APPENDIX C

PERMITS

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
2984 Shawano Avenue
Green Bay WI 54313-6727

Scott Walker, Governor
Cathy Stepp, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

January 24, 2014

Mr. Larry Wilson
Senior Project Manager
Tyco Marinette Project
800 Water Street
Marinette, WI 54143

File Ref: FID # 438039470

SUBJECT: Class 1 Plan Modification Determination for the Extension of Storage and Treatment of Arsenic Contaminated Sediment
Menominee River Sediment Removal Project
Adjacent to Tyco Fire Products LP Facility
1 Stanton Street, Marinette, Wisconsin
WDNR BRRTS # 02-38-000011
EPA # WID 006 125 215

Dear Mr. Wilson:

The Wisconsin Department of Natural Resources (the Department) has reviewed the hazardous waste class 1 modification request submitted by Tyco's consultant, CH2M Hill dated December 5, 2013 and accompanied by an Affidavit of Publication for the required 30-day public notice.

The request is for an extension to the February 1, 2014 expiration date contained in Condition 39 of the Department's initial Hazardous Waste Variance Approval dated July 3, 2012. The extension is necessary to complete a proposed betterment project to be completed under the terms of the agreement within the context of the Great Lakes Legacy Act and under the existing approved dredging plans and hazardous waste treatment variance and subsequent modifications during the 2014 dredging season.

This plan modification determination approves the request and extends the hazardous waste variance and subsequent modifications to December 31, 2014.

If you have any questions regarding this letter or the attached remediation variance, please contact Kristin DuFresne in Green Bay at 920-662-5443 or at kristin.dufresne@wisconsin.gov.

Sincerely,

Roxanne N. Chronert, Team Supervisor
Northeast Region Remediation & Redevelopment Program

cc: Jeff Danko, CH2MHill
Mike Mikulka, U.S. EPA – Region 5

Ed Lynch, DNR – WA/5
Robert Rosenberger, DNR – Peshtigo
Jim Zellmer, DNR – NERH
David Panofsky, DNR – WA/5
Steve Galarneau, DNR – WT/3
Jim Killian, DNR – WT/3
Cheryl Bougie, DNR – NERH
Kristin DuFresne - NERH

BEFORE THE STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

CLASS 1 LICENSE MODIFICATION
FINAL DETERMINATION
TYCO SAFETY PRODUCTS
US EPA ID # WID 006 125 215

FINDINGS OF FACT

The Department finds that:

1. Tyco International, Inc. (Tyco) is the legal owner and operator of Tyco Safety Products – Ansul, Inc. (Ansul) located at 1 Stanton Street in Marinette, Wisconsin.

2. On May 22, 2012, CH2M Hill submitted a remediation variance request for the storage and treatment of arsenic contaminated sediment dredged from the Menominee River. Once dredged, the sediment would be screened and transferred to the hopper of the pug mill via conveyors. The sediment would be mixed with chemicals in the pug mill, resulting in a waste that no longer exhibits the arsenic toxicity characteristic and meets solid waste landfill standards.

3. On July 3, 2012, the Department issued a hazardous waste remediation variance conditional approval for the May 22, 2012 variance request.

4. Tyco began dredging operations in the Turning Basin on July 10, 2012. During the 2012-2013 dredging seasons, a total of approximately 259,000 cubic yards of sediment was dredged and processed. A total of approximately 6.6 million gallons of wastewater was treated and discharged during the 2013 season.

5. On December 5, 2013, the Department received an email with an extension request and a copy of a public notice yet to be published.

6. On December 13, 2013 the Department received a hard copy of the Hazardous Waste Variance Extension Request dated December 5, 2013 and an Affidavit of Publication dated December 11, 2013 certifying that the public notice was published on December 11, 2013 in the Peshtigo Times.

7. On January 2, 2014, the Department received the $400 plan review fee associated with the plan modification.

8. As of January 10, 2014, no public comments or requests for public hearings, either in writing by letter or email, have been received by the Department or by Tyco.

CONCLUSIONS OF LAW

1. The Department has promulgated chs. NR 660 to 679, Wis. Adm. Code, establishing minimum requirements for hazardous waste management under the authority of ch. 291, Wis. Stats.

2. The Department has authority pursuant to s. 289.30(6), Wis. Stats., and s. NR 670.042(1), Wis. Adm. Code, to issue a hazardous waste operating license and approve a class 1 modification to a license or plan of operation.

3. Condition 15 of the Department's July 3, 2012 remediation variance approval states that any changes in hazardous waste storage or treatment activities not identified in the *Hazardous Waste Remediation Variance Request* dated May 12, 2012 shall be submitted as a Class 1 modification subject to Department review and approval in accordance with s. NR 670.042(1), Wis. Adm. Code.

4. Condition 39 of the Department's July 3, 2012 remediation variance approval states that requests to extend or renew shall only be granted after public input in accordance with s. NR 670.079(2)(c), Wis. Adm. Code.

DETERMINATION AND CONDITIONS

Based on the foregoing Findings of Fact and Conclusions of Law, the Department hereby approves the December 5, 2013, class 1 modification for an extension to the July 3, 2012 hazardous waste variance approval expiration date, under s. NR 670.042(1), Wis. Adm. Code, and the conditions set forth as follows:

1. This approval is based on the information available to the Department as of the date of this approval. If additional information, project changes or other circumstances indicate a possible need to modify this approval, the Department may ask you to provide further information relating to this activity. Likewise, the Department accepts proposals to modify approvals, as provided for in state statutes and administrative codes.

2. Nothing in this conditional approval shall relieve the owner or operator of the legal obligation to comply with applicable federal, state and local requirements.

3. Except as may be expressly provided below, no other conditions in the July 3, 2012 remediation variance approval operation approval, the August 24, 2012 or May 9, 2013 remediation variance plan modification approvals or other plan modification approvals are affected by this determination.

4. Condition 39 of the July 3, 2012 Hazardous Waste Variance shall be rescinded and replaced by the following: "This remediation variance shall expire on December 31, 2014. Requests to extend or renew this variance approval and modifications shall be submitted to the Department 90 days prior to December 31, 2014 and a public notice shall be published in accordance with s. NR 670.079(3), Wis. Adm. Code explaining the need for an extension.

5. Tyco shall hold and lead a public informational hearing in Marinette, Wisconsin at a location reasonably accessible to members of the general public and at a reasonable time, to take place a minimum of two weeks prior to the beginning of dredging in 2014. Tyco shall notify the Department's Project Coordinator located in the Department's Green Bay office and EPA Region 5 Project Coordinator 30 days prior to the scheduled informational hearing. Tyco shall publish a public notice between ten and 21 days prior to the informational hearing date, providing necessary information to allow the public to attend this informational hearing. Tyco shall provide the Department and the EPA Project Coordinator with a copy of an affidavit of publication for the notice.

NOTICE OF APPEAL RIGHTS

If you believe you have a right to challenge this decision made by the Department, you should know that Wisconsin statutes and administrative codes establish time periods and requirements for reviewing Department decisions.

To seek judicial review of the Department's decision, sections 227.52 and 227.53, Stats., establish criteria for filing a petition for judicial review. You have 30 days after the decision is mailed or otherwise served by the Department to file your petition with the appropriate circuit court and serve the petition on the Department. The petition shall name the Department of Natural Resources as the respondent.

Dated: January 24, 2013

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
FOR THE SECRETARY

Roxanne N. Chronert

Roxanne N. Chronert, Team Supervisor
Northeast Region Remediation & Redevelopment Program

State of Wisconsin
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WISCONSIN
DEPT. OF NATURAL RESOURCES

July 3, 2012

Mr. John Perkins, CHMM
Director, Environment, Health & Safety
Tyco Safety Products
6600 Congress Avenue
Boca Raton, FL 33487

File Ref: FID # 438039470

SUBJECT: Hazardous Waste Remediation Variance – Conditional Approval
Storage and Treatment of Arsenic Contaminated Sediment
Menominee River Sediment Removal Project
Adjacent to Tyco Fire Products LP Facility
1 Stanton Street, Marinette, Wisconsin
WDNR BRRTS # 02-38-000011
EPA # WID 006 125 215

Dear Mr. Perkins:

On March 8, 2012, the Wisconsin Department of Natural Resources (Department) received the document titled, "*Hazardous Waste Remediation Variance Request*". This document, dated March 7, 2012, was prepared by CH2MHill and submitted to the Department on behalf of Tyco Safety Products (Tyco). The Department met with representatives from CH2MHill, Tyco's consultant for the sediment dredging project, on April 25, 2012 to discuss the items in the Notice of Incompleteness issued by the Department on April 23, 2012. The Department received a revised Hazardous Waste Remediation Variance Request prepared by CH2MHill on May 22, 2012 in response to the Department's Notice of Incompleteness. The Department sent a draft remediation variance conditional approval to Tyco and CH2MHill for comment on June 21, 2012. The Department received comments in a letter prepared by CH2MHill dated June 27, 2012. Department and CH2MHill representatives discussed the draft conditional approval on June 28, 2012 and July 2, 2012. CH2MHill prepared and submitted to the Department two emails containing clarifying information on July 2, 2012.

Tyco is seeking a permit from the Department's Bureau of Watershed Management to conduct wet mechanical dredging in certain areas of the Menominee River adjacent to Tyco's plant at 1 Stanton Street in Marinette, Wisconsin. The areas where dredging will take place include the main channel of the river, the turning basin, three transition areas, the 6th Street Slip and the south channel. The remediation variance is for the on-site storage and treatment of arsenic contaminated sediment removed from the Menominee River.

On March 15, 2012, the Department received a plan review fee of $3,200.00 in accordance with ch. NR 670, Wis. Adm. Code, Appendix II. This fee covers the review of the remediation variance request. On April 9, 2012, the Department received a copy of the required Class 1 Public Notice, published in the local Eagle Herald newspaper on March 29, 2012. The Department and Tyco representatives did not receive any written comments on the proposed actions within the 30 day public comment period stated in the notice.

Project Summary

From 1957 to 1977, Ansul, Inc. produced arsenic-based agricultural herbicides at the facility located at 1 Stanton Street in Marinette, Wisconsin. The herbicide manufacturing process created a waste salt that contained approximately 2 percent arsenic by weight. This waste salt was stockpiled at several locations on the property and eventually leached into surrounding site soil, groundwater, surface water and sediment. The waste arsenic salt removal was completed in the 1980's and some upland remedial actions were pursued.

In February 2009, Ansul, Inc. and the U.S. Environmental Protection Agency signed an Administrative Order on Consent (AOC) for corrective actions necessary to remediate contamination resulting from past facility operations. The AOC includes implementation of institutional controls, on-site groundwater management, soil remediation, removal of sediment from the Menominee River and monitored natural recovery. Sediment removal is to be completed by November 1, 2013.

The sediment to be removed consists of a layer of soft sediment over a layer of semi-consolidated material (SCM). Generally, soft sediment in the lower velocity areas of the river consists of highly organic silt and detritus. Soft sediment in the portions of the river with higher flow velocity also includes loosely consolidated sand and gravel. The underlying SCM unit is comprised of fine- to medium-grained sand. Approximately 97,000 cubic yards of soft sediment and 153,000 cubic yards of SCM, or a total of 250,000 cubic yards of sediment will be dredged during seasonal periods in 2012 and 2013.

Sediment sampling in 2010 indicates total arsenic concentrations in the soft sediment range from about 1 milligram per kilogram (mg/kg) to 20,000 mg/kg while total arsenic concentrations in the SCM range from about 1 mg/kg to 2,900 mg/kg. Because the sediment contains relatively high concentrations of arsenic, Tyco/CH2MHill concluded that the arsenic has the potential to leach from the sediment at concentrations greater than 5 milligrams per liter (mg/L), resulting in the sediment being classified as a hazardous waste.

Tyco is proposing to construct a temporary treatment and storage facility to manage the arsenic contaminated sediment. Soft sediment and SCM containing total arsenic concentrations greater than or equal to 50 mg/kg will be mechanically dredged in the Menominee River main channel, turning basin, three transition zones, 6th Street Slip and south channel. The dredged material will be loaded into barges and moved adjacent to a support barge along the western side of the former 8th Street Slip. Excess dredge water will be decanted and sent to the temporary wastewater treatment unit located at the 6th Street Slip. The remaining dredged material will be pumped or otherwise mechanically transferred for screening to segregate rocks and other debris from the sediment. The sediment material passing through the screen will be transported via conveyor to the pug mill unit. Debris screened from the sediment will be placed in a container for subsequent re-sizing and eventually incorporated into the pug mill waste stream. The pug mill is regulated as a miscellaneous unit under ch. NR 664 subch. X, Wis. Adm. Code.

Reagents and pozzolanic materials will be blended with the screened dredged material in the pug mill unit to treat the material to acceptable standards for disposal in a nonhazardous landfill. The reagents and pozzolanic materials which may include ash to solidify and iron sulfate and calcium or sodium hypochlorite to stabilize the arsenic, will be electronically metered into the pug mill mixing tank to ensure proper dosage. Dosage rates will be determined by the sub-contractor. Depending on the consistency of the treated material, a conveyor belt or feeder trough will be used to pump the stabilized material to a storage bin to cure.

A total of 11 open top storage bins will be constructed on the asphalt pad in the general area of the salt vault and 8th Street Slip. Each of the storage bins will be 50 feet wide by 140 feet long. Side walls will be 8.5 feet high. The storage capacity of each vault is approximately 2,203 cubic yards. The storage bins will be constructed from concrete ecology blocks or precast concrete divider blocks. A sealant will be placed along the bottom of these blocks to reduce seepage between the bins. An estimated 1,300 – 1,500 cubic yards (one day's production) of dredged material will be stored in each bin. It is anticipated that no more than 16,500 cubic yards of material will be stored on-site at one time.

Samples will be collected from the piles of treated material. Once the analysis shows the treated material is nonhazardous, the material can be managed at a nonhazardous waste landfill. It will then be transferred to a lined truck that will be tarped, weighed and decontaminated prior to transporting the waste to the Waste Management solid waste landfill in Menominee, Michigan. Treated material that fails TCLP will be re-treated a second time in the pug mill and retested. If the material cannot be treated to meet solid waste landfill standards, it will be transported to a hazardous waste facility. Due to the possibility of unsuccessful treatment of the dredged material, Tyco is seeking a variance to store the material in the storage bins until it is either successfully re-treated or shipped off-site as a D004 hazardous waste. The storage bins are regulated as waste piles under ch. NR 664 subch. L, Wis. Adm. Code.

Department Response to Comments on the Draft Remediation Variance

The June 27, 2012 letter prepared by CH2MHill included the following comments on the draft remediation variance conditional approval.

1. *Condition 4 requiring treatment to only occur in the pug mill.* Geotextile tubes (geotubes) containing sediment will be generated during the operation of the temporary water treatment system at the 6th Street Slip. The spent geotubes will likely be a D004 hazardous waste (toxicity characteristic for arsenic). The geotubes cannot be treated in the pug mill as they will foul the auger and cause delays in the remediation activities. It is estimated that about 20 cubic yards of geotube waste will be generated per week. CH2MHill proposed treating the geotubes in the storage bins. The Department expressed concern regarding this proposal, since untreated waste will be added to material that has already been treated to meet solid waste landfill standards. To ensure adequate treatment of all waste, the Department requested CH2MHill to investigate the feasibility of treating the waste either separately in an empty storage bin or in a lugger box or bin other than those used to store treated sediment. On July 2, 2012, CH2MHill stated concerns that treating the geotube waste in a separate bin may be difficult due to space limitations on the Tyco site or at the 6th Street Slip. CH2MHill suggested placing a temporary divider in the storage bin to segregate the geotube waste from the treated sediment. The Department believes Tyco should further investigate the feasibility of treating the geotube waste in a unit other than the sediment storage bins. Condition 5 requires the treatment of the spent geotubes in a separate bin. If treating the geotube waste in a separate bin is not feasible, the Department is to be notified in writing at least 10 days prior to treating the geotube waste in a segregated area within the sediment storage bins.

2. *Condition 6 requiring the storage bins to be covered at all times, except when waste is added or removed from the bins.* Due to logistical and safety concerns, CH2MHill requests that this condition be removed. The Department has considered the information presented by CH2MHill and agrees to remove the requirement to cover the bins. Condition 6 (now condition 7) has been revised to require daily inspections of the bins and immediate actions to prevent or minimize visible dust emissions and the length of time precipitation remains in the bins. The condition also allows the Department to initiate a plan modification to require the bins to be covered if releases to the air, water or soil occur. Condition 8 has been revised to require a 6-

inch asphalt berm, rather than the clay berm proposed in the remediation variance request, in front of the storage bins as a means of controlling surface water from flowing in or out of the storage bins. Condition 9 has been revised to more clearly state the requirement to apply a sealant on the base and joints of the storage bins.

3. *Condition 12 requiring the characterization of dredged material prior to treatment.* While a large number of soft sediment and SCM samples have been collected and analyzed for total arsenic (summarized in Table A1 of the January 2012 draft final design report), only 6 soft sediment samples and 1 SCM sample have been analyzed for both total and TCLP arsenic. The sample results indicated the following:

Sediment Sampled	Total Arsenic mg/kg	TCLP Arsenic mg/L
SCM[1]	167	0.34
Soft Sediment[1]	2,030	6.8
Soft Sediment[1]	817	5.17
Soft Sediment[1]	2,030	9.14
Soft Sediment[2]	204	0.253
Soft Sediment[2]	1,047	2.10
Soft Sediment[2]	115	0.116

[1]From January 2012 Final Design Report
[2]From June 27, 2012 CH2MHill letter to Gary Cygan, U.S. EPA

Based on these sample results, the Department agrees that the soft sediment in the south channel does not require treatment for arsenic leachability because all total arsenic concentrations are below 120 mg/kg total arsenic. However, the Department does not agree with the conclusion that SCM containing less than 500 mg/kg does not have to be treated for arsenic leachability. This conclusion is apparently based on the 1 composite sample of SCM containing a total arsenic concentration of 167 mg/kg and a TCLP arsenic value of 0.34 mg/L. This 1 sample result for SCM cannot be used to correlate total arsenic concentrations at the regulatory limit of 5 mg/L for determining if a waste is hazardous or nonhazardous. CH2MHill proposed during the conference call on July 2, 2012 to collect samples of untreated SCM after it has been dredged and moved to the storage bins. The sample results would then be used to determine if treatment for arsenic leachability is necessary. The Department is concerned with this approach for 2 reasons: 1) the additional handling and storage of the untreated SCM could cause delays in the dredging schedule, which is already on a tight timeframe; and 2) samples of dredged sediment collected from the storage bins will likely be nonhazardous due to dilution by mixing highly contaminated arsenic containing SCM with SCM containing lower levels of arsenic. The sample results listed in Table A1 of the January 2012 draft final design report indicate SCM contains total arsenic at concentrations greater than 167 mg/kg in Transition Areas 2 and 3 and in the Turning Basin. Total arsenic concentrations in the SCM samples collected from the Menominee River and Transition Area 1 are all below 167 mg/kg. SCM will not be dredged in the 6th Street Slip and south channel. Condition 12 (now condition 13) has been revised to allow the Menominee River and Transition Area 1 SCM, where sample results indicated 167 mg/kg total arsenic or less, to be managed as nonhazardous (not treated for arsenic) without further sampling and analysis. For the Turning Basin and Transition Areas 2 and 3, Tyco may either sample and analyze the sediment where the highest total arsenic concentrations have been found prior to dredging to determine if treatment for arsenic is warranted, or treat all of the sediment for arsenic toxicity in each of the 3 areas.

4. *Condition 32 requiring a construction report and certification statement to be submitted to the Department.* Given that dredging will begin on July 10th, condition 32 (now condition 33) requires the construction report and certification statement to be submitted to the Department by August 13, 2012, slightly more than 30 days after completion of initial construction.

With this letter, the Department is conditionally approving Tyco's remediation variance request to allow the storage and treatment of hazardous waste dredged material. This approval addresses only the waste management issues related to the dredging project. This remediation variance is granted until February 1, 2014.

The conditions in the attached *Hazardous Waste Remediation Variance Conditional Approval for Tyco Safety Products* ("the Remediation Variance") state the requirements of chs. NR 660 to 670, Wis. Adm. Code, and chs. NR 700 to 750, Wis. Adm. Code, that are necessary to protect human health and the environment during the generation, storage, treatment and disposal of hazardous waste sediment from the Menominee River; ensure compliance with the land disposal requirements (LDRs) prior to the disposal of treated hazardous waste contaminated sediment in a Subtitle D solid waste landfill; and/or clarify the requirements that apply to the proposed remedial activity. This Remediation Variance does not relieve Tyco from meeting other federal, state or local permit or approval requirements.

Please review the conditions in the attached remediation variance approval carefully. If you have any questions regarding this letter or the attached remediation variance, please contact Kristin DuFresne in Green Bay at 920-662-5443 or at kristin.dufresne@wisconsin.gov.

Sincerely,

Bruce G. Urben, Air and Waste Regional Program Manager
Northeast Region

ec: Jeff Danko, CH2MHill
Gary Cygan, U.S. EPA – Region V
Sandy Miller, DNR – Sturgeon Bay
Ed Lynch, DNR – WA/5
Mark Gordon, DNR – RR/5
Robert Rosenberger, DNR – Peshtigo
Jim Zellmer, DNR – NERH
Jennie Easterly, DNR – Oshkosh
Steve Galarneau, DNR – WT/3
Jim Killian, DNR – WT/3
Cheryl Bougie, DNR – NERH
Roxanne Chronert, DNR – NERH
Kristin DuFresne, DNR - NERH

BEFORE THE
STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

HAZARDOUS WASTE REMEDIATION VARIANCE
CONDITIONAL APPROVAL
TYCO SAFETY PRODUCTS
US EPA ID # WID 006 125 215

FINDINGS OF FACT

The Department finds that:

1. Tyco International, Inc. (Tyco) is the legal owner and operator of Tyco Safety Products – Ansul, Inc. (Ansul) located at 1 Stanton Street in Marinette, Wisconsin.

2. The Tyco property is currently an active manufacturing facility that consists of approximately 63 acres, including an open paved area known as the salt vault and 8th Street Slip located between the manufacturing operations on the western part of the property and an undeveloped area to the east, referred to as the "wetlands area".

3. The Tyco property was used for the production of cattle feed, refrigerants and specialty chemicals. Arsenic-based agricultural herbicides were manufactured on the Tyco property between 1957 and 1977. A by-product of the manufacturing of these herbicides was a salt that contained approximately 2 percent arsenic by weight. This waste salt was stockpiled at several locations on the property and eventually leached into surrounding site soil, groundwater, surface water and sediment.

4. One or more releases of RCRA metals, volatile organic compounds and semi-volatiles historically took place on the Tyco property.

5. Dames and Moore, previous consultant for Ansul, conducted an interim action in the 8th Street Slip during the late 1990's. The Department issued a hazardous waste variance on May 19, 1999 to allow Ansul to dredge arsenic contaminated hazardous waste sediment from the 8th Street Slip and treat the sediment on-site. Treatment included dewatering the sediment and adding reagents to solidify the material and render the sediment nonhazardous.

6. In February 2009, Ansul and the U.S. Environmental Protection Agency signed an Administrative Order on Consent (AOC) for corrective actions necessary to remediate contamination resulting from past facility operations. The AOC includes implementation of institutional controls, on-site groundwater management, soil remediation, removal of sediment from the Menominee River and monitored natural recovery.

7. In 2010 and 2011, CH2MHill, Tyco's consultant, obtained samples of the sediment in the Menominee River adjacent to the Tyco property. Concentrations of up to 20,000 milligrams per kilogram (mg/kg) of total arsenic were found in the sediment. Because relatively high concentrations of arsenic have been found, the contaminated sediment has been classified as a D004 characteristic hazardous waste due to the potential leaching of the arsenic. Three samples of soft sediment submitted for TCLP analysis confirm that arsenic leaches from the sediment at concentrations above the regulatory limit of 5 milligrams per liter (mg/L) stated in s.

NR661.24(2), Wis. Adm. Code. Sediments that exhibit the toxicity characteristic for arsenic are defined as "characteristic hazardous waste" per s. NR 661.24(2), Wis. Adm. Code.

8. On January 23, 2012, the Department received a document titled, "*Draft Final Design Report*" that was prepared by CH2MHill and dated January 2012. This document was submitted to the Department on behalf of Tyco. The *Draft Final Design Report* included the results of the pre-design investigations of arsenic contamination in Menominee River sediments, delineates remediation areas and describes remedial approaches and technologies.

9. On March 7, 2012, CH2MHill submitted the document titled "*Hazardous Waste Remediation Variance Request*" to the Department on behalf of Tyco to treat and store hazardous waste sediment on-site. The hazardous waste will be generated when the arsenic contaminated sediment is dredged from 7 different areas of the Menominee River. The dredged material will be brought to shore in a barge, screened and mixed in a pug mill with reagents and pozzolanic materials. The treated material will then be transferred to bins where it will be stored for about 4 days before being tested to determine if the treated material meets landfill standards, including passing the paint filter test and arsenic TCLP test. The pug mill is a hazardous waste treatment unit subject to the miscellaneous unit standards in ch. NR 664 subch. X, Wis. Adm. Code. The bins are hazardous waste storage units subject to the waste pile standards in ch. NR 664 subch. L, Wis. Adm. Code.

10. On March 12, 2012, CH2MHill submitted the plan review fee of $3,200.00 in accordance with NR 670, Appendix II, Wis. Adm. Code.

11. Tyco published a notice in accordance with s. NR 670.79, Wis. Adm. Code, in the Eagle Herald newspaper on March 29, 2012. No written public comments were received by the Department or by Tyco during the 30 day public notice period.

12. On April 23, 2012, the Department issued a Notice of Incompleteness for the March 7, 2012 Remediation Variance Request.

13. On April 25, 2012, the Department met with CH2MHill representatives to discuss the April 23, 2012 Notice of Incompleteness.

14. On May 22, 2012, the Department received a revised hazardous waste remediation variance request from CH2MHill on behalf of Tyco.

15. The Department provided a draft version of the *Hazardous Waste Remediation Variance – Conditional Approval* to Tyco and CH2MHill on June 21, 2012. Written comments were received from CH2MHill on June 27, 2012.

16. On June 28, and July 2, 2012, the Department staff and CH2MHill representatives held conference calls to discuss the June 21, 2012 draft version of the *Hazardous Waste Remediation Variance – Conditional Approval*. Written information was submitted by CH2MHill on July 2, 2012. Questions and comments were incorporated into this approval, as appropriate.

CONCLUSIONS OF LAW

1. The Department promulgated chs. NR 660 to 670, Wis. Adm. Code, establishing the minimum requirements for hazardous waste management under the authority of ss. 291.001 through 291.97, Wis. Stats.

2. The Department has the authority under s. NR 670.079(1), Wis. Adm. Code, to issue a remediation variance from the requirements of s. 291.25, Wis. Stats., if it determines that the application for or compliance with the terms or conditions of any license required under chs. NR 660 to 670 would cause undue or unreasonable hardship and the remediation variance would not result in undue harm to human health or the environment. The remediation options presented in the remediation variance request, as described in Findings of Fact # 9 above, demonstrates undue and unreasonable hardship to warrant the issuance of the remediation variance.

3. The Department has the authority under s. NR 670.079(2)(d), Wis. Adm. Code, to revoke the remediation variance at any time if it is determined that revocation is appropriate to protect human health or the environment.

4. The Department has the authority under s. NR 670.079(2)(e), Wis. Adm. Code, to require compliance with the appropriate requirements of chs. NR 660 to 670 and chs. NR 700 to 750, Wis. Adm. Code, as a condition of issuance, in order to protect human health or the environment.

5. The Department has the authority under s. 291.31, Wis. Stats. and s. NR 670.079(4), Wis. Adm. Code, to issue the following conditional remediation variance.

CONDITIONS OF ISSUANCE

The Department hereby grants Tyco a remediation variance under s. NR 670.079, Wis. Adm. Code, and s. 291.31, Wis. Stats., to the requirements for obtaining a hazardous waste operating license under chs. NR 660 through 670, Wis. Adm. Code, for the treatment and storage of sediment exhibiting the toxicity characteristic for arsenic, or characteristic hazardous wastes, in a pug mill and storage bins as described in the May 22, 2012 remediation variance request and January 2012 *Draft Final Design Report*. The granting of this remediation variance is subject to the following conditions:

1. This approval is based on the information available to the Department as of the date of this approval. If additional information, project changes or other circumstances indicate a possible need to modify this approval, the Department may ask you to provide further information relating to this activity. Likewise, the Department accepts proposals to modify approvals, as provided for in state statutes and administrative codes.

2. The granting of this remediation variance does not relieve Tyco of its obligation to meet all other federal, state or local permit or approval requirements.

3. This remediation variance is issued for a term of 19 months, ending February 1, 2014. All closure activities shall be completed before this variance approval expires.

4. Treatment of hazardous waste sediments shall only occur in the pug mill. Untreated sediment shall only be stored in the barge while it is secured to shore. Sediment that has been treated, but is waiting for re-treatment, shall be stored in any of the 11 storage bins located on asphalt pavement in the former salt vault area and the 8th Street Slip.

5. Geotube waste shall only be treated in a lugger box or in some other structurally sound container or tank unit located on-site. A minimum of 1 sample per container or tank of treated

geotube waste shall be submitted for analysis to ensure the treated waste meets solid waste landfill standards. Each sample shall be composited from at least 3 locations of treated geotube waste. If geotube waste is to be treated in a segregated portion of a storage bin containing treated sediment, Tyco shall give written notification to the Department at least 10 days prior to the treatment activity. The notification shall state the problems encountered with treating the geotube waste in the lugger box or separate unit and include a description of the equipment and procedures that will be used to prevent the cross-contamination of the geotube waste with the treated sediment stored in the bin.

6. Each storage bin shall contain no more than the amount of dredge material treated in one day (1,300 – 1,500 cubic yards). The storage bins shall be operated with a minimum freeboard of 1 foot from the top of the storage bin side wall. The pile of treated dredge material in each storage bin shall be maintained below that height.

7. The uncovered piles of material in the storage bins shall be inspected daily. Remedial actions shall be taken immediately to control dust emissions. Water collected in the storage bins shall be pumped out immediately upon discovery and treated at the 6th Street Slip water treatment facility. Any material stored in the bins that is impacted by precipitation shall be retreated as appropriate to meet solid waste landfill standards (such as, paint filter test and arsenic TCLP). All inspection findings and remedial actions shall be documented in an inspection log and shall include the following:
    a. The date and time when dust emissions are discovered and corrected;
    b. The date of the rain event, the approximate amount of rainfall, and the date and time the water was pumped from the storage bins;
    c. The approximate volume of water removed from the storage bins.
    d. If waste in the storage bins is re-treated due to precipitation events, the total volume of waste treated and the reagents added.

    The Department retains the right to modify this condition if the uncovered piles cause releases to the air, soil or water.

8. A minimum 6-inch high asphalt berm shall be constructed at the end of each of the storage bins to control surface water run-on and run-off. The asphalt berms shall be constructed so they are located between the 2-foot high ecology blocks and piles of waste stored in the bins. The asphalt berms shall be inspected daily and shall be scheduled for repair immediately upon finding any defects or structural damage. Any seepage of surface water into or out of the storage bins shall be noted in the facility operating record, corrected immediately and reported to the Department. Verbal notification shall be made within 24 hours of discovery and written notification of the release, efforts undertaken to correct the release, and the cause of the release shall be made within 15 days of discovery.

9. Sealants shall be applied on the base and joints of the sections comprising the individual storage bins to minimize migration of surface water into or out of the storage bins.

10. During a rain event, the containment structure surrounding the active portions of the site shall be monitored to ensure all surface water is adequately contained. The Department shall be notified of any water overflows or if there is a breach of the containment structure. Verbal notification of the overflow or breach shall be made within 24 hours of discovery and written notification, including corrective actions, shall be made within 15 days of discovery.

11. After a rain event, sediment stabilization activities shall not be conducted until after ponded water has been removed from the work areas. The Department shall be given verbal notification if operations cannot resume within 48 hours of the rain event.

12. All material shall meet all landfill requirements before it is transported to a Subtitle D nonhazardous waste landfill.

13. All soft sediment, except for soft sediment in the south channel, shall be assumed to be hazardous and will require treatment for the arsenic toxicity characteristic. All semi-consolidated material (SCM) in the Menominee River and Transition Area 1 may be managed as nonhazardous (not require treatment for arsenic toxicity). For the SCM in the Turning Basin and in Transition Areas 2 and 3, Tyco shall either:
    a. Obtain in-situ samples of SCM from those areas where the total arsenic concentrations are the highest. The SCM samples shall be analyzed for total and TCLP arsenic. If the TCLP values are greater than 5 mg/L, the SCM shall be treated for arsenic leachability.
    b. Treat all SCM in each of these 3 areas as hazardous waste (treat for arsenic leachability).

14. At project initiation, when changing operations from treating soft sediment to SCM, or when beginning dredging operations in a different location, the following sampling and analysis of treated dredged material shall be conducted for the first 6 days of production:
    a. For each of the first 6 staging bins, 1 sample shall be collected for every 300 cubic yards of material treated, for a maximum of 5 samples per storage bin. Each of the 5 samples will be composited from 4 locations within the bin, for a maximum of 20 locations for 5 samples.
    b. The following analysis shall be conducted on each of the samples collected during the first 6 days of production:
        i. TCLP volatiles;
        ii. TCLP semi-volatiles;
        iii. TCLP 8 RCRA metals;
        iv. TCLP pesticides and herbicides; and,
        v. PCBs.
    c. If sampling demonstrates that a successful treatment rate of 100% has not been accomplished for the first 6 staging bins, samples from 3 additional staging bins shall be collected and analyzed as described in a. and b. above until analysis for the 3 additional bins demonstrates a 100% successful treatment rate.
    d. Once a 100% treatment rate is demonstrated, the rate of sampling and analysis as described in a. through c. above shall be decreased to a rate of once per month until the type of sediment (soft sediment or SCM) treated or dredging location changes.

15. Within 15 days of receiving the analytical data for the first 6 days of treatment of characteristic hazardous waste sediments, a report shall be submitted to the Department which includes the analytical results for the treated sediments and either of the following: 1) a discussion of whether additional treatment events were necessary per condition 14; or, 2) if sediments were treated to no longer exhibit a toxicity characteristic and meet the applicable LDR treatment standards in NR 668.48. If a second phase of increased sampling or treatment is required, a similar report shall also be submitted to the Department within 15 days of receiving the analytical data for the second treatment event. If the sediments still contain characteristic hazardous waste or do not meet LDR treatment standards after a second sampling or treatment, Tyco shall submit a proposal for an alternate treatment or disposal method with the analytical data. Alternate treatment methods or other changes in hazardous waste storage or

treatment activities not identified in the *Hazardous Waste Remediation Variance Request* dated May 22, 2012 shall be submitted as a Class 1 modification subject to Department review and approval in accordance with s. NR 670.042(1), Wis. Adm. Code. The submittal should include the appropriate fee stated in ch. NR 670, Wis. Adm. Code, Appendix II.

16. Each storage bin containing hazardous waste material shall be clearly marked with the words, "Hazardous Waste".

17. The sediment shall be run through the treatment process no more than 2 times. If after 2 rounds of treatment, the sediments still contain characteristic hazardous waste the sediment shall be disposed of as a hazardous waste.

18. The Department shall be notified prior to disposing of dredged sediment as a hazardous waste. Hazardous wastes generated on-site other than dredged sediment are not covered by this variance approval and shall be managed as hazardous waste in accordance with applicable hazardous waste generator requirements in ch. NR 662, Wis. Adm. Code.

19. Except as stated in condition13, all treated material shall be tested for TCLP arsenic and the required Subtitle D landfill parameters (paint filter test, etc.) prior to shipment off-site at the rate of 1 composite sample every 500 cubic yards or about 3 samples per staging pile. Each sample will be a composite of at least 4 discrete samples obtained from a minimum depth of 6-inches. If less than 3 samples are collected from a single staging pile, the operating record shall document the estimated volume of the staging pile and the number of samples collected.

20. In accordance with ch. NR 149, Wis. Adm. Code, all analyses shall be performed by Wisconsin certified or registered laboratories.

21. Prior to the installation of the water treatment equipment at the 6th Street Slip, the pavement shall receive an asphalt seal coat.

22. All structural damage to the asphalt pavement in the active areas, including the 6th Street Slip, shall be repaired immediately upon discovery. The date and time of discovery and the date and time of repair shall be clearly marked in the inspection records.

23. The Department shall be notified if the containment area for the water treatment system has been determined ineffective. A groundwater monitoring plan shall be developed after Department notification.

24. Within 7 days of the first shipment of treated nonhazardous waste sediment to the Subtitle D landfill, submit to the Department a copy of the signed LDR certification statement supplied to the landfill, as required by NR 668.07(2)(d), Wis. Adm. Code. The LDR certification shall notify the landfill of treatment of arsenic and the relevant underlying hazardous constituents, including metals (barium, cadmium, chromium, lead, mercury, nickel and zinc), organics (acetone, MEK, acetone and xylenes) and pesticides reasonably expected to be present in the soft sediment and SCM at concentrations exceeding the universal treatment standards stated in s. NR 668.48, Wis. Adm. Code.

25. The following clean closure standards shall be met for seasonal shut down and final closure:
    a. The clean-up standard of 32 milligrams per kilogram (mg/kg) arsenic will be met for all site surfaces, equipment or other materials remaining on Tyco property, such as asphalt, containment barriers and other permanent structures. One sample (wipe test or final

rinsate) shall be collected for each piece of equipment to verify the clean-up standard has been achieved. If wipe tests are used, 5 random samples shall be collected from the asphalt and an additional 5 random samples shall be collected from the containment barriers. If rinsate tests are used, 1 sample from the final rinsate shall be collected from the asphalt and 1 sample from the final rinsate shall be collected from the containment barriers.

b. The clean-up standard of 16 mg/kg arsenic shall be met for all site surfaces, equipment or other materials remaining on the 6th Street Slip, such as asphalt, containment barriers and other permanent structures. One sample (wipe test or final rinsate) shall be collected for each piece of equipment to verify the clean-up standard has been achieved. If wipe tests are used, 3 random samples shall be collected from the asphalt pad. If rinsate tests are used, 1 sample from the final rinsate shall be collected from the asphalt pad.

c. The applicable LDR treatment standard for arsenic stated in NR 668.40, Wis. Adm. Code, shall be met for all equipment, debris and other materials contaminated with hazardous waste sediment prior to its leaving the site. One sample (wipe test or final rinsate) shall be collected from each piece of equipment to verify the clean-up standard has been achieved.

26. Prior to use, the concrete catch basin integrity shall be inspected and documented by Tyco and reported to the Department. This integrity analysis shall be conducted by and submitted under the seal of a Wisconsin Registered Professional Engineer.

27. The waste storage inspection form in Attachment B shall be revised and re-submitted to the Department within 20 days of this approval. Revisions are necessary so the form addresses the inspection of site-specific items and includes, at a minimum, the time of the inspection and weekly inspections of the asphalt pad and berm, operation of the equipment used for treating the sediment and the integrity of the storage bins.

28. All inspections shall be documented in an inspection log. Problems discovered during the inspections shall be clearly documented. Repairs and/or operation changes shall be implemented immediately upon discovery of the problem, clearly documented and reported to the Department.

29. Logs that document all dredging, stabilization, and water treatment activities shall be maintained as part of the site operating record.

30. Dust control measures shall be taken to limit dust from the project to protect workers, on-site personnel and the environment, in accordance with ss. NR 670.014(2)(h)6 and NR 722.09(2)(d), Wis. Adm. Code. Releases of airborne particulate contaminants are not acceptable and shall require immediate shut down until dust control measures have been implemented.

31. Precautions that shall be taken to prevent particulate matter from becoming airborne include, but are not limited to, the following;
    a. The use, where possible, of water or chemicals for control of dust in construction operations.
    b. Application of asphalt, water, suitable chemicals or plastic covering on dirt roads, material stockpiles and other surfaces which can create airborne dust, provided such application does not create a hydrocarbon, odor or water pollution problem.
    c. Installation and the use of hoods, fans and air cleaning devices to enclose and vent the areas where dusty materials are handled.

d. Covering or securing of materials likely to become airborne while being moved on public roads or railroads.
e. The paving or maintenance of roadway areas so as to not create air pollution.

32. Adequate security to prevent entry of unauthorized personnel shall be maintained on the Tyco property and the 6th Street Slip during the treatment and storage of the characteristic hazardous waste sediment.

33. By August 13, 2012, a construction report and certification statement certifying the project was constructed in substantial compliance with this remediation variance approval shall be submitted to the Department. Detailed drawings showing the actual construction and location of the pug mill, storage bins, secondary containment structures and any other equipment, structures or devices related to the treatment process or waste handling process; the specifications and MSDS for the sealants used on the base and joints of the sections; the name of the certified or registered laboratories that will be completing the analysis; documentation that the asphalt seal coat was applied at the 6th Street Slip; and, the chemical reagents and pozzolanic materials used in the stabilization process shall be included in the report. Any deviation from the construction proposal shall be explained and justified.

34. By March 1, 2014, Tyco shall submit to the Department a final documentation report that includes the following:
    a. A certification statement that the project has been completed in accordance with the requirements of chs. NR 660 to 670, Wis. Adm. Code, chs. NR 700 to 750, Wis. Adm. Code,
    b. A certification statement that the project has been completed in accordance with the requirements of the February 2009 Administrative Order on Consent between Ansul and the U.S. Environmental Protection Agency;
    c. A detailed discussion of all closure activities, waste types and quantities generated during closure, and equipment decontamination procedures used;
    d. Detailed drawings showing the actual construction and location of the pug mill, storage bins, secondary containment structures and any other equipment, structures or devices related to the treatment process or waste handling process;
    e. The chemical reagents and pozzolanic materials used in the solidification and stabilization process;
    f. Laboratory data and sample locations;
    g. Color photographic documentation of the closure activities, properly labeled; and,
    h. A copy of all uniform hazardous waste manifests used to transport wastes off-site and land disposal restriction notifications and certifications and a copy of all records documenting the disposal of nonhazardous waste.
    i. A table summarizing daily activities including:
        i. The location from which material was dredged and the quantity of material dredged from each location.
        ii. The amount of wastewater generated in dewatering or decanting operations,
        iii. The amount of dredged material sent to the pug mill unit for treatment and the amount of reagent or pozzalanic materials used,
        iv. The amount of treated dredged material sent to the storage bins,
        v. Sediment type and locations sampled,
        vi. Sediment type and analytical results received for dredged materials.
        vii. The quantity of material shipped as nonhazardous waste,
        viii. The amount of sediment requiring a second treatment; and
        ix. The quantity of material shipped as hazardous waste.

j. Reports shall comply with the requirements of ch. NR 724.15, Wis. Adm. Code.

35. All wastes generated during site activities, including contaminated clothing, spill materials and wastes from the water treatment system, shall be characterized and properly managed as nonhazardous or hazardous waste.

36. In accordance with s. 291.91, Wis. Stats, Department employees and authorized representatives shall be allowed access to the facility and to the owner or operator's hazardous waste records, at all reasonable times, for the purposes of inspection and sample collection.

37. Semi-annual progress reports shall be submitted to the Department in accordance with s. NR. 724.13(3), Wis. Adm. Code, until all dredged sediment is properly treated and disposed. The reports shall summarize the data generated over the previous reporting period and evaluate the overall performance of the remediation system. Specifically, the reports shall contain:
    a. An analysis of treatment rate and contaminant stabilization efficiency of the treatment system;
    b. A proposal for additional monitoring, if appropriate;
    c. A description and estimate of the percentage of the cleanup completed;
    d. A summary of significant activities completed during the reporting period;
    e. Plans, specifications and reports to document the operation, maintenance and monitoring of the treatment system;
    f. A summary of current and projected activities to be conducted over the next reporting period;
    g. A summary of problems or difficulties encountered during the reporting period, and actions taken to rectify the problems;
    h. Changes and effects on the system; and,
    i. Tables that are useful to establish trends, which include data throughout the project and which consist of:
        i. Field data and flow rate measurements;
        ii. Amounts of material stabilized and stored on-site and/or transported off-site; and
        iii. Field measurements and analytical data summarized from laboratory reports.

38. All documentation required in the above conditions shall be submitted to the following:
    - One paper copy to: Jim Killian
      Department of Natural Resources
      101 South Webster Street – WT/3
      Madison, WI 53703
    - One paper copy to: Sandy Miller
      Department of Natural Resources
      110 South Neenah Avenue
      Sturgeon Bay, WI 54235
    - Two paper copies to: Kristin DuFresne
      Department of Natural Resources
      2984 Shawano Avenue
      Green Bay, WI 54313-6727

39. Pursuant to s. NR 670.079(2)(c), Wis. Adm. Code, this remediation variance may be renewed or extended only after the opportunity for a public hearing. Requests to extend or renew this

remediation variance shall be submitted to the Department 90 days prior to its expiration date, February 1, 2014.

40. The Department may, at any time, revoke this remediation variance if the Department determines that the conditions stated herein are not complied with or if revocation is necessary to protect human health or the environment.

NOTICE OF APPEAL RIGHTS

If you believe you have a right to challenge this decision made by the Department, you should know that Wisconsin statutes and administrative codes establish time periods and requirements for reviewing Department decisions.

To seek judicial review of the Department's decision, sections 227.52 and 227.53, Stats., establish criteria for filing a petition for judicial review. You have 30 days after the decision is mailed or otherwise served by the Department to file your petition with the appropriate circuit court and serve the petition on the Department. The petition shall name the Department of Natural Resources as the respondent.

Dated July 3, 2012

DEPARTMENT OF NATURAL RESOURCES

For the Secretary

Bruce G. Urben, Air & Waste Regional Program Manager
Northeast Region

APPENDIX D

SEDIMENT VOLUME CALCULATION DATA

Volume Report by DMU - ORIGINAL PROJECT

Project: Menominee River Sediment Removal
Location: Marinette, WI
Date: 11/23/2014
Current Survey Date: 11/18/2014

Volumes Computed Using Hypack V. 2013 TIN Model
Volumes are in Cubic Yards unless otherwise specified

	Turning Basin & Transition Area Phase I-IV Required Depth					Turning Basin & Transition Area Phase I-IV 0.5' Tolerance			
DMU	Volume Available	Volume Remaining	Volume Removed	DMU COMPLETE		DMU	Volume Available	Volume Remaining	Volume Removed
L1-A	109.5	8.3	101.2			L1-A	70.3	23.8	46.5
L1-B	99.9	12.1	87.8			L1-B	75.5	26.9	48.6
L1-C	270.1	44.7	225.4			L1-C	91.5	36.5	55.0
L1-D	259.8	1.9	257.9			L1-D	79.6	8.4	71.2
L2-A	224.2	93.4	130.8			L2-A	90.1	57.8	32.3
L2-B	296.9	147.1	149.8			L2-B	78.6	55.9	22.7
L2-C	260.9	158.5	102.4			L2-C	90.4	76.2	14.2
L2-D	596.9	348.8	248.1			L2-D	90.6	89.5	1.1
L3-A	364.0	248.5	115.5			L3-A	90.3	87.6	2.7
L3-B	424.0	314.2	109.8			L3-B	90.7	90.5	0.2
L3-C	421.7	311.5	110.2			L3-C	89.9	87.3	2.6
L3-D	542.1	315.6	226.5			L3-D	90.8	87.0	3.8
L4-A	522.0	268.2	253.8			L4-A	90.0	83.1	6.9
L4-B	363.5	119.4	244.1			L4-B	90.1	63.2	26.9
L4-C(1)	300.5	34.4	266.1			L4-C(1)	90.5	56.8	33.7
L4-C(2)	1.1	0.4	0.7			L4-C(2)	11.6	2.0	9.6
L4-D	310.9	17.7	293.2			L4-D	90.7	35.3	55.4
L5-A	662.8	4.3	658.5			L5-A	88.9	24.1	64.8
L5-B	1,156.0	20.5	1,135.5			L5-B	89.8	38.0	51.8
L5-C	869.7	10.9	858.8			L5-C	82.1	41.4	40.7
L5-D	849.2	12.2	837.0			L5-D	90.8	31.4	59.4
L6-A	842.2	545.0	297.2			L6-A	90.2	90.1	0.1
L6-B	774.1	471.7	302.4			L6-B	90.6	90.2	0.4
L6-C	908.1	421.8	486.3			L6-C	89.3	88.8	0.5
L6-D	580.5	199.8	380.7			L6-D	91.5	91.2	0.3
L7-A	692.3	4.7	687.6			L7-A	69.0	11.1	57.9
L7-B	419.4	10.7	408.7			L7-B	72.5	30.2	42.3
L7-C	532.5	1.6	530.9			L7-C	74.8	11.6	63.2
L7-D	530.1	15.4	514.7			L7-D	74.9	49.6	25.3
L7-E	378.7	73.7	305.0			L7-E	74.9	46.1	28.8
L8-A	216.5	3.2	213.3			L8-A	89.4	19.9	69.5
L8-B	419.1	0.2	418.9			L8-B	87.2	3.2	84.0
L8-C	289.4	58.9	230.5			L8-C	82.1	60.0	22.1
L8-D	511.0	8.7	502.3			L8-D	90.3	28.8	61.5
L9-A	225.8	163.5	62.3			L9-A	75.8	79.5	-3.7
L9-B	182.6	99.6	83.0			L9-B	64.8	58.9	5.9
L9-C	453.5	325.7	127.8			L9-C	90.9	78.8	12.1
L9-D	356.5	137.7	218.8			L9-D	90.8	56.0	34.8
L10-A	710.6	1.8	708.8			L10-A	88.5	14.2	74.3
L10-B	914.7	2.4	912.3			L10-B	87.4	9.4	78.0
L10-C	114.8	36.4	78.4			L10-C	50.8	50.7	0.1
L10-D	65.1	15.3	49.8			L10-D	36.7	25.8	10.9
L11-A	181.0	73.9	107.1			L11-A	78.8	54.9	23.9
L11-B	36.7	53.0	-16.3			L11-B	46.8	59.0	-12.2
L11-C	197.1	62.4	134.7			L11-C	89.3	41.8	47.5
L11-D	155.6	15.8	139.8			L11-D	68.3	25.8	42.5
L12-A	1,018.4	7.7	1,010.7			L12-A	84.6	16.0	68.6
L12-B	1,010.4	9.7	1,000.7			L12-B	90.4	28.2	62.2
L12-C	666.2	23.2	643.0			L12-C	79.3	51.0	28.3
L12-D	216.6	11.5	205.1			L12-D	90.7	17.9	72.8
L13-A	438.2	28.9	409.3			L13-A	67.0	44.8	22.2
L13-B	671.7	5.4	666.3			L13-B	90.5	13.6	76.9
L13-C	232.5	11.0	221.5			L13-C	73.7	17.1	56.6
L13-D	883.1	31.6	851.5			L13-D	90.8	34.8	56.0
L14-A	467.4	7.2	460.2			L14-A	90.7	11.9	78.8
L14-B	876.4	17.1	859.3			L14-B	90.7	36.9	53.8
L14-C	418.9	18.4	400.5			L14-C	91.1	39.3	51.8
L14-D	394.1	3.8	390.3			L14-D	90.2	27.1	63.1
L15-A	139.4	0.0	139.4			L15-A	90.7	1.6	89.1
L15-B	127.8	0.0	127.8			L15-B	91.3	0.0	91.3
L15-C	188.6	0.0	188.6			L15-C	90.6	1.8	88.8
L15-D	243.3	0.0	243.3			L15-D	90.8	0.1	90.7

	Turning Basin & Transition Area Phase I-IV Required Depth					Turning Basin & Transition Area Phase I-IV 0.5' Tolerance			
DMU	Volume Available	Volume Remaining	Volume Removed	DMU COMPLETE		DMU	Volume Available	Volume Remaining	Volume Removed
L16-A	273.8	0.2	273.6			L16-A	90.7	7.8	82.9
L16-B	342.7	0.7	342.0			L16-B	90.7	8.5	82.2
L16-C	233.8	0.1	233.7			L16-C	89.8	2.2	87.6
L16-D	272.2	10.9	261.3			L16-D	90.5	16.6	73.9
L17-A	193.2	0.7	192.5			L17-A	84.2	19.9	64.3
L17-B	158.2	2.1	156.1			L17-B	84.5	10.8	73.7
L17-C	251.8	0.0	251.8			L17-C	84.9	0.0	84.9
L17-D	190.6	0.0	190.6			L17-D	85.0	1.6	83.4
L18-A	192.0	0.0	192.0			L18-A	86.6	4.5	82.1
L18-B	230.8	0.0	230.8			L18-B	86.9	0.2	86.7
L18-C	113.2	0.8	112.4			L18-C	86.2	12.4	73.8
L18-D	241.6	3.8	237.8			L18-D	86.3	16.5	69.8
L19-A	183.4	0.0	183.4			L19-A	86.6	0.5	86.1
L19-B	161.5	7.0	154.5			L19-B	84.0	23.8	60.2
L19-C	275.9	0.0	275.9			L19-C	88.2	0.0	88.2
L19-D	222.7	1.3	221.4			L19-D	87.8	13.3	74.5
L20-A	59.0	43.7	15.3			L20-A	17.7	16.2	1.5
L20-B	45.2	5.4	39.8			L20-B	15.6	5.2	10.4
L20-C	24.4	14.0	10.4			L20-C	14.0	13.2	0.8
L20-D(1)	19.5	8.7	10.8			L20-D(1)	12.2	11.8	0.4
L20-D(2)	0.0	0.0	0.0			L20-D(2)	0.0	0.0	0.0
L21-A	490.8	27.7	463.1			L21-A	88.8	49.2	39.6
L21-B	219.8	18.0	201.8			L21-B	73.7	32.0	41.7
L21-C	326.9	14.0	312.9			L21-C	86.9	31.3	55.6
L21-D	151.0	12.2	138.8			L21-D	78.1	21.0	57.1
L22-A	39.6	5.6	34.0			L22-A	28.5	7.2	21.3
L22-B(1)	136.6	0.0	136.6			L22-B(1)	44.4	1.0	43.4
L22-B(2)	0.0	2.3	-2.3			L22-B(2)	0.7	3.1	-2.4
L22-C(1)	89.0	0.3	88.7			L22-C(1)	47.5	2.7	44.8
L22-C(2)	0.0	0.1	-0.1			L22-C(2)	0.0	0.3	-0.3
L22-D	215.3	7.4	207.9			L22-D	72.0	22.3	49.7
L23-A	58.4	4.6	53.8			L23-A	60.6	10.3	50.3
L23-B	213.0	49.2	163.8			L23-B	64.7	23.5	41.2
L23-C	177.7	40.7	137.0			L23-C	59.8	32.1	27.7
L23-D	148.2	44.9	103.3			L23-D	55.3	28.8	26.5
Totals	**33,538.4**	**5,797.4**	**27,741.0**	**0.0**			**7,304.9**	**3,070.2**	**4,234.7**

COLOR CODE TABLE

Volume Update	OCT 7 2014	
Volume Update	OCT 20 2014	
Volume Update	OCT 24 2014	
Volume Update	OCT 31 2014	
Volume Update	NOV 1 2014	
Volume Update	NOV 4 2014	
Volume Update	Nov 9 2014	
Volume Update	Nov 18 2014	L20 A,B,C + L13A

	Overall Project Volume Summary				
	Originally Available (including Tolerance)	Volume Remaining (NOT INCLUDING Tolerance)		Volume Removed (REQUIRED)	Volume Removed (INCLUDING TOLERANCE)
PI-PIV	40,843	5,797		27,741	31,976
PV	7,134	1,542		3,554	3,810
	TOTALS	**7,339**		31,295	35,786

* Totals do not include 927 of allowable overdredge beyond tolerance

Volume Report by DMU - ORIGINAL PROJECT SOUTH CHANNEL

Project: Menominee River Sediment Removal
Location: Marinette, WI
Date: 10/17/2014
Current Survey Date: 10/8/2014

Volumes Computed Using Hypack V. 2013 TIN Model
Volumes are in Cubic Yards unless otherwise specified

	South Channel (Phase V) Required Depth					South Channel (Phase V) With 0.5' Tolerance			
DMU	Volume Available	Volume Remaining	Volume Removed	NOTES (See abr. Below)		DMU	Volume Available	Volume Remaining	Volume Removed
L24-A	77.2	33.5	43.7			L24-A	75.6	74.3	1.3
L24-B	231.0	31.7	199.3			L24-B	75.4	68.5	6.9
L24-C	140.7	23.5	117.2			L24-C	75.6	75.2	0.4
L24-D	113.3	22.7	90.6			L24-D	75.6	73.3	2.3
L24-E	215.7	100.9	114.8	BA		L24-E	72.7	71.9	0.8
L25-A	240.9	63.7	177.2	BA		L25-A	74.7	72.3	2.4
L25-B	297.8	34.6	263.2			L25-B	74.7	74.0	0.7
L25-C	366.8	156.5	210.3	BA		L25-C	73.2	65.6	7.6
L25-D	254.4	18.9	235.5			L25-D	74.7	73.8	0.9
L25-E	436.2	33.9	402.3			L25-E	73.8	68.4	5.4
L26-A	124.6	10.7	113.9			L26-A	62.1	54.1	8.0
L26-B	66.1	24.9	41.2			L26-B	87.7	83.1	4.6
L26-C	328.9	32.5	296.4			L26-C	147.2	135.7	11.5
L26-D	93.9	19.1	74.8			L26-D	61.9	58.1	3.8
L27-A	51.8	11.4	40.4			L27-A	39.5	36.6	2.9
L27-B(1)	91.3	11.7	79.6			L27-B(1)	69.4	37.6	31.8
L27-B(2)	1.3	0.8	0.5			L27-B(2)	8.5	5.1	3.4
L27-C	89.0	16.8	72.2			L27-C	64.6	45.3	19.3
L27-D	87.3	85.1	2.2	UCA		L27-D	48.5	48.5	0.0
L28-A(1)	2.6	2.3	0.3			L28-A(1)	1.7	1.7	0.0
L28-A(2)	35.6	14.9	20.7			L28-A(2)	20.5	18.8	1.7
L28-B(1)	23.2	2.1	21.1			L28-B(1)	13.0	10.3	2.7
L28-B(2)	46.5	2.6	43.9			L28-B(2)	37.9	34.2	3.7
L28-C(1)	0.1	0.9	-0.8			L28-C(1)	1.1	1.4	-0.3
L28-C(2)	0.0	0.2	-0.2			L28-C(2)	2.7	5.5	-2.8
L28-D	117.2	21.8	95.4			L28-D	124.1	110.9	13.2
L29-A	37.8	3.8	34.0			L29-A	28.3	24.4	3.9
L29-B	56.5	2.5	54.0			L29-B	18.4	13.6	4.8
L29-C	33.6	5.0	28.6			L29-C	52.3	27.3	25.0
L30-A	98.3	92.5	5.8	RB		L30-A	10.6	10.5	0.1
L30-B	160.9	64.1	96.8	BA		L30-B	70.8	54.7	16.1
L30-C(1)	0.0	0.0	0.0			L30-C(1)	1.2	0.4	0.8
L30-C(2)	7.7	0.0	7.7			L30-C(2)	10.2	3.3	6.9
L30-C(3)	0.2	0.6	-0.4			L30-C(3)	0.4	0.4	0.0
L31-A	348.4	195.5	152.9	BA		L31-A	78.0	67.1	10.9
L31-B	325.6	187.4	138.2	UCA		L31-B	77.7	65.9	11.8
L31-C	216.5	119.8	96.7			L31-C	77.0	45.0	32.0
L31-D	276.7	92.8	183.9			L31-D	76.8	64.9	11.9
Totals	**5,095.6**	**1,541.7**	**3,553.9**	**0.0**			**2,038.1**	**1,781.7**	**256.4**

NOTES: Abbreviation Comments on DMU Volumes

Utility Clearance Area = UCA
Bank Area= BA
Railroad Bridge= RB

Overall Phase V Volume Summary			
Originally Available (including Tolerance)	Volume Remaining (NOT INCLUDING Tolerance)	Volume Removed (REQUIRED)	Volume Removed (INCLUDING TOLERANCE)
7,134	1,542	**3,554**	**3,810**

* Totals do not include allowable overdredge beyond tolerance

Volume Report by DMU - REDIG PROJECT

Project: Menominee River Sediment Removal
Location: Marinette, WI
Date: 11/23/2014
Current Survey Date: 11/18/2014

Volumes Computed Using Hypack V. 2013 TIN Model
Volumes are in Cubic Yards unless otherwise specified

	Turning Basin & Transition Area Phase I-IV Required Depth					Turning Basin & Transition Area Phase I-IV 0.5' Tolerance			
DMU	Volume Available	Volume Remaining	Volume Removed	DMU COMPLETE		DMU	Volume Available	Volume Remaining	Volume Removed
L8-C	106.7	5.2	101.5			L8-C	83.7	15.1	68.6
L8-D	268.0	13.8	254.2			L8-D	90.6	27.8	62.8
L10-C	530.4	48.6	481.8			L10-C	90.8	32.6	58.2
L10-D	184.5	16.2	168.3			L10-D	91.3	28.8	62.5
L11-A	170.5	15.3	155.2			L11-A	90.8	32.9	57.9
L11-D	501.6	37.0	464.6			L11-D	90.7	56.2	34.5
L12-B	352.6	65.3	287.3			L12-B	90.4	72.0	18.4
L12-C	636.8	34.2	602.6			L12-C	90.7	38.2	52.5
L14-A	598.7	124.0	474.7			L14-A	90.7	74.7	16.0
Totals	**3,349.8**	**359.6**	**2,990.2**	**0.0**			**809.7**	**378.3**	**431.4**

COLOR CODE TABLE

Volume Update **Nov 18 2014**

	Overall RE DIG Project Volume Summary				
	Originally Available (including Tolerance)	Volume Remaining (NOT INCLUDING		Volume Removed (REQUIRED)	Volume Removed (INCLUDING TOLERANCE)
REDIG	4,160	360		2,990	3,422
	TOTALS	**360**		2,990	3,422

* Totals do not include 875 of allowable overdredge beyond tolerance

APPENDIX E

BATHYMETRIC SURVEY DATA

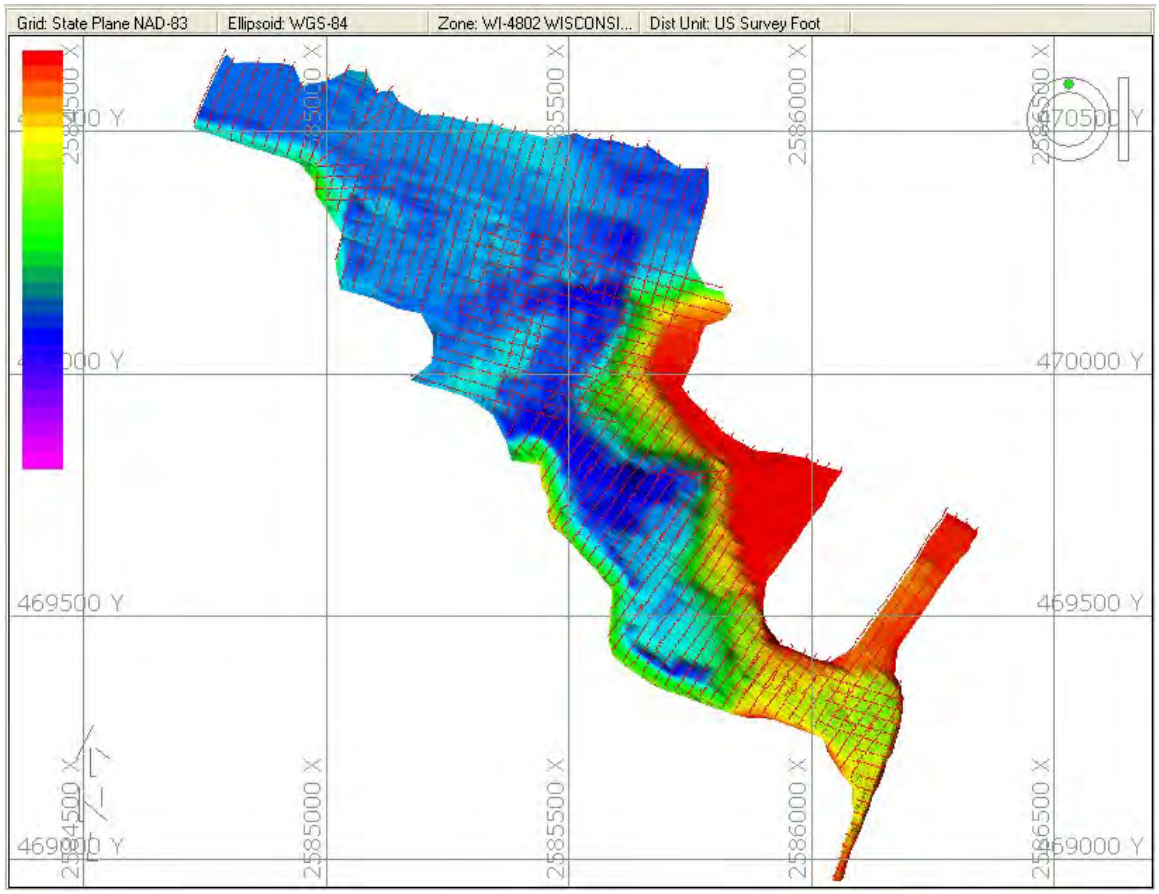
Hydrographic Consultants, Ltd.
P.O. Box 1448
Bellaire, TX 77402-1448
Ph: (713) 664-8066
Cell: (832) 798-1486
Info@hydro-ltd.com

SURVEY REPORT

Date: September 9, 2014

Subject: Single Beam Hydrographic Survey – Tyco Facility, Marinette Wiconsin

HCL performed a single beam hydrographic survey at the 25' cross-sections arranged to best model the contour of the dredging plan.



The following outlines our equipment, calibration, setup and other pertinent information from the survey.

SURVEY REPORT: **Tyco – 09/09/14**

1) SURVEY CREW

M. Becker
K. Herwig
D. Burger

2) EQUIPMENT

Single Beam
Survey Boat - "Pontoon"
RTK – Trimble R8 Rover
Echo Sounder - Odom CV100: 200 KHz narrow beam (3 degree) transducer
Data Acquisition/Processing - Hypack Software
Tide - Tide Staff provided by Sevenson located on Tyco Bulkhead. *"Top of Gauge Elevation: 581'*

3) BOAT SETUP

Single Beam

Position Service - Trimble R8 Rover (RTK Tide Corrections)
Depth - Odom CVM
Software – Hypack
Antenna Ht: -9.75' (Determined by RTK water elevation)

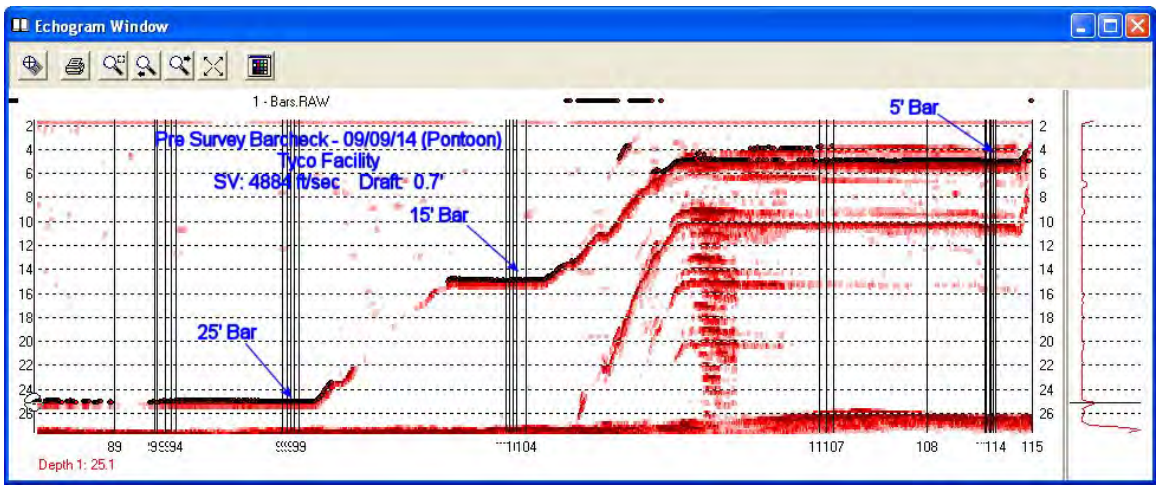
Antenna was on pipe directly over transducer and located near the bow of the boat. Transducer mount was checked with level to ensure that RTK antenna and transducer were plumb. Hypack tide reading was compared to tide staff. Antenna height was adjusted to make the two tide readings match.

4) ECHO SOUNDER CALIBRATIONS

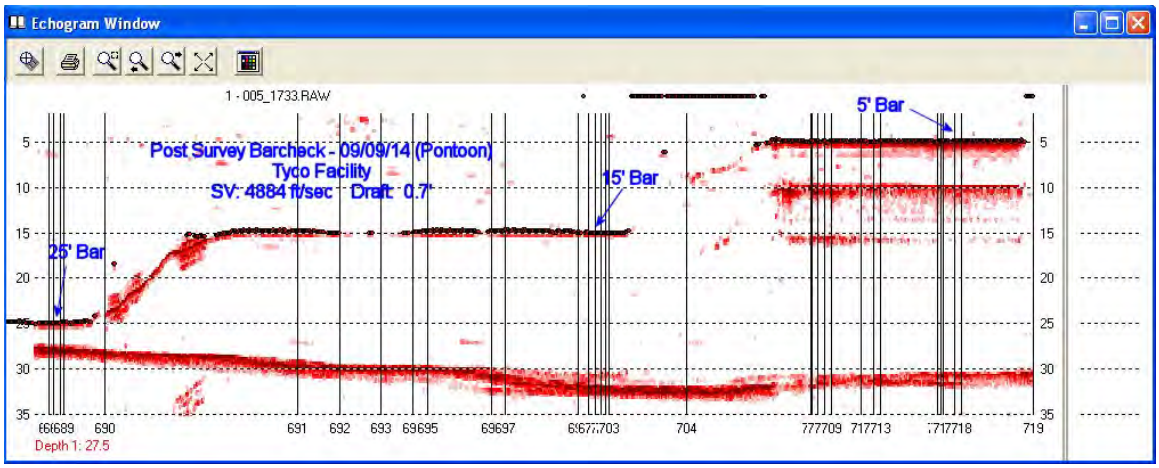
Single Beam (Surveyza) 09/09/14

Draft: 0.7'
Sound Velocity: 4884 ft/sec

Pre and Post Survey Bar Checks were performed on 09/09/14 – below are results.



Pre Survey Bar Check



Post Survey Bar Check

5) TIDES

RTK Base Station was checked at CP1. Results Below:

Point	Code	Easting	Northing	Elevation
090914-001	CP1 CHK	2585123.824	469131.108	587.104
090914-002	CP1 CHK	2585123.827	469131.07	587.092
090914-003	CP1 CHK	2585123.823	469131.114	587.104
Average		**2585123.825**	**469131.0973**	**587.1**
CP1	Control	2585123.797	469131.062	587.09
Delta		**0.028**	**0.035**	**0.010**

Tide Staff provided by Sevenson.
Top of staff Elevation (RTK): 581’ NAVD88

Tide Measured at staff on 09/09/14

Time	Tide
8:00	581 - 1.3 = 579.7’
17:40	581 - 1.3 = 579.7’

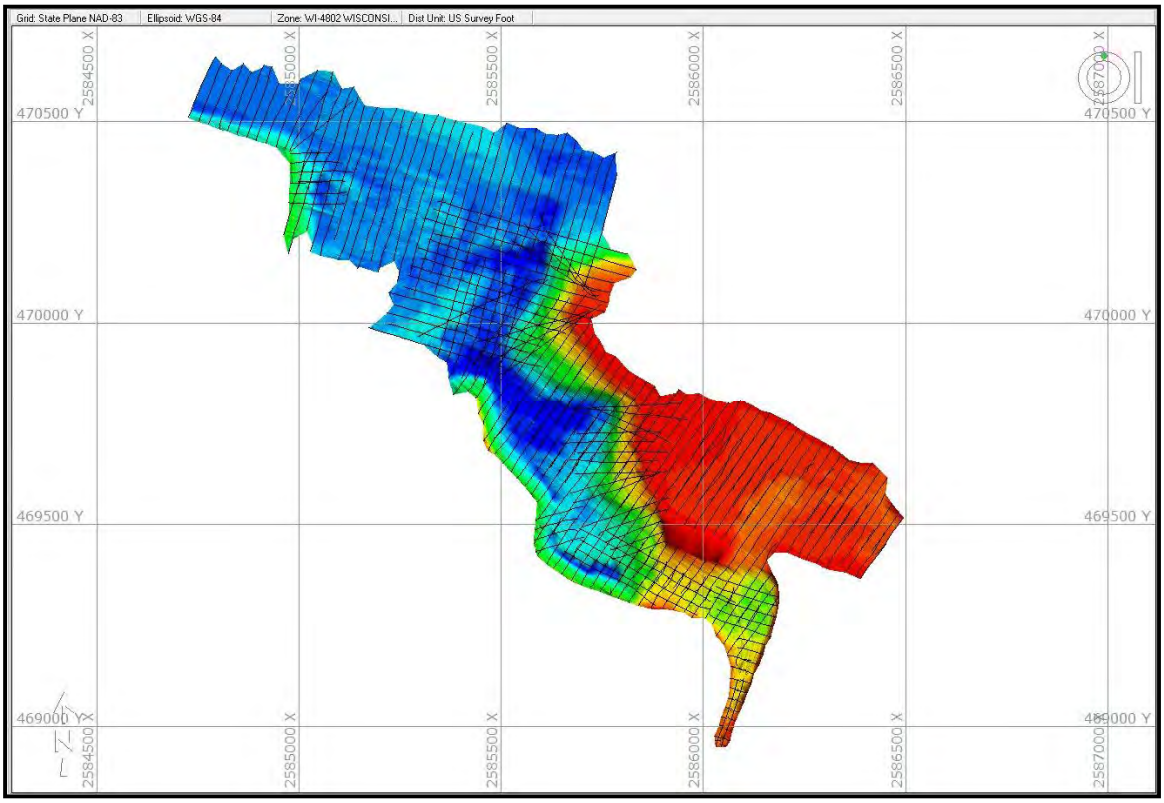
Hydrographic Consultants, Ltd.
P.O. Box 1448
Bellaire, TX 77402-1448
Ph: (713) 664-8066
Cell: (832) 798-1486
Info@hydro-ltd.com

SURVEY REPORT

Date: September 12, 2014

Subject: Single Beam Hydrographic Survey ï Tyco Facility, Marinette Wisconsin

HCL performed a single beam hydrographic survey at the 25ôcross-sections arranged to best model the contour of the dredging plan.



The following outlines our equipment, calibration, setup and other pertinent information from the survey.

SURVEY REPORT: **Tyco – 09/11/14**

1) SURVEY CREW

M. Becker
D. Burger

2) EQUIPMENT

Single Beam
Survey Boat - ñPontoonò
RTK ï Trimble R8 Rover
Echo Sounder - Odom CV100: 200 KHz narrow beam (3 degree) transducer
Data Acquisition/Processing - Hypack Software
Tide - Tide Staff provided by Sevenson located on Tyco Bulkhead. *"Top of Gauge Elevation: 581'*

3) BOAT SETUP

Single Beam

Position Service - Trimble R8 Rover (RTK Tide Corrections)
Depth - Odom CVM
Software ï Hypack
Antenna Ht: -9.75ô(Determined by RTK water elevation)

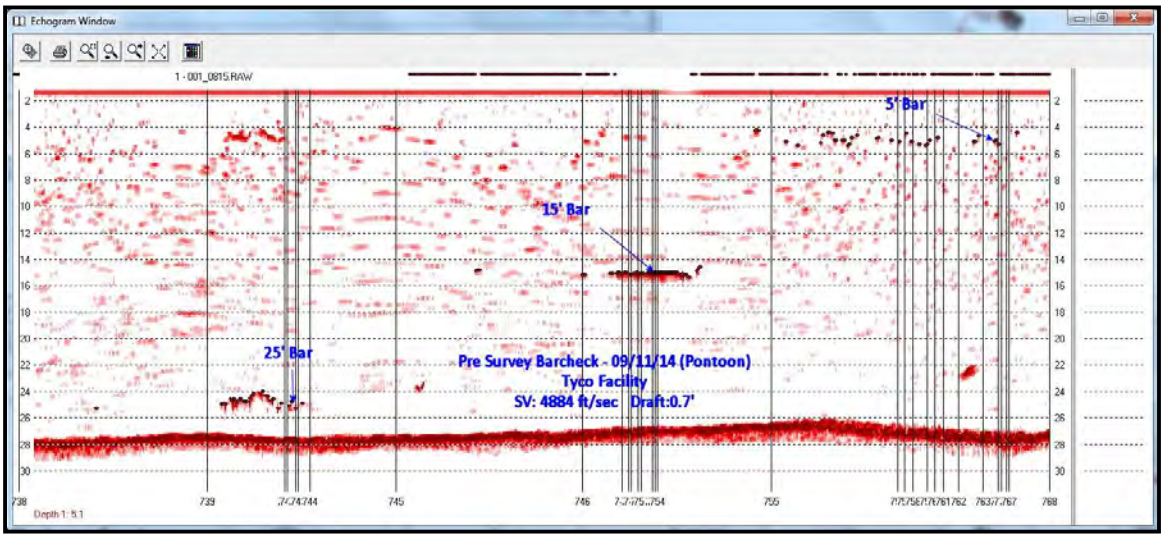
Antenna was on pipe directly over transducer and located near the bow of the boat. Transducer mount was checked with level to ensure that RTK antenna and transducer were plumb. Hypack tide reading was compared to tide staff. Antenna height was adjusted to make the two tide readings match.

4) ECHO SOUNDER CALIBRATIONS

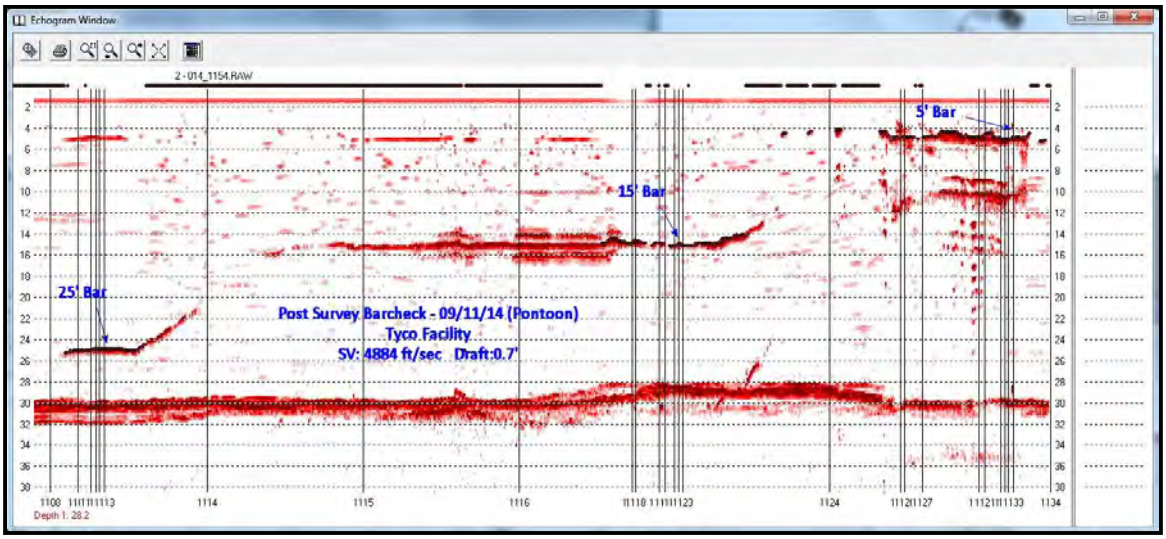
Single Beam (Pontoon) 09/11/14

Draft: 0.7ô
Sound Velocity: 4884 ft/sec

Pre and Post Survey Bar Checks were performed on 09/11/14 ï below are results.



Pre Survey Bar Check



Post Survey Bar Check

5) TIDES

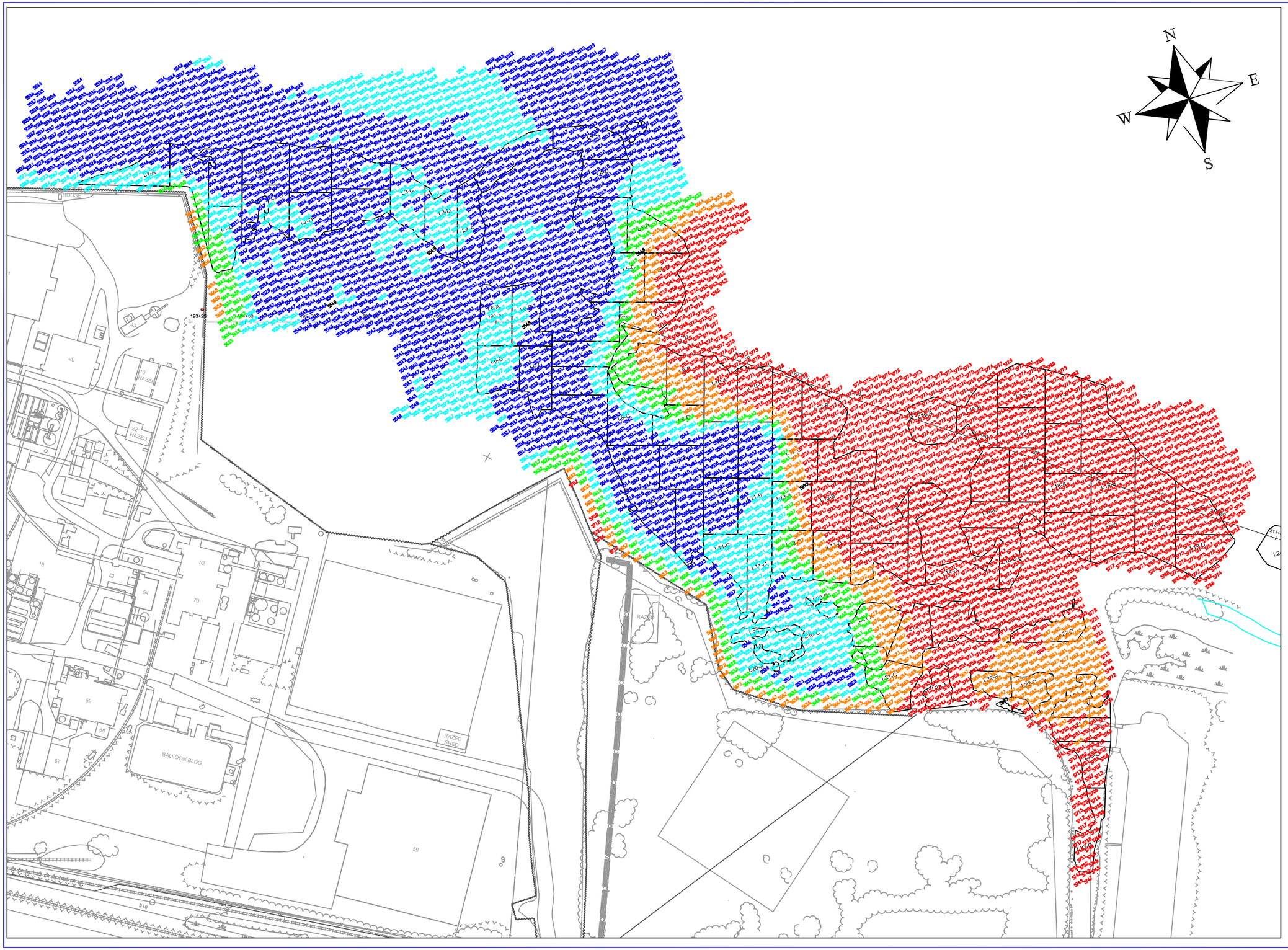
RTK Base Station was checked at CP1 on 9/9/14. Results Below:

Point	Code	Easting	Northing	Elevation
090914-001	CP1 CHK	2585123.824	469131.108	587.104
090914-002	CP1 CHK	2585123.827	469131.07	587.092
090914-003	CP1 CHK	2585123.823	469131.114	587.104
Average		**2585123.825**	**469131.0973**	**587.1**
CP1	Control	2585123.797	469131.062	587.09
Delta		**0.028**	**0.035**	**0.010**

Tide Staff provided by Sevenson.
Top of staff Elevation (RTK): 581ôNAVD88

Tide Measured at staff on 09/11/14

Time	Tide
8:10	581 - 1.05 = 579.95ô
12:01	581 - 1.5 = 579.5ô



COLOR TABLE

Red	> 570'
Orange	565' to 570'
Green	560' to 565'
Cyan	555' to 560'
Blue	< 555'

0 75 150 225

TYCO PRE CONSTRUCTION SURVEY
BD Survey

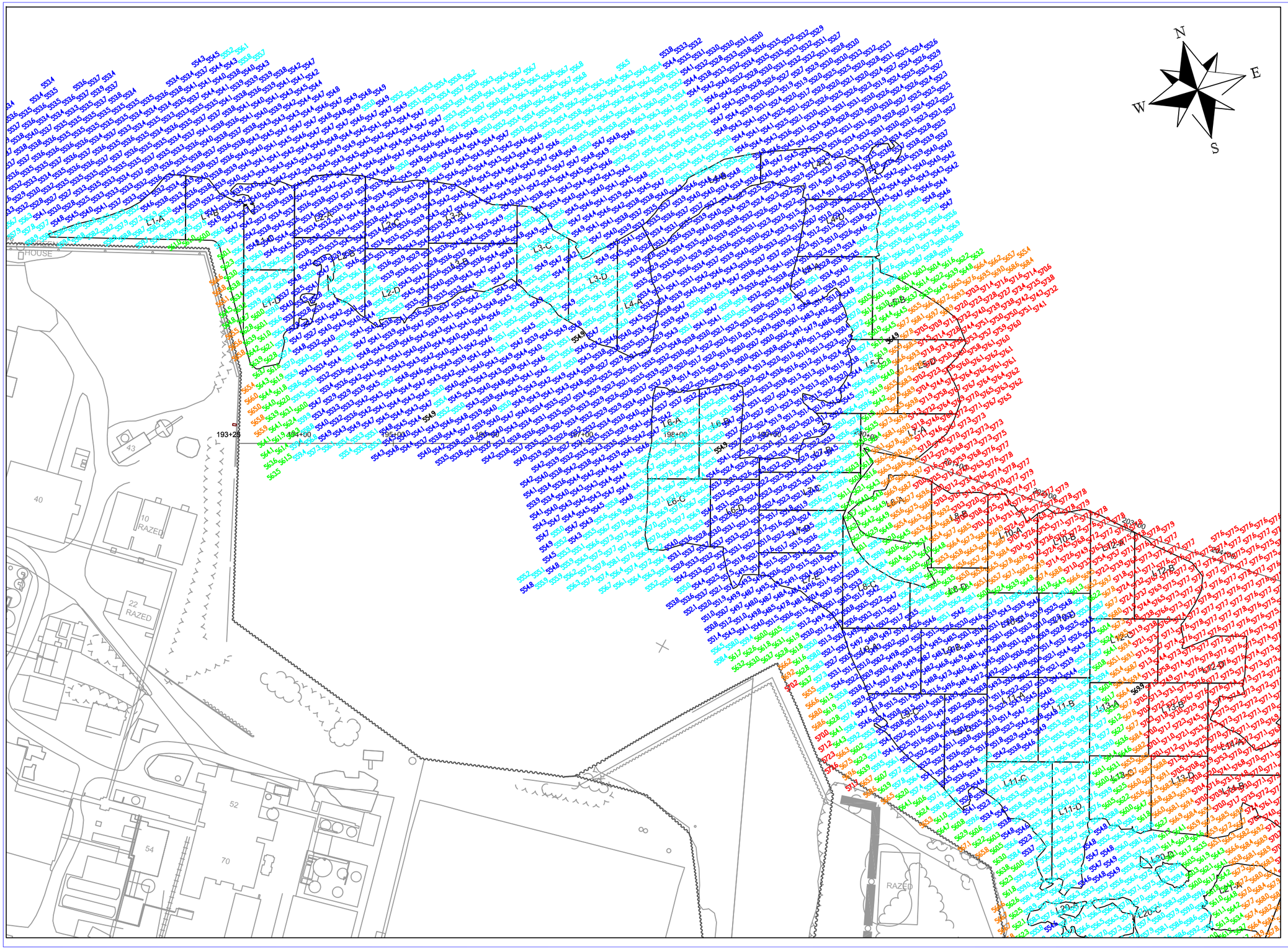
LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 1

DATE:	09/23/14
DRAWN BY:	SBM
CHECKED BY:	
CAD FILE:	BD Survey.dwg
SCALE:	AS SHOWN



COLOR TABLE

Red	> 570'
Orange	565' to 570'
Green	560' to 565'
Cyan	555' to 560'
Blue	< 555'

0 50 100 150

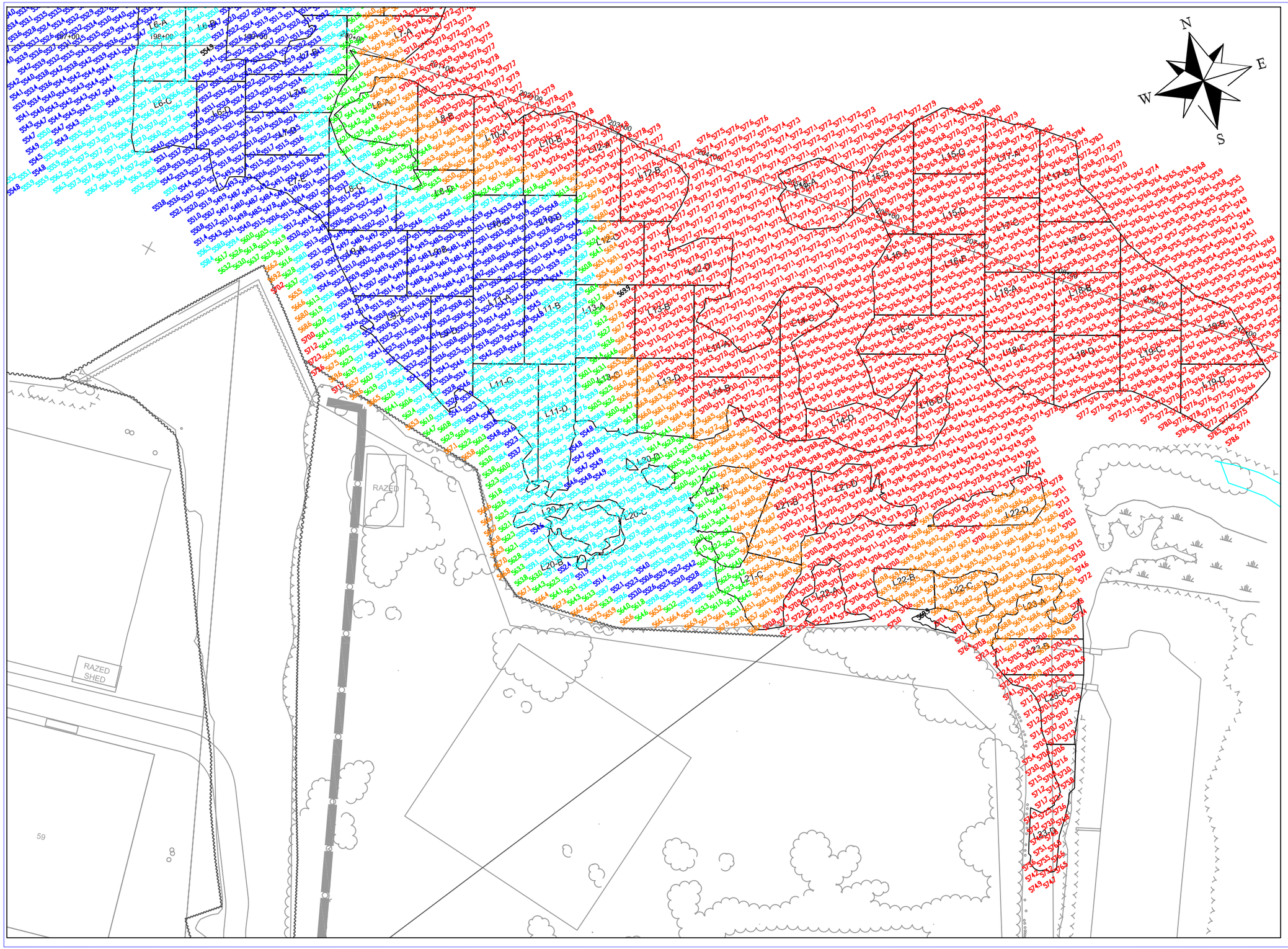
TYCO PRE CONSTRUCTION SURVEY
BD Survey

LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING		
2	DATE:	09/23/14
	DRAWN BY:	SBM
	CHECKED BY:	
	CAD FILE:	BD Survey.dwg
	SCALE:	AS SHOWN



COLOR TABLE

Red	> 570'
Orange	565' to 570'
Green	560' to 565'
Cyan	555' to 560'
Blue	< 555'

0 50 100 150

TYCO PRE CONSTRUCTION SURVEY
BD Survey

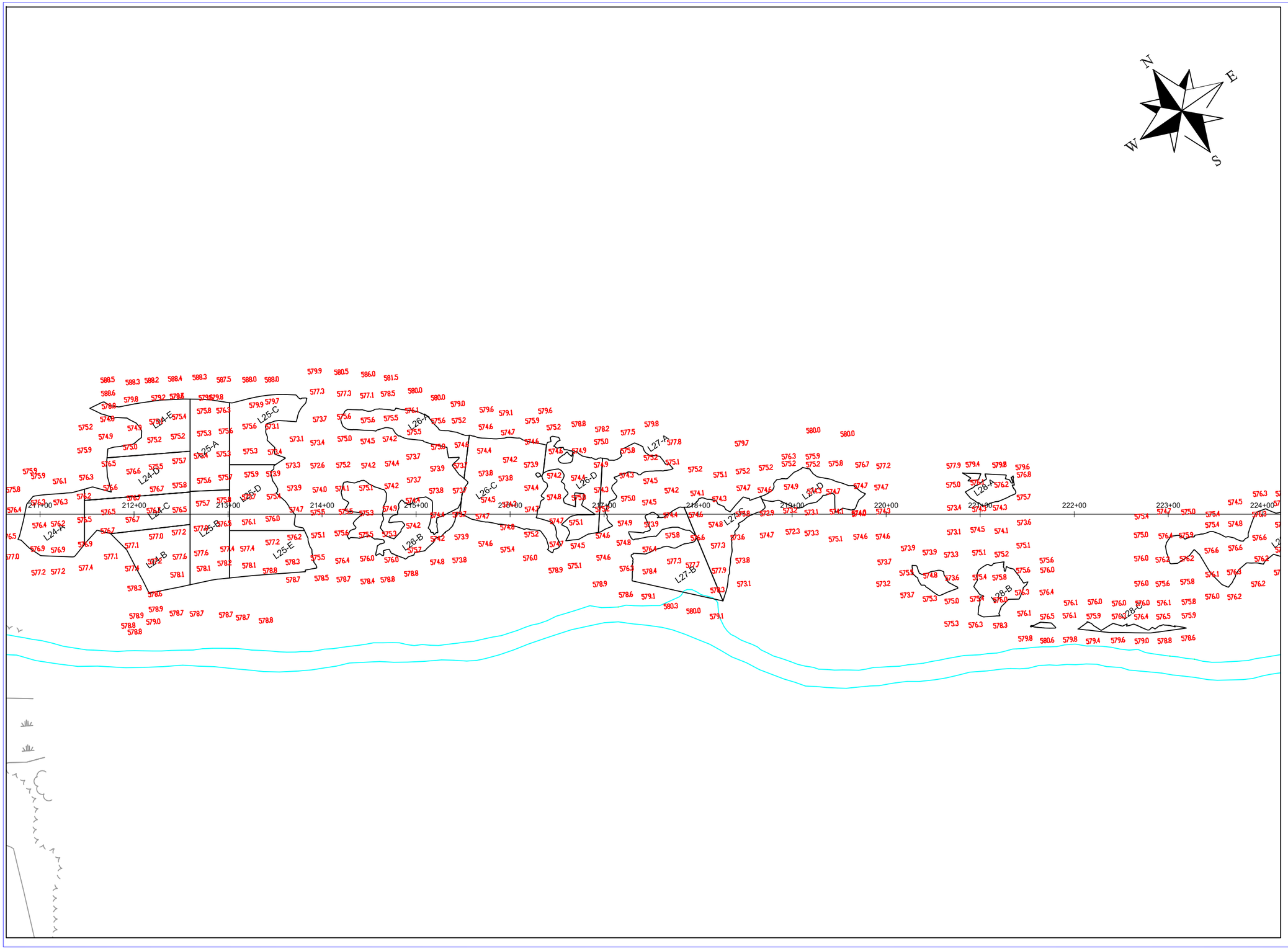
LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 3

DATE:	09/23/14
DRAWN BY:	SBM
CHECKED BY:	
CAD FILE:	BD Survey.dwg
SCALE:	AS SHOWN



COLOR TABLE

Red	> 570'
Orange	565' to 570'
Green	560' to 565'
Cyan	555' to 560'
Blue	< 555'

0 50 100 150

TYCO PRE CONSTRUCTION SURVEY
South Channel BD Survey

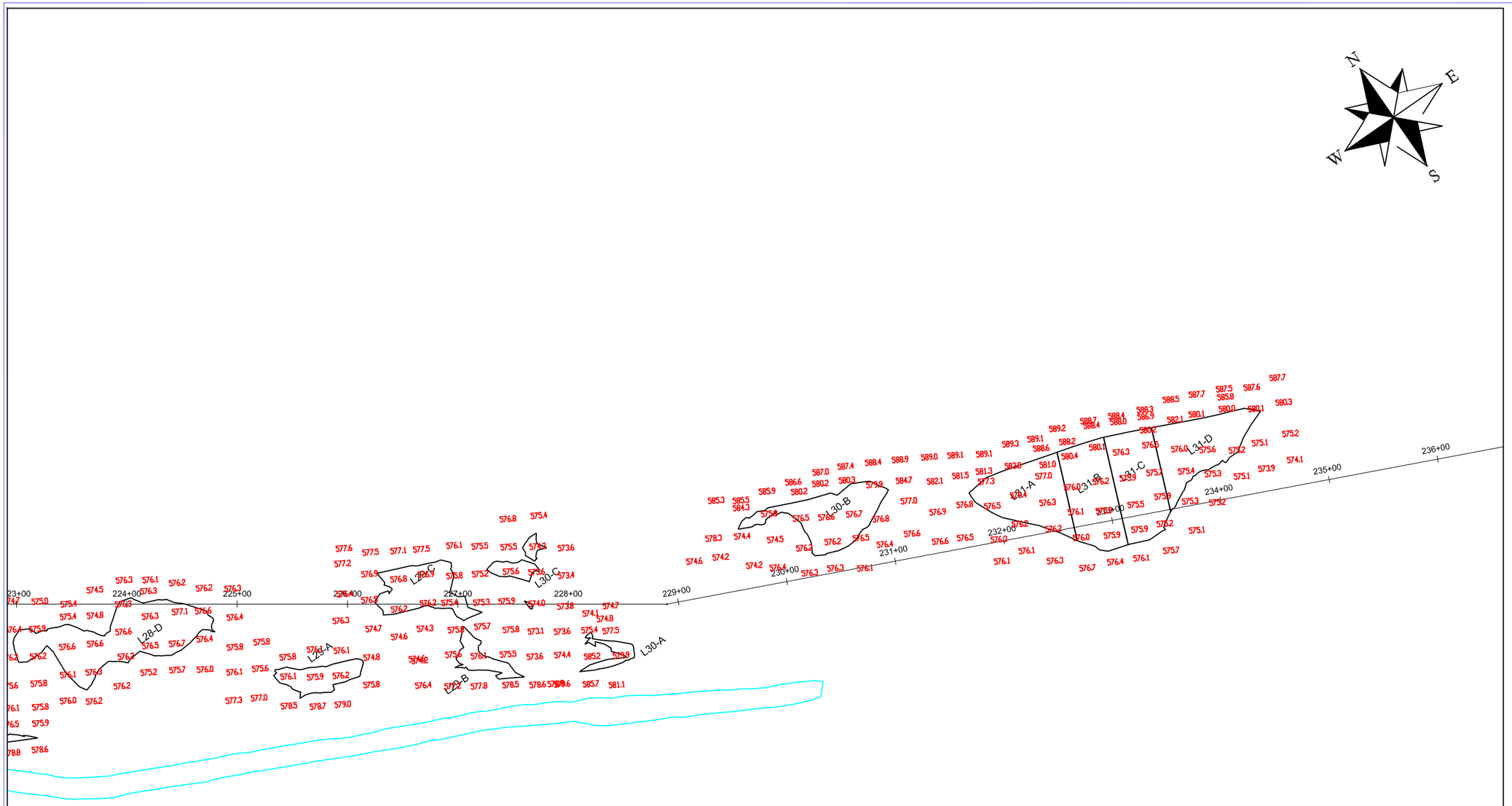
LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 4

DATE:	09/23/14
DRAWN BY:	SBM
CHECKED BY:	
CAD FILE:	BD Survey.dwg
SCALE:	AS SHOWN



COLOR TABLE

Red	> 570'
Orange	565' to 570'
Green	560' to 565'
Cyan	555' to 560'
Blue	< 555'

0 50 100 150

TYCO PRE CONSTRUCTION SURVEY
South Channel BD Survey

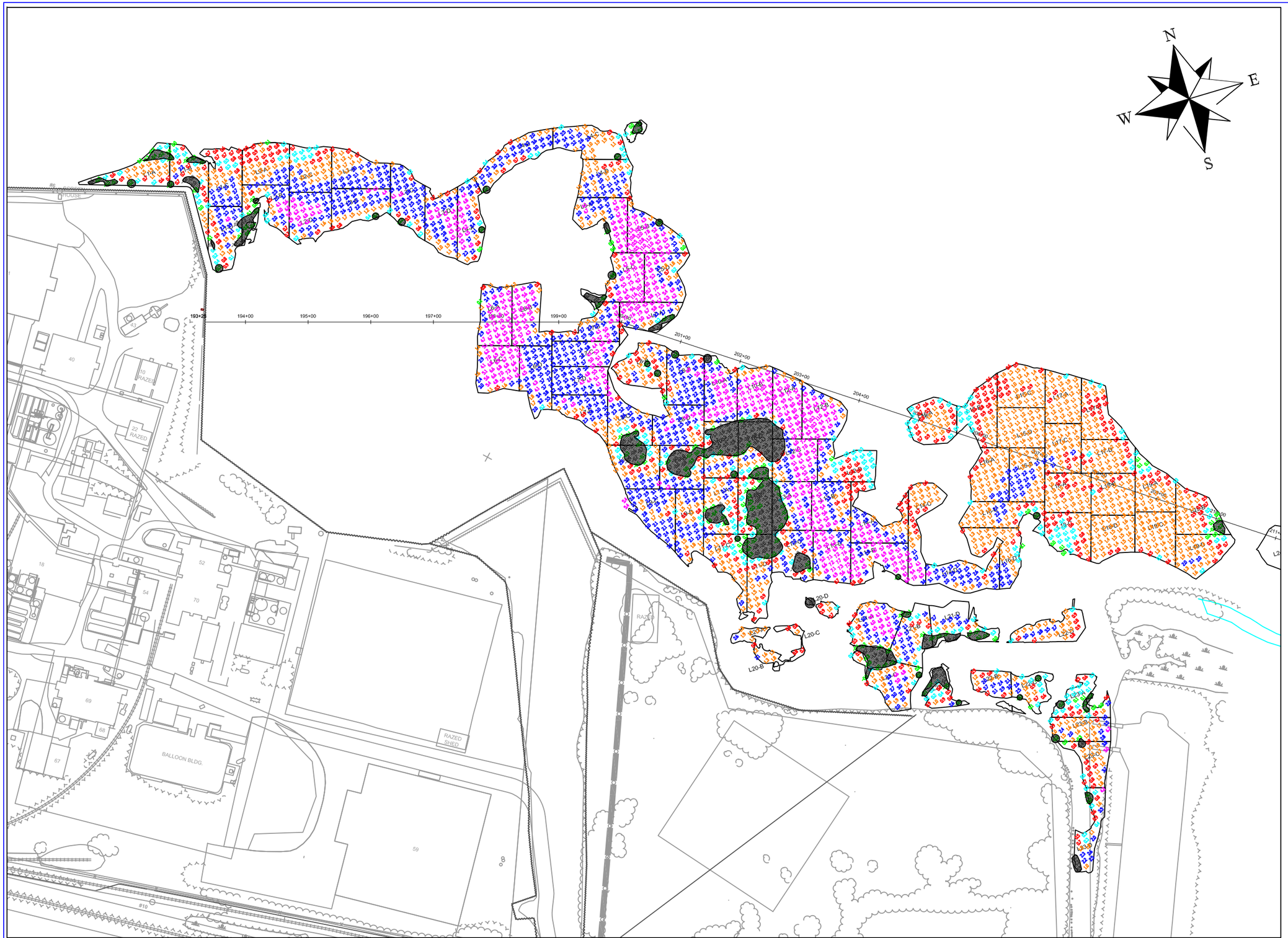
LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 5

DATE:	09/23/14
DRAWN BY:	SBM
CHECKED BY:	
CAD FILE:	BD Survey.dwg
SCALE:	AS SHOWN



COLOR TABLE

Magenta	> 4.0'
Blue	2.0' to 4.0'
Orange	1.0' to 2.0'
Red	0.5' to 1.0'
Cyan	0.0' to 0.5'
Green	-0.5' to 0.0'
Gray	<0.51'

BLACK - NO DREDGING

0 75 150 225

TYCO PRE ISOPACH PLOTS
Delta Plot BD vs Design

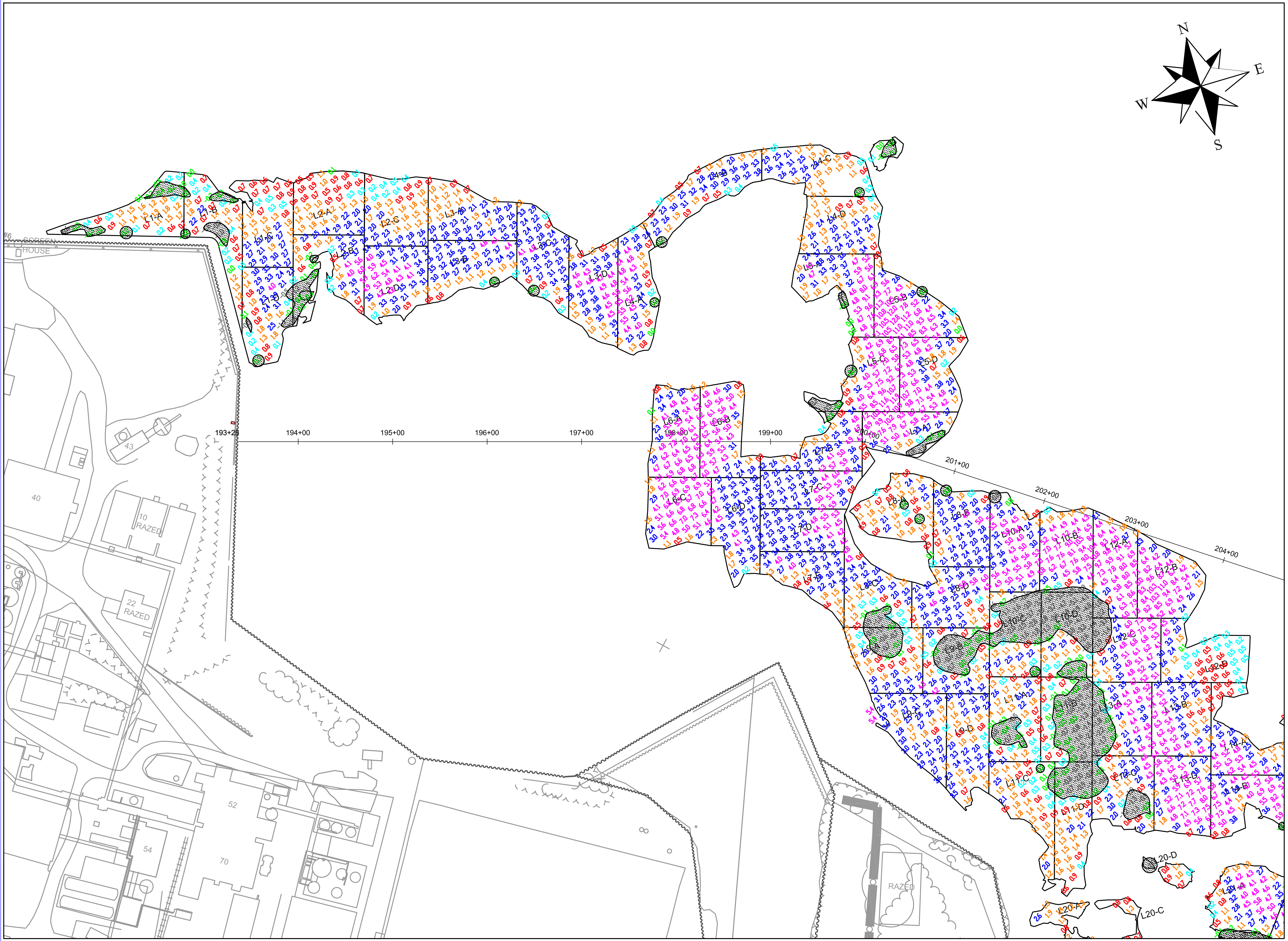
LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 6

DATE:	09/23/14
DRAWN BY:	SBM
CHECKED BY:	
CAD FILE:	BD Survey.dwg
SCALE:	AS SHOWN



COLOR TABLE

Magenta	> 4.0'
Blue	2.0' to 4.0'
Orange	1.0' to 2.0'
Red	0.5' to 1.0'
Cyan	0.0' to 0.5'
Green	-0.5' to 0.0'
Gray	<0.51'

BLACK - NO DREDGING

0 50 100 150

TYCO PRE ISOPACH PLOTS
Delta Plot BD vs Design

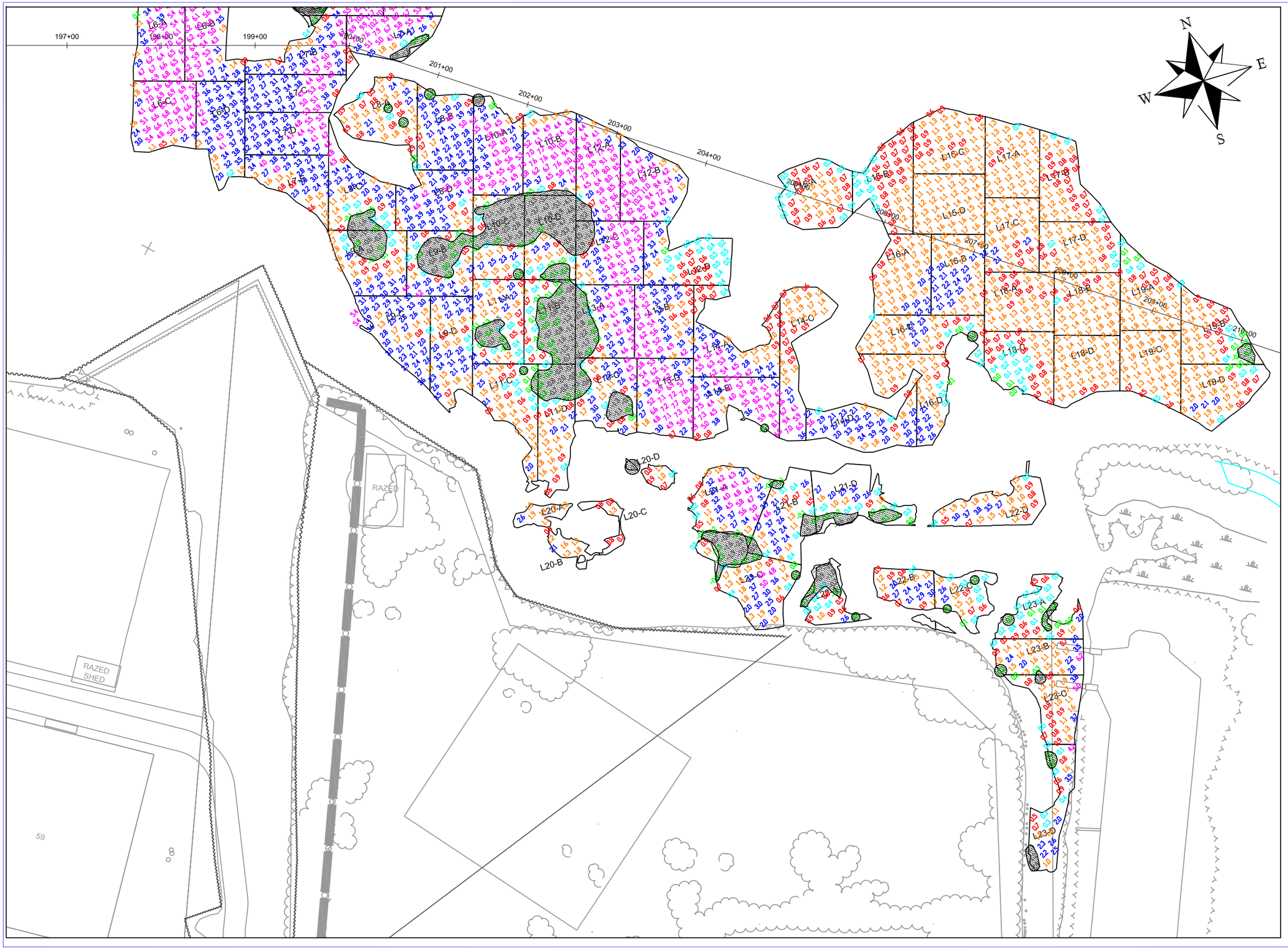
LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 7

DATE:	09/23/14
DRAWN BY:	SBM
CHECKED BY:	
CAD FILE:	BD Survey.dwg
SCALE:	AS SHOWN



COLOR TABLE

Magenta	> 4.0'
Blue	2.0' to 4.0'
Orange	1.0' to 2.0'
Red	0.5' to 1.0'
Cyan	0.0' to 0.5'
Green	-0.5' to 0.0'
Gray	<0.51'

BLACK - NO DREDGING

0 50 100 150

TYCO PRE ISOPACH PLOTS
Delta Plot BD vs Design

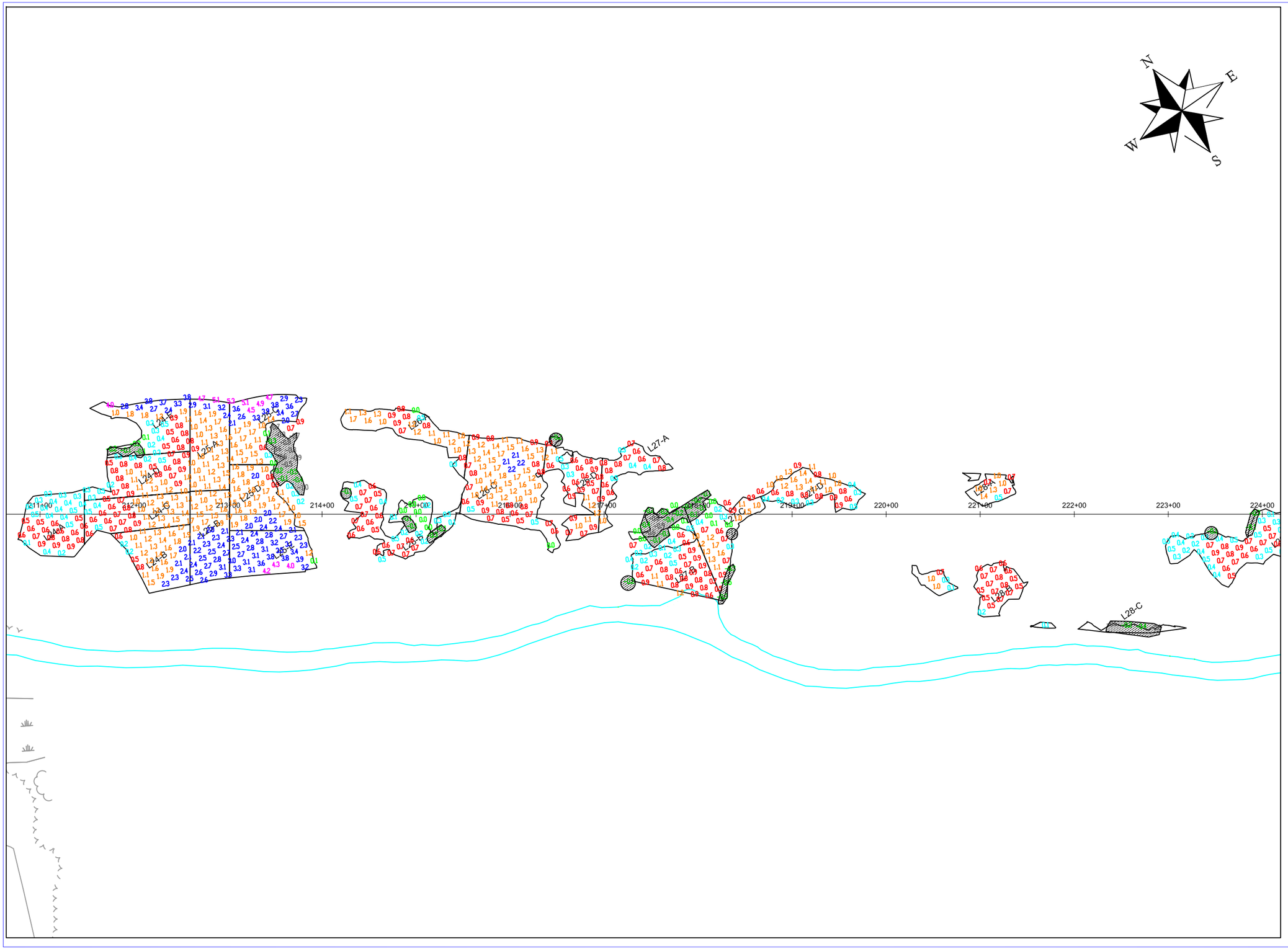
LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 8

DATE:	09/23/14
DRAWN BY:	SBM
CHECKED BY:	
CAD FILE:	BD Survey.dwg
SCALE:	AS SHOWN



COLOR TABLE

Magenta	> 4.0'
Blue	2.0' to 4.0'
Orange	1.0' to 2.0'
Red	0.5' to 1.0'
Cyan	0.0' to 0.5'
Green	-0.5' to 0.0'
Gray	<0.51'

BLACK - NO DREDGING

0 50 100 150

TYCO PRE ISOPACH PLOTS
South Channel Delta Plot BD vs Design

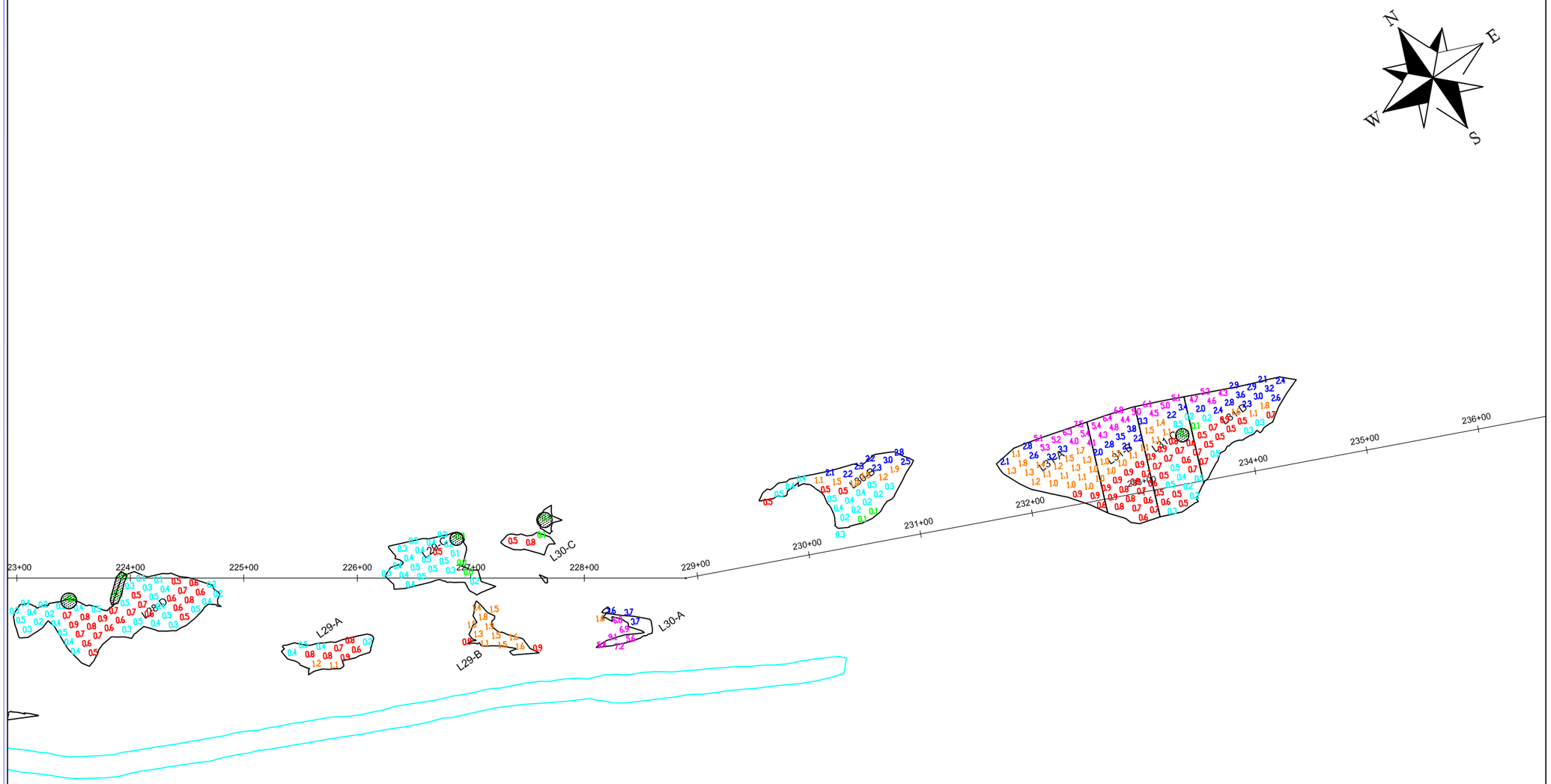
LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 9

DATE:	09/23/14
DRAWN BY:	SBM
CHECKED BY:	
CAD FILE:	BD Survey.dwg
SCALE:	AS SHOWN



COLOR TABLE

Magenta	> 4.0'
Blue	2.0' to 4.0'
Orange	1.0' to 2.0'
Red	0.5' to 1.0'
Cyan	0.0' to 0.5'
Green	-0.5' to 0.0'
Gray	<0.51'

BLACK - NO DREDGING

0 50 100 150

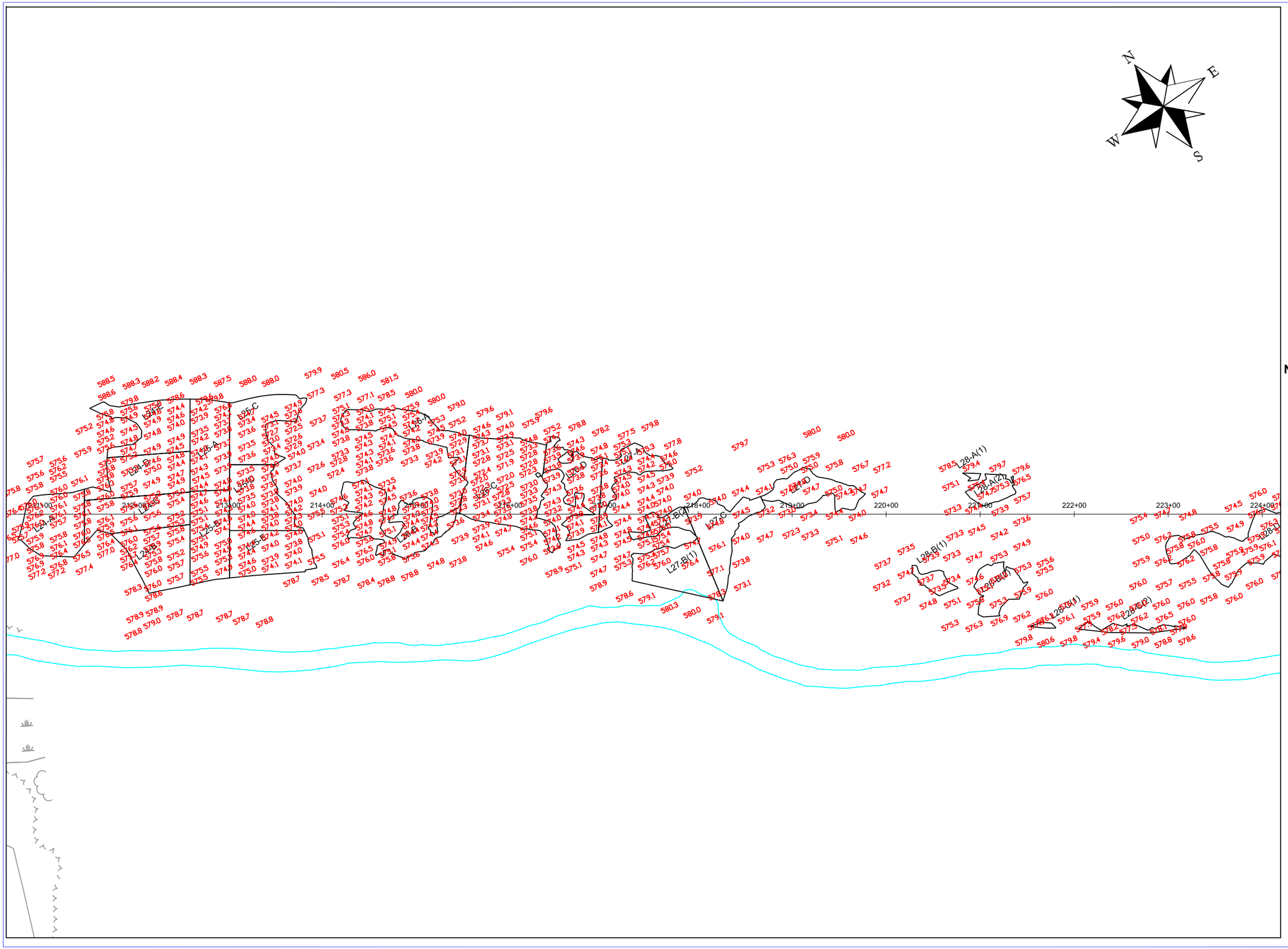
TYCO PRE ISOPACH PLOTS
South Channel Delta Plot BD vs Design

LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING		
10	DATE:	09/23/14
	DRAWN BY:	SBM
	CHECKED BY:	
	CAD FILE:	BD Survey.dwg
	SCALE:	AS SHOWN



NOTES: Post Surveys completed
Oct. 2, 2014 - Oct 4, 2014

COLOR TABLE

Red	> 570'
Orange	565' to 570'
Green	560' to 565'
Cyan	555' to 560'
Blue	< 555'

0 50 100 150

Oct 4 2014 Progress Survey
South Channel Oct 4 2014 Survey

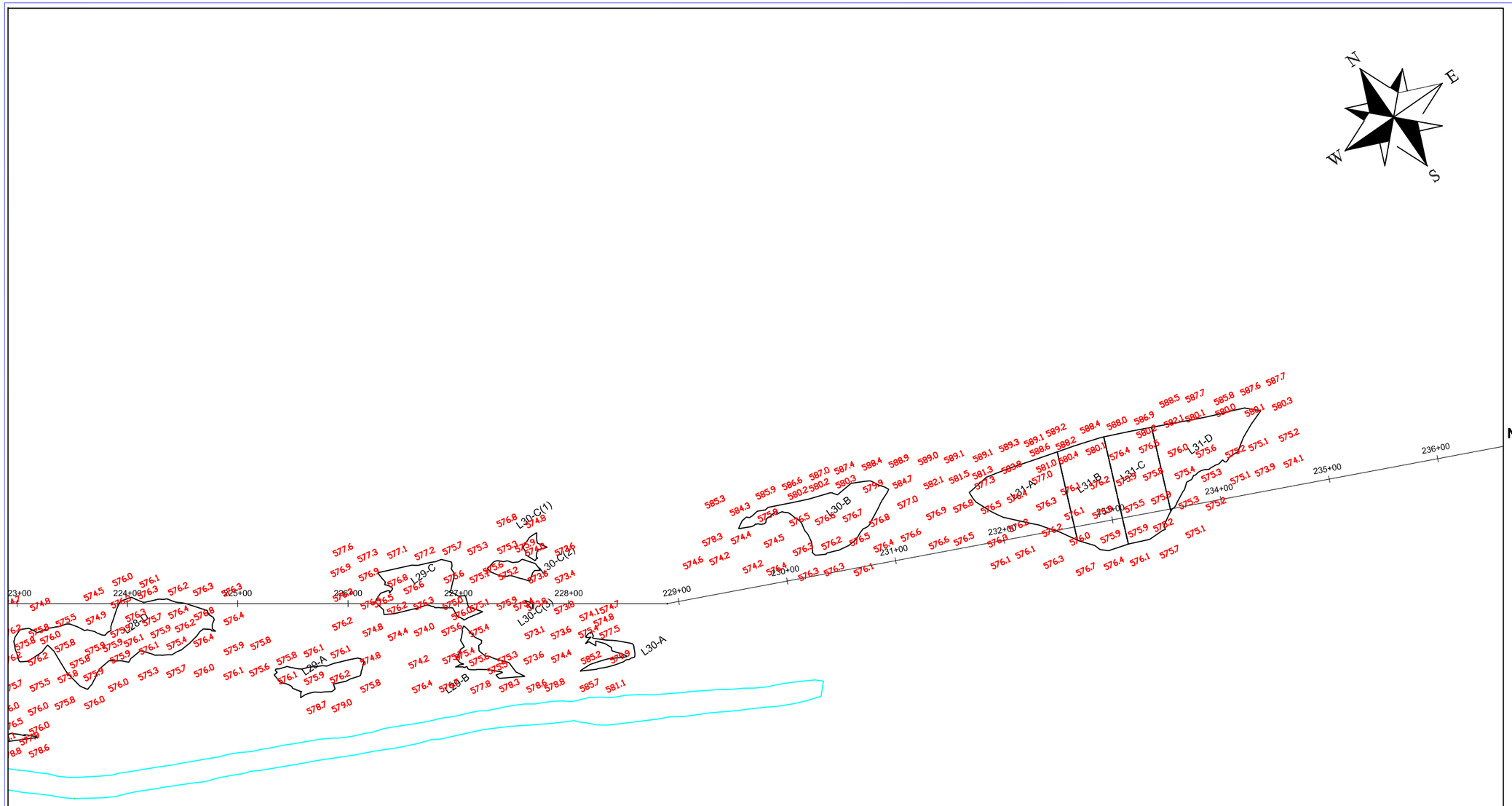
LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON
ENVIRONMENTAL
SERVICES, INC.

DRAWING
4

DATE:	10/07/14
DRAWN BY:	MRB
CHECKED BY:	
CAD FILE:	PV Oct4 2014.dwg
SCALE:	AS SHOWN



NOTES: Post Surveys completed
Oct. 2, 2014 - Oct 4, 2014

COLOR TABLE

Red	> 570'
Orange	565' to 570'
Green	560' to 565'
Cyan	555' to 560'
Blue	< 555'

0 50 100 150

Oct 4, 2014 Progress Survey
South Channel Oct 4 Survey

LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING
5

DATE:	10/07/14
DRAWN BY:	MRB
CHECKED BY:	
CAD FILE:	PV Oct4 2014.dwg
SCALE:	AS SHOWN

NOTES: Post Surveys completed
Oct. 2, 2014 - Oct 4, 2014

Differences based on survey to design elevation

COLOR TABLE

Magenta	> 4.0'
Blue	2.0' to 4.0'
Orange	1.0' to 2.0'
Red	0.5' to 1.0'
Cyan	0.0' to 0.5'
Green	-0.5' to 0.0'
Gray	<0.51'

0 50 100 150

DMU ISOPACH PLOT
South Channel Delta Plot Oct 4 vs Design

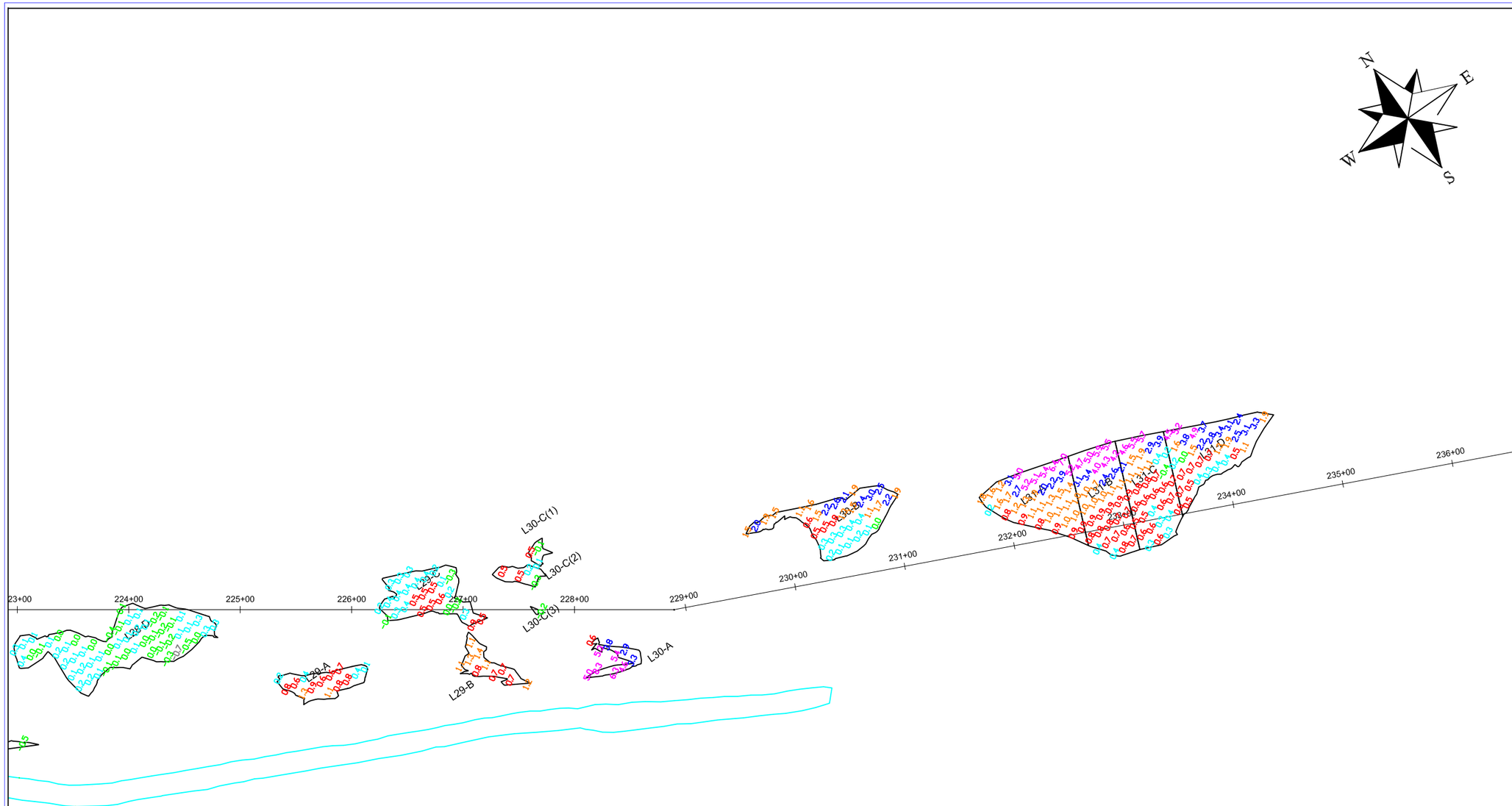
LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 9

DATE:	10/07/14
DRAWN BY:	MRB
CHECKED BY:	
CAD FILE:	PV_Oct4 2014.dwg
SCALE:	AS SHOWN



NOTES: Post Surveys completed
Oct. 2, 2014 - Oct 4, 2014

Differences based on survey to design elevation

COLOR TABLE

Magenta	> 4.0'
Blue	2.0' to 4.0'
Orange	1.0' to 2.0'
Red	0.5' to 1.0'
Cyan	0.0' to 0.5'
Green	-0.5' to 0.0'
Gray	<0.51'

0 50 100 150

DMU ISOPACH PLOT
South Channel Delta Plot Oct 4 vs. Design

LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING		
10	DATE:	10/07/14
	DRAWN BY:	MRB
	CHECKED BY:	
	CAD FILE:	PV Oct4 2014.dwg
	SCALE:	AS SHOWN

Hydrographic Consultants, Ltd.
P.O. Box 1448
Bellaire, TX 77402-1448
Ph: (713) 664-8066
Cell: (832) 798-1486
Info@hydro-ltd.com

SURVEY REPORT

Date: October 7, 2014

Subject: Single Beam Hydrographic Survey – Tyco Facility, Marinette Wisconsin

HCL performed a single beam hydrographic survey at the 25' cross-sections arranged to best model the contour of the dredging plan.

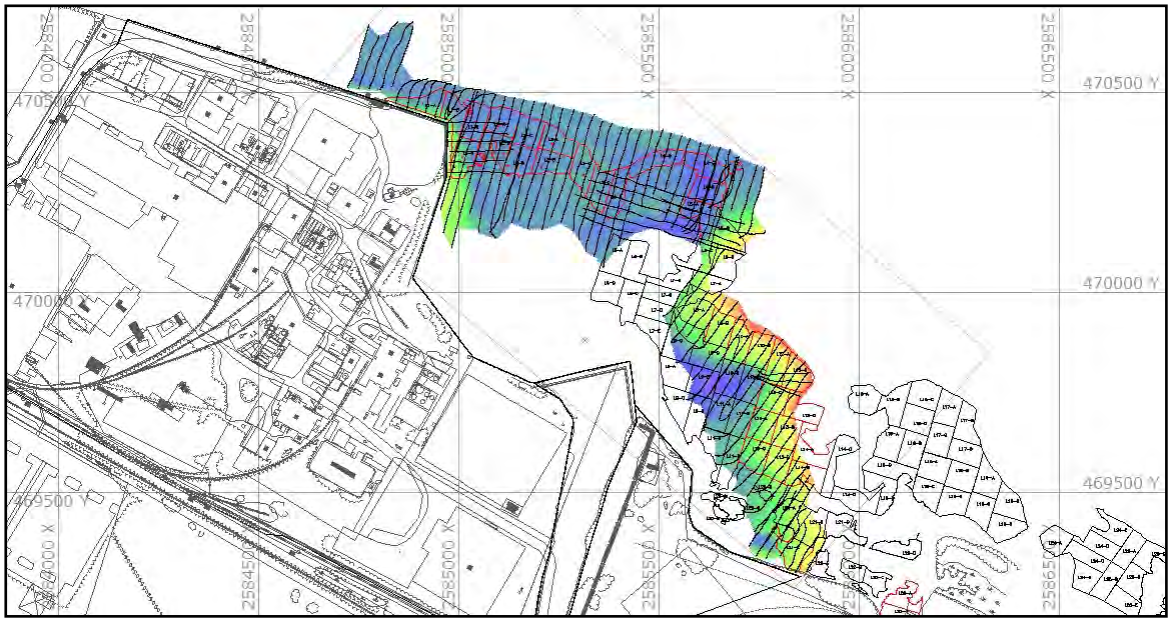


Figure 1: Oct 7, 2014 survey coverage

The following outlines our equipment, calibration, setup and other pertinent information from the survey.

SURVEY REPORT: **Tyco – 10/7/14**

1) **SURVEY CREW**
   R. Roman
   D. Burger

2) **EQUIPMENT**

   <u>Single Beam</u>
   Survey Boat - "Pontoon"
   RTK – Trimble R8 Rover
   Echo Sounder - Odom CV100: 200 KHz narrow beam (3 degree) transducer
   Data Acquisition/Processing - Hypack Software
   Tide – RTK water level check pre/post survey and RTK tides during

3) BOAT SETUP

Single Beam

Position Service - Trimble R8 Rover (RTK Tide Corrections)
Depth - Odom CVM
Software – Hypack
Antenna Ht: -9.75' (Determined by RTK water elevation)

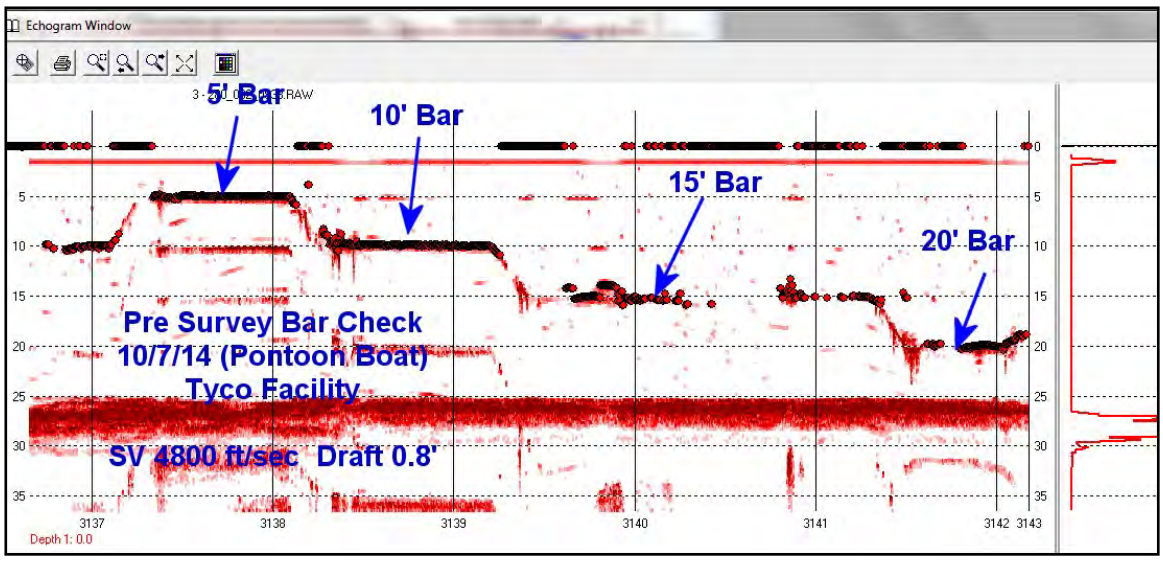
Antenna was on pipe directly over transducer and located near the bow of the boat. Transducer mount was checked with level to ensure that RTK antenna and transducer were plumb. Hypack tide reading was compared to direct readings on water prior to, during and post survey. Antenna height, determined on pre dredge survey, was corroborated for this survey

4) ECHO SOUNDER CALIBRATIONS

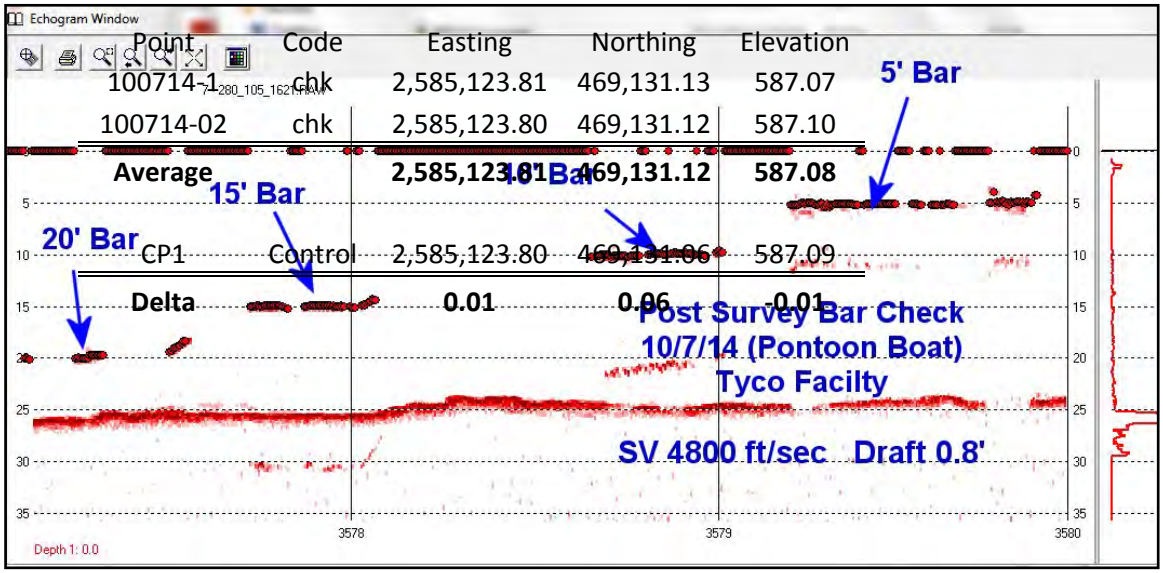
Single Beam (Pontoon) 10/7/14

Draft: 0.8'
Sound Velocity: 4800 ft/sec

Pre and Post Survey Bar Checks were performed on 10/7/14 – below are results.



Pre Survey Bar Check



Post Survey Bar Check

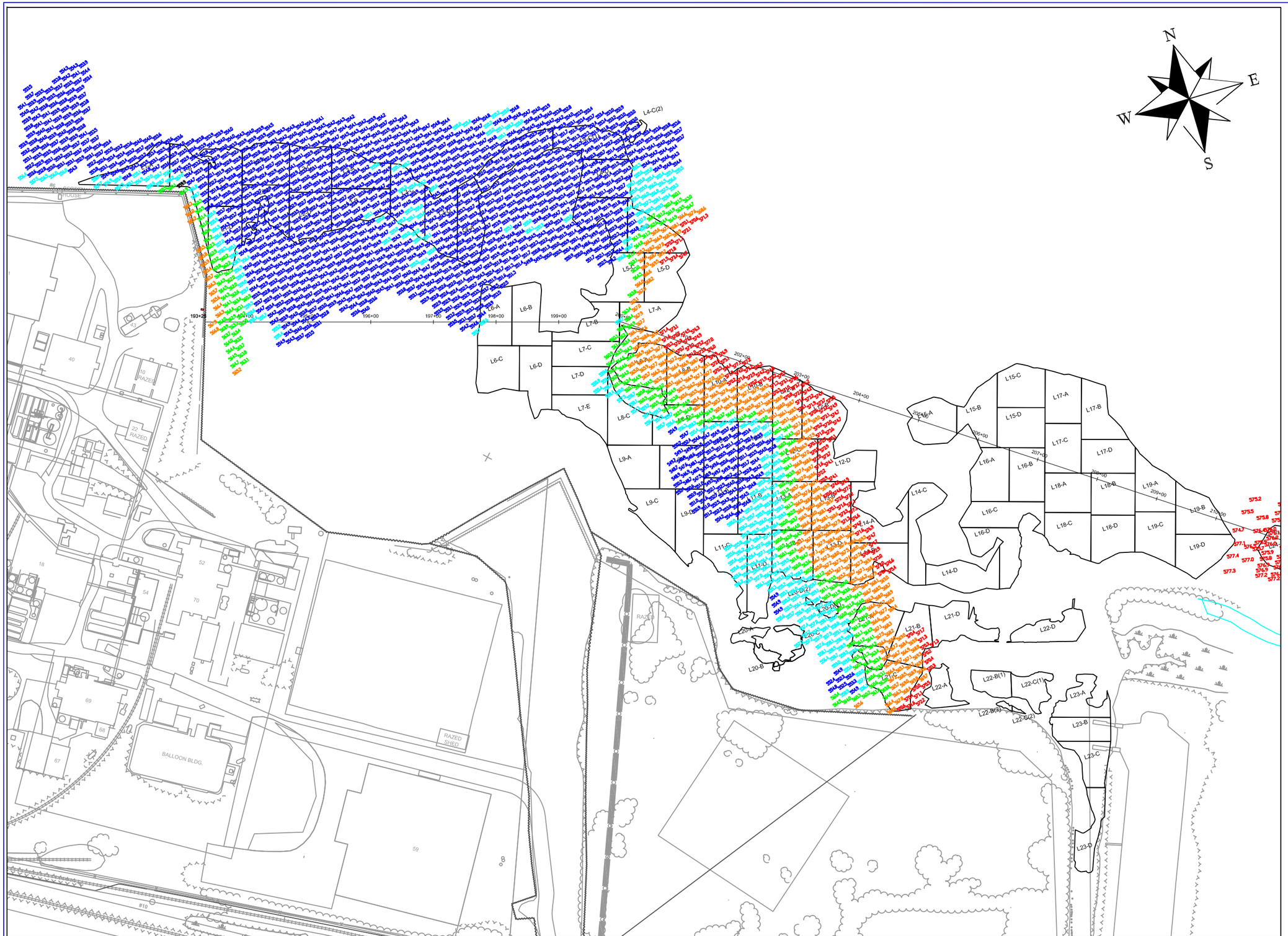
5) TIDES

RTK Base Station was checked at CP1 on 10/7/14. Results Below:

Point	Code	Easting	Northing	Elevation
100714-1	chk	2,585,123.81	469,131.13	587.07
100714-02	chk	2,585,123.80	469,131.12	587.10
Average		**2,585,123.81**	**469,131.12**	**587.08**
CP1	Control	2,585,123.80	469,131.06	587.09
Delta		**0.01**	**0.06**	**-0.01**

TIDE CHECK via RTK

Point	**Code**	**TIDE**
100714-04	tide 0910	579.6
100714-07	tide 1411	579.4
100714-10	tide 1626	579.6



DREDGE PROGRESS
10/07/14 Survey

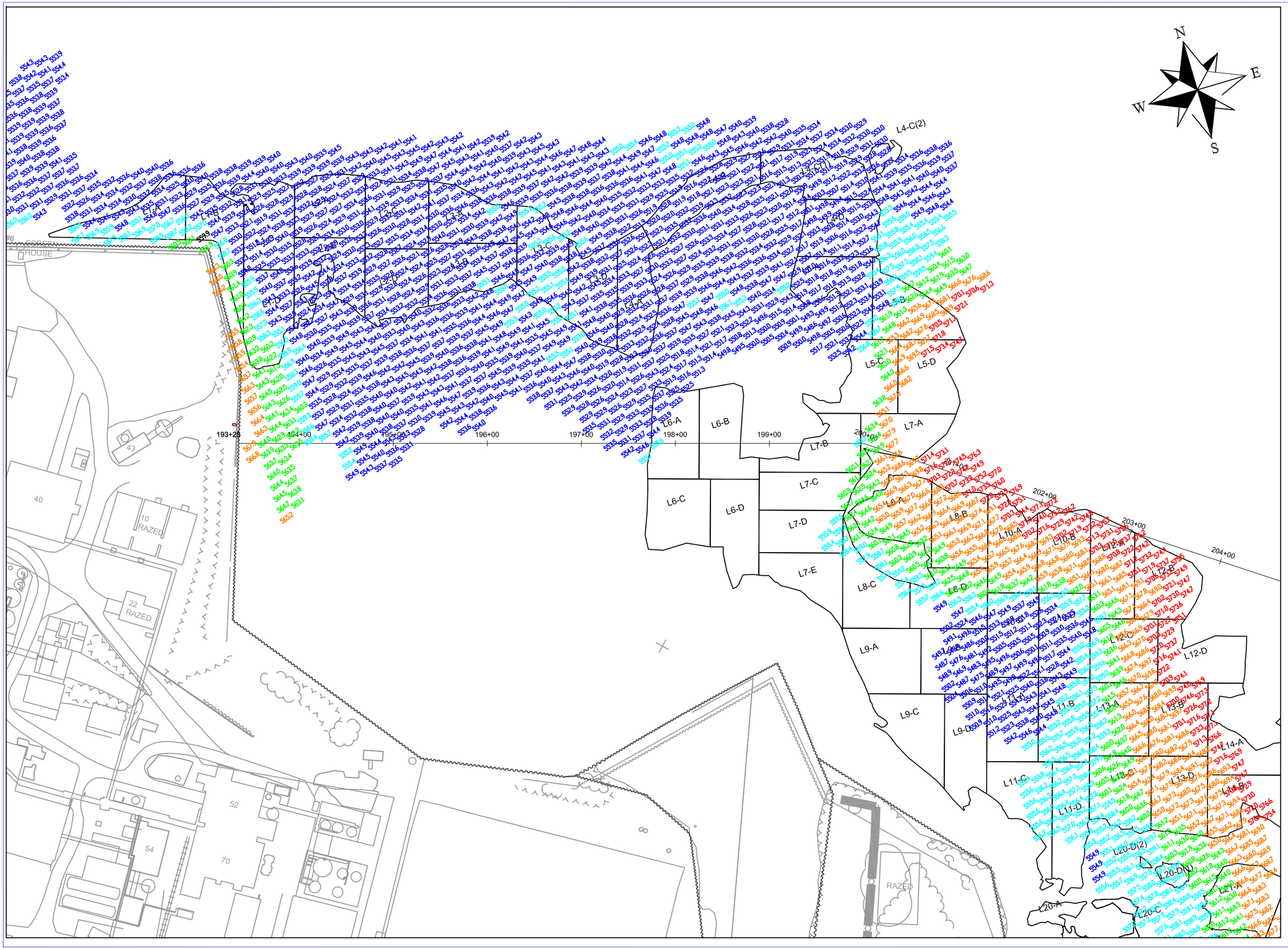
LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 1

DATE:	10/09/14
DRAWN BY:	MRB
CHECKED BY:	
CAD FILE:	Tyco 100714 Survey.dwg
SCALE:	AS SHOWN



COLOR TABLE

Red	> 570'
Orange	565' to 570'
Green	560' to 565'
Cyan	555' to 560'
Blue	< 555'

0 50 100 150

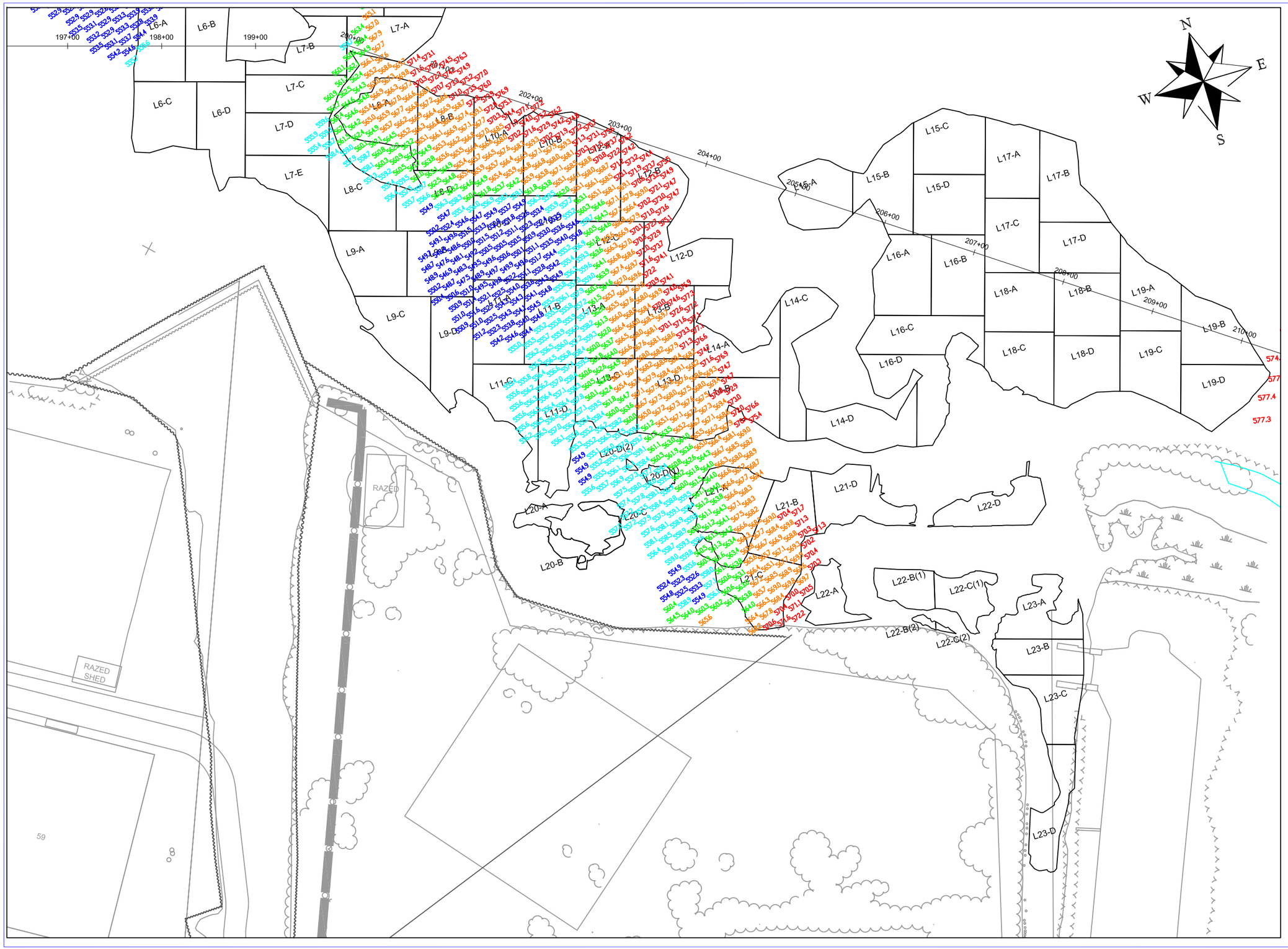
DREDGE PROGRESS
10/07/14 Survey

LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING		
2	DATE:	Tyco 100714 Survey.dwg
	DRAWN BY:	MRB
	CHECKED BY:	
	CAD FILE:	Progress Survey.dwg
	SCALE:	AS SHOWN



COLOR TABLE

Red	> 570'
Orange	565' to 570'
Green	560' to 565'
Cyan	555' to 560'
Blue	< 555'

0 50 100 150

DAILY DREDGE PROGRESS
10/07/14 Survey

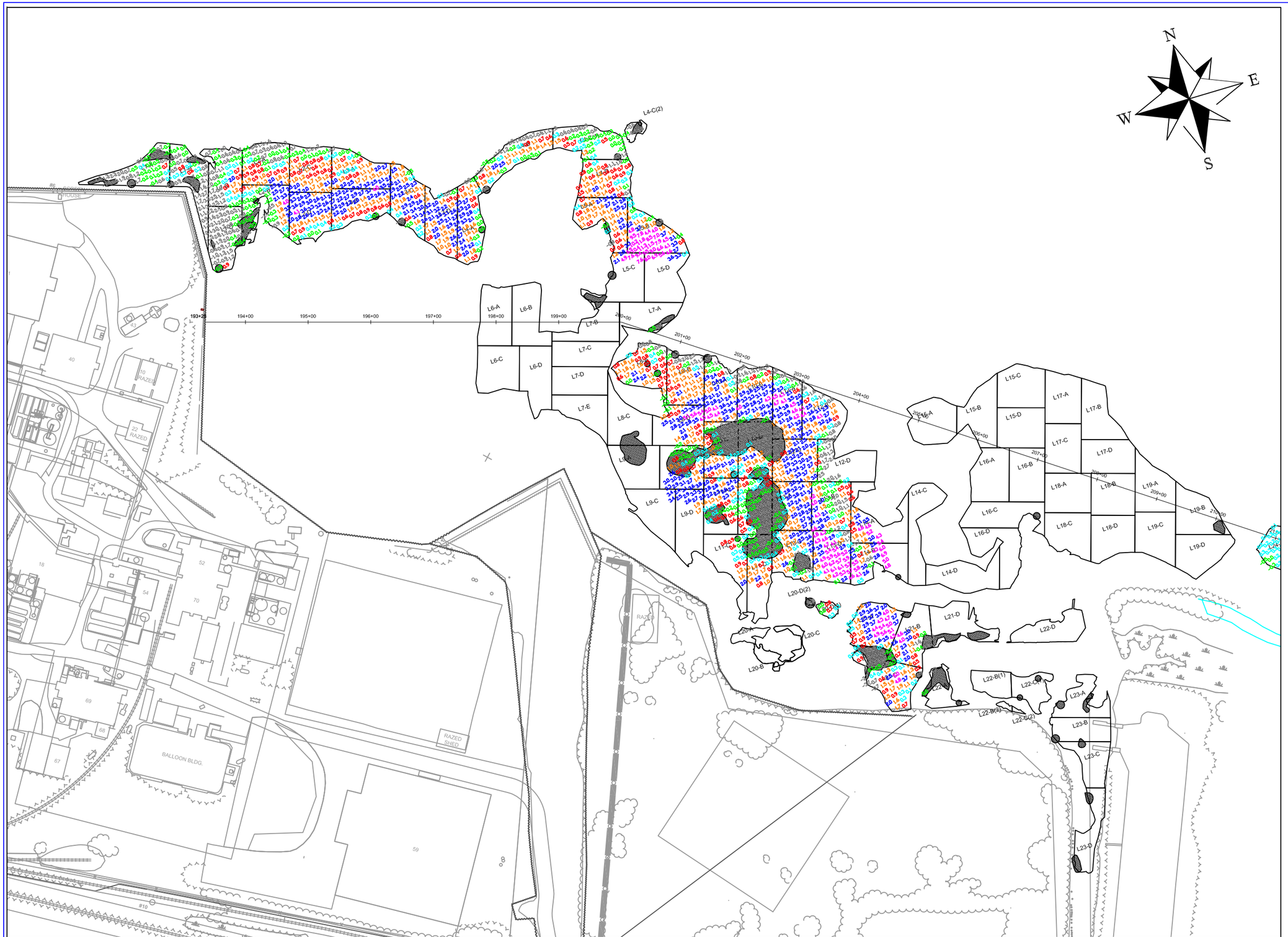
LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 3

DATE:	10/09/14
DRAWN BY:	MRB
CHECKED BY:	
CAD FILE:	Tyco 100714 Survey.dwg
SCALE:	AS SHOWN



COLOR TABLE

Magenta	> 4.0'
Blue	2.0' to 4.0'
Orange	1.0' to 2.0'
Red	0.5' to 1.0'
Cyan	0.0' to 0.5'
Green	-0.5' to 0.0'
Gray	<0.51'

BLACK = NO DREDGING

0 75 150 225

DREDGE PROGRESS
Delta Plot 10/07/14 vs Template

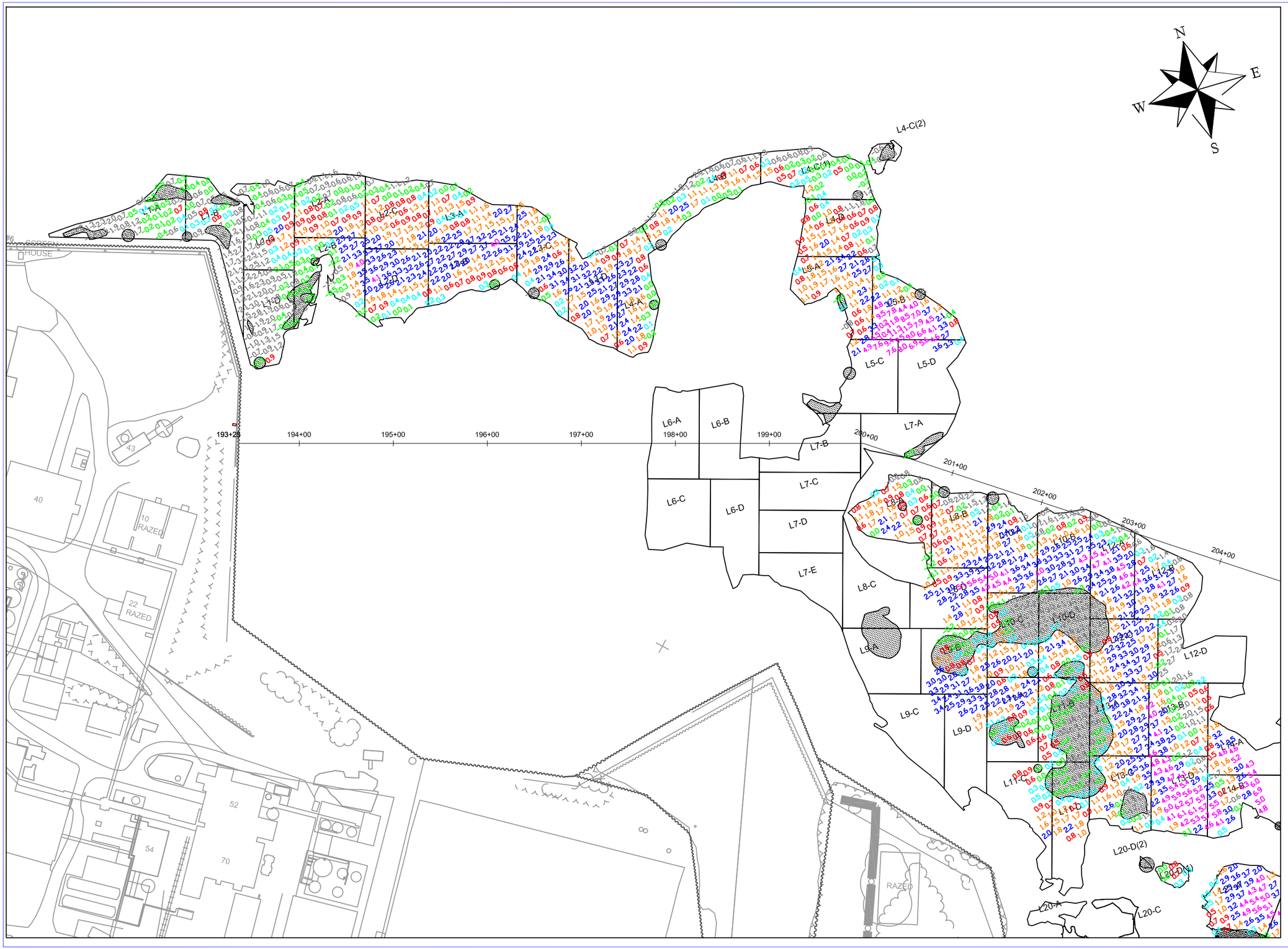
LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 6

DATE:	10/09/14
DRAWN BY:	MRB
CHECKED BY:	
CAD FILE:	Tyco 100714 Survey.dwg
SCALE:	AS SHOWN



COLOR TABLE

Magenta	> 4.0'
Blue	2.0' to 4.0'
Orange	1.0' to 2.0'
Red	0.5' to 1.0'
Cyan	0.0' to 0.5'
Green	-0.5' to 0.0'
Gray	<0.51'

BLACK = NO DREDGING

0 50 100 150

DREDGE PROGRESS
Delta Plot 10/07/14 vs Template

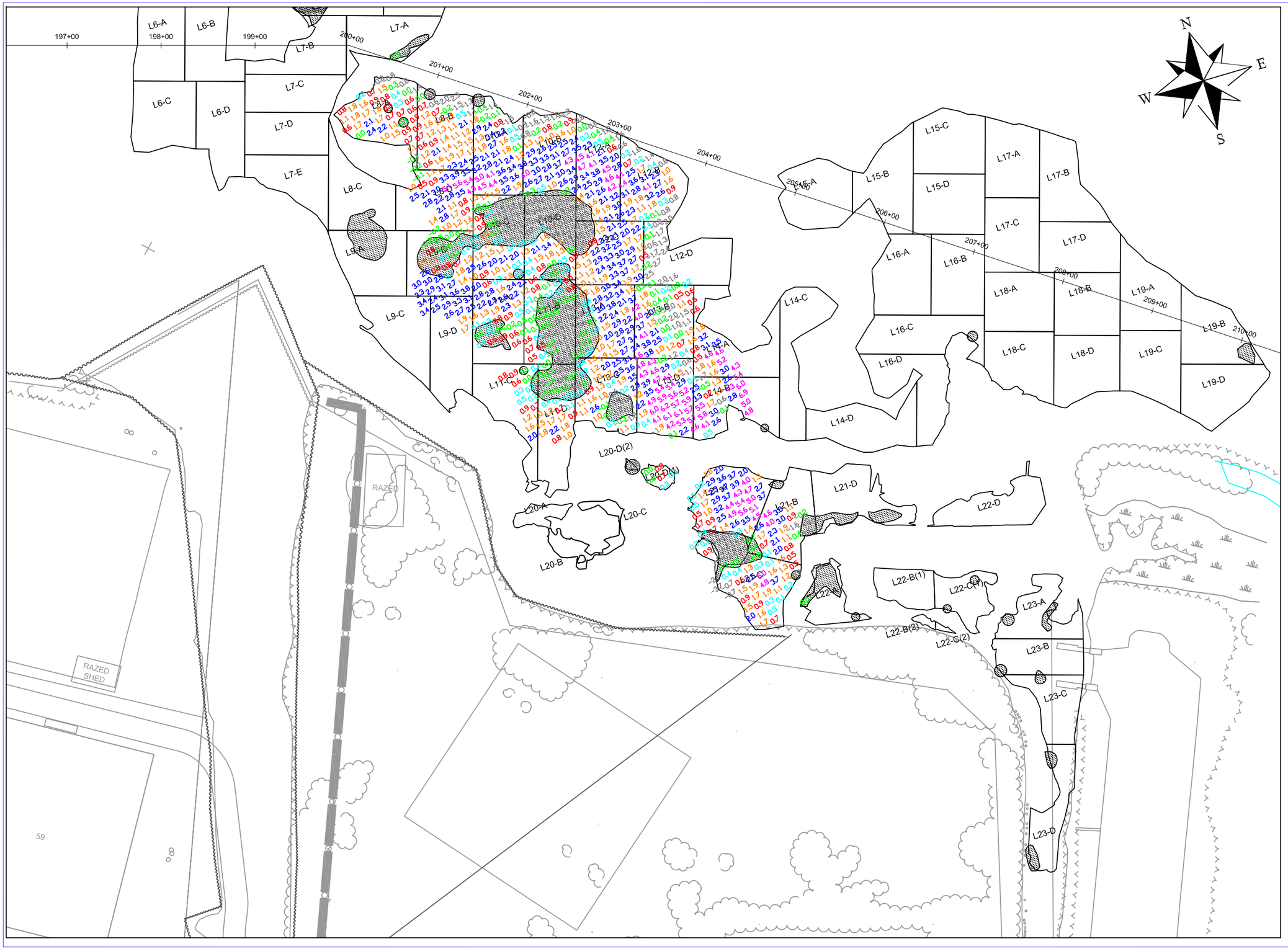
LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 7

DATE:	10/09/14
DRAWN BY:	MRB
CHECKED BY:	
CAD FILE:	Tyco 100714 Survey.dwg
SCALE:	AS SHOWN



COLOR TABLE

Magenta	> 4.0'
Blue	2.0' to 4.0'
Orange	1.0' to 2.0'
Red	0.5' to 1.0'
Cyan	0.0' to 0.5'
Green	-0.5' to 0.0'
Gray	<0.51'

BLACK = NO DREDGING

0 50 100 150

DAILY DREDGE PROGRESS
Delta Plot 10/07/14 vs Template

LOWER MENOMINEE RIVER TYCO SITE
SEDIMENT REMOVAL PROJECT

MARINETTE, WI

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING
8

DATE:	10/09/14
DRAWN BY:	MRB
CHECKED BY:	
CAD FILE:	Tyco 100714 Survey.dwg
SCALE:	AS SHOWN

Hydrographic Consultants, Ltd.
P.O. Box 1448
Bellaire, TX 77402-1448
Ph: (713) 664-8066
Cell: (832) 798-1486
Info@hydro-ltd.com

SURVEY REPORT

Date: April 28, 2015

Subject: Single Beam Pre Fill Hydrographic Survey – Tyco Facility, Marinette Wisconsin

HCL performed a single beam hydrographic survey at the 25' cross-sections arranged to best model the contour of the fill area (CYAN HATCHED).

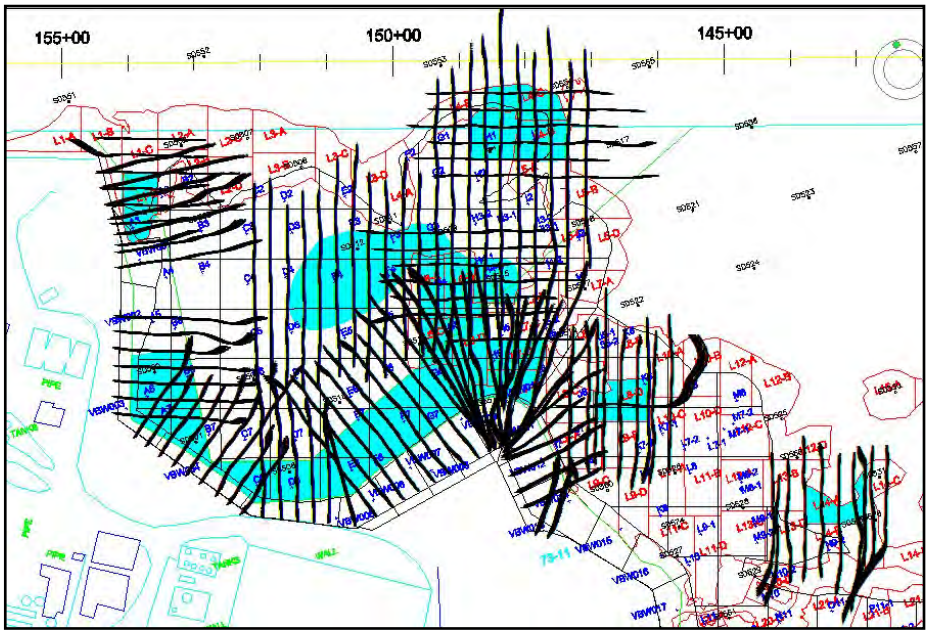


Figure 1: April 28, 2015 survey coverage

The following outlines our equipment, calibration, setup and other pertinent information from the survey.

SURVEY REPORT: **Tyco – 4/28/15**

1) **SURVEY CREW**
   R. Roman
   SES -Employee

2) **EQUIPMENT**

   Single Beam
   Survey Boat - "Pontoon"
   RTK – BASE SPS 855, BOAT – SPS 461 w/PPS box for timing
   Echo Sounder - Odom CV100: 200 KHz narrow beam (3 degree) transducer
   Data Acquisition/Processing - Hypack Software
   Tide – RTK water level check pre/post survey and RTK tides during

3) BOAT SETUP

Single Beam

Position Service - Trimble R8 Rover (RTK Tide Corrections)
Depth - Odom CVM
Software – Hypack
Antenna Ht: -9.90' (Determined by RTK water elevation)

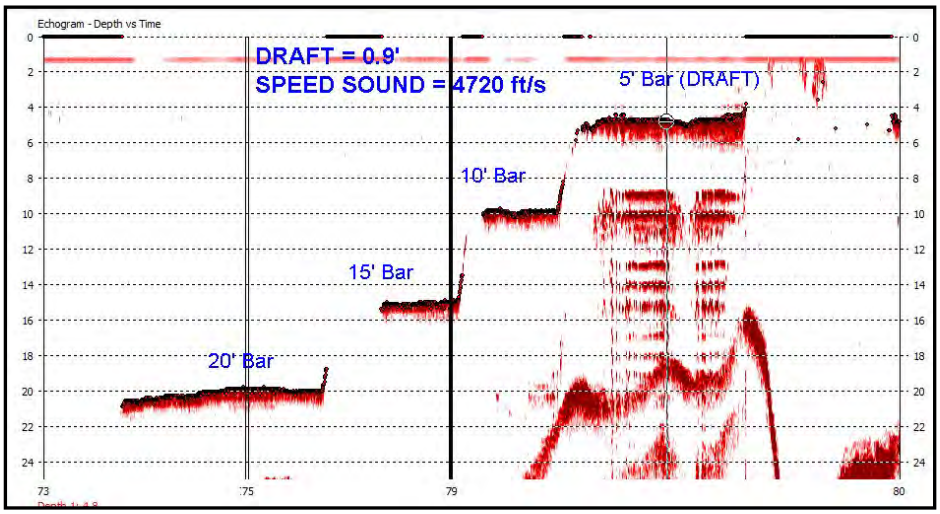
Antenna was on pipe directly over transducer and located near the bow of the boat. Transducer mount was checked with level to ensure that RTK antenna and transducer were plumb. Hypack tide reading was compared to direct readings on water prior to, during and post survey.

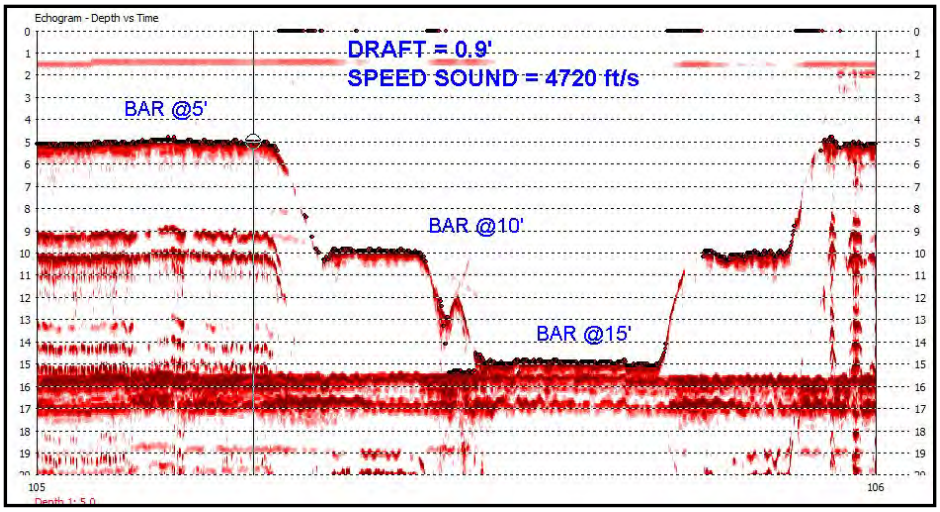
4) ECHO SOUNDER CALIBRATIONS

Single Beam (Pontoon) 4/28/15

Draft: 0.9' Sound Velocity: 4720 ft/sec

Pre Survey Bar check was performed on 2 different sets due to wind See below:



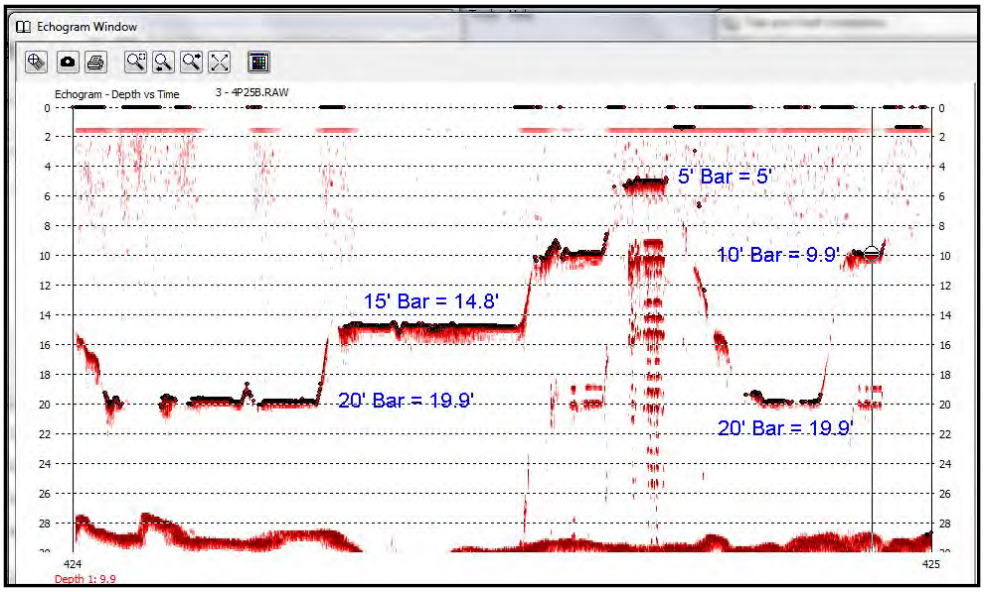


ECHO SOUNDER CALIBRATIONS (CONT'd)

Post Survey Bar Check – closed with a maximum difference of 0.2' This delta is in compliance with USACE standards for accuracy. *See USACE document EM 1110-2-1003 "Hydrographic Surveying" Table 9-6*.

Due to agreement with the 5' bar. Draft is considered to be static. Any changes in agreement with the 20', 15' and 10' bar are due to changes in the speed of sound velocity during the time of survey.

Post Survey Bar check shown below:



5) TIDES

RTK Base Station was checked at CP1 on 4/28/15. Results Below:

Point	Code	Easting	Northing	Elevation
042815-1	chk	2,585,123.90	469,131.21	587.09
042815-2	chk	2,585,123.90	469,131.21	587.10
042815-3	chk	2,585,123.97	469,131.16	587.12
042815-4	chk	2,585,123.93	469,131.18	587.10
Average		**2,585,123.92**	**469,131.19**	**587.10**
CP1	Control	2,585,123.80	469,131.06	587.09
Delta		**0.13**	**0.13**	**0.01**

TIDE CHECK via RTK

Point	**Code**	**TIDE**
042815-6	tide 09:00	579.7
042815-8	tide 10:50	579.6
042815-10	tide 18:04	579.9

APPENDIX F

DEBRIS CALCULATIONS

Final YTD Debris Daily Weights

Date	Total	Loads
10/27/2014	180.96	8
10/30/2014	25.03	1
10/31/2014	79.77	4
	285.76	13

Date	Total	Loads
11/4/2014	78.71	5
11/7/2014	169.1	14
11/12/2014	32.95	6
	280.76	25

YTD Total Tons	YTD Total Loads
566.52	38

APPENDIX G

INVASIVE SPECIES CONTROL PROJECT REPORT

NOTE: THE FINAL INVASIVE SPECIES REPORT WILL BE INCLUDED WITH THE FINAL RACR DOCUMENT AFTER THE DRAFT INVASICE SPECIES REPORT HAS BEEN FINALIZED PER EPA COMMENTS

APPENDIX H

DAILY REPORTS

APPENDIX I

INSPECTIONS

PREPARATORY PHASE CHECKLIST

(CONTINUED ON SECOND PAGE)

SPEC SECTION	DATE
01 45 16.13	09/27/14

CONTRACT NO	DEFINABLE FEATURE OF WORK	SCHEDULE ACT NO.	INDEX #
EP-R5-11-04	Dredging/Loading-Surveying/Turbidity and Resuspension MGMT		

PERSONNEL PRESENT

GOVERNMENT REP NOTIFIED 24 HOURS IN ADVANCE: (●) YES ( ) NO

NAME	POSITION	COMPANY/GOVERNMENT
Scott Burns	CQCSM	SES
Bryan Deskins	Lead Safety Technician/CQC	EQM
Gary Acquaro	Site Superintendent	EQM
Ricky Moss	Forman	SES
Al Lamort	Forman	SES

SUBMITTALS

REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER. HAVE ALL SUBMITTALS BEEN APPROVED? ( ) YES (●) NO

IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED? Construction Quality Control Plan needs approval from USEPA-TOCOR

ARE ALL MATERIALS ON HAND? (●) YES ( ) NO

IF NO, WHAT ITEMS ARE MISSING?

CHECK APPROVED SUBMITTALS AGAINST DELIVERED MATERIAL. (THIS SHOULD BE DONE AS MATERIAL ARRIVES.)

COMMENTS: None.

MATERIAL STORAGE

ARE MATERIALS STORED PROPERLY? (●) YES ( ) NO

IF NO, WHAT ACTION IS TAKEN?

SPECIFICATIONS

REVIEW EACH PARAGRAPH OF SPECIFICATIONS. Reviewed each paragraph in Section 01 45 16.13 of the Specifications.

DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK. CURTAINS INSPECTED, NO ISSUES; Dredging & survey procedures/paperwork reviewed (logs, draft tracking, etc); Barges confirmed to be water tight.

CLARIFY ANY DIFFERENCES.

WORK

ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.

IF NOT, WHAT ACTION IS TAKEN?

TESTING

IDENTIFY TEST TO BE PERFORMED, FREQUENCY, AND BY WHOM. Scow Screening done by CH2MHill every time a scow is considered full. Bin Sampling is performed by CH2MHill when the Bin is considered full. Turbidity monitoring is collected every 10 minutes by CH2MHill. Treated water is sampled before release or disposal by CH2MHill when water holding tanks become full.

WHEN REQUIRED? Turbidity Monitoring collection is needed every 10 minutes and all other monitoring is needed at SES Forman's and CH2Mhill's discretion

WHERE REQUIRED? Turbidity Monitoring collected downstream and upstream of the turbidity curtain. All other test are performed at the scow, tank, or Bin location.

REVIEW TESTING PLAN. Reviewed testing plan.

HAS TEST FACILITIES BEEN APPROVED? Yes

SAFETY

ACTIVITY HAZARD ANALYSIS APPROVED? (●) YES ( ) NO

REVIEW APPLICABLE PORTION OF EM 385-1-1. Reviewed applicable portion of EM 385-1-1

MEETING COMMENTS

USACE/SVDA COMMENTS DURING MEETING.

N/A

ITEMS OR REMARKS

OTHER ITEMS OR REMARKS:

No other items or remarks

	QC MANAGER 9/27/14 DATE

PREPARATORY PHASE CHECKLIST

(CONTINUED ON SECOND PAGE)

SPEC SECTION	DATE
01 45 16.13	09/27/14

CONTRACT NO	DEFINABLE FEATURE OF WORK	SCHEDULE ACT NO.	INDEX #
EP-R5-11-04	Offloading-Dewatering		

PERSONNEL PRESENT

GOVERNMENT REP NOTIFIED 24 HOURS IN ADVANCE: (●) YES ( ) NO

NAME	POSITION	COMPANY/GOVERNMENT
Scott Burns	CQCSM	SES
Bryan Deskins	Lead Safety Technician/CQC	EQM
Gary Acquaro	Site Superintendent	EQM
Ricky Moss	Forman	SES
Al Lamort	Forman	SES

SUBMITTALS

REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER. HAVE ALL SUBMITTALS BEEN APPROVED? ( ) YES (●) NO

IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED? Construction Quality Control Plan needs approval from USEPA-TOCOR

ARE ALL MATERIALS ON HAND? (●) YES ( ) NO

IF NO, WHAT ITEMS ARE MISSING?

CHECK APPROVED SUBMITTALS AGAINST DELIVERED MATERIAL. (THIS SHOULD BE DONE AS MATERIAL ARRIVES.)

COMMENTS:

MATERIAL STORAGE

ARE MATERIALS STOREO PROPERLY? (●) YES ( ) NO

IF NO, WHAT ACTION IS TAKEN?

SPECIFICATIONS

REVIEW EACH PARAGRAPH OF SPECIFICATIONS. Reviewed each paragraph In Section 01 45 16.13 of the Specifications.

Barges will only transport arsenic contaminated soil; drip pan installed 6' tween barge + land @ all offloading areas; offloading to be done in a controlled manner.

DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK Section 6.2 Offloading - Dewatering reviewed. from CQC PLAN.

CLARIFY ANY DIFFERENCES.

WOR

ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.

IF NOT, WHAT ACTION IS TAKEN?

TESTING

IDENTIFY TEST TO BE PERFORMED, FREQUENCY, AND BY WHOM. Scow Screening done by CH2MHill every time a scow is considered full. Bin Sampling is performed by CH2MHill when the Bin is considered full. Turbidity monitoring is collected every 10 minutes by CH2MHill. Treated water is sampled before release or disposal by CH2MHill when water holding tanks become full.

WHEN REQUIRED? Turbidity Monitoring collection is needed every 10 minutes and all other monitoring is needed at SES Forman's and CH2Mhill's discretion

WHERE REQUIRED? Turbidity Monitoring collected downstream and upstream of the turbidity curtain. All other test are performed at the scow, tank, or Bin location.

REVIEW TESTING PLAN. Reviewed testing plan.

HAS TEST FACILITIES BEEN APPROVED? Yes

SAFETY

ACTIVITY HAZARD ANALYSIS APPROVED? (●) YES ( ) NO

REVIEW APPLICABLE PORTION OF EM 385-1-1. Reviewed applicable portion of EM 385-1-1

MEETING COMMENTS

USACE/SVDA COMMENTS DURING MEETING.

N/A

ITEMS OR REMARKS

OTHER ITEMS OR REMARKS:

No other items or remarks

	QC MANAGER 9-27-14 DATE

PREPARATORY PHASE CHECKLIST

(CONTINUED ON SECOND PAGE)

SPEC SECTION	DATE
01 45 16.13	09/27/14

CONTRACT NO	DEFINABLE FEATURE OF WORK	SCHEDULE ACT NO.	INDEX #
EP-R5-11-04	Transportation-Offsite Landfill Disposal		

PERSONNEL PRESENT

GOVERNMENT REP NOTIFIED 24 HOURS IN ADVANCE: (•) YES ( ) NO

NAME	POSITION	COMPANY/GOVERNMENT
Scott Burns	CQCSM	SES
Bryan Deskins	Lead Safety Technician/CQC	EQM
Gary Acquaro	Site Superintendent	EQM
Ricky Moss	Forman	SES
Al Lamort	Forman	SES

SUBMITTALS

REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER. HAVE ALL SUBMITTALS BEEN APPROVED? ( ) YES (•) NO

IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED? Construction Quality Control Plan needs approval from USEPA-TOCOR

ARE ALL MATERIALS ON HAND? (•) YES ( ) NO

IF NO, WHAT ITEMS ARE MISSING?

CHECK APPROVED SUBMITTALS AGAINST DELIVERED MATERIAL. (THIS SHOULD BE DONE AS MATERIAL ARRIVES.)

COMMENTS:

MATERIAL STORAGE

ARE MATERIALS STORED PROPERLY? (•) YES ( ) NO

IF NO, WHAT ACTION IS TAKEN?

SPECIFICATIONS

REVIEW EACH PARAGRAPH OF SPECIFICATIONS. Reviewed each paragraph in Section 01 45 16.13 of the Specifications. YB

Reviewed Traffic Plan + Waste Mgmt Plan; also Section 6.4 of CQC Plan

DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK. Reviewed 6.4 of CQC for details

CLARIFY ANY DIFFERENCES.

WOR

ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.

IF NOT, WHAT ACTION IS TAKEN?

TESTING

IDENTIFY TEST TO BE PERFORMED, FREQUENCY, AND BY WHOM. Scow Screening done by CH2MHill every time a scow is considered full. Bin Sampling is performed by CH2MHill when the Bin is considered full. Turbidity monitoring is collected every 10 minutes by CH2MHill. Treated water is sampled before release or disposal by CH2MHill when water holding tanks become full.

WHEN REQUIRED? Turbidity Monitoring collection is needed every 10 minutes and all other monitoring is needed at SES Forman's and CH2Mhill's discretion

WHERE REQUIRED? Turbidity Monitoring collected downstream and upstream of the turbidity curtain. All other test are performed at the scow, tank, or Bin location.

REVIEW TESTING PLAN. Reviewed testing plan.

HAS TEST FACILITIES BEEN APPROVED? Yes

SAFETY

ACTIVITY HAZARD ANALYSIS APPROVED? (●) YES ( ) NO

REVIEW APPLICABLE PORTION OF EM 385-1-1. Reviewed applicable portion of EM 385-1-1

MEETING COMMENTS

USACE/SVDA COMMENTS DURING MEETING.

ITEMS OR REMARKS

OTHER ITEMS OR REMARKS:

No other items or remarks

	QC MANAGER 9-27-14 DATE

PREPARATORY PHASE CHECKLIST

(CONTINUED ON SECOND PAGE)

SPEC SECTION	DATE
01 45 16.13	09/27/14

CONTRACT NO	DEFINABLE FEATURE OF WORK	SCHEDULE ACT NO.	INDEX #
EP-R5-11-04	Treatment-Stabilization		

PERSONNEL PRESENT

GOVERNMENT REP NOTIFIED 24 HOURS IN ADVANCE: (●) YES ( ) NO

NAME	POSITION	COMPANY/GOVERNMENT
Scott Burns	CQCSM	SES
Bryan Deskins	Lead Safety Technician/CQC	EQM
Gary Acquaro	Site Superintendent	EQM
Ricky Moss	Forman	SES
Al Lamort	Forman	SES

SUBMITTALS

REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER. HAVE ALL SUBMITTALS BEEN APPROVED? ( ) YES (●) NO

IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED? Construction Quality Control Plan needs approval from USEPA-TOCOR

ARE ALL MATERIALS ON HAND? (●) YES ( ) NO

IF NO, WHAT ITEMS ARE MISSING?

CHECK APPROVED SUBMITTALS AGAINST DELIVERED MATERIAL. (THIS SHOULD BE DONE AS MATERIAL ARRIVES.)

COMMENTS:

MATERIAL STORAGE

ARE MATERIALS STORED PROPERLY? (●) YES ( ) NO

IF NO, WHAT ACTION IS TAKEN?

SPECIFICATIONS

REVIEW EACH PARAGRAPH OF SPECIFICATIONS. Reviewed each paragraph in Section 01 45 16.13 of the Specifications.
Also reviewed safe plan of action for dry ferric handling + processing procedures

DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK. Reviewed SPAs + CQC Plan Section 6.3

CLARIFY ANY DIFFERENCES. 5 frac tanks on site for liquid ferric storage

WORK

ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.

IF NOT, WHAT ACTION IS TAKEN?

TESTING

IDENTIFY TEST TO BE PERFORMED, FREQUENCY, AND BY WHOM. Scow Screening done by CH2MHill every time a scow is considered full. Bin Sampling is performed by CH2MHill when the Bin is considered full. Turbidity monitoring is collected every 10 minutes by CH2MHill. Treated water is sampled before release or disposal by CH2MHill when water holding tanks become full.

WHEN REQUIRED? Turbidity Monitoring collection is needed every 10 minutes and all other monitoring is needed at SES Forman's and CH2Mhill's discretion

WHERE REQUIRED? Turbidity Monitoring collected downstream and upstream of the turbidity curtain. All other test are performed at the scow, tank, or Bin location.

REVIEW TESTING PLAN. Reviewed testing plan.

HAS TEST FACILITIES BEEN APPROVED? Yes

SAFETY

ACTIVITY HAZARD ANALYSIS APPROVED? (●) YES ( ) NO

REVIEW APPLICABLE PORTION OF EM 385-1-1. Reviewed applicable portion of EM 385-1-1

MEETING COMMENTS

USACE/SVDA COMMENTS DURING MEETING.

ITEMS OR REMARKS

OTHER ITEMS OR REMARKS:

No other Items or remarks

	QC MANAGER 9-27-14 DATE

Sevenson Environmental

TYCO Fire Products

Safe Plan Of Action

Project No. 1083
Job/Task Stabilization with Dry Ferric Sulfate **Work Area** Menominee River Sediment Removal **Date** 9/18/14

Steps of Task	Hazard/Reaction to Change	Safe Plan	Resources
Transporting Dry Ferric Sulfate Super Sacks to location	Forklift, Job lift, overhead hazard, damaged sacks, spills, moving equipment, ground personnel, fall from trailer, noise greater than 85 dBA	Use care in transporting – do not block view with sacks, Super Sacks should remain on pallet for transport to work area, insure sacks are in good condition before transport, watch for ground personnel, dedicated signal person (if required) for setting pallets. Worker on trailer may be exposed to a potential fall of greater than 4 feet but less than 6 feet in height use caution near edge of trailer. Hearing protection is required around the pug mill/processing area	MSDS Safe Operating Procedures. Manufacturers handling procedures. Have spill kit available. (shovels, pans) Discuss travel pattern prior to starting activity Ear Plugs or ear muffs
Opening the Ferric Sulfate Super Sacks anonymous	Inspect Sacks for Damage, pinch points, stuck by, suspended load, inspecting Bazooka Tube, noise greater than 85 dBA	PPE requirements adhered to; PPE on hand/in-use. Have spill kit/Chemical neutralizer on hand. Inspect sacks for damage before lifting and placement of ferric super sack into hopper, inspect empty sacks to insure sacks are in empty. Handle empty sack in a manner to reduce the potential for dust emission from residual ferric. Overhead lifting/suspended load protocols shall be followed. Use LO/TO controls when performing inspection inside Bazooka Tube hopper and bag house, do not enter or put body parts into hopper area with out LO/TO controls in place. Hearing protection is required around the pug mill/processing area	MSDS Safe Operating Procedures. Manufacturers handling procedures. Tag lines used for placement and control of sacks to hoppers. Have spill kit available. (Shovels, pans) LO/TO controls Ear plugs or ear muffs

	Exposure to Ferric Sulfate	Insure PPE requirements for task are adhered to, PPE on hand/in-use, clear area of unessential personnel, insure personnel properly trained and informed of task to be performed. Personnel handling empty super sacks will be required to wear tight fitting safety glasses or chemical goggles to prevent dust exposure to the eyes.	MSDS Safe Operating Procedures. Manufacturers handling procedures. All involved personnel properly trained for task to be performed and the PPE requirements for task. Have spill kit available. (Shovels, pans) Tight fitting safety glasses or chemical goggles.
First Aid	Skin Exposure	Wash affected area with water for 15 min. If irritation persists seek medical attention.	MSDS Safe Operating Procedures Manufacturers handling procedures. Water supply
	Eye Exposure	Wash affected area with water for 15 min. **Seek medical attention.**	MSDS Safe Operating Procedures Manufacturers handling procedures.
	Inhalation	Move to fresh air, artificial respiration - do not attempt mouth to mouth with out one way breathing airway protective device	MSDS Safe Operating Procedures Manufacturers handling procedures. One way breathing airway protective device
	Ingestion	Give two glasses of water, do not induce vomiting, do not give anything by mouth to unconscious person, **seek medical attention**	MSDS Safe Operating Procedures Manufacturers handling procedures.
Storage of Dry Ferric Sulfate	Storage of Dry Ferric Sulfate	Label all Dry Ferric Sulfate to be stored, store Super Sacks according to manufactures instructions (MSDS)	MSDS Safe Operating Procedures Manufacturers handling procedures.

Team Members' Signatures

The signature of the supervisor confirms the completion of the hazard assessment and Safe Plan of Action by the crew.

Supervisors Signature: _____ Date 9/18/14

Instructions: 1. Write name of job or task in space provided. 2. Conduct walk-through survey of work area. 3. Write the steps of the task in a safe sequence. 4. List all possible hazards involved in each step and reaction to change. 5. In the Safe Plan column, state actions that will be taken to prevent the hazards or injury from reaction to change. 6. In Resources column, list equipment, tools, etc. needed to do the job. 8. Ask each team member, who helped develop and will use this SPA, to sign in spaces provided. 9. Review the SPA at the end of the task for improvements.

Work shall stop when conditions change, the job changes, or a deficiency in the plan is discovered, and the current SPA will be modified or a new SPA created.

Safe Plan Of Action

Project No. 1083
Job/Task Solidification Operations **Work Area** Menominee River Sediment Dredging **Date** _____

Steps of Task	Hazard/Reaction to Change	Safe Plan	Resources
1. Dredge soil from river.	Chemical/Toxicological ▪ Nuisance Dust ▪ Ferric Sulfate ▪ ▪	Chemical/Toxicological Hazards: 1. Wear appropriate PPE to prevent dermal contact with soils. 2. When checking tanks & assisting offloading chemicals. Must wear Goggles and/or Face shield, Rubber Gloves. 3. When flushing lines, line breaking and repairing/modifying lines & piping, which have contained chemicals.	1. Air monitoring instrument. 2. Level C and D. 3. Pugmill, Conveyors, Silos. 4. Excavators/Loaders
2. Load soil into pugmill.	Biological: 1. Stinging and biting insects. 2. Wild animals.		5. Eyewash. 6. Refer to Site Health and Safety Plan. (SSHP)
3. Add stabilize material to soil.	Physical Hazards:	Goggles/Face Shield, Rubber Gloves, Rubber Suit or Apron, Rubber Boots.	
4. Load treated soils into storage bins.	1. Slip/Trip/Fall on uneven or wet surfaces. 2. Thermal stress – Hot/Cold	Biological: 1. Use insect repellant.	
5. Load trucks.	3. Severe Weather. 4. Being struck by or against objects.	2. Carefully inspect under debris on ground. Keep away from animals.	Inspections:
6. Trucks go through truck wash and weigh on scale.	5. Noise. 6. Hand and power tools. 7. Exposure to heavy equipment and truck traffic.	Physical Hazards: 1. Watch where you step. Wear shoes with good traction. Maintain three (3) points of contact.	1. Inspect tools; equipment.
7. Trucks haul treated soil to landfill.		2. Wear appropriate clothing. Be aware of signs of heat/cold stress. Keep hydrated.	2. Daily safety inspections.
		3. If weather conditions are dangerous, postpone fieldwork. Go to appropriate shelter until given the "All Clear".	3. Inspect PPE prior to use.
		4. Maintain eye contact with operator.	
		5. Use ear plugs/muffs around equipment. 6. Use appropriate PPE. Use the right tool for the right job.	
		7. Must wear safety vest and hard hat at all times.	

The signature of the supervisor confirms the completion of the hazard assessment and Safe Plan of Action by the crew.

Supervisors Signature: _____ Date_____

Project No. 1083

Job/Task Solidification Operations **Work Area** Menominee River Sediment Dredging **Date:**

Team Member Signature Sheet Continuation

Review checklist while completing front page of SPA. Check all that apply.

A new SPA is required if the job scope or work conditions change.

Required Permits	Hazards	Safe Plan
☐ Confined Space	☐ Overhead Utilities	☐ Power de-energization required ☐ Insulation blankets required ☐ Wire watcher required ☐ Required clearance distance = _____Ft. ☐ Safe work zone marked
☐ Critical Lift		
☐ Hot Work	☐ Crane or other Lifting Equipment	☐ Signalman assigned ☐ Tag lines in use ☐ Area around crane barricaded ☐ Lifting equipment inspected ☐ Personnel protected from overhead load
☐ Lock Out/Tag Out		
☐ Soil Disturbance (Over 12")	☐ Underground Utilities	☐ Reviewed as-builts ☐ Subsurface surveys ☐ Received dig permit ☐ Required clearance distance = _____ Ft. ☐ Safe work zone Marked
☐ Utility Clearance		
Required PPE	☐ Electrical	☐ Lock Out/Tag Out/Try Out ☐ Permit required? ☐ Confirm that equipment is de-energized ☐ Reviewed electrical safety procedures
☐ Hard Hat, Class C		
☐ Hard Hat, Class E *(Elect. Protect)*	☐ Excavations	☐ Permits ☐ Inspected prior to entering ☐ Proper sloping/shoring ☐ Barricades provided ☐ Access/egress provided ☐ Protection from accumulated water
☐ Ear Plugs/Ear Muffs		
Eye Protection:	☐ Fire Hazard	☐ Hot Work Permit ☐Fire Extinguishers ☐ Fire watch ☐ Adjacent area protected ☐ Unnecessary flammable material removed
☐ Safety Glasses		
☐ Face Shield	☐ Vehicular Traffic or Heavy Equipment	☐ Traffic Barricades ☐ Cones ☐ Signs ☐ Flagmen ☐ Lane closure ☐ Communication with equipment operator
☐ Chemical Goggles		
☐ Welding Hood	☐ Noise >85 dB	Hearing protection is required: ☐ Ear plugs ☐ Ear Muffs ☐ Both
Hand Protection:	☐ Hand & Power Tools:	☐ Inspect general cond. ☐ GFCI in use ☐ Identified PPE required for each tool ☐ Reviewed safety requirements in operators manual(s) ☐ Guarding OK
☐ Cut Resistant Gloves		
☐ Welders Gloves	☐ Hand Hazards	List sharp tools, material, equipment: _____ ☐ PPE gloves, etc. ☐ Protected sharp edges as necessary
☐ Nitrile Gloves		
☐ Surgical Gloves	☐ Manual Lifting	☐ Reviewed proper lifting tech. ☐ Identified material requiring lifting equipment ☐ Hand protection required ☐ Back support belts
☐ Rubber Gloves		
☐ Elect. Insulated Gloves	☐ Ladders	☐ Inspect general cond. before use ☐ Ladder inspected with in last quarter ☐ Ladder tied off or held ☐ Proper angle and placement ☐ Reviewed ladder safety
☐ Arm Sleeves		
Foot Protection:	☐ Scaffolds	☐☐ Inspect general condition before use ☐ Tags in place ☐ Properly secured ☐ Toe boards used ☐ Footings adequate ☐ Materials properly stored on scaffold
☐ Sturdy Work Boots		
☐ Safety Toe Boots	☐ Slips, Trips Falls	☐ Inspect for trip hazards ☐ Hazards marked ☐ Tools & material properly stored ☐ Extension cords properly secured ☐ Work zone free of debris
☐ Rubber Boots		
☐ Rubber Boot Covers	☐ Pinch Points	List potential pinch points: _____ ☐ Working near operating equipment ☐ Hand/Body positioning
☐ Dielectric Footwear		
Respiratory. Protection:	☐ Working w/ Chemicals	☐ List specific chemicals involved and list hazards and precaution on front side. ☐ Reviewed MSDS ☐ Exposure Monitoring required ☐ Have proper containers and labels. ☐ Identified proper PPE (respirators, clothing, gloves, etc.)
☐ Dust Mask		
☐ Air Purifying Respirator	☐ Asbestos or Lead Paint Potential	☐ Areas to be worked may contain asbestos or lead paint ☐ Asbestos controls incorporated ☐ Lead based point controls in place ☐ Exposure monitoring conducted.
☐ Supplied Air Respirator		
☐ SCBA	☐ Heat Stress Potential	☐ Heat stress monitoring (>85°) ☐ Liquids available ☐ Cool down periods ☐ Sun Screen ☐ Reviewed Heat Stress symptoms
☐ Emergency Escape Respirator		
Special Clothing:	☐ Cold Stress Potential	☐ Proper clothing (i.e.. gloves, coat, coveralls) ☐ Wind chill <32° ☐ Reviewed Cold Stress symptoms ☐ Warm up periods
☐ Tyvek ®	☐ Environmental	☐ Air emissions ☐ Water discharge ☐ Hazardous wastes ☐ Other wastes ☐ Pollution prevention ☐ Waste minimization
☐ Poly Coated Tyvek ®		
☐ Fire Resistent Coveralls	☐ Natural or Site Hazards	☐ Weather ☐ Terrain ☐ Adjacent operations or processes ☐ Biological hazards ☐ Animals/reptiles/insects hazards
☐ Rain Suit		
☐ Safety Vest	☐ Adjacent Work/Processes	☐ Notified them of our presents ☐ Other workers adjecent, above, or below. ☐ Coordinated with adjacent supervisor/customer/operator ☐ Need barriers between.
Fall Protection:	☐ Barricades/covers	☐ Caution barricade tape required ☐ Danger barricade tape required ☐ Rigid railing required ☐ Covers over opening ☐ Warning signs required
☐ Harness		
☐ Double Lanyard Required	**Additional Information:**	
☐ Anchorage Point Available		
☐ Additional Anchorage Connector Needed e.g. Cross Arm Strap, etc.		
☐ Retractable Device Needed		
☐ Horizontal Life Line System Req'd.		
☐ Fall Clearance Distance Adequate		
☐ Fall Rescue/Retrieval Plan Set Up		

INITIAL PHASE CHECKLIST

SPEC SECTION	DATE
01 45 16.13	9/11/14

CONTRACT NO	DEFINABLE FEATURE OF WORK	SCHEDULE ACT NO.	INDEX #/
EP-R5-11-04	Dredging/Loading-Surveying/Turbidity and Resuspension MGMT		

PERSONNEL PRESENT

GOVERNMENT REP NOTIFIED ____ HOURS IN ADVANCE: ○ YES ○ NO

NAME	POSITION	COMPANY/GOVERNMENT
Scott Burns	QC Manager	SES
Bryan Deskins	Safety	EQ
Al LaMortrella	Superintendent	SES

PROCEDURE COMPLIANCE

IDENTIFY FULL COMPLIANCE WITH PROCEDURES IDENTIFIED AT PREPARATORY. COORDINATE PLANS, SPECIFICATIONS, AND SUBMITTALS.

COMMENTS: Required submittals are in. Reviewed procedures from preparatory & Definable feature of work (CQC Plan - Section 6.1)

PRELIMINARY WORK

ENSURE PRELIMINARY WORK IS COMPLETE AND CORRECT. IF NOT, WHAT ACTION IS TAKEN?

Preliminary work complete. Scows inspected for water-tightness. Excavators equipped w/ DREDGEPACK software.

WORKMANSHIP

ESTABLISH LEVEL OF WORKMANSHIP.

WHERE IS WORK LOCATED? Turning Basin / Transition Area Menominee River

IS SAMPLE PANEL REQUIRED? ○ YES ⊗ NO

WILL THE INITIAL WORK BE CONSIDERED AS A SAMPLE? ○ YES ⊙ NO

(IF YES, MAINTAIN IN PRESENT CONDITION AS LONG AS POSSIBLE AND DESCRIBE LOCATION OF SAMPLE)

RESOLUTION

RESOLVE ANY DIFFERENCES.

COMMENTS: N/A

CHECK SAFETY	REVIEW JOB CONDITIONS USING EM 385-1-1 AND JOB HAZARD ANALYSIS
	COMMENTS: Activity Hazard Analysis reviewed with workers at safety meeting. Required safety equipment on hand
OTHER	OTHER ITEMS OR REMARKS
	If/WHEN glacial till is encountered, EPA or EPA rep. will be notified. Dredging in area will stop until till is confirmed.
	QC MANAGER 9/11/14 DATE

INITIAL PHASE CHECKLIST

CONTRACT NO: EP-R5-11-04	DEFINABLE FEATURE OF WORK: Offloading-Dewatering	SPEC SECTION: 01 45 16.13	DATE: 9/17/14
		SCHEDULE ACT NO.	INDEX #

PERSONNEL PRESENT

GOVERNMENT REP NOTIFIED ____ HOURS IN ADVANCE: ○ YES ○ NO

NAME	POSITION	COMPANY/GOVERNMENT
Scott Burns	QC Manager	SES
Bryan Deskins	Safety	EQ
Al LaMorticella	Super.	SES

PROCEDURE COMPLIANCE

IDENTIFY FULL COMPLIANCE WITH PROCEDURES IDENTIFIED AT PREPARATORY. COORDINATE PLANS, SPECIFICATIONS, AND SUBMITTALS.

COMMENTS: Reviewed Section 6.2 of CQC Plan again.

PRELIMINARY WORK

ENSURE PRELIMINARY WORK IS COMPLETE AND CORRECT. IF NOT, WHAT ACTION IS TAKEN?

Preliminary work complete. Barges + work boats/vessels inspected. Daily inspection will be performed. Drip pan between water + land ready. Free water will be pumped from barges prior to offloading.

WORKMANSHIP

ESTABLISH LEVEL OF WORKMANSHIP.

WHERE IS WORK LOCATED? Offloading from barges @ Menomine River to processing area on land.

IS SAMPLE PANEL REQUIRED? ○ YES ⊗ NO

WILL THE INITIAL WORK BE CONSIDERED AS A SAMPLE? ○ YES ⊙ NO

(IF YES, MAINTAIN IN PRESENT CONDITION AS LONG AS POSSIBLE AND DESCRIBE LOCATION OF SAMPLE)

RESOLUTION

RESOLVE ANY DIFFERENCES.

COMMENTS: N/A

CHECK SAFETY	REVIEW JOB CONDITIONS USING EM 385-1-1 AND JOB HAZARD ANALYSIS
	COMMENTS: Proper PPE required working near water (lifevests)
OTHER	OTHER ITEMS OR REMARKS
	No overfill of bucket during offloading. Offload @ controlled pace to avoid loss of dredge material
	QC MANAGER: [signature] DATE: 9/17/14

INITIAL PHASE CHECKLIST

SPEC SECTION	DATE
01 45 16.13	9/17/14

CONTRACT NO	DEFINABLE FEATURE OF WORK	SCHEDULE ACT NO.	INDEX #
EP-R5-11-04	Treatment-Stabilization		

PERSONNEL PRESENT

GOVERNMENT REP NOTIFIED ____ HOURS IN ADVANCE: ○ YES ○ NO

NAME	POSITION	COMPANY/GOVERNMENT
Scott Burns	QC	SES
Bryan Deskins	Safety	EQ
Rance Sundquist	Foreman	SES

PROCEDURE COMPLIANCE

IDENTIFY FULL COMPLIANCE WITH PROCEDURES IDENTIFIED AT PREPARATORY. COORDINATE PLANS, SPECIFICATIONS, AND SUBMITTALS.

COMMENTS: 2 day supply of portland cement on hand. Dry + liquid ferric also available. Feed systems checked. Reviewed CQC plan section 6.3

PRELIMINARY WORK

ENSURE PRELIMINARY WORK IS COMPLETE AND CORRECT. IF NOT, WHAT ACTION IS TAKEN?

Pugmills restored from previous work - ready to begin operations. New piping/lines run for addition of various additives (Portland cement, dry + liquid ferric)

WORKMANSHIP

ESTABLISH LEVEL OF WORKMANSHIP.

WHERE IS WORK LOCATED? Processing Pad

IS SAMPLE PANEL REQUIRED? ○ YES ☒ NO

WILL THE INITIAL WORK BE CONSIDERED AS A SAMPLE? ○ YES ⊙ NO

(IF YES, MAINTAIN IN PRESENT CONDITION AS LONG AS POSSIBLE AND DESCRIBE LOCATION OF SAMPLE)

RESOLUTION

RESOLVE ANY DIFFERENCES.

COMMENTS: None.

CHECK SAFETY	REVIEW JOB CONDITIONS USING EM 385-1-1 AND JOB HAZARD ANALYSIS
	COMMENTS: Proper PPE required @ processing area - Tyvek, gloves, boots, hardhats + safety glasses. MSDS on file @ safety office.
OTHER	OTHER ITEMS OR REMARKS
	Pugmills will operate individually - one helo in reserve for use during maintenance / repair periods
	QC MANAGER 9/17/14 DATE

INITIAL PHASE CHECKLIST

SPEC SECTION	DATE
01 45 16.13	9/24/14

CONTRACT NO	DEFINABLE FEATURE OF WORK	SCHEDULE ACT NO.	INDEX #
EP-R5-11-04	Transportation-Offsite Landfill Disposal		

PERSONNEL PRESENT

GOVERNMENT REP NOTIFIED ____ HOURS IN ADVANCE: ○ YES ○ NO

NAME	POSITION	COMPANY/GOVERNMENT
Scott Burns	QC	SES
Bryan Deskins	Safety	EQ
Gary Acquaro	PM	EQ
Mark Schmitt	PM	SES

PROCEDURE COMPLIANCE

IDENTIFY FULL COMPLIANCE WITH PROCEDURES IDENTIFIED AT PREPARATORY. COORDINATE PLANS, SPECIFICATIONS, AND SUBMITTALS.

COMMENTS: Reviewed traffic plan + loading procedures. Checked equipment for compliance. Trucks to be weighed @ site before leaving for Waste Management landfill for comparison/limits.

PRELIMINARY WORK

ENSURE PRELIMINARY WORK IS COMPLETE AND CORRECT. IF NOT, WHAT ACTION IS TAKEN?

Reviewed CQC Section 6.4. Disposal to be tracked + reported by EQ.

WORKMANSHIP

ESTABLISH LEVEL OF WORKMANSHIP.

WHERE IS WORK LOCATED? Loading Area @ Containment bins.

IS SAMPLE PANEL REQUIRED? ○ YES ⊘ NO

WILL THE INITIAL WORK BE CONSIDERED AS A SAMPLE? ○ YES ⊙ NO

(IF YES, MAINTAIN IN PRESENT CONDITION AS LONG AS POSSIBLE AND DESCRIBE LOCATION OF SAMPLE)

RESOLUTION

RESOLVE ANY DIFFERENCES.

COMMENTS: None -

CHECK SAFETY	REVIEW JOB CONDITIONS USING EM 385-1-1 AND JOB HAZARD ANALYSIS
	COMMENTS: Activity Hazard Analysis reviewed for task with operators + laborers assigned to loading.
OTHER	OTHER ITEMS OR REMARKS
	Transportation subcontractor provided by EQ.
	QC MANAGER: [signature] DATE: 9/24/14

APPENDIX J

PUNCHLIST

Menominee River Legacy Project - Punch List Final Updated on 11/23

Location	Task description	Due Date	Responsible Party	Complete Date	Date Confirmed	Comment
6th Street	Install new Park bench	8/27/15	EQ	9/15/15	9/15/15	Completed 9/15/15
Wetlands	Repair damage to grading and hydroseeding	9/2/15	EQ	9/11/15	9/15/15	Completed 9/15/15
Wetlands	Grade and seed turtle berm	9/2/15	EQ	9/15/15	9/15/15	Additional seeding placed on 9/11
Process Area	Asphalt sealing at fence post holes	8/21/15	EQ	8/28/15	9/15/15	Completed 9/15/15
Process Area	Finish repair of asphalt at EW-3 control box	8/21/15	EQ	9/11/15	9/15/15	Completed 9/15/15
Process Area	Repair damaged asphalt caused by pugmill movement	9/2/15	Tyco	9/11/15	9/15/15	Completed 9/15/15
Construction trailer area	Complete trailer anchor repairs	8/21/15	EQ	8/21/15	9/10/15	Completed 9/10/15
Bldg 59 exterior	Repair asphalt damage caused by pugmill movement	9/2/15	Tyco	9/11/15	9/15/15	Completed 9/11/15
Bldg 59 exterior	Seal remainder of cracks in subcontractor parking area	9/2/15	EQ	9/15/15	9/15/15	Completed 9/15/15
General Site	Crack Sealing	8/20/15	EQ	9/11/15	9/15/15	Completed 9/11/15
General Site	Final asphalt sweep/cleanup	9/2/15	EQ	9/15/15	9/15/15	Completed 9/15/15
General Site	Paint striping emergency access and salt vault drop off	8/27/15	EQ	9/8/15	9/15/15	Completed 9/11/15
Site and South Channel	Spray Eradicate Invasive Species	8/31/15	EQ	9/26/15	9/26/15	Completed 9/26/15
Site and South Channel	Cut and remove dead Invasive Species	10/31/15	EQ	11/23/15	11/23/15	Completed 11/23/15
Closeout documents	Construction Completion Report	11/15/15	EQ			
Closeout documents	Sample Summary Report	9/15/15	Tyco/CH			
Closeout documents	Close Out Reports, amend RCRA CCR with Legacy Documents	12/31/15	Tyco/CH			