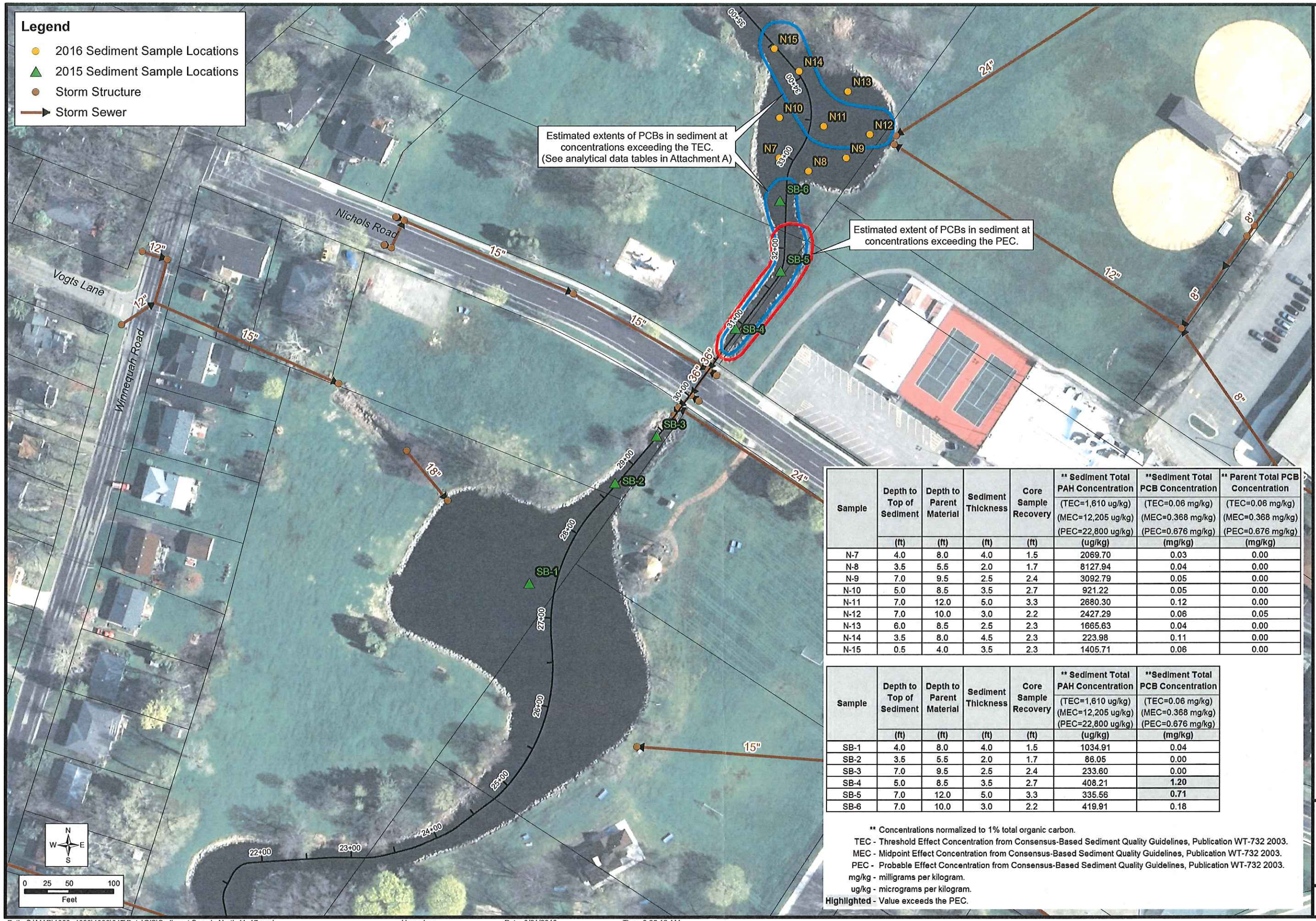
SAMPLE LOCATIONS AND ANALYTICAL RESULTS

WINNEQUAH PARK LAGOON
CITY OF MONONA
DANE COUNTY, WISCONSIN



Sample	Depth to Top of Sediment	Depth to Parent Material	Sediment Thickness	Core Sample Recovery	** Sediment Total PAH Concentration (TEC=1,610 ug/kg) (MEC=12,205 ug/kg) (PEC=22,800 ug/kg)	**Sediment Total PCB Concentration (TEC=0.06 mg/kg) (MEC=0.368 mg/kg) (PEC=0.676 mg/kg)	** Parent Total PCB Concentration (TEC=0.06 mg/kg) (MEC=0.368 mg/kg) (PEC=0.676 mg/kg)
	(ft)	(ft)	(ft)	(ft)	(ug/kg)	(mg/kg)	(mg/kg)
N-7	4.0	8.0	4.0	1.5	2069.70	0.03	0.00
N-8	3.5	5.5	2.0	1.7	8127.94	0.04	0.00
N-9	7.0	9.5	2.5	2.4	3092.79	0.05	0.00
N-10	5.0	8.5	3.5	2.7	921.22	0.05	0.00
N-11	7.0	12.0	5.0	3.3	2680.30	0.12	0.00
N-12	7.0	10.0	3.0	2.2	2427.29	0.06	0.05
N-13	6.0	8.5	2.5	2.3	1665.63	0.04	0.00
N-14	3.5	8.0	4.5	2.3	223.98	0.11	0.00
N-15	0.5	4.0	3.5	2.3	1405.71	0.06	0.00

Sample	Depth to Top of Sediment	Depth to Parent Material	Sediment Thickness	Core Sample Recovery	** Sediment Total PAH Concentration (TEC=1,610 ug/kg) (MEC=12,205 ug/kg) (PEC=22,800 ug/kg)	**Sediment Total PCB Concentration (TEC=0.06 mg/kg) (MEC=0.368 mg/kg) (PEC=0.676 mg/kg)
	(ft)	(ft)	(ft)	(ft)	(ug/kg)	(mg/kg)
SB-1	4.0	8.0	4.0	1.5	1034.91	0.04
SB-2	3.5	5.5	2.0	1.7	86.05	0.00
SB-3	7.0	9.5	2.5	2.4	233.60	0.00
SB-4	5.0	8.5	3.5	2.7	408.21	**1.20**
SB-5	7.0	12.0	5.0	3.3	335.56	**0.71**
SB-6	7.0	10.0	3.0	2.2	419.91	0.18

** Concentrations normalized to 1% total organic carbon.
TEC - Threshold Effect Concentration from Consensus-Based Sediment Quality Guidelines, Publication WT-732 2003.
MEC - Midpoint Effect Concentration from Consensus-Based Sediment Quality Guidelines, Publication WT-732 2003.
PEC - Probable Effect Concentration from Consensus-Based Sediment Quality Guidelines, Publication WT-732 2003.
mg/kg - milligrams per kilogram.
ug/kg - micrograms per kilogram.
Highlighted - Value exceeds the PEC.

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FIGURE 1
1093.047

Path: S:\MAD\1000--1099\1093\047\Data\GIS\Sediment Sample North 11x17.mxd User: danc Date: 6/21/2016 Time: 9:35:12 AM

SAMPLE LOCATIONS AND ANALYTICAL RESULTS

WINNEQUAH PARK LAGOON
CITY OF MONONA
DANE COUNTY, WISCONSIN

Legend
- 2016 Sediment Sample Locations
- Storm Structure
- Storm Sewer

S1
S2

Mathys Road
Baskerville Avenue
Winnequah Road
Winnequah Trail
Healy Lane
Navajo Trail

0 25 50 100 Feet

Sample	Depth to Top of Sediment	Depth to Parent Material	Sediment Thickness	Core Sample Recovery	** Composite Sediment Total PAH Concentration (TEC=1,610 ug/kg) (MEC=12,205 ug/kg) (PEC=22,800 ug/kg)	** Composite Sediment Total PCB Concentration (TEC=0.06 mg/kg) (MEC=0.368 mg/kg) (PEC=0.676 mg/kg)	** Composite Parent Total PAH Concentration (TEC=1,610 ug/kg) (MEC=12,205 ug/kg) (PEC=22,800 ug/kg)	** Composite Parent Total PCB Concentration (TEC=0.06 mg/kg) (MEC=0.368 mg/kg) (PEC=0.676 mg/kg)
	(ft)	(ft)	(ft)	(ft)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)
S-1	1.5	3.5	2.0	1.4	139.90	0.00	139.68	0.00
S-2	2.0	4.5	2.5	1.7				

** Concentrations normalized to 1% total organic carbon.
TEC - Threshold Effect Concentration from Consensus-Based Sediment Quality Guidelines, Publication WT-732 2003.
MEC - Midpoint Effect Concentration from Consensus-Based Sediment Quality Guidelines, Publication WT-732 2003.
PEC - Probable Effect Concentration from Consensus-Based Sediment Quality Guidelines, Publication WT-732 2003.
mg/kg - milligrams per kilogram.
ug/kg - micrograms per kilogram.
Highlighted - Value exceeds the PEC.

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FIGURE 2
1093.047

Path: S:\MAD\1000--1099\1093\047\Data\GIS\Sediment Sample South 11x17.mxd User: danc Date: 6/21/2016 Time: 9:36:02 AM

Legend

- Existing Wet Pond
- Existing Stormwater Treatment Device
- Proposed Stormwater Treatment Device Locations
- Storm Structure
- Storm Sewer
- Sanitary Manhole
- Sanitary Sewer
- Drainage Basins

Potential Diversion of 15" to Existing Wet Pond

Potential Diversion of 12" and/or 15" to Wet Detention Basin

Existing Rain Garden

Potential Diversion of 24" and 12" Storm Sewer to Wet Detention Basin

Potential Bioretention Basin

1 5.7 AC
2 6.1 AC
3 4.8 AC
4 2.6 AC
5 5.3 AC
6 0.9 AC
7 8.6 AC
8 23.6 AC
9 7.2 AC
10 5.2 AC
11 4.3 AC
12 16.3 AC

Source: Esri, DigitalGlobe, GeoEye, the GIS User Community

0 150 300 600 Feet

Path: S:\MAD\1000--1099\1093\047\Data\GIS\Shoreland Erosion Assessment_11x17.mxd User: christyr Date: 5/3/2016 Time: 8:52:52 AM

STORMWATER TREATMENT DEVICE ASSESSMENT

WINNEQUAH PARK LAGOON SMALING, MANAGEMENT, AND PLANNING
CITY OF MONONA
DANE COUNTY, WISCONSIN

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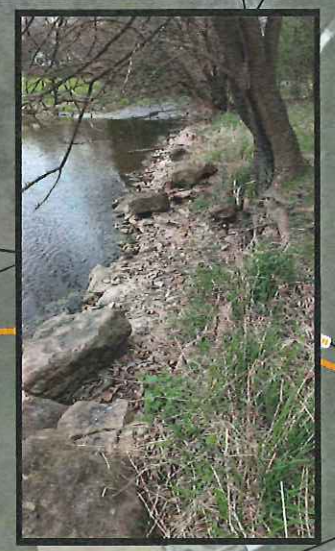
FIGURE 3
1093.047

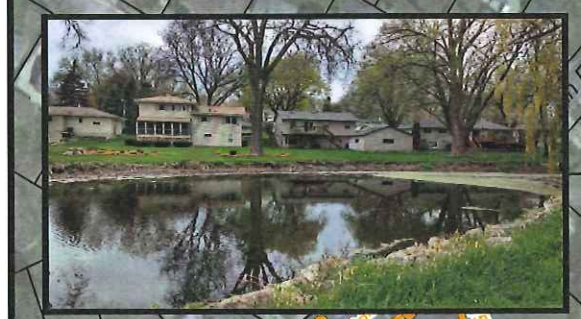
Legend

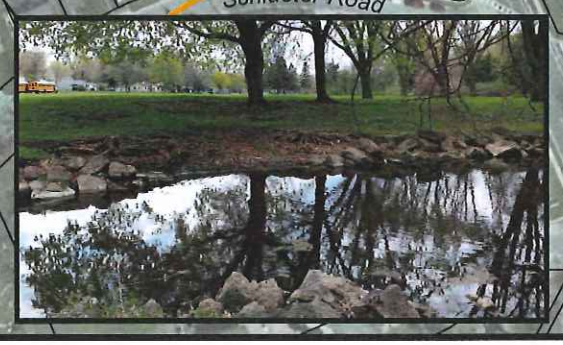
- Storm Sewer
- Storm Structure
- Parcels

Proposed Erosion Control Measure

- Augmentitive Riprap Restoration (1,084 FT)
- Coir Fiber Roll Restoration (351 FT)
- Traditional Riprap Streambank Restoration (993 FT)
- Potential Canoe/Kayak Launch Location
- Potential Public Fishing Pier Location







Existing Canoe/Kayak Launch

Potential to Reclaim Shoreline Lost Due to Erosion

Winnequah Trail

Schlueter Road

0 50 100 200
Feet

SHORELAND EROSION ASSESSMENT
WINNEQUAH PARK LAGOON SAMPLING, MANAGEMENT, AND PLANNING
CITY OF MONONA
DANE COUNTY, WISCONSIN

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FIGURE 4
1093.047

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Winnequah Park Lagoons: Sediment Samples
1093.047

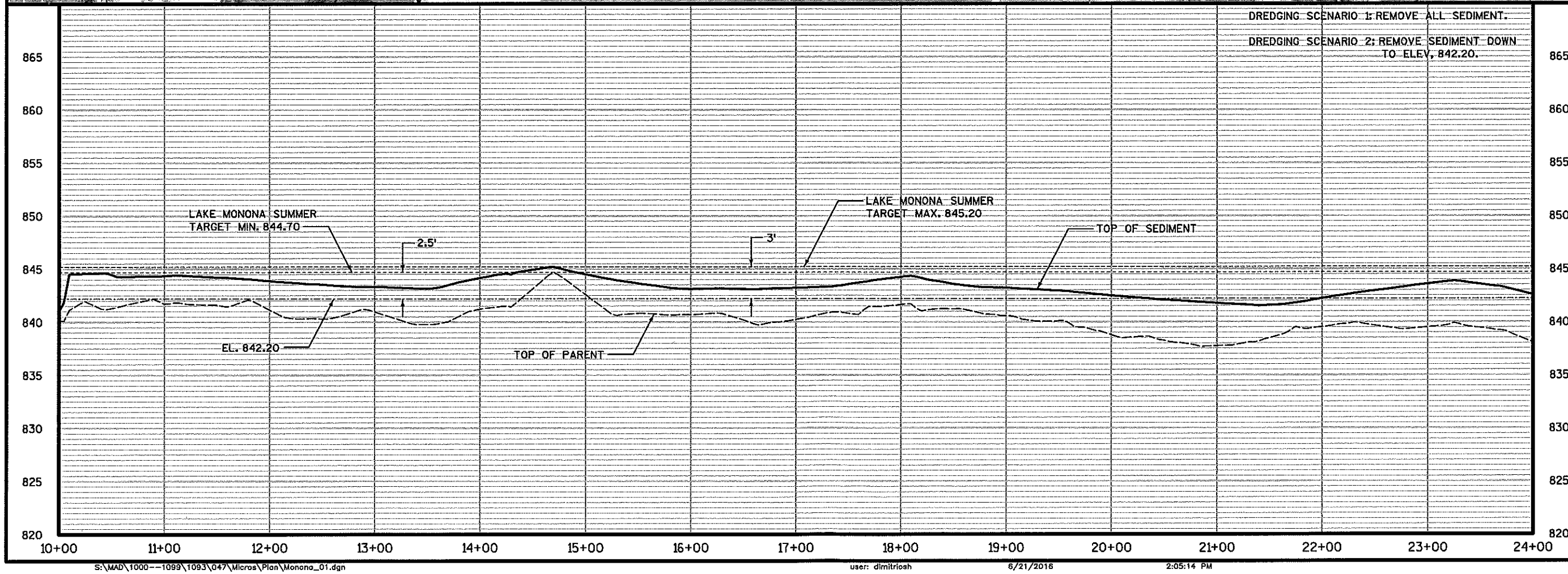
				GRAB SEDIMENT SAMPLES - May 12, 2016															
				N-7		N-8		N-9		N-10		N-11		N-12		N-13		N-14		N-15	
				TOC mg/kg	TOC %	TOC mg/kg	TOC %	TOC mg/kg	TOC %	TOC mg/kg	TOC %	TOC mg/kg	TOC %	TOC mg/kg	TOC %	TOC mg/kg	TOC %	TOC mg/kg	TOC %	TOC mg/kg	TOC %
				63300	6.33	55400	5.54	56400	5.64	80100	8.01	64400	6.44	70500	7.05	56100	5.61	41200	4.12	72200	7.22
Contaminant	CBSQG TEC	CBSQG MEC	CBSQG PEC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC
PAHs (ug/kg)																					
1-Methylnaphthalene			--	23.80	3.76	39.70	7.17	9.85	1.75	10.40	1.30	202.00	31.37	17.40	2.47	15.40	2.75	16.00	3.88	27.30	3.78
2-Methylnaphthalene	20.2	111	201	28.3	4.47	41.7	7.53	13.2	2.34	15.2	1.90	270	*41.93*	29.8	4.23	21	3.74	28.9	7.01	46.5	6.44
Acenaphthene	6.7	48	89	66.7	*10.54*	181	*32.67*	84.8	*15.04*	34.4	4.29	93.1	*14.46*	123	*17.45*	40.8	*7.27*	13.2	3.20	81.9	*11.34*
Acenaphthylene	5.9	67	128	46.7	*7.38*	89.5	*16.16*	32.9	5.83	23.4	2.92	52.3	*8.12*	54	*7.66*	41.7	*7.43*	17.7	4.30	87.3	*12.09*
Anthracene	57.2	451	845	306	48.34	507	*91.52*	260	46.10	85.2	10.64	173	26.86	325	46.10	106	18.89	25.2	6.12	181	25.07
Benzo(a)anthracene	108	579	1050	991	*156.56*	2690	*485.56*	1350	*239.36*	503	62.80	984	*152.80*	1200	*170.21*	576	102.67	46.2	11.21	663	91.83
Benzo(a)pyrene	150	800	1450	989	*156.24*	3610	*651.62*	1320	*234.04*	556	69.41	1240	*192.55*	1210	*171.63*	702	125.13	45.5	11.04	752	104.16
Benzo(b)fluoranthene	240	6820	13400	1860	*293.84*	7430	*1341.16*	2340	*414.89*	1090	136.08	2640	*409.94*	2290	*324.82*	1570	*279.86*	104	25.24	1400	193.91
Benzo(g,h,i)perylene	170	1685	3200	819	129.38	2890	*521.66*	1120	*198.58*	539	67.29	1270	*197.20*	989	140.28	706	125.85	43.5	10.56	569	78.81
Benzo(k)fluoranthene	240	6820	13400	398	62.88	1540	*277.98*	673	119.33	306	38.20	607	94.25	499	70.78	351	62.57	19	4.61	359	49.72
Chrysene	166	728	1290	1050	165.88	4010	*723.83*	1370	*242.91*	596	74.41	1450	*225.16*	1320	*187.23*	846	150.80	66.4	16.12	813	112.60
Dibenzo(a,h)anthracene	33	84	135	176	27.80	577	**104.15**	248	*43.97*	112	13.98	254	*39.44*	215	30.50	145	25.85	10.9	2.65	141	19.53
Fluoranthene	423	1327	2230	2310	364.93	8010	**1445.85**	3270	*579.79*	1280	159.80	2840	*440.99*	3240	*459.57*	1580	281.64	139	33.74	1700	235.46
Fluorene	77.4	307	536	146	23.06	370	66.79	164	29.08	73.8	9.21	181	28.11	229	32.48	84.4	15.04	34.8	8.45	179	24.79
Indeno(1,2,3-cd)pyrene	200	1700	3200	741	117.06	2760	*498.19*	1060	187.94	496	61.92	1180	183.23	943	133.76	657	117.11	38.9	9.44	551	76.32
Naphthalene	176	369	561	29.7	4.69	62.9	11.35	17.6	3.12	17.6	2.20	64.7	10.05	28.2	4.00	25.9	4.62	14.6	3.54	38.2	5.29
Phenanthrene	204	687	1170	1200	189.57	3770	*680.51*	1450	*257.09*	541	67.54	1430	*222.05*	1850	*262.41*	546	97.33	124	30.10	1080	149.58
Pyrene	195	858	1520	1920	*303.32*	6450	**1164.26**	2660	*471.63*	1100	137.33	2330	*361.80*	2550	*361.70*	1330	*237.08*	135	32.77	1480	*204.99*
Total PAHs (ug/kg)	1610	12205	22800	13101.20	*2069.70*	45028.80	*8127.94*	17443.35	*3092.79*	7379.00	921.22	17261.10	*2680.30*	17112.40	*2427.29*	9344.20	*1665.63*	922.80	223.98	10149.20	1405.71
Total PCBs (mg/kg)	0.06	0.368	0.676	0.1996	0.03	0.2125	0.04	0.2745	0.05	0.4192	0.05	0.786	*0.12*	0.4396	*0.06*	0.239	0.04	0.449	*0.11*	0.441	*0.06*

				GRAB PARENT MATERIAL SAMPLES - May 12, 2016															
				N-7		N-8		N-9		N-10		N-11		N-12		N-13		N-14		N-15	
				** TOC mg/kg	TOC %	** TOC mg/kg	TOC %	** TOC mg/kg	TOC %	** TOC mg/kg	TOC %	** TOC mg/kg	TOC %	** TOC mg/kg	TOC %	** TOC mg/kg	TOC %	** TOC mg/kg	TOC %	** TOC mg/kg	TOC %
				13010	1.301	13010	1.301	13010	1.301	13010	1.301	13010	1.301	13010	1.301	13010	1.301	13010	1.301	13010	1.301
Contaminant	CBSQG TEC	CBSQG MEC	CBSQG PEC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC	Dry Weight Concentration	Concentration Normalized to 1% TOC
Total PCBs (mg/kg)	0.06	0.368	0.676	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.0676	0.05	0	0.00	0	0.00	0	0.00

** The TOC concentration of 13,010 mg/kg used to normalizing these results to 1% TOC is the average TOC concentration of the 2 Winnequah Park Lagoon parent material samples analyzed for TOC.

CBSQG - Consensus-Based Sediment Quality Guidelines, Interim Guidance, Publication WT-732 2003.
TEC - Threshold Effect Concentration
MEC - Midpoint Effect Concentration
PEC - Probable Effect Concentration
-- - No Standard for this compound
mg/kg - milligrams per kilogram
ug/kg - micrograms per kilogram

Italics - Exceeds TEC
Bold - Exceeds MEC
Highlighted - Exceeds PEC
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
TOC - Total Organic Carbon



NO. | REVISIONS | DATE:

PLAN AND PROFILE
DOWNSTREAM OF NICHOLS ROAD

WINNEQUAH PARK LAGOON SAMPLING, MANAGEMENT, AND PLANNING
CITY OF MONONA
DANE COUNTY, WISCONSIN

JOB NO. 1093.047
PROJECT MGR. JHL

STRAND ASSOCIATES®

SHEET 1

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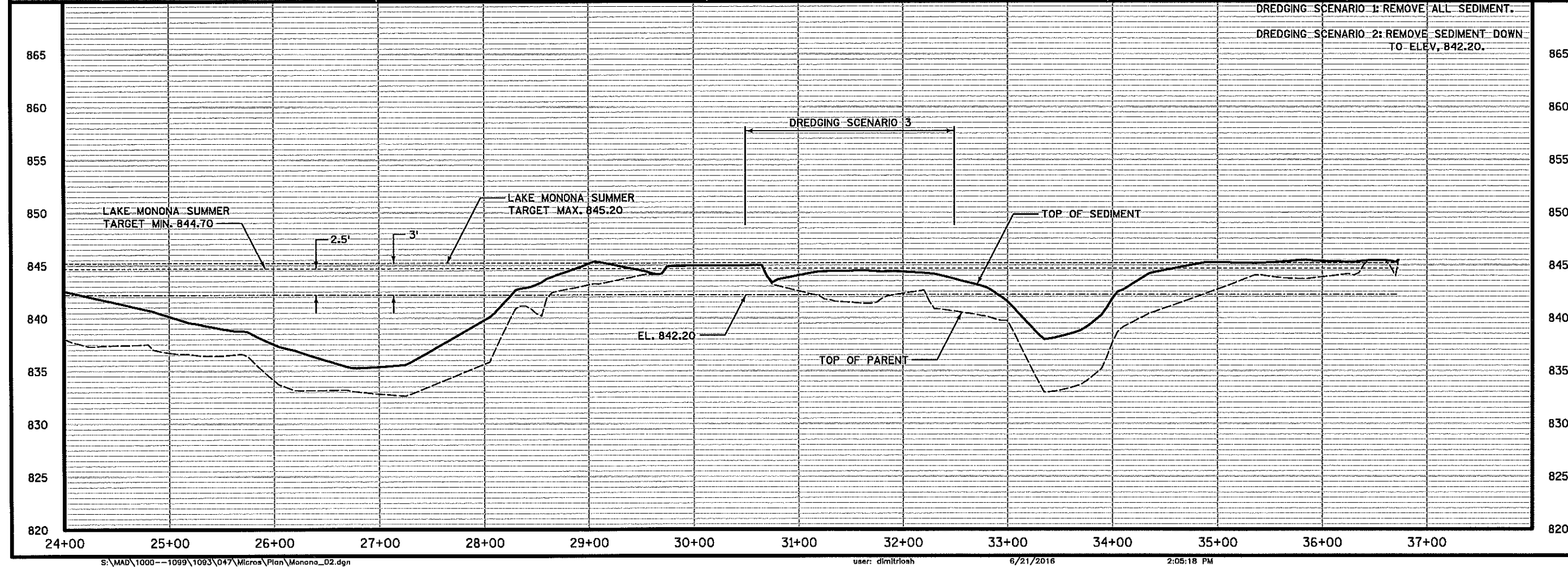
DREDGING SCENARIO 2: REMOVE SEDIMENT DOWN TO ELEV. 842.20.



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PLAN AND PROFILE
UPSTREAM OF NICHOLS ROAD

WINNEQUAH PARK LAGOON SAMPLING, MANAGEMENT, AND PLANNING
CITY OF MONONA
DANE COUNTY, WISCONSIN

JOB NO. 1093.047

PROJECT MGR. JHL

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SHEET 2

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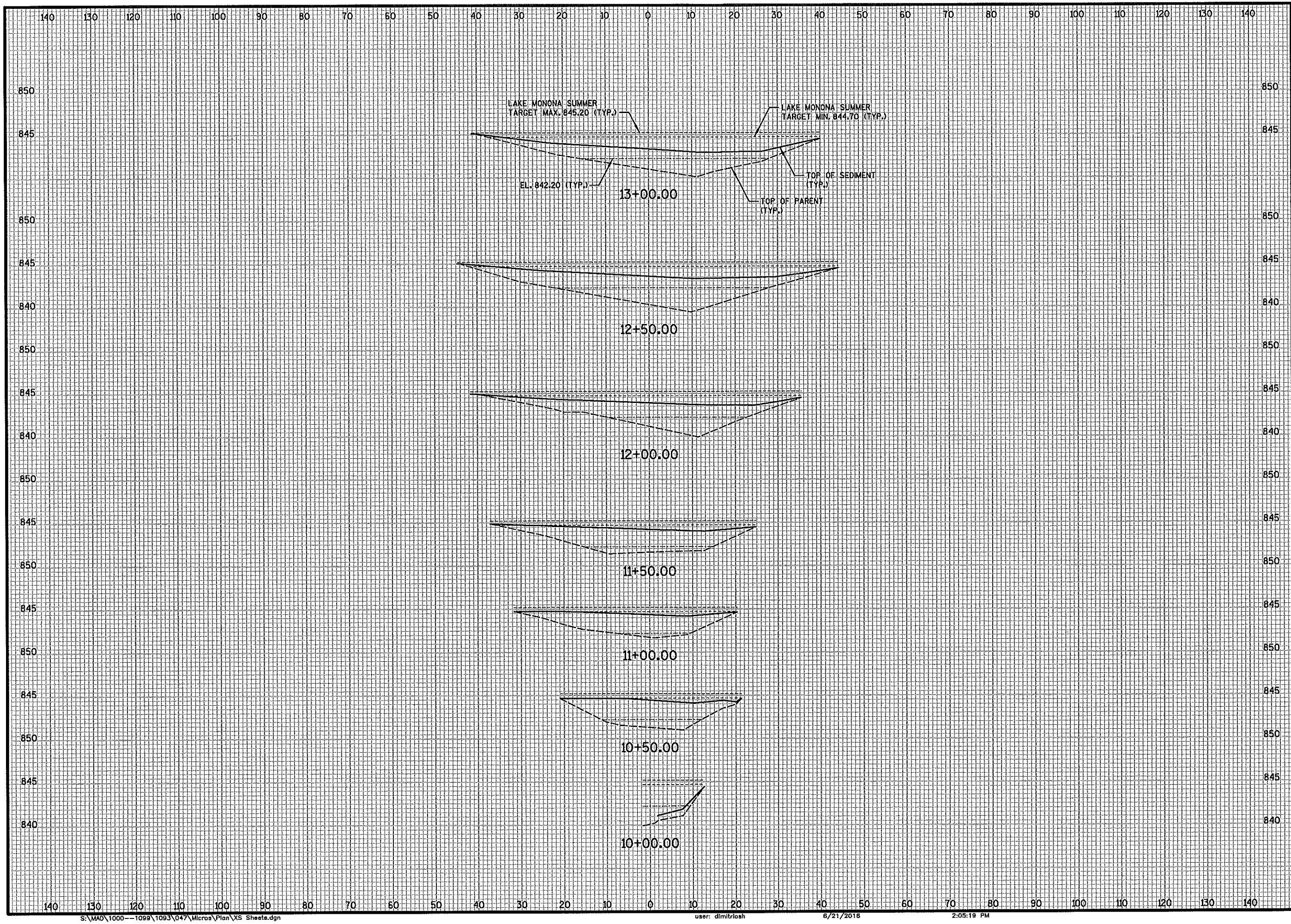

DATE:

REVISIONS

NO.

CROSS SECTIONS

WINNEQUAN PARK LAGOON SAMPLING, MANAGEMENT, AND PLANNING
CITY OF MONONA
DANE COUNTY, WISCONSIN

JOB NO. 1093.047

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SHEET 3

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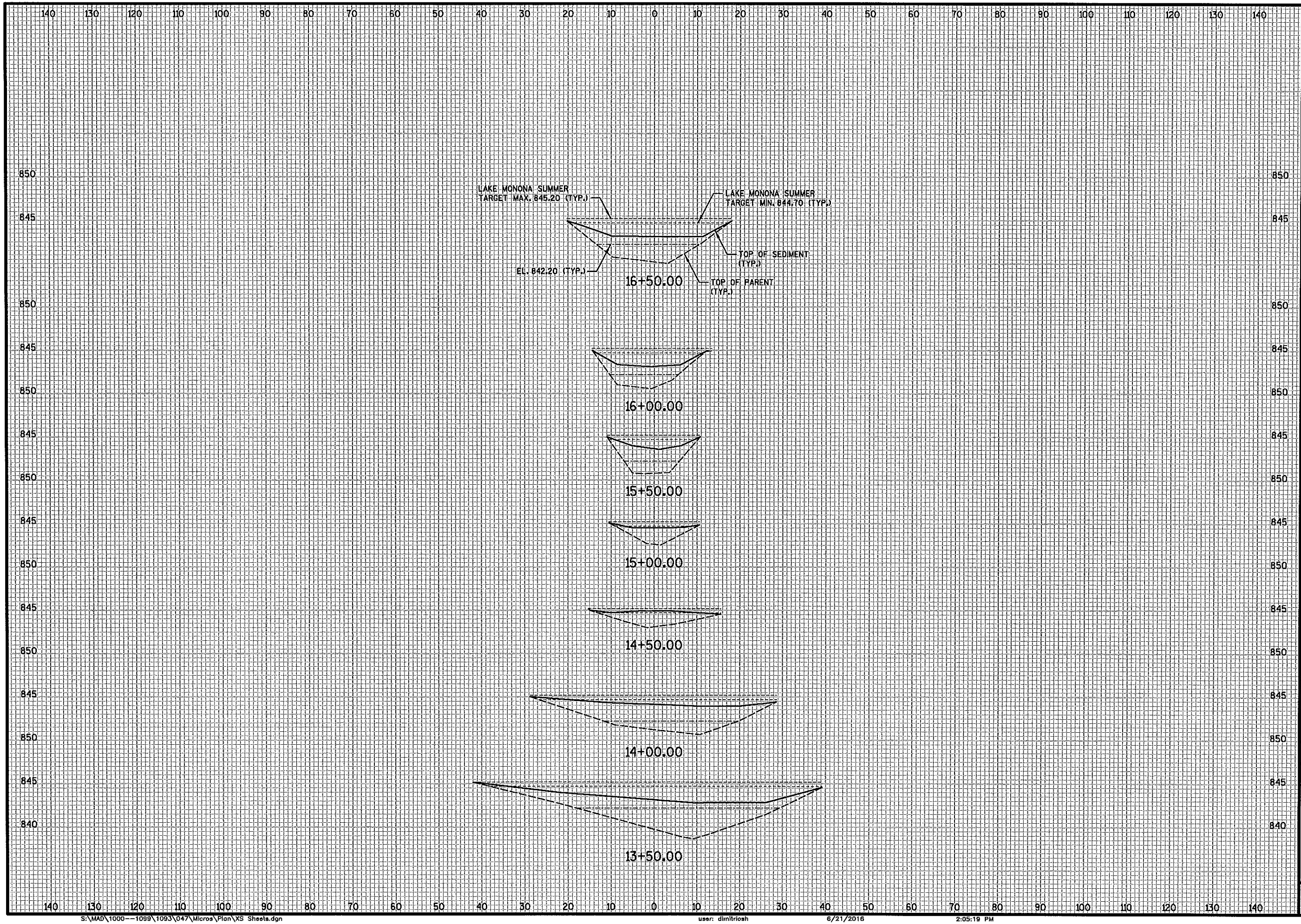

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DANE COUNTY, WISCONSIN

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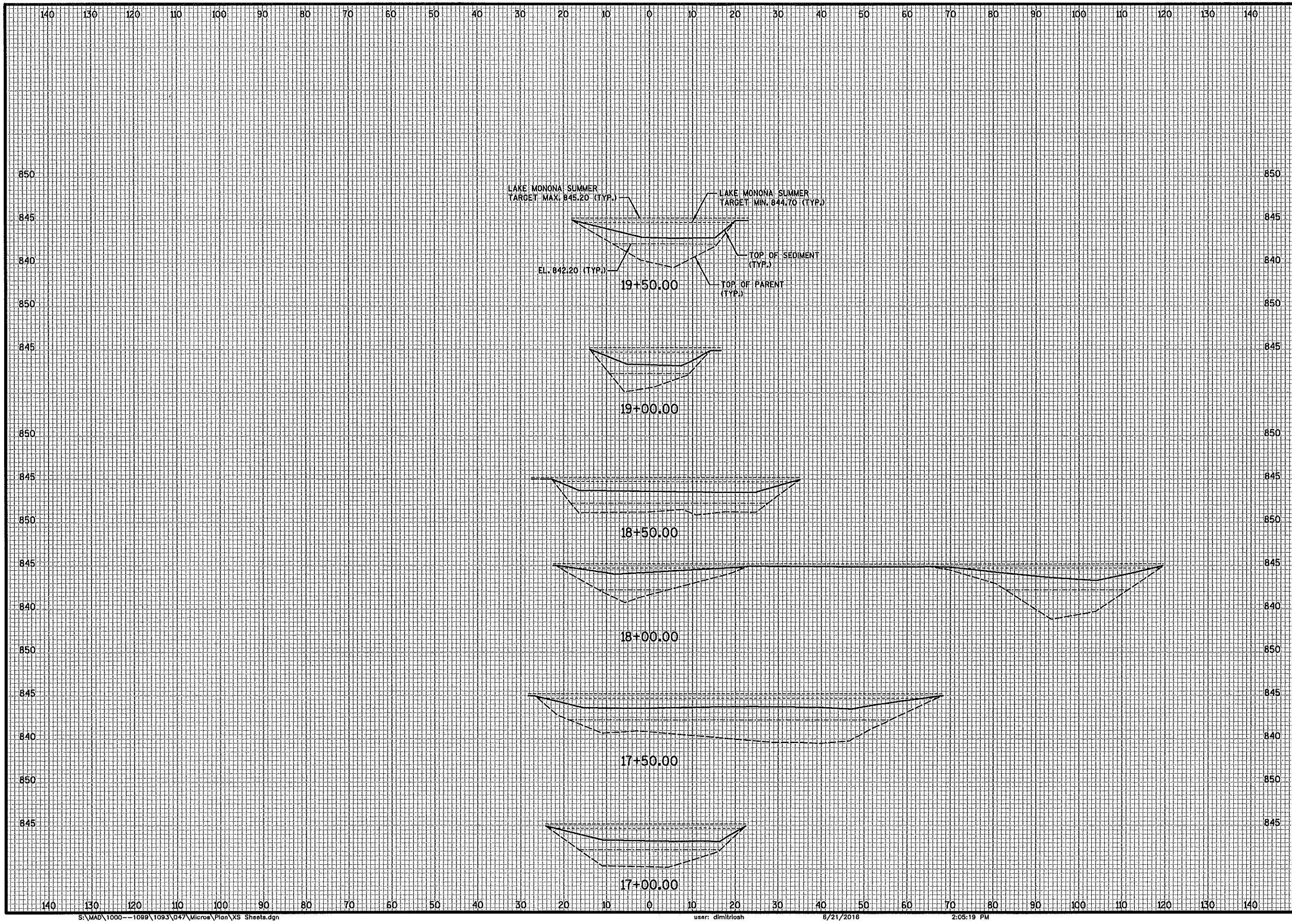

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DANE COUNTY, WISCONSIN

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SHEET
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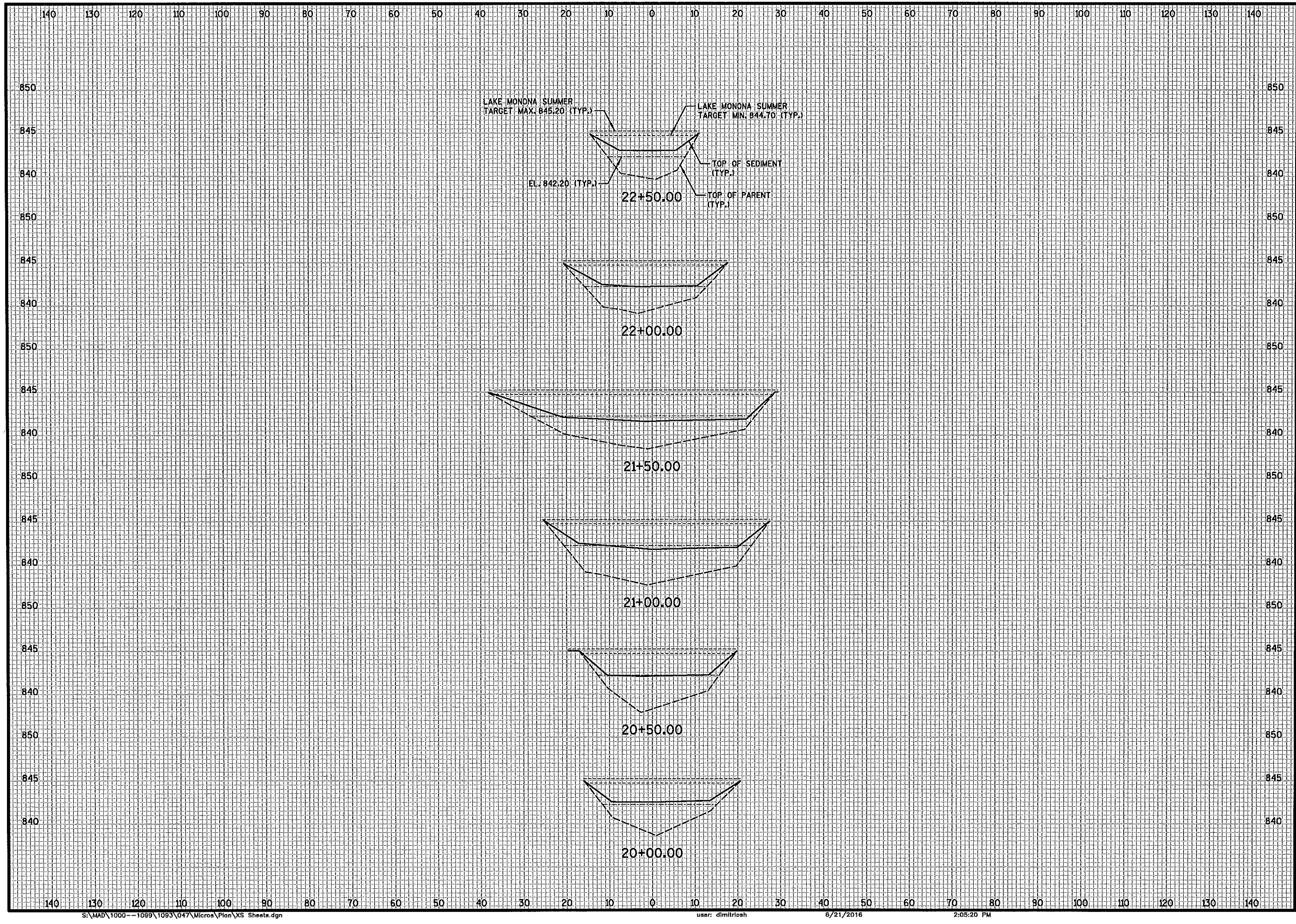

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CROSS SECTIONS

WINNEQUAN PARK LAGOON SAMPLING, MANAGEMENT, AND PLANNING
CITY OF MONONA
DANE COUNTY, WISCONSIN

JOB NO. 1093.047

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SHEET 6

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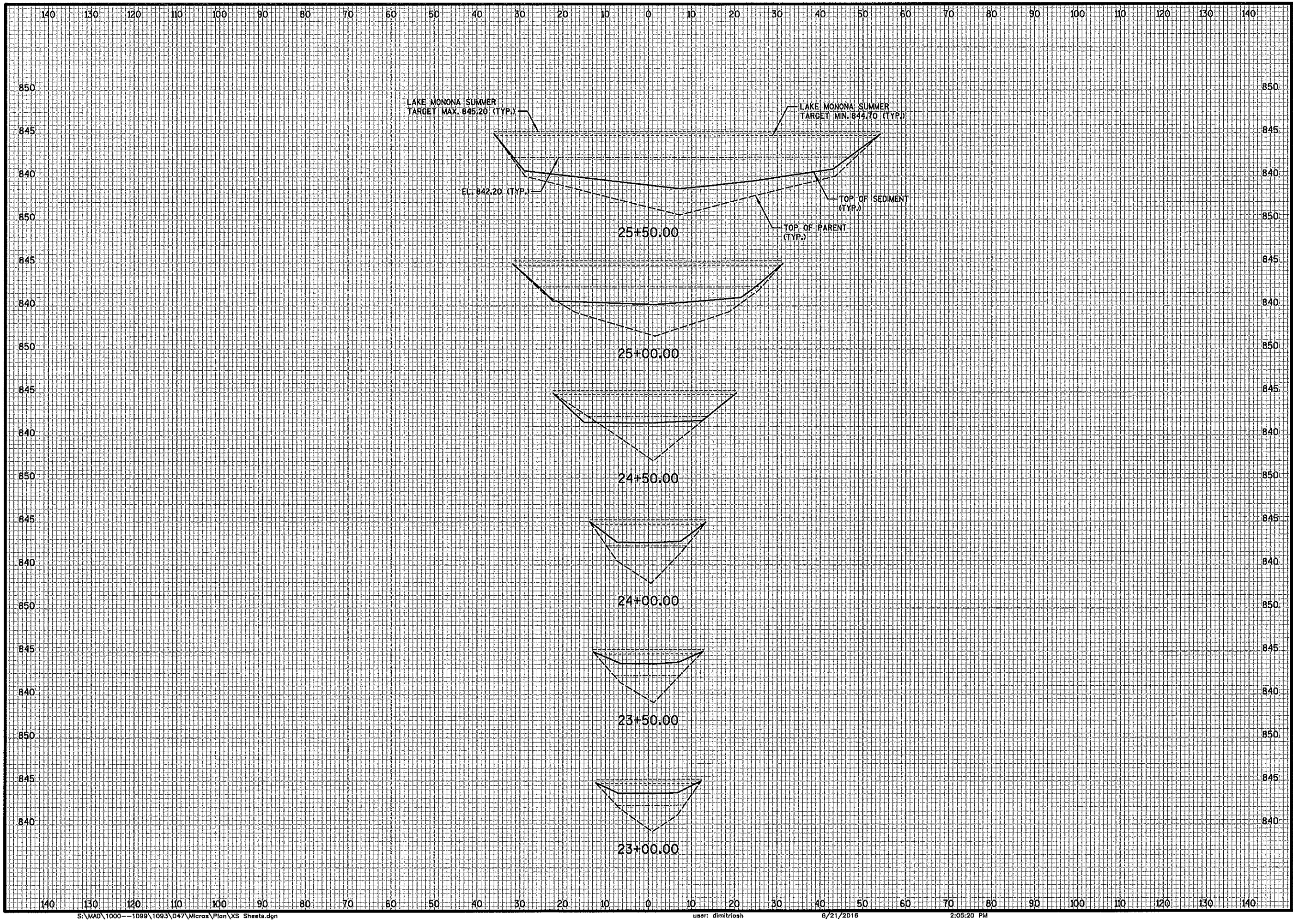

DATE:

REVISIONS

NO.

CROSS SECTIONS

WINNEQUAN PARK LAGOON SAMPLING, MANAGEMENT, AND PLANNING
CITY OF MONONA
DANE COUNTY, WISCONSIN

JOB NO.
1093.047

PROJECT MGR.
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SHEET
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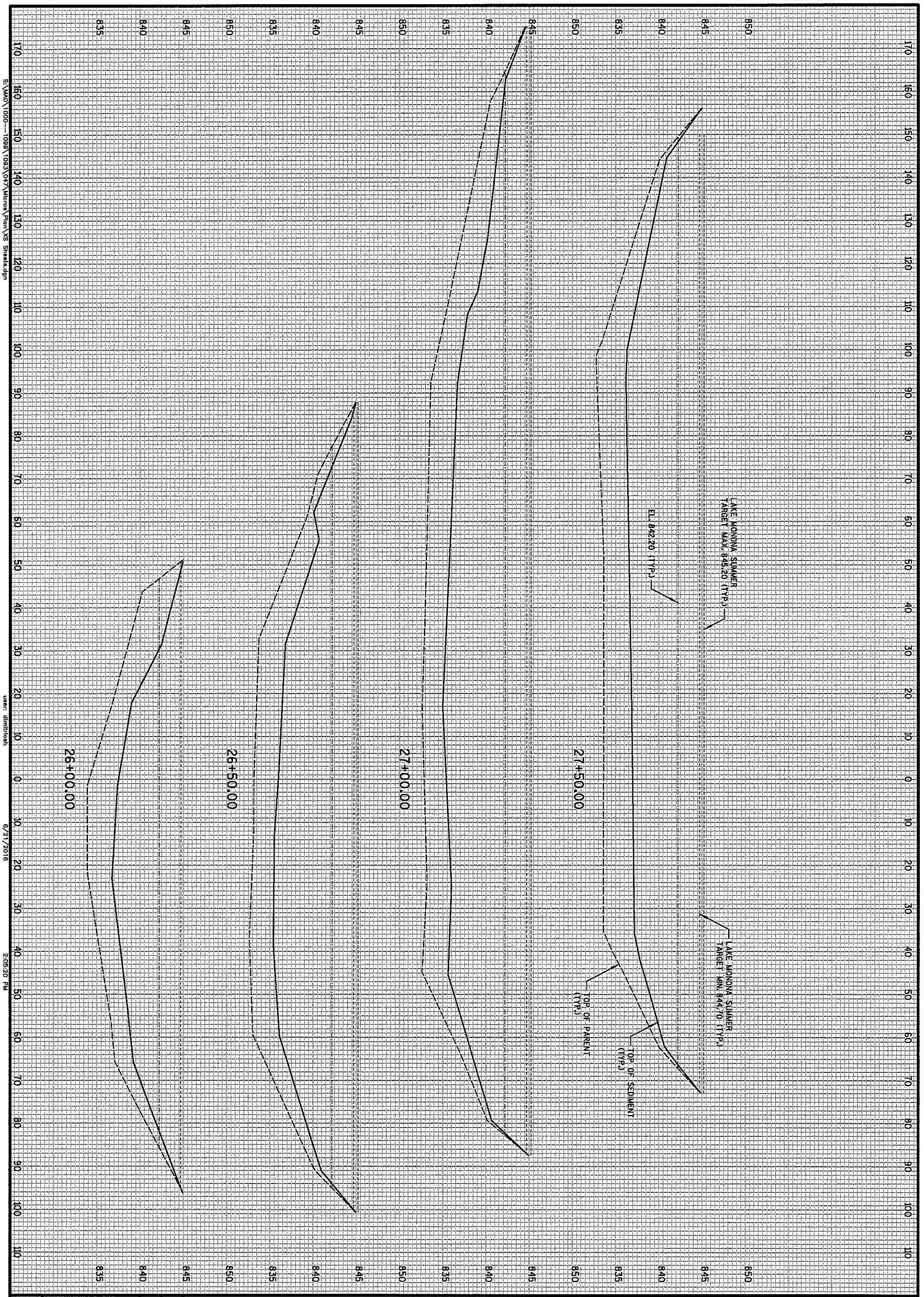

CROSS SECTIONS

WINNEQUAN PARK LAGOON SAMPLING, MANAGEMENT, AND PLANNING
CITY OF MONONA
DANE COUNTY, WISCONSIN

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JOB NO. 1093.047
PROJECT MGR. JHL
SHEET 8

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CROSS SECTIONS

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CITY OF MONONA
DANE COUNTY, WISCONSIN

NO.	REVISIONS	DATE

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1093.047

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JHL

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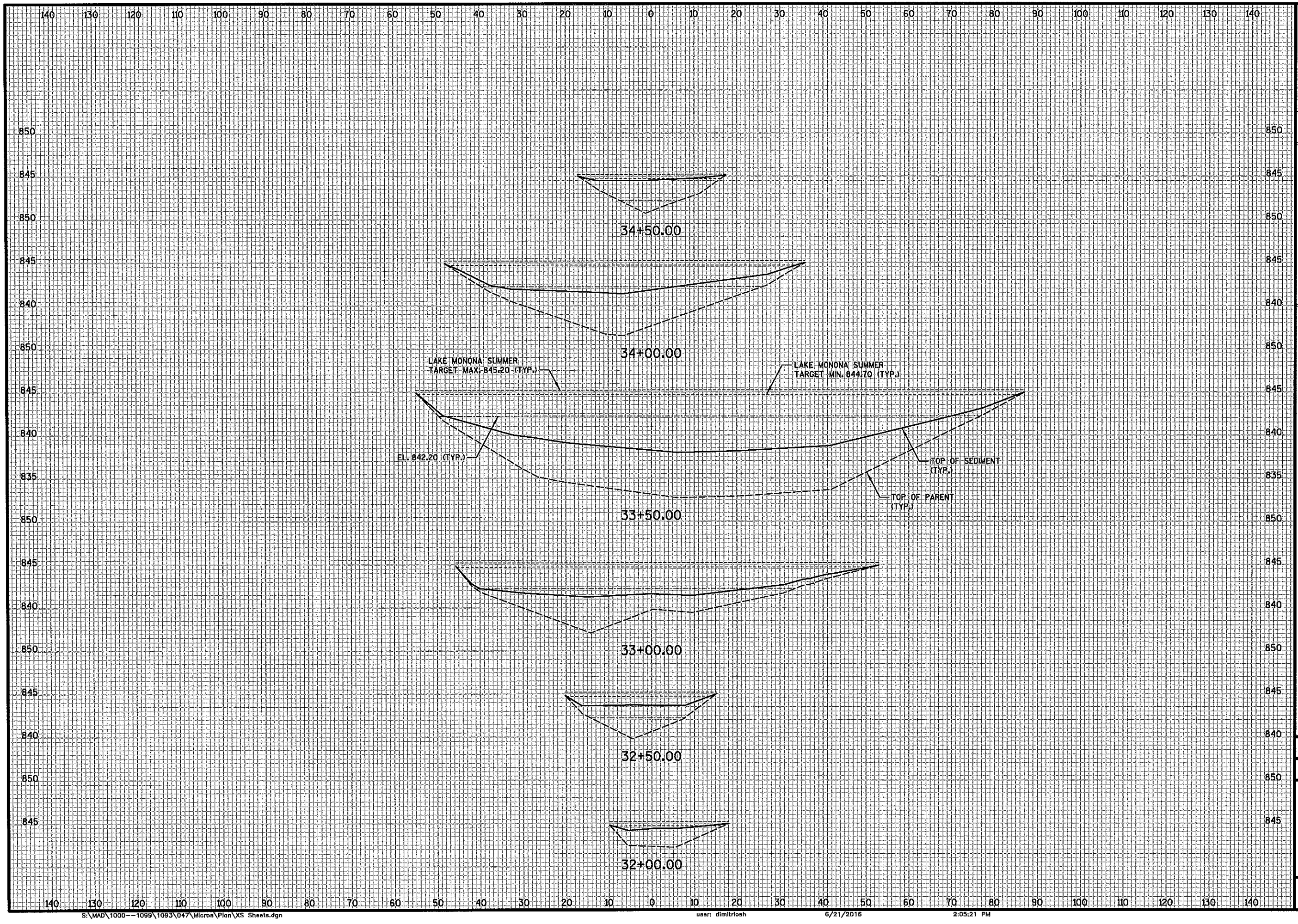
SHEET
9

28+00.00
TOP OF PARENT (TYP.)
TOP OF SEDIMENT (TYP.)
EL. 842.20 (TYP.)
LAKE MONONA SUMMER TARGET MIN. 844.70 (TYP.)
LAKE MONONA SUMMER TARGET MAX. 845.20 (TYP.)
28+50.00
29+00.00
29+50.00
30+00.00
30+50.00
31+00.00
31+50.00



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CROSS SECTIONS

WINNEQUAN PARK LAGOON SAMPLING, MANAGEMENT, AND PLANNING
CITY OF MONONA
DANE COUNTY, WISCONSIN

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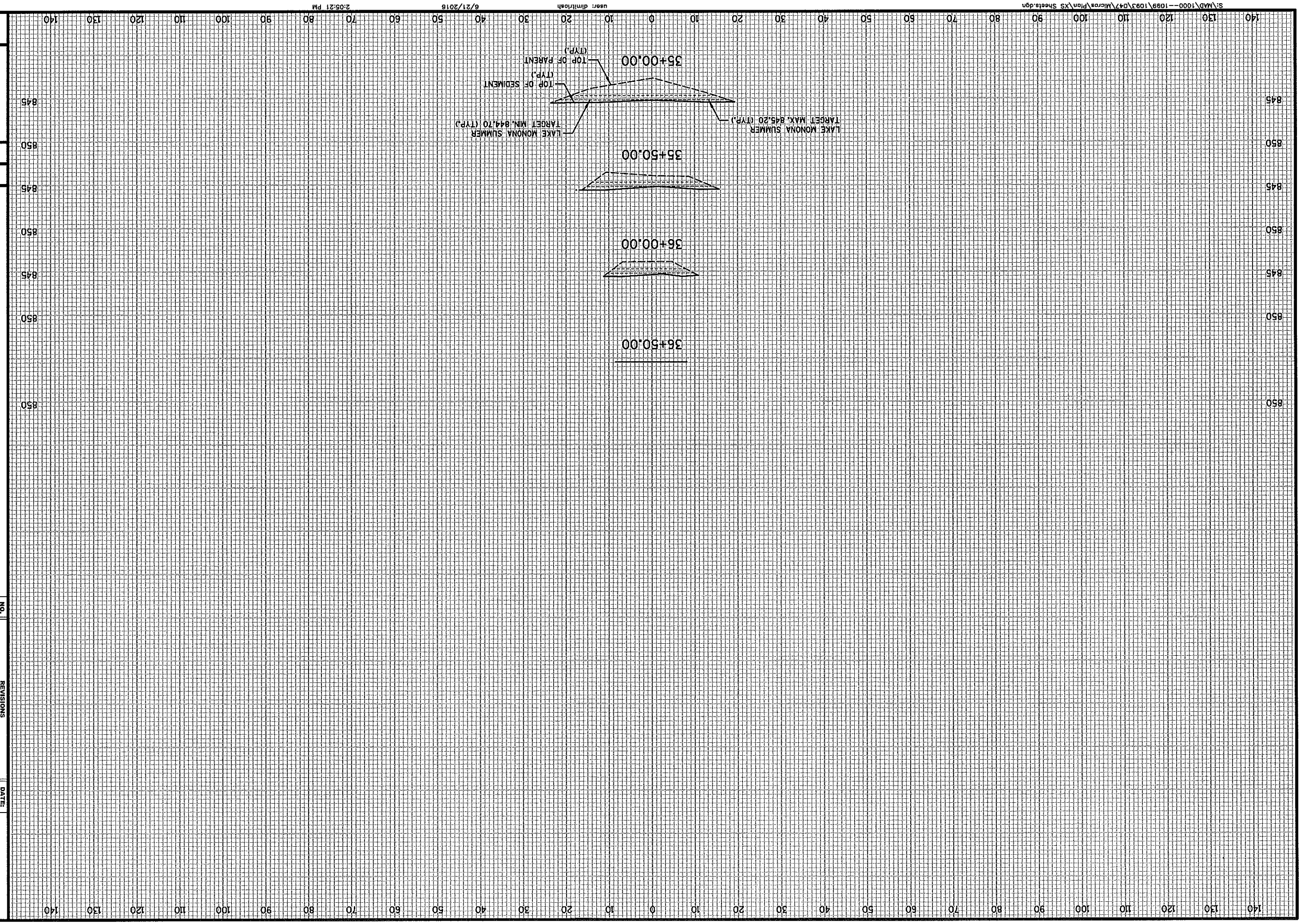

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