NORTH AND SOUTH HENNEPIN MARSH SEDIMENT SUMMARY

Environmental Consulting & Technology, Inc. (ECT) has completed the assessment of sediment samples collected by ECT from the Hennepin Marsh project area in Grosse Ile Township, Michigan. Based on the analytical results discussed below, the soils/sediment is considered not contaminated. During the State permitting process, the State will make the final determination of the characterization.

North Hennepin

The proposed work for this location of the project involves the placement of stone to create a habitat shoal like the ones created at Stony and Celeron Islands. There will not be any sediment removal/dredging.

On September 27, 2019, ECT collected four representative core samples (ranging in depth of 0-2 feet) in the vicinity of the proposed shoal. At each of the four sampling locations the sampling device was pushed to refusal. These samples were submitted to Brighton Analytical for analysis of PCBs, PAHs, the metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, and zinc), BOD, and total phosphorus, as dictated by EGLE guidance documents. All samples were below criteria for PCBs and PAHs. One sample was slightly above criteria for nickel with all other metals below. The sediments were noted to be predominantly clay-silt.

Samples were collected on December 3, 2018, prior to concept development, for an initial general sediment assessment of the north project area. At that time four representative sediment samples were collected in the project impact area via ponar grab. The sediment samples were submitted to RTI Laboratories in Livonia, MI for totals analysis. The samples were analyzed for metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, and zinc), polychlorinated biphenyls (PCBs), and select polycyclic aromatic hydrocarbons (PAHs). All results were below the established criteria.

South Hennepin

The proposed design for the South Hennepin project area involves the dredging of a channel through the marsh area to allow for flow circulation during low water elevations. The dredged material may be

partially used as a top fill material for the reconstruction of the islands in the area, depending on its constructability in the field. What is not used on the islands will be side cast in the area next to the proposed dredged channel.

On September 20th and 24th, 2019, ECT collected twelve representative core samples (ranging in depth of 0-2.3 feet – 0-4 feet) six samples each from the two possible locations of the proposed channel. At each of the sampling locations the sampling device was pushed to refusal. These samples were submitted to Brighton Analytical for analysis of PCBs, PAHs, metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, and zinc), BOD, and total phosphorus. One sample from one of the channel runs, was above criteria for nickel, all others were below criteria. The sediments were noted to be predominantly loamy clay.

Samples were collected previously, prior to concept development, on December 3, 2018, for an initial general sediment assessment of the project area. Ten representative sediment samples were collected via ponar grab**.** The sediment samples were submitted to RTI Laboratories in Livonia, MI for totals analysis of PCBs, PAHs, metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, and zinc). Results indicated no exceedances of the established criteria.

Summary

Sampling methodology was covered in detail in the NOAA approved, project specific Quality Assurance Project Plan (QAPP).

The samples display consistent characteristics including no detectable PAHs or PCBs, trace metals below all criteria (with two exceptions), and moderately elevated BOD and phosphorus. Because of the consistency of the sediment quality and the general absence of any contaminants, it is reasonable to say that movement of the material in and around these areas will not result in any exacerbation or other negative environmental impacts.

The resulting laboratory reports are summarized in **Tables 1-5**, with sampling location identified in **Figures 1 & 2**.

Table 1: Sample Results for Total Analyses (HENNEPIN North Bay - 09/27/2019)

	Target Detection Limit	Statewide Default Background (mg/kg)	WRD-048 Guidelines	Drinking Water Protection	GSI Protection	Direct Contact	HN01B		HN02B		HN03B		HN04B	
							CL01337		CL01338		CL01339		CL01340	
							0-1'10"		0-2'		0-2'3"		0-2'4"	
							Composite		Composite		Composite		Composite	
							flag	result	flag	result	flag	result	flag	result
Metals (µg/kg-dry), Method SW846 6020A/7471A														
arsenic	100	5,800	33,000	4,600	4,600	7,600		1,900		2,400		1,800		1,900
cadmium	200	1,200	4,980	6,000	3,000	550,000		690		1,600		540		1,000
chromium	2,000	15,000	111,000	100,000,000	300,000,000	790,000,000		18,000		53,000		24,000		31,000
copper	1,000	32,000	149,000	5,800,000	73,000	20,000,000		18,000		47,000		25,000		26,000
lead	1,000	21,000	128,000	700,000	2,500,000	400,000		17,000		38,000		20,000		29,000
mercury	50	130	1,060	1,700	1	160,000		78		140		79		110
nickel	1,000	15,000	48,600	100,000	63,000	40,000,000		18,000		60,000		33,000		32,000
selenium	200	410	1,900	4,000	400	2,600,000		390		770		480		450
zinc	1,000	47,000	459,000	1,800,000	170,000	100,000,000		71,000		190,000		94,000		130,000
PCBs (µg/kg-dry), Method SW846 8082A														
Total PCBs	330	NA	676	NA	NA	NA	<	330	<	330	<	330	<	330
PAHs (µg/kg-dry), Method SW846 8270D														
2-Methylnaphthalene	60	NA	NA	57,000	4,200	8,100,000	<	330	<	330	<	330	<	330
Acenaphthene	330	NA	NA	300,000	8,700	41,000,000	<	330	<	330	<	330	<	330
Acenaphthylene	330	NA	NA	5,900	NA	1,600,000	<	330	<	330	<	330	<	330
Anthracene	330	NA	845	41,000	NA	230,000,000	<	330	<	330	<	330	<	330
Benzo(a)anthracene	330	NA	1,050	NA	NA	20,000	<	330	<	330	<	330	<	330
Benzo(a)pyrene	330	NA	1,450	NA	NA	2,000	<	330	<	330	<	330	<	330
Benzo(b)fluoranthene	330	NA	NA	NA	NA	20,000	<	330	<	330	<	330	<	330
Benzo(g,h,i)perylene	330	NA	NA	NA	NA	2,500,000	<	330	<	330	<	330	<	330
Benzo(k)fluoranthene	330	NA	NA	NA	NA	200,000	<	330	<	330	<	330	<	330
Chrysene	330	NA	1,290	NA	NA	2,000,000	<	330	<	330	<	330	<	330
Dibenzo(a,h)anthracene	330	NA	NA	NA	NA	2,000	<	330	<	330	<	330	<	330
Fluoranthene	330	NA	2,230	730,000	5,500	46,000,000	<	330	<	330	<	330	<	330
Fluorene	330	NA	536	390,000	5,300	27,000,000	<	330	<	330	<	330	<	330
Indeno(1,2,3-cd)pyrene	330	NA	NA	NA	NA	20,000	<	330	<	330	<	330	<	330
Naphthalene	330	NA	561	35,000	730	16,000,000	<	330	<	330	<	330	<	330
Phenanthrene	330	NA	1,170	56,000	2,100	1,600,000	<	330	<	330	<	330	<	330
Pyrene	330	NA	1,520	480,000	NA	29,000,000	<	330	<	330	<	330	<	330
TOTAL PAH	NA	NA	22,800	NA	NA	NA	<	330	<	330	<	330	<	330
Biochemical Oxygen Demand (mg/L), Method SM5210B-Mod														
BOD*	NA	NA	250	500	NA	NA		570		290		370		320
Total Phosphorus (mg/kg), Method EPA365.2														
Total Phosphorus	NA	NA	NA	NA	NA	NA		670		3,400		1,600		1,200

Notes:

Result > WRD-048 Guidelines

* BOD values are reported to EGLE for evaluation if upland sediment disposal is considered

NA = Not Applicable

Data entered by: MMP

Data entry QC check by:

Table 2: Sample Results for Total Analyses (HENNEPIN North Bay - 12/03/2018)

	Target Detection Limit	Statewide Default Background (mg/kg)	WRD-048 Guidelines	Drinking Water Protection	GSI Protection	Direct Contact	HN1		HN2		HN3		HN4	
							1812208-001		1812208-0022		1812208-003		1812208-004	
							0-6"		0-6"		0-6"		0-6"	
							Grab		Grab		Grab		Grab	
							flag	result	flag	result	flag	result	flag	result
Metals (µg/kg-dry), Method SM 846 6020A/7471A														
arsenic	100	5,800	33,000	4,600	4,600	7,600		3,300	<	6,500	<	6,300	<	6,900
cadmium	50	1,200	4,980	6,000	3,000	550,000		630		410		540		550
chromium		15,000	111,000	100,000,000	300,000,000	790,000,000		24,000		20,000		18,000		20,000
copper	1,000	32,000	149,000	5,800,000	73,000	20,000,000		32,000		19,000		17,000		19,000
lead	1,000	21,000	128,000	700,000	2,500,000	400,000		17,000		13,000		13,000		14,000
mercury	100	130	1,060	1,700	1	160,000		160		150		160		170
nickel		15,000	48,600	100,000	63,000	40,000,000		20,000		17,000		15,000		16,000
selenium	500	410	1,900	4,000	400	2,600,000		600		650		320		450
zinc	1,000	47,000	459,000	1,800,000	170,000	100,000,000		140,000		120,000		220,000		140,000
PCBs (µg/kg-dry), Method SW846 8082A														
Total PCBs	330	NA	676	NA	NA	NA	<	96	<	100		28	<	93
PAHs (µg/kg-dry), Method SW846 8270D														
2-Methylnaphthalene	60	NA	NA	57,000	4,200	8,100,000	<	1,400	<	1,500	<	1,300		73
Acenaphthene	330	NA	NA	300,000	8,700	41,000,000	<	1,400	<	1,500	<	1,300	<	1,400
Acenaphthylene	330	NA	NA	5,900	NA	1,600,000	<	1,400	<	1,500		65		65
Anthracene	330	NA	845	41,000	NA	230,000,000		75	<	1,500		110		130
Benzo(a)anthracene	330	NA	1,050	NA	NA	20,000		230		230		340		380
Benzo(a)pyrene	330	NA	1,450	NA	NA	2,000		330		320		470		510
Benzo(b)fluoranthene	330	NA	NA	NA	NA	20,000		540		520		700		810
Benzo(g,h,i)perylene	330	NA	NA	NA	NA	2,500,000		190		170		210		220
Benzo(k)fluoranthene	330	NA	NA	NA	NA	200,000		150	<	1,500		220		310
Chrysene	330	NA	1,290	NA	NA	2,000,000		350		340		490		570
Dibenzo(a,h)anthracene	330	NA	NA	NA	NA	2,000	<	1,400	<	1,500	<	1,300	<	1,400
Fluoranthene	330	NA	2,230	730,000	5,500	46,000,000		510		500		620		790
Fluorene	330	NA	536	390,000	5,300	27,000,000	<	1,400	<	1,500	<	1,300	<	1,400
Indeno(1,2,3-cd)pyrene	330	NA	NA	NA	NA	20,000		160		140		180		200
Naphthalene	330	NA	561	35,000	730	16,000,000		61	<	1,500		100		130
Phenanthrene	330	NA	1,170	56,000	2,100	1,600,000		280		270		350		440
Pyrene	330	NA	1,520	480,000	NA	29,000,000		490		470		620		720
TOTAL PAH	330	NA	22,800	NA	NA	NA		3,366		2,960		4,475		5,348

Notes:
Result > WRD-048 Guidelines
NA = Not Applicable

Data entered by: MMP
Data entry QC check by: SRD

Table 3: Sample Results for Total Analyses (HENNEPIN South Bay - 09/20/2019)

	Target Detection Limit	Statewide Default Background (mg/kg)	WRD-048 Guidelines	Drinking Water Protection	GSI Protection	Direct Contact	HS01B		HS02B		HS03B		HS04B		HS05B		HS06B	
							CL01024		CL01025		CL01026		CL01027		CL01028		CL01029	
							0-3'		0-2'9"		0-2'8"		0-2'4"		0-2'7"		0-5'3"	
							Composite		Composite		Composite		Composite		Composite		Composite	
							flag	result	flag	result	flag	result	flag	result	flag	result	flag	result
Metals (µg/kg-dry), Method SW846 6020A/7471A																		
arsenic	100	5,800	33,000	4,600	4,600	7,600		3,500		1,500		4,400		1,600		2,400		4,400
cadmium	200	1,200	4,980	6,000	3,000	550,000		410		120		700		270		550		3,100
chromium	2,000	15,000	111,000	100,000,000	300,000,000	790,000,000		16,000		5,000		18,000		13,000		16,000		64,000
copper	1,000	32,000	149,000	5,800,000	73,000	20,000,000		23,000		9,300		39,000		16,000		25,000		58,000
lead	1,000	21,000	128,000	700,000	2,500,000	400,000		9,400		5,400		11,000		9,400		11,000		69,000
mercury	50	130	1,060	1,700	1	160,000	<	50	<	50	<	50	<	50	<	50		250
nickel	1,000	15,000	48,600	100,000	63,000	40,000,000		22,000		6,400		27,000		21,000		22,000		51,000
selenium	200	410	1,900	4,000	400	2,600,000		900		230		1,400		290		1,100		900
zinc	1,000	47,000	459,000	1,800,000	170,000	100,000,000		46,000		19,000		46,000		41,000		50,000		210,000
PCBs (µg/kg-dry), Method SW846 8082A																		
Total PCBs	330	NA	676	NA	NA	NA	<	330	<	330	<	330	<	330	<	330	<	330
PAHs (µg/kg-dry), Method SW846 8270D																		
2-Methylnaphthalene	60	NA	NA	57,000	4,200	8,100,000	<	500	<	330	<	590	<	330	<	530	<	400
Acenaphthene	330	NA	NA	300,000	8,700	41,000,000	<	500	<	330	<	590	<	330	<	530	<	400
Acenaphthylene	330	NA	NA	5,900	NA	1,600,000	<	500	<	330	<	590	<	330	<	530	<	400
Anthracene	330	NA	845	41,000	NA	230,000,000	<	500	<	330	<	590	<	330	<	530	<	400
Benzo(a)anthracene	330	NA	1,050	NA	NA	20,000	<	500	<	330	<	590	<	330	<	530	<	400
Benzo(a)pyrene	330	NA	1,450	NA	NA	2,000	<	500	<	330	<	590	<	330	<	530	<	400
Benzo(b)fluoranthene	330	NA	NA	NA	NA	20,000	<	500	<	330	<	590	<	330	<	530	<	400
Benzo(g,h,i)perylene	330	NA	NA	NA	NA	2,500,000	<	500	<	330	<	590		640	<	530	<	400
Benzo(k)fluoranthene	330	NA	NA	NA	NA	200,000	<	500	<	330	<	590	<	330	<	530	<	400
Chrysene	330	NA	1,290	NA	NA	2,000,000	<	500	<	330	<	590	<	330	<	530	<	400
Dibenzo(a,h)anthracene	330	NA	NA	NA	NA	2,000	<	500	<	330	<	590	<	330	<	530	<	400
Fluoranthene	330	NA	2,230	730,000	5,500	46,000,000	<	500	<	330	<	590	<	330	<	530	<	400
Fluorene	330	NA	536	390,000	5,300	27,000,000	<	500	<	330	<	590	<	330	<	530	<	400
Indeno(1,2,3-cd)pyrene	330	NA	NA	NA	NA	20,000	<	500	<	330	<	590		560	<	530	<	400
Naphthalene	330	NA	561	35,000	730	16,000,000	<	500	<	330	<	590	<	330	<	530	<	400
Phenanthrene	330	NA	1,170	56,000	2,100	1,600,000	<	500	<	330	<	590	<	330	<	530	<	400
Pyrene	330	NA	1,520	480,000	NA	29,000,000	<	500	<	330	<	590	<	330	<	530	<	400
TOTAL PAH	NA	NA	22,800	NA	NA	NA	<	500	<	330	<	590		1,200	<	530	<	400
Biochemical Oxygen Demand (mg/L), Method SM5210B-Mod																		
BOD*	NA	NA	250	500	NA	NA		220		220		480		110		310		600
Total Phosphorus (mg/kg), Method EPA365.2																		
Total Phosphorus	NA	NA	NA	NA	NA	NA		750		200		760		460		1,400		1,200

Notes:

Result > WRD-048 Guidelines

* BOD values are reported to EGLE for evaluation if upland sediment disposal is considered

NA = Not Applicable

Data entered by: MMP

Data entry QC check by:

Table 4: Sample Results for Total Analyses (HENNEPIN South Bay - 09/24/2019)

	Target Detection Limit	Statewide Default Background (mg/kg)	WRD-048 Guidelines	Drinking Water Protection	GSI Protection	Direct Contact	HS07B		HS08B		HS09B		HS10B		HS11B		HS12B	
							CL01030		CL01031		CL01032		CL01033		CL01034		CL01035	
							0-2'8.5"		0-2'10"		0-2'10"		0-2'7"		0-3'7"		0-4'3"	
							Composite		Composite		Composite		Composite		Composite		Composite	
							flag	result	flag	result	flag	result	flag	result	flag	result	flag	result
Metals (µg/kg-dry), Method SW846 6020A/7471A																		
arsenic	100	5,800	33,000	4,600	4,600	7,600		2,300		2,000		1,900		2,400		4,100		4,000
cadmium	200	1,200	4,980	6,000	3,000	550,000		300		350		410		750		1,300		1,500
chromium	2,000	15,000	111,000	100,000,000	300,000,000	790,000,000		16,000		17,000		19,000		21,000		31,000		35,000
copper	1,000	32,000	149,000	5,800,000	73,000	20,000,000		20,000		21,000		24,000		29,000		38,000		44,000
lead	1,000	21,000	128,000	700,000	2,500,000	400,000		9,900		10,000		14,000		16,000		30,000		36,000
mercury	50	130	1,060	1,700	1	160,000	<	50	<	50	<	50	<	50		120		160
nickel	1,000	15,000	48,600	100,000	63,000	40,000,000		22,000		24,000		27,000		25,000		30,000		34,000
selenium	200	410	1,900	4,000	400	2,600,000		550		570		520		710		1,100		970
zinc	1,000	47,000	459,000	1,800,000	170,000	100,000,000		59,000		45,000		58,000		64,000		110,000		130,000
PCBs (µg/kg-dry), Method SW846 8082A																		
Total PCBs	330	NA	676	NA	NA	NA	<	330	<	330	<	330	<	330	<	330	<	330
PAHs (µg/kg-dry), Method SW846 8270D																		
2-Methylnaphthalene	60	NA	NA	57,000	4,200	8,100,000	<	330	<	330	<	330	<	430	<	860	<	500
Acenaphthene	330	NA	NA	300,000	8,700	41,000,000	<	330	<	330	<	330	<	430	<	860	<	500
Acenaphthylene	330	NA	NA	5,900	NA	1,600,000	<	330	<	330	<	330	<	430	<	860	<	500
Anthracene	330	NA	845	41,000	NA	230,000,000	<	330	<	330	<	330	<	430	<	860	<	500
Benzo(a)anthracene	330	NA	1,050	NA	NA	20,000	<	330	<	330	<	330	<	430	<	860	<	500
Benzo(a)pyrene	330	NA	1,450	NA	NA	2,000	<	330	<	330	<	330	<	430	<	860	<	500
Benzo(b)fluoranthene	330	NA	NA	NA	NA	20,000	<	330	<	330	<	330	<	430	<	860	<	500
Benzo(g,h,i)perylene	330	NA	NA	NA	NA	2,500,000	<	330	<	330	<	330	<	430	<	860	<	500
Benzo(k)fluoranthene	330	NA	NA	NA	NA	200,000	<	330	<	330	<	330	<	430	<	860	<	500
Chrysene	330	NA	1,290	NA	NA	2,000,000	<	330	<	330	<	330	<	430	<	860	<	500
Dibenzo(a,h)anthracene	330	NA	NA	NA	NA	2,000	<	330	<	330	<	330	<	430	<	860	<	500
Fluoranthene	330	NA	2,230	730,000	5,500	46,000,000	<	330	<	330	<	330	<	430	<	860	<	500
Fluorene	330	NA	536	390,000	5,300	27,000,000	<	330	<	330	<	330	<	430	<	860	<	500
Indeno(1,2,3-cd)pyrene	330	NA	NA	NA	NA	20,000	<	330	<	330	<	330	<	430	<	860	<	500
Naphthalene	330	NA	561	35,000	730	16,000,000	<	330	<	330	<	330	<	430	<	860	<	500
Phenanthrene	330	NA	1,170	56,000	2,100	1,600,000	<	330	<	330	<	330	<	430	<	860	<	500
Pyrene	330	NA	1,520	480,000	NA	29,000,000	<	330	<	330	<	330	<	430	<	860	<	500
TOTAL PAH	NA	NA	22,800	NA	NA	NA	<	330	<	330	<	330	<	430	<	860	<	500
Biochemical Oxygen Demand (mg/L), Method SM5210B-Mod																		
BOD*	NA	NA	250	500	NA	NA		230		240		200		540		470		690
Total Phosphorus (mg/kg), Method EPA365.2																		
Total Phosphorus	NA	NA	NA	NA	NA	NA		740		1,000		940		1,100		420		790

Notes:

Result > WRD-048 Guidelines

* BOD values are reported to EGLE for evaluation if upland sediment disposal is considered

NA = Not Applicable

Data entered by: MMP

Data entry QC check by:

Table 5: Sample Results for Total Analyses (HENNEPIN South Bay - 12/03/2018)

	Target Detection Limit	Statewide Default Background (mg/kg)	WRD-048 Guidelines	Drinking Water Protection	GSI Protection	Direct Contact	HS1		HS2		HS3		HS4		HS5		HS6		HS7		HS8		HS9		HS10	
							1812209-001		1812209-002		1812209-003		1812209-004		1812209-005		1812209-006		1812209-007		1812209-008		1812209-009		1812209-010	
							0-6"		0-6"		0-6"		0-6"		0-6"		0-6"		0-6"		0-6"		0-6"		0-6"	
							Grab		Grab		Grab		Grab		Grab		Grab		Grab		Grab		Grab		Grab	
							flag	result	flag	result	flag	result	flag	result	flag	result	flag	result	flag	result	flag	result	flag	result	flag	result
Metals (µg/kg-dry), Method SM 846 6020A/7471A																										
arsenic	100	5,800	33,000	4,600	4,600	7,600	<	10,000	<	9,400	<	6,200	<	6,300	<	6,300	<	8,000	<	6,600	<	3,400	<	7,800	<	6,400
cadmium	50	1,200	4,980	6,000	3,000	550,000		1,200		1,400		720		1,200		710		1,400		2,200		240		1,300		1,100
chromium		15,000	111,000	100,000,000	300,000,000	790,000,000		41,000		41,000		25,000		33,000		28,000		41,000		54,000		11,000		37,000		18,000
copper	1,000	32,000	149,000	5,800,000	73,000	20,000,000		38,000		43,000		20,000		30,000		22,000		37,000		51,000		7,000		42,000		20,000
lead	1,000	21,000	128,000	700,000	2,500,000	400,000		26,000		32,000		16,000		25,000		19,000		29,000		41,000		9,500		29,000		41,000
mercury	100	130	1,060	1,700	1	160,000		150		140		92		110		84		120		210		34		150		190
nickel		15,000	48,600	100,000	63,000	40,000,000		33,000		32,000		18,000		24,000		21,000		25,000		34,000		7,700		27,000		12,000
selenium	500	410	1,900	4,000	400	2,600,000		1,000		1,400		660		940		890		1,200		1,400		180		1,100		750
zinc	1,000	47,000	459,000	1,800,000	170,000	100,000,000		170,000		140,000		95,000		65,000		100,000		150,000		160,000		41,000		120,000		90,000
PCBs (µg/kg-dry), Method SW846 8082A																										
Total PCBs	330	NA	676	NA	NA	NA		48		76		64		86		48		86		110		31		96		160
PAHs (µg/kg-dry), Method SW846 8270D																										
2-Methylnaphthalene	60	NA	NA	57,000	4,200	8,100,000	<	2,200	<	2,000	<	1,400	<	1,300	<	1,400	<	1,900	<	1,400		40	<	1,500		94
Acenaphthene	330	NA	NA	300,000	8,700	41,000,000	<	2,200	<	2,000	<	1,400	<	1,300	<	1,400	<	1,900	<	1,400	<	240	<	1,500	<	1,400
Acenaphthylene	330	NA	NA	5,900	NA	1,600,000	<	2,200	<	2,000	<	1,400	<	1,300	<	1,400	<	1,900	<	1,400		27	<	1,500	<	1,400
Anthracene	330	NA	845	41,000	NA	230,000,000		150		130	<	1,400	<	1,300	<	1,400		110	<	1,400		29		150		170
Benzo(a)anthracene	330	NA	1,050	NA	NA	20,000		450		430		140		200		150		320		200		120		430		420
Benzo(a)pyrene	330	NA	1,450	NA	NA	2,000		620		590		130		210		170		330		240		140		410		650
Benzo(b)fluoranthene	330	NA	NA	NA	NA	20,000		860		840		260		370		300		530		440		200		750		990
Benzo(g,h,i)perylene	330	NA	NA	NA	NA	2,500,000		200		170	<	1,400	<	1,300	<	1,400	<	1,900	<	1,400		37		110		160
Benzo(k)fluoranthene	330	NA	NA	NA	NA	200,000		340		280	<	1,400		150	<	1,400		230	<	1,400		70		290		420
Chrysene	330	NA	1,290	NA	NA	2,000,000		610		500		160		270		180		390		290		140		500		510
Dibenzo(a,h)anthracene	330	NA	NA	NA	NA	2,000	<	2,200	<	2,000	<	1,400	<	1,300	<	1,400	<	1,900	<	1,400	<	240	<	1,500	<	1,400
Fluoranthene	330	NA	2,230	730,000	5,500	46,000,000		850		670		270		430		310		680		420		190		940		840
Fluorene	330	NA	536	390,000	5,300	27,000,000	<	2,200	<	2,000	<	1,400	<	1,300	<	1,400	<	1,900	<	1,400	<	240	<	1,500		110
Indeno(1,2,3-cd)pyrene	330	NA	NA	NA	NA	20,000		180		160	<	1,400		78	<	1,400	<	1,900	<	1,400		32		110		170
Naphthalene	330	NA	561	35,000	730	16,000,000		150		120	<	1,400		65	<	1,400		87		65		35		74		130
Phenanthrene	330	NA	1,170	56,000	2,100	1,600,000		500		400		140		240		170		400		240		85		490		610
Pyrene	330	NA	1,520	480,000	NA	29,000,000		830		700		270		430		300		670		440		230		930		940
TOTAL PAH	330	NA	22,800	NA	NA	NA		5,740		4,990		1,370		2,443		1,580		3,747		2,335		1,375		5,184		6,214

Notes:

Result > WRD-048 Guidelines

NA = Not Applicable

Data entered by: MMP

Data entry QC check by: SRD

SURVEY PROVIDED BY MIDWESTERN CONSULTING, NOVEMBER 2018

ALL WELL LOCATIONS ARE RELATIVE AND NOT EXACT DUE TO COORDINATES NOT BEING AVAILABLE, DISTANCE FROM A RELATIVE LOCATION WAS USED

* DENOTES EXTREMELY RELATIVE LOCATION OF WELL, PLACED USING MAP ONLY, NOT DISTANCE

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HRM Herpetological Resource and Management

Somat Engineering

MIDWESTERN CONSULTING

FRIENDS of the DETROIT RIVER

DETROIT RIVER AOC- HENNEPIN MARSH HABITAT RESTORATION PROJECT

FRIENDS OF THE DETROIT RIVER

WAYNE COUNTY, MICHIGAN

DRAFT	12-19-19
PRELIMINARY	01-25-19

180641
ECT PROJECT NUMBER

AB/SR	JO
DESIGNED BY	CHECKED BY
SR	JO
DRAWN BY	APPROVED BY

SHEET TITLE

FIGURE 1

SCALE: 1" = 150' @ 8.5" x 11"

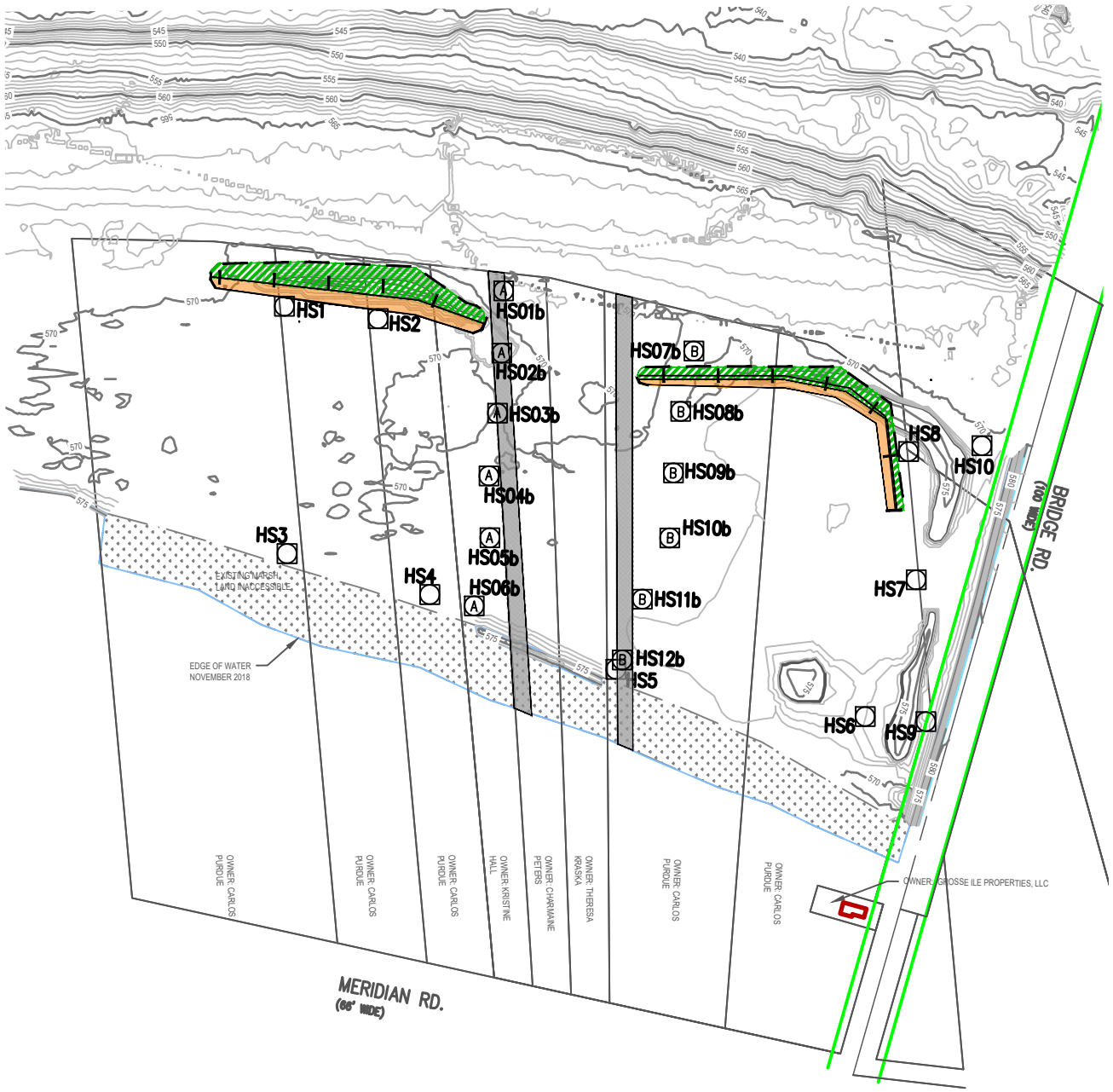
0 75' 150' 300'

NORTH

SHEET NUMBER 8

P:\Friends of Detroit River -Hennepin\CAD\Hennepin.dwg

SURVEY PROVIDED BY MIDWESTERN CONSULTING,
NOVEMBER 2018



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SHEET TITLE

FIGURE 2

SCALE: 1" = 100' @ 8.5" x 11"

0 50' 100' 200'

NORTH

SHEET NUMBER

9