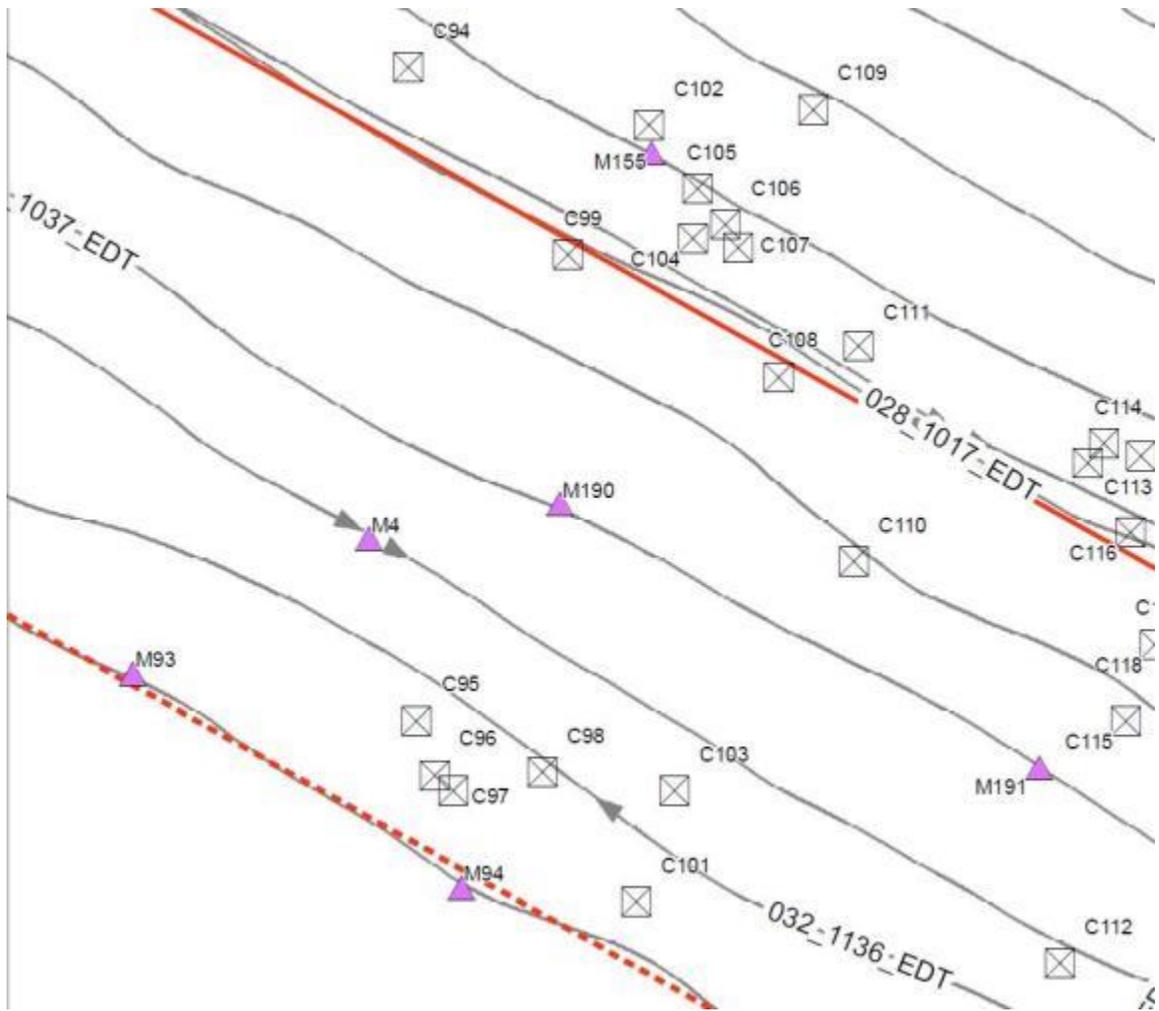


Figure 10 Contact Grouping 1 (CSR)

The following are the detailed side scans of those contacts:

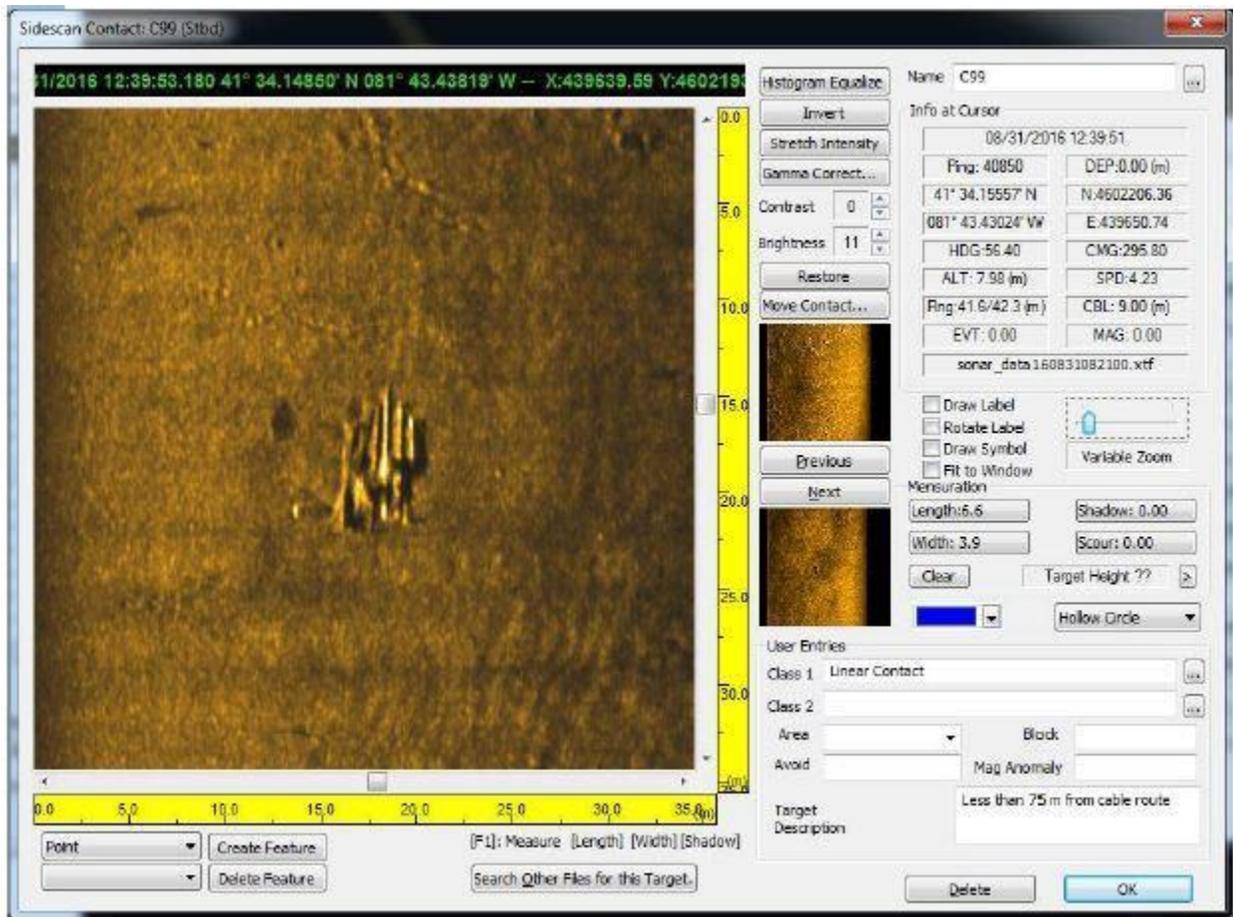


Figure 11 Contact C99 (CSR)

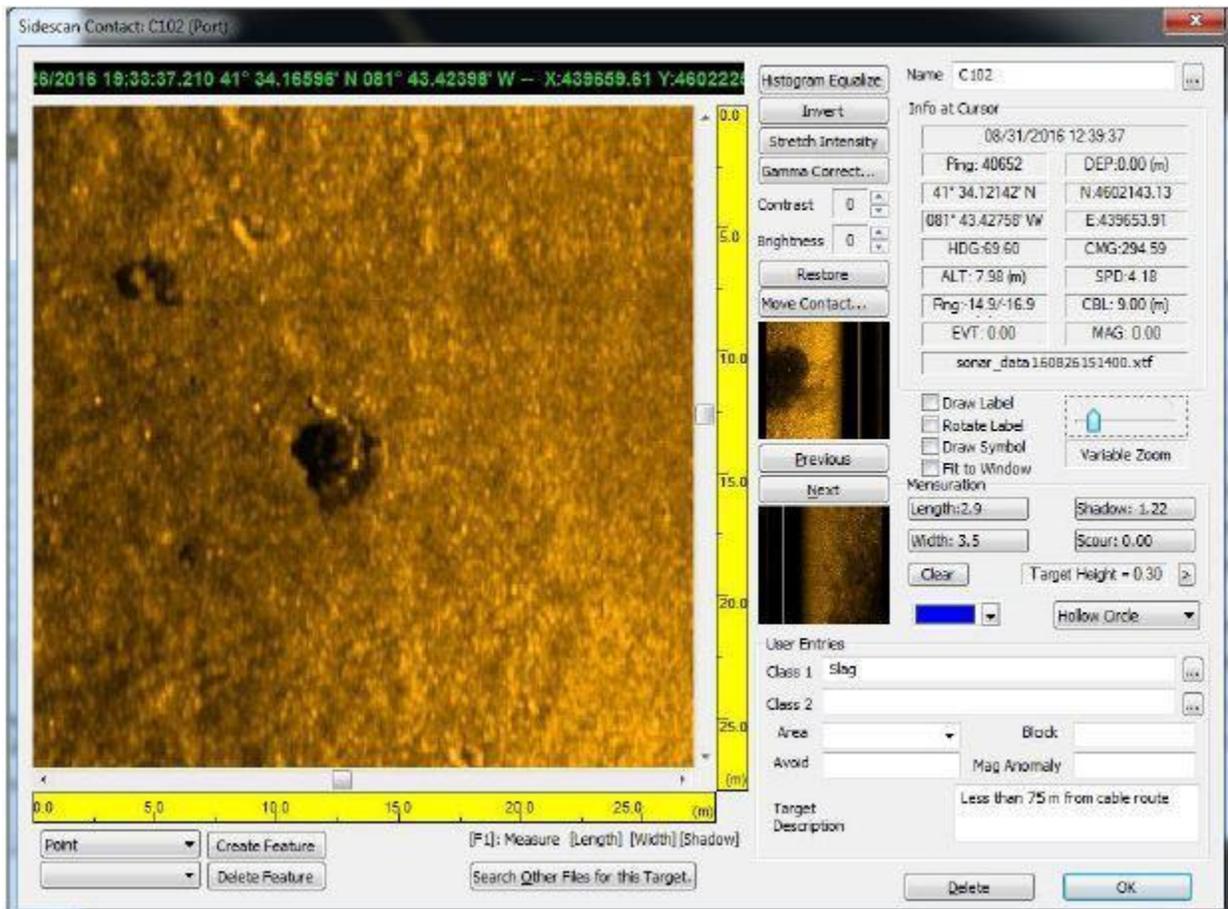


Figure 12 Contact C102 (CSR)

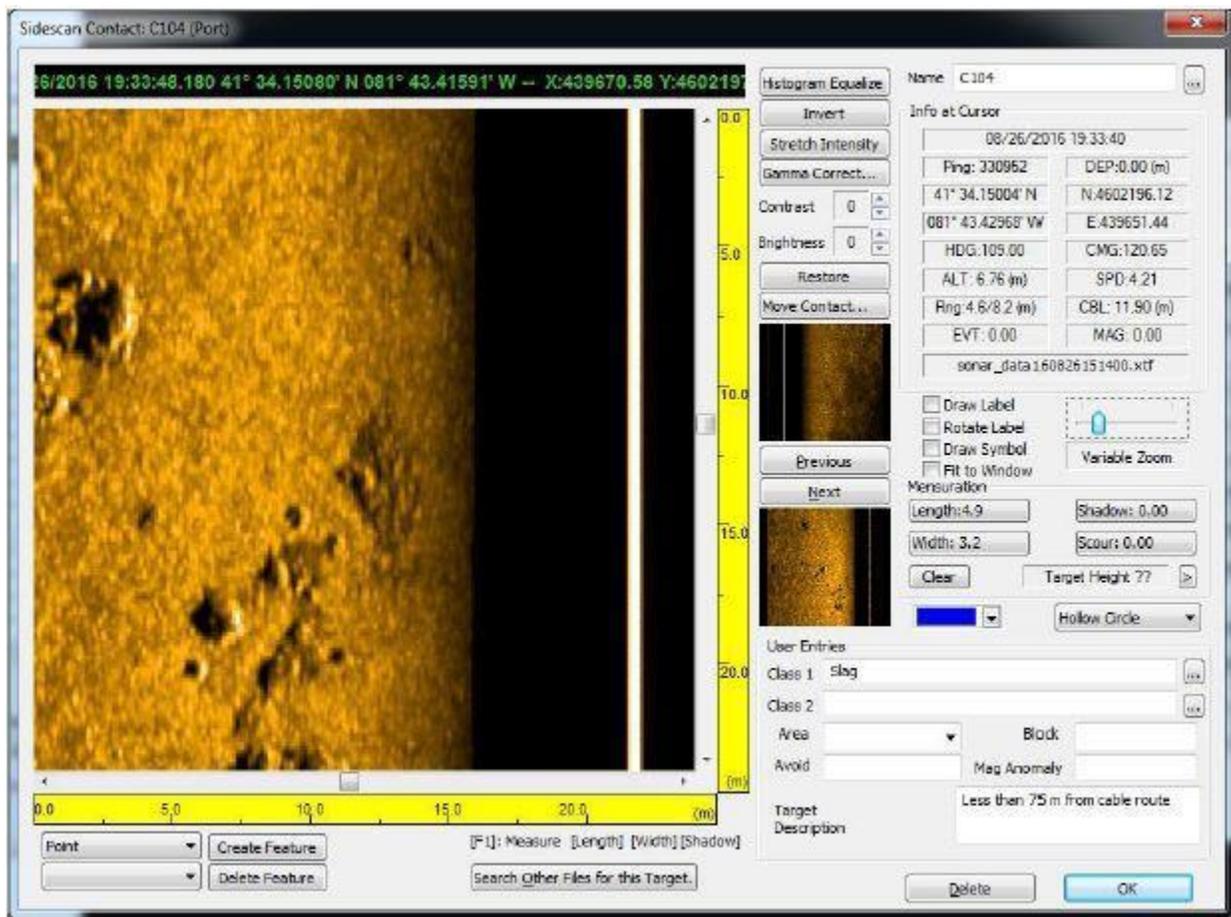


Figure 13 Contact C104

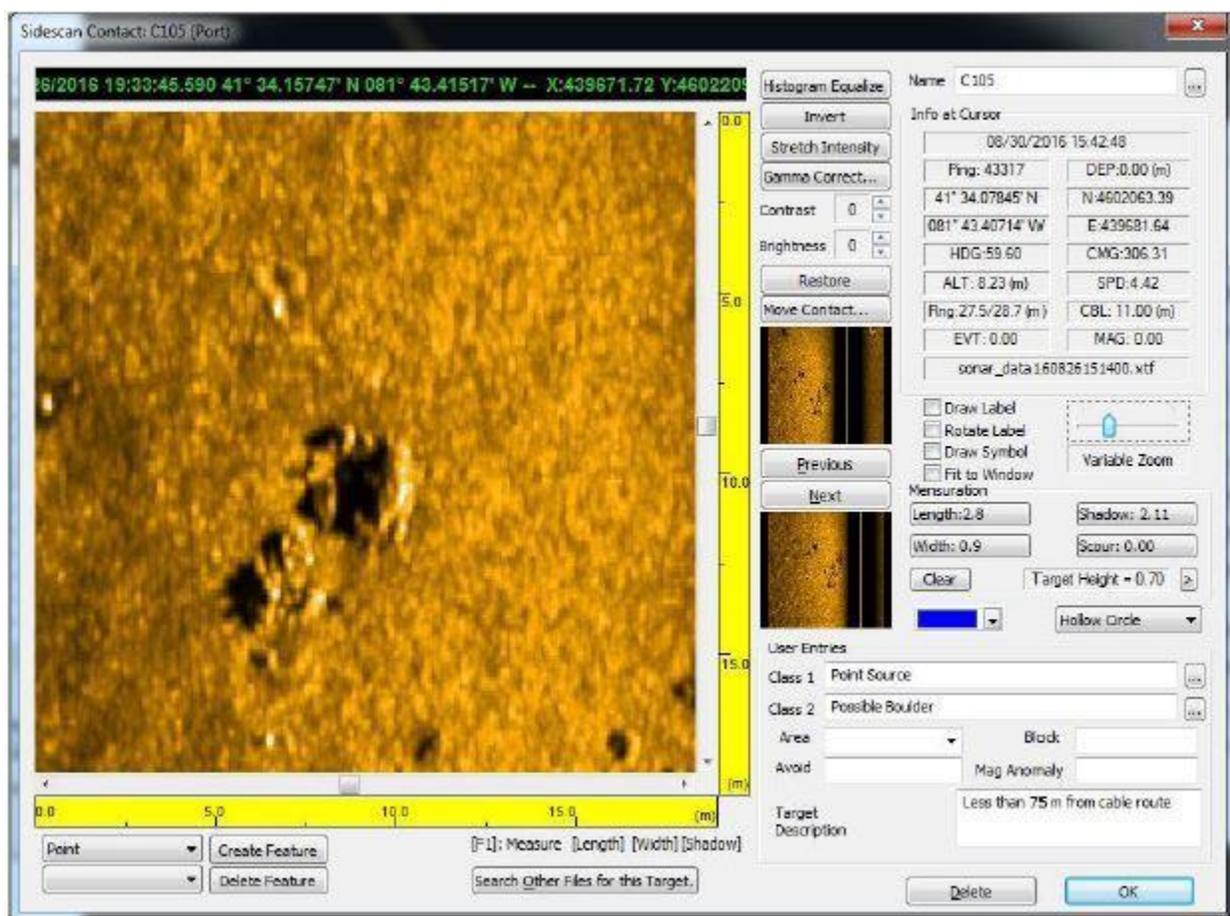


Figure 14 Contact C105 (CSR)

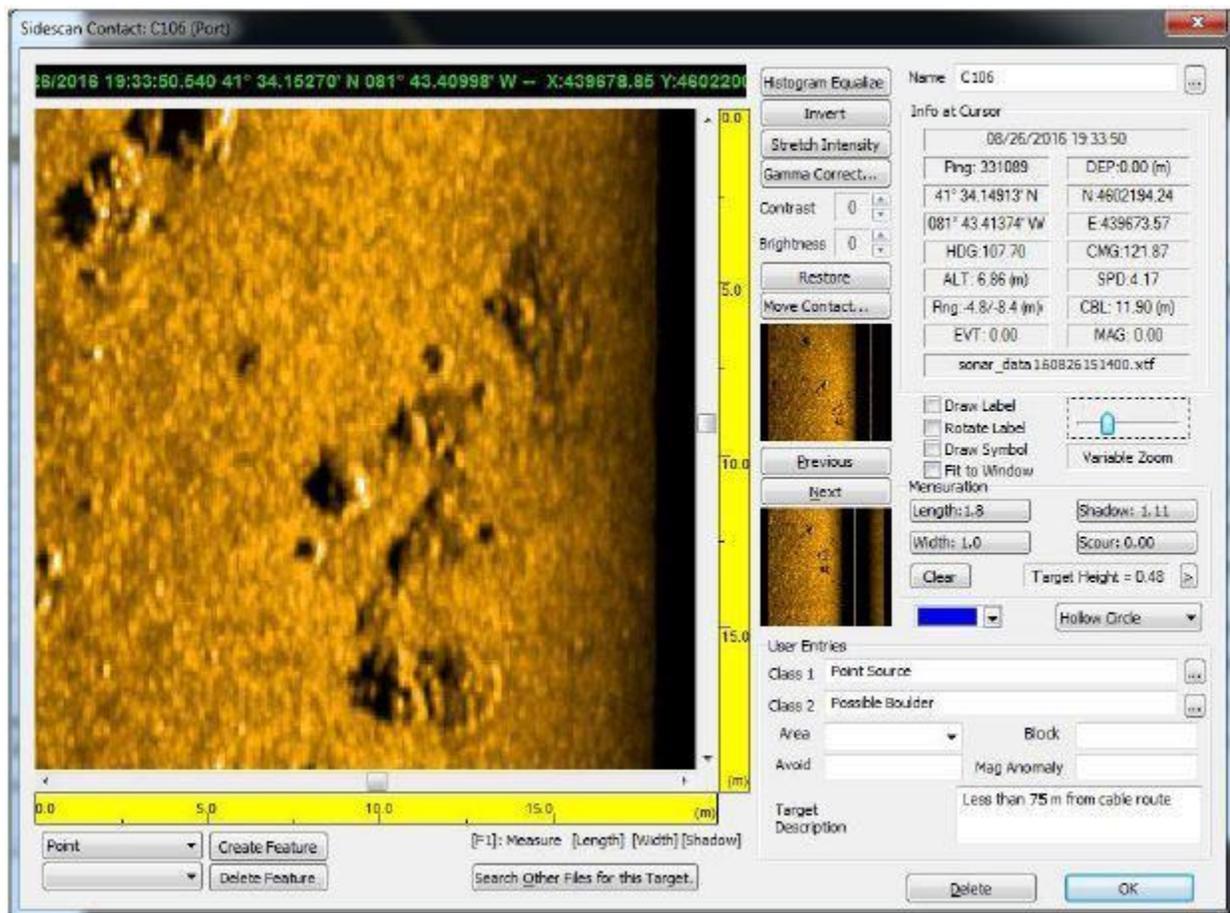


Figure 15 Contact C106 (CSR)

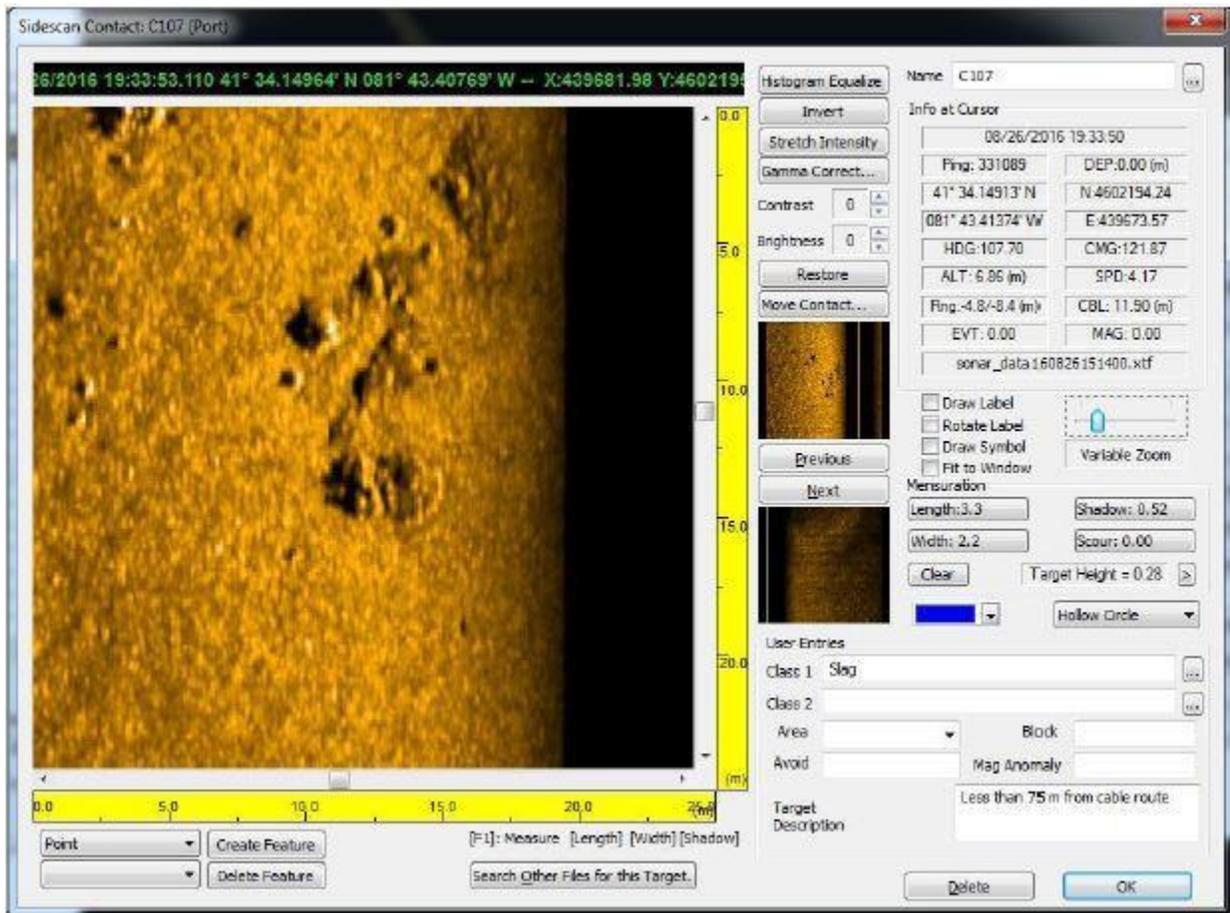


Figure 16 Contact C107 (CSR)

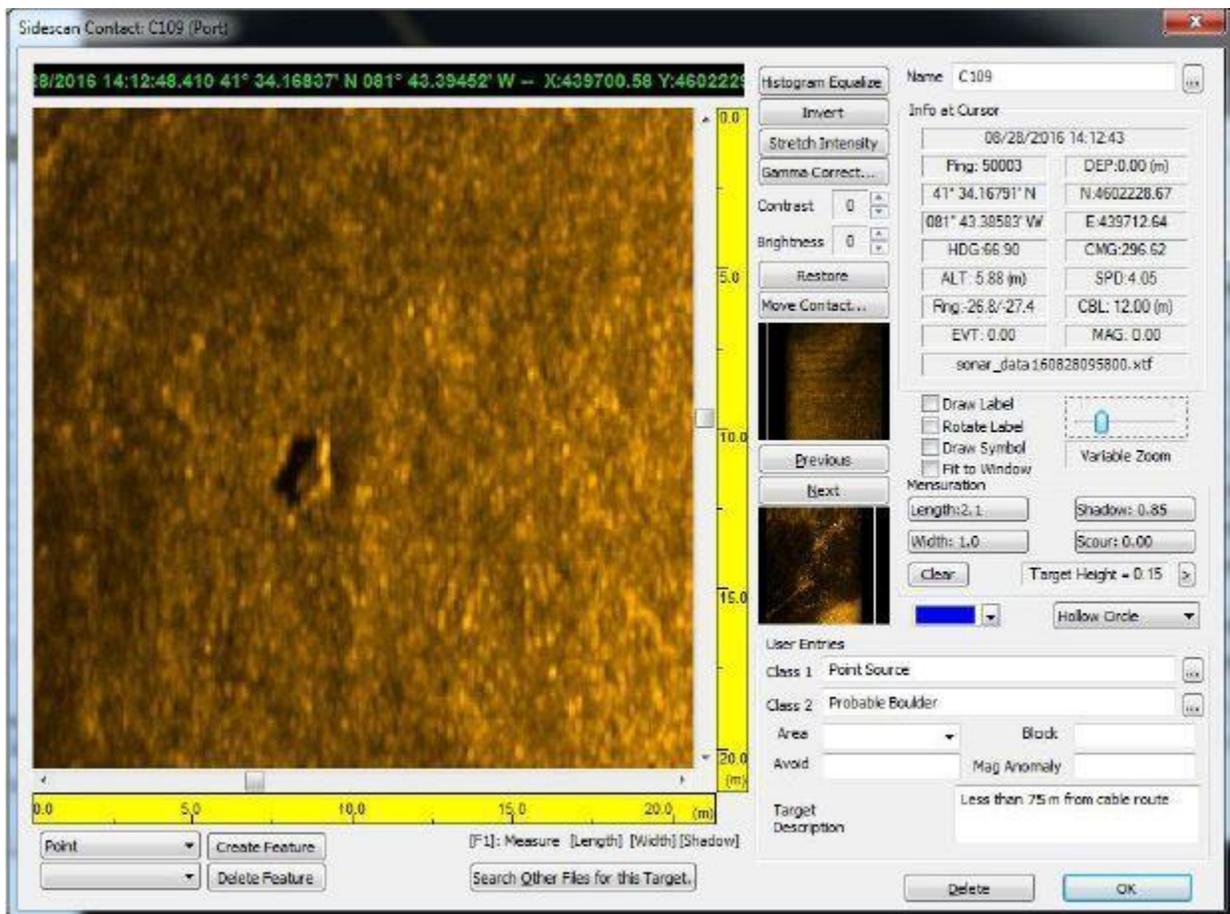


Figure 17 Contact C109 (CSR)

The side scan sonar image in Figure 18 shows the relationship of these contacts with each other over a 100 meter wide swath. It is clear that these contacts are very discernible and have good resolution. Note that the Klein 3000 side scan sonar system operating at 500 kHz has a resolution on the order of 10-20 cm.

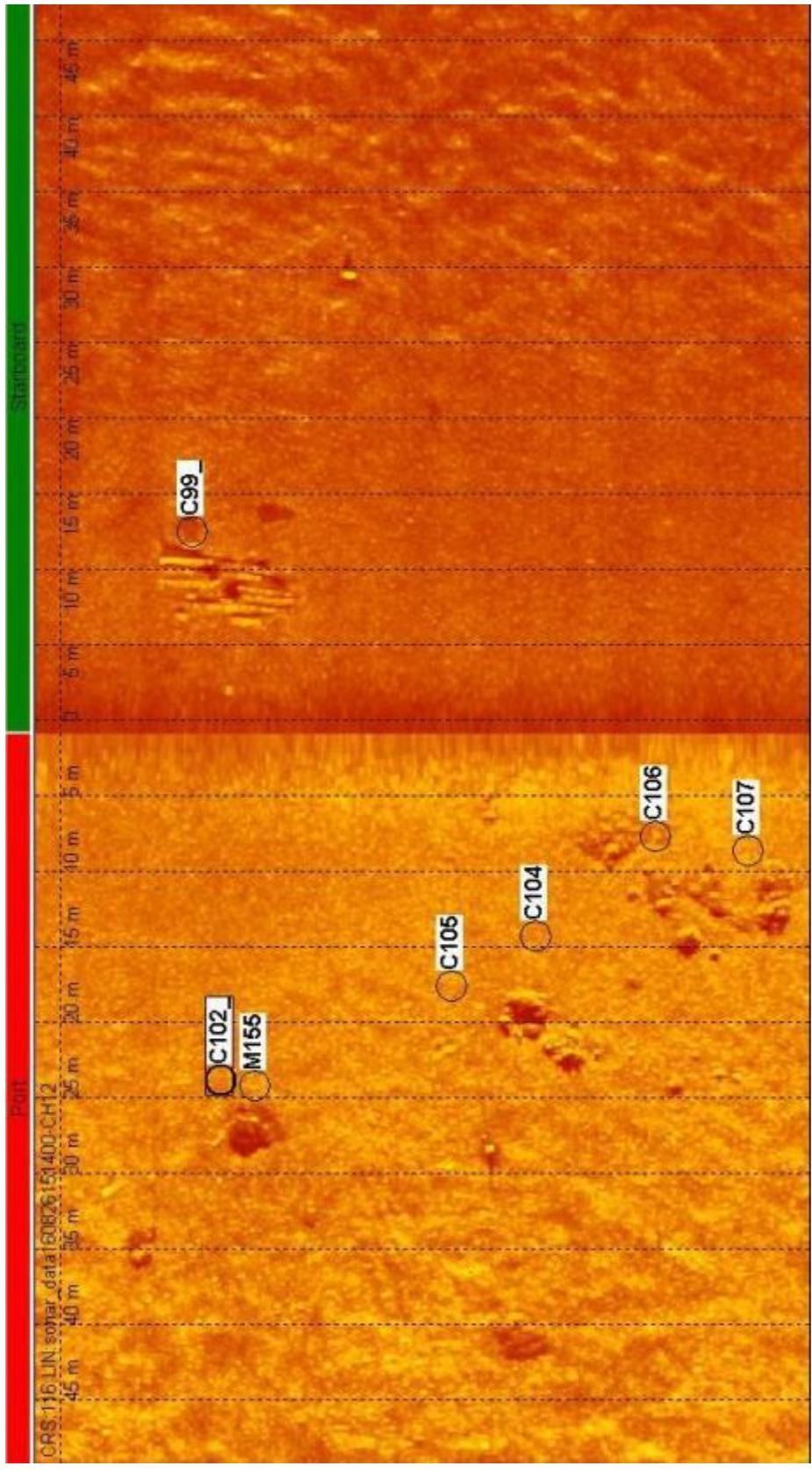


Figure 18 Group 1 Contacts in Context (VanZandt Engineering)

Multibeam bathymetric remote sensing systems were designed to gather bathymetric (depth) data, not image the sea floor. The ODOM Model ES3 multibeam sonar system has quoted resolution of 0.02% of range with a range of 60 meters, but that resolution is only for bathymetric purposes in the Z-axis (depth). The spatial resolution of the system (X and Y-axis) is on the order of 5 – 10 meters, which will not image small contacts on the order of a meter or less. An example of this lack of special resolution is seen from EDOM’s early sales literature (Figure 19)

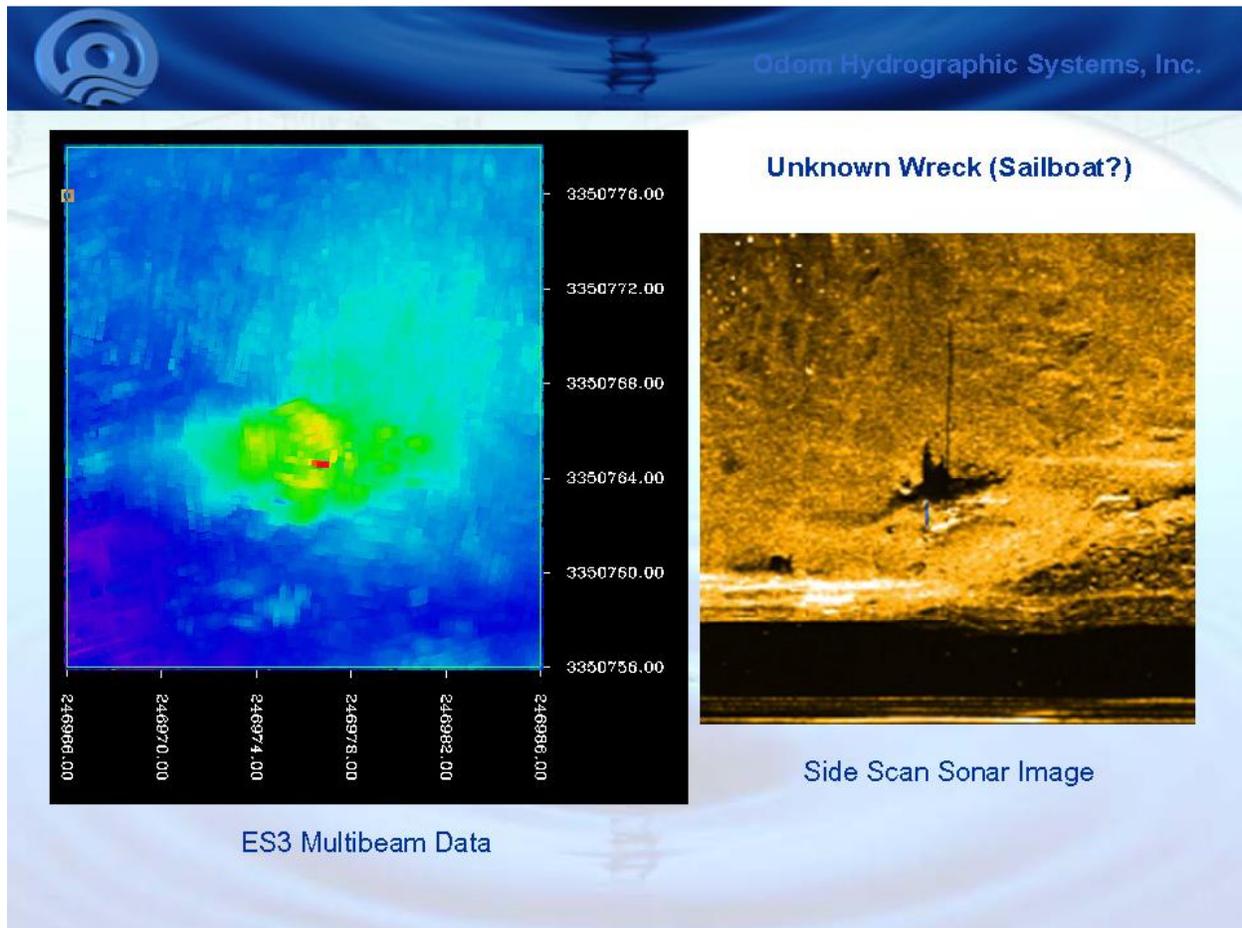
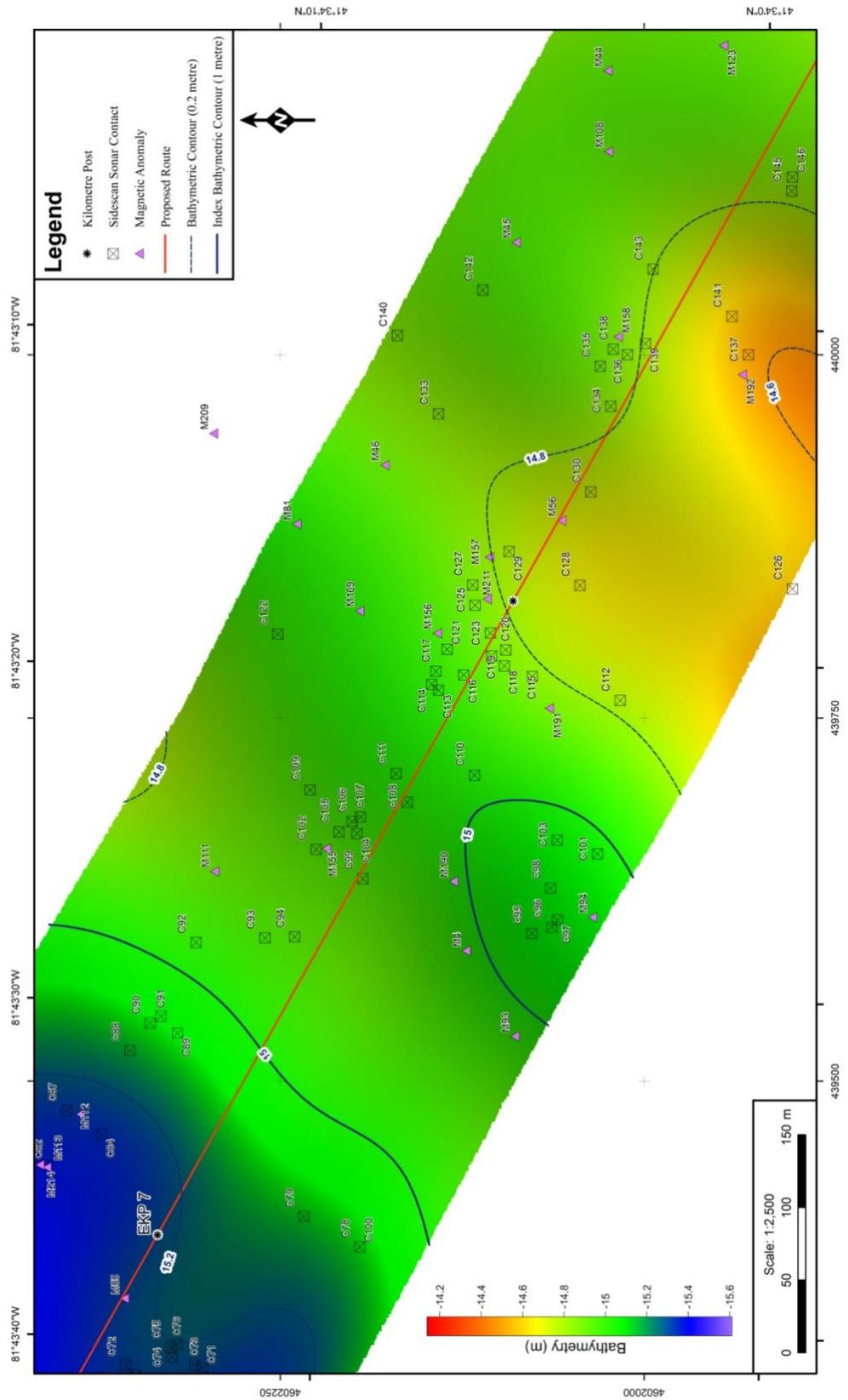


Figure 19 Lack of Multibeam Sonar Resolution (ODOM)

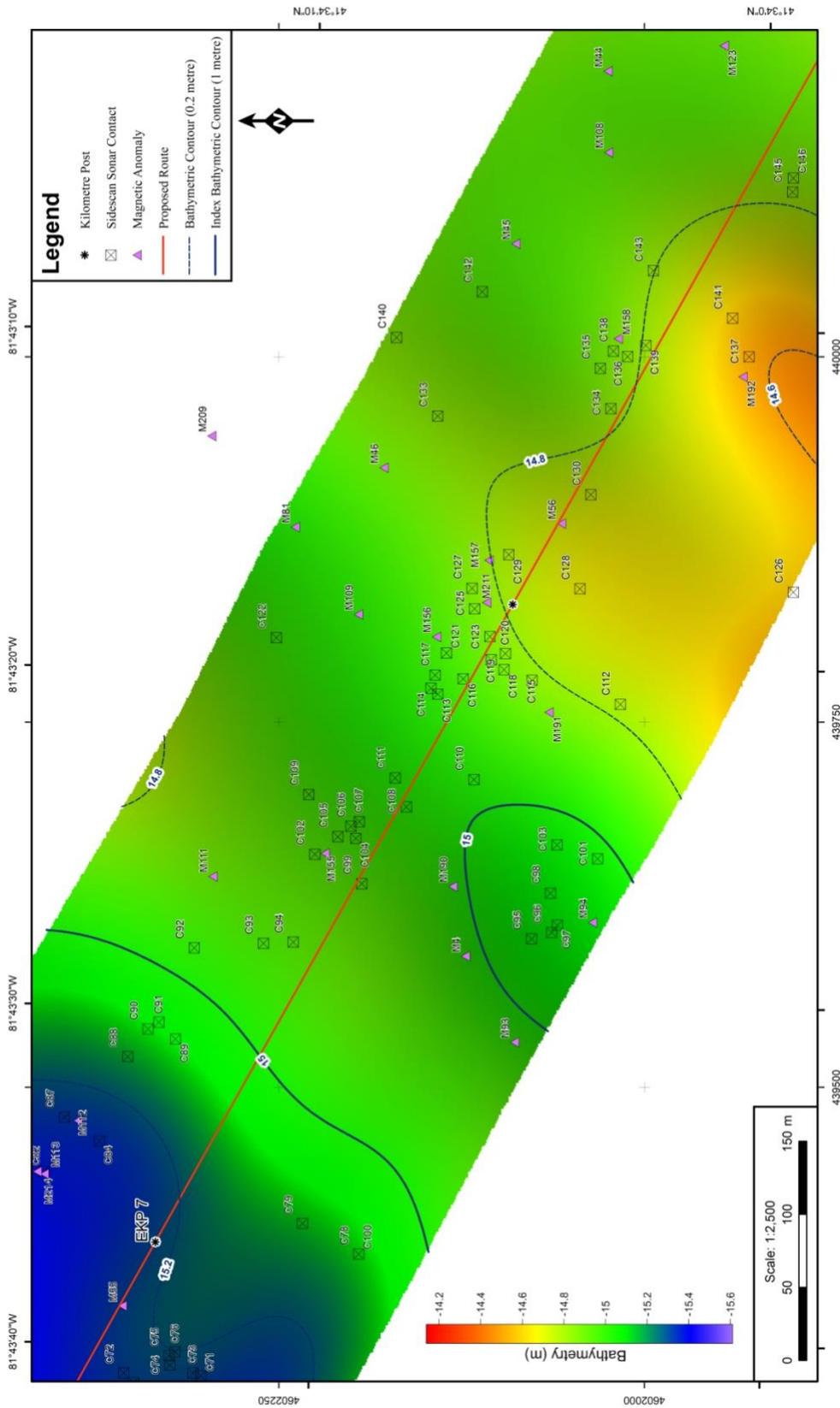
As demonstrated by the above example, the side scan sonar image of the sailboat with mast still standing on the right is clearly recognizable, whereas the image on the left has no spatial resolution other than a change in bottom elevation. The multibeam image in no way resembles a sailboat, a recognizable artifact, or indicates that the shape of the object was manmade. To further illustrate the point that multibeam data has insufficient resolution for image



identification,

Figure 20 and Figure 21 are the multibeam data collected around the Contact Grouping 1 area and contoured at 0.2 meter increments. It is readily apparent that these data lead to the

conclusion that the entire lake bottom in this area is smooth and there are absolutely no contacts to evaluate. This lack of spatial resolution is the reason that the multibeam bathymetric data gathered during the survey was not used for contact determination or contact evaluation.



Multibeam Data from Contact Grouping 1 (CSR)

Figure 20

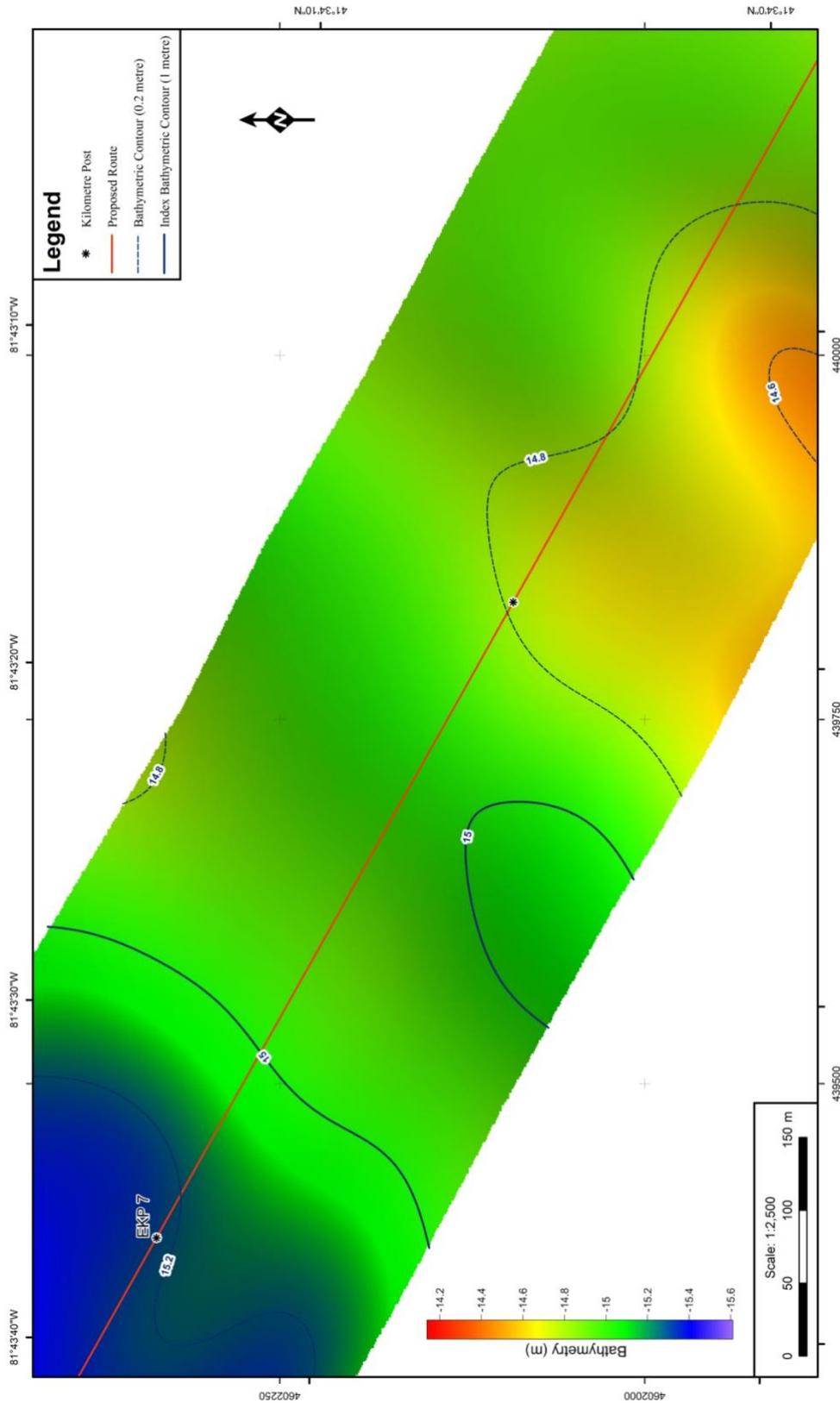


Figure 21 Multibeam Data Contact Grouping 1 with no Contact Overlays (CSR)

A Klein 3000 chirp sub-bottom profiler (SBP) integrated with the Klein 3000 sidescan system was used to collect underground geological data in the turbine and export cable APEs. The resolution of the SBP is stated as 12.5 cm or better, but only for depth in the Z-axis. The spatial resolution for contact discrimination is on the order of meters. The beam angle of the SBP is 20° along track and 40° cross track @ 5 kHz. This equates to an area 2 meters by 4.4 meters when towed at a survey altitude of 6 meters off the bottom and the wide beam angles and low frequencies do not lend themselves to small contact imaging. The main purpose of the SBP in the survey is to determine the underlying geology for the purposes of construction, locating possible prehistoric features such as old river beds, large outcroppings, hills and valleys, or possibly large midden piles many meters in size, and shallow buried objects such as boulders and possibly large artifacts. These normally show up as indiscernibly hyperbolic reflections, Figure 22 (Jacobsson)

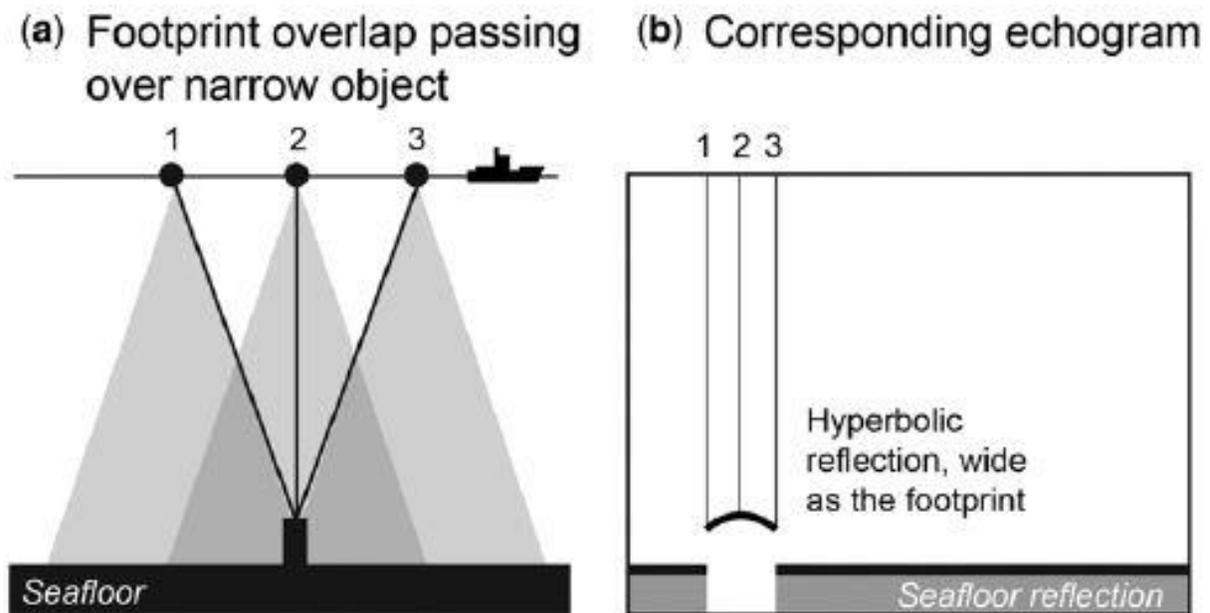


Figure 22 Hyperbolic reflection mechanics (Jacobsson)

“Given the lack of angular resolution and the relatively broad beam width of an SBP, the shortest range to within the beam footprint will be recorded as if it was always directly below the vessel. The closest distance to the object that the sonar records in the form of an echo will change as the ship moves (Figure 22a). This distance will appear as a changing depth to the

object. A narrow object (narrow pit or peak) will appear to widen as the ship moves past it. The end result is a characteristic hyperbolic shape on the echogram, where the object is located in the center (Figure 22b)(Jakobsson).”

Again it is possible that artifacts may show up on SBP data, but they would not be identifiable or easily distinguished from geological features (Figure 23)(Papatheodorou). Again, this is why SBP data was not used to identify historic artifacts.

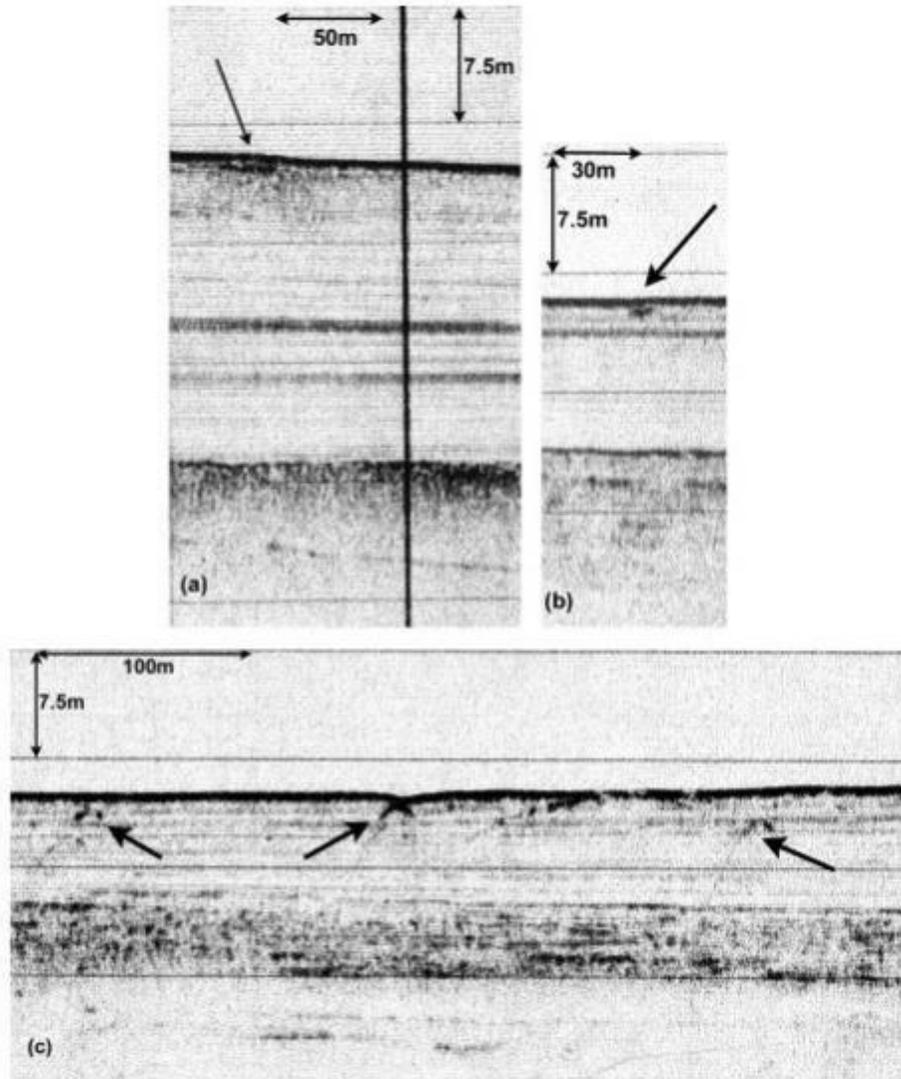


Figure 23 3.5 kHz sub-bottom seismic reflection profiles, showing sub-surface targets which probably represent cultural debris from the Battle of Navarino. (Papatheodorou)

SBP data for grouping 1 shows no discernible images or subbottom structure for any of the contacts associated with this grouping (Figure 24 and Figure 25).

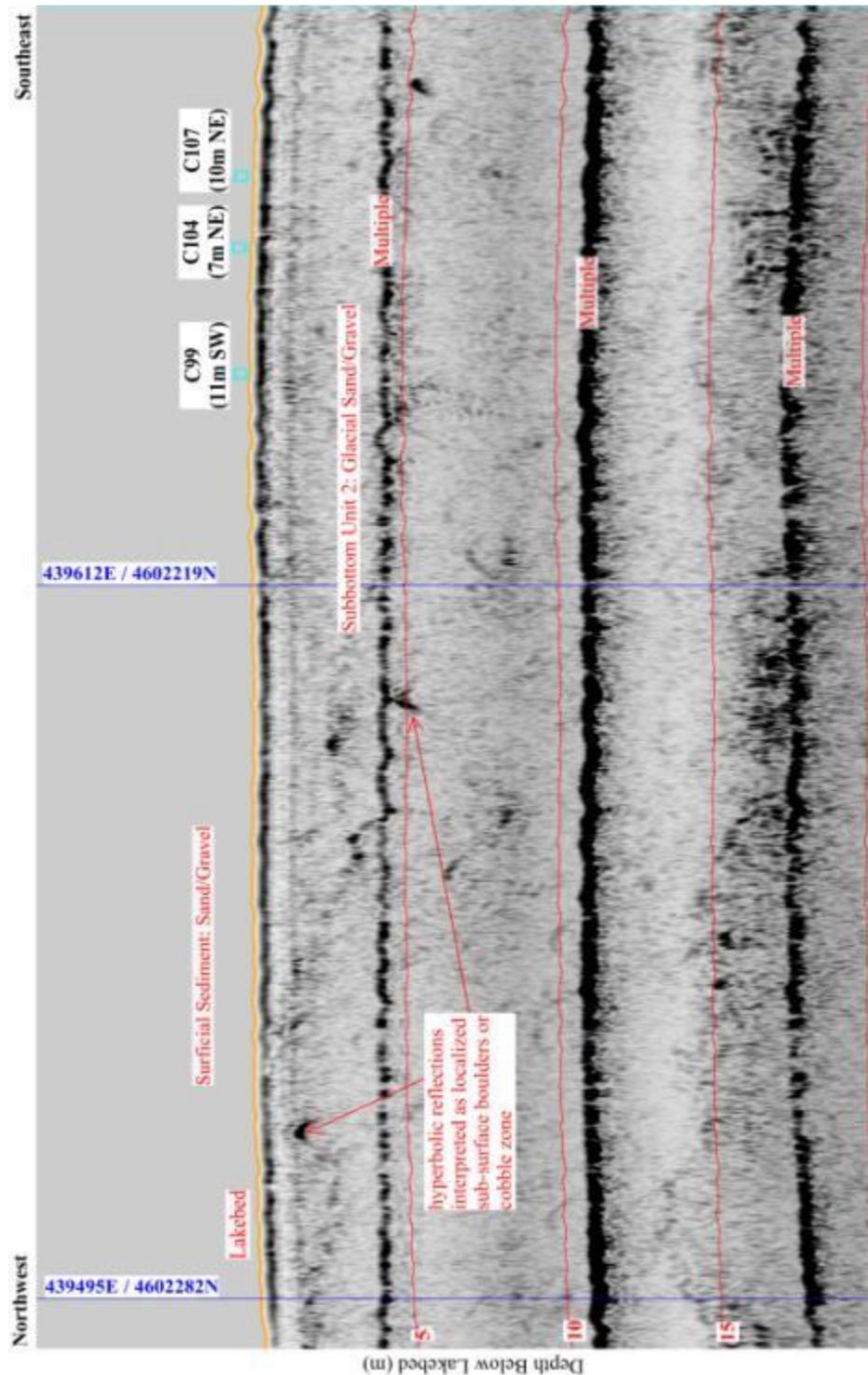


Figure 24 Chirp profiler record illustrating the shallow sub-surface geology over sonar contacts along survey line 028_1514 (sonar file 160826151400). (CSR)

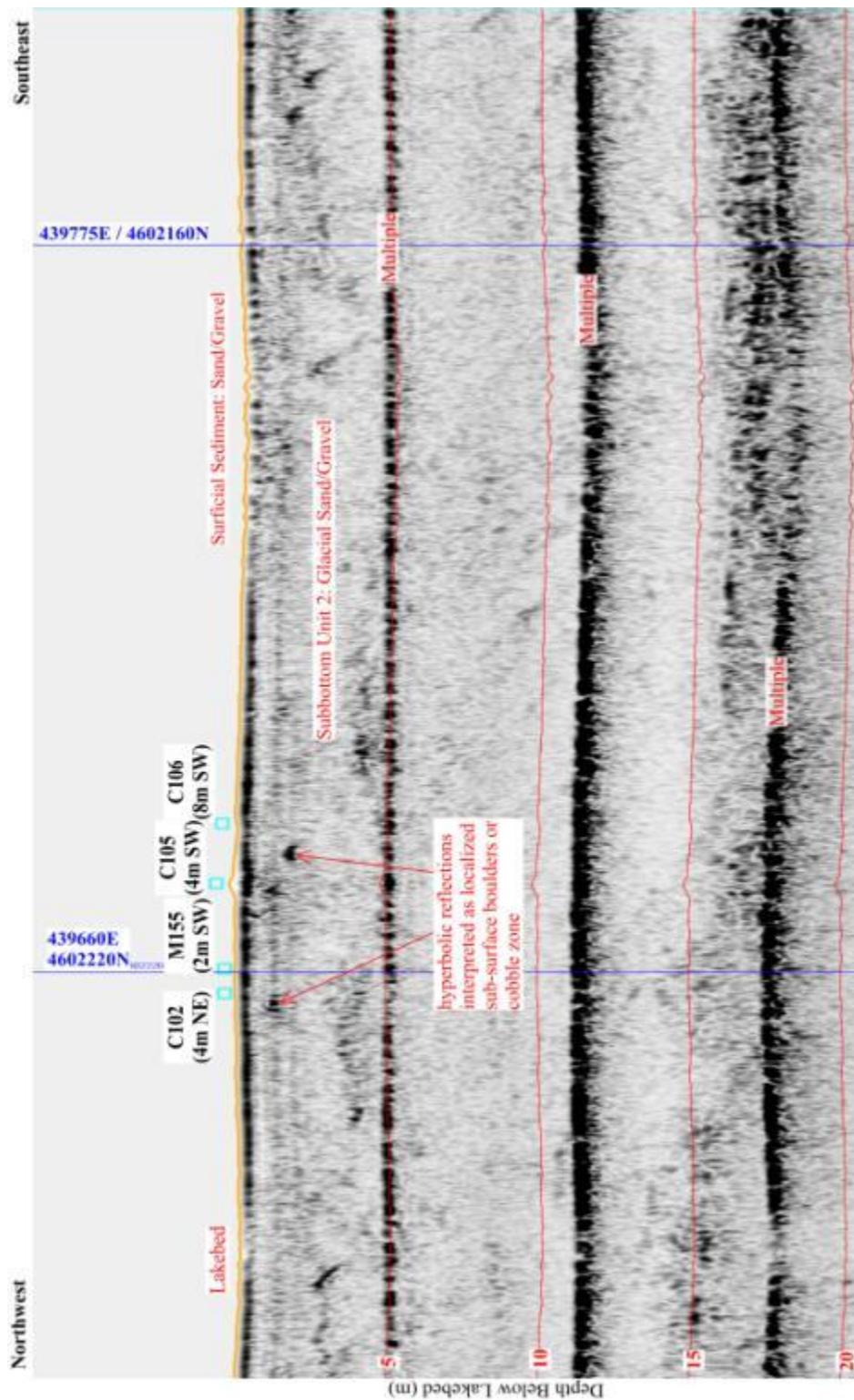


Figure 25 Chirp profiler record illustrating the shallow sub-surface geology over sonar contacts along survey line 027_1345 (sonar file 160830134500). (CSR)

The hyperbolic reflections imaged are on the meter size or less and probably represent individual boulders.

This lack of contact resolution is the reason that the SBP data gathered during the survey was not used for contact determination or contact evaluation.

5.5.2 Contact Grouping Analysis

The contact grouping of C99, C102, C104, C105, C106, C107, C109, and M155 in context with the lake bottom (Figure 18) resembles a dump site for construction trash. Contacts C104 – C107 are probably stone or cement refuse due to their appearance and lack of magnetic signature.

Contact C99 has no magnetic signature so it is probably of organic construction and most likely wood. It measures 9 meters x 4 meters with a calculated height off of the bottom of about 0.2 meters at its highest point with the majority of the structure at the level of the lake bottom. The image resembles wooden cribbing or a wooden dock. While it is possible that this could be a portion of an old shipwreck, such as blown off decking or hull structure, the lack of remnants of a centerboard structure, railings, frames, or anything cross tying this structure together make it highly unlikely.

Contact C102 measures 4 meters x 2.5 meters and its calculated height off of the bottom is 0.5 meters. There is a magnetic signature associated with this contact registering 13.7 nano teslas (nt) which equates to approximately 49 kilograms (kg). (Note: The relationship between nt and mass will be discussed in the magnetic contacts section.) The contact resembles a very thin curved piece of ferrous metal, manmade but unidentifiable.

The grouping in itself resembles a dump site and has several disarticulated manmade objects with no archaeological context or historical context such as a shipwreck.

5.5.3 Side Scan Only Contacts

The sidescan sonar contacts table was determined by the analysis of 271 line km of side scan sonar data by CSR. They tabulated the pertinent data for each contact along with a subjective description of the contacts identified (Table 1). They also provided detailed sidescan images with pertinent data for each individual contact in the attached CSR Survey Report APPENDIX IV, SIDESCAN SONAR CONTACT SONOGRAMS.

The 271 line km of side scan sonar data was then analyzed by VanZandt Engineering to verify CSR's interpretation of the data and their contact table. VanZandt Engineering concurs with the contacts identified from the raw data. They then evaluated the data and descriptions provided for the individual contacts. VanZandt Engineering concurs except for the following description change:

- The CSR term "slag" used to describe a contact with or without an associated magnetic anomaly is redefined to "non-magnetic mill tailings" for a contact that does not have an associated magnetic anomaly as slag is a ferrous material with a magnetic signature

Out of the 455 identified sonar contacts 420 of them were not associated with a magnetic anomaly. Out of those 420 contacts 11 were identified as possibly being manmade. Of the 409 non-manmade contacts a majority of these are linear contacts, low reflectivity patches, point sources, and circular sources. The 11 remaining contacts were rectangular contacts.

The linear contacts are mostly trees and anchor scour. The rivers feeding Lake Erie discharge quite a number of trees after a strong storm. Some of these trees have been culled (Figure 26) and sawn up in the Metro parks system by grounds keeping staff along the river banks, with some still intact (Figure 27). During a storm, and afterwards when the rivers rise, these trees, either uprooted or culled, are carried downstream and discharged into the lake.

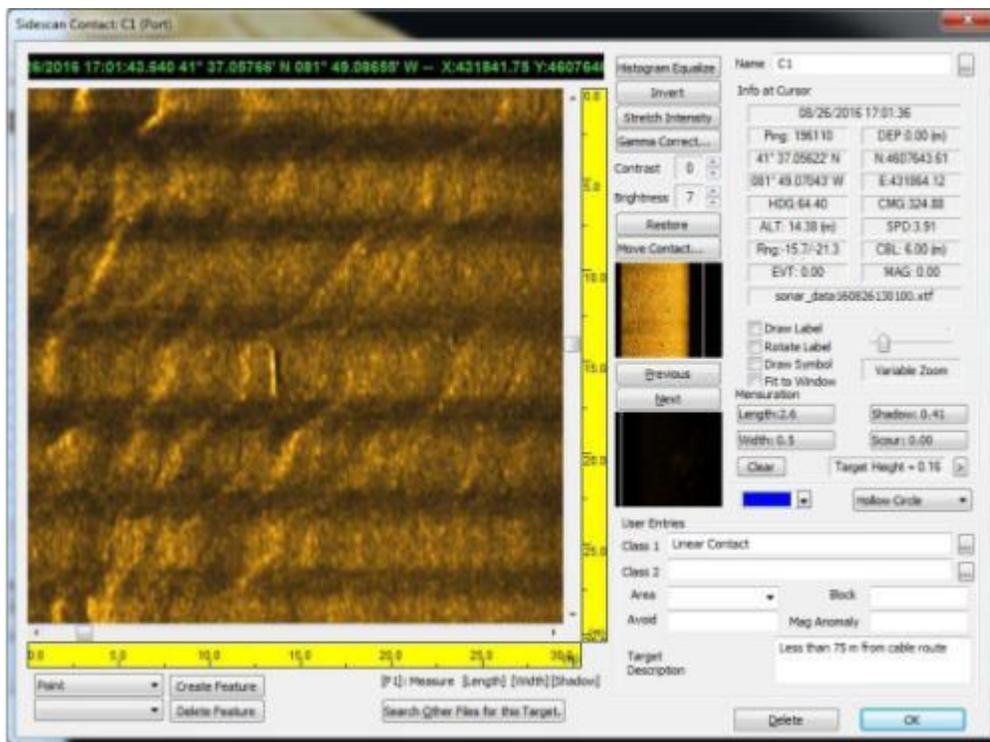


Figure 26 Cut Log (CSR)

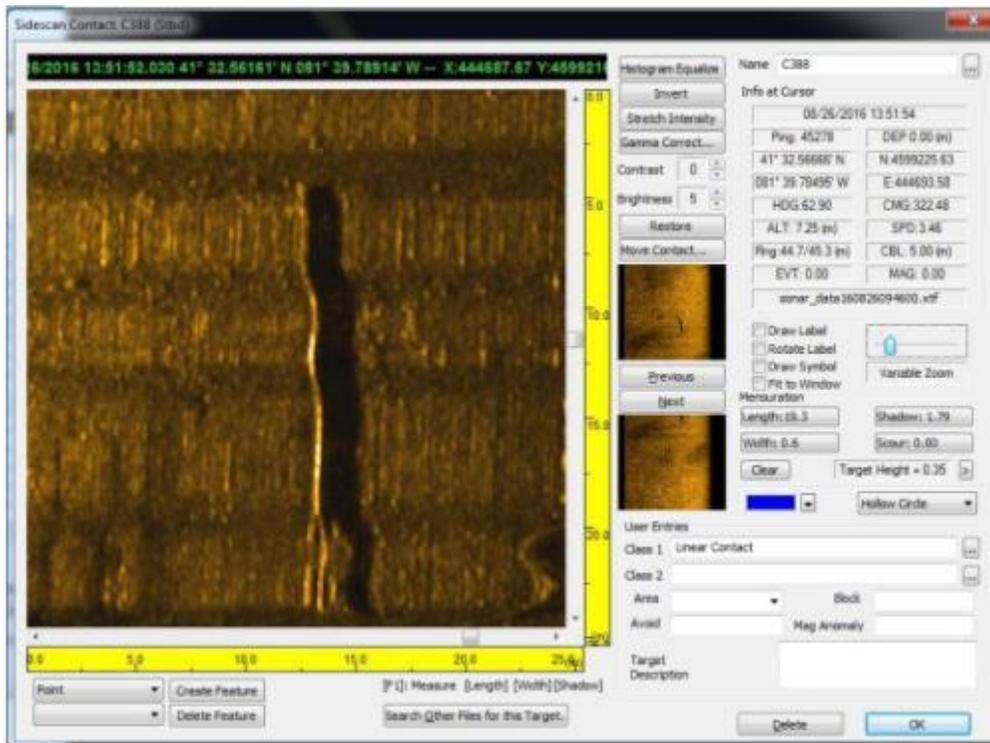


Figure 27 Tree with Roots (CSR)

Examples of low reflectivity patches, point sources, and circular sources which normally consist of tailings, dumpings and boulders are as follows:

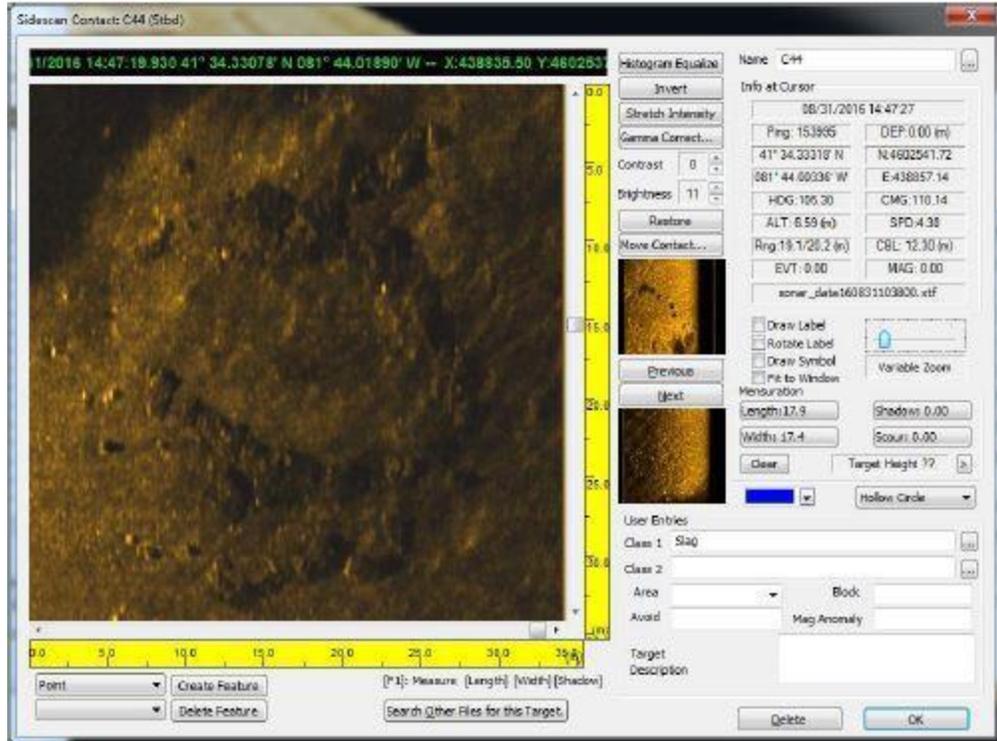


Figure 28 Low Reflectivity Contact (CSR)

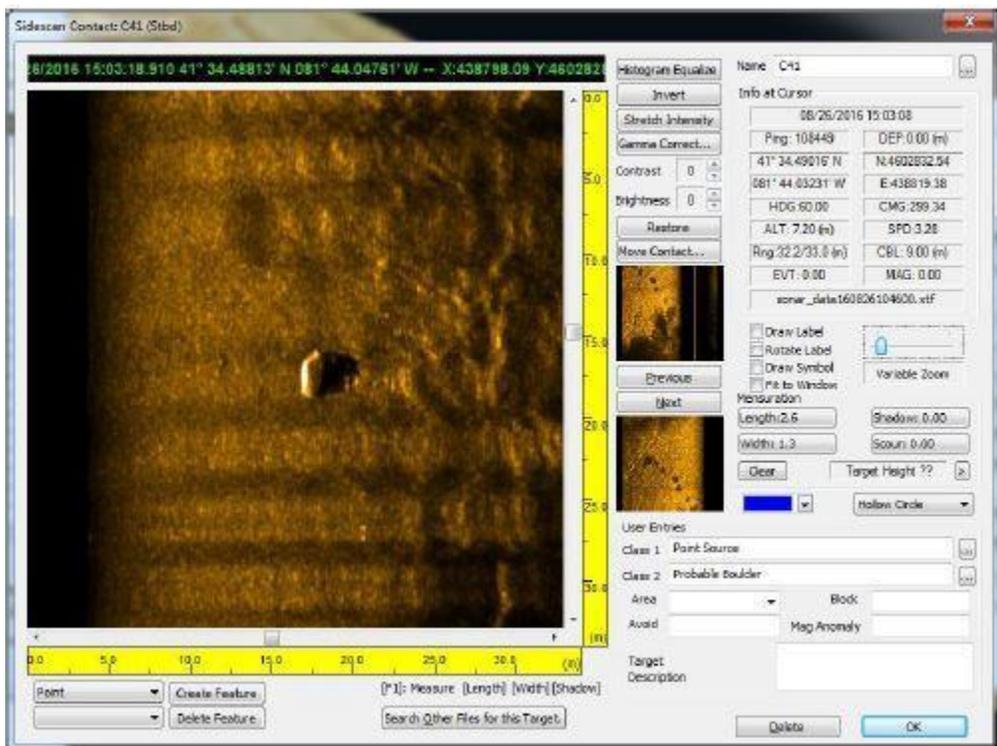


Figure 29 Point Source Contact (CSR)

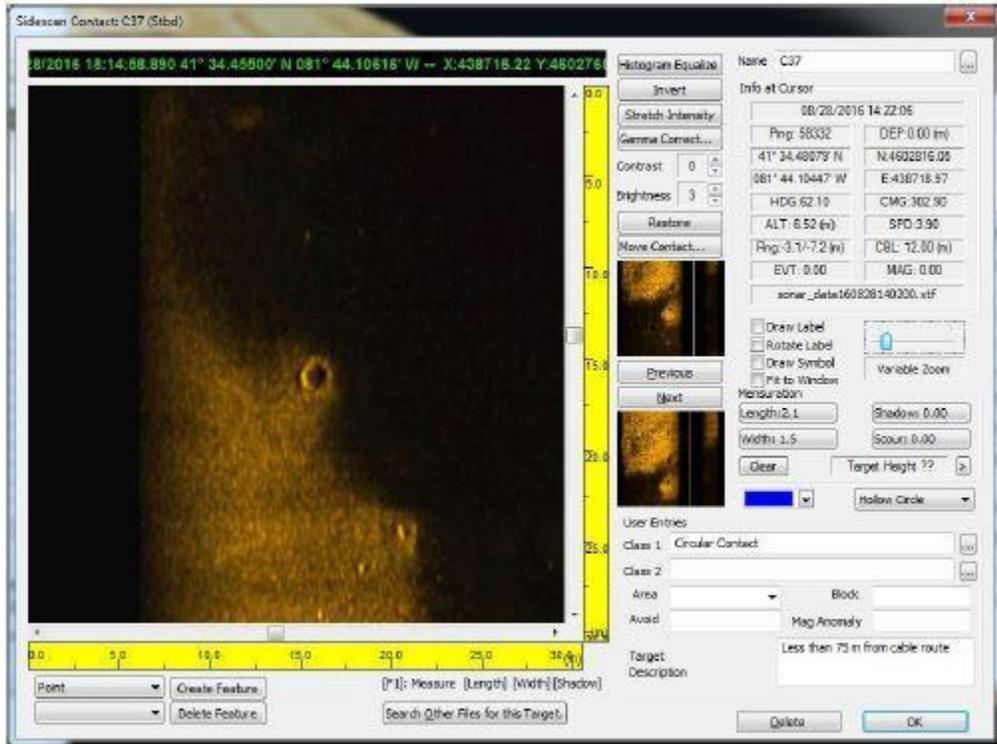


Figure 30 Circular Source Contact (CSR)

The 11 manmade targets were unidentifiable but characterized by straight lines and angles. For example, contact C383 (Figure 31) has a distinct 90 degree angle and measures 2.5 meters x 5 meters and could possibly be some roofing debris that was dumped; or it could be something totally different. The contact has no magnetic anomaly associated with it nor does it have any elevation above the lake bed.

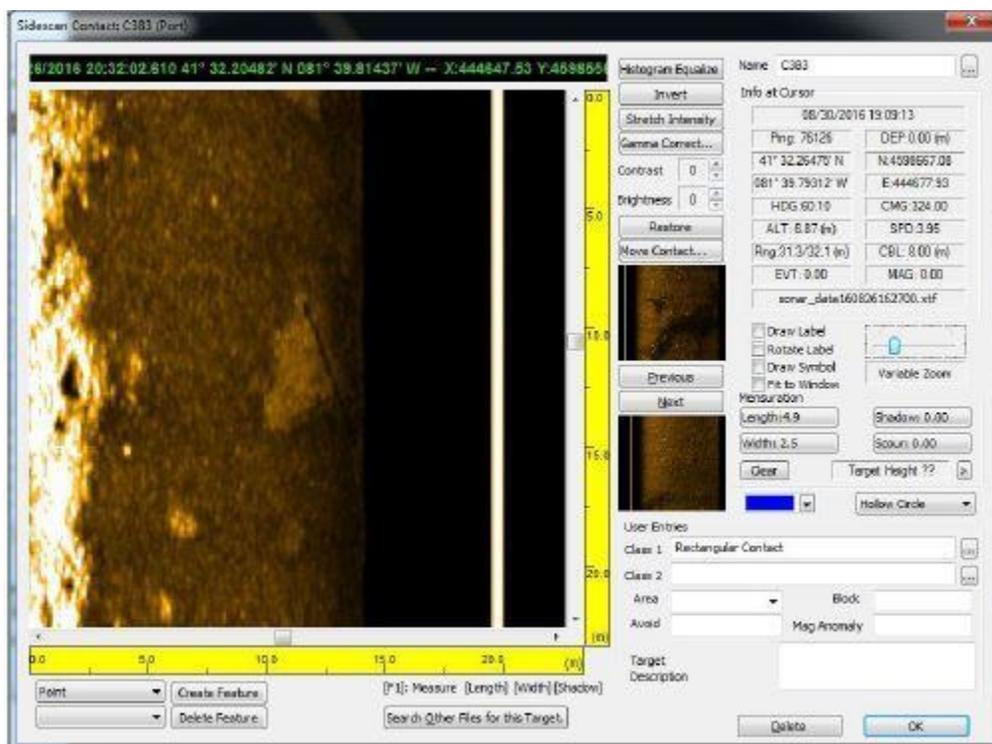


Figure 31 Manmade Contact C383 (CSR)

The analysis of the 420 sidescan sonar contacts without associated magnetic anomalies yielded no contacts of historical significance, although several manmade contacts were found, they are disarticulated with no archaeological context, thus do not represent potentially significant historical resources.

5.5.4 Magnetic Anomalies

The magnetic anomalies table was determined by the analysis of 271 line km of magnetometer data by CSR. 178 Magnetic anomalies were detected and they tabulated the pertinent remote sensing data for each anomaly (Table 2). CSR Survey Report APPENDIX V MAGNETIC ANOMALIES TABLE.

The 271 line km of magnetometer data was then analyzed by VanZandt Engineering to verify CSR's interpretation of the data and their anomaly table. VanZandt Engineering concurs with the anomalies identified from the raw data.

VanZandt Engineering further modified the Magnetic Anomalies Table to include an estimate of the target mass (Table 3) utilizing the Hall equation (Camidge):

$$w = \frac{\Delta M d^3}{10 \text{ nt} \frac{m^3}{kg}} \times \frac{b}{a}$$

Where: b/a = target width over length ratio (assumed to = 1)

d = Altitude of towfish above the bottom in meters

ΔM = Magnetic anomaly strength in nt

w = estimated mass of the target in kg

The estimation of mass from the hall equation was used to evaluate the contact size for both the no sidescan contact cases and the sidescan contact cases.

Table 3 Magnetic Contacts Sorted by Mass

ID	NAD83 Geographic		NAD83 UTM Zone 37		NAD83 State Plane North		Bathymetry (m)	Distance Proposed	Polarity	Amplitude (nT)	Associated Sidescan Contact ID	Magmatite Height Above Seafloor (m)	Survey Date (EOP)	Equivalent Mass from Hill Equations (kg)
	Latitude	Longitude	Easting (m)	Northing (m)	East (US survey feet)	North (US survey feet)								
M0148	41.6	-81.7	4387000.0	4012576.3	2177756.3	635285.0	33.4	134.5	Dipole	266.8		3.4	032 1136	4044
M0155	41.5	-81.7	443111.4	459484.1	2194011.3	68675.2	12.3	62.9	Dipole	109.8	C187	5.8	010 1525	5421
M0200	41.5	-81.7	443115.9	459486.3	2194044.0	68675.6	11.5	61.7	Dipole	109.8	C188	5.5	030 1117	2725
M0216	41.5	-81.8	452158.4	461559.3	2195171.7	761671.7	37.2	173.4	Dipole	75.7		5.6	021 1118	2291
M056	41.5	-81.7	445711.7	4389015.0	2198854.7	681866.4	0.0	437.4	Monopole	233.1		4.5	047 1550	2124
M0150	41.5	-81.7	443145.4	4610107.1	2197800.1	697431.4	10.5	61.0	Dipole	85.2		5.1	030 1117	3534
M0177	41.5	-81.7	444437.1	4382465.4	2195278.5	681045.8	10.6	288.4	Dipole	144.8		5.1	040 1422	1915
M0177	41.5	-81.7	440145.4	4611776.1	2192741.9	672714.9	14.8	173.3	Dipole	138.2		4.8	032 1136	3418
M075	41.5	-81.7	443700.0	4577981.6	2194441.6	680891.1	0.0	1091.5	Dipole	145.1		4.3	048 1331	1194
M0186	41.5	-81.7	442855.4	4610332.1	2191507.6	685145.6	12.5	55.3	Dipole	50.7		5.1	030 1117	1151
M073	41.5	-81.7	449204.9	4389011.1	2198812.6	683161.7	0.0	395.1	Dipole	136.4		4.3	046 1343	3088
M014	41.5	-81.7	443508.2	4594874.7	2191971.0	687687.5	11.9	92.2	Monopole	187.5	C185	3.8	031 1321	3029
M059	41.5	-81.7	441882.7	4389028.7	2198880.2	681918.8	0.0	470.7	Monopole	125.3		4.3	047 1450	896
M0121	41.6	-81.7	438662.6	4612037.9	2178244.7	635663.3	15.5	36.2	Monopole	74.3		4.3	026 1401	681
M019	41.5	-81.7	443401.7	4389081.7	2193982.0	681717.3	12.3	82.6	Dipole	107.7	C186	4.1	026 1416	742
M055	41.5	-81.7	443015.4	4585935.3	2197071.4	682345.4	10.0	221.5	Dipole	69.7		4.7	078 1019	713
M053	41.6	-81.7	4388412.3	4612664.5	2178108.1	635740.0	15.3	3.5	Monopole	58.0		4.1	026 1514	675
M0209	41.6	-81.7	439445.8	4612254.9	2181848.5	644218.7	0.0	235.9	Monopole	71.7		4.5	048 0806	653
M07	41.5	-81.7	440844.6	4611412.3	2184848.0	681576.9	14.4	58.8	Dipole	76.8		4.3	031 1341	611
M0166	41.6	-81.7	440135.8	4612324.5	2185216.5	635245.1	14.9	93.9	Dipole	75.2		4.3	025 0958	598
M088	41.6	-81.8	432553.1	4605598.6	2188952.4	708182.1	17.2	123.9	Monopole	130.4		3.5	009 1213	553
M0205	41.6	-81.7	440737.8	4611775.7	2186572.4	632765.8	0.0	196.0	Dipole	61.2		4.5	050 0809	558
M06	41.5	-81.7	444597.3	4388870.3	2188615.1	683461.4	10.6	341.6	Monopole	38.6	C132	5.2	070 1409	543
M021	41.6	-81.7	443160.1	4610746.9	2191193.9	676927.0	12.4	102.2	Dipole	77.6		5.6	056 1138	539
M077	41.6	-81.7	440744.2	4611884.7	2181866.0	672998.0	14.8	2.7	Dipole	155.3		3.2	028 1334	509
M0206	41.6	-81.7	440781.1	4611873.0	2181972.8	635105.0	14.7	36.8	Monopole	68.6		4.1	040 0947	473
M02	41.5	-81.7	441864.4	4388021.7	2180883.5	681314.1	10.4	317.9	Monopole	41.3	C411	4.3	071 1427	330
M052	41.6	-81.7	443275.6	4612226.6	2179515.2	684161.3	15.2	132.1	Dipole	75.6		3.4	039 1402	313
M0215	41.6	-81.7	443457.8	4612439.0	2180350.0	634076.0	15.3	122.2	Monopole	61.7	C85	3.7	047 0911	313
M013	41.6	-81.7	443188.9	4610161.5	2192283.4	689301.1	12.4	90.0	Dipole	52.6	C197	3.9	041 1301	312
M0185	41.6	-81.8	438353.4	4613588.1	2163317.4	704863.5	17.0	65.1	Monopole	39.8		3.4	030 0957	312
M050	41.6	-81.8	433276.2	4605118.5	2191481.0	704950.4	17.1	145.6	Monopole	26.3		4.9	033 1522	309
M0134	41.5	-81.7	440715.7	4590716.3	2191045.9	683915.0	11.5	347.0	Monopole	31.6		4.6	089 1515	308
M0186	41.5	-81.7	444490.0	4388725.0	2184962.5	682988.7	10.4	185.0	Dipole	25.8	C165	4.9	091 1409	304
M059	41.6	-81.7	440344.2	4611900.7	2181163.0	632405.4	14.4	3.4	Monopole	134.8		2.8	016 1534	294
M070	41.5	-81.7	443897.8	4384000.4	2192311.7	682904.5	11.3	530.9	Dipole	60.0		2.6	076 1270	280
M071	41.5	-81.7	441143.4	4584600.8	2195804.1	682810.7	10.5	526.8	Monopole	31.2	C116	4.4	077 1315	266
M0184	41.6	-81.8	433276.6	4605770.8	2191838.4	703286.6	17.1	61.6	Monopole	15.8		5.5	030 0957	263
M011	41.6	-81.7	442943.2	4610297.2	2191467.5	686014.4	12.5	91.7	Monopole	30.7		4.0	031 1301	262
M0182	41.6	-81.7	442984.1	4610144.8	2191939.9	687775.1	12.4	147.1	Dipole	71.5	C21	3.3	033 1442	257
M0103	41.6	-81.7	441762.8	4610047.5	2192584.2	687344.1	12.5	145.0	Dipole	65.3	C163	3.4	033 1442	257
M018	41.5	-81.7	444348.8	4381300.9	2184216.0	681778.0	8.7	118.9	Monopole	34.7		2.4	048 1483	255
M09	41.5	-81.7	443198.5	4594802.9	2194771.3	686805.3	12.1	109.8	Monopole	29.1		4.4	076 1270	248
M010	41.6	-81.7	441228.4	4611477.2	2188122.4	680712.1	13.9	139.4	Monopole	22.4		4.8	033 1422	248
M05	41.6	-81.7	433274.8	4605768.1	2185744.4	705444.1	17.1	3.9	Monopole	61.0	C8	3.4	005 1408	240
M0133	41.5	-81.7	444115.4	4384034.0	2193270.0	683005.0	11.4	482.6	Monopole	21.6		4.8	079 1536	239
M08	41.6	-81.7	440303.9	4611821.0	2181048.6	632690.7	14.6	3.7	Dipole	84.8		3.0	016 1534	229
M08	41.6	-81.7	441300.9	4610868.7	2188446.8	686811.1	13.2	91.4	Monopole	64.6		3.2	031 1301	225
M04	41.5	-81.7	444413.0	4584250.0	2192765.0	681935.0	10.1	345.6	Monopole	22.3	C162	4.6	070 1409	217
M02	41.6	-81.7	438728.1	4612586.6	2177984.5	634347.0	15.4	92.1	Dipole	63.9		3.2	031 1221	209
M0129	41.6	-81.7	440112.8	4611945.5	2187294.1	639294.1	14.9	60.7	Dipole	26.2		4.3	026 1421	208
M05	41.6	-81.7	440493.8	4611499.5	2184054.8	631857.9	14.5	92.4	Dipole	23.3		4.4	031 1241	198
M0217	41.6	-81.8	433195.2	4615880.3	2183104.4	705180.9	17.1	113.6	Monopole	30.8		3.9	022 1108	195
M024	41.6	-81.7	440488.0	4611805.7	2183935.9	632860.7	14.3	11.6	Monopole	38.1		3.7	026 1421	193
M050	41.6	-81.8	433355.4	4615751.1	2183750.9	705415.9	17.1	15.6	Monopole	65.1	C8	3.4	026 1434	193
M0139	41.6	-81.7	440744.4	4611881.0	2183884.7	632084.8	14.8	24.7	Dipole	59.7		3.2	027 1345	192
M0177	41.6	-81.7	440462.2	4611697.5	2183977.0	632494.4	14.2	33.8	Dipole	59.7		3.2	028 0818	192

ID	NAOBS Geographic		NAOBS LTM Zone 17		NAOBS QTM Zone 17		NAOBS QTM Zone 17 North		Distance From Prospect	Pole/Dir	Amplitude (dBT)	Associated Sidescan Contact ID	Magnetometer Height Above Seabed (m)	Survey Line (E-IDE)	Equivalent Mass from Hal Equation (kg)
	Latitude	Longitude	Easting (M)	Northing (M)	East (US survey feet)	North (US survey feet)	Bathymetry (m)	Depth (m)							
M10	41.3	-81.7	444942.3	459810.4	2198131.8	684603.8	684603.8	286.1	104	23.8		4.3	069_1343	189	
M109	41.3	-81.7	444662.0	459803.4	2197551.0	681741.5	681741.5	41.7	104	23.6	C384	4.0	069_1343	177	
M4	41.6	-81.7	439568.9	4602122.3	2195690.2	693935.5	693935.5	85.4	15.0	28.8		2.8	031_1241	172	
M35	41.6	-81.7	439558.9	4602357.1	2194981.8	694493.8	694493.8	2.7	17.0	28.8		3.9	028_1514	171	
M134	41.5	-81.7	444311.0	4598576.4	2196380.5	693473.9	693473.9	392.8	10.1	26.3		4.0	064_1537	168	
M152	41.6	-81.7	440307.3	4601249.5	2189772.8	692667.6	692667.6	31.6	16.2	26.4		2.6	077_1605	161	
M122	41.6	-81.7	443035.1	4600132.3	2192105.1	687703.0	687703.0	68.3	12.4	21.5	C252	4.2	031_1301	158	
M164	41.5	-81.7	444486.7	4598879.6	2196042.7	688476.0	688476.0	130.9	11.0	21.5	C383	5.6	094_1009	156	
M133	41.6	-81.7	443457.3	4601107.5	2196875.8	690515.1	690515.1	62.1	13.3	20.6		4.2	030_1057	153	
M131	41.5	-81.7	443286.2	4600784.3	2193769.9	690337.8	690337.8	21.4	17.1	23.5		3.9	027_1347	139	
M136	41.5	-81.7	443310.0	4598403.4	2196104.5	688335.9	688335.9	408.9	11.0	20.2		4.1	081_1303	139	
M15	41.5	-81.7	443993.0	4598853.0	2193182.7	684494.3	684494.3	398.8	11.1	18.8		5.0	061_1414	135	
M69	41.6	-81.7	441961.6	4600893.5	2198533.1	695563.8	695563.8	2.4	13.3	36.9		5.2	028_1554	135	
M1	41.6	-81.8	434036.0	4605228.3	2165254.1	703971.7	703971.7	65.9	16.9	31.1		2.7	031_1341	132	
M131	41.5	-81.7	444233.8	4598613.5	2196127.5	691621.1	691621.1	652.8	10.3	37.5		3.2	075_1556	130	
M129	41.5	-81.7	444281.9	4598486.2	2196293.2	691773.3	691773.3	484.1	9.9	37.5		3.2	075_1556	123	
M127	41.5	-81.7	444363.9	4598571.6	2196555.9	692294.1	692294.1	365.3	10.0	20.1		3.9	082_1541	119	
M136	41.6	-81.8	433031.1	4603472.3	2188931.2	701274.1	701274.1	118.3	17.1	29.2		3.4	082_1541	119	
M202	41.6	-81.7	443980.2	4600340.7	2193244.5	687892.8	687892.8	120.4	12.4	23.0		5.3	056_1138	118	
M10	41.6	-81.7	443476.6	4600486.1	2196261.7	688673.0	688673.0	94.8	12.6	29.6		2.7	031_1301	117	
M142	41.6	-81.7	442759.4	4600314.1	2191593.5	688065.1	688065.1	117.3	12.8	27.3		2.5	032_1116	113	
M149	41.6	-81.8	433389.4	4605588.4	2160148.5	704793.2	704793.2	113.8	17.1	33.9		3.9	032_1236	113	
M153	41.6	-81.8	433371.9	4605746.0	2160077.0	704537.0	704537.0	31.3	13.3	18.5		3.9	027_1347	110	
M81	41.6	-81.7	439880.5	4602216.8	2188647.3	694236.2	694236.2	133.7	15.0	27.6		3.4	023_0917	110	
M156	41.6	-81.7	439816.3	4602142.3	2187405.0	693191.9	693191.9	91.7	14.9	36.7	C121	3.1	027_1345	109	
M44	41.6	-81.7	440195.5	4602028.9	2188584.3	693354.0	693354.0	121.6	14.9	69.5		2.5	024_1046	109	
M52	41.6	-81.8	433761.6	4605502.5	2165324.5	704593.0	704593.0	1.8	17.0	30.2		2.9	028_1434	109	
M57	41.6	-81.7	440156.4	4601723.9	2188371.7	693360.4	693360.4	141.8	14.7	44.1		4.0	030_1057	108	
M197	41.5	-81.7	442032.5	4600789.1	2198797.5	695953.3	695953.3	58.1	13.1	18.8		2.9	033_1022	108	
M87	41.5	-81.7	444135.0	4598284.3	2196024.0	691343.3	691343.3	68.2	13.8	23.0		3.5	075_1302	107	
M206	41.6	-81.7	440771.6	4601718.3	2190591.7	692385.2	692385.2	136.2	14.5	20.4		3.7	050_0859	103	
M194	41.6	-81.7	441471.8	4601100.5	2189232.8	690921.6	690921.6	61.2	13.3	13.9		4.2	030_1057	103	
M82	41.6	-81.7	439456.9	4602480.5	2189253.4	690006.6	690006.6	157.8	15.3	19.3	C88	5.7	023_0917	98	
M47	41.6	-81.7	439447.0	4602444.1	2189204.6	690081.6	690081.6	180.704.6	15.3	121.6		2.0	024_1046	98	
M64	41.6	-81.7	439263.8	4602007.5	2196604.3	694751.3	694751.3	81.1	15.1	16.4		3.9	028_1514	97	
M144	41.6	-81.7	440803.4	4601801.1	2188793.2	691536.3	691536.3	123.5	16.4	18.6	C167	4.5	032_1116	97	
M3	41.6	-81.7	439138.9	4602376.3	2191046.2	694641.8	694641.8	88.6	13.1	43.4		2.8	031_1221	93	
M109	41.6	-81.7	442894.2	4600339.7	2191634.4	688176.6	688176.6	29.7	12.5	11.0		4.3	025_0758	93	
M128	41.5	-81.7	444325.4	4598410.9	2196440.2	691323.7	691323.7	434.3	9.8	33.6		2.9	075_1358	87	
M75	41.6	-81.7	442774.4	4600616.5	2191225.6	689078.3	689078.3	132.2	13.7	29.0	C226	3.1	023_0857	86	
M51	41.6	-81.7	443535.0	4600181.7	2192763.0	687677.7	687677.7	8.0	13.6	3.7		4.4	028_1554	83	
M108	41.6	-81.7	440012.4	4602018.0	2187282.8	693573.6	693573.6	26.0	14.8	26.1	C138	3.2	027_1345	82	
M45	41.6	-81.7	439924.1	4602176.1	2187784.0	694541.6	694541.6	127.7	14.8	68.5		2.1	024_1046	82	
M8	41.6	-81.7	441944.3	4600781.3	2188451.4	689627.8	689627.8	93.9	13.2	26.7		3.1	031_1301	80	
M26	41.5	-81.7	444045.0	4599102.5	2198439.8	693023.4	693023.4	311.4	10.5	108.9	G436	1.9	065_1528	75	
M89	41.6	-81.7	440294.8	4601482.7	2189204.2	692376.9	692376.9	146.8	14.3	79.4		2.1	033_1022	74	
M214	41.6	-81.7	439442.5	4602415.3	2189130.2	694793.0	694793.0	54.1	15.3	14.1	C82	3.7	047_0911	71	
M186	41.6	-81.7	439881.5	4603186.1	2192026.8	696971.8	696971.8	64.5	15.6	11.1		4.0	030_1037	71	
M176	41.6	-81.7	439466.5	4602457.8	2189205.5	694531.8	694531.8	142.3	15.3	14.0	C86	3.7	047_0911	71	
M193	41.6	-81.7	441768.3	4600935.8	2190705.1	690068.4	690068.4	68.1	13.5	8.2		4.4	030_1057	70	
M89	41.6	-81.8	433116.9	4605795.9	2194055.9	703527.1	703527.1	71.8	17.1	50.2		2.4	007_3458	69	
M192	41.6	-81.7	439986.3	4601932.6	2189200.8	692328.9	692328.9	61.3	14.6	24.8	C137	3.0	030_1037	67	
M135	41.5	-81.7	444357.2	4598163.1	2196538.2	695275.8	695275.8	10.2	10.2	21.6		3.1	083_1615	64	
M41	41.6	-81.7	441661.5	4601211.4	2187240.2	690673.3	690673.3	138.3	13.1	13.0		3.8	024_1028	64	
M20	41.5	-81.7	443941.8	4598954.6	2195142.8	693736.3	693736.3	258.3	11.3	23.2		2.8	074_1516	64	
M187	41.6	-81.7	438964.3	4602623.3	2177953.9	694434.7	694434.7	54.8	15.4	11.6		3.8	030_1037	64	
M56	41.6	-81.7	439885.9	4602016.3	2181665.5	693641.1	693641.1	1.9	14.7	16.6		3.3	026_1534	60	
M80	41.6	-81.7	440281.5	4602013.9	2189946.1	693027.4	693027.4	133.9	14.8	18.0		3.2	023_0917	59	
M77	41.6	-81.7	441101.2	4601550.7	2189581.3	692063.1	692063.1	16.3	16.3	47.1		4.7	023_0917	57	
M139	41.5	-81.7	444162.7	4598897.9	2193871.6	698812.6	698812.6	406.4	11.5	4.6	C321	4.6	081_1903	56	
M14	41.6	-81.7	439513.0	4602035.5	2190770.0	693555.7	693555.7	151.3	15.1	15.7		3.2	033_1602	55	
M180	41.6	-81.7	439286.8	4602330.3	2197664.4	694004.6	694004.6	53.8	13.2	11.2		3.6	030_1037	52	

ID	NAD83 Geographic		NAD83 UTM Zone 17		NAD83 Ohio State Plane North		Bathymetry (m)	Distance from Proposed	Polarity	Amplitude (nT)	Associated Seismic Contact ID	Magnetometer Height Above Labeled (m)	Survey Line (DOT)	Equivalent Mass from Hall Equation (kg)
	Latitude	Longitude	Easting (m)	Northing (m)	East (U.S. survey foot)	North (U.S. survey foot)								
M100	41.5	-81.7	440272.7	4598554.8	2158951.4	688419.0	10.4	271.5	Microplate	42.6	C107	2.3	024_0546	52
M143	41.6	-81.7	441931.7	4602776.5	2188451.4	689549.0	13.2	130.8	Microplate	17.2		3.1	032_1116	51
M174	41.6	-81.7	443176.8	4603391.3	2192555.8	688362.1	12.4	153.4	Dipole	23.2		2.8	023_0857	51
M106	41.6	-81.7	440068.0	4601782.0	2192276.6	692749.4	16.8	192.7	Dipole	16.6		3.0	033_1672	50
M109	41.6	-81.7	439823.7	4602195.7	2191453.3	694093.0	15.8	88.8	microplate	85.5		1.8	023_0958	50
M156	41.6	-81.7	441921.6	4600946.9	2188416.1	689796.0	13.3	62.6	Microplate	6.7		4.2	030_1057	50
M155	41.6	-81.7	439668.3	4602185.5	2190015.7	694183.6	14.9	28.8	Microplate	13.7	C103	3.3	027_1845	49
M161	41.6	-81.7	440488.7	4601762.6	2193954.6	692706.4	14.2	26.2	Dipole	26.0		2.6	027_1605	49
M18	41.6	-81.6	433113.4	4605990.2	2199225.4	706161.8	17.3	1.3	Microplate	11.1		3.6	003_1408	47
M195	41.6	-81.7	439959.5	4601821.1	2192022.1	693873.3	14.6	156.5	Dipole	33.5		2.4	033_1622	46
M188	41.6	-81.7	439023.3	4602480.5	2178810.9	694982.2	15.2	53.9	Dipole	9.7		3.6	030_1037	45
M121	41.6	-81.6	435018.7	4606269.2	2158892.3	707073.8	17.3	89.3	Microplate	23.3		2.7	002_1121	44
M18	41.6	-81.7	443901.7	4599350.4	2154956.6	694987.6	11.8	398.0	Microplate	15.6		3.0	038_1452	42
M15	41.6	-81.7	438817.7	4602711.7	2178785.1	693797.6	15.6	89.2	Microplate	23.9		2.6	025_1018	42
M51	41.6	-81.8	433404.3	4605693.3	2160156.3	705205.9	12.1	2.7	Microplate	17.0		2.9	028_1434	41
M18	41.6	-81.7	440218.6	4601691.2	2192751.7	693459.5	14.5	162.3	Dipole	20.2		2.7	033_1672	40
M17	41.6	-81.7	440795.6	4601723.5	2194617.0	693597.7	14.3	144.0	Microplate	13.9		2.9	023_0917	39
M157	41.6	-81.7	439860.7	4602116.4	2191583.0	693902.1	14.8	29.0	Microplate	11.5	C129	3.2	027_1345	38
M13	41.6	-81.7	439531.8	4603988.9	2194498.1	693725.9	15.8	147.4	Dipole	17.1		2.8	033_1602	38
M17	41.6	-81.7	446553.9	4598800.4	2192450.0	693225.4	10.3	6.2	Microplate	32.5		2.2	065_1528	35
M190	41.6	-81.7	439637.3	4602131.1	2190964.3	693870.5	15.8	38.6	Microplate	8.7		3.4	030_1037	34
M191	41.6	-81.7	439756.8	4602065.3	2191241.4	693661.3	14.3	57.7	Dipole	9.5		3.3	030_1037	34
M182	41.6	-81.8	434988.3	4604772.4	2164421.8	702773.7	16.8	29.0	Microplate	11.3		3.1	029_0916	34
M179	41.6	-81.7	440364.2	4601966.5	2193240.0	693376.1	14.7	154.7	Microplate	13.3		2.9	029_0917	32
M113	41.6	-81.7	439448.8	4602410.5	2190184.9	694776.1	15.3	85.0	Dipole	25.6	C82	2.3	025_0958	31
M120	41.6	-81.6	433246.7	4603533.2	2159665.0	706049.9	12.1	86.5	Microplate	20.2		2.4	002_1121	28
M45	41.6	-81.7	440077.4	4603988.1	2192292.1	693754.3	14.9	118.9	Dipole	24.7		2.2	024_1046	26
M179	41.6	-81.7	439033.4	4603499.2	2178981.6	695044.2	19.2	31.7	Dipole	37.0	C50	2.0	029_0958	26
M12	41.6	-81.7	439477.3	4602367.6	2190305.0	694793.1	15.2	86.9	Dipole	28.4	C87	2.3	025_0958	25
M100	41.6	-81.7	444920.4	4598519.2	2198365.5	689302.2	10.5	254.0	Microplate	17.8	(418	2.4	025_0918	25
M176	41.6	-81.7	441782.9	4600961.2	2197351.5	690153.2	13.5	38.7	Microplate	17.5		2.4	029_0818	24
M87	41.6	-81.6	432636.2	4605981.4	2157613.4	708076.5	17.4	31.5	Microplate	20.7		2.2	006_1917	22
M5	41.6	-81.7	440299.3	4601710.1	2193041.8	693559.4	14.3	91.6	Dipole	37.0		1.8	031_1341	22
M174	41.6	-81.7	441564.3	4600858.4	2198533.6	688826.1	13.2	31.7	Dipole	75.1		1.4	029_0818	21
M116	41.6	-81.7	439765.4	4603787.2	2177961.4	693974.2	15.6	89.5	Dipole	14.8		3.4	025_1018	20
M118	41.6	-81.6	434341.1	4605221.0	2163595.3	702714.5	16.9	53.9	Microplate	21.9		2.1	025_1058	20
M176	41.6	-81.7	441206.6	4601497.3	2196026.5	691879.6	14.1	154.4	Microplate	16.4		2.3	021_0917	20
M140	41.6	-81.7	443085.3	4601373.3	2192272.7	687523.4	12.5	112.9	Microplate	15.3	C356	2.3	032_1056	19
M117	41.6	-81.6	436180.7	4604218.9	2169290.5	700556.3	15.7	80.0	Microplate	11.8		2.5	025_1058	18
M171	41.6	-81.7	442033.4	4600854.1	2198775.0	689717.4	13.1	28.3	Microplate	52.0		1.5	029_0758	18
M141	41.6	-81.7	442988.0	4600185.0	2191954.3	687674.5	12.4	118.3	Microplate	14.3		2.3	032_1056	17
M104	41.6	-81.7	441056.5	4601216.3	2194561.0	690449.2	14.1	162.2	Microplate	4.8		3.3	051_0890	17
M43	41.6	-81.7	440512.9	4601846.5	2193794.9	692987.5	14.3	121.3	Dipole	16.4		2.1	024_1026	17
M111	41.6	-81.7	439548.4	4602795.2	2190953.5	694610.4	14.3	88.0	Dipole	20.9		1.9	025_0958	14
M203	41.6	-81.7	441556.9	4601152.4	2197331.3	690770.0	13.1	45.2	Microplate	8.4		2.5	052_0822	13
M172	41.6	-81.7	441954.9	4600865.5	2198521.8	689675.9	13.2	36.2	Microplate	21.4		1.6	029_0758	9
M83	41.6	-81.7	439811.9	4603387.4	2174654.6	697801.8	16.8	131.9	Microplate	13.3		1.8	023_0917	8
M62	41.6	-81.7	443101.7	4601517.5	2195528.7	692540.0	14.2	121.7	Dipole	23.9		1.3	024_1026	5
M175	41.6	-81.7	441945.7	4600870.5	2198505.0	689965.0	13.2	28.3	Microplate	12.3		1.6	029_0818	5
M107	41.6	-81.7	442874.6	4600487.5	2191061.7	688101.8	12.8	89.7	Dipole	11.2		1.6	025_0958	4
M170	41.6	-81.7	442832.3	4600368.5	2191485.1	693657.4	14.6	16.2	Microplate	22.7	C125	1.2	048_0856	4
M181	41.6	-81.7	438176.6	4603949.6	2176021.8	696473.5	15.7	57.1	Microplate	26.6		1.1	029_0856	1

5.5.4.1 Magnetic Anomalies with Sidescan Sonar Contacts

Of the 178 total magnetic anomalies recorded 38 had associated sidescan sonar contacts (Table 4). These magnetic anomalies were analyzed with the detailed sonar contact information in the attached CSR Survey Report APPENDIX IV, SIDESCAN SONAR CONTACT SONOGRAMS. A description of the analysis results for each target is presented in Table 5.

Table 4 Magnetic Anomalies with Sidescan Sonar Contacts

ID	NAO63 Geographic		NAO63 UTM Zone 17		NAO63 Ohio State Plane North		Bathymetry (m)	Distance from Proposed	Polarity	Amplitude (nT)	Associated Sidescan Contact ID	Magnetometer Height Above Labeled (m)	Survey Line (.EDT)	Equivalent Mass from Hall Equation (kg)	Description
	Latitude	Longitude	Easting (M)	Northing (M)	East (US survey feet)	North (US survey feet)									
M105	41.5	-81.7	443611.4	4559884.1	2194013.1	666755.2	12.3	67.9	Dipole	106.8	C287	6.8	030_1525	3421	slag or dredge spoil
M100	41.5	-81.7	443611.9	4559885.3	2194014.0	666753.6	11.9	62.7	Dipole	163.8	C288	5.8	030_1117	2725	slag or dredge spoil
M14	41.5	-81.7	443636.2	4559873.2	2193971.0	666667.5	11.9	92.2	Monopole	187.5	C285	3.8	031_1321	1029	slag or dredge spoil
M19	41.5	-81.7	443601.7	4559862.7	2193862.0	666717.3	12.3	82.6	Dipole	107.7	C285	4.1	074_1516	74.2	slag or dredge spoil
M36	41.5	-81.7	444997.3	4558667.0	2198813.1	668463.4	10.6	341.6	Monopole	36.6	C432	5.2	070_1609	54.3	Near breakwall. Dimension and mass of target consistent with 6 cu ft dumpster
M84	41.6	-81.8	43123.3	4600173.3	2153241.0	707076.0	17.2	116.9	Monopole	123.9	C6	3.0	001_1043	336	2 x 1 m point source
M62	41.5	-81.7	444986.4	4558621.7	2198586.9	668184.1	10.4	317.9	Monopole	41.5	C431	4.3	071_1627	330	2 x 2 m slag or scrap pile
M92	41.6	-81.7	43975.6	4602226.6	2178653.2	694163.3	15.2	152.1	Dipole	79.6	C63	3.4	033_1802	31.3	3 x 1 m linear contact, probable scrap
M215	41.6	-81.7	439857.8	4602439.0	2180229.0	694870.6	15.3	122.2	Monopole	61.7	C85	3.7	047_0911	31.3	slag
M13	41.6	-81.7	443088.9	4600161.5	2192263.4	697003.1	12.4	90.0	Dipole	25.7	C57	3.9	031_1301	31.2	Dredge spoil
M166	41.5	-81.7	444430.4	4558675.0	2196962.5	665965.7	10.4	188.0	Monopole	25.8	C305	4.9	091_1609	304	4 x 0.4 m linear contact, scrap
M71	41.5	-81.7	44145.0	4558662.8	2196834.1	665310.7	10.5	526.8	Monopole	31.2	C318	4.4	077_1726	266	slag or dredge spoil
M102	41.6	-81.7	442584.1	4600154.8	2191939.9	667675.1	12.4	147.1	Dipole	71.5	C243	3.3	033_1642	257	slag or dredge spoil
M109	41.6	-81.7	443175.8	4600075.5	2192586.2	667734.1	12.5	145.0	Dipole	65.3	C263	3.4	033_1642	257	18 x 0.4 m linear contact, scrap pipe or shaft
M49	41.6	-81.8	433275.8	4605768.1	2157644.1	703444.1	17.1	1.9	Monopole	61.0	C8	3.4	005_1408	240	Unknown, circular 25 m dia, possible mushroom mooring buoy
M34	41.5	-81.7	444413.0	4558429.0	2196736.6	661993.0	10.1	345.6	Monopole	22.3	C82	4.6	070_1609	217	Unknown, circular 5.5 m dia, no height
M50	41.6	-81.8	43326.4	4605759.1	2157326.8	703413.9	17.1	15.6	Monopole	49.1	C8	3.4	028_1434	133	Unknown, rectangular contact, 2 x 2 meters, no height
M29	41.5	-81.7	444662.0	4558653.4	2197531.0	667243.5	10.1	41.7	Dipole	27.6	C384	4.0	069_1543	177	height
M12	41.6	-81.7	44336.1	4600132.3	2192105.1	667030.0	12.4	188.9	Dipole	21.3	C252	4.2	031_1301	158	slag or dredge spoil
M104	41.6	-81.7	43868.7	4558675.6	2196827.7	668476.0	11.0	139.9	Dipole	8.7	C63	3.6	034_1309	156	Pipe or shaft
M106	41.6	-81.7	43868.3	4600142.3	2183369.0	665016.8	14.9	157.8	Monopole	39.3	C121	3.7	027_1385	109	slag or dredge spoil
M14	41.6	-81.7	43849.8	4600140.3	2183372.2	665156.2	14.4	123.8	Monopole	10.6	C163	4.5	032_1116	87	slag or dredge spoil
M75	41.6	-81.7	442724.4	4600165.5	2191252.6	669073.3	12.7	153.2	Monopole	20.0	C226	3.1	039_0857	86	Pipe or shaft
M158	41.6	-81.7	440012.4	4602018.0	2182082.8	669232.6	14.8	26.0	Monopole	25.1	C138	3.2	027_1345	82	slag or dredge spoil
M26	41.5	-81.7	444945.0	4559002.6	2198428.8	663905.4	10.5	331.4	Dipole	108.9	C426	1.9	065_1528	75	Unknown, circular target 2 m dia x 0.5 m tall, low mass so thin
M214	41.6	-81.7	43842.5	4602415.3	2180190.2	694792.0	15.3	94.1	Monopole	14.1	C62	3.7	047_0911	71	Pipe or shaft
M216	41.6	-81.7	438466.5	4601932.6	2180366.5	694932.8	14.0	142.9	Monopole	14.0	C86	3.7	047_0911	71	slag or dredge spoil
M132	41.6	-81.7	439586.3	4601932.6	2180020.0	693336.9	14.6	61.3	Dipole	24.8	C137	3.0	030_1037	67	Pipe or shaft
M139	41.5	-81.7	441162.7	4558667.9	2196873.6	665812.8	11.5	406.4	Dipole	5.8	C321	4.6	061_1703	56	Pipe or shaft
M143	41.6	-81.7	441931.7	4600774.5	2188951.4	668543.0	13.2	100.8	Monopole	17.2	C197	3.1	032_1116	51	Unknown small point source, low mass
M155	41.6	-81.7	439660.2	4602218.5	2182915.7	694155.6	14.9	28.8	Monopole	13.7	C102	3.3	027_1345	49	slag or dredge spoil
M157	41.6	-81.7	439890.7	4602106.4	2181580.0	693802.1	14.8	29.0	Monopole	11.5	C129	3.2	027_1345	38	Unknown small point source, low mass
M113	41.6	-81.7	438440.8	4602410.5	2180184.9	694776.1	15.3	89.0	Dipole	25.6	C62	2.3	025_0958	31	Pipe or shaft
M112	41.6	-81.7	439477.3	4602867.6	2180306.0	694703.1	15.2	86.9	Dipole	20.4	C67	2.3	025_0958	25	Possible small anchor and chain
M106	41.5	-81.7	444930.4	4558669.5	2198369.5	665800.2	10.5	254.0	Monopole	17.8	C416	2.4	025_0918	23	Unknown, rectangular contact, 3.5 x 2 x 0.5 meters, possible bow, low mass
M140	41.6	-81.7	443065.2	4600137.3	2192272.7	667653.4	12.5	112.9	Monopole	15.3	C256	2.3	032_1056	19	slag or dredge spoil
M211	41.6	-81.7	438331.8	4602108.0	2181446.1	693806.7	14.8	16.2	Monopole	22.7	C125	1.2	048_0856	4	Unknown small point source, low mass

Table 5 Analysis Description of the Magnetic Anomalies Associated with Sidescan Sonar Contacts

Marine Magnetometer Anomalies					
ID	Amplitude (nT)	Associated Sidescan Contact ID	Magnetometer Height Above Lakebed (m)	Equivalent Mass from Hall Equation (kg)	Description
M165	108.8	C287	6.8	3421	slag or dredge spoil
M200	163.8	C288	5.5	2725	slag or dredge spoil
M14	187.5	C285	3.8	1029	slag or dredge spoil
M19	107.7	C285	4.1	742	slag or dredge spoil
M36	38.6	C432	5.2	543	Near breakwall. Dimension and mass of target consistent with 6 cu ft dumpster
M84	123.9	C6	3.0	335	2 x 1 m point source
M62	41.5	C431	4.3	330	2 x 2 m slag or scrap pile
M92	79.6	C63	3.4	313	3 x 1 m linear contact, probable scrap
M215	61.7	C85	3.7	313	slag
M13	52.6	C257	3.9	312	Dredge spoil
M166	25.8	C365	4.9	304	4 x 0.4 m linear contact, scrap
M71	31.2	C318	4.4	266	slag or dredge spoil
M102	71.5	C243	3.3	257	slag or dredge spoil
M103	65.3	C263	3.4	257	8 x 0.4 m linear contact, scrap pipe or shaft
M49	61.0	C8	3.4	240	Unknown, circular 5.5 m dia, no height
M34	22.3	C352	4.6	217	Unknown, circular 2.5 m dia, possible mushroom mooring buoy
M50	49.1	C8	3.4	193	Unknown, circular 5.5 m dia, no height
M29	27.6	C384	4.0	177	Unknown, rectangular contact, 2 x 2 meters, no height
M12	21.3	C252	4.2	158	slag or dredge spoil
M164	8.9	C363	5.6	156	Pipe or shaft
M156	36.7	C121	3.1	109	slag or dredge spoil
M82	19.3	C83	3.7	98	slag or dredge spoil
M144	10.6	C167	4.5	97	slag or dredge spoil
M75	29.0	C226	3.1	86	Pipe or shaft
M158	25.1	C138	3.2	82	slag or dredge spoil
M26	108.9	C426	1.9	75	Unknown, circular target 2 m dia x 0.5 m tall, low mass so thin
M214	14.1	C82	3.7	71	Pipe or shaft
M216	14.0	C86	3.7	71	slag or dredge spoil
M192	24.8	C137	3.0	67	Pipe or shaft
M139	5.8	C321	4.6	56	Pipe or shaft
M143	17.2	C197	3.1	51	Unknown small point source, low mass
M155	13.7	C102	3.3	49	slag or dredge spoil
M157	11.5	C129	3.2	38	Unknown small point source, low mass
M113	25.6	C82	2.3	31	Pipe or shaft
M112	20.4	C87	2.3	25	Possible small anchor and chain
M106	17.8	C418	2.4	25	Unknown, rectangular contact, 3.5 x 2 x 0.5 meters, possible box, low mass
M140	15.3	C256	2.3	19	slag or dredge spoil
M211	22.7	C125	1.2	4	Unknown small point source, low mass

Each magnetic anomaly was compared to its corresponding sonogram, and an inference was made as to what the object could possibly be based on the image likeness and estimated mass. Some comparison yielded reasonable assumptions to the object's identity and some did not. For example anomaly M165 is associated with contact C287 (Figure 32).

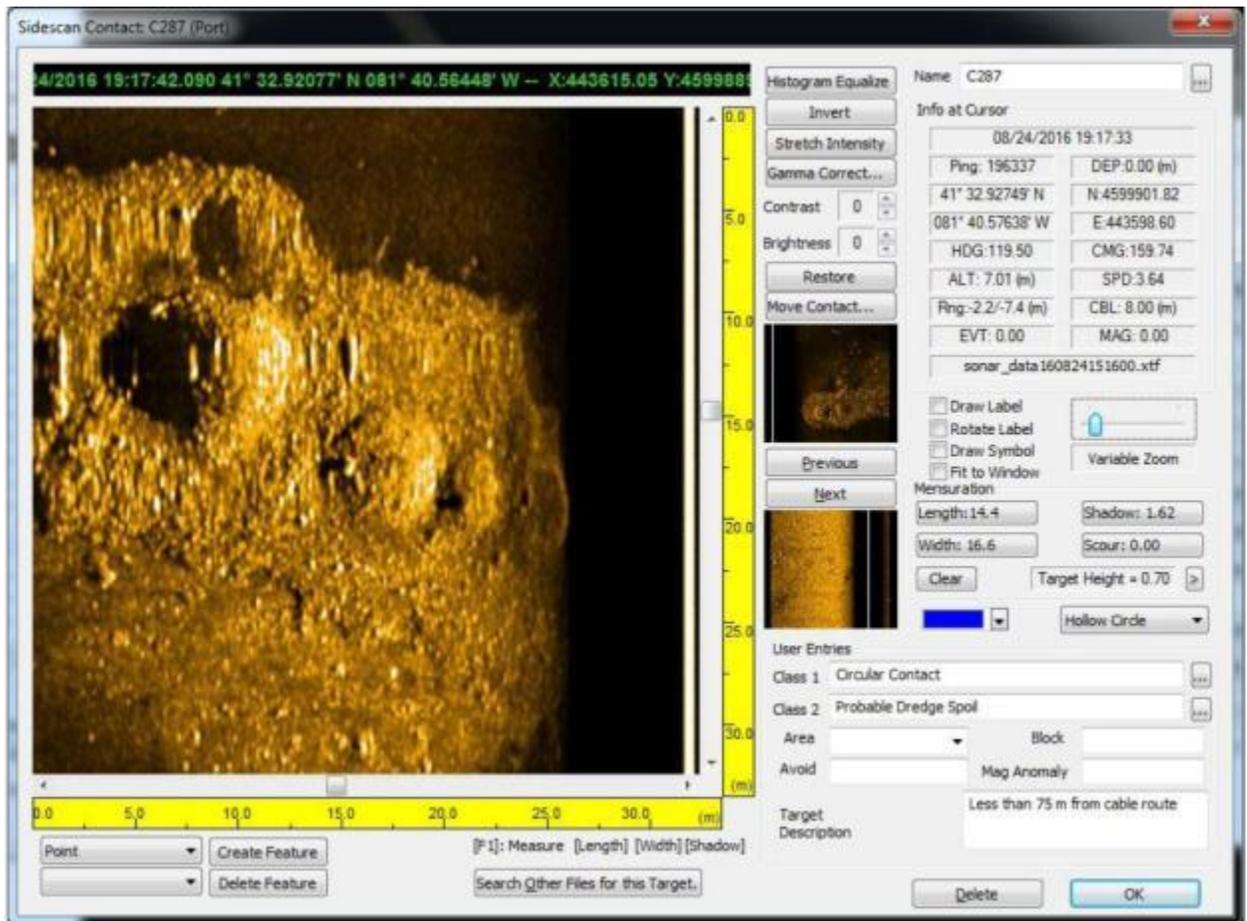


Figure 32 C287 (CSR)

The sonogram for C287 was identified as slag or dredge spoil and the associate magnetic anomalies estimated mass of 3421 kg supports the hypothesis that this is indeed a slag pile or pile of some other magnetic material.

Magnetic anomaly M34 is associated with contact C352 (Figure 33). The contact is described as a circular contact but it resembles a mushroom mooring anchor and its mass of 217 kg support this conjecture.

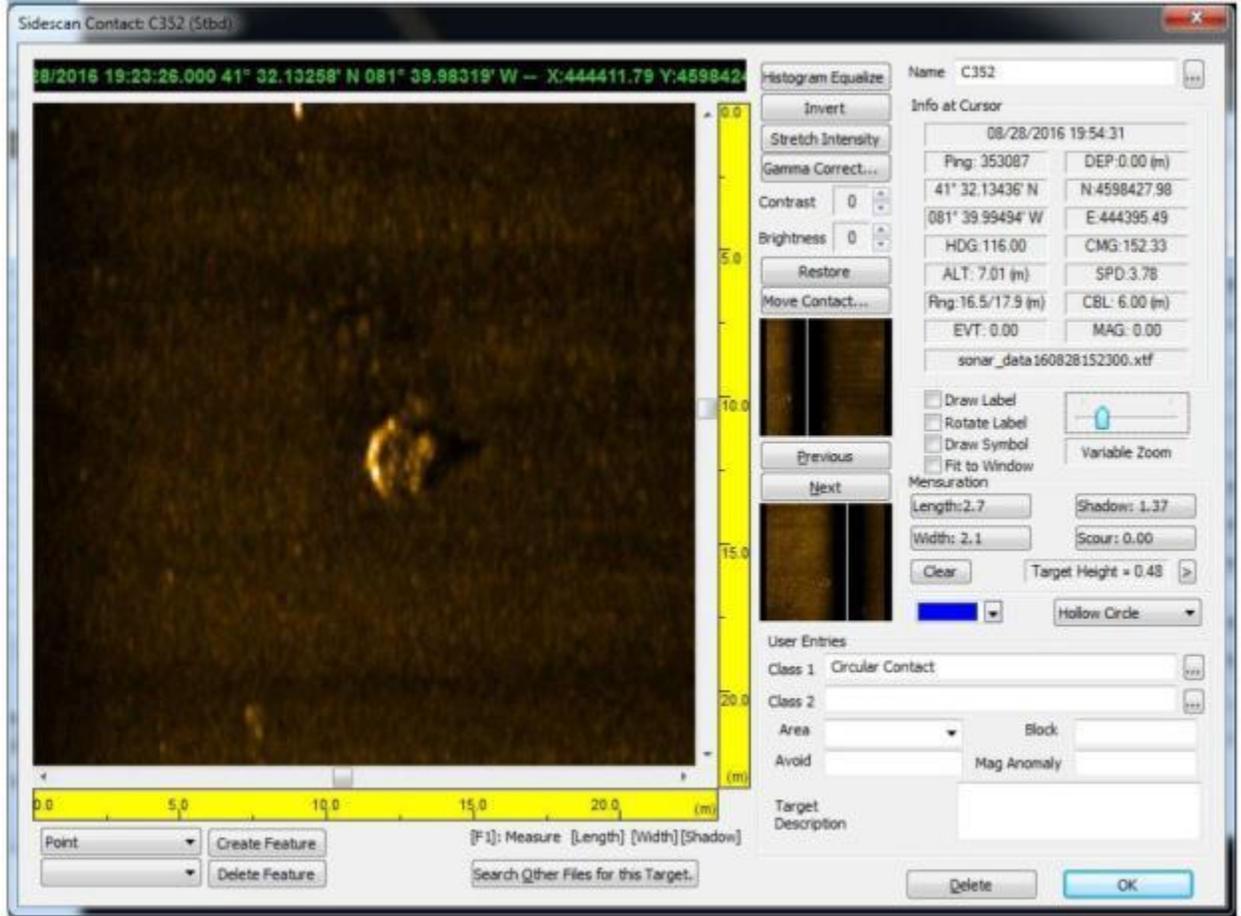


Figure 33 C352 (CSR)

Some anomalies with sonograms are simply unknown where the image and mass say very little about the object. For example M143 is associated with C197 (Figure 34).

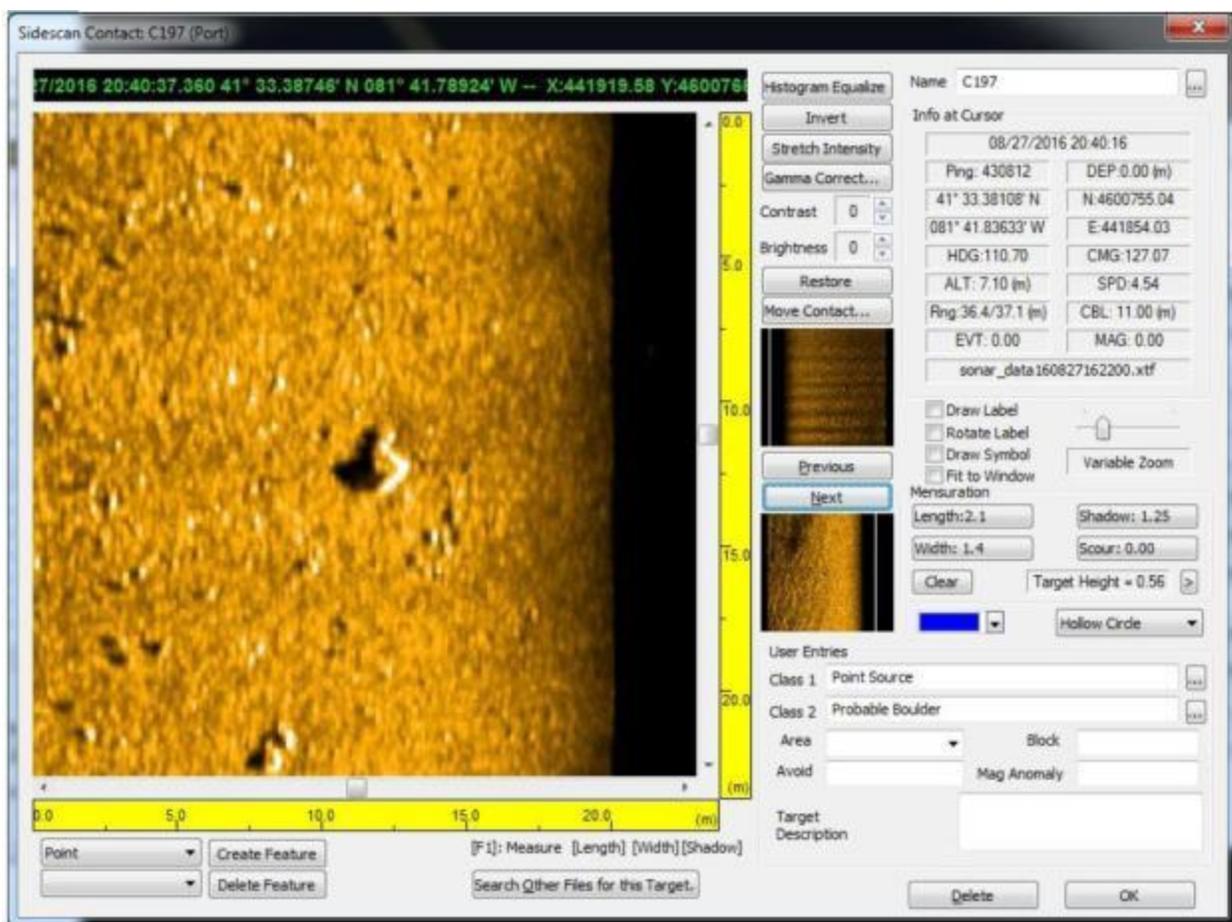


Figure 34 C197 (CSR)

C197 is an unidentifiable object with an estimated mass of 51 kg and a size of 2 x 1.5 meters. It is unknown but it does not resemble anything that might be considered an artifact or object of historic significance.

The analysis of the 38 magnetic anomalies with associated sidescan sonar contacts yielded no objects of historical significance, although several possible manmade contacts were found they are disarticulated with no archaeological context, thus do not represent potentially significant historical resources.

5.5.4.2 Magnetic Anomalies without Sidescan Sonar Contacts

Of the 178 total magnetic anomalies recorded 140 had no associated sidescan sonar contacts (Table 6). These magnetic anomalies were analyzed with the detailed magnetic anomaly profile information in the attached CSR Survey Report, APPENDIX VI MAGNETIC ANOMALY PROFILES - INSIDE 150M CORRIDO and APPENDIX VIII MAGNETIC ANOMALY PROFILES - OUTSIDE 150M CORRIDOR.

Table 6 Magnetic Anomalies without Sidescan Sonar Contacts

ID	NAD83 Geographic		NAD83 UTM Zone 17		NAD83 Ohio State Plane North		Bathymetry (m)	Distance from Proposed	Polarity	Amplitude (nT)	Associated Sidescan Contact ID	Magnetometer Height Above Lakebed (m)	Survey Line (EDT)	Equivalent Mass from Hill Equation (kg)	Description
	Latitude	Longitude	Easting (M)	Northing (M)	East (US survey feet)	North (US survey feet)									
M148	41.6	-81.7	4387036.6	4602578.3	2177756.3	695285.0	15.4	124.9	Dipole	256.8		032 1136	4044	Possible anchor and chain	
M218	41.6	-81.8	432958.4	4605922.3	2158710.1	706161.7	17.2	123.4	Dipole	79.7		021 1118	2291	Same as M86	
M66	41.5	-81.7	445071.7	459919.0	2198854.2	683666.4	0.0	457.4	Monopole	243.1		067 1650	2124	Outside of survey area	
M199	41.5	-81.7	443435.4	4600107.1	2192800.1	687433.4	12.5	61.0	Dipole	84.2		030 1117	1934		
M167	41.5	-81.7	444437.1	4598745.4	2196757.5	693045.8	10.6	228.4	Dipole	154.4		051 1090	1915		
M127	41.6	-81.7	440145.4	4601735.1	2182546.4	692714.9	14.8	123.3	Dipole	126.2		032 1186	1418	Outside of survey area	
M25	41.5	-81.7	449705.0	4597355.6	2194411.6	680485.1	0.0	1091.5	Dipole	145.1		068 1551	1154	Outside of survey area	
M198	41.6	-81.7	442855.4	4600342.1	2191507.6	684145.6	12.5	55.3	Dipole	50.7		030 1117	1151	Same as M111	
M34	41.5	-81.7	445005.9	4599011.1	2198854.2	683666.4	0.0	352.1	Dipole	146.6		066 1555	1086	Outside of survey area	
M65	41.5	-81.7	440082.7	4599028.7	2198854.2	683666.4	0.0	470.7	Monopole	125.3		067 1650	996	Outside of survey area	
M122	41.6	-81.7	438860.6	4602857.9	2197264.7	695963.8	15.5	56.2	Monopole	74.9		049 1609	881	Possible anchor and chain	
M35	41.5	-81.7	444515.4	4598505.3	2197071.4	682249.4	10.0	221.5	Dipole	68.7		070 1609	713		
M53	41.6	-81.7	438812.3	4602664.5	219108.1	695574.0	15.5	3.5	Monopole	98.0		028 1514	675	Possible anchor and chain	
M209	41.6	-81.7	439945.8	4602295.9	2181846.5	694426.7	0.0	235.9	Monopole	71.7		048 0856	693	Outside of survey area	
M7	41.6	-81.7	440844.6	4601412.2	2184848.0	691579.5	14.4	95.8	Dipole	76.8		031 1241	611		
M108	41.6	-81.7	440138.8	4602024.5	2182500.5	693545.1	14.9	98.9	Dipole	75.2		025 0958	598		
M86	41.6	-81.8	432953.1	4605936.6	2158692.4	706182.1	17.2	123.9	Monopole	130.4		009 1213	559	Same as M218	
M205	41.6	-81.7	440292.8	4601755.7	2184657.4	692769.8	0.0	196.0	Dipole	61.2		050 0859	558	Outside of survey area	
M201	41.6	-81.7	443669.1	4602244.9	2191993.3	687227.0	12.4	102.2	Dipole	27.6		056 1138	539	Same target as 202	
M57	41.6	-81.7	440245.2	4601854.7	2182856.0	692986.0	14.7	30.8	Dipole	155.3		028 1534	509		
M208	41.6	-81.7	440281.1	4601973.0	2182972.8	693060.0	14.7	30.8	Monopole	68.6		049 0847	473		
M91	41.6	-81.7	438656.7	4602588.4	2177744.8	695183.3	15.4	145.6	Monopole	142.0		033 1652	465	Possible anchor and chain	
M32	41.5	-81.7	445031.4	4599355.7	2188721.5	684018.9	0.0	423.7	Monopole	57.5		066 1555	457	Outside of survey area	
M101	41.6	-81.7	441367.4	4601050.5	2186605.6	690428.8	13.4	146.0	Monopole	48.4		033 1622	365		
M134	41.6	-81.7	438834.3	4602868.9	2178179.0	695468.7	15.5	31.7	Monopole	101.9		027 1345	366	Possible anchor and chain	
M185	41.6	-81.8	434933.4	4605518.5	2160397.4	704663.5	17.0	65.1	Monopole	15.8		030 0957	312		
M90	41.6	-81.8	433226.2	4605618.5	2159610.1	704590.4	17.1	149.6	Monopole	26.3		033 1522	309		
M134	41.6	-81.7	442415.7	4599016.3	2194045.9	693090.0	11.5	347.0	Monopole	31.6		083 1615	308		
M59	41.6	-81.7	440344.2	4601800.7	2181363.9	692826.4	14.4	1.4	Monopole	134.0		028 1534	294		
M70	41.5	-81.7	44397.8	4599000.4	2195331.7	683844.5	11.3	530.9	Dipole	3.6		076 1720	280		
M184	41.6	-81.8	433286.6	4605720.8	2159638.4	705286.6	17.1	61.6	Monopole	15.8		030 0957	263		
M11	41.6	-81.7	442434.2	4600372.2	2191469.5	688034.4	12.5	91.7	Monopole	30.7		031 1301	262	Same as M198	
M28	41.5	-81.7	444238.8	4598350.9	2196225.0	691286.0	9.7	515.9	Monopole	54.7		069 1543	255		
M69	41.5	-81.7	443688.5	4598802.9	2194271.3	684603.3	12.1	109.8	Monopole	29.1		076 1720	248		
M100	41.6	-81.7	441288.4	4601147.2	2186122.4	690732.1	13.9	136.4	Monopole	22.4		033 1622	248		
M138	41.5	-81.7	444115.4	4598924.0	2189722.0	693800.5	11.4	482.6	Monopole	21.6		079 1556	239		
M58	41.6	-81.7	440363.3	4601821.0	2183048.0	692980.7	14.6	3.7	Dipole	84.8		028 1534	229		
M68	41.6	-81.7	441930.9	4600365.7	2188466.8	693661.1	13.2	91.4	Monopole	66.6		031 1301	225		
M2	41.6	-81.7	439736.1	4602936.6	2177668.5	695447.0	13.4	92.1	Dipole	63.9		031 1221	209		
M123	41.6	-81.7	440712.8	4601945.5	2187744.5	693294.1	14.9	60.7	Dipole	26.2		026 1421	208		
M6	41.6	-81.7	440695.8	4601495.5	2184354.8	691857.9	14.5	92.4	Dipole	23.9		031 1241	198		
M217	41.6	-81.8	433195.2	4605669.3	2159504.4	705180.3	17.1	113.6	Monopole	32.9		022 1108	195		
M124	41.6	-81.7	440498.0	4601805.2	2183596.9	692860.7	14.3	61.6	Monopole	38.1		026 1421	193		
M159	41.6	-81.7	440254.4	4601881.0	2182894.7	693084.8	14.8	24.7	Dipole	58.7		027 1345	192		
M177	41.6	-81.7	440462.2	4601697.5	2183577.0	692494.4	14.2	33.8	Dipole	58.7		029 0818	192		
M30	41.5	-81.7	444542.3	4598850.4	2198439.6	683405.8	10.4	284.1	Dipole	23.8		069 1543	189		
M4	41.6	-81.7	439589.8	4602122.5	2180690.2	693838.5	15.0	89.4	Monopole	28.8		031 1241	172		
M24	41.5	-81.7	439550.5	4602357.1	2178919.6	694958.6	15.2	1.7	Dipole	76.5		028 1514	171		
M163	41.6	-81.7	444311.0	4598576.4	2196383.5	682470.9	10.1	399.8	Monopole	26.3		064 1537	168		
M163	41.6	-81.7	440507.3	4601745.5	2183722.0	692667.6	14.2	34.6	Dipole	91.4		027 1405	161		
M193	41.6	-81.7	441457.3	4601107.6	2186975.8	690615.1	13.3	62.1	Dipole	20.6		030 0857	153		
M151	41.6	-81.8	433286.2	4605746.5	2159758.9	705937.8	17.1	24.4	Monopole	23.5		027 1247	139		
M136	41.5	-81.7	444230.0	4598605.4	2186104.5	692380.9	11.0	468.8	Monopole	20.2		081 1703	139		
M15	41.5	-81.7	443592.0	4598955.0	2193918.7	684983.3	11.1	586.8	Monopole	10.8		061 1414	135		
M60	41.6	-81.7	441960.6	4600895.5	2188956.1	689960.8	13.3	2.4	Monopole	9.6		028 1534	135		
M1	41.6	-81.8	434038.8	4605228.5	2162796.1	703716.7	16.9	93.1	Monopole	66.9		031 1141	132		
M131	41.5	-81.7	444233.8	4598623.5	2196127.5	692627.1	10.3	459.8	Monopole	39.7		079 1556	130		
M129	41.5	-81.7	444218.9	4598486.2	2196293.2	692173.3	9.9	454.1	Monopole	37.5		027 1345	123		
M127	41.5	-81.7	444362.9	4598821.6	2196559.9	692279.4	10.0	366.3	Monopole	20.1		082 1541	119		
M150	41.6	-81.8	43303.1	4605672.5	2159531.2	705126.2	17.1	118.5	Monopole	30.2		032 1286	119		
M202	41.6	-81.7	44383.2	4600244.7	2193244.5	697893.2	12.4	126.4	Monopole	7.9		056 1138	118		
M10	41.6	-81.7	442478.6	4600498.1	2190261.7	688673.0	12.8	94.6	Monopole	59.6		031 1301	117		
M142	41.6	-81.7	442759.4	4600914.1	2191193.5	688085.1	12.6	117.9	Dipole	72.3		032 1116	113		
M149	41.6	-81.8	43388.4	4605666.4	2160746.5	704795.2	17.1	113.6	Monopole	18.0		032 1286	113		
M153	41.6	-81.8	433070.9	4605746.0	2160077.0	705377.0	17.1	92.3	Monopole	15.5		027 1247	110		
M81	41.6	-81.7	439883.5	4602238.9	2182647.3	694288.2	15.0	135.7	Monopole	27.9		023 0917	110		
M44	41.6	-81.7	440195.5	460225.0	2182663.0	693554.0	14.9	121.6	Dipole	69.5		024 1046	109		
M52	41.6	-81.8	437466.6	4605505.5	2161324.5	704593.0	17.0	1.8	Monopole	30.2		028 1484	105		

M197	4.16	-8.17	440136.6	4601722.5	2182672.7	692560.4	14.7	161.0	Monopole	44.1	2.9	033 1622	108
M198	4.16	-8.17	442037.5	4600787.1	2188797.9	685963.3	13.1	58.1	Monopole	16.8	4.0	030 1057	108
M199	4.15	-8.17	444159.0	4586280.1	2190724.0	681243.3	9.6	606.2	Monopole	25.0	3.5	075 1702	107
M200	4.16	-8.17	4407718.9	4601181.9	2184591.7	695292.2	14.5	136.2	Dipole	20.4	3.7	050 0839	103
M201	4.16	-8.17	4414718.8	4601100.5	21869234.8	6950592.4	13.3	61.2	Monopole	13.3	4.2	030 1057	103
M202	4.16	-8.17	4394474.4	4602444.1	2180204.6	694886.8	15.3	121.6	Monopole	122.2	2.0	024 1046	98
M203	4.16	-8.17	4392638.8	4602407.5	2179604.2	694736.3	15.3	0.1	Monopole	16.4	3.9	028 1514	97
M3	4.16	-8.17	439138.9	4602376.0	2179196.2	694645.8	15.3	88.6	Monopole	43.4	2.8	031 1221	95
M169	4.16	-8.17	442894.2	4600380.7	2191634.4	688176.8	12.5	29.7	Monopole	11.0	4.3	029 0758	87
M128	4.15	-8.17	444325.4	4588410.0	2190480.2	681925.7	9.8	434.9	Dipole	35.6	2.4	079 1556	87
M61	4.16	-8.17	442256.4	460181.7	2192765.0	687677.7	12.6	0.8	Monopole	9.7	4.4	028 1554	83
M46	4.16	-8.17	439924.1	4602178.3	2181764.0	694041.6	14.9	122.7	Monopole	88.5	2.1	024 1046	82
M95	4.16	-8.17	441944.3	4600738.3	2188451.4	692927.8	15.2	59.9	Dipole	26.7	3.1	031 1801	80
M186	4.16	-8.17	440236.8	4601662.7	2189036.2	692970.9	14.3	145.0	Monopole	79.4	2.1	033 1622	74
M195	4.16	-8.17	437881.5	4603108.1	2179028.6	699767.8	15.6	64.5	Monopole	11.1	4.0	030 1057	71
M196	4.16	-8.17	441768.3	4600935.6	2187906.1	690068.4	13.5	60.1	Monopole	8.2	4.4	030 1057	70
M89	4.16	-8.18	433166.9	4601595.9	2193405.5	709529.1	17.1	72.8	Dipole	50.2	2.4	007 1458	69
M135	4.15	-8.17	444399.2	4586386.3	2190538.2	682676.8	10.2	385.5	Monopole	21.6	3.1	083 1615	64
M41	4.16	-8.17	441661.5	4601211.4	2187460.0	690967.3	13.1	128.3	Monopole	15.0	3.5	024 1026	64
M20	4.15	-8.17	443941.8	4589868.4	2195149.8	683736.3	11.3	594.9	Dipole	29.2	2.8	074 1516	64
M187	4.16	-8.17	438764.3	4602623.5	2177952.9	695436.7	15.4	59.8	Monopole	11.6	3.8	030 1037	64
M96	4.16	-8.17	439885.9	4602056.9	2181665.9	693641.1	14.7	1.9	Dipole	16.6	3.3	028 1534	60
M80	4.16	-8.17	440281.5	4602013.9	2182965.1	695262.4	14.8	153.9	Monopole	18.0	3.2	023 0917	59
M77	4.16	-8.17	441101.2	4601584.7	2180681.9	692022.1	14.2	153.3	Monopole	42.1	2.3	023 0917	57
M94	4.16	-8.17	439612.9	4602056.6	2180739.9	693555.7	15.1	153.9	Dipole	16.2	3.2	033 1602	55
M189	4.16	-8.17	439280.8	4602380.5	2179644.4	694904.6	15.2	59.0	Dipole	11.2	3.6	040 1037	52
M40	4.15	-8.17	444927.7	4586594.8	2190391.4	683419.4	10.4	271.5	Monopole	42.6	2.3	024 0946	52
M74	4.16	-8.17	443176.8	4600951.3	2192958.8	688462.1	12.4	153.4	Dipole	23.2	2.8	023 0857	51
M96	4.16	-8.17	440088.0	4601782.0	2182785.6	692749.4	14.8	192.7	Dipole	18.6	3.0	033 1622	50
M109	4.16	-8.17	439823.7	4602195.7	2181453.5	694039.0	15.0	88.8	Monopole	85.5	1.8	029 0958	50
M196	4.16	-8.17	441921.6	4600846.9	2188414.1	697066.0	13.3	62.6	Monopole	6.7	4.2	030 1057	50
M161	4.16	-8.17	440468.7	4601762.6	2183594.6	692708.4	14.2	26.2	Dipole	28.0	2.6	027 1405	49
M48	4.16	-8.18	433115.4	4609590.2	2199225.4	706168.8	17.2	1.5	Monopole	10.1	3.6	005 1408	47
M95	4.16	-8.17	439903.5	4601821.1	2182022.1	692873.3	14.6	156.5	Dipole	33.5	2.4	033 1622	46
M188	4.16	-8.17	439023.3	4602480.5	2179810.9	694982.2	15.2	53.9	Dipole	9.7	3.6	030 1037	45
M121	4.15	-8.18	433018.7	4606269.2	2198926.2	707073.8	17.3	89.9	Monopole	22.3	2.7	002 1121	44
M18	4.15	-8.17	443901.7	4599390.4	2194995.6	684987.6	11.6	398.0	Monopole	15.6	3.0	058 1452	42
M115	4.16	-8.17	438867.7	460231.7	2176286.1	695973.6	15.6	89.2	Monopole	23.9	2.6	025 1018	42
M91	4.16	-8.18	434044.3	4609693.3	2160190.3	705295.9	12.1	2.7	Monopole	17.0	2.9	028 1434	41
M98	4.16	-8.17	440210.6	4601691.2	2182751.7	692499.5	14.5	162.3	Dipole	20.2	2.7	033 1622	40
M78	4.16	-8.17	440733.6	4601723.5	2184617.0	692997.7	14.5	144.0	Monopole	15.3	2.3	023 0917	39
M93	4.16	-8.17	439531.0	4602088.9	2180495.1	693725.9	15.0	147.4	Dipole	17.1	2.8	033 1602	38
M27	4.15	-8.17	444653.9	4588000.4	2194936.0	684225.4	10.3	6.2	Monopole	92.5	2.2	065 1598	35
M190	4.16	-8.17	439637.5	4602131.1	2180846.2	698705.5	15.0	58.6	Monopole	8.7	3.4	030 1037	34
M191	4.16	-8.17	439736.8	4602065.3	2181241.4	693661.3	14.9	57.7	Dipole	9.5	3.3	030 1037	34
M182	4.16	-8.18	434983.3	4604772.4	2169424.9	702273.7	16.8	29.0	Monopole	11.3	3.1	029 0916	34
M79	4.16	-8.17	440364.2	4601868.5	2183240.0	693378.1	14.7	154.7	Monopole	13.3	2.9	023 0917	32
M120	4.16	-8.18	433248.7	4609593.2	2199665.0	706049.9	17.1	86.5	Monopole	20.2	2.4	002 1121	28
M45	4.16	-8.17	440077.4	4602088.1	2182232.1	693794.3	14.9	118.9	Dipole	24.7	2.2	024 1046	26
M179	4.16	-8.17	439035.4	4602499.2	2179849.6	695044.2	15.2	31.7	Dipole	32.0	2.0	029 0838	26
M176	4.16	-8.17	441792.9	4600961.2	2187952.5	690153.2	13.5	30.7	Monopole	17.5	2.4	029 0818	24
M87	4.16	-8.18	432636.2	4606581.4	2157619.4	708076.5	17.4	31.5	Monopole	20.7	2.2	006 1317	22
M5	4.16	-8.17	440299.5	4601720.1	2183041.8	692599.4	14.3	93.6	Dipole	37.0	1.8	031 1241	22
M174	4.16	-8.17	441944.3	4600858.4	2188593.6	69826.1	13.2	31.7	Dipole	75.1	1.4	029 0818	21
M116	4.16	-8.17	439759.4	4602787.2	2177962.4	69974.2	15.6	89.5	Dipole	14.8	2.4	029 1018	20
M118	4.16	-8.18	434344.1	4605211.0	2168983.3	703714.5	16.9	99.9	Monopole	21.3	2.1	025 1058	20
M76	4.16	-8.17	442041.6	4601697.3	2186024.5	691879.6	14.1	194.4	Monopole	16.4	2.3	023 0917	20
M117	4.16	-8.18	436162.7	4604281.9	2169930.5	709598.3	15.7	89.0	Monopole	11.8	2.5	025 1098	18
M171	4.16	-8.17	442032.4	4600824.1	2188779.0	699717.4	13.1	28.3	Monopole	52.0	1.5	029 0758	18
M141	4.16	-8.17	442989.0	4600185.0	2191954.3	697674.5	12.4	118.3	Monopole	14.3	2.3	032 1056	17
M204	4.16	-8.17	441058.5	4601216.3	2185561.0	690949.2	14.1	162.2	Monopole	4.8	3.3	051 0830	17
M43	4.16	-8.17	440512.9	4601846.9	2183734.9	692987.5	14.3	171.3	Dipole	18.4	2.1	024 1026	17
M111	4.16	-8.17	439644.4	4602295.2	2180859.5	694409.4	14.9	88.0	Dipole	20.9	1.9	025 0958	14
M203	4.16	-8.17	441596.9	4601152.4	2187331.3	690707.0	13.1	45.2	Monopole	8.4	2.5	052 0822	13
M172	4.16	-8.17	441954.9	4600939.5	2188922.8	69829.9	13.2	36.2	Monopole	21.4	1.6	029 0758	9
M83	4.16	-8.17	437833.9	4603387.4	2174956.6	697890.6	16.0	159.9	Monopole	13.3	1.8	023 0997	8
M42	4.16	-8.17	441101.7	4601517.5	2185665.7	691940.0	14.2	121.7	Dipole	23.9	1.3	024 1026	5
M173	4.16	-8.17	441944.7	4600667.8	2188048.1	698955.8	13.3	33.3	Monopole	7.4	1.9	029 0818	5
M175	4.16	-8.17	440920.5	4600970.5	2188850.0	698685.0	13.2	28.3	Monopole	12.3	1.6	029 0818	5
M107	4.16	-8.17	442974.6	4604637.5	2191981.7	698660.6	12.6	89.7	Dipole	10.2	1.6	029 0938	4
M170	4.16	-8.17	442832.2	4600968.5	2191455.0	692688.5	12.6	25.1	Dipole	26.6	1.0	029 0758	3
M181	4.16	-8.17	438193.6	4602493.6	2176015.8	694733.6	15.7	57.1	Monopole	9.3	1.1	029 0856	1

The 140 individual magnetic anomalies tell us relatively little of their origin because they are buried or finely distributed over the lake bottom and have no other associated remote sensing data with which to compare. The mass of these anomalies was estimated and tabulated in Table 3 and Table 6, but it does not indicate the anomaly's size because it may be a solid, hollow, or widely distributed object or objects. The spatial location of these anomalies was analyzed from the CSR vessel trackline charts and only one grouping of anomalies stood out as a possible manmade source and is analyzed below. All of the remaining anomalies were determined to be point sources because they were not detectable across multiple tracklines except for that one grouping. The individual point sources may be individual objects or buried slag or mill tailings that have been dumped and become covered over the years. The polarity of the anomaly can infer the objects orientation, but not its possible origin, and becomes irrelevant to the analysis. The last piece of information about the anomaly is the width, which can infer the size of the object be it long and skinny or short and fat, but it also is of little value in determining a buried object's origin.

There were a number of contacts that may indicate the presence of a linear ferrous feature perpendicular to the proposed route (

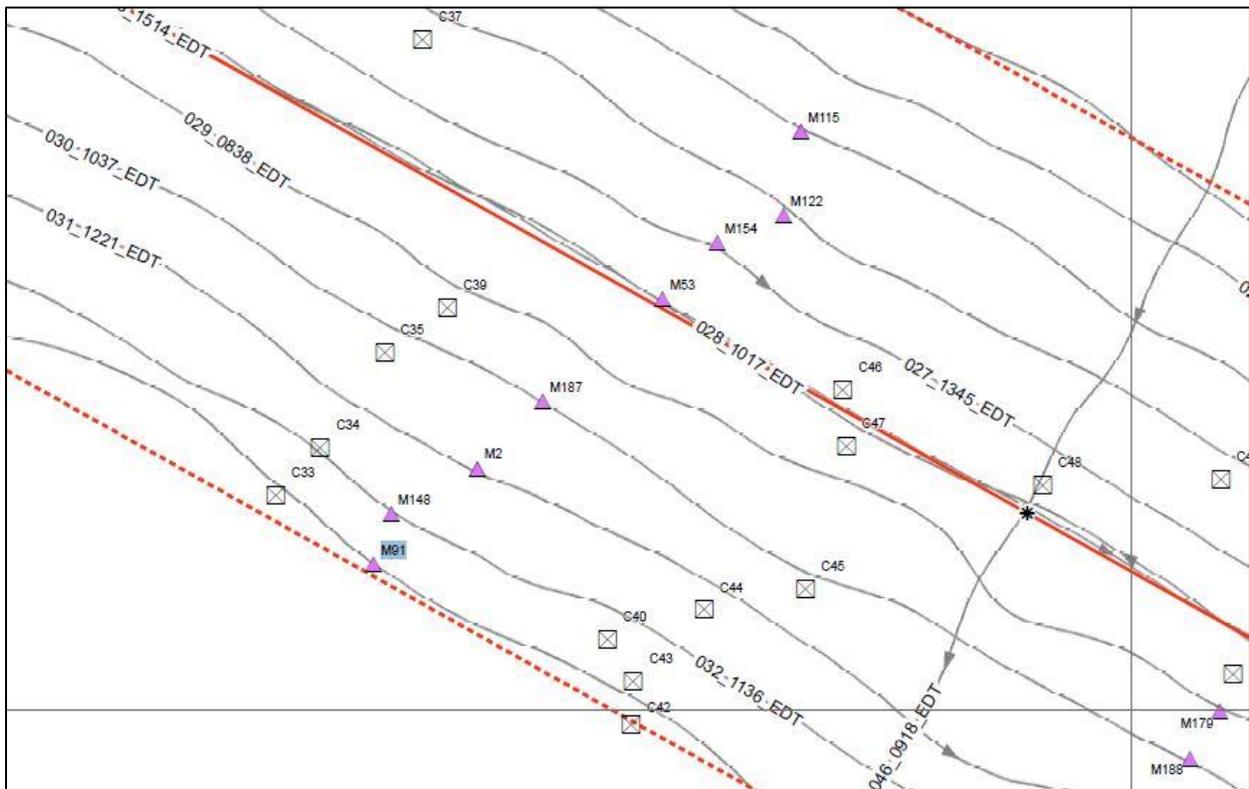


Figure 35). This feature could not be identified from the sidescan or sub-bottom profiler data acquired over this area. An analysis of the magnetic data shows that these contacts are most likely buried steel or iron buoy blocks or anchors.

This identification of these anomalies as an anchor and chain is inferred from the anomalies' masses and their spatial location to each other. M148's mass was estimated to be 4044 kg which is equivalent to a 10,000 pound standard anchor size that is normally found on many barges. The anomalies are in an approximate straight line running about 250 meters (820 ft). This length is comparable to 9 shots of anchor chain that corresponds to 247 meters (810 ft) with one shot of chain equaling 15 fathoms (27.5 meters, 90 ft). The remaining masses of the anomalies are consistent with the density of anchor chain or cable used with a 10,000 pound anchor. It is possible that the anchor and chain were lost from a barge during a storm, became fouled and cast loose, as well as many other possible scenarios.

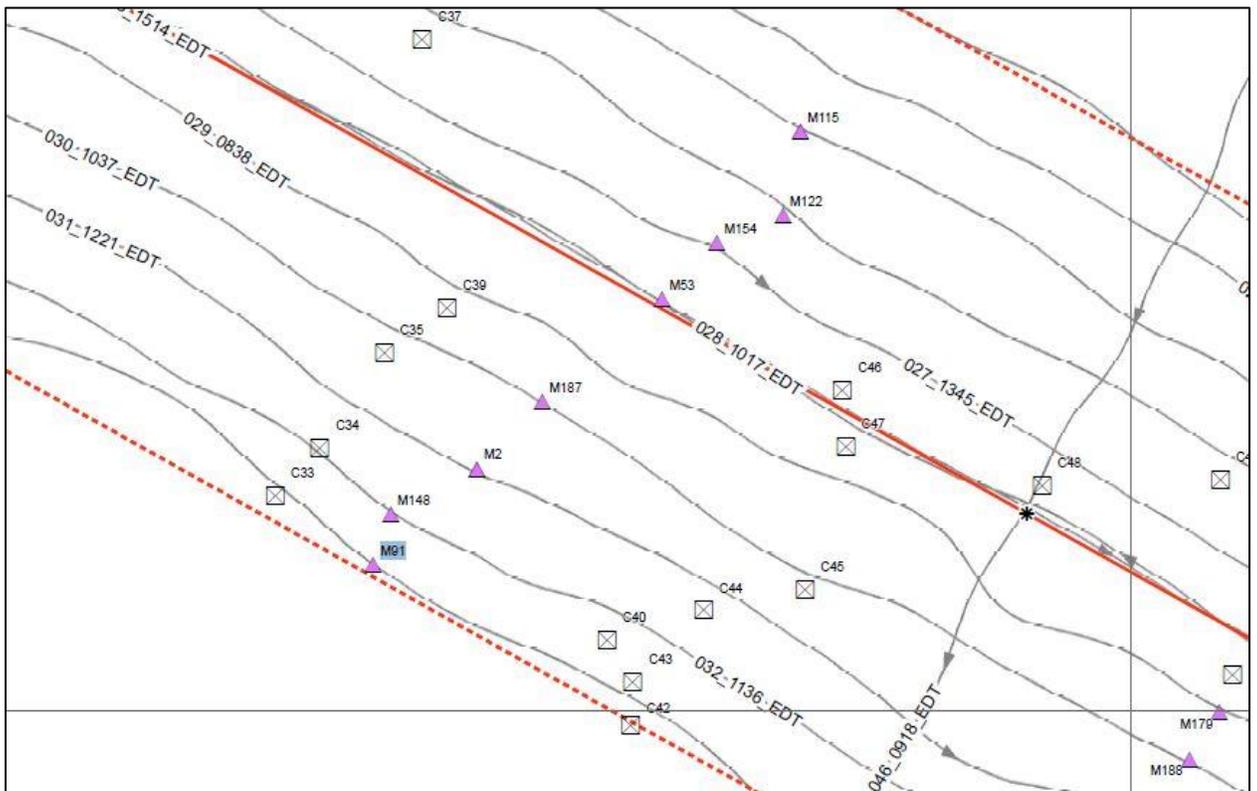


Figure 35 Possible Anchor and Chain (CSR)

The analysis of the 140 magnetic anomalies with no associated sidescan sonar contacts yielded no objects of historical significance, although several possible manmade contacts were found, they are disarticulated with no archaeological context, thus do not represent potentially significant historical resources.

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